THE CITY OF SAN DIEGO

DEVELOPMENT SERVICES DEPARTMENT
Date of Notice: May 17, 2017
PUBLIC NOTICE OF THE PREPARATION
OF AN ENVIRONMENTAL IMPACT REPORT
SAP No.: 24004397

PUBLIC NOTICE: The City of San Diego as the Lead Agency has determined that the project described below will require the preparation of an Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA). This Notice of Preparation of a project EIR was publicly noticed and distributed on May 17, was published in the *San Diego Daily Transcript*, and placed on the City of San Diego website at the following location:

http://www.sandiego.gov/city-clerk/officialdocs/notices/.

SCOPING MEETING: A public scoping meeting will be held by the City of San Diego's Development Services Department on May 31st beginning at 6:00 p.m. and running no later than 8:00 p.m. at the Hotel Karlan, located at 14455 Penasquitos Drive, San Diego, CA 92129. Please note depending on the number of attendees, the meeting could end earlier than 8:00 p.m. Verbal and written comments regarding the scope and alternatives of the proposed EIR will be accepted at the meeting.

Written/Mail-in comments may be sent to Anna McPherson, AICP, City of San Diego Development Services Center, 1222 First Avenue, MS 501, San Diego, CA 92101 or e-mail your comments to **DSDEAS@sandiego.gov** referencing the Project Name (Black Mountain Road Community Plan Amendment) and Project Number (357262) in the subject line within 30 days of the posting of this notice/date of the Public Notice above. Responsible agencies are requested to indicate their statutory responsibilities in connection with this project when responding. An EIR incorporating public input will then be prepared and distributed for the public to review and comment.

Project Name/PTS No.: Black Mountain Road Community Plan Amendment/357262

Community Plan Area: Rancho Peñasquitos

Council District: South of State Route 56 (majority of project): Council District 6 (Council Member Chris Cate)/North of State Route 56: Council District 5 (Council Member Mark Kersey)

Project Description: GENERAL PLAN AND RANCHO PENASQUITOS COMMUNITY PLAN AMENDMENT to reclassify Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community. The project site is located in the City of San Diego (City), in San Diego County, east of Interstate 5, west of Interstate 15, and crosses State Route 56 (SR-56). The project site lies approximately 8 miles inland from the Pacific Ocean and is approximately 17 miles north of downtown San Diego (Attachment 1). The project area stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern community boundary adjacent to the Los Peñasquitos Canyon Preserve (Attachment 2). Black Mountain

Road currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over SR-56 is wider and operates as a 5-lane Primary Arterial. The CPA was initiated on February 27, 2014.

Implementation of the project and required traffic mitigation measures would also require an amendment to the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans (PFFPs).

Applicant: Cal Atlantic Homes, 16010 Camino Del Sur, San Diego, CA 92127-2583

Recommended Finding: Pursuant to Section 15060(d) of CEQA Guidelines, it appears that the proposed project may result in significant environmental impacts in the following areas: **AIR QUALITY, NOISE, and TRAFFIC AND CIRCULATION**.

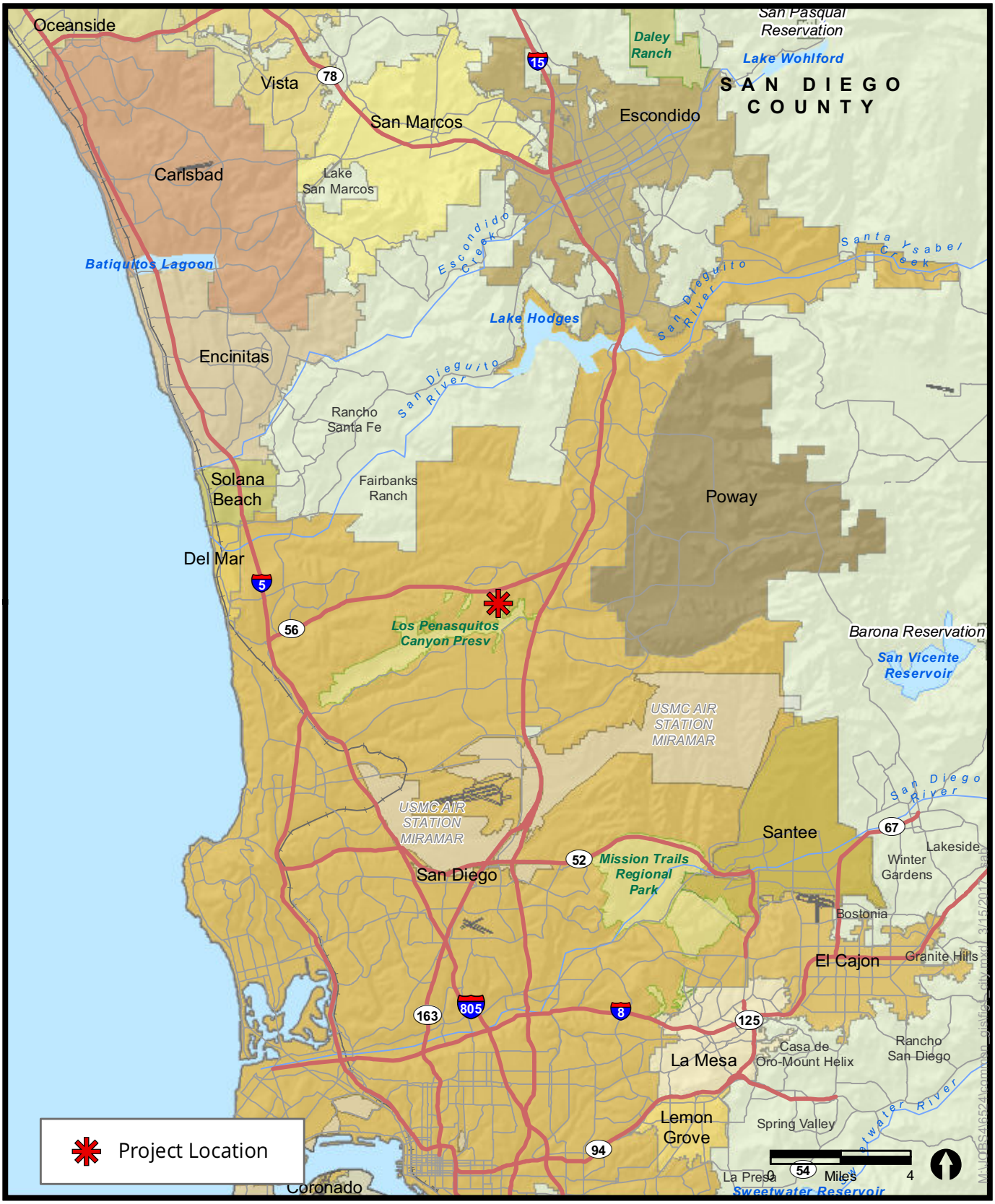
Availability in Alternative Format: To request the City's letter to the applicant detailing the required scope of work (EIR Scoping Letter, attached) in alternative format, call the Development Services Department at (619) 446-5460 immediately to ensure availability. This information is ALSO available in alternative formats for persons with disabilities; to request this notice in alternative format, call (619) 446-5446 or (800) 735-2929 (TEXT TELEPHONE).

Additional Information: For environmental review information, contact Anna McPherson at (619) 446-5276. The Scoping Letter and supporting documents may be reviewed, or purchased for the cost of reproduction, at the fifth floor of the Development Services Center. For information regarding public meetings/hearings on this project, contact Project Manager Morris Dye at (619) 446-5201.

Kerry Santoro
Deputy Director
Development Services Department

DISTRIBUTION: See Attached

ATTACHMENTS: Figure 1: Regional Location Map
Figure 2: Project Location Map
Scoping Letter



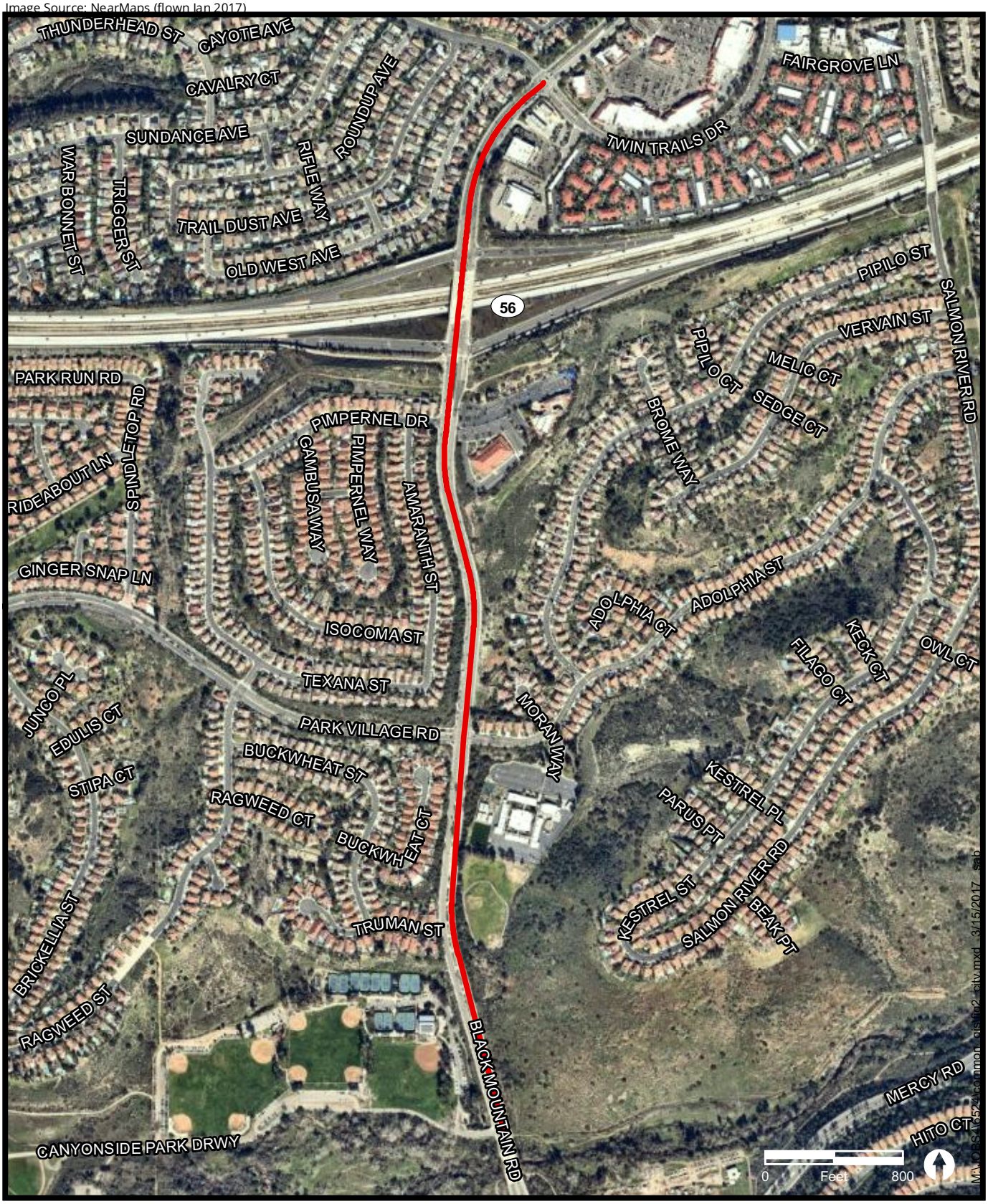
Regional Location

6524 Black Mountain Road/Project No. 357262

City of San Diego – Development Services Department

FIGURE No. 1

Image Source: NearMaps (flown Jan 2017)



Project Location on Aerial Photograph

6524 Black Mountain Road/Project No. 357262

City of San Diego – Development Services Department

FIGURE No. 2

THE CITY OF SAN DIEGO

May 17, 2017

Mr. William Dumka
Senior Vice President
Cal Atlantic
16010 Camino Del Sur
San Diego, CA 92127-2583

Subject: **Scope of Work for an Environmental Impact Report for the Black Mountain Road Community Plan Amendment Project (Project No. 357262)**

Dear Mr. Dumka:

Pursuant to Section 15060(d) of the California Environmental Quality Act (CEQA), the Environmental Analysis Section (EAS) of the City of San Diego (City) Development Services Department has determined that the project may have significant effects on the environment, and the preparation of an Environmental Impact Report (EIR) is required. Staff has determined that a Focused EIR is the appropriate environmental document for the Black Mountain Road Community Plan Amendment Project.

The purpose of this letter is to identify the specific issues to be addressed in the EIR. The EIR shall be prepared in accordance with the attached "City of San Diego Technical Report and Environmental Impact Guidelines." A Notice of Preparation (NOP) will be distributed to the Responsible Agencies and others who may have an interest in the project. Scoping meetings are required by CEQA Section 21083.9(a)(2) for projects that may have statewide, regional, or area-wide environmental impacts. The project has the potential to impact a California Department of Transportation facility, and therefore, it would have area-wide environmental impacts. Prior to preparation of the EIR, a public scoping meeting will be held at the Hotel Karlan, located at 14455 Penasquitos Drive San Diego, CA 92129. The meeting will be held in the "Del Mar Room" on May 31st from 6:00 p.m. to 8:00 p.m. to gather input.

Changes or additions to the scope of the EIR may be required as a result of input received in response to the Scoping Meeting and NOP. In addition, the applicant may adjust the project over time, and these changes would be disclosed in the EIR.

Each section and issue area of the EIR shall provide a descriptive analysis of the project followed by a comprehensive evaluation. The EIR shall also include sufficient graphics and tables to provide a complete description of all major project features.

The project that would be the subject of the EIR is briefly described as follows:

Project Description: The project proposes a General Plan amendment to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan and a Community Plan Amendment to the Rancho Peñasquitos Community Plan Circulation Element to reclassify Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community. The project area is located in the City of San Diego, in San Diego County, east of Interstate 5, west of Interstate 15, and crosses State Route 56 (SR-56). The project site lies approximately 8 miles inland from the Pacific Ocean and is approximately 17 miles north of downtown San Diego. The proposed project area stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern community boundary adjacent to the Los Peñasquitos Canyon Preserve. Black Mountain Road currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over SR-56 is wider and operates as a 5-lane Primary Arterial. The City of San Diego Planning Commission initiated the CPA on February 27, 2014.

Implementation of the project and any associated traffic mitigation measures would also require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans.

EIR FORMAT/CONTENT REQUIREMENTS

The EIR serves to inform governmental agencies and the public of a project's environmental impacts. Emphasis in the EIR must be on identifying feasible solutions to environmental problems. The objective is not to simply describe and document an impact, but to actively create and suggest mitigation measures or project alternatives to substantially reduce significant adverse environmental impacts. The adequacy of the EIR will depend greatly on the thoroughness of this effort.

The EIR must be written in an objective, clear, and concise manner, in plain language. Each section/issue area of the EIR shall provide a descriptive analysis of the project followed by a comprehensive evaluation of the issue area and use graphics and tables to replace extensive word descriptions and to assist in clarification. Conclusions must be supported with quantitative, as well as qualitative information, to the extent feasible.

Prior to public review, a Certification page to be attached at the front of the Draft EIR will also need to be prepared. The Certification page cannot be prepared until an approved draft has been submitted and accepted by the City. The Draft EIR shall include a title page including the Project Tracking System number and the date of the publication. The entire Draft EIR must be left justified and shall include a table of contents and an executive summary of the following sections:

A. <u>INTRODUCTION</u>

Introduce the project with a brief discussion on the intended use and purpose of the EIR. Describe and/or incorporate by reference any previously certified environmental documents that address the project site. Briefly describe areas where the project is in compliance or

non-compliance with assumptions and mitigation contained in these previously certified documents. Additionally, this section shall provide a brief description of any other local, state, and federal agencies that may be involved in the project review and or any grant approvals.

B. ENVIRONMENTAL SETTING

The EIR shall describe the precise location of the project and present it on a detailed topographic map and regional map. Provide a local and regional description of the environmental setting of the project, as well as the zoning and land use designations of the site and its contiguous properties, area topography, drainage characteristics, and vegetation. Include the existing and planned land uses in the vicinity, on- and off-site resources, the community plan area land use designations(s), Multi-Habitat Planning Area (MHPA), existing zoning, all utility easements and any required maintenance access, and any overlay zones within this section. Include all applicable jurisdictional boundaries, policy and land use plans and overlay zones that affect the project site. This section shall also discuss the provision of emergency services.

C. PROJECT DESCRIPTION

Per CEQA Guidelines Section 15124, the EIR shall include a discussion of the goals and objectives. Project objectives will be critical in determining the appropriate alternatives for the project, which would avoid or substantially reduce potentially significant impacts. The description of the project shall include an overview of all major project features and phasing, including land use, grading quantities and locations, retaining walls (number of retaining walls and their individual heights and lengths), landscaping, drainage design, improvement plans, including any off-site components, vehicular access points, and parking areas associated with the project. The project description shall provide a discussion of all applicable discretionary actions required for the project (e.g., Site Development Permit), as well as a discussion of all permits and approvals required by federal, state, and other regulatory agencies.

D. HISTORY OF PROJECT CHANGES

This section of the EIR shall outline the history of the project and any physical changes that have been made to the project in response to environmental concerns identified during the City's review of the project.

E. ENVIRONMENTAL ANALYSIS

The potential for significant environmental impacts must be thoroughly analyzed and mitigation measures identified that would avoid or substantially lessen any such significant impacts. The EIR must represent the independent analysis of the City of San Diego as Lead Agency; therefore, all impact analysis must be based on the City's current City of San Diego California Environmental Quality Act Significance Determination Thresholds.

Below are key environmental issue areas that have been identified for this project, within which the issue statements must be addressed individually. Discussion of each issue statement shall include an explanation of the existing project site conditions, impact analysis, significance determination, and appropriate mitigation. The impact analysis shall address potential direct and indirect impacts that could be created through implementation of the project.

In each environmental issue section, mitigation measures to avoid or substantially lessen impacts must be clearly identified and discussed. The ultimate outcome after mitigation shall also be discussed (i.e., significant but mitigated, significant and unmitigated). If other potentially significant issue areas arise during detailed environmental investigation of the project, consultation with Development Services Department is required to determine if these areas need to be added to the EIR. As supplementary information is required, the EIR may also need to be expanded.

LAND USE

Issue 1: Would the project result in an inconsistency/conflict with the environmental goals, objectives, or guidelines of a community or general plan?

The project proposes an amendment to the adopted Circulation Element of the Rancho Peñasquitos Community Plan and Figure LU-2 Land Use and Street System Map of the General Plan. This section of the EIR will address whether the proposed amendments would result in an inconsistency or conflict with any environmental goals, objectives, or policies of the community plan or general plan, resulting in a significant secondary physical effect, thereby resulting in a significant environmental impact.

AIR QUALITY AND ODOR (CONSTRUCTION EMISSIONS)

Issue 1: Would the project result in a conflict with or obstruct implementation of the applicable air quality plan?

Issue 2: Would the project result in a violation of any air quality standard or contribute substantially to an existing or projected air quality violation?

Issue 3: Would the project result in exposing sensitive receptors to substantial pollutant concentrations?

Issue 4: Would the project result in creating objectionable odors affecting a substantial number of people?

This section of the EIR shall summarize the findings of the Air Quality Letter Report prepared for the project. This section of the EIR shall analyze the potential for air quality impacts related to increased traffic congestion due to the project, and the construction emissions of criteria pollutants associated with construction of the traffic improvement areas needed for

traffic mitigation. This section of the EIR shall also provide a qualitative discussion of potential impacts associated with odor. If significant air quality impacts are identified, the EIR shall include mitigation measures that would reduce impacts to below a level of significance per the standards set by the City of San Diego.

NOISE

Issue 1: Would the project result in or create a significant increase in the existing ambient noise levels?

Issue 2: Would the project result in exposure of people to noise levels, which exceed the City's adopted noise ordinance or are incompatible with Table K-4 of the City of San Diego?

This section of the EIR shall summarize the findings of the Noise Technical Report prepared for the project. This section of the EIR shall estimate future vehicular traffic noise levels. Noise levels shall be calculated for the affected roadway segments with and without project implementation, and Noise level increases/decreases will be assessed for existing land uses. The results of the model shall be expressed in community noise equivalent levels (CNEL) and programmatically evaluate noise impacts for sensitive receptors surrounding the project roadway network.

This section of the EIR shall document existing baseline noise levels based on measurements at up to five locations at, and adjacent to, the project's off-site improvement areas needed for traffic mitigation. This section of the EIR shall analyze potential noise impacts associated with construction of the proposed improvement areas to assess project-level noise levels at adjacent properties, based on equipment types and operations provided by the client or the client's designated agent. If significant noise impacts are identified, the EIR shall include mitigation measures that would reduce impacts to below a level of significance. The analysis shall calculate the necessary barrier heights or operational restrictions, or other mitigation options to reduce noise levels to standards set by the City of San Diego.

TRANSPORTATION/CIRCULATION

Issue 1: Would the project result in an increase in projected traffic, which is substantial in relation to the existing traffic load and capacity of the street system?

Issue 2: Would the project result in an addition of a substantial amount of traffic to a congested freeway segment, interchange, or ramp as shown in the table on the next page?

Issue 3: Would the project result in a substantial impact upon existing or planned transportation systems?

Issue 4: Would the project result in an increase in traffic hazards for motor vehicles, bicyclists, or pedestrians due to a proposed, non-standard design feature (e.g., poor sight distance or driveway onto an access restricted roadway)?

Issue 5: Would the project result in a conflict with adopted policies, plans, or programs supporting alternative transportation models (e.g., bus turnouts, bicycle racks)?

This section of the EIR shall identify potential impacts to the traffic and circulation system based on the results of the Black Mountain Road TIS. The TIS was prepared consistent with the City's Traffic Impact Study Manual and approved by City staff and shall be included as an appendix to the EIR. A summary of the approved traffic study shall be included in the body of the EIR and document the effect the project would have on surrounding circulation element roadways and intersections within the study area. The analysis shall focus on segment and intersection conditions for existing and horizon year conditions with or without the project. The impact analysis shall be cumulative in nature and include past, present, and reasonably foreseeable future developments in the community that may impact or contribute to local and regional street and circulation systems.

This section of the EIR shall also describe any required modifications and/or improvements to the existing circulation system, including City streets, intersections, freeways, and interchanges. Finally, the section shall describe the impacts the project may have on the walkability, pedestrian, and bicycle connectivity within the project site and off-site areas. This section shall also describe mitigation measures that would reduce impacts to below a level of significance per the standards set by the City of San Diego.

F. SIGNIFICANT ENVIRONMENTAL EFFECTS, WHICH CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED

This section shall describe the significant unavoidable impacts of the projects, including those significant impacts that can be mitigated but not reduced to below a level of significance.

G. SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

In conformance with CEQA Section 15126.2(b) and (c), the EIR shall discuss the significant environmental effects which cannot be avoided if the project is implemented; and the significant irreversible changes that would result from the implementation of the project. Address the use of nonrenewable resources during the construction and life of the project.

H. GROWTH INDUCEMENT

The EIR shall address the potential for growth inducement through implementation of the project. The EIR shall discuss the ways in which the project could foster economic or population growth either directly or indirectly. Accelerated growth could further strain

existing community facilities or encourage activities that could significantly affect the environment. This section need not conclude that growth-inducing impacts, if any, are significant unless the project would induce substantial growth or concentration of population.

I. CUMULATIVE IMPACTS

When the project is considered with other past, present, and reasonably foreseeable projects in the project area, implementation could result in significant environmental changes, which are individually limited but cumulatively considerable. In accordance with Section 15130 of the CEQA Guidelines, potential cumulative impacts shall be discussed in a separate section of the EIR.

J. EFFECTS FOUND NOT TO BE SIGNIFICANT

A separate section of the EIR shall include a brief discussion of why certain areas were not considered to be potentially significant and were therefore not included in the EIR. It is anticipated that these issues would include: agricultural resources, geologic conditions, growth inducement, health and safety, historical resources, hydrology, mineral resources, paleontological resources, public services and facilities, public utilities, visual effects and neighborhood character, water quality, and greenhouse gas emissions. However, if these or other potentially significant issue areas arise during the detailed environmental investigation of the project, consultation with EAS staff is required to determine if these or other issue areas need to be addressed within the EIR. Additionally, as supplementary information is submitted, the EIR may need to be expanded to include additional areas.

K. ALTERNATIVES

The EIR shall place major attention on reasonable alternatives, which avoid or reduce the project's significant environmental impacts. These alternatives shall be identified and discussed in detail, and shall address all significant impacts. The alternatives analysis shall be conducted in sufficient graphic and narrative detail to clearly assess the relative level of impacts and feasibility. At a minimum, the following alternatives shall be considered:

No Project (Adopted Community Plan Circulation Network) Alternative: The No Project Alternative shall qualitatively discuss potential impacts associated with widening Black Mountain Road to a 6-lane Primary Arterial as it is currently designated in the Rancho Peñasquitos Community Plan.

Other alternatives may be developed based on results of the impact analysis and comments received on the Notice of Preparation.

L. MITIGATION, MONITORING, AND REPORTING PROGRAM (MMRP)

For each of the issue areas discussed above, mitigation measures shall be clearly identified, discussed, and their effectiveness assessed in each issue section of the EIR. A Mitigation,

Monitoring, and Reporting Program (MMRP) for each mitigation measure must be identified. At a minimum, the program shall identify: (1) the City department or other entity responsible for the monitoring; (2) the monitoring and reporting schedule; and (3) the completion requirements. The separate MMRP shall also be contained (verbatim) as a separate chapter within the EIR. When appropriate, EAS staff will provide the applicant with specific Mitigation Monitoring and Reporting Programs to be incorporated into the EIR.

M. OTHER

The EIR shall include the references, individuals and agencies consulted, and certification page.

Conclusion:

If other potentially significant issue areas arise during detailed environmental investigation of the project, consultation with this division is required to determine if these other areas need to be addressed in the EIR. Should the project description be revised, an additional scope of work may be required. Furthermore, as the project design progresses and supplementary information becomes available, the EIR may need to be expanded to include additional issue areas.

If you have any questions or need clarification regarding any of the information contained in the scoping letter, please contact Anna McPherson at (619) 446-5276 or **AMcPherson@sandiego.gov**.

Sincerely,

Kerry Santoro
Deputy Director
Development Services Department

cc: Anna McPherson AICP, Senior Planner, Development Services Department
Ann French Gonsalves, Senior Traffic Engineer, Development Services Department
Michael Prinz, Senior Planner, Planning Department
Environmental Project File

DEPARTMENT OF TRANSPORTATION
DISTRICT 11
4050 TAYLOR STREET, M.S. 240
SAN DIEGO, CA 92110
PHONE (619) 688-6960
FAX (619) 688-4299
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

June 15, 2017

11-SD-56
Black Mountain Road
Community Plan Amendment
NOP SCH # 2017051058

Anna L. McPherson
City of San Diego
1222 First Avenue, MS-501
San Diego, CA 92101

Dear Ms. McPherson:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Black Mountain Road Community Plan Amendment Notice of Preparation. The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enchance California's economy and livability. The Local Development-Intergovernmetal Review (LD-IGR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities.

Caltrans would like to submit the following comments:

1. Caltrans is concerned with the potential down grade of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major from Twin Trails Drive to the southern boundary of the Rancho Penasquitos Community because Black Mountain Road is seen as a parallel route to the Interstate 15 (I-15) from a corridor point of view.

2. Please clarify the location where this segment is planned to be reclassified to 4-lane Major. The beginning of the project description reads "General Plan and Rancho Penasquitos Community Plan Amendment to reclassify Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major." However, later in the same project description section, the document reads "Black Mountain Road currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes."

3. **Traffic Impact Study and Circulation**

   - A Traffic Impact Study (TIS) is necessary to determine the proposed project's near-term and long-term impacts to State facilities – existing and proposed – and to propose appropriate mitigation measures.

- Also, determine the traffic impact from the Merge 56 (Also known as Merge 56 Development) project. The project Merge 56 proposes to reclassify Camino del Sur from a four-lane major road to a modified two-lane collector for the segment from Carmel Mountain Road south to Dormouse Road, and to reclassify Carmel Mountain Road from a four lane major road to a modified two-lane collector road within the Torrey Highlands Subarea Plan and Rancho Penasquitos Community Plan.

- The geographic area examined in the TIS should include, at a minimum, all regionally significant arterial system segments and intersections, including State highway facilities where the project will add over 100 peak hour trips. State highway facilities that are experiencing noticeable delays should be analyzed in the scope of the traffic study for projects that add 50 to 100 peak hour trips.

- A focused analysis may be required for project trips assigned to a State highway facility that is experiencing significant delay, such as where traffic ques exceed ramp storage capacity. A focused analysis may also be necessary if there is an increased risk of a potential traffic accident.

    - Please include State Route 56 (SR-56) eastbound on/off ramps and SR-56 westbound on/off ramps at the intersection of Black Mountain road in the traffic analysis of the Environmental Impact Report (EIR).

- In addition, the TIS could also consider implementing vehicles miles traveled (VMT) analysis into their modeling projections.

- Any increase in goods movement operations and its impacts to State highway facilities should be addressed in the TIS.

- The data used in the TIS should not be more than 2 years old.

- The study should use as a guideline the Caltrans Guide for the Preparation of Traffic Impact Studies. www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf.

- Please provide the electronic analysis with the TIS to facilitate the review process.

4. **Intersection Control Evaluation**

- Please be advised that any potential for the project to permanently alter roadway features within Caltrans Right of Way (R/W) must be analyzed through an Intersection Control Evaluation (ICE)

- Proposed intersection modifications are subject to the Caltrans Intersection Control Evaluation (ICE) policy (Traffic Operation Policy Directive 13-02). Alternative intersection design(s) will need to be considered in accordance with the ICE policy. Please refer to the policy for more information and requirements. http://www.dot.ca.gov/trafficops/ice.html

5. **IGR Encroachment Permit Comments**

- Any work performed within Caltrans right-of-way (R/W) will require discretionary review and approval by Caltrans and an encroachment permit will be required for any work within the Caltrans R/W prior to construction.

- As part of the encroachment permit process, the applicant must provide an approved final environmental document including the California Environmental Quality Act (CEQA) determination addressing any environmental impacts within the Caltrans' R/W, and any corresponding technical studies. If these materials are not included with the encroachment permit application, the applicant will be required to acquire and provide these to Caltrans before the permit application will be accepted. Identification of avoidance and/or mitigation measures will be a condition of the encroachment permit approval as well as procurement of any necessary regulatory and resource agency permits. Encroachment permit submittals that are incomplete can result in significant delays in permit approval.
- Improvement plans for construction within State Highway R/W must include the appropriate engineering information consistent with the state code and signed and stamped by a professional engineer registered in the State of California. Caltrans Permit Manual contains a listing of typical information required for project plans. All design and construction must be in conformance with the Americans with Disabilities Act (ADA) requirements.

- Additional information regarding encroachment permits may be obtained by contacting the Caltrans Permits Office at (619) 688-6158. Early coordination with Caltrans is strongly advised for all encroachment permits.

If you have any questions, please contact Vanessa De La Rosa, Community Planning Liaison, at (619)688-4289 or by e-mail sent to vanessa.delarosa@dot.ca.gov.

Sincerely,

MAURICE EATON, Acting Branch CHief
Development Review Branch

From: Jeanette Poole [mailto:waltzplan@gmail.com]
Sent: Wednesday, June 14, 2017 5:34 PM
To: DSD EAS <DSDEAS@sandiego.gov>
Cc: Jon Becker <jbecker@projectdesign.com>; Katharine Cresto <kcresto@san.rr.com>; Dan Christensen <dan@christensenrealtygroup.com>; Hector De Leon <hector@cranegc.com>; Ferreira, Erika <EFerreira@sandiego.gov>; Powell, Rob <RTPowell@sandiego.gov>
Subject: Black Mountain Road Community Plan Amendment - Project No. 357262

Date: June 14, 2017

To: Anna McPherson:

From: Park Village Landscape Maintenance District

Re: Black Mountain Road Community Plan Amendment - Project No: 357262

The Park Village Landscape Maintenance Assessment District (LMAD) Citizens Advisory Committee (CAC) discussed the subject Scoping Letter at their last meeting held on June 6, 2017. The CAC voted unanimously to support the on-going effort and proposed Community Plan Amendment to change the road classification for Black Mountain Road between SR-56 and Mercy Road in the Rancho Penasquitos Community Plan and the City's General Plan from a 6-lane prime arterial to a 4-lane major roadway.

The landscape maintenance of this section of Black Mountain Road is the responsibility of the Park Village LMAD making the Park Village CAC a group which is very aware of any and all issues related to this section of Black Mountain Road.

The items listed in the Scoping Letter are satisfactory to the Park Village LMAD with no further comments at this time. We look forward to reviewing the environmental document when it is available for public review and respectfully request we receive a copy for our committee to review.

Please contact me should you have any questions regarding the action taken by the Park Village LMAD regarding the subject scoping letter.

Sincerely,
On behalf of the Park Village LMAD

Jeanette Waltz Poole
waltzplan@gmail.com
cell: 619-701-0766

APPENDIX A-2

Proposed Amendments

The project proposes to implement the following amendments:

- Community Plan Amendment to the Rancho Peñasquitos Community Plan Transportation Element to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major.

- General Plan Amendment to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial.

- Revise the Black Mountain Ranch Subarea Plan to remove the requirement to widen the project roadway to a 6-lane Primary Arterial.

- Revise the Black Mountain Ranch Subarea Plan Transportation Phasing Plan to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures.

The proposed amendments listed above are presented on the following pages.

Rancho Peñasquitos Community Plan Amendment

Proposed Changes to the Text of the Adopted RANCHO PENASQUITOS COMMUNITY PLAN

SPECIFIC RECOMMENDATIONS

Roadway Improvements

The following recommendations regarding specific roadway improvements have been developed based upon the recently completed Traffic Impact Study completed for the Black Mountain Road Community Plan Amendment Project and expressed desires of the community. Transportation improvements will be constructed in accordance with the phasing schedule in the Public Facilities Financing Plan. Roadway classifications shown on Figure 28 which are not discussed in this section are unchanged from the previous community plan.

• **State Route 56.** State Route 56 (Ted Williams Parkway) should be constructed as a six lane freeway from I-15 to the western boundary of Rancho Peñasquitos using TRANSNET and Facility Benefit Assessment (FBA) funds earmarked for this purpose. State Route 56 from I-15 to I-5 is a critical east-west link between Rancho Peñasquitos and surrounding communities and coastal areas. Money is currently being collected from assessments in six communities, including Rancho Peñasquitos, to obtain right-of-way for the portion of SR-56 that would traverse the future urbanizing area. It is recommended that, if environmental issues can be resolved, a financing mechanism should be developed to construct SR-56 as at least a four-lane facility through the future urbanizing area and that this road be built when sufficient funds have been obtained.

• **Black Mountain Road**. ~~From just north of Twin Trails Drive to the southern community boundary, this road may be improved to modified six-lane arterial status with Class II bicycle lanes.~~ Black Mountain Road from Twin Trails Drive to the southern Rancho Peñasquitos community boundary should remain a 4-lane Major, except in the vicinity of SR-56, where operational improvements including lane modifications can be made to help address congestion, safety, and multimodal access. As a design feature, the bridge over SR-56 would be re-striped to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound through traffic. This re-striping requires signal modification at each end of the bridge. To accommodate the additional northbound lane created by re-striping the overpass, the roadway north of the overpass bridge would need to be widened. The widening would extend approximately from the SR-56 westbound off-ramp to the first commercial driveway to the north of the freeway interchange.

• **Camino Ruiz Extension across Los Peñasquitos Canyon**. The Camino Ruiz extension has been deleted from this Plan due to widespread opposition from residents and community groups in Rancho Peñasquitos and Mira Mesa. They feel that the environmental impacts of the roadway to Los Peñasquitos Canyon Preserve outweigh the benefits to traffic flow and access that would be achieved if the roadway extension were built, and they accept the severe congestion that will result on Black Mountain Road.

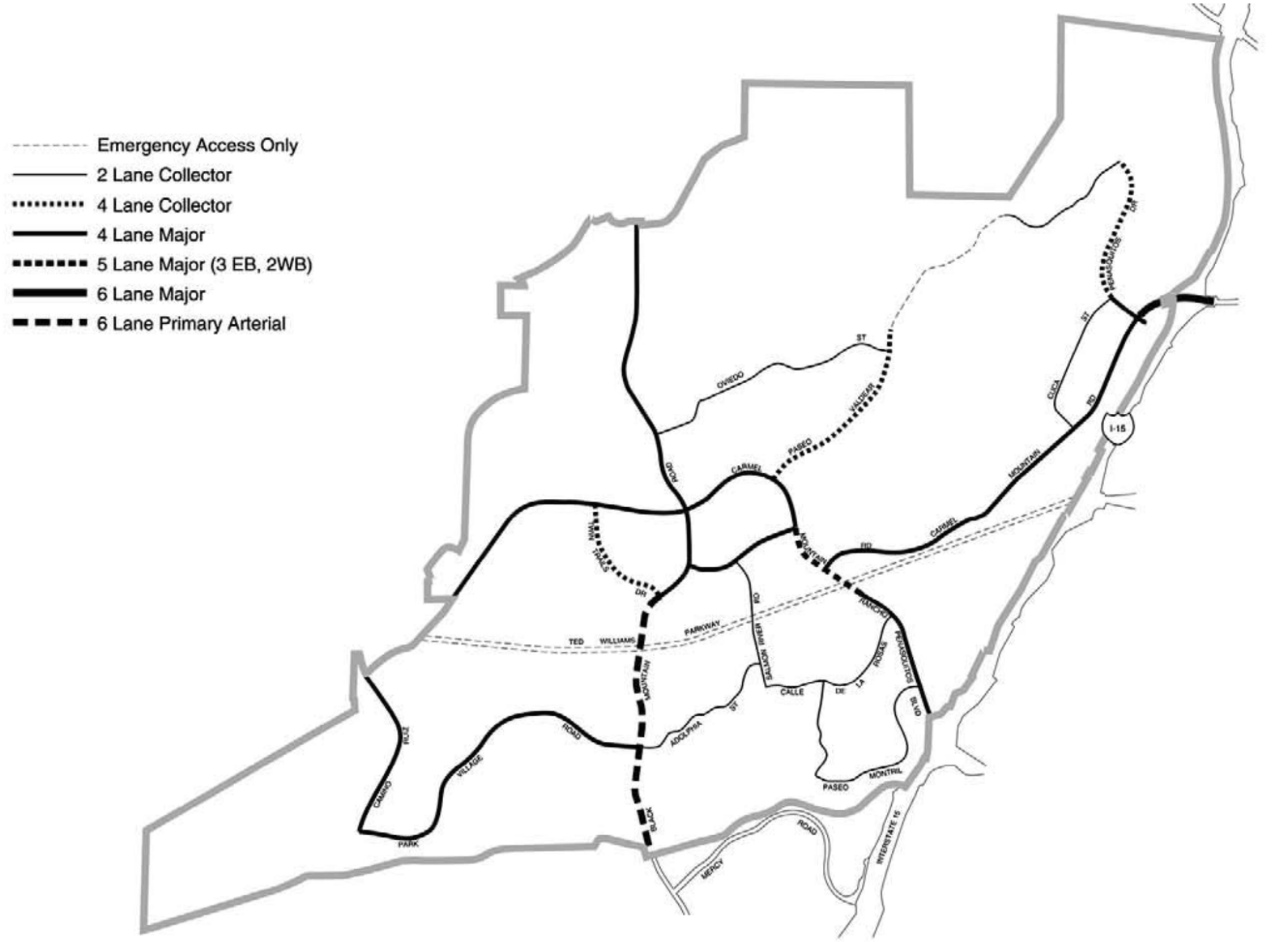
• **Camino del Sur.** Northerly terminus to Carmel Mountain Road – Retain four-lane major classification. The road should be designed in an environmentally and aesthetically sensitive manner, having minimal impact upon the natural open space system. The median can be reduced where there is no fronting property, which will help to minimize grading impacts.

• **Carmel Mountain Road.** Paseo Montalban to Rancho Peñasquitos Boulevard – Classify as a modified five-lane major street (3EB, 2WB).

• **Carmel Mountain Road**. Interstate 15 to Peñasquitos Drive – Classify as a modified sixlane major street.

• **Paseo Valdear**. Westerly portion, from Oviedo Street approximately 300 feet north – Classify as four-lane collector street; to limit of development in Montana Mirador classify as a local street. Cul-de-sac at Montana Mirador subdivision. Provide an emergency access road to westerly portion of Paseo Valdear.

Map Source: Rancho Peñasquitos Community Plan



Recommended Street Classifications

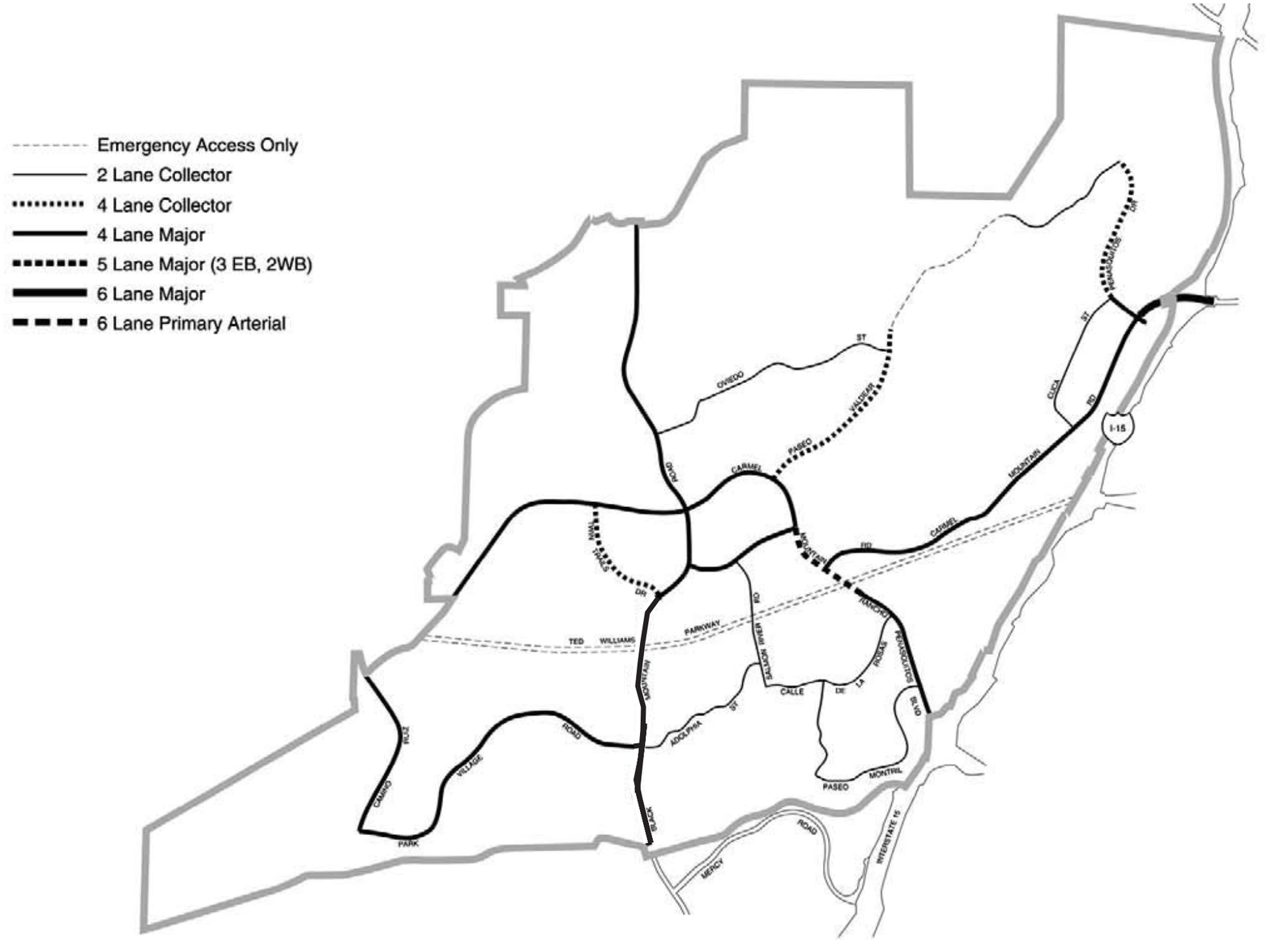
Rancho Peñasquitos Community Plan

FIGURE 3-1

Existing Rancho Peñasquitos Community Plan Recommended Street Classifications Map

M:\JOBS4\6524\env\graphics\fig2-4.ai 12/19/18 fmm

Map Source: Rancho Peñasquitos Community Plan



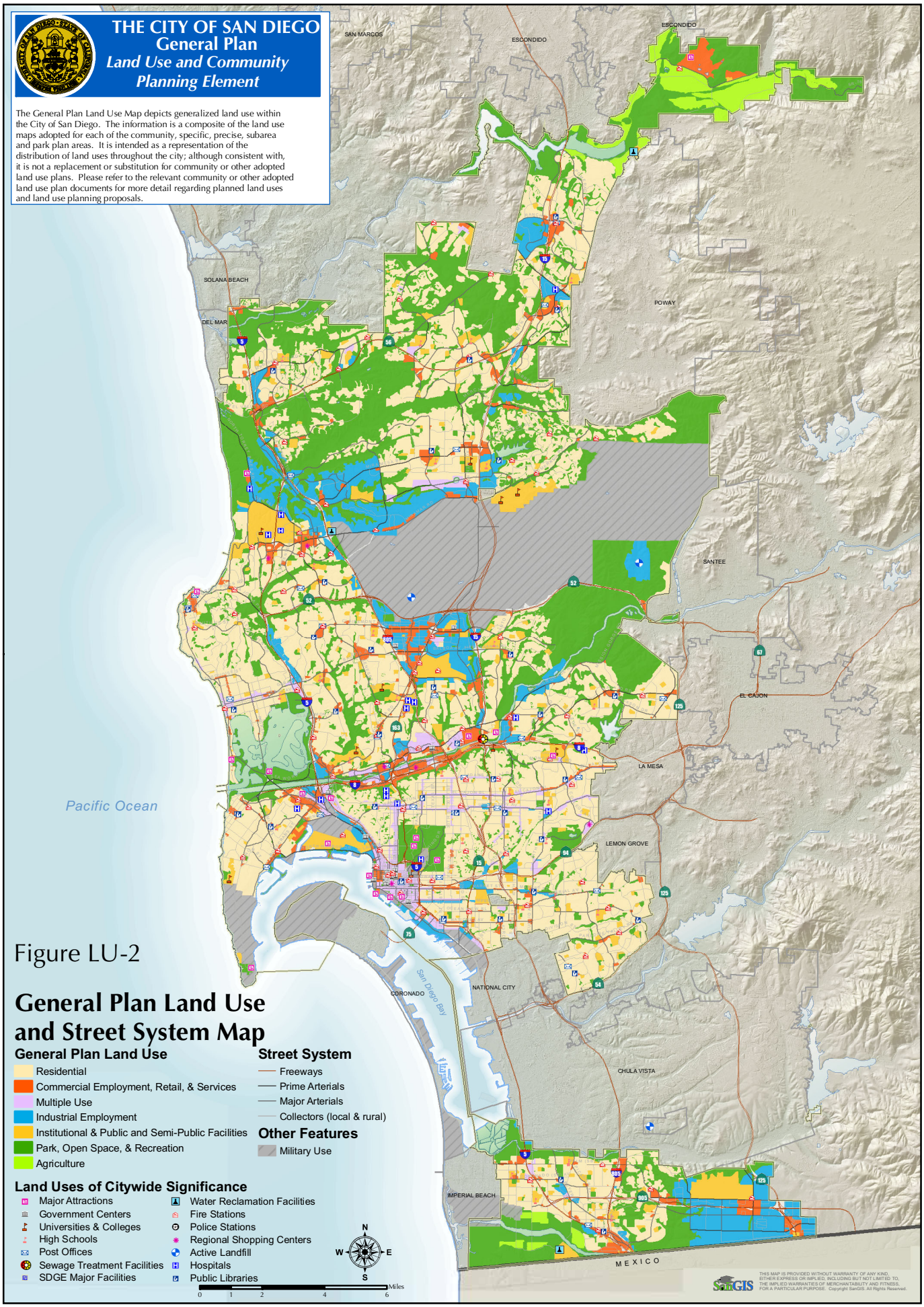
Recommended Street Classifications

Rancho Peñasquitos Community Plan

FIGURE 3-2
Amended Rancho Peñasquitos Community Plan Recommended Street Classifications Map

M:\JOBS4\6524\env\graphics\fig3-2_A.ai 03/26/19 fmm

General Plan Amendment


THE CITY OF SAN DIEGO
General Plan
Land Use and Community Planning Element
The General Plan Land Use Map depicts generalized land use within the City of San Diego. The information is a composite of the land use maps adopted for each of the community, specific, precise, subarea and park plan areas. It is intended as a representation of the distribution of land uses throughout the city; although consistent with, it is not a replacement or substitution for community or other adopted land use plans. Please refer to the relevant community or other adopted land use plan documents for more detail regarding planned land uses and land use planning proposals.
SAN MARCOS
ESCONDIDO
SOLANA BEACH
DEL MAR
POWAY
SANTEE
EL CAJON
LA MESA
LEMON GROVE
NATIONAL CITY
CORONADO
CHULA VISTA
IMPERIAL BEACH
MEXICO
Pacific Ocean
San Diego Bay
Figure LU-2
General Plan Land Use and Street System Map
General Plan Land Use
Residential
Commercial Employment, Retail, & Services
Multiple Use
Industrial Employment
Institutional & Public and Semi-Public Facilities
Park, Open Space, & Recreation
Agriculture
Street System
Freeways
Prime Arterials
Major Arterials
Collectors (local & rural)
Other Features
Military Use
Land Uses of Citywide Significance
Major Attractions
Government Centers
Universities & Colleges
High Schools
Post Offices
Sewage Treatment Facilities
SDGE Major Facilities
Water Reclamation Facilities
Fire Stations
Police Stations
Regional Shopping Centers
Active Landfill
Hospitals
Public Libraries
N
W
E
S
Miles
0 1 2 4 6
SanGIS
THIS MAP IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Copyright SanGIS. All Rights Reserved.

THE CITY OF SAN DIEGO
General Plan
Land Use and Community Planning Element

The General Plan Land Use Map depicts generalized land use within the City of San Diego. The information is a composite of the land use maps adopted for each of the community, specific, precise, subarea and park plan areas. It is intended as a representation of the distribution of land uses throughout the city; although consistent with, it is not a replacement or substitution for community or other adopted land use plans. Please refer to the relevant community or other adopted land use plan documents for more detail regarding planned land uses and land use planning proposals.

Draft Mar 29, 2019

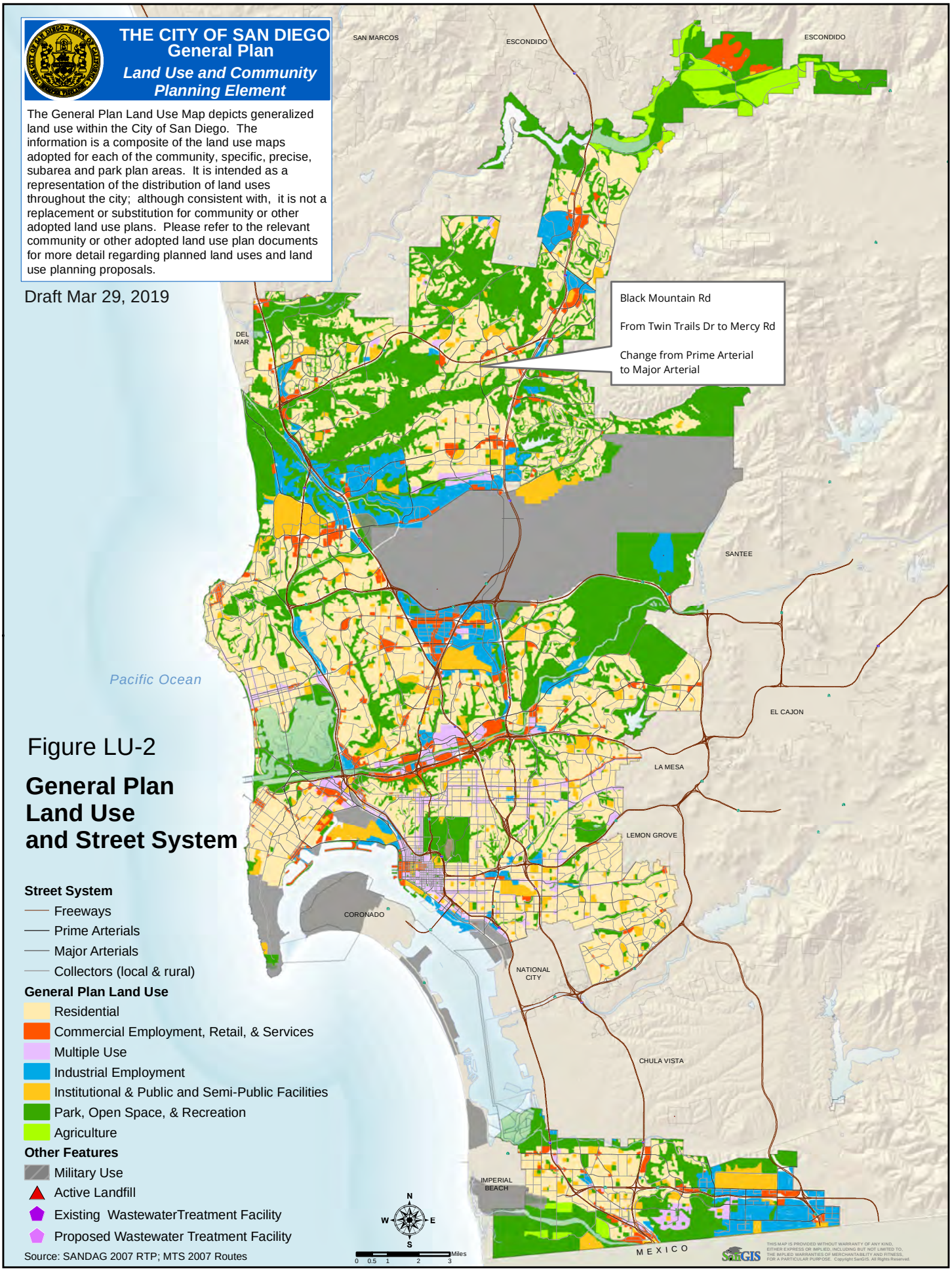


Figure LU-2

General Plan Land Use and Street System

Street System
- Freeways
- Prime Arterials
- Major Arterials
- Collectors (local & rural)

General Plan Land Use
- Residential
- Commercial Employment, Retail, & Services
- Multiple Use
- Industrial Employment
- Institutional & Public and Semi-Public Facilities
- Park, Open Space, & Recreation
- Agriculture

Other Features
- Military Use
- Active Landfill
- Existing WastewaterTreatment Facility
- Proposed Wastewater Treatment Facility

Source: SANDAG 2007 RTP; MTS 2007 Routes

THIS MAP IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Copyright SanGIS. All Rights Reserved.

Black Mountain Ranch Subarea Plan Revisions

Proposed Changes to the Text of the Adopted BLACK MOUNTAIN RANCH SUBAREA PLAN

SPECIFIC RECOMMENDATIONS

Roadway Improvements

The following recommendations regarding specific roadway improvements have been developed based upon the recently completed Traffic Impact Study completed for the Black Mountain Road Community Plan Amendment Project and expressed desires of the community. Transportation improvements will be constructed in accordance with the phasing schedule in the Public Facilities Financing Plan.

a) Bernardo Center Drive

Improvements are recommended at the intersection at West Bernardo Drive as well as at the intersection with Camino del Norte. Improvements to the approach lanes will result in additional capacity, and minor widening will be required. The improvement may also include a pedestrian bridge. Impacts from these improvements will be temporary traffic delays and possible short-term noise impacts from construction of the improvements.

b) Black Mountain Road

The extension of Black Mountain Road from the northern limit of Black Mountain Road to Carmel Valley Road will be constructed to its ultimate cross section as part of the BMR/VTM PRD. ~~The portion of Black Mountain Road south of SR-56 is expected to have traffic volumes that will require that the roadway be widened to six lane primary arterial standards. This widening effort will extend between Twin Trails Road and Mercy Road. As the widening to six lanes is a planned improvement, impacts from the widening will be temporary traffic delays and possible short term noise impacts from construction of the improvements.~~ Black Mountain Road from Twin Trails Drive to the southern Rancho Peñasquitos community boundary should remain a 4-lane Major, except in the vicinity of SR-56, where operational improvements including lane modifications can be made to help address congestion, safety, and multimodal access. As a design feature, the bridge over SR-56 would be re-striped to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound through traffic. This re-striping requires signal modification at each end of the bridge. To accommodate the additional northbound lane created by re-striping the overpass, the roadway north of the overpass bridge would need to be widened. The widening would extend approximately from the SR-56 westbound off-ramp to the first commercial driveway to the north of the freeway interchange.

c) Camino del Norte

This facility is necessary for access to the I-15 corridor from the project as a four-lane facility on the western portion increasing to a six-lane arterial to the east within the 4S Ranch project. On-site portions of Camino del Sur will be built by Subarea I. The adjacent portions will be constructed by the 4S Ranch project. The need for this facility is identified in the phased improvements for Subarea I. Additional improvements have also been defined at the I-15 interchange consistent with the project report by Caltrans that will enhance capacity at the interchange. These improvements are reflected in the planned geometry used for the calculations of delay and congestion. A significant archeological site, CA-SDI-5,103, is located within the future alignment of Camino del Sur. Mitigation in the form of data recovery is required for construction of Camino del Sur to Bing Crosby Boulevard in accordance with 1995 VTM/PRD. Beyond this, no further mitigation is appropriate in view of the acceptable levels of service forecast for buildout conditions.

d) Camino del Sur

Camino del Sur is planned to be constructed in its ultimate cross section of a four-lane major street between Carmel Valley Road and San Dieguito Road as part of the approved VTM/PRD for Black Mountain Ranch. For the portion of Camino del Sur north of San Dieguito Road, the proposed project will construct Camino del Sur to four-lane major standards. The developers of Torrey Highlands will construct portions of Camino del Sur to the south of Carmel Valley Road. Impacts from these improvements were evaluated in the Black Mountain Ranch VTM/PRD EIR and the EIR for Fairbanks Highlands. A partial cloverleaf interchange will be provided.

Black Mountain Ranch Subarea Plan Transportation Phasing Plan Revisions

Summary of Required Circulation Improvements By Phase
Black Mountain Ranch Revised VTM and the Remainder of Black Mountain Ranch Subarea I

VTM PHASE

PFFP Proj No.	*Facility*	*Location*	*Required Improvement Description*
	Vesting Tentative Map Phase One: Prior to development in the Vesting Tentative Map area, the following improvements shall be assured to the satisfaction of the City Engineer:		
	On-Site Roads		
T-3	Black Mtn. Rd.	Carmel Valley Rd. to existing Black Mtn. Rd.	Construct 4 lane major street.
T-9	Camino Del Sur	At San Dieguito Rd.	Construct traffic signal.
T-9	Camino Del Sur	San Dieguito Rd. to Carmel Valley Rd.	Construct 2 lanes of an ultimate 4 lane major road.
T-9	Camino Del Sur	At B Street	Construct traffic signal.
T-9	Camino Del Sur	At Carmel Valley Rd.	Construct traffic signal.
T-3	Carmel Valley Rd.	At Black Mountain Rd.	Construct traffic signal.
T-1	San Dieguito Rd.	Property boundary east to Camino Del Sur	Construct a 2-lane collector street with intersection widening.
	Off-Site Roads		
T-4	Black Mtn. Rd.	At Maler Rd.	Construct traffic signal.
T-4	Black Mtn. Rd.	At SR-56 WB Ramp	Widen WB approach for dual lefts and right turn lanes. Modify signal.
T-4	Black Mtn. Rd.	At SR-56 EB Ramp	Widen SB approach for dual lefts; Widen NB approach for exclusive right turn lane.
T-4	Black Mtn. Rd.	At Park Village Rd.	Widen SB approach for exclusive right turn lane.
T-19	Carmel Valley Rd.	Western portion of SR-56 to Via Abertura	Provide striping, signing, and widening improvements as required by City Engineer, enhance existing 2-lane road
T-21.1, T-21.2	Carmel Valley Rd.	Via Abertura to Black Mtn. Rd.	Construct 2 lanes of an ultimate 4 lane major road with intersection widening
T-19	Carmel Valley Rd.	At Rancho Santa Fe Farms Rd.	Construct traffic signal
T-28	El Camino Real	At San Dieguito Rd.	Widen WB approach for shared left and right turn lane
T-4	Rancho Penasquitos Blvd.	At SR-56 WB Ramp	Widen WB off ramp to provide a center left/through/right turn lane.
	Vesting Tentative Map Phase Two: Prior to exceeding 600 equivalent dwelling units in the Vesting Tentative Map area, the following improvements shall be assured to the satisfaction of the City Engineer:		
	On-Site Roads		
N/A T-9	SR-56 or Camino Del Sur	Black Mountain Rd. to Camino Del Sur San Dieguito Rd. to Carmel Valley Rd.	Extend to Camino Del Sur Widen to 4 lane major street
T-13, T-14	Camino Del Sur	Carmel Valley Rd. to SR-56	Construct 4-lane major street
	Off-Site Roads		
T-18	Carmel Valley Rd.	At I-5 SB Ramp	Restripe the intersection for a WB shared left/through lane. Modify signal for split phasing

NAME CHANGE NOTES:

a) Former North Village Drive has been renamed Paseo Del Sur and is included herein as an Internal Roadway.
b) Former Camino Ruiz and those portions of Camino del Norte within Subarea I and Subarea IV have been renamed Camino Del Sur.
c) The portion of Camino Santa Fe within Subarea III at SR-56 and north to Del Mar Heights Road has been renamed Carmel Valley Road.

Summary of Required Circulation Improvements By Phase
Black Mountain Ranch Revised VTM and The Remainder of Black Mountain Ranch Subarea I

PHASE I-A & I-B

PFFP Proj No.	*Facility*	*Location*	*Required Improvement Description*
	Black Mountain Ranch Subarea I Phase I-A: Prior to exceeding 2,610 equivalent dwelling units in the Vesting Tentative Map phase and any equivalent dwelling units in the remainder of Subarea I, the following improvements shall be assured to the satisfaction of the City Engineer.		
	On-Site Roads		
T-5	Camino Del Sur	San Dieguito Rd. to Paseo Del Sur	Construct 2 lanes of ultimate 4-lane major street
T-47, T-48	Internal Roadways	As required by internal development	Construct roadways and traffic signals
	Off-Site Roads		
T-14	Camino Del Sur	Carmel Valley Rd. to SR-56	If not complete, widen to 4 lanes
T-21.1	Carmel Valley Rd.	Via Abertura to Camino Del Sur	Widen to 4 lanes
N/A	SR-56	Black Mountain Rd. to Camino Del Sur	Construct 4 lane freeway (3) (4)
T-53	San Dieguito Rd.	At El Apajo	Traffic signal or Contribute funding for improvement
T-29.1	El Camino Real	San Dieguito Rd. south to Half Mile Dr.	Widen to 4 lanes
T-32.1	Via de la Valle	El Camino Real West to San Andres Dr.	Widen to 4 lanes (1) (5)
T-32.1	Via de la Valle	San Andres Dr. to I-5	Restripe for 6 lanes (1)
	Black Mountain Ranch Subarea I Phase I-B: Prior to exceeding 2,610 equivalent dwelling units in the Vesting Tentative Map phase and 1,282 equivalent dwelling units in the remainder of Subarea I, the following improvements shall be assured to the satisfaction of the City Engineer.		
	On-Site Roads		
T-10	Camino Del Sur	San Dieguito Rd. to Carmel Valley Rd.	If not complete, widen to 4 lanes
T-47, T-48	Internal Roadways	As required by internal development	Construct roadways and traffic signals
	Off-Site Roads		
N/A	Camino Del Sur	SR-56 south to Carmel Mountain Rd.	Construct 4 lanes
N/A	Camino Del Sur	Carmel Mountain Rd to Dormouse Rd.	Construct 2 lanes (2)
T-19, T-20	Carmel Valley Rd.	Del Mar Heights Rd. to SR-56	Construct 4 lanes
T-20	Carmel Valley Rd.	Via Abertura west to Del Mar Heights Rd.	Widen to 4 lanes
T-22.2	Carmel Valley Rd.	Camino Del Sur to Black Mountain Rd.	Widen to 4 lanes
N/A	Del Mar Heights Rd.	Lansdale Dr. to Carmel Valley Rd.	Construct 4 lanes
T-2	El Apajo	Via de Santa Fe to San Dieguito Rd.	Widen to 3 lanes
	SR-56	Camino Del Sur to east of Carmel Country Rd.	Construct 4 lane freeway (3) (4)
T-15.1	SR-56	At Camino Del Sur	Construct diamond interchange
N/A	SR-56	At Carmel Valley Rd.	Construct diamond interchange
T-56	SR-56	At I-15	Contribution of $580,000 for interchange improvements
T-29.2	El Camino Real	Via de la Valle to San Dieguito Rd.	Widen to four-lanes (2)
T-29.2	Via de la Valle	El Camino Real (E) to El Camino Real (W)	Widen to four-lanes (2) (5)
N/A	Interstate 5	SR-56 to I-805	Construct dual freeways (3)

(1) If unable to assure at time of first EDU in Phase I-A because of failure to acquire right of way, obtain Coastal Commission approval or other reason beyond City or developer control, improvement will be subject to a bonded deferred improvement agreement and moved into Phase I-B.
(2) Current City CIP projects. City will assure in Phase I-B; otherwise, Phase II EDUs will not be released until assured
(3) SR-56 is assured by the City and the dual freeways are assured by Caltrans.
(4) SR-56 was formerly described as a single project from Carmel Valley to Black Mountain Road.
(5) Via de la Valle was formerly described as a single project from San Andres Drive to El Camino Real (E).

Summary of Required Circulation Improvements By Phase
Black Mountain Ranch Revised VTM and The Remainder of Black Mountain Ranch Subarea I

PHASE II-A & II-B

PFFP Proj. No.	*Facility*	*Location*	*Required Improvement Description*
	Black Mountain Ranch Subarea I Phase II-A: Prior to exceeding 2,610 equivalent dwelling units in the Vesting Tentative Map phase and 1,582 equivalent dwelling units in the remainder of Subarea I, (totaling 4,192 equivalent dwelling units in all of Subarea I), the following improvements shall be assured to the satisfaction of the City Engineer.		
	On-Site Roadways		
T-6, T-34	Camino Del Sur	San Dieguito Rd. to Camino del Norte	Widen to 4 lanes (6)
T-25	Carmel Valley Rd.	Black Mountain Rd. to Camino Crisalida	Construct 2 lanes (7) (8)
T-47, T-48	Internal Roadways	As needed	Construct roadways and traffic signals
	Off-site Roadways		
T-46	Bernardo Center Dr.	At I-15	Construct ramp improvements
T-35, T-36	Camino del Norte	Camino Del Sur to Camino San Bernardo	If not constructed, construct 4-lanes (9)
T-37	Camino del Norte	At Bernardo Center Dr.	Improve capacity at-grade, pedestrian bridge
T-38	Camino del Norte	At I-15 Ramps	Complete interchange improvements, NB & SB truck climbing lanes
T-55	I-15	SR-163 to Escondido	Construct capacity enhancements (HOV, auxiliary lanes or comparable improvements) to facility.
T-39	Rancho Bernardo Rd.	Bernardo Center Dr. to West Bernardo Dr.	Widen to 6-lanes
T-39	Rancho Bernardo Rd.	At West Bernardo Dr.	Construct intersection improvements
T-39	Rancho Bernardo Rd.	At I-15 NB/SB Ramps	Construct intersection improvements
T-45	West Bernardo Dr.	At Bernardo Center Dr.	Construct intersection improvements
T-43	West Bernardo Dr.	I-15 SB Ramps to Aguamiel Rd.	Improve cross-section
T-44	West Bernardo Dr.	At I-15 SB Ramp	Construct traffic signal
T-54.2	SR-56 Westbound	Between Carmel Creek Rd. On & Off Ramps	Contribute fair share of $1,000,000. for Auxiliary Lane
T-18	El Camino Real SB	At Carmel Valley Rd./SR-56	Contribute fair share of $600,000. for turn pocket
	Black Mountain Ranch Subarea I Phase II-B: Prior to exceeding 2,610 equivalent dwelling units in the Vesting Tentative Map phase and 2,602 equivalent dwelling units in the remainder of Subarea I, (totaling 5,212 equivalent dwelling units in all of Subarea I), the following improvements shall be assured to the satisfaction of the City Engineer.		
	On-Site Roadways		
T-47, T-48	Internal Roadways	As needed	Construct roadways and traffic signals
	Off-Site Roadways		
N/A	I-5	I-805 to Birmingham	Construct capacity enhancements (HOV, auxiliary lanes or comparable improvements) to facility.
T-25	Carmel Valley Rd.	Black Mountain Rd. to Camino Crisalida	Widen to 4 lanes (8)
N/A	Camino Del Sur	Carmel Mountain Rd to Dormouse Rd.	Widen to 4 lanes

(6) Project formerly described as three separate increments: Camino Ruiz from San Dieguito Road to North Village Drive, Camino Ruiz from North Village Drive to Camino del Norte and Camino del Norte from the Eastern Project Boundary to the Western Project Boundary.
(7) 138 EDUs will be released with the assurance of two lanes of Carmel Valley Road between Black Mountain Road and Camino Crisalida without regard to other transportation phasing or EDU limitations.
(8) Project formerly described as Black Mountain Rd. to Bernardo Center Dr.
(9) Project formerly described as two separate increments: Camino del Norte from Eastern Project Boundary to 4S Parkway and from 4S Parkway to Existing Terminus which was Camino San Bernardo.

Summary of Required Circulation Improvements By Phase
Black Mountain Ranch Revised VTM and The Remainder of Black Mountain Ranch Subarea I

PHASE III

PFFP Proj No.	***Facility***	***Location***	***Required Improvement Description***
	Black Mountain Ranch Subarea I Phase III: Prior to exceeding 2,610 equivalent dwelling units in the Vesting Tentative Map phase and 3,682 equivalent dwelling units in the remainder of Subarea I, (totaling 6,292 equivalent dwelling units in all of Subarea I), the following improvements shall be assured to the satisfaction of the City Engineer.		
	On-Site Roadways		
T-47, T-48	Internal Roadways	As needed	Construct roadways and traffic signals
	Off-Site Roadways		
N/A	Camino Del Sur	Carmel Valley Rd. to Carmel Mountain Rd.	Widen to six-lanes
T-54.2	State Route 56	I-5 to I-15	Widen to 6-lane freeway.
T-58	State Route 56	At I-5	Construct north facing ramps.
T-15.1	State Route 56	At Camino Del Sur	Construct partial cloverleaf interchange.
N/A	Carmel Valley Rd,	Del Mar Heights Rd. to SR-56	Widen to six-lanes.
~~T-57~~	~~Black Mountain Rd~~	~~Twin Trails Rd. to north of Mercy Rd.~~	~~Widen to six-lanes~~
TBD	Black Mountain Rd	Between the SR-56 westbound ramps and SR-56 eastbound ramps	Restripe overpass to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, it is estimated that the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.
TBD	Twin Trails Drive	At Sundance Avenue	Construct traffic signal.
TBD	State Route 56	Eastbound between Camino Del Sur and Black Mountain Road	Construct a continuous auxiliary lane.
TBD	State Route 56	Rancho Peñasquitos Boulevard/ SR-56 westbound on-ramp	Construct an additional on-ramp lane.

Black Mountain Ranch Land Uses

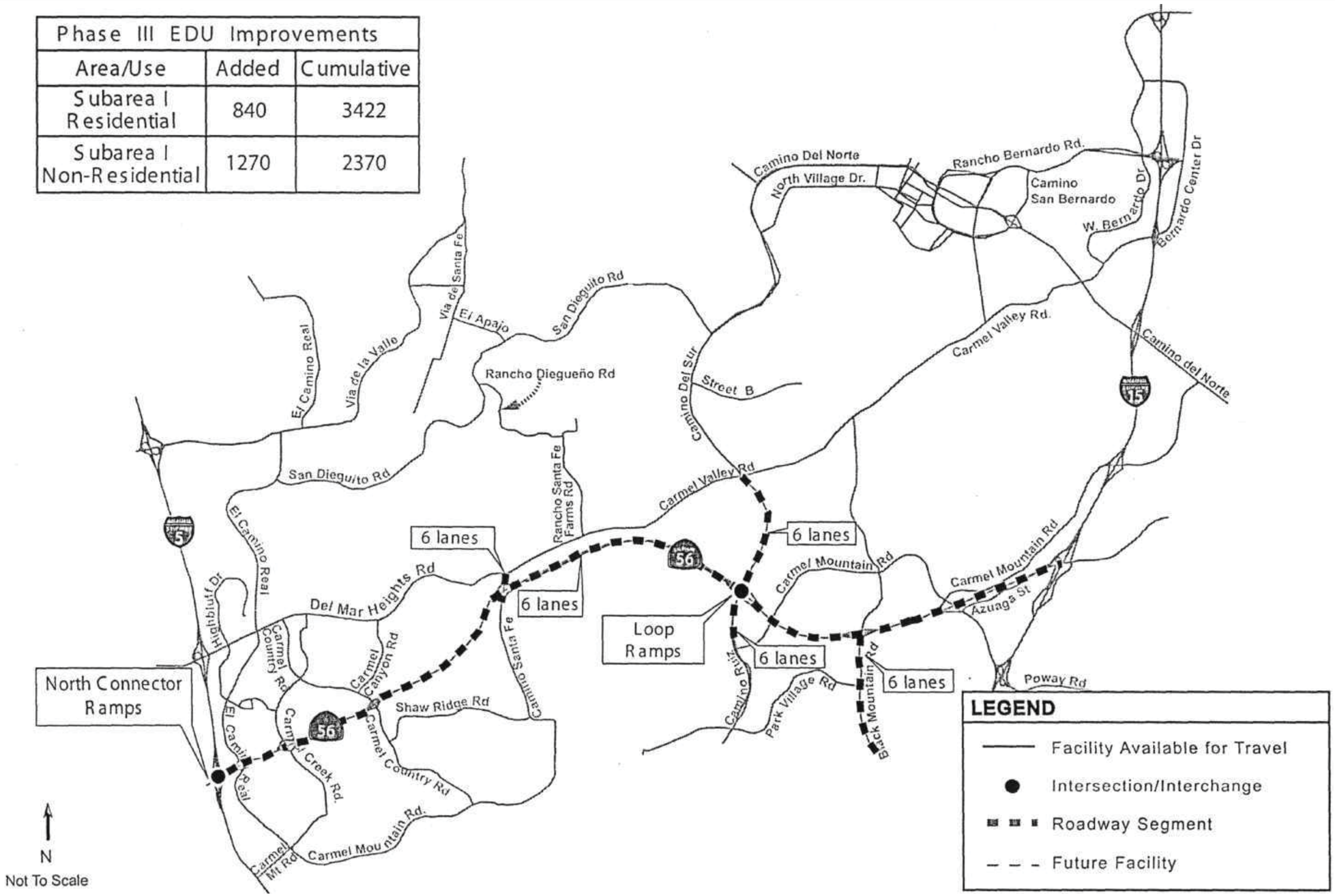
Land Use	*Units*	*Intensity*	*Daily Trip Rate (Vehicle Trips)*	*Total Daily Trips (Vehicle Trips)*
VTM PHASE				
Black Mountain Ranch Land Uses Under VTM 95-0173				
Estate Residential	Dwelling Units	71	12	852
Single Family Residential	Dwelling Units	871	10	8,710
Affordable Housing	Dwelling Units	179	8	1,432
Middle School	Acres	17	40	680
Elementary School	Acres	10	60	600
Church (2)	Acres (Total)	6	60	360
Golf Courses (2)	Courses (Total)	2	600	1,200
Neighborhood Park (2)	Acres (Total)	10	10	100
Community Park	Acres	30	10	300
Subtotals:	**Dwelling Units:**	**1,121**	**Trips:**	**14,234**
Black Mountain Ranch Land Uses Under Proposition C 1996 and VTM 99-1161				
Neighborhood Commercial	Thousand Sq. Feet	60	120	7,200
Single Family Residential	Dwelling Units	218	10	2,180
Multi-Family Residential	Dwelling Units	42	8	336
Subtotals:	**Dwelling Units:**	**260**	**Trips:**	**9,716**
Perimeter Ownership Land Uses				
Single Family Residential	Dwelling Units	190	10	1,900
Affordable Housing	Dwelling Units	36	7	252
Subtotals:	**Dwelling Units:**	**226**	**Trips:**	**2,152**
VTM PHASE TOTALS:	**Dwelling Units:**	**1,607**	**Trips:**	**26,102**

PHASE I, II & III				
Phase I, II & III Black Mountain Ranch Ownership Land Uses				
Estate Residential	Dwelling Units	120	12	1,440
Single Family Residential	Dwelling Units	1,600	10	16,000
Multi-Family Residential	Dwelling Units	830	8	6,640
Age Restricted Residential	Dwelling Units	500	4	2,000
High School (portion)	Acres	40	50	2,000
Middle School	Acres	30	40	1,200
Elementary School	Acres	10	60	600
Employment Center	Thousand Sq. Feet	450	16	7,200
Neighborhood Commercial	Thousand Sq. Feet	75	120	9,000
Office	Thousand Sq. Feet	65	20	1,300
Resort/Hotel (Prop. C – 1996)	Rooms	300	8	2,400
Neighborhood Park	Acres	7	40	280
Subtotals:	**Dwelling Units:**	**3,050**	**Trips:**	**50,060**
Phase I, II & III Perimeter Ownership Land Uses				
SW Perimeter – Single Fam.	Dwelling Units	94	10	940
SE Perimeter – Single Fam.	Dwelling Units	349	10	3,490
NE Perimeter – Multi- Fam.	Dwelling Units	300	8	2,400
Subtotals:	**Dwelling Units:**	**743**	**Trips:**	**6,830**
PHASE I, II & III TOTALS:	**Dwelling Units:**	**3,793**	**Trips:**	**56,890**
TOTAL DWELLING UNITS BLACK MOUNTAIN RANCH SUBAREA I		**5,400**		
TOTAL TRIPS BLACK MOUNTAIN RANCH SUBAREA I				**82,990 (1)**

(1) Total trips are1030 trips (103 EDU) less than the total trips of 84,020 allocated in the Transportation Phasing Plan. This buffer was created primarily by the deletion of a High School Site that was included in the original VTM 95-0173 and in the original traffic and transportation analysis which is the basis for the Transportation Phasing Plan.

Map Source: Black Mountain Ranch Subarea Plan

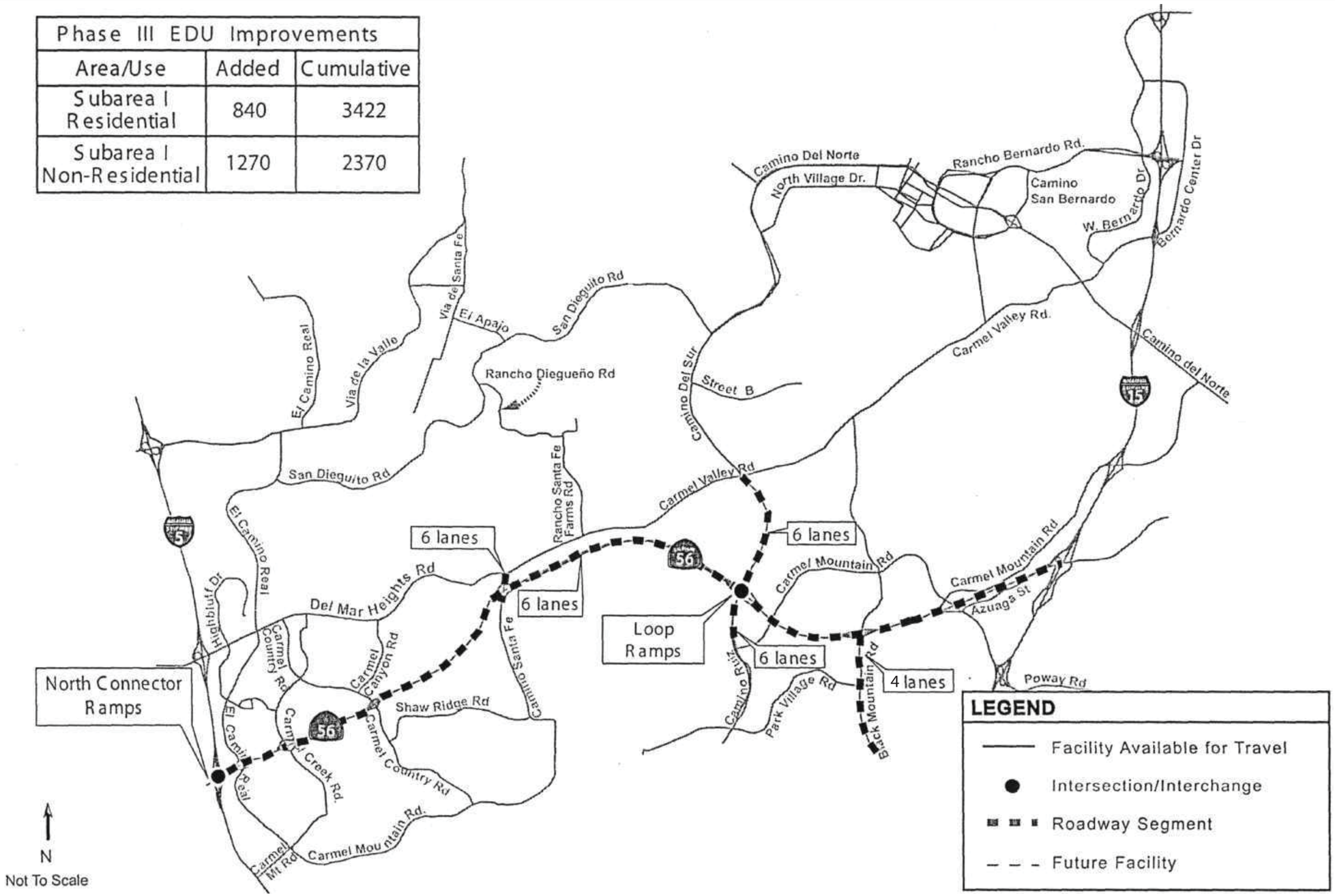
Phase III EDU Improvements		
Area/Use	Added	Cumulative
Subarea I Residential	840	3422
Subarea I Non-Residential	1270	2370



Existing Black Mountain Ranch Phasing: Phase III

Map Source: Black Mountain Ranch Subarea Plan

Phase III EDU Improvements		
Area/Use	Added	Cumulative
Subarea I Residential	840	3422
Subarea I Non-Residential	1270	2370



Amended Black Mountain Ranch Phasing: Phase III

M:\JOBS4\6524\env\graphics\Appendix_A.ai 03/26/19 fmm

BLACK MOUNTAIN ROAD TRANSPORTATION IMPACT STUDY (8TH SUBMITTAL)

May 2016

KOA CORPORATION
PLANNING & ENGINEERING
www.koacorporation.com

BLACK MOUNTAIN ROAD TRANSPORTATION IMPACT STUDY (8TH SUBMITTAL)

May 2016

On Behalf Of:

Black Mountain Ranch/
Standard Pacific Homes



Prepared by:
KOA Corporation
5095 Murphy Canyon Road, Suite 330
San Diego, CA 92123
(619) 683-2933
Fax: (619) 683-7982
Job No.: JB32064

Table of Contents

EXECUTIVE SUMMARY ..... **ES-I**

CHAPTER 1 THE PROJECT **1**

PROJECT DESCRIPTION 1
STUDY AREA 1
PROJECT TRIP GENERATION 3
TRIP DISTRIBUTION AND ASSIGNMENT 4

CHAPTER 2 METHODOLOGIES **7**

STUDY SCENARIOS AND TIME PERIODS 7
CAPACITY ANALYSIS METHODOLOGIES 7
Roadway Segment Capacity Analysis *7*
Intersection Capacity Analysis *7*
Signalized Intersections 7
All-Way Stop-Controlled Intersections 8
Two-Way Stop-Controlled Intersections 8
Freeway Mainline Analysis *8*
Metered Freeway On-Ramp Conditions *8*
Analysis of Significance *8*

CHAPTER 3 EXISTING CONDITIONS **9**

TRAFFIC VOLUMES 9
ROADWAY NETWORK 9
ROADWAY CAPACITY LOS 11
INTERSECTION CAPACITY LOS 11
FREEWAY MAINLINE LOS 11
FREEWAY INTERCHANGE ON-RAMP METERING DELAY 11

CHAPTER 4 HORIZON YEAR CONDITIONS **27**

HORIZON YEAR TRAFFIC VOLUMES 27
HORIZON YEAR CIRCULATION NETWORK 28
HORIZON YEAR TRAFFIC ANALYSIS AND IMPACTS 29

CHAPTER 5 TRANSIT, PEDESTRIAN AND BICYCLE FACILITIES **53**

TRANSIT FACILITIES 53
PEDESTRIAN FACILITIES 53
BICYCLE FACILITIES 53

CHAPTER 6 IMPACTS AND MITIGATIONS **54**

SIGNIFICANT IMPACTS 54
ADDITIONAL PROJECT EFFECTS 55

CHAPTER 7 RECOMMENDATIONS **56**

List of Figures

FIGURE 1-1 – PROJECT VICINITY MAP 5
FIGURE 1-2 – PROJECT STUDY AREA 6
FIGURE 3-1A – EXISTING ROADWAY CLASSIFICATION 18
FIGURE 3-1B – ULTIMATE ROADWAY CLASSIFICATION 19
FIGURE 3-2 – EXISTING CIRCULATION NETWORK 20
FIGURE 3-3 – EXISTING DAILY ROADWAY SEGMENT VOLUMES 22
FIGURE 3-4 – EXISTING AM PEAK HOUR INTERSECTION VOLUMES 23
FIGURE 3-4 CONT. – EXISTING AM PEAK HOUR INTERSECTION VOLUMES 24
FIGURE 3-5 – EXISTING PM PEAK HOUR INTERSECTION VOLUMES 25
FIGURE 3-5 CONT. – EXISTING PM PEAK HOUR INTERSECTION VOLUMES 26
FIGURE 4-1 – HORIZON YEAR ROADWAY CLASSIFICATION 39
FIGURE 4-2 – HORIZON YEAR CIRCULATION NETWORK 40
FIGURE 4-2 CONT. – HORIZON YEAR CIRCULATION NETWORK 41
FIGURE 4-3 – HORIZON YEAR DAILY ROADWAY SEGMENT VOLUMES, WITHOUT PROJECT 42
FIGURE 4-4 – HORIZON YEAR DAILY ROADWAY SEGMENT VOLUMES, WITH PROJECT 43
FIGURE 4-5 – HORIZON YEAR AM PEAK HOUR INTERSECTION VOLUMES, WITHOUT PROJECT 44
FIGURE 4-5 CONT. – HORIZON YEAR AM PEAK HOUR INTERSECTION VOLUMES, WITHOUT PROJECT 45
FIGURE 4-6 – HORIZON YEAR PM PEAK HOUR INTERSECTION VOLUMES, WITHOUT PROJECT 46
FIGURE 4-6 CONT. – HORIZON YEAR PM PEAK HOUR INTERSECTION VOLUMES, WITHOUT PROJECT 47
FIGURE 4-7 – HORIZON YEAR AM PEAK HOUR INTERSECTION VOLUMES, WITH PROJECT 48
FIGURE 4-7 CONT. – HORIZON YEAR AM PEAK HOUR INTERSECTION VOLUMES, WITH PROJECT 49
FIGURE 4-8 – HORIZON YEAR PM PEAK HOUR INTERSECTION VOLUMES, WITH PROJECT 50
FIGURE 4-8 CONT. – HORIZON YEAR PM PEAK HOUR INTERSECTION VOLUMES, WITH PROJECT 51
FIGURE 4-9 – PROJECT IMPACTS AND MITIGATION LOCATIONS 52

List of Tables

TABLE ES-1 SUMMARY OF WEEKDAY ROADWAY SEGMENT CONDITIONS ..... ES-III
TABLE ES-2 SUMMARY OF AM PEAK HOUR INTERSECTION CONDITIONS ..... ES-IV
TABLE ES-3 SUMMARY OF PM PEAK HOUR INTERSECTION CONDITIONS ..... ES-V
TABLE ES-4 SUMMARY OF FREEWAY MAINLINE CONDITIONS ..... ES-VI
TABLE ES-5 SUMMARY OF FREEWAY RAMP METERING CONDITIONS ..... ES-VII
TABLE 3-1 OTHER STUDY AREA STREETS SUMMARY 12
TABLE 3-2 EXISTING ROADWAY SEGMENT CONDITIONS 13
TABLE 3-3 EXISTING INTERSECTION CONDITIONS 14
TABLE 3-4 EXISTING FREEWAY MAINLINE LOS 15
TABLE 3-5 EXISTING FREEWAY INTERCHANGE CALCULATED ON-RAMP METERING DELAY 16
TABLE 3-6 EXISTING FREEWAY INTERCHANGE OBSERVED ON-RAMP METERING DELAY 17
TABLE 4-1 CUMULATIVE PROJECTS 27
TABLE 4-2 HORIZON YEAR (2050) CIRCULATION NETWORK IMPROVEMENTS/CHANGES 29
TABLE 4-3 HORIZON YEAR WITHOUT PROJECT (BLACK MOUNTAIN RD AS 6 LANES) ROADWAY SEGMENT CONDITIONS 31
TABLE 4-4 HORIZON YEAR WITH PROJECT (BLACK MOUNTAIN RD AS 4 LANES) ROADWAY SEGMENT CONDITIONS 32
TABLE 4-5 HORIZON YEAR COMPARISON OF ROADWAY SEGMENT CONDITIONS 33
TABLE 4-6 HORIZON YEAR AM PEAK HOUR INTERSECTION CONDITIONS 34
TABLE 4-7 HORIZON YEAR PM PEAK HOUR INTERSECTION CONDITIONS 35
TABLE 4-8A HORIZON YEAR FREEWAY MAINLINE ANALYSIS 36
TABLE 4-8B HORIZON YEAR FREEWAY MAINLINE ANALYSIS 37
TABLE 4-9 HORIZON YEAR FREEWAY INTERCHANGE ON-RAMP METERING DELAY 38
TABLE 6-1 MITIGATION SUMMARY 54
TABLE 7-1 INTERSECTION DELAY/LOS 56

Appendices

APPENDIX A LEVEL OF SERVICE CONCEPTS, ANALYSIS METHODOLOGIES & STANDARDS OF SIGNIFICANCE
APPENDIX B TRAFFIC COUNT DATA
APPENDIX C COORDINATED SIGNAL SYSTEM MAP AND PEAK-HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING CONDITIONS
APPENDIX D FUTURE STREET CLASSIFICATIONS – RANCHO PEÑASQUITOS COMMUNITY PLAN
APPENDIX E SANDAG MODELS, SEGMENT GROWTH RATES AND SEGMENT ADJUSTMENTS
APPENDIX F PEAK-HOUR INTERSECTION ANALYSIS WORKSHEETS HORIZON YEAR CONDITIONS: WITHOUT PROJECT (SUBJECT BLACK MOUNTAIN ROAD SEGMENT AS 6 LANES)
APPENDIX G PEAK-HOUR INTERSECTION ANALYSIS WORKSHEETS HORIZON YEAR CONDITIONS: WITH PROJECT (SUBJECT BLACK MOUNTAIN ROAD SEGMENT AS 4 LANES)
APPENDIX H PEAK-HOUR INTERSECTION ANALYSIS
AND QUEUE ANALYSIS WORKSHEETS HORIZON YEAR CONDITIONS: WITH PROJECT, WITH MITIGATION
APPENDIX I FREEWAY RAMP METERING RATE & CALTRANS VOLUME, PEAK HOUR, DIRECTIONAL AND TRUCK PERCENTAGE DATA
APPENDIX J SIGNAL WARRANT ANALYSIS FOR INTERSECTION OF SUNDANCE AVENUE AND TWIN TRAILS DRIVE
APPENDIX K CONCEPTUAL DRAWINGS OF MITIGATION AND RECOMMENDED MEASURES
APPENDIX L CITY OF SAN DIEGO EXISTING AND PROPOSED BICYCLE NETWORK MAPS
APPENDIX M MTS ROUTE INFORMATION
APPENDIX N ILV CALCULATIONS FOR CALTRANS CONTROLLED INTERCHANGES
APPENDIX O PFFP PROJECT SHEETS

EXECUTIVE SUMMARY

Black Mountain Road is designated a 6-Lane Primary Arterial in the Rancho Peñasquitos Community Plan, which is part of the General Plan of the City of San Diego. Black Mountain Road currently functions as a 4-Lane Major. A Community Plan Amendment has been initiated at the request of the Black Mountain Ranch developer to reclassify Black Mountain Road to a 4-Lane Major from Twin Trails Drive on the north to the southern community boundary. For analysis purposes, the proposed reclassification of this segment of Black Mountain Road to a 4-Lane Major is considered the "Project".

The Rancho Peñasquitos community is located approximately 17 miles to the north of downtown San Diego and approximately 8 miles to the east of the Pacific Ocean. The extent of the study area was determined in consultation with City staff, along with their knowledge of the transportation system in the northern area of the City. Within this study area, 57 intersections and 37 roadway segments were selected for analysis. Daily traffic volumes along roadway segments were obtained through machine data collection. Intersection turning movement counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM and evening peak period from 4:00 PM to 6:00 PM. The dates on which the segment and intersection counts were conducted range during the period of October, 2013 to July, 2014.

As the Project is the reclassification of a segment of Black Mountain Road to a 4-Lane Major, it itself is not a trip generator. Instead, the future traffic is derived from existing and future development within and around the study area, a large geographic area, and not by a single development site. For the study area, horizon year traffic volumes on the roadway network were estimated based on SANDAG's daily traffic volume forecasts. SANDAG's calibrated and validated base model (Series 12, base year 2008), was used for the base year and their 2050 model used for the horizon year, the latter reflecting build-out of the community plan. Horizon year daily volume forecasts were provided for two conditions: Without Project, which assumed the subject Black Mountain Road segment as a 6-Lane Primary Arterial, and With Project, which assumed the subject Black Mountain Road segment as a 4-Lane Major. The models included horizon year improvements and changes to the circulation network in the Rancho Peñasquitos area. (See Chapter 4 for network improvements in the horizon year as well as funding sources for these projects) These forecasted volumes along with the traffic counts were used to develop traffic growth factors and future condition volumes at each study segment and study intersection.

Significant traffic impacts due to volume changes associated with the Project were determined. Significant segment impacts were found for Black Mountain Road south of Twin Trails Drive and for Black Mountain Road north of Park Village Road-Adolphia Street. These impacts will be unmitigated as maintaining Black Mountain Road at its current classification of 4 lanes is the project.

A single significant intersection impact occurs during the AM peak hour at the intersection of Sundance Avenue and Twin Trails Drive. To mitigate this impact, a traffic signal is recommended to replace the all-way stop control. This upgrade would improve the level of service from LOS E to LOS A and fully mitigate the significant impact. Traffic signal peak hour warrants were conducted for existing conditions and 2050 with project conditions and indicate that this signal will be warranted in the future. This warrant can be found in Appendix J. This mitigation is not found in any PFFP or Regional Plan. Partial mitigation may be provided by modifying the PFFPs of those communities currently providing funding for the widening of Black Mountain Road to substitute this mitigation for the widening project currently included in those PFFPs. See Appendix O for potential PFFP modifications to project T-11.1 of the Pacific Highlands, project T-57 of Black Mountain Ranch, and project T-2D of Rancho Penasquitos plans.

One significant freeway mainline impact was found within the study area. The freeway mainline significant impact was found in the PM peak hour on eastbound SR-56 between Camino del Sur and Black Mountain Road. This impact could be mitigated by the construction of an additional eastbound

auxiliary lane from Camino del Sur to Black Mountain Road. This mitigation is not found in any PFFP, Regional or Caltrans Plan. Partial mitigation may be provided by modifying the PFFPs of those communities currently providing funding for the widening of Black Mountain Road to substitute this mitigation for the widening project currently included in those PFFPs. See Appendix O for potential PFFP modifications to project T-11.1 of the Pacific Highlands, project T-57 of Black Mountain Ranch, and project T-2D of Rancho Penasquitos plans.

One ramp metering delay impact was also found within the study area. In the AM peak hour, the Rancho Penasquitos Blvd – SR56 WB on ramp experiences an increase in delay of 3 minutes from about 21 minutes to 24 minutes, resulting in a significant impact. This impact could be mitigated by the construction of an additional ramp lane onto westbound SR-56 at this location. This mitigation is not found in any PFFP, Regional or Caltrans Plan. Partial mitigation may be provided by modifying the PFFPs of those communities currently providing funding for the widening of Black Mountain Road to substitute this mitigation for the widening project currently included in those PFFPs. See Appendix O for potential PFFP modifications to project T-11.1 of the Pacific Highlands, project T-57 of Black Mountain Ranch, and project T-2D of Rancho Penasquitos plans.

While not a significant impact, to improve the traffic flow along Black Mountain Road at SR-56, a restriping of the segment between the SR-56 westbound ramps and SR-56 eastbound ramps is recommended, as there is currently width for an additional northbound lane. This restriping would include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. The inside lane would terminate into the dual left-turn pockets, designating the two outer lanes as exclusively through lanes as shown in Appendix K. This modification would increase the northbound-to-westbound left-turn pocket storage and improve flow of northbound through traffic. To accommodate the offsets from this restriping, the roadway will need to be widened for northbound traffic north of the bridge to accommodate a transition taper as shown in Appendix K. Although this reconfiguration and widening on the northeast corner would improve the traffic flow along Black Mountain Road at SR-56, the segments of Black Mountain Road south of Twin Trails Drive and north of Park Village Road would remain significantly impacted.

Tables ES-1, ES-2, ES-3, ES-4, and ES-5 below, respectively summarize roadway segment, peak hour intersection, freeway mainline and freeway ramp metering conditions for the existing conditions, horizon year without project and horizon year with project scenarios. For all assumptions, calculations, explanations in derivation and methodology, please refer to the more in depth analyses found in Chapters 1-4.

Table ES-1
Summary of Weekday Roadway Segment Conditions

Segment Number and Name	2014 Existing		2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		Comparison	
	V/C	LOS	V/C	LOS	V/C	LOS	Δ V/C	Impact
1. Camino Del Sur s/o Carmel valley Road	0.443	B	0.518	B	0.505	B	-0.01	No
2. Camino Del Sur s/o Wolverine Way - Fallhaven Road	0.518	B	0.605	C	0.590	C	-0.02	No
3. Camino Del Sur n/o SR-56 Westbound Ramps	0.648	C	0.757	C	0.738	C	-0.02	No
4. Camino Del Sur s/o SR-56 Eastbound Ramps	0.245	A	0.534	B	0.548	B	0.01	No
5. Carmel Valley Road w/o Black Mountain Road	1.049	F	0.431	B	0.434	B	0.00	No
6. Carmel Valley Road e/o Black Mountain Road	0.345	A	0.566	C	0.570	C	0.00	No
7. Black Mountain Road n/o Maler Road	0.308	A	0.457	B	0.480	B	0.02	No
8. Black Mountain Road s/o Oviedo Street	0.474	B	0.589	C	0.587	C	0.00	No
9. Black Mountain Road s/o Carmel Mountain Road	0.369	A	0.459	B	0.443	B	-0.02	No
10. Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	0.358	A	0.446	B	0.430	B	-0.02	No
11. Black Mountain Road s/o Twin Trails Drive	0.837	D	0.634	C	0.939	E	0.31	**Yes**
12. Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	0.764	D	0.578	B	0.857	D	0.28	No
13. Black Mountain Road n/o Park Village Road - Adolphia Street	0.886	E	0.732	C	0.888	E	0.16	**Yes**
14. Black Mountain Road n/o Canyonside Park Drive	0.760	D	0.674	C	0.867	D	0.19	No
15. Black Mountain Road bet. Mercy Road & Babuta Road	0.481	B	0.640	C	0.549	B	-0.09	No
16. Black Mountain Road s/o Westview Parkway	0.370	A	0.493	B	0.423	B	-0.07	No
17. Westview Parkway e/o Black Mountain Road	0.203	A	0.295	A	0.240	A	-0.06	No
18. Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	0.354	A	0.367	A	0.370	A	0.00	No
19. Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	0.548	C	0.567	C	0.574	C	0.01	No
20. Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	0.686	C	0.655	C	0.688	C	0.03	No
21. Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	0.703	C	0.672	C	0.705	C	0.03	No
22. Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	0.827	D	0.790	D	0.828	D	0.04	No
23. Poway Road e/o I-15 Northbound Ramps	0.751	C	0.887	D	0.887	D	0.00	No
24. Carmel Mountain Road s/o Sundance Avenue	0.124	A	0.245	A	0.250	A	0.01	No
25. Carmel Mountain Road w/o Sparren Avenue	0.170	A	0.222	A	0.233	A	0.01	No
26. Carmel Mountain Road w/o Black Mountain Road	0.208	A	0.260	A	0.265	A	0.01	No
27. Sundance Avenue w/o War Bonnet Street*	-	-	-	-	-	-	-	-
28. Carmel Mountain Road e/o Freeport Road	0.283	A	0.361	A	0.360	A	0.00	No
29. Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	0.341	A	0.435	B	0.434	B	0.00	No
30. Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	0.627	C	0.736	C	0.733	C	0.00	No
31. Carmel Mountain Road e/o I-15 Northbound Ramps	0.749	C	0.880	D	0.877	D	0.00	No
32. Camino Del Sur n/o Park Village Road	0.030	A	0.268	A	0.255	A	-0.01	No
33. Park Village Road e/o Camino Del Sur	0.211	A	0.315	A	0.293	A	-0.02	No
34. Park Village Road w/o Black Mountain Road	0.439	B	0.444	B	0.440	B	0.00	No
35. Mercy Road bet. Chabola Road & Branicole Ln	0.357	A	0.467	B	0.436	B	-0.03	No
36. Mercy Road n/o Alemania Road	0.496	B	0.592	C	0.561	C	-0.03	No
37. Scripps Poway Parkway e/o I-15 Northbound Ramps	0.880	D	1.057	F	1.033	F	-0.02	No

* Capacity for local residential street not specified in *San Diego Traffic Impact Study Manual, July 2008*.

Table ES-2
Summary of AM Peak Hour Intersection Conditions

	2014 Existing		2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		Comparison	
Intersection Number and Name	Delay	LOS	Delay	LOS	Delay	LOS	Δ Delay	Impact
1. Camino Del Sur/Carmel Valley Road ***	41.1	D	56.7	E	56.0	E	-0.7	No
2. Camino Del Sur/Watson Ranch Road ***	10.3	B	8.4	A	8.3	A	-0.1	No
3. Camino Del Sur/Wolverine Way - Fallhaven Road ***	25.3	C	22.2	C	20.4	C	-1.8	No
4. Camino Del Sur/Torrey Meadows Drive	18.1	B	16.5	B	16.7	B	0.2	No
5. Camino Del Sur/Highlands Village Place ***	19.3	B	15.4	B	14.9	B	-0.5	No
6. Camino Del Sur/SR-56 Westbound Ramps	15.6	B	17.5	B	17.8	B	0.3	No
7. Camino Del Sur/SR-56 Eastbound Ramps ***	15.9	B	10.4	B	10.2	B	-0.2	No
8. Camino Del Sur/Torrey Santa Fe Road ***	13.8	B	13.4	B	13.3	B	-0.1	No
9. Black Mountain Road/Carmel Valley Road	23.3	C	22.3	C	22.5	C	0.2	No
10. Black Mount Road/Maler Road ***	7.6	A	7.8	A	8.0	A	0.2	No
11. Black Mountain Road/Stargaze Avenue ***	15.7	B	14.7	B	13.4	B	-1.3	No
12. Black Mountain Road/Oviedo Street	16.8	B	17.0	B	26.3	C	9.3	No
13. Black Mountain Road/Carmel Mountain Road	47.4	D	44.0	D	47.9	D	3.9	No
14. Black Mountain Road/Paseo Montalban	13.4	B	12.4	B	12.8	B	0.4	No
15. Black Mountain Road/Twin Trails Drive	43.2	D	52.9	D	54.4	D	1.5	No
16. Black Mountain Road/SR-56 Westbound Ramps ***	37.9	D	47.3	D	45.0	D	-2.3	No
17. Black Mountain Road/SR-56 Eastbound Ramps	22.0	C	22.4	C	23.1	C	0.7	No
18. Black Mountain Road/Park Village Road - Adolphia Street	46.3	D	33.9	C	37.3	D	3.4	No
19. Black Mountain Road/Canyonside Park Drive	2.3	A	2.5	A	5.2	A	2.7	No
20. Black Mountain Road/Mercy Road	29.8	C	24.4	C	27.4	C	3.0	No
21. Black Mountain Road/Westview Parkway ***	13.4	B	16.3	B	14.5	B	-1.8	No
22. Carmel Mountain Road/Sundevil Way ***	20.2	C	16.0	B	15.6	B	-0.4	No
23. Carmel Mountain Road/Paseo Montalban ***	24.6	C	24.0	C	23.8	C	-0.2	No
24. Carmel Mountain Road/SR-56 WB Ramps - Rancho Penasquitos Boulevard	41.9	D	45.7	D	46.0	D	0.3	No
25. Rancho Penasquitos Boulevard/SR-56 Eastbound Ramps - Azuaga Street ***	20.6	C	24.8	C	24.2	C	-0.6	No
26. Rancho Penasquitos Boulevard/Calle De Las Rosas ***	10.1	B	10.3	B	9.9	A	-0.4	No
27. Rancho Penasquitos Boulevard/Via Del Sud	4.5	A	4.3	A	4.6	A	0.3	No
28. Rancho Penasquitos Boulevard/Paseo Montril	13.5	B	13.6	B	13.6	B	0.0	No
29. Rancho Penasquitos Boulevard/I-15 Southbound Off-Ramp	7.9	A	8.2	A	8.4	A	0.2	No
30. Rancho Penasquitos Boulevard/I-15 Northbound Off-Ramp	10.9	B	15.0	B	15.6	B	0.6	No
31. Carmel Mountain Road/(West) Sundance Avenue	13.8	B	12.9	B	12.9	B	0.0	No
32. Carmel Mountain Road/Sedorus Street (All-way stop control)*	7.5	A	8.2	A	8.1	A	-0.1	No
33. Carmel Mountain Road/Entreken Way	21.3	C	22.6	C	22.6	C	0.0	No
34. Sparren Avenue/Carmel Mountain Road ***	24.1	C	32.1	C	28.2	C	-3.9	No
35. Twin Trails Drive/Carmel Mountain Road	28.8	C	25.9	C	29.5	C	3.6	No
36. (East) Sundance Avenue/Carmel Mountain Road (Two-way stop control)** *	18.4	C	15.5	C	15.2	C	-0.3	No
37. Sundance Avenue/Twin Trails Drive (All-way stop control)	22.7	C	38.8	E	46.4	E	7.6	**Yes**
38. Penasquitos Post Office Driveway/Twin Trails Drive	18.2	B	18.3	B	18.4	B	0.1	No
39. Twin Trails Drive/Fairgrove Lane (All-way stop control)	8.0	A	8.0	A	8.1	A	0.1	No
40. Twin Trails Drive/Paseo Montalban	11.0	B	11.0	B	11.1	B	0.1	No
41. Salmon River Road/Paseo Montalban ***	13.6	B	13.9	B	13.2	B	-0.7	No
42. Salmon River Road/Fairgrove Lane (All-way stop control)	8.0	A	8.0	A	8.0	A	0.0	No
43. Salmon River Road/Adolphia Street - Limar Way (All-way stop control)	7.5	A	7.5	A	7.5	A	0.0	No
44. Paseo Cardiel/Carmel Mountain Road	23.1	C	20.2	C	20.3	C	0.1	No
45. Freeport Road/Carmel Mountain Road	8.8	A	5.8	A	6.4	A	0.6	No
46. Stoney Creek Road/Carmel Mountain Road ***	10.5	B	9.0	A	8.9	A	-0.1	No
47. Cuca Street - Caminata Deluz/Carmel Mountain Road	14.0	B	12.2	B	12.2	B	0.0	No
48. Penasquitos Drive/Carmel Mountain Road	28.9	C	29.0	C	29.0	C	0.0	No
49. I-15 Southbound Ramps/Carmel Mountain Road	18.2	B	19.7	B	20.1	C	0.4	No
50. I-15 Northbound Ramps/Carmel Mountain Road	21.9	C	25.2	C	25.3	C	0.1	No
51. Camino Del Sur/Park Village Road ***	24.5	C	51.6	D	45.6	D	-6.0	No
52. Rumex Lane/Park Village Road	7.9	A	7.8	A	7.9	A	0.1	No
53. Ragweed Street/Park Village Road	15.9	B	16.0	B	16.4	B	0.4	No
54. Mercy Road/Kika Court	8.0	A	7.8	A	7.8	A	0.0	No
55. Alemania Road/Mercy Road	9.4	A	9.8	A	9.9	A	0.1	No
56. I-15 Southbound Ramps/Mercy Road ***	31.0	C	35.5	D	34.8	C	-0.7	No
57. I-15 Northbound Ramps/Mercy Road - Scripps Poway Parkway ***	39.0	D	77.0	E	70.1	E	-6.9	No

Timing and Phasing Source: City of San Diego Timing Sheets - See Appendix B

* Assumes a signalization upgrade in 2050.

** Worst case control delay and LOS shown.

*** Positive improvements in avg. intersection delay are due to shift in traffic patterns and the re-optimization of the analysis for the intersection.

Table ES-3
Summary of PM Peak Hour Intersection Conditions

		2014 Existing		2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		Difference	
	Intersection Number and Name	Delay	LOS	Delay	LOS	Delay	LOS	Δ Delay	Impact
1.	Camino Del Sur/Carmel Valley Road ***	33.3	C	45.9	D	45.4	D	-0.5	No
2.	Camino Del Sur/Watson Ranch Road ***	9.4	A	6.7	A	5.6	A	-1.1	No
3.	Camino Del Sur/Wolverine Way - Fallhaven Road ***	17.9	B	20.2	C	18.3	B	-1.9	No
4.	Camino Del Sur/Torrey Meadows Drive	21.0	C	13.7	B	14.0	B	0.3	No
5.	Camino Del Sur/Highlands Village Place	13.2	B	16.6	B	16.8	B	0.2	No
6.	Camino Del Sur/SR-56 Westbound Ramps	16.3	B	19.7	B	20.2	C	0.5	No
7.	Camino Del Sur/SR-56 Eastbound Ramps	23.4	C	16.8	B	16.8	B	0.0	No
8.	Camino Del Sur/Torrey Santa Fe Road	15.8	B	19.2	B	19.7	B	0.5	No
9.	Black Mountain Road/Carmel Valley Road	50.2	D	47.9	D	48.8	D	0.9	No
10.	Black Mount Road/Maler Road	7.5	A	7.5	A	7.6	A	0.1	No
11.	Black Mountain Road/Stargaze Avenue	15.4	B	14.0	B	14.8	B	0.8	No
12.	Black Mountain Road/Oviedo Street	16.0	B	17.6	B	26.0	C	8.4	No
13.	Black Mountain Road/Carmel Mountain Road ***	36.5	D	28.5	C	28.3	C	-0.2	No
14.	Black Mountain Road/Paseo Montalban	13.4	B	14.8	B	15.1	B	0.3	No
15.	Black Mountain Road/Twin Trails Drive ***	38.8	D	40.5	D	32.0	C	-8.5	No
16.	Black Mountain Road/SR-56 Westbound Ramps	29.6	C	34.4	C	34.7	C	0.3	No
17.	Black Mountain Road/SR-56 Eastbound Ramps	23.9	C	26.1	C	26.2	C	0.1	No
18.	Black Mountain Road/Park Village Road - Adolphia Street ***	26.1	C	29.7	C	29.4	C	-0.3	No
19.	Black Mountain Road/Canyonside Park Drive	4.8	A	4.8	A	6.8	A	2.0	No
20.	Black Mountain Road/Mercy Road ***	25.3	C	37.2	D	31.8	C	-5.4	No
21.	Black Mountain Road/Westview Parkway ***	16.1	B	22.7	C	20.5	C	-2.2	No
22.	Carmel Mountain Road/Sundevil Way	16.8	B	14.6	B	14.6	B	0.0	No
23.	Carmel Mountain Road/Paseo Montalban	33.4	C	23.3	C	23.1	C	-0.2	No
24.	Carmel Mountain Road/SR-56 WB Ramps - Rancho Penasquitos Boulevard **	34.3	C	35.6	D	35.3	D	-0.3	No
25.	Rancho Penasquitos Boulevard/SR-56 Eastbound Ramps - Azuaga Street ***	51.3	D	70.7	E	69.4	E	-1.3	No
26.	Rancho Penasquitos Boulevard/Calle De Las Rosas	10.0	A	9.5	A	10.0	A	0.5	No
27.	Rancho Penasquitos Boulevard/Via Del Sud	4.3	A	3.9	A	4.5	A	0.6	No
28.	Rancho Penasquitos Boulevard/Paseo Montril	14.6	B	14.5	B	14.5	B	0.0	No
29.	Rancho Penasquitos Boulevard/I-15 Southbound Off-Ramp	9.4	A	9.7	A	9.7	A	0.0	No
30.	Rancho Penasquitos Boulevard/I-15 Northbound Off-Ramp	14.9	B	19.4	B	20.6	C	1.2	No
31.	Carmel Mountain Road/(West) Sundance Avenue	16.1	B	16.0	B	16.5	B	0.5	No
32.	Carmel Mountain Road/Sedorus Street (All-way stop control)*	7.4	A	5.2	A	5.1	A	-0.1	No
33.	Carmel Mountain Road/Entreken Way ***	13.4	B	12.6	B	12.5	B	-0.1	No
34.	Sparren Avenue/Carmel Mountain Road	24.0	C	20.1	C	20.2	C	0.1	No
35.	Oviedo Street/Carmel Mountain Road ***	16.7	B	20.1	C	19.6	B	-0.5	No
36.	(East) Sundance Avenue/Carmel Mountain Road (Two-way stop control)**	9.9	A	10.3	B	10.3	B	0.0	No
37.	Sundance Avenue/Twin Trails Drive (All-way stop control)	14.9	B	23.8	C	27.5	D	3.7	No
38.	Penasquitos Post Office Driveway/Twin Trails Drive ***	26.7	C	26.6	C	26.1	C	-0.5	No
39.	Twin Trails Drive/Fairgrove Lane (All-way stop control)	9.0	A	9.1	A	9.2	A	0.1	No
40.	Twin Trails Drive/Paseo Montalban	12.9	B	12.9	B	13.0	B	0.1	No
41.	Salmon River Road/Paseo Montalban ***	15.1	B	15.1	B	11.9	B	-3.2	No
42.	Salmon River Road/Fairgrove Lane (All-way stop control)	8.8	A	8.8	A	8.9	A	0.1	No
43.	Salmon River Road/Adolphia Street - Limar Way (All-way stop control)	7.9	A	7.9	A	7.9	A	0.0	No
44.	Paseo Cardiel/Carmel Mountain Road	29.1	C	25.1	C	27.3	C	2.2	No
45.	Freeport Road/Carmel Mountain Road	7.8	A	5.1	A	7.5	A	2.4	No
46.	Stoney Creek Road/Carmel Mountain Road ***	3.6	A	4.2	A	3.7	A	-0.5	No
47.	Cuca Street - Caminata Deluz/Carmel Mountain Road ***	10.9	B	10.9	B	10.8	B	-0.1	No
48.	Penasquitos Drive/Carmel Mountain Road ***	28.1	C	30.9	C	30.8	C	-0.1	No
49.	I-15 Southbound Ramps/Carmel Mountain Road	25.3	C	35.4	D	35.5	D	0.1	No
50.	I-15 Northbound Ramps/Carmel Mountain Road	27.3	C	50.5	D	51.4	D	0.9	No
51.	Camino Del Sur/Park Village Road	19.3	B	23.7	C	23.8	C	0.1	No
52.	Rumex Lane/Park Village Road	7.1	A	6.9	A	7.0	A	0.1	No
53.	Ragweed Street/Park Village Road	16.1	B	16.1	B	16.6	B	0.5	No
54.	Mercy Road/Kika Court ***	7.4	A	8.3	A	7.5	A	-0.8	No
55.	Alemania Road/Mercy Road ***	10.3	B	10.6	B	10.3	B	-0.3	No
56.	I-15 Southbound Ramps/Mercy Road ***	33.0	C	40.5	D	37.6	D	-2.9	No
57.	I-15 Northbound Ramps/Mercy Road - Scripps Poway Parkway ***	34.8	C	61.7	E	52.9	D	-8.8	No

Timing and Phasing Source: City of San Diego Signal Timing Sheets - See Appendix B

* Assumes a signalization upgrade in 2050.

** Worst case control delay and LOS shown.

*** Positive improvements in avg. intersection delay are due to shift in traffic patterns and the re-optimization of the analysis for the intersection.

Table ES-4
Summary of Freeway Mainline Conditions

Freeway Segment	AM/ PM	LOS E Capacity	Existing Conditions		Long Term Without Project (BMR 6-Lanes)		Long Term With Project (BMR 4-Lanes)		Comparison	
			V/C	LOS	V/C	LOS	V/C	LOS	Δ V/C	Significant?
SR-56 Westbound										
West of Camino del Sur	AM	7,050	0.902	D	1.132	F	1.136	F	0.004	No
	PM	7,050	0.332	A	0.417	B	0.418	B	0.001	No
Camino del Sur to Black Mountain Rd	AM	7,050	0.999	E	1.119	F	1.124	F	0.005	No
	PM	7,050	0.367	A	0.412	B	0.414	B	0.002	No
Black Mountain Road to Rancho Penasquitos Blvd *	AM	8,850	0.762	C	0.808	D	0.798	C	-0.010	No
	PM	8,850	0.280	A	0.297	A	0.294	A	-0.003	No
Rancho Penasquitos Blvd to I-15 Interchange *	AM	7,050	0.985	E	0.997	E	0.983	E	-0.014	No
	PM	7,050	0.362	A	0.367	A	0.362	A	-0.005	No
SR-56 Eastbound										
West of Camino del Sur	AM	7,050	0.346	A	0.434	B	0.436	B	0.002	No
	PM	7,050	0.885	D	1.112	F	1.115	F	0.003	No
Camino del Sur to Black Mountain Rd	AM	7,050	0.383	A	0.429	B	0.431	B	0.002	No
	PM	7,050	0.981	E	1.098	F	1.104	F	0.006	**Yes**
Black Mountain Road to Rancho Penasquitos Blvd *	AM	7,050	0.270	A	0.389	A	0.384	A	-0.005	No
	PM	7,050	0.690	C	0.995	E	0.983	E	-0.012	No
Rancho Penasquitos Blvd to I-15 Interchange *	AM	7,050	0.378	A	0.382	A	0.377	A	-0.005	No
	PM	7,050	0.967	E	0.978	E	0.965	E	-0.013	No
I-15 Northbound										
South of Mercy Road *	AM	16,910	0.725	C	1.245	F	1.239	F	-0.006	No
	PM	16,910	0.534	B	0.917	D	0.913	D	-0.004	No
Mercy Road to Rancho Penasquitos Blvd *	AM	16,910	0.687	C	1.210	F	1.195	F	-0.015	No
	PM	16,910	0.506	B	0.892	D	0.881	D	-0.011	No
Rancho Penasquitos Blvd to Ted Williams Pkwy *	AM	15,110	0.674	C	1.246	F	1.232	F	-0.014	No
	PM	15,110	0.497	B	0.918	D	0.908	D	-0.010	No
Ted Williams Pkwy to Carmel Mountain Rd *	AM	16,910	0.667	C	1.094	F	1.094	F	0.000	No
	PM	16,910	0.491	B	0.807	D	0.806	D	-0.001	No
North of Carmel Mountain Rd	AM	16,910	0.692	C	1.145	F	1.146	F	0.001	No
	PM	16,910	0.422	B	0.699	C	0.700	C	0.001	No
I-15 Southbound										
South of Mercy Road *	AM	16,910	0.532	B	0.913	D	0.909	D	-0.004	No
	PM	16,910	0.716	C	1.230	F	1.224	F	-0.006	No
Mercy Road to Rancho Penasquitos Blvd *	AM	16,910	0.504	B	0.888	D	0.877	D	-0.011	No
	PM	16,910	0.679	C	1.196	F	1.181	F	-0.015	No
Rancho Penasquitos Blvd to Ted Williams Pkwy *	AM	16,910	0.442	B	0.817	D	0.808	D	-0.009	No
	PM	16,910	0.596	B	1.100	F	1.088	F	-0.012	No
Ted Williams Pkwy to Carmel Mountain Rd	AM	16,910	0.489	B	0.803	D	0.803	D	0.000	No
	PM	16,910	0.659	C	1.081	F	1.081	F	0.000	No
North of Carmel Mountain Rd	AM	15,110	0.338	A	0.559	B	0.560	B	0.001	No
	PM	15,110	0.773	C	1.279	F	1.280	F	0.001	No

Peak Hour Volume = (ADT)(K)(D)/(Truck Factor))
V/C = Peak Hour Volume / Capacity
Truck Source: 2013 Annual Average Daily Truck Traffic on the California State Highway System
ADT Source: SANDAG Modeling (Appendix E)
K/D Source: 2013 K and D Factors on the California State Highway System
* Improvement in Change in V/C Ratio are due to shift in traffic patterns

Table ES-5
Summary of Freeway Ramp Metering Conditions

Location	# of Lane	Meter Rate (veh/hr/ lane)	Existing Conditions		Horizon Year Without Project		Horizon Year With Project		Comparison	
			Delay (min)	Queue (ft)	Delay (min)	Queue (ft)	Delay (min)	Queue (ft)	Δ Delay	Impact
AM Peak Hour										
Camino del Sur - SR56 WB Ramp	2	435	0	0	0	0	0	0	0	No
Camino del Sur - SR56 WB Ramp (HOV)	1	435	0	0	0	0	0	0	0	No
Black Mountain Rd - SR56 WB Ramp *	2	520	17	8,729	28	14,027	27	13,427	-1	No
Black Mountain Rd - SR56 WB Ramp (HOV)	1	520	0	0	0	0	0	0	0	No
Rancho Penasquitos - SR56 WB Ramp	1	600	16	4,553	21	6,119	24	6,815	3	**Yes**
Carmel Mountain Rd - I15 SB Ramp	2	367	3	1,134	14	5,075	14	4,971	0	No
Carmel Mountain Rd - I15 SB Ramp (HOV)	1	367	0	0	0	0	0	0	0	No
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	2	492	30	14,094	46	21,721	46	21,837	0	No
Rancho Penasquitos - I15 SB Ramp - EB->SB	2	492	0	0	0	0	0	0	0	No
Mercy Rd - I15 SB Ramp *	2	420	18	7,221	32	13,172	28	11,214	-5	No
Mercy Rd - I15 SB Ramp (HOV)	1	420	0	0	0	0	0	0	0	No
PM Peak Hour										
Camino del Sur - SR56 EB Ramp *	2	480	0	0	16	7,317	14	6,273	-2	No
Camino del Sur - SR56 EB Ramp (HOV)	1	480	0	0	0	0	0	0	0	No
Black Mountain Rd - SR56 EB Ramp	2	600	0	0	0	0	0	0	0	No
Black Mountain Rd - SR56 EB Ramp (HOV)	1	600	0	0	0	0	0	0	0	No
Rancho Penasquitos - SR56 EB Ramp	2	300	0	0	0	0	0	0	0	No
Carmel Mountain Rd - I15 SB Ramp	2	473	6	2,555	17	7,801	17	7,671	0	No
Carmel Mountain Rd - I15 SB Ramp (HOV)	1	473	0	0	0	0	0	0	0	No
Carmel Mountain Rd - I15 NB Ramp	2	463	0	0	0	0	0	0	0	No
Carmel Mountain Rd - I15 NB Ramp (HOV)	1	463	0	0	0	0	0	0	0	No
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	2	576	0	0	0	0	0	0	0	No
Rancho Penasquitos - I15 SB Ramp - EB->SB	2	576	0	0	0	0	0	0	0	No
Rancho Penasquitos - I15 NB Ramp - WB->NB	1	335	17	2,755	31	4,988	31	5,017	0	No
Rancho Penasquitos - I15 NB Ramp - Loop EB->NB	1	335	0	0	0	0	0	0	0	No
Mercy Rd - I15 SB Ramp *	2	406	27	10,591	44	17,142	38	15,028	-5	No
Mercy Rd - I15 SB Ramp (HOV)	1	406	0	0	0	0	0	0	0	No
Mercy Rd - I15 NB Ramp *	2	270	46	11,902	67	17,435	64	16,704	-3	No

Source: Caltrans January 2015
Meter rate is based on the most restrictive meter rate provided by Caltrans, see Appendix I
HOV demand is equal to 10% of Total Demand
Total Demand onto all lanes of each Freeway Ramp is found in the vehicle turning movements in Figures 3-4 and 3-5
Combined Meter Rate = (Meter Rate per Lane) * (# of Lanes)
Excess Demand = (Demand * # of lanes) -(Combined Meter Rate); if Excess Demand <0, then Excess Demand = 0
Delay = Excess Demand / Combined Meter Rate
Queue = Excess Demand * 29 ft/vehicle
* Improvement in average ramp delay is due to shift in traffic patterns

CHAPTER 1
THE PROJECT

Black Mountain Road is designated a 6-Lane Primary Arterial in the Rancho Peñasquitos Community Plan, which is part of the General Plan of the City of San Diego. Black Mountain Road currently functions as a 4-Lane Major. A Community Plan Amendment has been initiated by the City Planning Commission at the request of the Black Mountain Ranch developer to reclassify Black Mountain Road to a 4-Lane Major from Twin Trails Drive on the north to the southern community boundary. The Rancho Peñasquitos community is located approximately 17 miles to the north of downtown San Diego and approximately 8 miles to the east of the Pacific Ocean. It is bounded on the east by the communities of Carmel Mountain Ranch and Sabre Springs, on the south by the Los Peñasquitos Canyon Preserve and the Mira Mesa community, and on the west and north by subareas I and IV known as Black Mountain Ranch and Torrey Highlands and the Rancho Bernardo community planning area. Future development in this area is described in Chapter 4. The community is topographically diverse and is physically characterized by numerous canyons, hillsides and ridges.

This transportation impact study has been prepared to analyze and evaluate the reclassification of Black Mountain Road to a 4-Lane Major from Twin Trails Drive to the southern boundary of the Community of Rancho Peñasquitos. For analysis purposes, the proposed reclassification of this segment of Black Mountain Road to a 4-Lane Major is considered the "Project". Figure 1-1 shows the Project segment and surrounding area.

PROJECT DESCRIPTION

Black Mountain Road is a north-south roadway located west of Interstate 15 (I-15). Black Mountain Road is entirely within the City of San Diego, extending continuously from Carmel Valley Road on the north to Miramar Road on the south, a distance of approximately 6.6 miles. The northern half of Black Mountain Road is within and governed by the Rancho Peñasquitos Community Plan. The Project segment is within the northern half of Black Mountain Road. It is approximately 1.3 miles long from Twin Trails Drive on the north to the southern community boundary adjacent to the Los Peñasquitos Canyon Preserve. Currently, Black Mountain Road operates as a 4-Lane Major with landscaped medians, contiguous sidewalks and Class II bike lanes. The bridge section of Black Mountain Road that crosses State Route 56 (SR-56) is wider and operates as a 5-lane Primary Arterial.

The Project, the reclassification of Black Mountain Road to a 4-Lane Major from Twin Trails Drive to the southern community boundary, as initiated under a Community Plan Amendment, has been proposed in order to preserve the existing character of the community, as well as avoid the need to acquire private property necessary to expand Black Mountain Road to a six-lane facility.

A primary goal of the Community Plan is the construction and maintenance of an adequate system for vehicular, bicycle and pedestrian circulation. The expansion of Black Mountain Road to a 6-Lane Primary Arterial was identified as a primary roadway improvement to relieve congestion and mitigate impacts due to proposed development. Therefore, implementation of the Project would need to address traffic impacts resulting from Black Mountain Road not being improved to six lanes, as well as impacts to the bicycle and pedestrian networks.

STUDY AREA

The study area is a large area that includes numerous intersections and street segments expected to be affected by the Project. The extent of the study area was determined in consultation with City staff, along with their knowledge of the transportation system in the northern area of the City. Within this study area, 57 intersections and 37 roadway segments were selected for analysis, which are listed below and denoted in Figure 1-2.

Intersections
Except as noted, all of the following intersections are signalized.

1. Camino Del Sur/Carmel Valley Road
2. Camino Del Sur/Watson Ranch Road
3. Camino Del Sur/Wolverine Way - Fallhaven Road
4. Camino Del Sur/Torrey Meadows Drive
5. Camino Del Sur/Highlands Village Place
6. Camino Del Sur/SR-56 Westbound Ramps
7. Camino Del Sur/SR-56 Eastbound Ramps
8. Camino Del Sur/Torrey Santa Fe Road
9. Black Mountain Road/Carmel Valley Road
10. Black Mount Road/Maler Road
11. Black Mountain Road/Stargaze Avenue
12. Black Mountain Road/Oviedo Street
13. Black Mountain Road/Carmel Mountain Road
14. Black Mountain Road/Paseo Montalban
15. Black Mountain Road/Twin Trails Drive
16. Black Mountain Road/SR-56 Westbound Ramps
17. Black Mountain Road/SR-56 Eastbound Ramps
18. Black Mountain Road/Park Village Road - Adolphia Street
19. Black Mountain Road/Canyonside Park Drive
20. Black Mountain Road/Mercy Road
21. Black Mountain Road/Westview Parkway
22. Carmel Mountain Road/Sundevil Way
23. Carmel Mountain Road/Paseo Montalban
24. Carmel Mountain Road/SR-56 Westbound Ramps - Rancho Peñasquitos Boulevard
25. Rancho Peñasquitos Boulevard/SR-56 Eastbound Ramps - Azuaga Street
26. Rancho Peñasquitos Boulevard/Calle De Las Rosas
27. Rancho Peñasquitos Boulevard/Via Del Sud
28. Rancho Peñasquitos Boulevard/Paseo Montril
29. Rancho Peñasquitos Boulevard/I-15 Southbound Off-Ramp
30. Rancho Peñasquitos Boulevard/I-15 Northbound Off-Ramp
31. Carmel Mountain Road/(West) Sundance Avenue
32. Carmel Mountain Road/Sedorus Street *(All-way stop control)*
33. Carmel Mountain Road/Entreken Way
34. Sparren Avenue/Carmel Mountain Road
35. Twin Trails Drive/Carmel Mountain Road
36. (East) Sundance Avenue/Carmel Mountain Road *(Two-way stop control)*
37. Sundance Avenue/Twin Trails Drive *(All-way stop control)*
38. Peñasquitos Post Office Driveway/Twin Trails Drive
39. Twin Trails Drive/Fairgrove Lane *(All-way stop control)*
40. Twin Trails Drive/Paseo Montalban
41. Salmon River Road/Paseo Montalban
42. Salmon River Road/Fairgrove Lane *(All-way stop control)*
43. Salmon River Road/Adolphia Street - Limar Way *(All-way stop control)*
44. Paseo Cardiel/Carmel Mountain Road
45. Freeport Road/Carmel Mountain Road
46. Stoney Creek Road/Carmel Mountain Road
47. Cuca Street - Caminata Deluz/Carmel Mountain Road
48. Peñasquitos Drive/Carmel Mountain Road
49. I-15 Southbound Ramps/Carmel Mountain Road
50. I-15 Northbound Ramps/Carmel Mountain Road
51. Camino Del Sur/Park Village Road
52. Rumex Lane/Park Village Road

53. Ragweed Street/Park Village Road
54. Mercy Road/Kika Court
55. Alemania Road/Mercy Road
56. I-15 Southbound Ramps/Mercy Road
57. I-15 Northbound Ramps/Mercy Road - Scripps Poway Parkway

Roadway Segments

1. Camino Del Sur south of Carmel Valley Road
2. Camino Del sur south of Wolverine Way - Fallhaven Road
3. Camino Del Sur north of SR-56 Westbound Ramps
4. Camino Del Sur south of SR-56 Eastbound Ramps
5. Carmel Valley Road west of Black Mountain Road
6. Carmel Valley Road east of Black Mountain Road
7. Black Mountain Road north of Maler Road
8. Black Mountain road south of Oviedo Street
9. Black Mountain Road south of Carmel Mountain Road
10. Black Mountain Road between Paseo Montalban and Twin Trails Drive
11. Black Mountain Road south of Twin Trails Drive
12. Black Mountain Road between SR-56 Westbound and Eastbound Ramps
13. Black Mountain Road north of Park Village Road - Adolphia Street
14. Black Mountain Road north of Canyonside Park Drive
15. Black Mountain Road between Mercy Road and Babuta Road
16. Black Mountain Road south of Westview Parkway
17. Westview Parkway east of Black Mountain Road
18. Carmel Mountain Road between Paseo Aldabra and Sundevil Way
19. Carmel Mountain Road between Paseo Montalban and SR-56 Westbound Ramps
20. Rancho Peñasquitos Boulevard between SR-56 Westbound Ramps - Azuaga Street and Calle De Las Rosas
21. Rancho Peñasquitos Boulevard between Calle De Las Rosas and Via Del Sud
22. Rancho Peñasquitos Boulevard between Paseo Montril and I-15 Southbound Ramps
23. Poway Road east of I-15 Northbound Ramps
24. Carmel Mountain Road south of Sundance Avenue
25. Carmel Mountain Road west of Sparren Avenue
26. Carmel Mountain Road west of Black Mountain Road
27. Sundance Avenue west of War Bonnet Street
28. Carmel Mountain Road east of Freeport Road
29. Carmel Mountain Road between Peñasquitos Drive and Gerana Street
30. Carmel Mountain Road between I-15 Southbound Ramps and Peñasquitos Drive
31. Carmel Mountain Road east of 1-15 Northbound Ramps
32. Camino Del Sur north of Park Village Road
33 Park Village road east of Camino Del Sur
34. Park Village Road west of Black Mountain Road
35. Mercy Road between Chabola road and Branicole Lane
36. Mercy Road north of Alemania Road
37. Scripps Poway Parkway east of I-15 Northbound Ramps

PROJECT TRIP GENERATION

Vehicular trip generation is a measure or forecast of the number of trips that begin or end at a project site. In this case, there is no project or project site in the typical sense. As the Project is the reclassification of a segment of Black Mountain Road to a 4-Lane Major, it itself is not a trip generator. Instead, the trips are generated by the existing and future development within and around the study area, a large geographic area, and not by a single development site. The determination of the trips on the study area roadway network, including Black Mountain Road and the Project segment, is described below and in other sections of this report.

Traffic volume forecasts for the year 2050 for roadway network in the study area were developed and provided by the San Diego Association of Governments (SANDAG). These forecasts were produced from SANDAG's latest travel demand forecasting model, the primary long-range transportation planning tool in the San Diego region. The future traffic volumes for the study intersections and street segments and the methodology used to estimate those volumes are described in Chapter 4.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution refers to the process of identifying the general destination of outbound trips and origins of inbound trips within a regional context. Trip assignment refers to the process of identifying the specific routes drivers would likely use to reach their destinations. The trip distribution and assignment of the future traffic volumes to the study area roadway network were intrinsically performed by the SANDAG model as part of its forecasting process for both the 4-lane major scenario and the 6-lane major scenario.

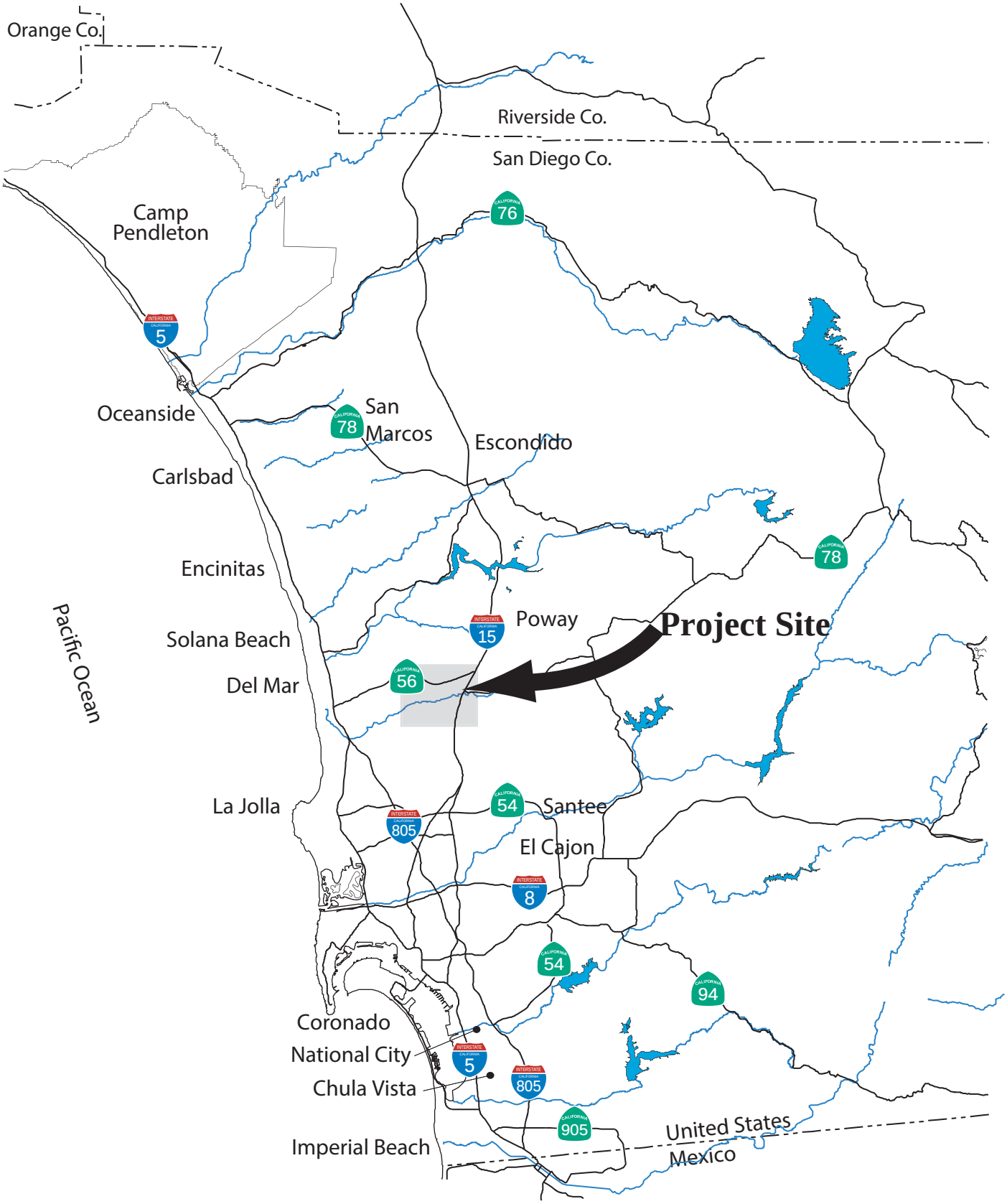


Figure 1-1
Project Vicinity Map

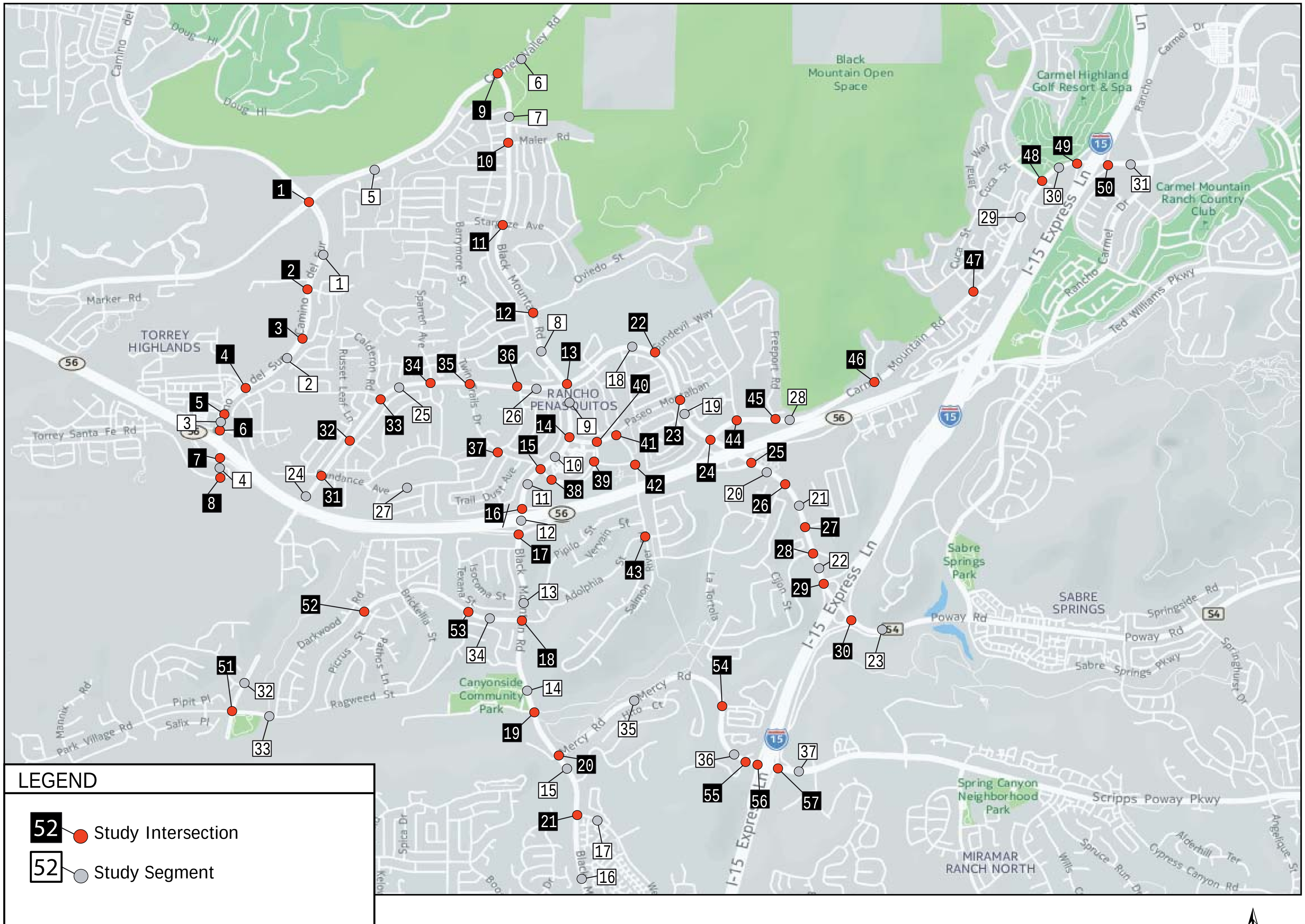


Figure 1-2
Project Study Area

CHAPTER 2
METHODOLOGIES

This chapter describes the methodologies and assumptions used to conduct the transportation impact study for the Project. The study methodology and analysis were consistent with the *City of San Diego Traffic Impact Study Manual (1998)* and *City of San Diego Significance Determination Thresholds, Development Services Department (2011)*. These guidelines were used to determine the potential significant impacts of the Project, based on the following considerations:

- Study scenarios and time periods
- Capacity analysis methodologies

STUDY SCENARIOS AND TIME PERIODS

The following scenarios were analyzed for the AM peak hour, PM peak hour and daily time periods in the study:

- Existing (2014) Conditions
- Horizon Year (2050) Conditions Without Project (BMR Segment 6-Lane Primary Arterial)
- Horizon Year (2050) Conditions With Project (BMR Segment 4-Lane Major)

A full list of the network changes that occur and were studied in both Horizon Year scenarios is expanded on in Chapter 4 in Table 4.2.

CAPACITY ANALYSIS METHODOLOGIES

Roadway operating conditions are typically described in terms of "level of service." Level of service is a "report card" type scale used to indicate the quality of traffic flow on roadway segments and at intersections under prevailing conditions. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). A more detailed description of the LOS concepts, along with the analysis methodologies and standards of significance discussed below, are provided in Appendix A.

Roadway Segment Capacity Analysis

The City of San Diego has published daily traffic volumes standards for roadways within its jurisdiction. To determine service levels on study area roadways segments, the appropriate average daily traffic thresholds for level of service were compared to the daily capacity of the roadway segments, relative to the existing and future volumes in the study area. The thresholds for determining level of service used in this analysis are summarized in Appendix A.

Intersection Capacity Analysis

The analysis of peak-hour intersection performance was conducted using Synchro, a traffic analysis and signal optimization software application. Synchro supports the Highway Capacity Manual (HCM) methodology for signalized and unsignalized intersections. Appendix A contains the HCM delay and level of service criteria for signalized and unsignalized intersections.

Signalized Intersections

The HCM methodology for analyzing signalized intersections is based on the "operational analysis" procedure. This procedure uses 1,900 passenger cars per hour of green per lane as the maximum saturation flow of a single lane at a signalized intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition (e.g., percentage of vehicles that are trucks), and shared lane movements (e.g., through and right-turn

movements from the same lane). Average control delay is calculated using a volume-weighted average of all of the delays for all vehicles entering the intersection.

All-Way Stop-Controlled Intersections
The HCM methodology for analyzing all-way stop-controlled intersections is based on conflicting traffic for vehicles stopped at an intersection. These intersections operate in either two-phase or four-phase patterns, and flows are determined by a consensus of right-of-way that alternates between north-south and east-west movements. Average control delay is calculated using a volume-weighted average of all of the delays for all vehicles entering the intersection.

Two-Way Stop-Controlled Intersections
The HCM methodology for analyzing two-way stop-controlled intersections is based on gap acceptance and conflicting traffic for vehicles stopped on the minor street approaches. The critical gap (or minimum gap that would be acceptable) is defined as the minimum time interval in the major street traffic flow that allows one vehicle from the minor street to enter the intersection. Control delay and level of service for the "worst" approach are reported, rather than for the intersection as a whole.

Freeway Mainline Analysis

The method for calculating freeway level of service is based on the volume-to-capacity (V/C) ratio using the following equation:

$$V/C = \frac{[\ (ADT * Peak\ hour\ percent * Directional\ factor)/Truck\ factor]}{Capacity}$$

where:
ADT = average daily traffic volume (2-way);
Peak hour percent = the proportion of ADT that occurs during the peak hour (not specifically AM or PM);
Directional factor = the proportion of peak hour traffic traveling in the peak direction;
Truck factor = a reduction in capacity to account for heavy vehicles and grades; and
Capacity = 2,300 vehicles per hour per lane.

The resultant v/c ratios are compared to the standard v/c thresholds for level of service contained in Appendix A. The freeway mainline ADT, directional factors, peak hour factors, and truck factors used in these analyses are found in Appendix I.

Metered Freeway On-Ramp Conditions

Freeway ramp meters are designed to maximize mainline freeway capacity, reduce traffic congestion and reduce peak period delays. This is accomplished by regulating the flow of vehicles entering the freeway, allowing for traffic flow on the mainline to achieve reasonable speeds. If excess demand exists at freeway on-ramps, delays and considerable queue lengths could result on ramps and adjacent surface roadways. All freeway ramp meters were analyzed based on the most restrictive ramp metering rates provided by Caltrans. Additionally, max observed queue lengths and max observed delay were recorded for the existing conditions. Appendix I contains the ramp meter rates obtained from Caltrans as well as the field notes for observed queueing and flow rates.

Analysis of Significance

To determine direct project impacts, the City of San Diego has developed a series of thresholds based on allowable increases in volume-to-capacity (V/C) ratios that become more stringent as service levels worsen. These thresholds are summarized in Appendix A. Where roadway segments and intersections operate at LOS A, B, C or D, no project impacts are considered significant.

CHAPTER 3
EXISTING CONDITIONS

Existing conditions represent the current conditions of the study area. Under existing conditions, the subject segment along Black Mountain Road functions as a 4-Lane Major.

TRAFFIC VOLUMES

Daily traffic volumes along roadway segments were obtained through machine data collection. Intersection turning movement counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM and evening peak period from 4:00 PM to 6:00 PM. The dates on which the segment and intersection counts were conducted range during the period of October, 2013 to July, 2014 on non-holiday weekdays, specifically Tuesday through Thursday. Figures 3-2, 3-3, 3-4 and 3-5 show existing condition volumes. Appendix B contains the individual roadway segment and intersection count sheets.

ROADWAY NETWORK

The principal roadways in the project study area are described briefly below. The description includes the physical characteristics, adjacent land uses, and traffic control devices along these roadways as well as discussion of the Rancho Peñasquitos Community Plan. A map of the ultimate street classifications upon build-out of the community can be found in Appendix D. The existing roadway geometry and control conditions are shown in Figures 3-1 and 3-2.

Primary regional access to the study area is provided via two freeways, Interstate 15 (Escondido Freeway), a north-south facility, and State Route 56 (Ted Williams Freeway), an east-west facility. State Route 56 merges with Interstate 15 to the east of the study area. Interstate 15 provides access to the greater San Diego area to the south and the City of Escondido to the north.

Interstate 15 (I-15) is a north-south highway extending southward from the State of Montana to the State of California. Within the vicinity of the study area, I-15 has five through lanes per direction, 2 managed lanes in each direction, an auxiliary lane in each direction between each on/off ramp, and on/off-ramps at Mercy Road-Scripps Poway Parkway, Rancho Peñasquitos Boulevard-Poway Road and Carmel Mountain Road.

State Route 56 (SR-56) is an east-west highway running between Interstate 5, near the Pacific Ocean, and I-15, in the Rancho Peñasquitos Community. Within the vicinity of the study area, SR-56 has two through lanes per direction with and additional intermittent auxiliary/transition lane in each direction and on/off-ramps at Camino Del Sur, Black Mountain Road and Rancho Peñasquitos Boulevard.

The following streets provide freeway access and circulation to local destinations.

Camino Del Sur is functionally classified as a 4-Lane Prime Arterial running primarily north-south from Rancho Bernardo Road in the north becoming Camino del Norte to Torrey Santa Fe Road. Camino Del Sur is then broken off by a canyon and continues to the south from Dormouse Road to just past Park Village Road. An extension of Camino Del Sur is planned to be constructed by the Merge 56 project and will connect the two segments between Torrey Santa Fe Road and Dormouse Road. It is striped with two through lanes in each direction, separated by a raised median, and left-turn channelization. The curb-to-curb width varies throughout the segment with a common measurement of 110 feet. Sidewalks and bike lanes are present and on-street parking is restricted. The posted speed limit is generally 45 MPH within the study area. From the SR-56 westbound ramps north to Carmel Valley Road, Camino Del Sur has an ultimate community plan classification of a 6-Lane Major Arterial. The Merge 56 project, a proposed development in the Rancho

Penasquitos area is currently proposing to downgrade the ultimate classification of Camino del Sur to a 2 lane facility between a portion of its frontage and the existing terminus near Dormouse Road.

Black Mountain Road is functionally classified as a 4-Lane Prime Arterial within the study area and extends southward from Carmel Valley Road to its terminus at Carroll Centre Road, where it continues as Kearny Villa Road. Within the study area, Black Mountain Road is generally striped with two through lanes per direction, separated by a raised median, and left-turn channelization. The roadway has sidewalks, bike lanes and a curb-to-curb width that varies throughout the segment with a common measurement of 90 feet. On-street parking is restricted. Within the study area, the speed limit is generally 45 MPH, with the exception of the segment between Twin Trails Drive and Oviedo Street, where it is 40 MPH. South of Mercy Road, the speed limit increases to 50 MPH. The roadway serves both residential and commercial uses. Black Mountain Road is built to its ultimate community plan classification of a 4-Lane Primary Arterial, with the exception of the segment from Twin Trails Drive to Mercy Road. The Rancho Peñasquitos Community Plan identifies this segment to become a 6-Lane Primary Arterial. This study analyzes the implications of this segment being maintained as four lanes instead of being widened to six lanes.

Carmel Mountain Road is functionally classified as a 4-Lane Major Arterial within the study area. It is generally an east-west roadway that extends from Via Panacea to Camino Del Norte, where it continues as Paseo Lucido. It is generally striped with two through lanes in each direction, with the exception of the segment from Paseo Montalban to Azuaga Street/SR-56 northbound ramps, which is striped with three eastbound lanes and two westbound lanes. A raised center median is generally present, along with left-turn channelization. The curb-to-curb width varies throughout the segment with a common measurement of 80 feet and the speed limit is generally 40 MPH. Sidewalks are present and the roadway is striped with bike lanes along most of its segments. On-street parking is restricted. Carmel Mountain Road south of Sundance Avenue to Via Panacea currently functions as a 2-Lane Collector with a 35 foot curb-to-curb width. Carmel Mountain Road is built to its ultimate community plan classification of a 4-Lane Major Arterial except for south of Sundance Avenue. An extension of Carmel Mountain Road is planned to be constructed by the Merge 56 project, and will extend from Via Panacea to the extended section of Camino Del Sur described above. The Merge 56 development project also looks to downgrade the ultimate classification of this extension portion from Sundance Avenue to extended section of Camino del Sur to a 2-Lane Collector.

Rancho Peñasquitos Boulevard, is functionally classified as a 4-Lane Major Arterial, generally spans an area between SR-56 and I-15. It begins at Carmel Mountain Road, where it bends eastward at the SR-56 southbound ramps, and terminates at I-15, where it continues as Poway Road. Sidewalks are present, bike lanes are absent, and the roadway is striped with two lanes per direction, separated by a raised median and left-turn channelization. The curb-to-curb width varies throughout the segment with a common measurement of 80 feet and the posted speed is 40 MPH. Rancho Peñasquitos Boulevard is built to its ultimate community plan classification of a 4-Lane Major Arterial.

Mercy Road is functionally classified as a 4-Lane Major Arterial from Black Mountain Road to the I-15 freeway ramps, where it continues as Scripps Poway Parkway. It is striped with two lanes per direction and divided by a raised median. The roadway provides sidewalks, bike lanes and left-turn channelization and prohibits on-street parking. The curb-to-curb width varies throughout the segment with a common measurement of 75 feet and the posted speed limit is 45 MPH traveling eastbound and 50 MPH traveling westbound. Mercy Road is built to its ultimate community plan classification of a 4-Lane Major Arterial.

Carmel Valley Road is functionally classified as a four lane Major Arterial from SR-56 to Chadamy Way and striped with one lane in each direction from Chadamy Way to Black Mountain Road. Carmel Valley Road runs primarily east/west within the northern half of Torrey Highlands, and extends all the way east to Camino del Norte. The roadway provides sidewalks and a raised median from SR-56 to Chadamy Way and provides bike lanes, left turn channelization and prohibits on-street parking throughout the study area. The curb-to-curb width varies throughout the segment with a common measurement of 100 feet and a posted speed limit of 55 mph. Carmel Valley Road's

ultimate classification is a 4-Lane Major Arterial with additional right-of-way for transit dedicated lanes.

A summary of other study area streets is provided in Table 3-1. Tables 3-2 and 3-3 present the operational performance of the roadway segments and intersections for the existing conditions. Additional details regarding specific existing peak-hour intersection operating conditions can be found on the analysis worksheets in Appendix C. Additionally, Appendix C denotes which intersections were run in analysis as coordinated system. These coordinated systems continue to run as coordinated in all future scenarios as well.

ROADWAY CAPACITY LOS

A detailed roadway capacity analysis was conducted per the methodology discussed in Chapter 2 for the Existing Conditions scenario. These results are found in Table 3-2.

INTERSECTION CAPACITY LOS

A detailed intersection capacity analysis was conducted per the methodology discussed in Chapter 2 for the Existing Conditions scenario. These are found in Table 3-3.

FREEWAY MAINLINE LOS

A detailed freeway mainline analysis was conducted to determine the study area freeway mainline LOS under existing conditions. Existing count volumes were provided by Caltrans for the year 2013. A summary of existing freeway mainline LOS is presented in Table 3-4. As shown in Table 3-4, two of the four study segments along SR-56 are operating at LOS E during the AM and/or PM peak hours. Study segments along I-15 are operating at LOS C or better during the peak hours. The detailed LOS analysis worksheet, including adjustment factors, is included in Appendix I.

FREEWAY INTERCHANGE ON-RAMP METERING DELAY

An on-ramp metering delay analysis was conducted for existing conditions. A summary of the analysis results is provided in Table 3-5. The ramp metering rates were obtained from Caltrans and are included in Appendix I and existing metering delay is shown in Table 3-6.

In addition, an Intersection Lane Vehicles (ILV) analysis of existing conditions was performed for controlled interchanges. The calculation worksheets are contained in Appendix N.

Table 3-1
Other Study Area Streets Summary

Roadway Name	Functional Classification	Lanes Per Direction	Curb-to-Curb Width	Posted Speed Limit	Raised Median	TWLTL	Left-Turn Channel.	Sidewalks	Bike Lanes
Sundance Avenue	Local	1	40 ft	25 mph				✓	
Twin Trails Drive (W-O Black Mtn Rd)	2-Lane Collector [1]	1	60 ft	30 mph		✓	✓	✓	✓
Twin Trails Drive (E-O Black Mtn Rd)	2-Lane Collector	1	50 ft	25-35 mph		✓	✓	✓	
Paseo Montalban (W-O Carmel Mtn Rd)	4-Lane Major	2	80 ft	40 mph	✓		✓	✓	✓
Fairgrove Lane	Local	1	40 ft	25 mph				✓	
Salmon River Road	Local	1	40-50 ft	30 mph		✓	✓	✓	
Park Village Road	4-Lane Major	2	80 ft	45 mph	✓		✓	✓	✓
Westview Parkway	4-Lane Collector	2	70 ft	45 mph		✓	✓	✓	

1. Community Plan recommended classification is 4-Lane Collector.

Table 3-2
Existing Roadway Segment Conditions

Segment Number and Name	Lanes/ Class	LOS E (Capacity)	Existing ADT	V/C	LOS
1. Camino Del Sur s/o Carmel valley Road	4PA	40,000	17,728	0.443	B
2. Camino Del Sur s/o Wolverine Way - Fallhaven Road	4PA	40,000	20,710	0.518	B
3. Camino Del Sur n/o SR-56 Westbound Ramps	4PA	40,000	25,921	0.648	C
4. Camino Del Sur s/o SR-56 Eastbound Ramps	4MA	40,000	9,818	0.245	A
5. Carmel Valley Road w/o Black Mountain Road	2C NF	10,000	10,489	1.049	F
6. Carmel Valley Road e/o Black Mountain Road	4MA	40,000	13,793	0.345	A
7. Black Mountain Road n/o Maler Road	4MA	40,000	12,303	0.308	A
8. Black Mountain Road s/o Oviedo Street	4MA	40,000	18,956	0.474	B
9. Black Mountain Road s/o Carmel Mountain Road	4MA	40,000	14,740	0.369	A
10. Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	4MA	40,000	14,315	0.358	A
11. Black Mountain Road s/o Twin Trails Drive	4MA	40,000	33,492	0.837	D
12. Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	4MA	40,000	30,567	0.764	D
13. Black Mountain Road n/o Park Village Road - Adolphia Street	4MA	40,000	35,443	0.886	E
14. Black Mountain Road n/o Canyonside Park Drive	4MA	40,000	30,380	0.760	D
15. Black Mountain Road bet. Mercy Road & Babuta Road	6PA	60,000	28,862	0.481	B
16. Black Mountain Road s/o Westview Parkway	6PA	60,000	22,214	0.370	A
17. Westview Parkway e/o Black Mountain Road	4C	30,000	6,099	0.203	A
18. Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	4MA	40,000	14,152	0.354	A
19. Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	4MA	40,000	21,907	0.548	C
20. Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	4MA	40,000	27,441	0.686	C
21. Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	4MA	40,000	28,120	0.703	C
22. Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	4MA	40,000	33,066	0.827	D
23. Poway Road e/o I-15 Northbound Ramps	6PA	60,000	45,045	0.751	C
24. Carmel Mountain Road s/o Sundance Avenue	2C NF	10,000	1,241	0.124	A
25. Carmel Mountain Road w/o Sparren Avenue	4MA	40,000	6,811	0.170	A
26. Carmel Mountain Road w/o Black Mountain Road	4MA	40,000	8,316	0.208	A
27. Sundance Avenue w/o War Bonnet Street*	-	-	1,884	-	-
28. Carmel Mountain Road e/o Freeport Road	4MA	40,000	11,328	0.283	A
29. Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	4MA	40,000	13,655	0.341	A
30. Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	4MA	40,000	25,071	0.627	C
31. Carmel Mountain Road e/o I-15 Northbound Ramps	6PA	60,000	44,953	0.749	C
32. Camino Del Sur n/o Park Village Road	4MA	40,000	1,185	0.030	A
33. Park Village Road e/o Camino Del Sur	4MA	40,000	8,430	0.211	A
34. Park Village Road w/o Black Mountain Road	4MA	40,000	17,546	0.439	B
35. Mercy Road bet. Chabola Road & Branicole Ln	4MA	40,000	14,279	0.357	A
36. Mercy Road n/o Alemania Road	4MA	40,000	19,851	0.496	B
37. Scripps Poway Parkway e/o I-15 Northbound Ramps	6PA	60,000	52,815	0.880	D

* Capacity for local residential street not specified in *San Diego Street Design Manual, July 2002*.

Abbreviations: 2C NF: 2 lane collector with no fronting property. 2MA: 2 lane Major Arterial. 4C: 4 lane Collector. 4MA: 4 lane Major Arterial. 4PA: 4 lane Prime Arterial. 6PA: 6 lane Prime Arterial.

Table 3-3
Existing Intersection Conditions

Intersection Number and Name	2014 Existing			
	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
1. Camino Del Sur/Carmel Valley Road	41.1	D	33.3	C
2. Camino Del Sur/Watson Ranch Road	10.3	B	9.4	A
3. Camino Del Sur/Wolverine Way - Fallhaven Road	25.3	C	17.9	B
4. Camino Del Sur/Torrey Meadows Drive	18.1	B	21.0	C
5. Camino Del Sur/Highlands Village Place	19.3	B	13.2	B
6. Camino Del Sur/SR-56 Westbound Ramps	15.6	B	16.3	B
7. Camino Del Sur/SR-56 Eastbound Ramps	15.9	B	23.4	C
8. Camino Del Sur/Torrey Santa Fe Road	13.8	B	15.8	B
9. Black Mountain Road/Carmel Valley Road	23.3	C	50.2	D
10. Black Mount Road/Maler Road	7.6	A	7.5	A
11. Black Mountain Road/Stargaze Avenue	15.7	B	15.4	B
12. Black Mountain Road/Oviedo Street	16.8	B	16.0	B
13. Black Mountain Road/Carmel Mountain Road	47.4	D	36.5	D
14. Black Mountain Road/Paseo Montalban	13.4	B	13.4	B
15. Black Mountain Road/Twin Trails Drive	43.2	D	38.8	D
16. Black Mountain Road/SR-56 Westbound Ramps	37.9	D	29.6	C
17. Black Mountain Road/SR-56 Eastbound Ramps	22.0	C	23.9	C
18. Black Mountain Road/Park Village Road - Adolphia Street	46.3	D	26.1	C
19. Black Mountain Road/Canyonside Park Drive	2.3	A	4.8	A
20. Black Mountain Road/Mercy Road	29.8	C	25.3	C
21. Black Mountain Road/Westview Parkway	13.4	B	16.1	B
22. Carmel Mountain Road/Sundevil Way	20.2	C	16.8	B
23. Carmel Mountain Road/Paseo Montalban	24.6	C	33.4	C
24. Carmel Mountain Road/SR-56 WB Ramps - Rancho Penasquitos Boulevard	41.9	D	34.3	C
25. Rancho Penasquitos Boulevard/SR-56 Eastbound Ramps - Azuaga Street	20.6	C	51.3	D
26. Rancho Penasquitos Boulevard/Calle De Las Rosas	10.1	B	10.0	A
27. Rancho Penasquitos Boulevard/Via Del Sud	4.5	A	4.3	A
28. Rancho Penasquitos Boulevard/Paseo Montril	13.5	B	14.6	B
29. Rancho Penasquitos Boulevard/I-15 Southbound Off-Ramp	7.9	A	9.4	A
30. Rancho Penasquitos Boulevard/I-15 Northbound Off-Ramp	10.9	B	14.9	B
31. Carmel Mountain Road/(West) Sundance Avenue	13.8	B	16.1	B
32. Carmel Mountain Road/Sedorus Street (All-way stop control)	7.5	A	7.4	A
33. Carmel Mountain Road/Entreken Way	21.3	C	13.4	B
34. Sparren Avenue/Carmel Mountain Road	24.1	C	24.0	C
35. Oviedo Street/Carmel Mountain Road	28.8	C	16.7	B
36. (East) Sundance Avenue/Carmel Mountain Road (Two-way stop control)*	18.4	C	9.9	A
37. Sundance Avenue/Twin Trails Drive (All-way stop control)	22.7	C	14.9	B
38. Penasquitos Post Office Driveway/Twin Trails Drive	18.2	B	26.7	C
39. Twin Trails Drive/Fairgrove Lane (All-way stop control)	8.0	A	9.0	A
40. Twin Trails Drive/Paseo Montalban	11.0	B	12.9	B
41. Salmon River Road/Paseo Montalban	13.6	B	15.1	B
42. Salmon River Road/Fairgrove Lane (All-way stop control)	8.0	A	8.8	A
43. Salmon River Road/Adolphia Street - Limar Way (All-way stop control)	7.5	A	7.9	A
44. Paseo Cardiel/Carmel Mountain Road	23.1	C	29.1	C
45. Freeport Road/Carmel Mountain Road	8.8	A	7.8	A
46. Stoney Creek Road/Carmel Mountain Road	10.5	B	3.6	A
47. Cuca Street - Caminata Deluz/Carmel Mountain Road	14.0	B	10.9	B
48. Penasquitos Drive/Carmel Mountain Road	28.9	C	28.1	C
49. I-15 Southbound Ramps/Carmel Mountain Road	18.2	B	25.3	C
50. I-15 Northbound Ramps/Carmel Mountain Road	21.9	C	27.3	C
51. Camino Del Sur/Park Village Road	24.5	C	19.3	B
52. Rumex Lane/Park Village Road	7.9	A	7.1	A
53. Ragweed Street/Park Village Road	15.9	B	16.1	B
54. Mercy Road/Kika Court	8.0	A	7.4	A
55. Alemania Road/Mercy Road	9.4	A	10.3	B
56. I-15 Southbound Ramps/Mercy Road	31.0	C	33.0	C
57. I-15 Northbound Ramps/Mercy Road - Scripps Poway Parkway	39.0	D	34.8	C

Signal Timing and Phasing Source - City of San Diego Timing Sheets - See Appendix B

* Worst case control delay and LOS shown.

Table 3-4
Existing Freeway Mainline LOS

Freeway Segment	Direction	# of Lanes	Hourly Capacity	ADT	Peak Hour Volume		V/C		LOS	
					AM	PM	AM	PM	AM	PM
SR-56										
West of Camino del Sur	WB	2 Mainline, 0 Auxiliary, 0 HOV	4700	65,000	4238	1559	0.902	0.332	D	A
	EB	2 Mainline, 0 Auxiliary, 0 HOV	4700		1625	4161	0.346	0.885	A	D
Camino del Sur to Black Mountain Rd	WB	2 Mainline, 0 Auxiliary, 0 HOV	4700	72,000	4695	1727	0.999	0.367	E	A
	EB	2 Mainline, 0 Auxiliary, 0 HOV	4700		1800	4609	0.383	0.981	A	E
Black Mountain Road to Rancho Penasquitos Blvd	WB	2 Mainline, 1 Auxiliary, 0 HOV	6500	76,000	4956	1823	0.762	0.280	C	A
	EB	3 Mainline, 0 Auxiliary, 0 HOV	7050		1900	4865	0.270	0.690	A	C
Rancho Penasquitos Blvd to I-15 Interchange	WB	2 Mainline, 0 Auxiliary, 0 HOV	4700	71,000	4630	1703	0.985	0.362	E	A
	EB	2 Mainline, 0 Auxiliary, 0 HOV	4700		1775	4545	0.378	0.967	A	E
I-15										
South of Mercy Road	NB	5 Mainline, 1 Auxiliary, 2 HOV	16910	249,000	12258	9034	0.725	0.534	C	B
	SB	5 Mainline, 1 Auxiliary, 2 HOV	16910		8997	12113	0.532	0.716	B	C
Mercy Road to Rancho Penasquitos Blvd	NB	5 Mainline, 1 Auxiliary, 2 HOV	16910	236,000	11618	8563	0.687	0.506	C	B
	SB	5 Mainline, 1 Auxiliary, 2 HOV	16910		8527	11481	0.504	0.679	B	C
Rancho Penasquitos Blvd to Ted Williams Pkwy	NB	5 Mainline, 0 Auxiliary, 2 HOV	15110	207,000	10190	7510	0.674	0.497	C	B
	SB	5 Mainline, 1 Auxiliary, 2 HOV	16910		7480	10070	0.442	0.596	B	B
Ted Williams Pkwy to Carmel Mountain Rd	NB	5 Mainline, 1 Auxiliary, 2 HOV	16910	229,000	11273	8309	0.667	0.491	C	B
	SB	5 Mainline, 1 Auxiliary, 2 HOV	16910		8274	11140	0.489	0.659	B	C
North of Carmel Mountain Rd	NB	5 Mainline, 1 Auxiliary, 2 HOV	16910	218,000	11694	7142	0.692	0.422	C	B
	SB	5 Mainline, 0 Auxiliary, 2 HOV	15110		5108	11678	0.338	0.773	A	C

Peak Hour Volume = (ADT)(K)(D)/(Truck Factor))

V/C = Peak Hour Volume / Capacity

Truck Source: 2013 Annual Average Daily Truck Traffic on the California State Highway System

ADT Source: 2013 Traffic Volumes on the California State Highway System

K/D Source: 2013 K and D Factors on the California State Highway System

Hourly Capacity Assumptions:

Mainline - 2350 vph; Auxiliary - 1800 vph; Managed -1680 vph; HOV - 1600 vph

Table 3-5
Existing Freeway Interchange Calculated On-Ramp Metering Delay

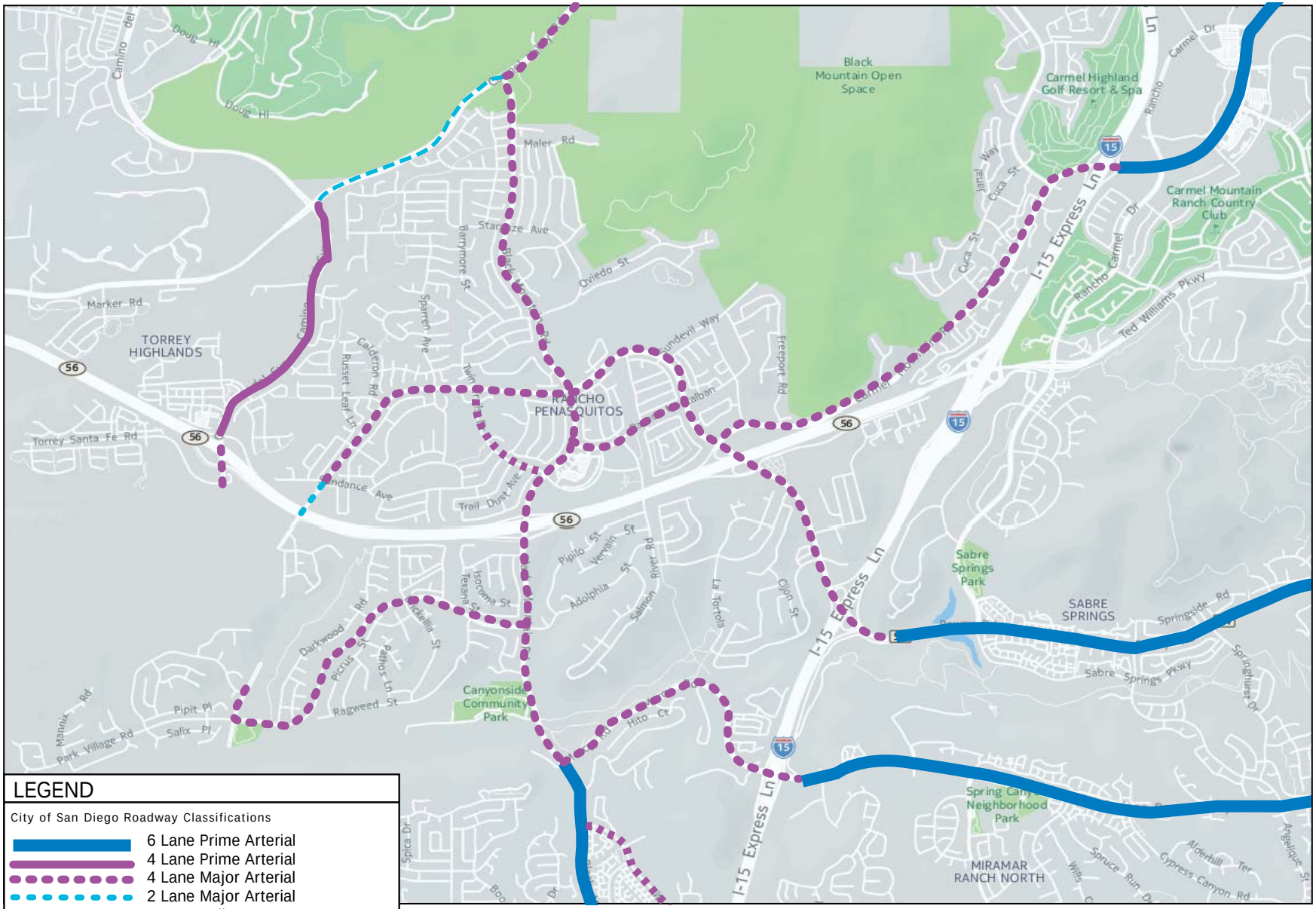
Location	# of Lanes	Meter Rate (veh/hr/ lane)	Combined Meter Rate (veh/hr)	Without Connection			
				Demand (veh/hr)	Excess Demand (veh/hr)	Delay (min)	Queue (ft)
AM Peak Hour							
Camino del Sur - SR56 WB Ramp	2	435	870	462	0	0	0
Camino del Sur - SR56 WB Ramp (HOV)	1	435	435	51	0	0	0
Black Mountain Road - SR56 WB Ramp	2	520	1,040	1,341	301	17	8,729
Black Mountain Road - SR56 WB Ramp (HOV)	1	520	520	149	0	0	0
Rancho Penasquitos - SR56 WB Ramp	1	600	600	757	157	16	4,553
Carmel Mountain Road - I15 SB Ramp	2	367	734	773	39	3	1,134
Carmel Mountain Road - I15 SB Ramp (HOV)	1	367	367	86	0	0	0
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	2	492	984	1,470	486	30	14,094
Rancho Penasquitos - I15 SB Ramp - EB->SB	2	492	984	785	0	0	0
Mercy Road - I15 SB Ramp	2	420	840	1,089	249	18	7,221
Mercy Road - I15 SB Ramp (HOV)	1	420	420	121	0	0	0
PM Peak Hour							
Camino del Sur - SR56 EB Ramp	2	480	960	917	0	0	0
Camino del Sur - SR56 EB Ramp (HOV)	1	480	480	102	0	0	0
Black Mountain Road - SR56 EB Ramp	2	600	1,200	651	0	0	0
Black Mountain Road - SR56 EB Ramp (HOV)	1	600	600	72	0	0	0
Rancho Penasquitos - SR56 EB Ramp	2	300	600	194	0	0	0
Carmel Mountain Road - I15 SB Ramp	2	473	946	1,034	88	6	2,555
Carmel Mountain Road - I15 SB Ramp (HOV)	1	473	473	115	0	0	0
Carmel Mountain Road - I15 NB Ramp	2	463	926	723	0	0	0
Carmel Mountain Road - I15 NB Ramp (HOV)	1	463	463	80	0	0	0
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	2	576	1,152	849	0	0	0
Rancho Penasquitos - I15 SB Ramp - EB->SB	2	576	1,152	781	0	0	0
Rancho Penasquitos - I15 NB Ramp - WB->NB	1	335	335	430	95	17	2,755
Rancho Penasquitos - I15 NB Ramp - Loop EB->NB	1	335	335	130	0	0	0
Mercy Road - I15 SB Ramp	2	406	812	1,177	365	27	10,591
Mercy Road - I15 SB Ramp (HOV)	1	406	406	131	0	0	0
Mercy Road - I15 NB Ramp	2	270	540	950	410	46	11,902
Mercy Road - I15 NB Ramp (HOV)	1	270	270	106	0	0	0

Source: Caltrans January 2015
Meter rate is based on the most restrictive meter rate provided by Caltrans, see Appendix C
HOV demand is equal to 10% of Total Demand
Total Demand onto all lanes of each Freeway Ramp is found in the vehicle turning movements in Figures 3-4 and 3-5
Combined Meter Rate = (Meter Rate per Lane) * (# of Lanes)
Excess Demand = (Demand * # of lanes) -(Combined Meter Rate); if Excess Demand <0, then Excess Demand = 0
Delay = Excess Demand / Combined Meter Rate
Queue = Excess Demand * 29 ft/vehicle

Table 3-6
Existing Freeway Interchange Observed On-Ramp Metering Delay

Ramp Location	Date	Time	# of lanes	Max Observed Queue (Veh / Ln)	Max Observed Delay (min)	Observed Queue Length (ft)	Calculated Flow Rate (veh / hr / lane)
AM Peak Hour							
Camino del Sur - SR56 WB Ramp	6/17/15	7:50 AM	2-SOV, 1-HOV	4	0.2	116.0	421
Black Mountain Road - SR56 WB Ramp	6/17/15	7:28 AM	2-SOV, 1-HOV	15	0.6	435.0	529
Rancho Penasquitos - SR56 WB Ramp	6/17/15	7:05 AM	1-SOV	8	0.5	232.0	900
Carmel Mountain Road - I15 SB Ramp	6/17/15	7:45 AM	2-SOV, 1-HOV	10	0.5	290.0	436
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	6/17/15	7:30 AM	2-SOV	25	1.9	725.0	391
Rancho Penasquitos - I15 SB Ramp - EB->SB	6/17/15	7:40 AM	2-SOV	12	0.7	348.0	514
Mercy Road - I15 SB Ramp	6/17/15	8:10 AM	2-SOV, 1-HOV	12	0.4	348.0	600
PM Peak Hour							
Camino del Sur - SR56 EB Ramp	6/17/15	5:00 PM	2-SOV, 1-HOV	8	0.2	232.0	736
Black Mountain Road - SR56 EB Ramp	6/17/15	4:48 PM	2-SOV, 1-HOV	4	0.1	116.0	736
Rancho Penasquitos - SR56 EB Ramp	6/17/15	4:53 PM	1-SOV	4	0.2	116.0	1,200
Carmel Mountain Road - I15 SB Ramp	6/17/15	5:00 PM	2-SOV, 1-HOV	8	0.4	232.0	436
Carmel Mountain Road - I15 NB Ramp	6/17/15	5:10 PM	2-SOV, 1-HOV	8	0.4	232.0	436
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	6/17/15	4:55 PM	2-SOV	9	0.3	261.0	948
Rancho Penasquitos - I15 SB Ramp - EB->SB	6/17/15	5:20 PM	2-SOV	4	0.3	116.0	818
Rancho Penasquitos - I15 NB Ramp - WB->NB	6/17/15	5:08 PM	1-SOV	13	1.9	377.0	419
Rancho Penasquitos - I15 NB Ramp - Loop EB->NB	6/17/15	5:33 PM	1-SOV	3	0.4	87.0	439
Mercy Road - I15 SB Ramp	6/17/15	5:44 PM	2-SOV, 1-HOV	13	1.2	377.0	218
Mercy Road - I15 NB Ramp	6/17/15	4:45 PM	2-SOV, 1-HOV	11	0.6	319.0	387

Meter Rate = Observed in Field, see Appendix I
SOV = Single Occupancy Vehicle Lane
HOV = High Occupancy Vehicle Lane



LEGEND

City of San Diego Roadway Classifications

- 6 Lane Prime Arterial
- 4 Lane Prime Arterial
- 4 Lane Major Arterial
- 2 Lane Major Arterial
- 4 Lane Collector
- 2 Lane Collector

Figure 3-1
Existing Roadway Classification

N
Not To Scale

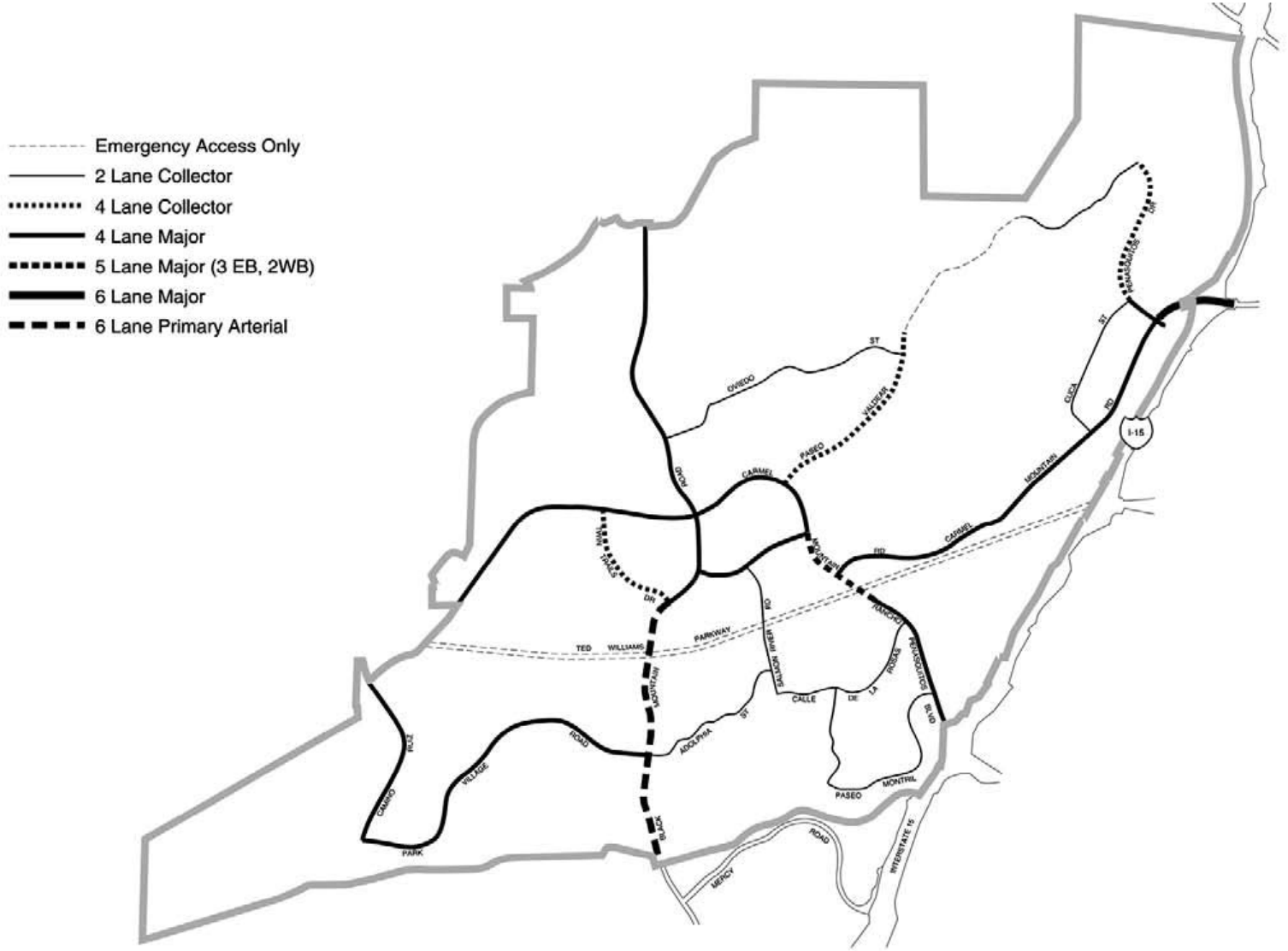
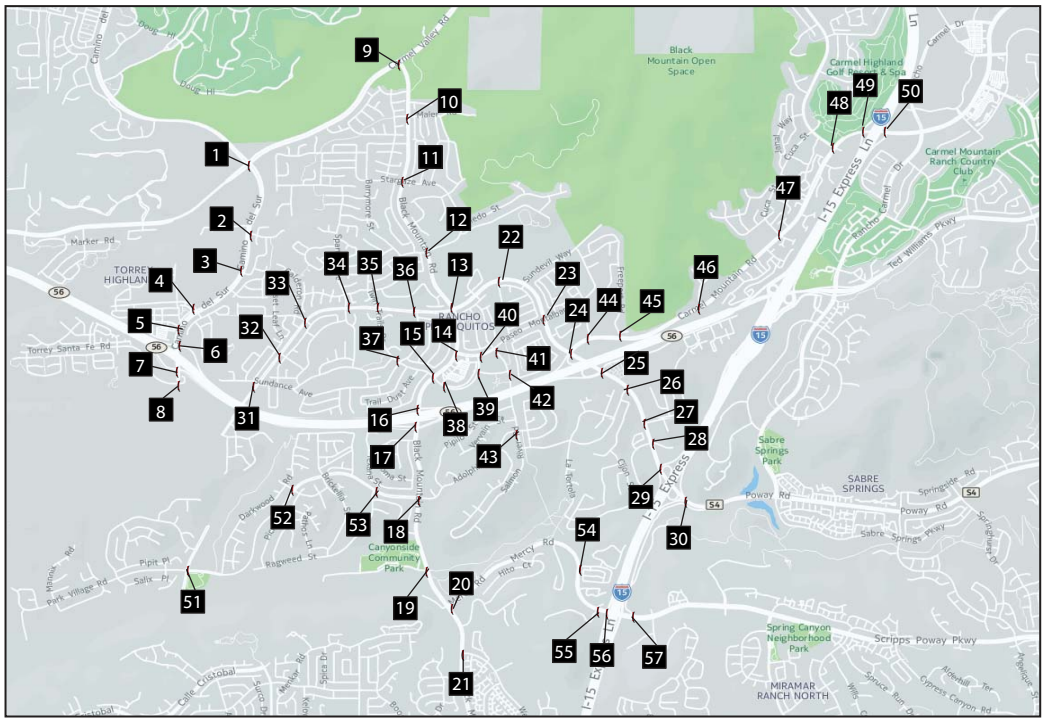
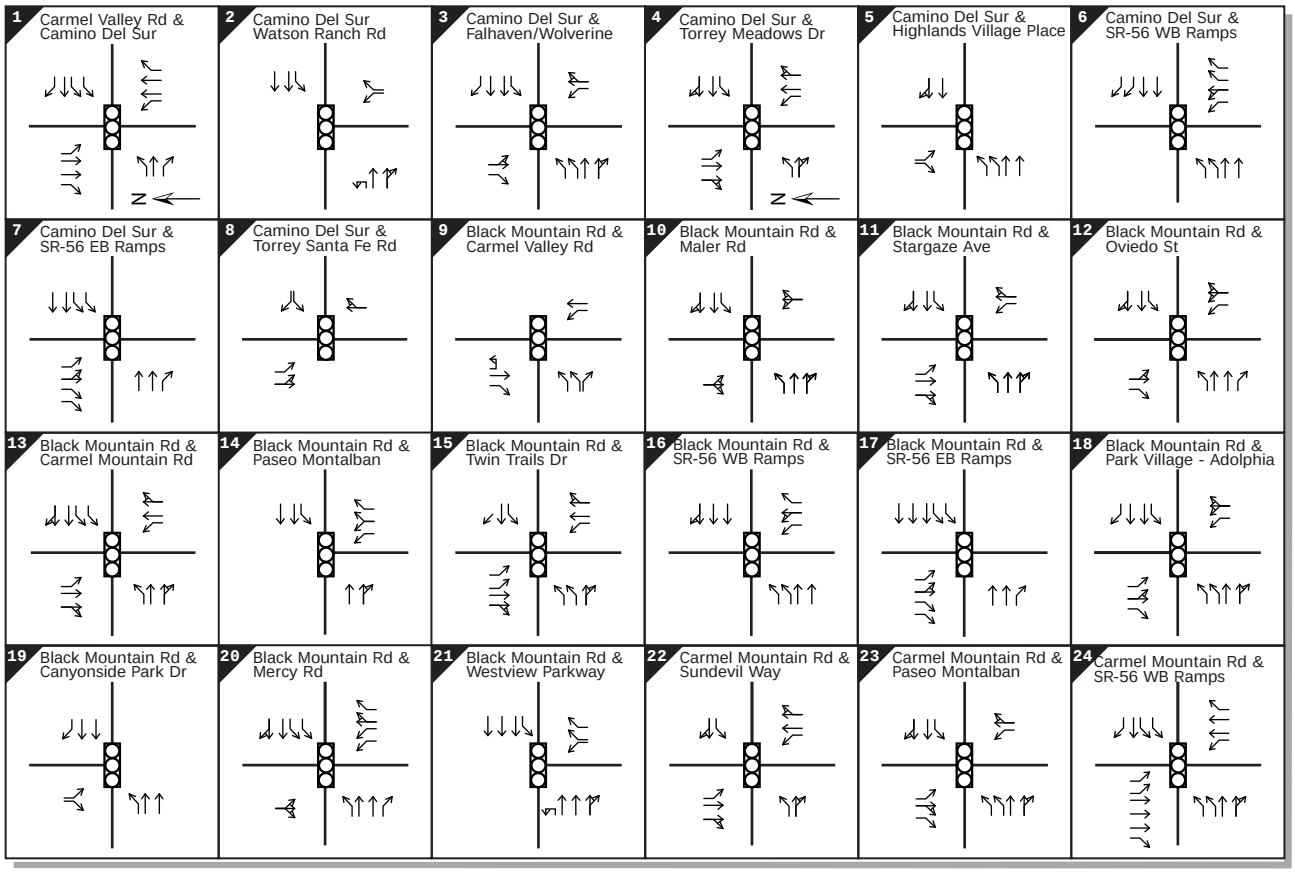


Figure 3-1b
Ultimate Street Classifications per Rancho Penasquitos Community Plan





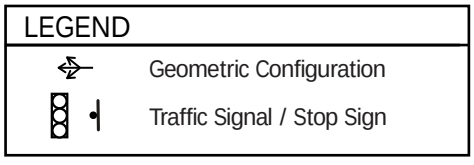


Figure 3-2
Existing Circulation Network

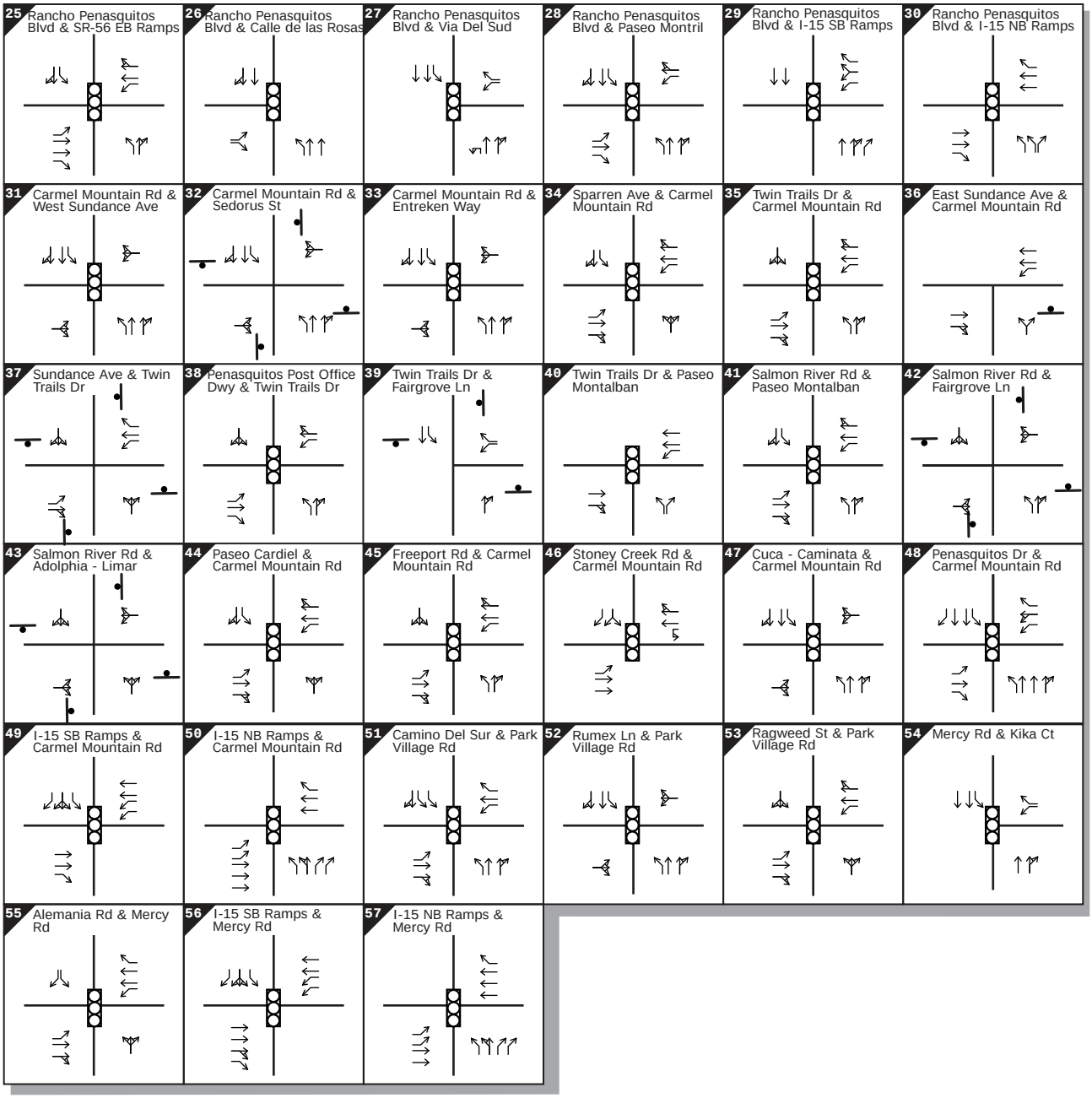


Figure 3-2 cont.
Existing Circulation Network

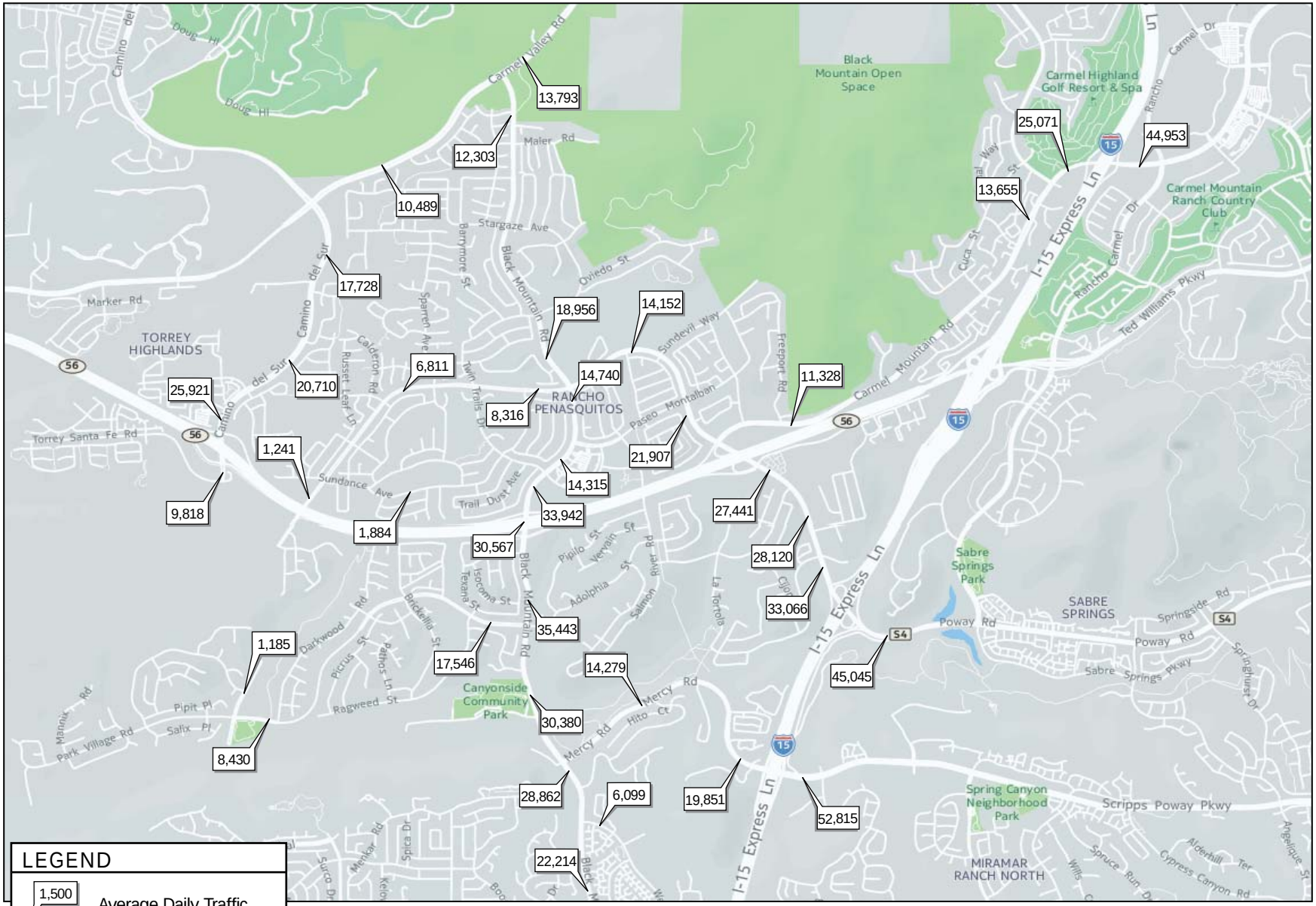
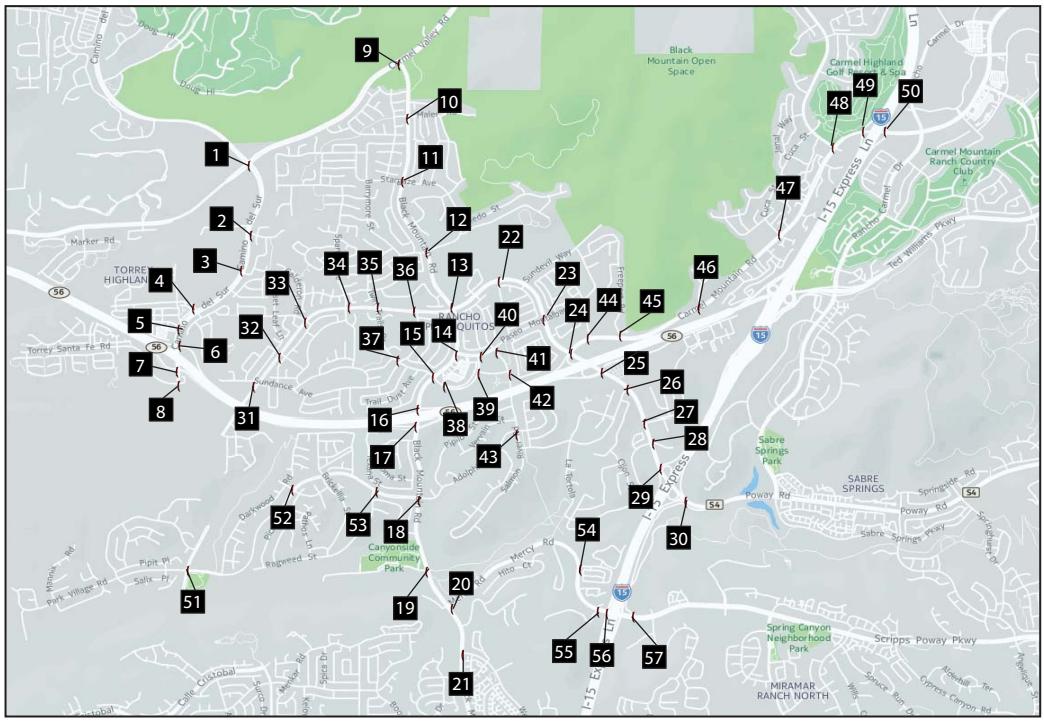
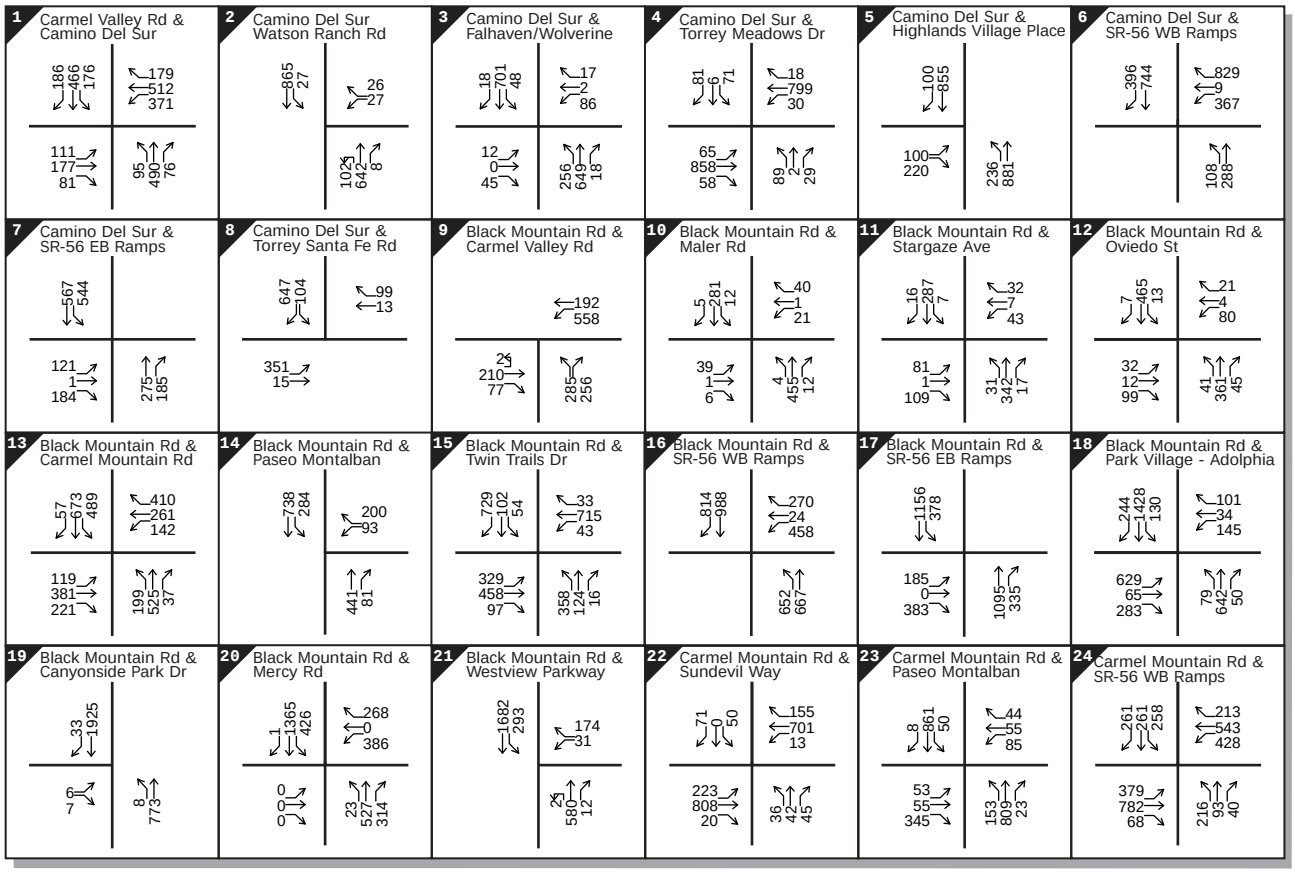


Figure 3-3
Existing Daily Roadway Segment Volumes

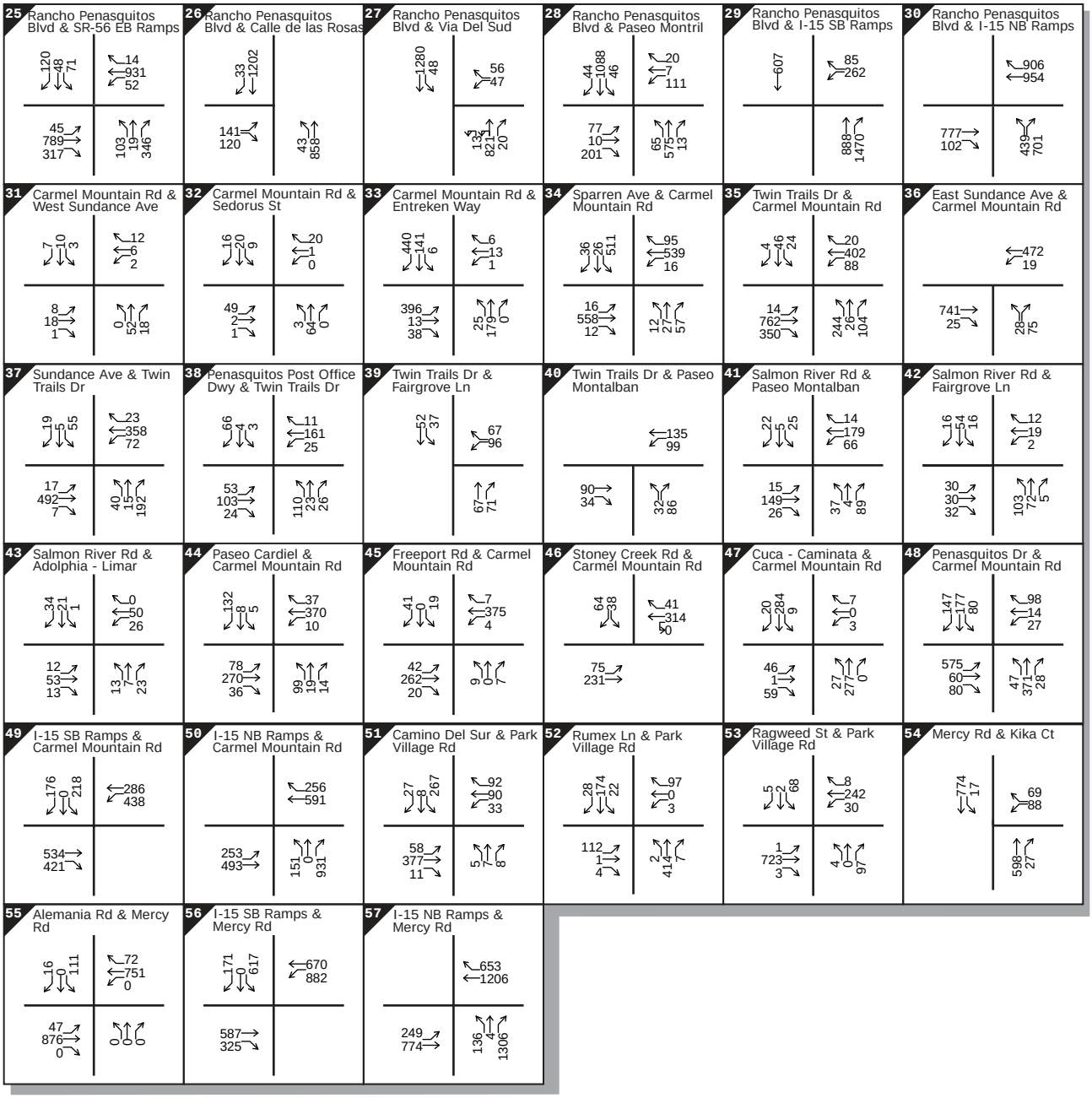




LEGEND

10 AM Peak Hour Traffic

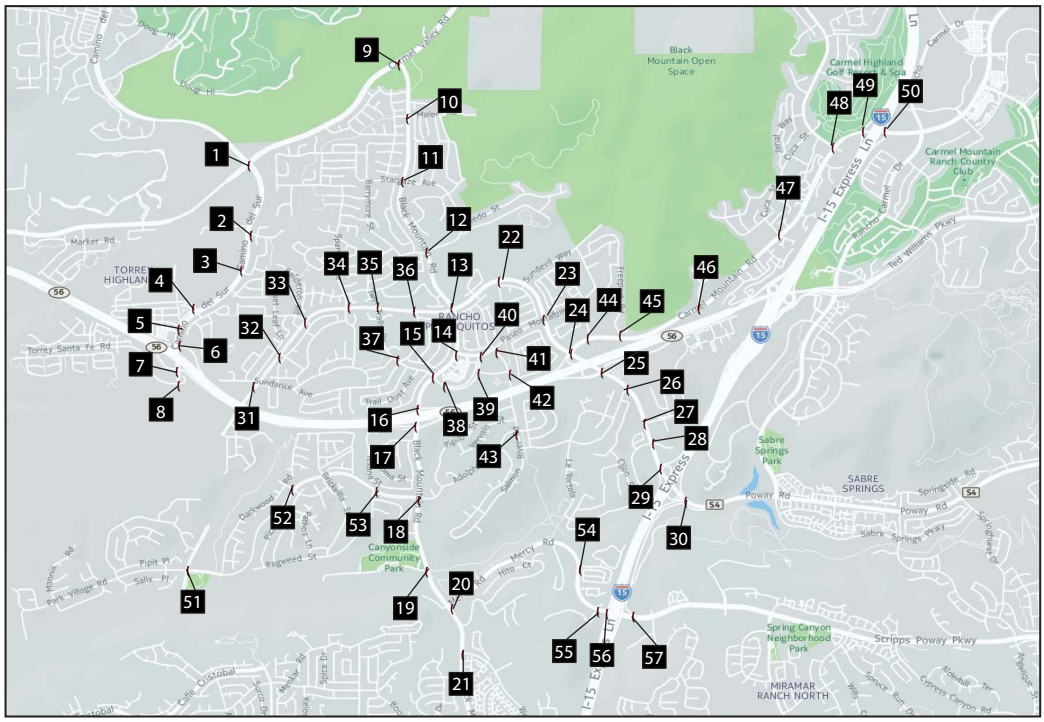
Figure 3-4
Existing AM Peak Hour Intersection Volumes

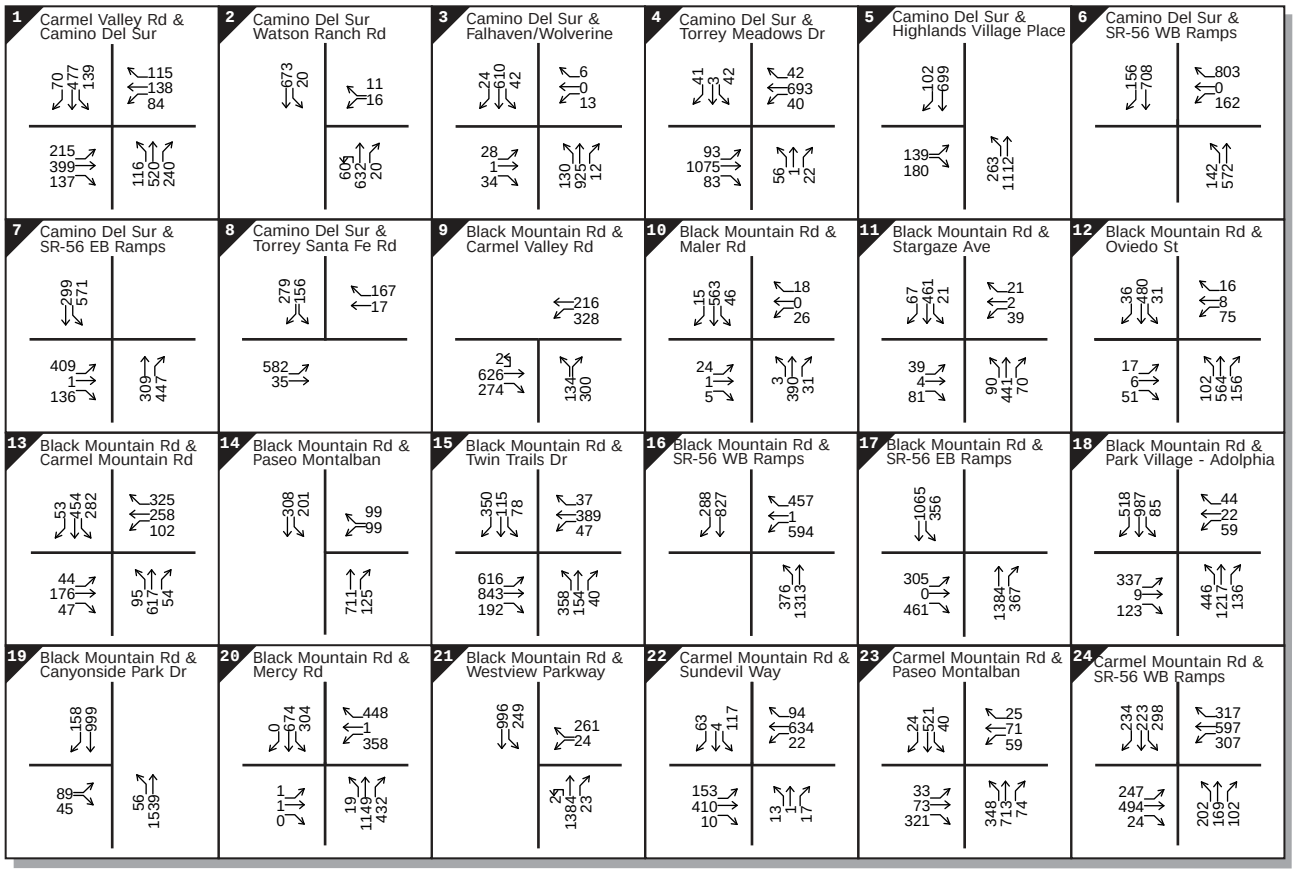


LEGEND

10 AM Peak Hour Traffic

Figure 3-4 cont.
Existing AM Peak Hour Intersection Volumes

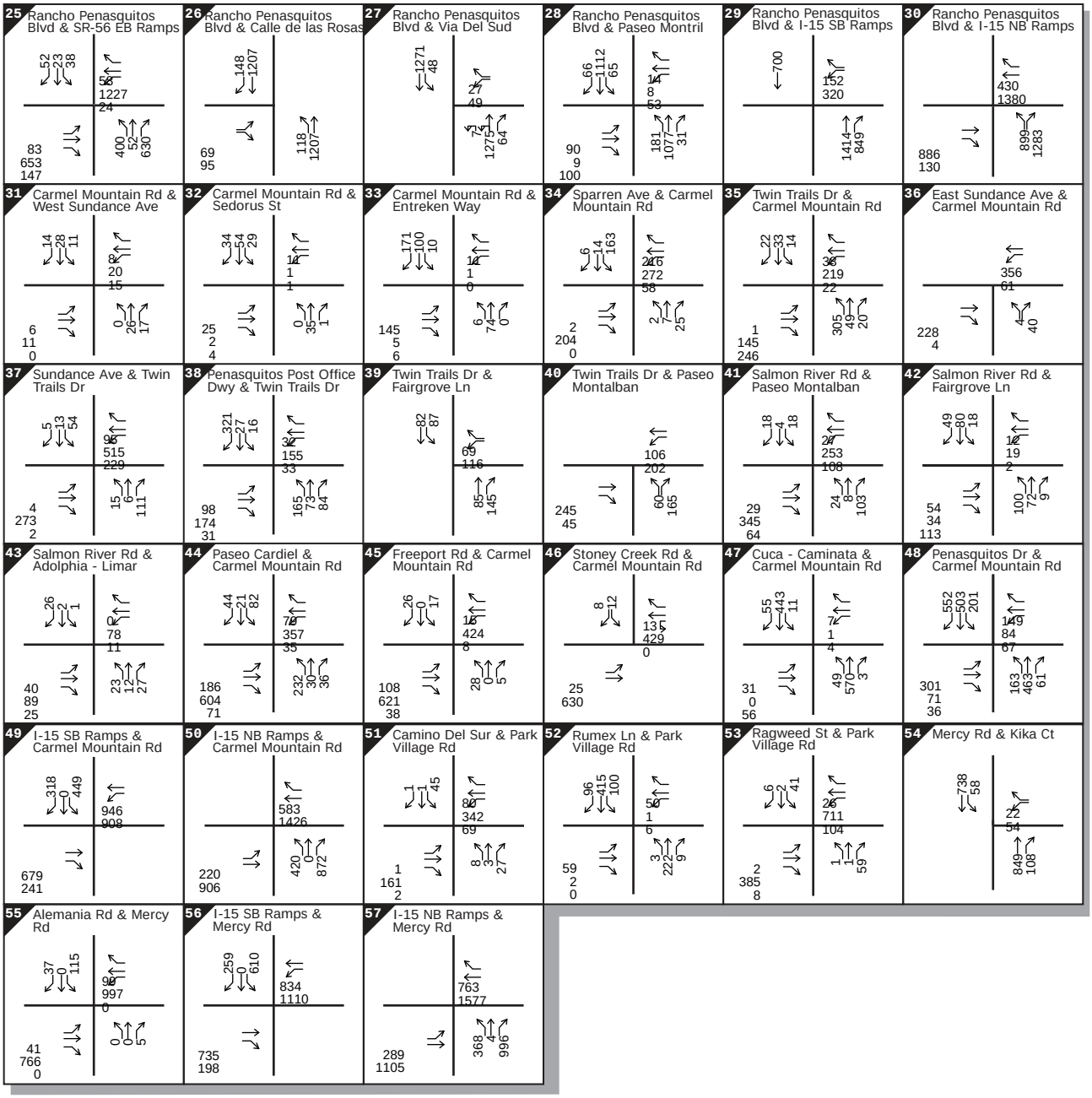




LEGEND

10 PM Peak Hour Traffic

Figure 3-5
Existing PM Peak Hour Intersection Volumes



LEGEND

10 PM Peak Hour Traffic

Figure 3-5 cont.
Existing PM Peak Hour Intersection Volumes

CHAPTER 4
HORIZON YEAR CONDITIONS

As the remaining phases of development of the Rancho Peñasquitos community and neighboring communities would be intermittent between the existing year (2014) and 2050, with no specific phasing timelines, a Near-Term analysis was not considered applicable for this study. Therefore, this study focused on horizon year conditions utilizing long-range traffic volume forecasts for the year 2050.

HORIZON YEAR TRAFFIC VOLUMES

Long-range traffic growth is associated with land development, land use changes, increases in economic activity, and changes in demographics. For the study area, horizon year traffic volumes on the roadway network were estimated based on SANDAG's daily traffic volume forecasts. SANDAG's most current calibrated and validated base model was used for the base year and their 2050 model used for the horizon year, the latter reflecting complete build-out of Black Mountain Ranch and adjacent subareas. This 2050 model incorporates the updated land use/socio-economic projections and planned/programmed transportation improvements and changes for the region. The land use/socio-economic projections were augmented by the inclusion of three cumulative projects that are proposing Community Plan Amendments, described in Table 4-1.

Table 4-1
Cumulative Projects

Project Name	Location	Change in ADT	Approved?
Merge 56 (CPA) (19,500 daily trips to 19,040 trips)	Torrey Highlands/ Subarea IV	-459	No
Rhodes Crossing (CPA) (14 SFU TO 260 MDU)	Torrey Highlands/ Subarea IV	2,740	No
Kilroy Commercial Office (CPA)	Torrey Highlands/ Subarea IV	9,000	No

Horizon year daily volume forecasts were provided for two conditions: Without Project, which assumed the subject Black Mountain Road segment as a 6-Lane Primary Arterial, and With Project, which assumed the subject Black Mountain Road segment as a 4-Lane Major. The incremental differences in volumes and growth percentages between the two years, 2008 and 2050, both Without Project and With Project, were determined for the roadway network segments in common. These volume increments and growth percentages were over a time frame of 42 years, whereas the time frame for this study is 36 years, from 2014 to 2050. An adjustment factor of 0.857 (i.e., ratio of 36 / 42) was applied to the volume increments and growth percentages for the Without Project and With Project conditions to make them consistent with the 2014 - 2050 time frame. These adjusted daily volume increments and growth percentages were generally applied to the 2014 daily traffic count volumes of the 37 study segments, resulting in Without Project and With Project segment daily volumes for the horizon year. The resulting Without Project and With Project volumes were examined for reasonableness and also consistency with volumes at nearby study locations. At locations where volumes were found to grow negatively into the future per the models, we rounded up from existing to ensure zero negative growth into the future. An exception to this procedure was made along Rancho Peñasquitos Boulevard in the 6-lane 2050 scenario. At this location under this condition, Rancho Peñasquitos was allowed to have negative growth as the

model suggested, attributed to the increased volumes on the 6-lane configured Black Mountain Road. Segment growth rates, models and segment adjustments are provided in Appendix E.

The same SANDAG 2008, 2050 Without Project and 2050 With Project models were also used to estimate Without Project and With Project peak-hour turning movement volumes at the study intersections for the horizon year. The 2050 daily volumes were compared to the 2008 daily volumes to identify areas adjacent to or near study intersections showing negligible or no increase in volumes. These areas were further examined to see whether development within them appeared essentially completed. If so, it was reasoned that the turning movement volumes to and from the study intersections directly serving these areas would remain unchanged or increase only nominally.

Where the comparison between the 2050 and 2008 daily volumes showed meaningful increases, it was assumed that the percentage increases were also indicative of approximately the same increases in the peak-hour turning movement volumes at the adjacent or nearby study intersections. The segment growth factors described above along with additional area specific growth factors were applied to the estimation the future peak-hour turning movement volumes. As with the estimation of future daily volumes, the factor of 0.857 was applied to the growth factors to adjust for the time frame of 2014 to 2050, rather than 2008 to 2050. The adjusted growth factors were then applied to the 2014 peak-hour traffic count volumes of the adjacent or nearby study intersections, as appropriate, to estimate the Without Project and With Project peak-hour turning movement volumes for the horizon year.

HORIZON YEAR CIRCULATION NETWORK

The SANDAG transportation models used to develop the above traffic volume forecasts included horizon year improvements and changes to the circulation network in the Rancho Peñasquitos area. The model assumed two scenarios for the subject segment of Black Mountain Road between Twin Trails Drive and Mercy Road, one with the segment as a 6-Lane Primary Arterial (Without Project condition) and one with the segment as a 4-Lane Major (With Project condition). Both of these scenarios also include additional circulation network changes that were listed in Table 4-2. The horizon year roadway geometry and control conditions are shown in Figure 4-1 and 4-2.

The operational performance of the study segments and intersections for the horizon year, Without Project and With Project, are presented in Table 4-3 through Table 4-8. Figure 4-2 through 4-8 show the horizon year study segment and intersection volumes for the Without Project and With Project conditions. Details regarding horizon year operating conditions for each intersection can be found in the capacity analysis worksheets in Appendices F (With Project scenario) and G (Without Project scenario).

Table 4-2
Horizon Year (2050) Circulation Network Improvements/Changes

Roadway Segment and Intersection Locations	Improvement/Change	Project Source	Completion Date
Camino Del Sur			
From Carmel Valley Road to SR-56 Westbound Ramps	Widen from 4PA to 6MA	Torrey Highlands PFFP Project # T-2.2	Phase 3 @ 2,700 EDU of T.H. PFFP
From Torrey Santa Fe Road to Park Village Road	Construct road, modeled as 4MA, Merge 56 proposes to downgrade from 4MA to 2C	Torrey Highlands PFFP Project # T-3.1 A&B Rancho Penasquitos PFFP Project # T-4B	Phase 4 @3,610 EDU of T.H. PFFP
Carmel Valley Road			
From west of Camino Del Sur	Widen from 2C NF, 2MA to 4MA	Torrey Highlands PFFP Project # T-4.3 & T-4.4	Phase 3 @ 2,700 EDU of T.H. PFFP
Carmel Mountain Road			
From Via Panacea to Camino Del Sur	Construct road, modeled as 2C, Merge 56 proposes to downgrade classification from 4MA to 2C	Torrey Highlands PFFP Project # T-5.2	Phase 4 @3,610 EDU of T.H. PFFP
Carmel Mountain Road/Sedorus Street Intersection	Upgrade from AWSC to Signalized	K-B Homes Project Feature	Part of Project
Black Mountain Road			
From Twin Trails Drive to Mercy Road	Widen from 4MA to 6PA (Without Project Scenario)	Black Mountain Ranch PFFP Project #T-57	Phase 3 @4,270 EDU of B.M.R. PFFP
SR-56			
From I-5 to Ted Williams Parkway	Widen from 4 lanes to 6 lanes	Caltrans	2050 in Regional Plan
From SR-56 to I-5 North	Construct Fly-over ramps to I-5N	Caltrans	2035 in Regional Plan
SR-56 On-Ramps at Camino del Sur	Construct cloverleaf on-ramp loops	Torrey Highlands PFFP Project #T-1.3	Phased

Abbreviations: 2C NF: 2 lane collector with no fronting property. 2MA: 2 lane Major Arterial. 4MA: 4 lane Major Arterial. 4PA: 4 lane Prime Arterial. 6MA: 6 lane Major Arterial. 6PA: 6 lane Prime Arterial.

HORIZON YEAR TRAFFIC ANALYSIS AND IMPACTS

Significant traffic impacts due to volume changes associated with the Project were determined as described in Chapter 2. As can be seen in Table 4-5, significant segment impacts were found for Segment 11, Black Mountain Road south of Twin Trails Drive, and for Segment 13, Black Mountain Road north of Park Village Road-Adolphia Street. Segment 11 operates with a V/C ratio of 0.634 and an LOS C under the Without Project condition and with a V/C ratio of 0.939 and an LOS E under the With Project condition. In addition, Segment 13 operates with a V/C ratio of 0.732 and an LOS C under the Without Project condition and with a V/C ratio of 0.886 and an LOS E under

the With Project condition. These operating conditions are considered "significant impacts" according to the City's criteria.

As can be seen in Table 4-6, a significant intersection impact was identified during the AM peak hour at Intersection 37, Sundance Avenue and Twin Trails Drive. This intersection is an all-way stop-controlled intersection and operates with an average delay of 38.8 seconds and an LOS E under the Without Project condition and an average delay of 46.4 seconds and an LOS E under the With Project condition. This 7.6 second difference along with an LOS E qualifies as a significant impact.

Table 4-8 presents the results of the freeway mainline analysis conducted for horizon year conditions. The volumes, peak hour factors, directional factors, and truck percentages were obtained from Caltrans and compiled into Appendix I. One significant freeway mainline impacts was found within the study area during this analysis. The freeway mainline significant impact was found in the PM peak hour on eastbound SR-56 between Camino del Sur and Black Mountain Road.

It should be noted that some freeway mainline segments had V/C ratios that improved due to the project. This phenomenon occurs to changes in anticipated traffic patterns reflected in SANDAG's 2050 scenario models. Generally, the model runs prepared by SANDAG for the two scenarios show a slight shift of traffic in the future when Black Mountain Road is limited to four lanes in the future. With a lower capacity on Black Mountain Road in the future as the result of being held to four, rather than six, lanes traffic somewhat increases on two bypass routes. Those routes consist of portions of I-15 between Mercy Road and SR56 and SR56 between I-15 and Black Mountain Road. The initial future model volumes tend to have around 1,000 to 2,000 ADT more traffic on these two freeways within these limits, and beyond those limits the differences are minimal. Similarly, the portion of Penasquitos Blvd to the west of I-15 and northerly to SR56 also has about 1,000 more ADT on the four lane alternative for Black Mountain Road presumably due to bypass traffic that otherwise would have been using Black Mountain Road.

An on-ramp metering delay analysis was conducted for horizon year conditions. The results of this analysis are presented in Table 4-9. The most restrictive ramp metering rates in Appendix I were assumed for this analysis. One ramp metering delay impact was also found within the study area. In the AM peak hour, the Rancho Penasquitos Blvd – SR56 WB on ramp is anticipated to experience an increase in delay of 3 minutes from about 21 minutes to 24 minutes, resulting in a significant impact.

An ILV analysis of horizon year conditions was also performed for controlled interchanges. The calculation worksheets are included in Appendix N.

Figure 4-9 shows the locations where significant impacts occur and whether or not mitigations are provided.

Table 4-3
Horizon Year Without Project (Black Mountain Rd as 6 Lanes)
Roadway Segment Conditions

Segment Number and Name	Lanes/ Class	LOS E (Capacity)	W/O Project ADT	V/C	LOS
1. Camino Del Sur s/o Carmel valley Road	6MA	50,000	25,903	0.518	B
2. Camino Del Sur s/o Wolverine Way - Fallhaven Road	6MA	50,000	30,260	0.605	C
3. Camino Del Sur n/o SR-56 Westbound Ramps	6MA	50,000	37,874	0.757	C
4. Camino Del Sur s/o SR-56 Eastbound Ramps	6MA	50,000	26,700	0.534	B
5. Carmel Valley Road w/o Black Mountain Road	4MA	40,000	17,223	0.431	B
6. Carmel Valley Road e/o Black Mountain Road	4MA	40,000	22,648	0.566	C
7. Black Mountain Road n/o Maler Road	4MA	40,000	18,262	0.457	B
8. Black Mountain Road s/o Oviedo Street	4MA	40,000	23,562	0.589	C
9. Black Mountain Road s/o Carmel Mountain Road	4MA	40,000	18,353	0.459	B
10. Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	4MA	40,000	17,824	0.446	B
11. Black Mountain Road s/o Twin Trails Drive	6PA	60,000	38,028	0.634	C
12. Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	6PA	60,000	34,707	0.578	B
13. Black Mountain Road n/o Park Village Road - Adolphia Street	6PA	60,000	43,949	0.732	C
14. Black Mountain Road n/o Canyonside Park Drive	6PA	60,000	40,431	0.674	C
15. Black Mountain Road bet. Mercy Road & Babuta Road	6PA	60,000	38,411	0.640	C
16. Black Mountain Road s/o Westview Parkway	6PA	60,000	29,564	0.493	B
17. Westview Parkway e/o Black Mountain Road	4C	30,000	8,854	0.295	A
18. Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	4MA	40,000	14,661	0.367	A
19. Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	4MA	40,000	22,696	0.567	C
20. Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	4MA	40,000	26,218	0.655	C
21. Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	4MA	40,000	26,867	0.672	C
22. Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	4MA	40,000	31,592	0.790	D
23. Poway Road e/o I-15 Northbound Ramps	6PA	60,000	53,230	0.887	D
24. Carmel Mountain Road s/o Sundance Avenue	4MA	40,000	9,784	0.245	A
25. Carmel Mountain Road w/o Sparren Avenue	4MA	40,000	8,895	0.222	A
26. Carmel Mountain Road w/o Black Mountain Road	4MA	40,000	10,400	0.260	A
27. Sundance Avenue w/o War Bonnet Street*	-	-	2,500	-	-
28. Carmel Mountain Road e/o Freeport Road	4MA	40,000	14,425	0.361	A
29. Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	4MA	40,000	17,389	0.435	B
30. Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	4MA	40,000	29,444	0.736	C
31. Carmel Mountain Road e/o I-15 Northbound Ramps	6PA	60,000	52,794	0.880	D
32. Camino Del Sur n/o Park Village Road	4MA	40,000	10,700	0.268	A
33. Park Village Road e/o Camino Del Sur	4MA	40,000	12,600	0.315	A
34. Park Village Road w/o Black Mountain Road	4MA	40,000	17,757	0.444	B
35. Mercy Road bet. Chabola Road & Branicole Ln	4MA	40,000	18,662	0.467	B
36. Mercy Road n/o Alemania Road	4MA	40,000	23,662	0.592	C
37. Scripps Poway Parkway e/o I-15 Northbound Ramps	6PA	60,000	63,408	1.057	F

* Capacity for local residential street not specified in *San Diego Traffic Impact Study Manual, July 2008*.

Abbreviations: 4C: 4 lane Collector. 4MA: 4 lane Major Arterial. 6MA: 6 lane Major Arterial. 6PA: 6 lane Prime Arterial.

Table 4-4
Horizon Year With Project (Black Mountain Rd as 4 Lanes)
Roadway Segment Conditions

Segment Number and Name	Lanes/ Class	LOS E (Capacity)	W/ Project ADT	V/C	LOS
1. Camino Del Sur s/o Carmel valley Road	6MA	50,000	25,250	0.505	B
2. Camino Del Sur s/o Wolverine Way - Fallhaven Road	6MA	50,000	29,497	0.590	C
3. Camino Del Sur n/o SR-56 Westbound Ramps	6MA	50,000	36,919	0.738	C
4. Camino Del Sur s/o SR-56 Eastbound Ramps	6MA	50,000	27,400	0.548	B
5. Carmel Valley Road w/o Black Mountain Road	4MA	40,000	17,349	0.434	B
6. Carmel Valley Road e/o Black Mountain Road	4MA	40,000	22,814	0.570	C
7. Black Mountain Road n/o Maler Road	4MA	40,000	19,204	0.480	B
8. Black Mountain Road s/o Oviedo Street	4MA	40,000	23,472	0.587	C
9. Black Mountain Road s/o Carmel Mountain Road	4MA	40,000	17,709	0.443	B
10. Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	4MA	40,000	17,198	0.430	B
11. Black Mountain Road s/o Twin Trails Drive	4MA	40,000	37,540	0.939	E
12. Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	4MA	40,000	34,261	0.857	D
13. Black Mountain Road n/o Park Village Road - Adolphia Street	4MA	40,000	35,500	0.888	E
14. Black Mountain Road n/o Canyonside Park Drive	4MA	40,000	34,677	0.867	D
15. Black Mountain Road bet. Mercy Road & Babuta Road	6PA	60,000	32,944	0.549	B
16. Black Mountain Road s/o Westview Parkway	6PA	60,000	25,356	0.423	B
17. Westview Parkway e/o Black Mountain Road	4C	30,000	7,197	0.240	A
18. Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	4MA	40,000	14,819	0.370	A
19. Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	4MA	40,000	22,940	0.574	C
20. Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	4MA	40,000	27,500	0.688	C
21. Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	4MA	40,000	28,200	0.705	C
22. Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	4MA	40,000	33,100	0.828	D
23. Poway Road e/o I-15 Northbound Ramps	6PA	60,000	53,230	0.887	D
24. Carmel Mountain Road s/o Sundance Avenue	4MA	40,000	9,980	0.250	A
25. Carmel Mountain Road w/o Sparren Avenue	4MA	40,000	9,312	0.233	A
26. Carmel Mountain Road w/o Black Mountain Road	4MA	40,000	10,600	0.265	A
27. Sundance Avenue w/o War Bonnet Street*	-	-	2,600	-	-
28. Carmel Mountain Road e/o Freeport Road	4MA	40,000	14,396	0.360	A
29. Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	4MA	40,000	17,354	0.434	B
30. Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	4MA	40,000	29,337	0.733	C
31. Carmel Mountain Road e/o I-15 Northbound Ramps	6PA	60,000	52,601	0.877	D
32. Camino Del Sur n/o Park Village Road	4MA	40,000	10,200	0.255	A
33. Park Village Road e/o Camino Del Sur	4MA	40,000	11,700	0.293	A
34. Park Village Road w/o Black Mountain Road	4MA	40,000	17,600	0.440	B
35. Mercy Road bet. Chabola Road & Branicole Ln	4MA	40,000	17,420	0.436	B
36. Mercy Road n/o Alemania Road	4MA	40,000	22,420	0.561	C
37. Scripps Poway Parkway e/o I-15 Northbound Ramps	6PA	60,000	62,005	1.033	F

* Capacity for local residential street not specified in *San Diego Traffic Impact Study Manual, July 2008*.

Abbreviations: 4C: 4 lane Collector. 4MA: 4 lane Major Arterial. 6MA: 6 lane Major Arterial. 6PA: 6 lane Prime Arterial.

Table 4-5
Horizon Year Comparison of
Roadway Segment Conditions

Segment Number and Name	2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		Difference	Impact
	V/C	LOS	V/C	LOS		
1. Camino Del Sur s/o Carmel valley Road	0.518	B	0.505	B	-0.01	No
2. Camino Del Sur s/o Wolverine Way - Fallhaven Road	0.605	C	0.590	C	-0.02	No
3. Camino Del Sur n/o SR-56 Westbound Ramps	0.757	C	0.738	C	-0.02	No
4. Camino Del Sur s/o SR-56 Eastbound Ramps	0.534	B	0.548	B	0.01	No
5. Carmel Valley Road w/o Black Mountain Road	0.431	B	0.434	B	0.00	No
6. Carmel Valley Road e/o Black Mountain Road	0.566	C	0.570	C	0.00	No
7. Black Mountain Road n/o Maler Road	0.457	B	0.480	B	0.02	No
8. Black Mountain Road s/o Oviedo Street	0.589	C	0.587	C	0.00	No
9. Black Mountain Road s/o Carmel Mountain Road	0.459	B	0.443	B	-0.02	No
10. Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	0.446	B	0.430	B	-0.02	No
11. Black Mountain Road s/o Twin Trails Drive	0.634	C	0.939	E	0.31	**Yes**
12. Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	0.578	B	0.857	D	0.28	No
13. Black Mountain Road n/o Park Village Road - Adolphia Street	0.732	C	0.888	E	0.16	**Yes**
14. Black Mountain Road n/o Canyonside Park Drive	0.674	C	0.867	D	0.19	No
15. Black Mountain Road bet. Mercy Road & Babuta Road	0.640	C	0.549	B	-0.09	No
16. Black Mountain Road s/o Westview Parkway	0.493	B	0.423	B	-0.07	No
17. Westview Parkway e/o Black Mountain Road	0.295	A	0.240	A	-0.06	No
18. Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	0.367	A	0.370	A	0.00	No
19. Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	0.567	C	0.574	C	0.01	No
20. Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	0.655	C	0.688	C	0.03	No
21. Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	0.672	C	0.705	C	0.03	No
22. Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	0.790	D	0.828	D	0.04	No
23. Poway Road e/o I-15 Northbound Ramps	0.887	D	0.887	D	0.00	No
24. Carmel Mountain Road s/o Sundance Avenue	0.245	A	0.250	A	0.01	No
25. Carmel Mountain Road w/o Sparren Avenue	0.222	A	0.233	A	0.01	No
26. Carmel Mountain Road w/o Black Mountain Road	0.260	A	0.265	A	0.01	No
27. Sundance Avenue w/o War Bonnet Street*	-	-	-	-	-	-
28. Carmel Mountain Road e/o Freeport Road	0.361	A	0.360	A	0.00	No
29. Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	0.435	B	0.434	B	0.00	No
30. Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	0.736	C	0.733	C	0.00	No
31. Carmel Mountain Road e/o I-15 Northbound Ramps	0.880	D	0.877	D	0.00	No
32. Camino Del Sur n/o Park Village Road	0.268	A	0.255	A	-0.01	No
33. Park Village Road e/o Camino Del Sur	0.315	A	0.293	A	-0.02	No
34. Park Village Road w/o Black Mountain Road	0.444	B	0.440	B	0.00	No
35. Mercy Road bet. Chabola Road & Branicole Ln	0.467	B	0.436	B	-0.03	No
36. Mercy Road n/o Alemania Road	0.592	C	0.561	C	-0.03	No
37. Scripps Poway Parkway e/o I-15 Northbound Ramps	1.057	F	1.033	F	-0.02	No

* Capacity for local residential street not specified in *San Diego Traffic Impact Study Manual, July 2008*.

Table 4-6
Horizon Year AM Peak Hour
Intersection Conditions

Intersection Number and Name	2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		Comparison	
	Delay	LOS	Delay	LOS	Δ Delay	Impact
1. Camino Del Sur/Carmel Valley Road	56.7	E	56.0	E	-0.7	No
2. Camino Del Sur/Watson Ranch Road	8.4	A	8.3	A	-0.1	No
3. Camino Del Sur/Wolverine Way - Fallhaven Road	22.2	C	20.4	C	-1.8	No
4. Camino Del Sur/Torrey Meadows Drive	16.5	B	16.7	B	0.2	No
5. Camino Del Sur/Highlands Village Place	15.4	B	14.9	B	-0.5	No
6. Camino Del Sur/SR-56 Westbound Ramps	17.5	B	17.8	B	0.3	No
7. Camino Del Sur/SR-56 Eastbound Ramps	10.4	B	10.2	B	-0.2	No
8. Camino Del Sur/Torrey Santa Fe Road	13.4	B	13.3	B	-0.1	No
9. Black Mountain Road/Carmel Valley Road	22.3	C	22.5	C	0.2	No
10. Black Mount Road/Maler Road	7.8	A	8.0	A	0.2	No
11. Black Mountain Road/Stargaze Avenue	14.7	B	13.4	B	-1.3	No
12. Black Mountain Road/Oviedo Street	17.0	B	26.3	C	9.3	No
13. Black Mountain Road/Carmel Mountain Road	44.0	D	47.9	D	3.9	No
14. Black Mountain Road/Paseo Montalban	12.4	B	12.8	B	0.4	No
15. Black Mountain Road/Twin Trails Drive	52.9	D	54.4	D	1.5	No
16. Black Mountain Road/SR-56 Westbound Ramps	47.3	D	45.0	D	-2.3	No
17. Black Mountain Road/SR-56 Eastbound Ramps	22.4	C	23.1	C	0.7	No
18. Black Mountain Road/Park Village Road - Adolphia Street	33.9	C	37.3	D	3.4	No
19. Black Mountain Road/Canyonside Park Drive	2.5	A	5.2	A	2.7	No
20. Black Mountain Road/Mercy Road	24.4	C	27.4	C	3.0	No
21. Black Mountain Road/Westview Parkway	16.3	B	14.5	B	-1.8	No
22. Carmel Mountain Road/Sundevil Way	16.0	B	15.6	B	-0.4	No
23. Carmel Mountain Road/Paseo Montalban	24.0	C	23.8	C	-0.2	No
24. Carmel Mountain Road/SR-56 WB Ramps - Rancho Penasquitos Boulevard	45.7	D	46.0	D	0.3	No
25. Rancho Penasquitos Boulevard/SR-56 Eastbound Ramps - Azuaga Street	24.8	C	24.2	C	-0.6	No
26. Rancho Penasquitos Boulevard/Calle De Las Rosas	10.3	B	9.9	A	-0.4	No
27. Rancho Penasquitos Boulevard/Via Del Sud	4.3	A	4.6	A	0.3	No
28. Rancho Penasquitos Boulevard/Paseo Montril	13.6	B	13.6	B	0.0	No
29. Rancho Penasquitos Boulevard/I-15 Southbound Off-Ramp	8.2	A	8.4	A	0.2	No
30. Rancho Penasquitos Boulevard/I-15 Northbound Off-Ramp	15.0	B	15.6	B	0.6	No
31. Carmel Mountain Road/(West) Sundance Avenue	12.9	B	12.9	B	0.0	No
32. Carmel Mountain Road/Sedorus Street (All-way stop control)*	8.2	A	8.1	A	-0.1	No
33. Carmel Mountain Road/Entreken Way	22.6	C	22.6	C	0.0	No
34. Sparren Avenue/Carmel Mountain Road	32.1	C	28.2	C	-3.9	No
35. Twin Trails Drive/Carmel Mountain Road	25.9	C	29.5	C	3.6	No
36. (East) Sundance Avenue/Carmel Mountain Road (Two-way stop control)**	15.5	C	15.2	C	-0.3	No
37. Sundance Avenue/Twin Trails Drive (All-way stop control)	38.8	E	46.4	E	7.6	**Yes**
38. Penasquitos Post Office Driveway/Twin Trails Drive	18.3	B	18.4	B	0.1	No
39. Twin Trails Drive/Fairgrove Lane (All-way stop control)	8.0	A	8.1	A	0.1	No
40. Twin Trails Drive/Paseo Montalban	11.0	B	11.1	B	0.1	No
41. Salmon River Road/Paseo Montalban	13.9	B	13.2	B	-0.7	No
42. Salmon River Road/Fairgrove Lane (All-way stop control)	8.0	A	8.0	A	0.0	No
43. Salmon River Road/Adolphia Street - Limar Way (All-way stop control)	7.5	A	7.5	A	0.0	No
44. Paseo Cardiel/Carmel Mountain Road	20.2	C	20.3	C	0.1	No
45. Freeport Road/Carmel Mountain Road	5.8	A	6.4	A	0.6	No
46. Stoney Creek Road/Carmel Mountain Road	9.0	A	8.9	A	-0.1	No
47. Cuca Street - Caminata Deluz/Carmel Mountain Road	12.2	B	12.2	B	0.0	No
48. Penasquitos Drive/Carmel Mountain Road	29.0	C	29.0	C	0.0	No
49. I-15 Southbound Ramps/Carmel Mountain Road	19.7	B	20.1	C	0.4	No
50. I-15 Northbound Ramps/Carmel Mountain Road	25.2	C	25.3	C	0.1	No
51. Camino Del Sur/Park Village Road	51.6	D	45.6	D	-6.0	No
52. Rumex Lane/Park Village Road	7.8	A	7.9	A	0.1	No
53. Ragweed Street/Park Village Road	16.0	B	16.4	B	0.4	No
54. Mercy Road/Kika Court	7.8	A	7.8	A	0.0	No
55. Alemania Road/Mercy Road	9.8	A	9.9	A	0.1	No
56. I-15 Southbound Ramps/Mercy Road	35.5	D	34.8	C	-0.7	No
57. I-15 Northbound Ramps/Mercy Road - Scripps Poway Parkway	77.0	E	70.1	E	-6.9	No

* Assumes a signalization upgrade in 2050 scenarios.

** Worst case control delay and LOS shown.

Table 4-7
Horizon Year PM Peak Hour
Intersection Conditions

Intersection Number and Name	2050 W/O Project (BMR as 6 Lanes) Delay	LOS	2050 W/ Project (BMR as 4 Lanes) Delay	LOS	Difference Delay	Impact
1. Camino Del Sur/Carmel Valley Road	45.9	D	45.4	D	-0.5	No
2. Camino Del Sur/Watson Ranch Road	6.7	A	5.6	A	-1.1	No
3. Camino Del Sur/Wolverine Way - Fallhaven Road	20.2	C	18.3	B	-1.9	No
4. Camino Del Sur/Torrey Meadows Drive	13.7	B	14.0	B	0.3	No
5. Camino Del Sur/Highlands Village Place	16.6	B	16.8	B	0.2	No
6. Camino Del Sur/SR-56 Westbound Ramps	19.7	B	20.2	C	0.5	No
7. Camino Del Sur/SR-56 Eastbound Ramps	16.8	B	16.8	B	0.0	No
8. Camino Del Sur/Torrey Santa Fe Road	19.2	B	19.7	B	0.5	No
9. Black Mountain Road/Carmel Valley Road	47.9	D	48.8	D	0.9	No
10. Black Mount Road/Maler Road	7.5	A	7.6	A	0.1	No
11. Black Mountain Road/Stargaze Avenue	14.0	B	14.8	B	0.8	No
12. Black Mountain Road/Oviedo Street	17.6	B	26.0	C	8.4	No
13. Black Mountain Road/Carmel Mountain Road	28.5	C	28.3	C	-0.2	No
14. Black Mountain Road/Paseo Montalban	14.8	B	15.1	B	0.3	No
15. Black Mountain Road/Twin Trails Drive	40.5	D	32.0	C	-8.5	No
16. Black Mountain Road/SR-56 Westbound Ramps	34.4	C	34.7	C	0.3	No
17. Black Mountain Road/SR-56 Eastbound Ramps	26.1	C	26.2	C	0.1	No
18. Black Mountain Road/Park Village Road - Adolphia Street	29.7	C	29.4	C	-0.3	No
19. Black Mountain Road/Canyonside Park Drive	4.8	A	6.8	A	2.0	No
20. Black Mountain Road/Mercy Road	37.2	D	31.8	C	-5.4	No
21. Black Mountain Road/Westview Parkway	22.7	C	20.5	C	-2.2	No
22. Carmel Mountain Road/Sundevil Way	14.6	B	14.6	B	0.0	No
23. Carmel Mountain Road/Paseo Montalban	23.3	C	23.1	C	-0.2	No
24. Carmel Mountain Road/SR-56 WB Ramps - Rancho Penasquitos Boulevard	35.6	D	35.3	D	-0.3	No
25. Rancho Penasquitos Boulevard/SR-56 Eastbound Ramps - Azuaga Street	70.7	E	69.4	E	-1.3	No
26. Rancho Penasquitos Boulevard/Calle De Las Rosas	9.5	A	10.0	A	0.5	No
27. Rancho Penasquitos Boulevard/Via Del Sud	3.9	A	4.5	A	0.6	No
28. Rancho Penasquitos Boulevard/Paseo Montril	14.5	B	14.5	B	0.0	No
29. Rancho Penasquitos Boulevard/I-15 Southbound Off-Ramp	9.7	A	9.7	A	0.0	No
30. Rancho Penasquitos Boulevard/I-15 Northbound Off-Ramp	19.4	B	20.6	C	1.2	No
31. Carmel Mountain Road/(West) Sundance Avenue	16.0	B	16.5	B	0.5	No
32. Carmel Mountain Road/Sedorus Street (All-way stop control)*	5.2	A	5.1	A	-0.1	No
33. Carmel Mountain Road/Entreken Way	12.6	B	12.5	B	-0.1	No
34. Sparren Avenue/Carmel Mountain Road	20.1	C	20.2	C	0.1	No
35. Oviedo Street/Carmel Mountain Road	20.1	C	19.6	B	-0.5	No
36. (East) Sundance Avenue/Carmel Mountain Road (Two-way stop control)**	10.3	B	10.3	B	0.0	No
37. Sundance Avenue/Twin Trails Drive (All-way stop control)	23.8	C	27.5	D	3.7	No
38. Penasquitos Post Office Driveway/Twin Trails Drive	26.6	C	26.1	C	-0.5	No
39. Twin Trails Drive/Fairgrove Lane (All-way stop control)	9.1	A	9.2	A	0.1	No
40. Twin Trails Drive/Paseo Montalban	12.9	B	13.0	B	0.1	No
41. Salmon River Road/Paseo Montalban	15.1	B	11.9	B	-3.2	No
42. Salmon River Road/Fairgrove Lane (All-way stop control)	8.8	A	8.9	A	0.1	No
43. Salmon River Road/Adolphia Street - Limar Way (All-way stop control)	7.9	A	7.9	A	0.0	No
44. Paseo Cardiel/Carmel Mountain Road	25.1	C	27.3	C	2.2	No
45. Freeport Road/Carmel Mountain Road	5.1	A	7.5	A	2.4	No
46. Stoney Creek Road/Carmel Mountain Road	4.2	A	3.7	A	-0.5	No
47. Cuca Street - Caminata Deluz/Carmel Mountain Road	10.9	B	10.8	B	-0.1	No
48. Penasquitos Drive/Carmel Mountain Road	30.9	C	30.8	C	-0.1	No
49. I-15 Southbound Ramps/Carmel Mountain Road	35.4	D	35.5	D	0.1	No
50. I-15 Northbound Ramps/Carmel Mountain Road	50.5	D	51.4	D	0.9	No
51. Camino Del Sur/Park Village Road	23.7	C	23.8	C	0.1	No
52. Rumex Lane/Park Village Road	6.9	A	7.0	A	0.1	No
53. Ragweed Street/Park Village Road	16.1	B	16.6	B	0.5	No
54. Mercy Road/Kika Court	8.3	A	7.5	A	-0.8	No
55. Alemania Road/Mercy Road	10.6	B	10.3	B	-0.3	No
56. I-15 Southbound Ramps/Mercy Road	40.5	D	37.6	D	-2.9	No
57. I-15 Northbound Ramps/Mercy Road - Scripps Poway Parkway	61.7	E	52.9	D	-8.8	No

* Assumes a signalization upgrade in 2050 scenarios.
** Worst case control delay and LOS shown.

Table 4-8A
Horizon Year Freeway Mainline Analysis
SR-56 Westbound and Eastbound

Freeway Segment	AM/PM	LOS E Capacity	Long Term Without Project (BMR 6-Lanes)			Long Term With Project (BMR 4-Lanes)			Comparison	
			PHV	V/C	LOS	PHV	V/C	LOS	Δ V/C	Significant?
SR-56 Westbound										
West of Camino del Sur	AM	7,050	7,984	1.132	F	8,011	1.136	F	0.004	No
	PM	7,050	2,937	0.417	B	2,947	0.418	B	0.001	No
Camino del Sur to Black Mountain Rd	AM	7,050	7,888	1.119	F	7,925	1.124	F	0.005	No
	PM	7,050	2,902	0.412	B	2,916	0.414	B	0.002	No
Black Mountain Road to Rancho Penasquitos Blvd	AM	8,850	7,147	0.808	D	7,062	0.798	C	-0.010*	No
	PM	8,850	2,629	0.297	A	2,598	0.294	A	-0.003*	No
Rancho Penasquitos Blvd to I-15 Interchange	AM	7,050	7,026	0.997	E	6,928	0.983	E	-0.014*	No
	PM	7,050	2,585	0.367	A	2,549	0.362	A	-0.005*	No
SR-56 Eastbound										
West of Camino del Sur	AM	7,050	3,060	0.434	B	3,071	0.436	B	0.002	No
	PM	7,050	7,838	1.112	F	7,864	1.115	F	0.003	No
Camino del Sur to Black Mountain Rd	AM	7,050	3,024	0.429	B	3,038	0.431	B	0.002	No
	PM	7,050	7,744	1.098	F	7,780	1.104	F	0.006	**Yes**
Black Mountain Road to Rancho Penasquitos Blvd	AM	7,050	2,739	0.389	A	2,707	0.384	A	-0.005*	No
	PM	7,050	7,016	0.995	E	6,933	0.983	E	-0.012*	No
Rancho Penasquitos Blvd to I-15 Interchange	AM	7,050	2,693	0.382	A	2,656	0.377	A	-0.005*	No
	PM	7,050	6,897	0.978	E	6,802	0.965	E	-0.013*	No

Peak Hour Volume = (ADT)(K)(D)/(Truck Factor))
V/C = Peak Hour Volume / Capacity
Truck Source: 2013 Annual Average Daily Truck Traffic on the California State Highway System
ADT Source: SANDAG Modeling (Appendix E)
K/D Source: 2013 K and D Factors on the California State Highway System

Footnote:
* These locations see decrease in V/C due to decreased in Total ADT per Model Runs See Appendix E for SANDAG models. See description in Freeway Mainline portion of Chapter 4 for discussion.

Hourly Capacity Assumptions
Mainline - 2350 vph; Auxiliary - 1800 vph; Managed - 1680 vph; HOV - 1600 vph

Table 4-8B
Horizon Year Freeway Mainline Analysis
I-15 Northbound and Southbound

Freeway Segment	AM/PM	LOS E Hourly Capacity	Long Term Without Project (BMR 6-Lanes)			Long Term With Project (BMR 4-Lanes)			Comparison	
			PHV	V/C	LOS	PHV	V/C	LOS	Δ V/C	Significant?
I-15 Northbound										
South of Mercy Road	AM	16,910	21,045	1.245	F	20,952	1.239	F	-0.006*	No
	PM	16,910	15,511	0.917	D	15,442	0.913	D	-0.004*	No
Mercy Road to Rancho Penasquitos Blvd	AM	16,910	20,460	1.210	F	20,211	1.195	F	-0.015*	No
	PM	16,910	15,080	0.892	D	14,896	0.881	D	-0.011*	No
Rancho Penasquitos Blvd to Ted Williams Pkwy	AM	15,110	18,824	1.246	F	18,612	1.232	F	-0.014*	No
	PM	15,110	13,874	0.918	D	13,717	0.908	D	-0.010*	No
Ted Williams Pkwy to Carmel Mountain Rd	AM	16,910	18,503	1.094	F	18,501	1.094	F	0.000	No
	PM	16,910	13,638	0.807	D	13,636	0.806	D	-0.001*	No
North of Carmel Mountain Rd	AM	16,910	19,356	1.145	F	19,374	1.146	F	0.001	No
	PM	16,910	11,821	0.699	C	11,832	0.700	C	0.001	No
I-15 Southbound										
South of Mercy Road	AM	16,910	15,447	0.913	D	15,379	0.909	D	-0.004*	No
	PM	16,910	20,797	1.230	F	20,705	1.224	F	-0.006*	No
Mercy Road to Rancho Penasquitos Blvd	AM	16,910	15,018	0.888	D	14,835	0.877	D	-0.011*	No
	PM	16,910	20,219	1.196	F	19,973	1.181	F	-0.015*	No
Rancho Penasquitos Blvd to Ted Williams Pkwy	AM	16,910	13,817	0.817	D	13,661	0.808	D	-0.009*	No
	PM	16,910	18,602	1.100	F	18,393	1.088	F	-0.012*	No
Ted Williams Pkwy to Carmel Mountain Rd	AM	16,910	13,582	0.803	D	13,580	0.803	D	0.000	No
	PM	16,910	18,286	1.081	F	18,283	1.081	F	0.000	No
North of Carmel Mountain Rd	AM	15,110	8,454	0.559	B	8,462	0.560	B	0.001	No
	PM	15,110	19,329	1.279	F	19,347	1.280	F	0.001	No

Peak Hour Volume = (ADT)(K)(D)/(Truck Factor))
V/C = Peak Hour Volume / Capacity
Truck Source: 2013 Annual Average Daily Truck Traffic on the California State Highway System
ADT Source: SANDAG Modeling (Appendix E)
K/D Source: 2013 K and D Factors on the California State Highway System

Footnote:
* These locations see decrease in V/C due to decreased in Total ADT per Model Runs See Appendix E for SANDAG models. See description in Freeway Mainline portion of Chapter 4 for discussion.

Hourly Capacity Assumptions
Mainline - 2350 vph; Auxiliary - 1800 vph; Managed - 1680 vph; HOV - 1600 vph

Table 4-9
Horizon Year Freeway Interchange On-Ramp Metering Delay

Location	# of Lanes	Meter Rate (veh/hr/ lane)	Meter Rate (veh/hr)	Without Project				With Project				Comparison	
				Demand (veh/hr)	Excess Demand (veh/hr)	Delay (min)	Queue (ft)	Demand (veh/hr)	Excess Demand (veh/hr)	Delay (min)	Queue (ft)	Δ Delay	Sign-ificant
AM Peak Hour													
Camino del Sur - SR56 WB Ramp	2	435	870	718	0	0	0	702	0	0	0	0	No
Camino del Sur - SR56 WB Ramp (HOV)	1	435	435	80	0	0	0	78	0	0	0	0	No
Black Mountain Road - SR56 WB Ramp	2	520	1,040	1,524	484	28	14,027	1,503	463	27	13,427	-1	No
Black Mountain Road - SR56 WB Ramp (HOV)	1	520	520	169	0	0	0	167	0	0	0	0	No
Rancho Penasquitos - SR56 WB Ramp	1	600	600	811	211	21	6,119	835	235	24	6,815	3	**Yes**
Carmel Mountain Road - I15 SB Ramp	2	367	734	909	175	14	5,075	905	171	14	4,971	0	No
Carmel Mountain Road - I15 SB Ramp (HOV)	1	367	367	101	0	0	0	101	0	0	0	0	No
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	2	492	984	1,733	749	46	21,721	1,737	753	46	21,837	0	No
Rancho Penasquitos - I15 SB Ramp - EB->SB	2	492	984	797	0	0	0	801	0	0	0	0	No
Mercy Road - I15 SB Ramp	2	420	840	1,294	454	32	13,172	1,227	387	28	11,214	-4	No
Mercy Road - I15 SB Ramp (HOV)	1	420	420	144	0	0	0	136	0	0	0	0	No
PM Peak Hour													
Camino del Sur - SR56 EB Ramp	2	480	960	1,212	252	16	7,317	1,176	216	14	6,273	-2	No
Camino del Sur - SR56 EB Ramp (HOV)	1	480	480	135	0	0	0	131	0	0	0	0	No
Black Mountain Road - SR56 EB Ramp	2	600	1,200	773	0	0	0	717	0	0	0	0	No
Black Mountain Road - SR56 EB Ramp (HOV)	1	600	600	86	0	0	0	80	0	0	0	0	No
Rancho Penasquitos - SR56 EB Ramp	2	300	600	198	0	0	0	201	0	0	0	0	No
Carmel Mountain Road - I15 SB Ramp	2	473	946	1,215	269	17	7,801	1,211	265	17	7,671	0	No
Carmel Mountain Road - I15 SB Ramp (HOV)	1	473	473	135	0	0	0	135	0	0	0	0	No
Carmel Mountain Road - I15 NB Ramp	2	463	926	849	0	0	0	846	0	0	0	0	No
Carmel Mountain Road - I15 NB Ramp (HOV)	1	463	463	94	0	0	0	94	0	0	0	0	No
Rancho Penasquitos - I15 SB Ramp - Loop WB->SB	2	576	1,152	1,001	0	0	0	1,003	0	0	0	0	No
Rancho Penasquitos - I15 SB Ramp - EB->SB	2	576	1,152	791	0	0	0	795	0	0	0	0	No
Rancho Penasquitos - I15 NB Ramp - WB->NB	1	335	335	507	172	31	4,988	508	173	31	5,017	0	No
Rancho Penasquitos - I15 NB Ramp - Loop EB->NB	1	335	335	153	0	0	0	154	0	0	0	0	No
Mercy Road - I15 SB Ramp	2	406	812	1,403	591	44	17,142	1,330	518	38	15,028	-6	No
Mercy Road - I15 SB Ramp (HOV)	1	406	406	156	0	0	0	148	0	0	0	0	No
Mercy Road - I15 NB Ramp	2	270	540	1,141	601	67	17,435	1,116	576	64	16,704	-3	No

Source: Caltrans January 2015
Meter rate is based on the most restrictive meter rate provided by Caltrans, see Appendix C
HOV demand is equal to 10% of Total Demand
Total Demand onto all lanes of each Freeway Ramp is found in the vehicle turning movements in Figures 4-4 and 4-5
Combined Meter Rate = (Meter Rate per Lane) * (# of Lanes)
Excess Demand = (Demand * # of lanes) -(Combined Meter Rate); if Excess Demand <0, then Excess Demand = 0
Delay = Excess Demand / Combined Meter Rate; Queue = Excess Demand * 29 ft/vehicle

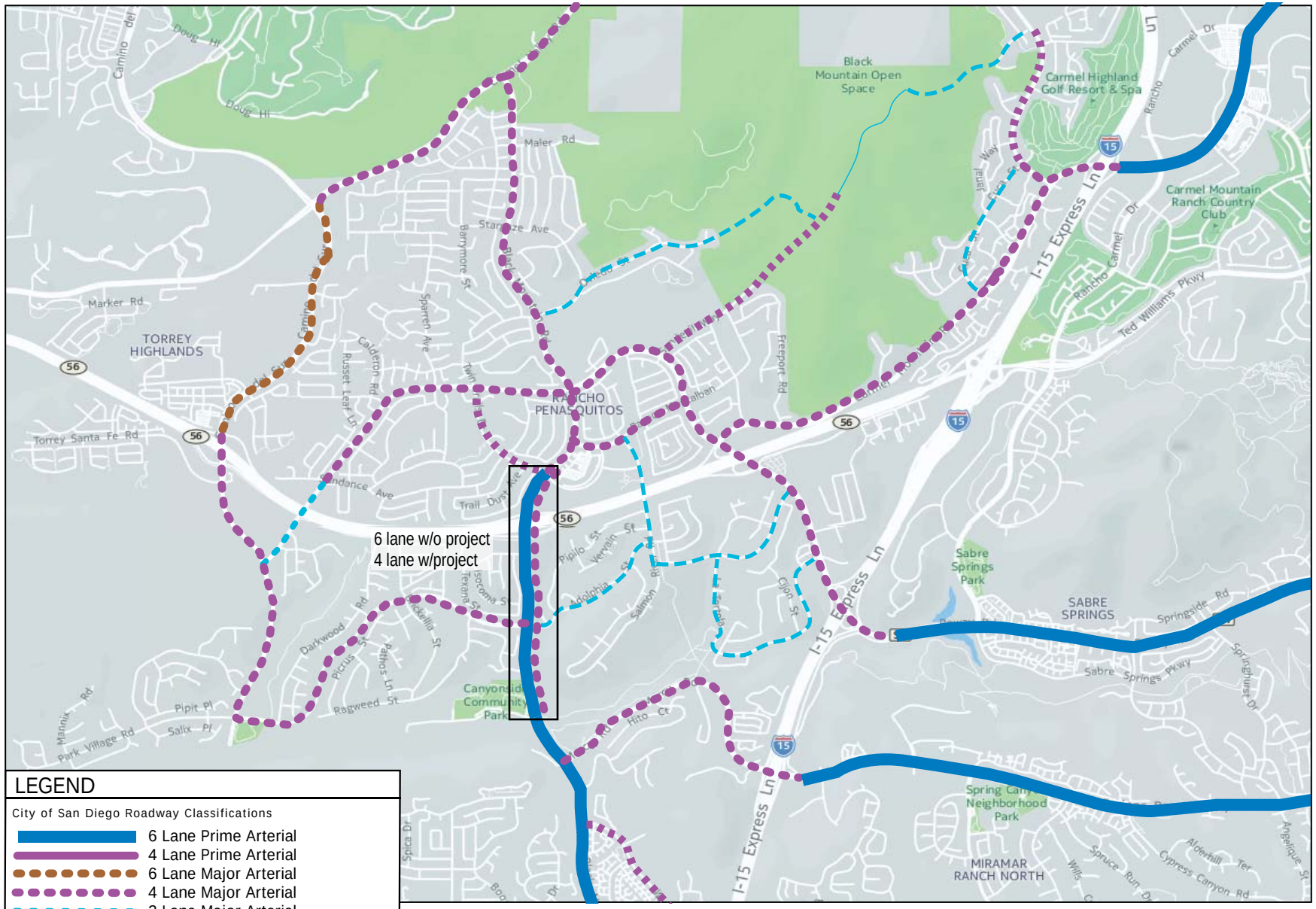
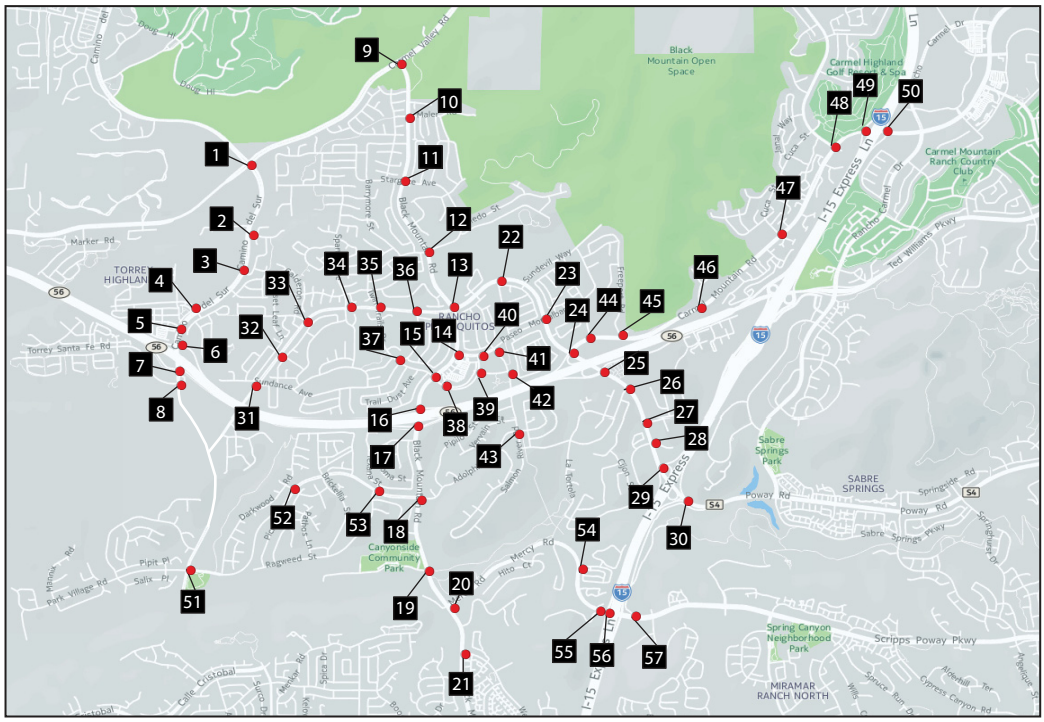


Figure 4-1
Horizon Year Roadway Classification



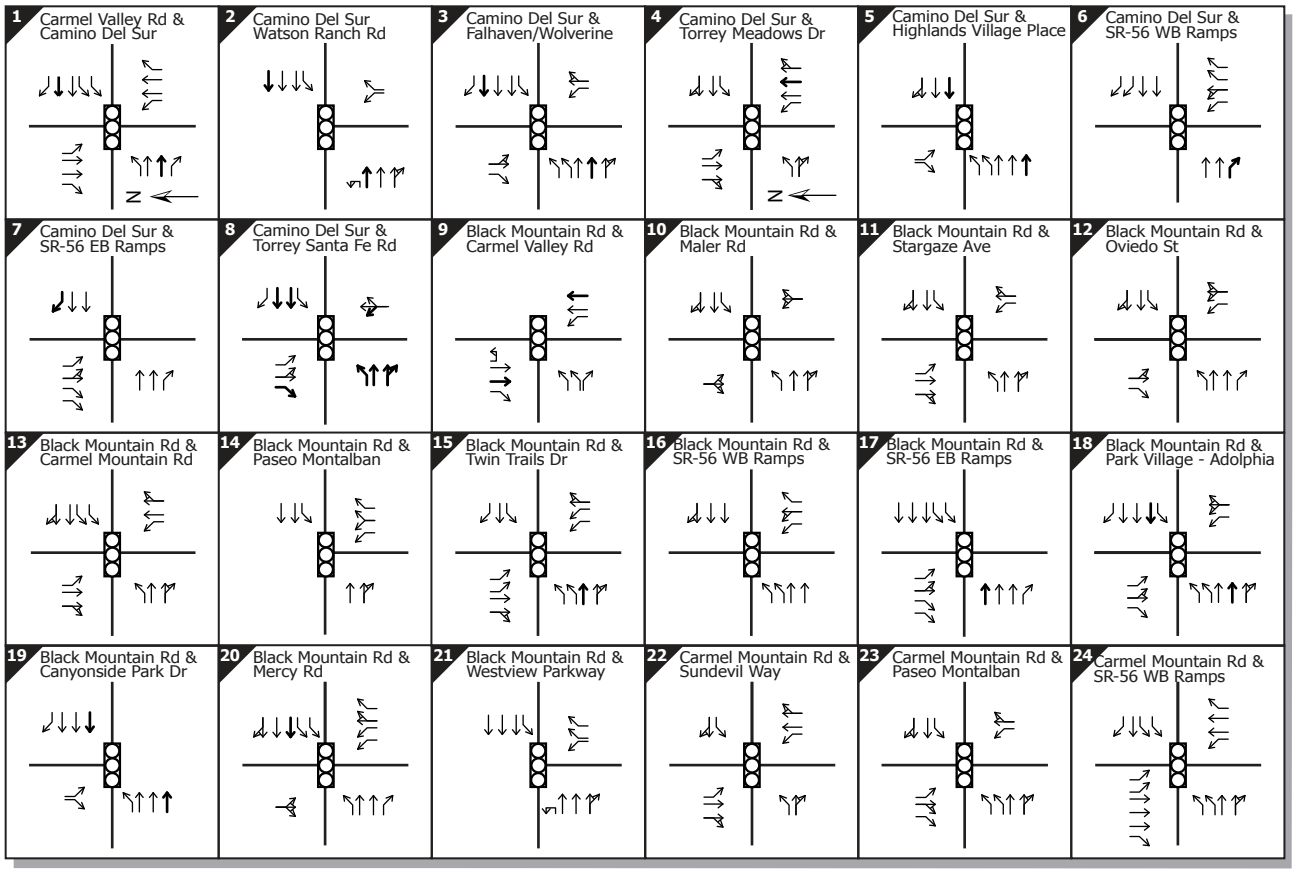


Figure 4-2
Horizon Year Circulation Network

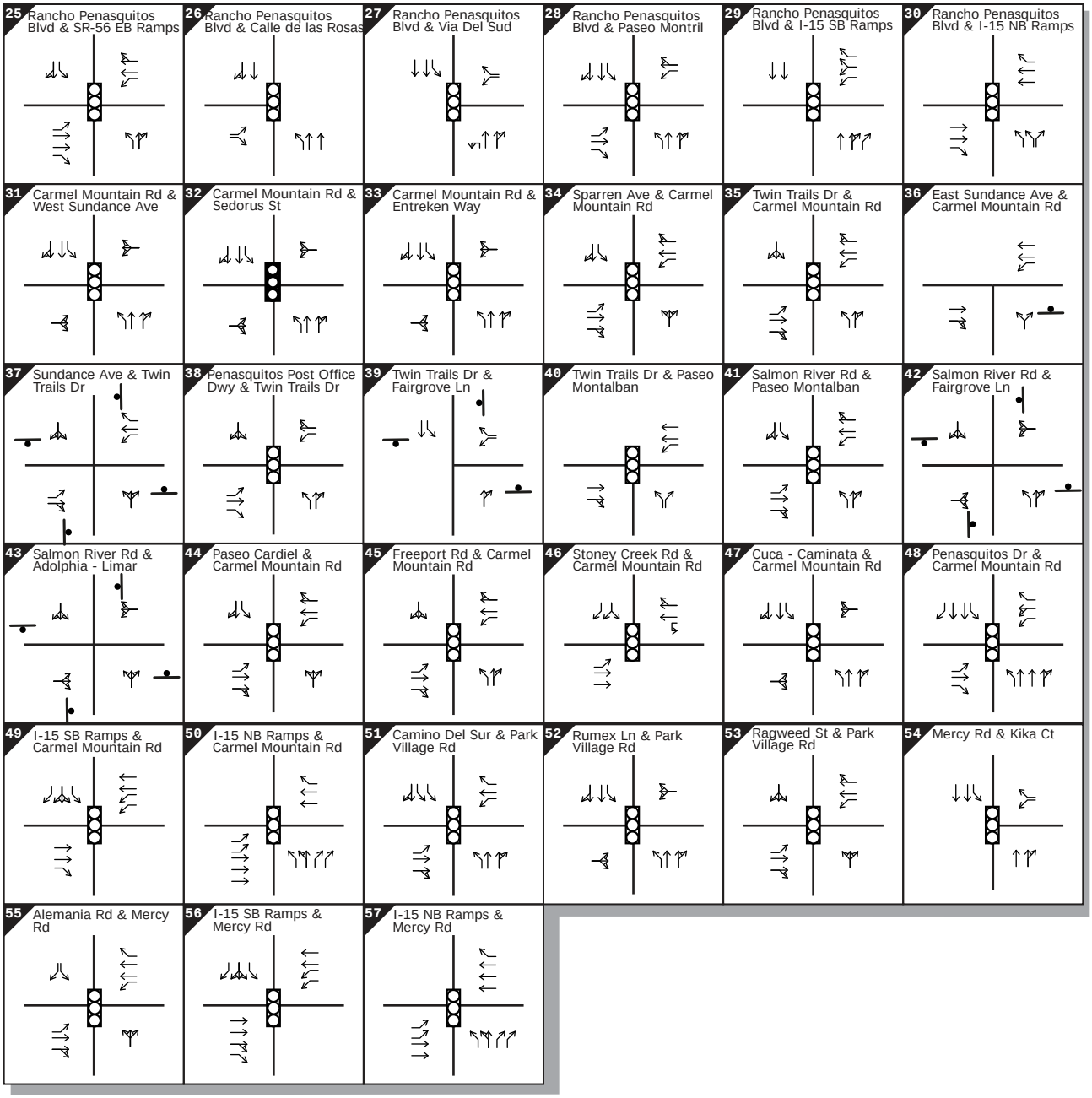


Figure 4-2 cont.
Horizon Year Circulation Network

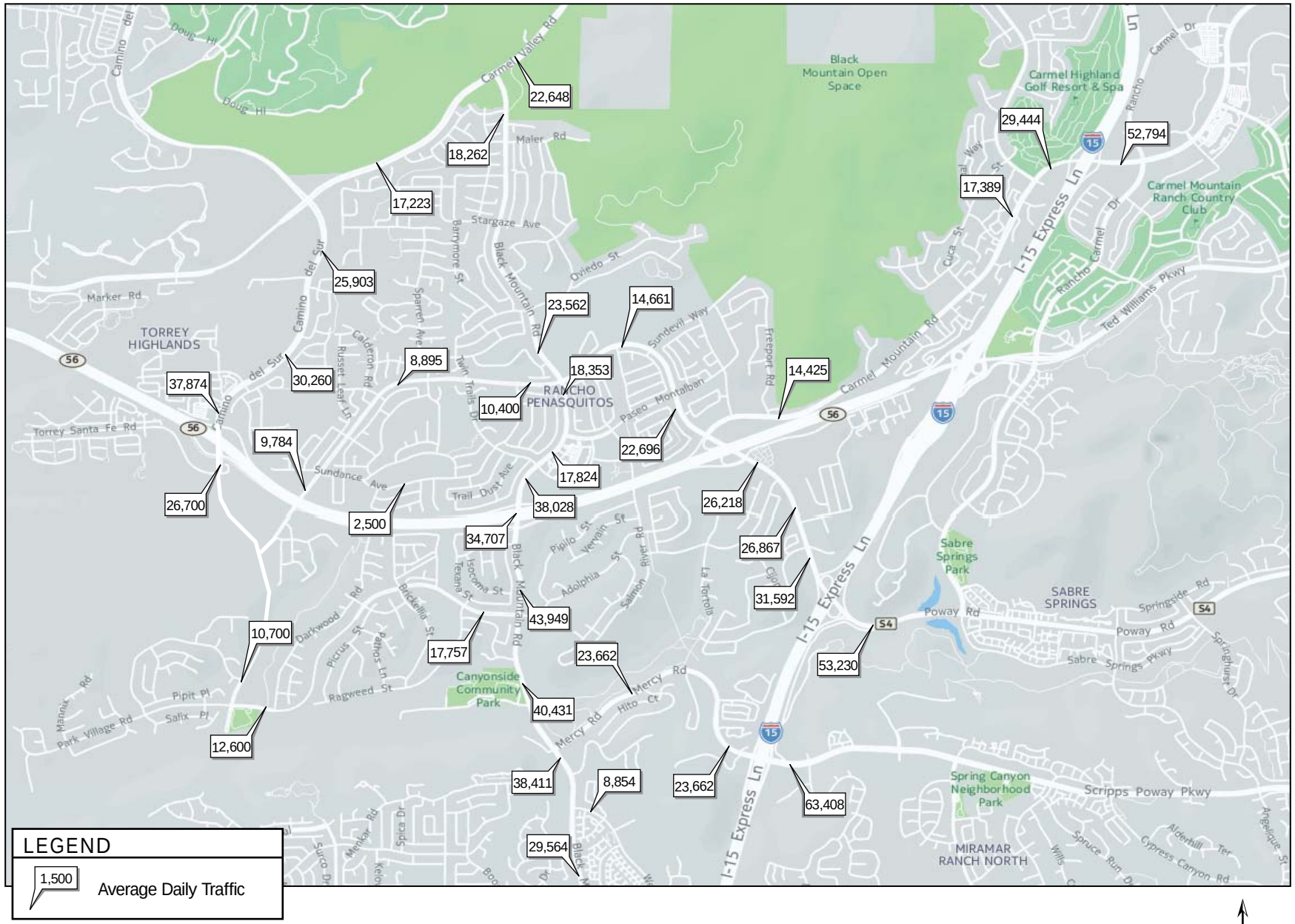


Figure 4-3
Horizon Year Daily Roadway Segment Volumes, Without Project

N
Not To Scale

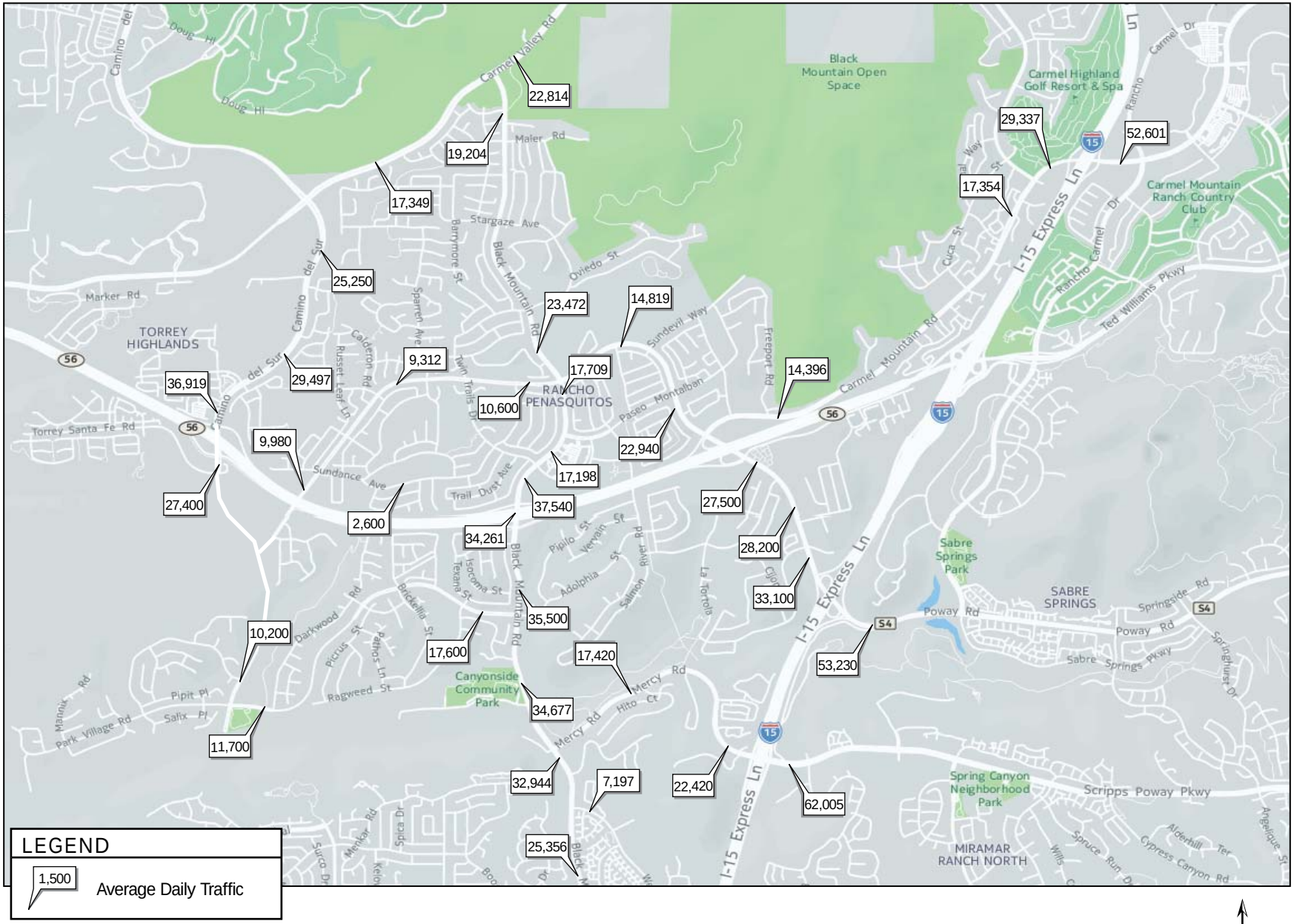
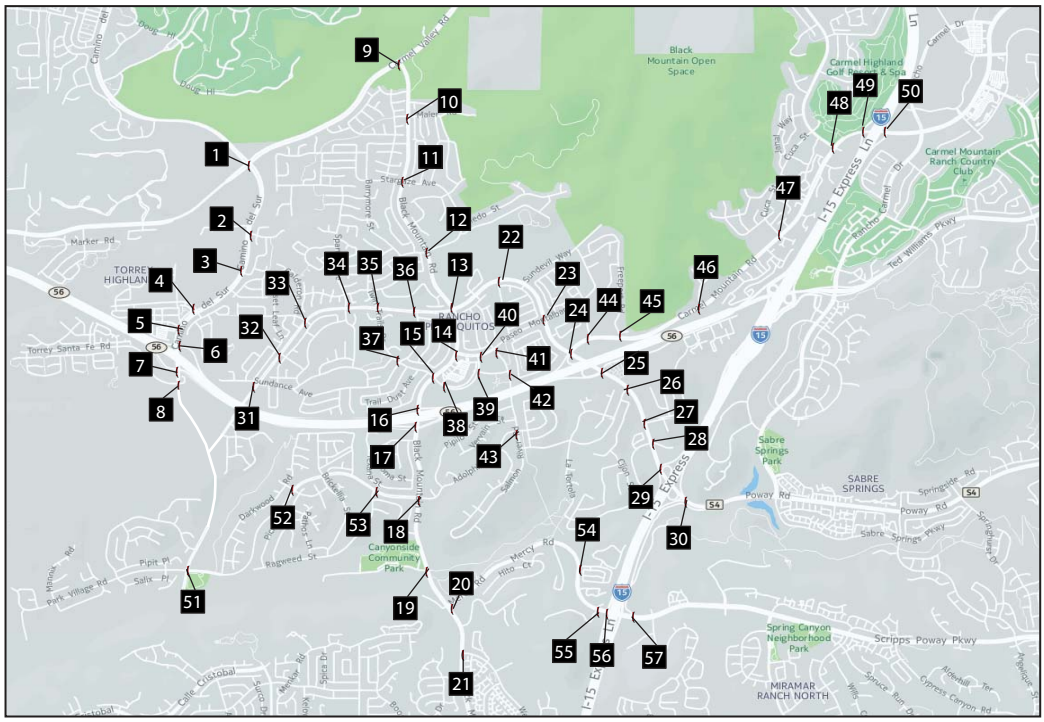
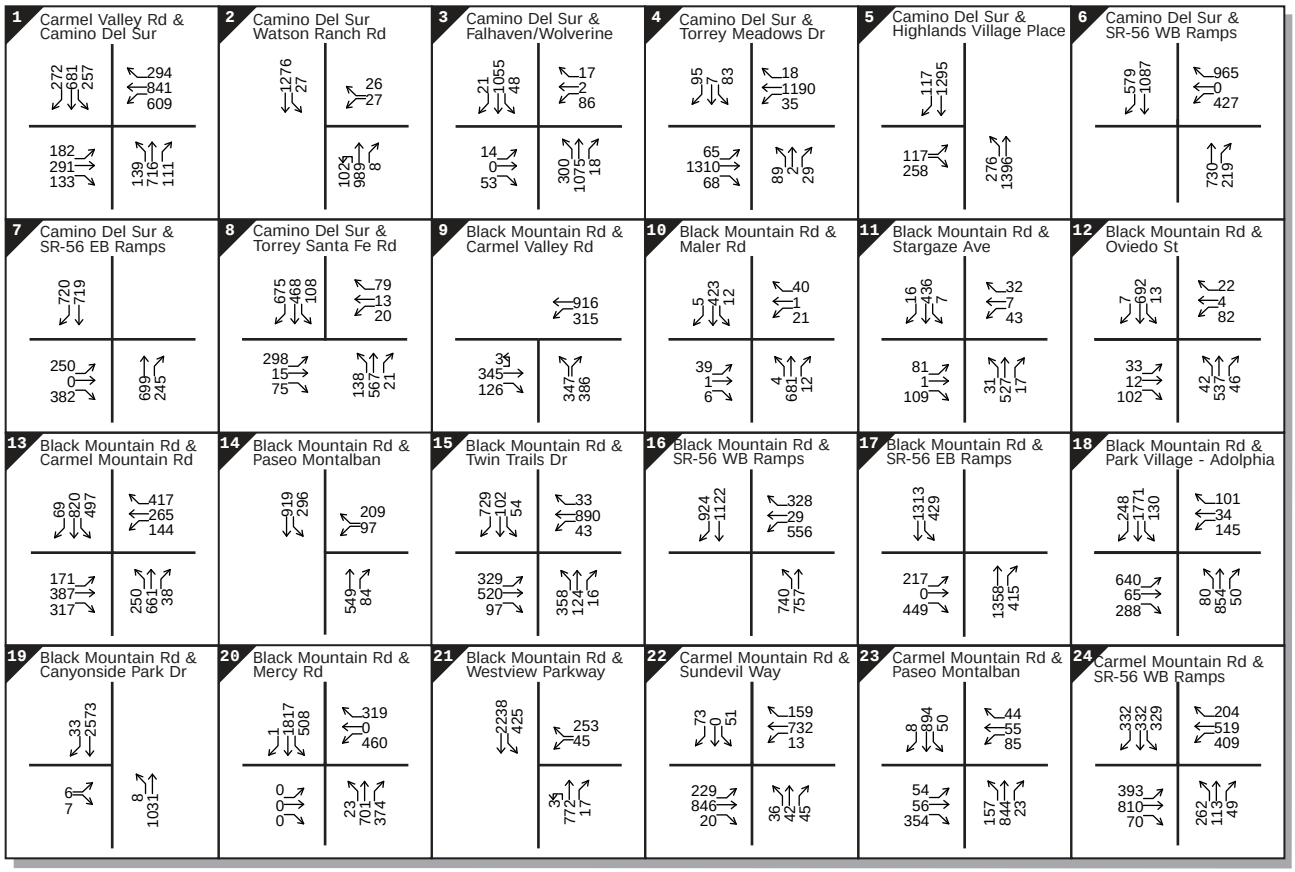


Figure 4-4
Horizon Year Daily Roadway Segment Volumes, With Project

N
Not To Scale

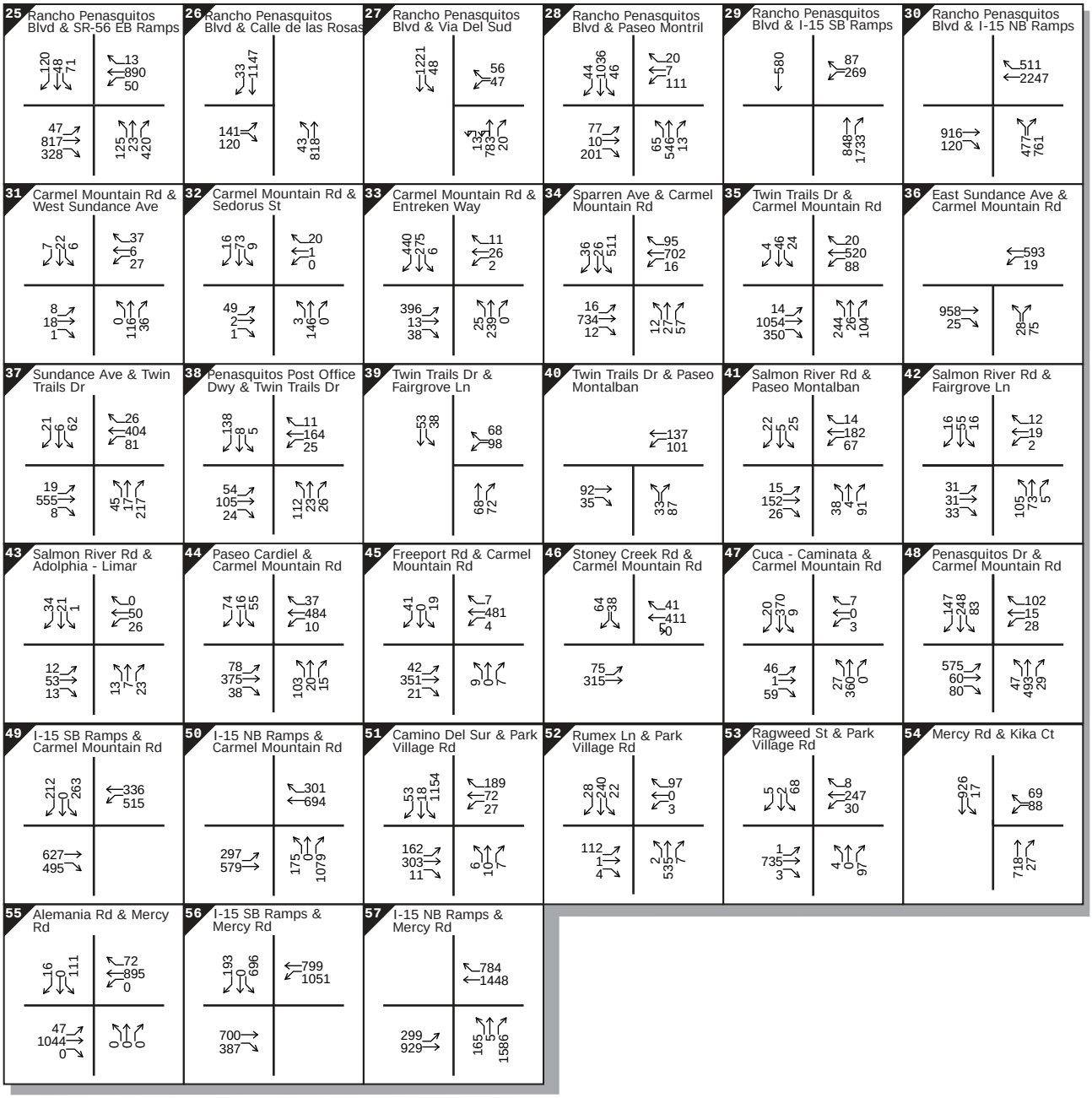




LEGEND

10 AM Peak Hour Traffic

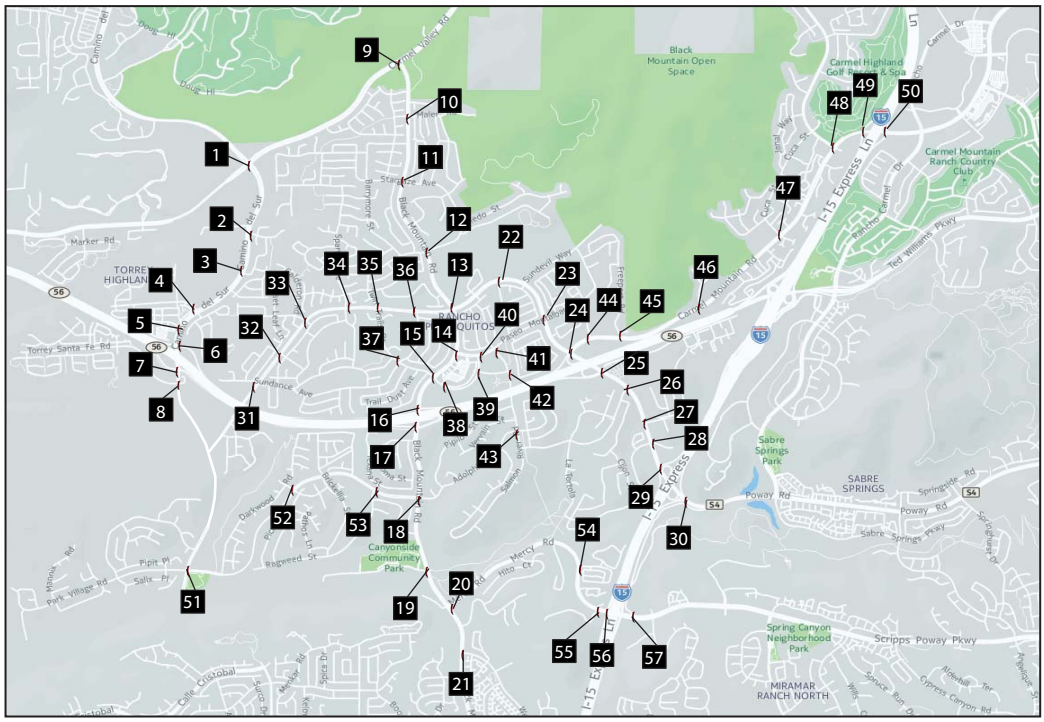
Figure 4-5
Horizon Year AM Peak Hour Intersection Volumes, Without Project

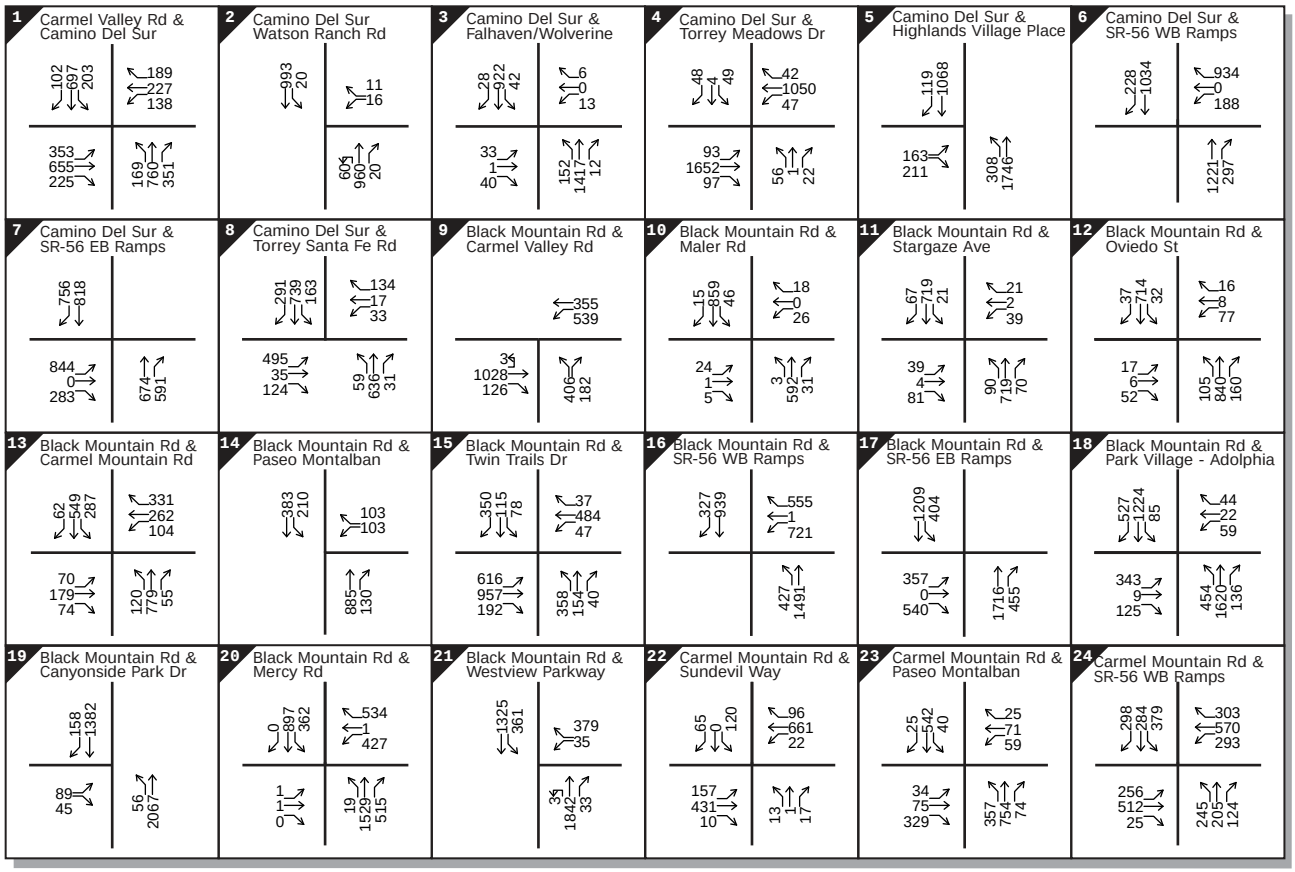


LEGEND

10 AM Peak Hour Traffic

Figure 4-5 cont.
Horizon Year AM Peak Hour Intersection Volumes, Without Project

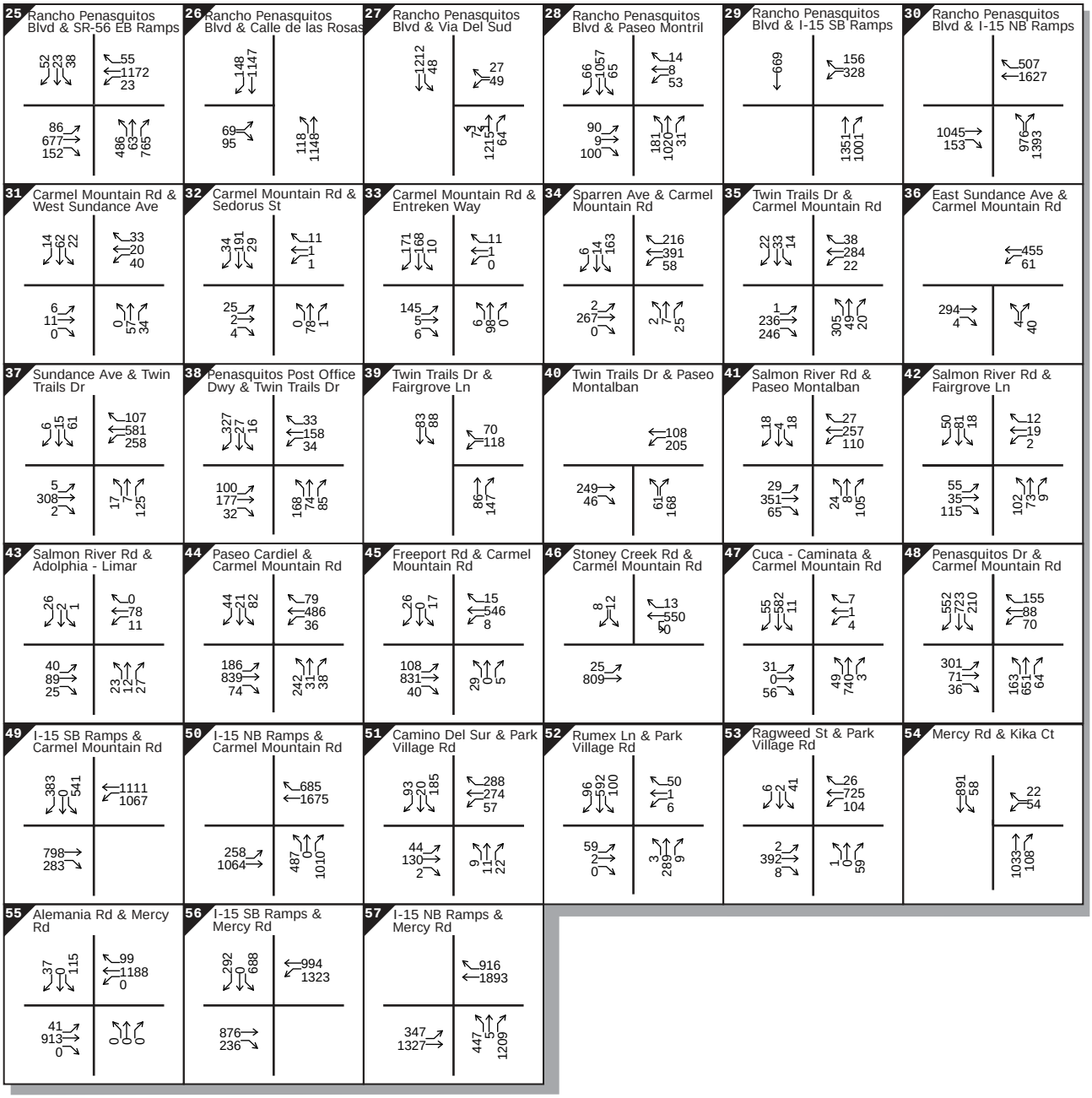




LEGEND

10 PM Peak Hour Traffic

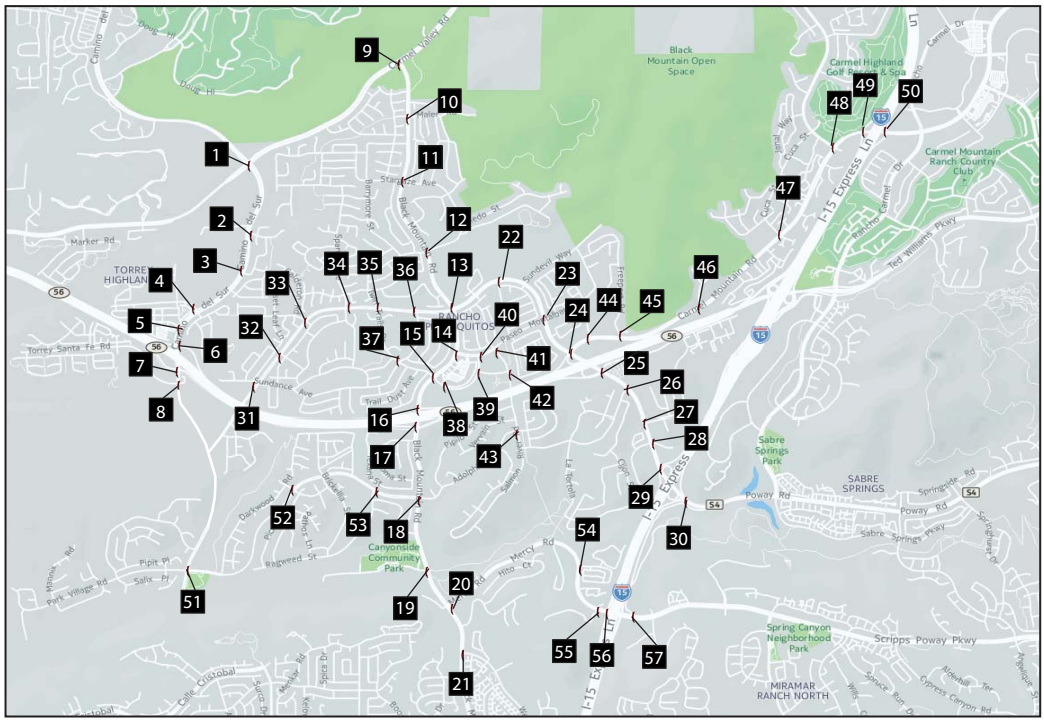
Figure 4-6
Horizon Year PM Peak Hour Intersection Volumes, Without Project

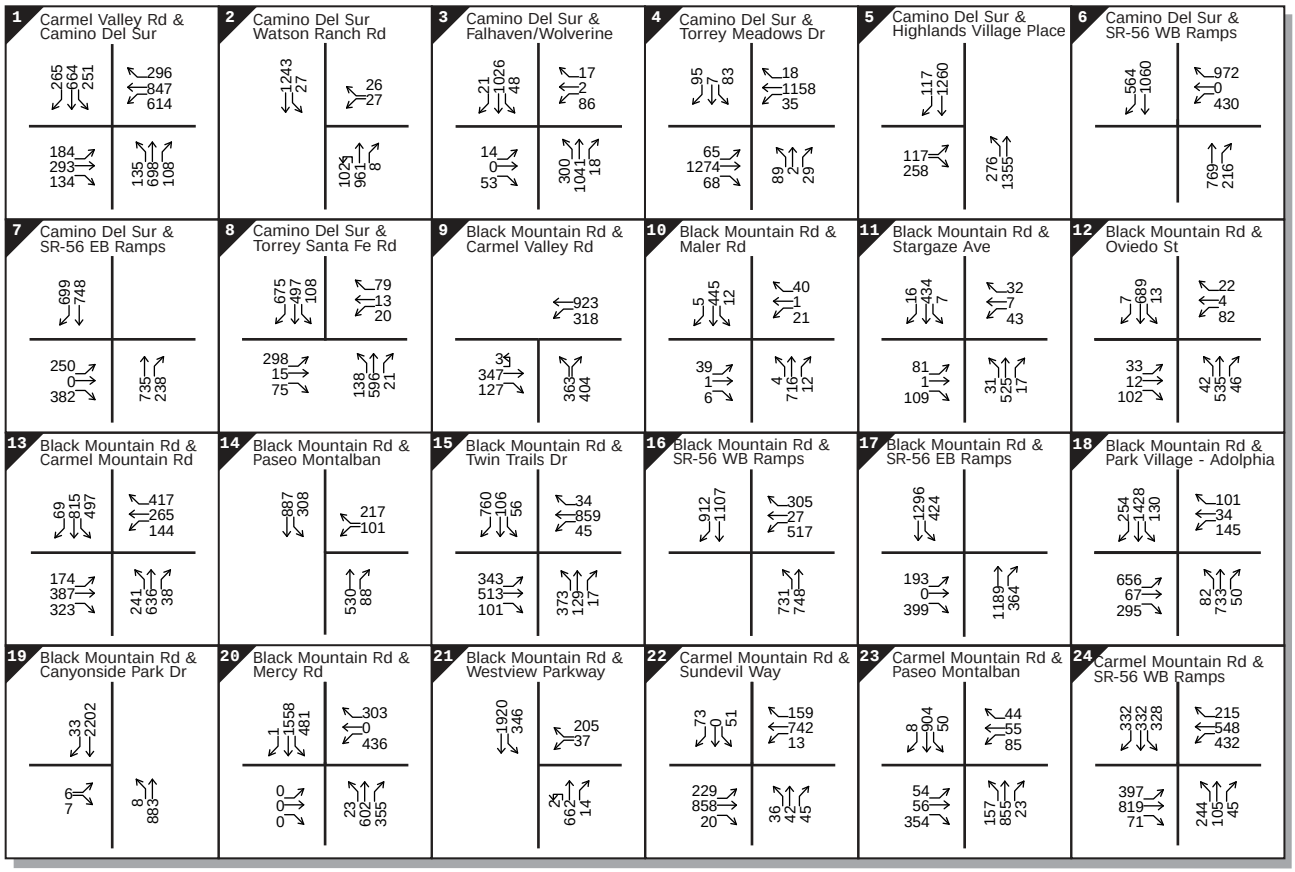


LEGEND

10 PM Peak Hour Traffic

Figure 4-6 cont.
Horizon Year PM Peak Hour Intersection Volumes, Without Project

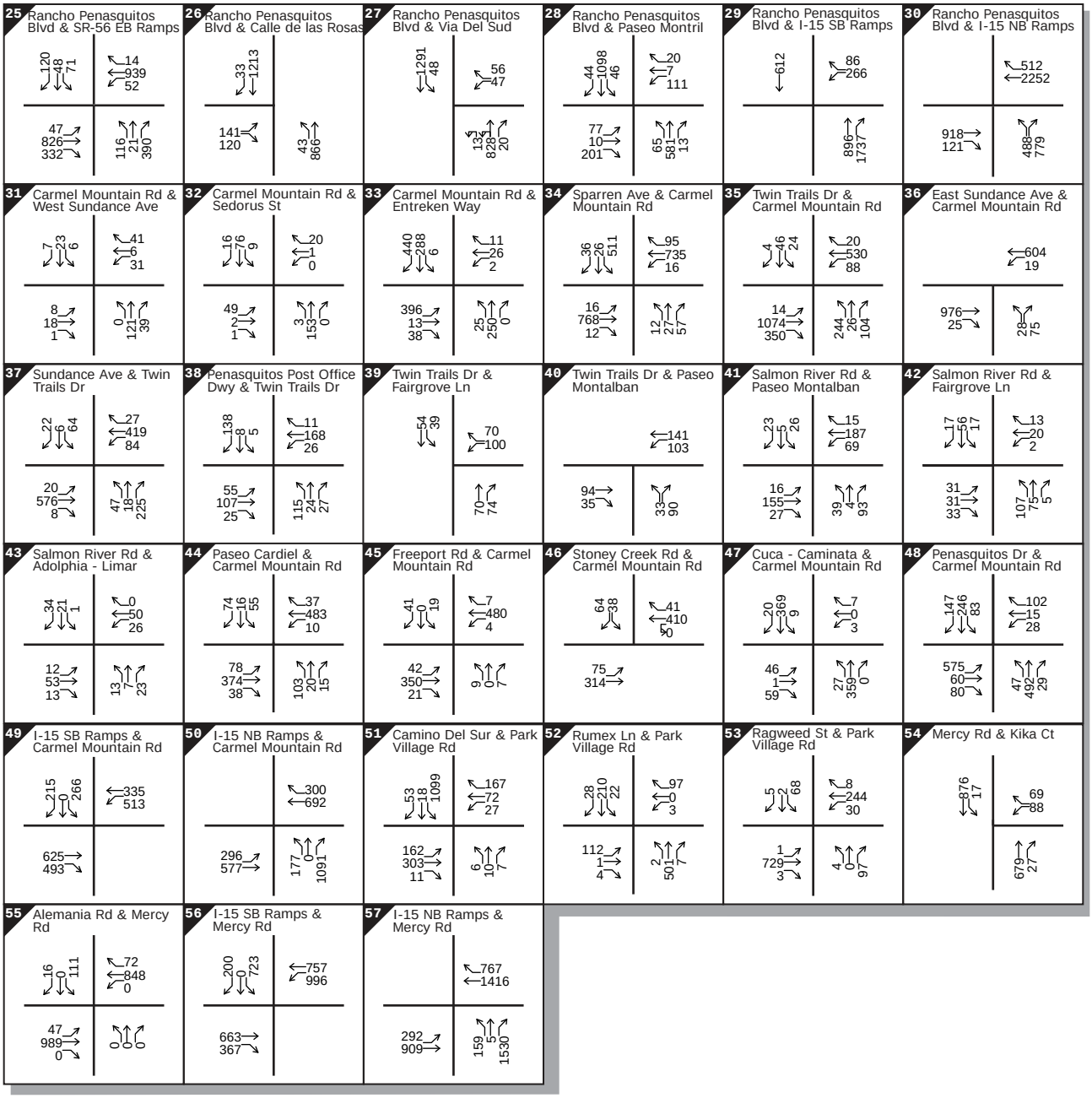




LEGEND

10 AM Peak Hour Traffic

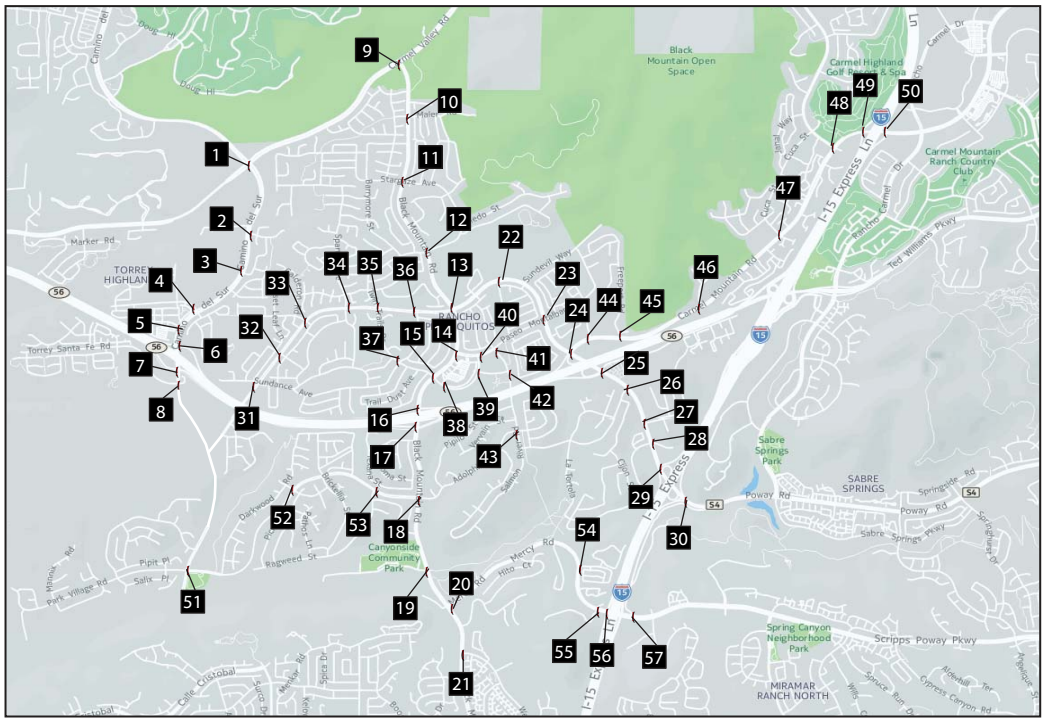
Figure 4-7
Horizon Year AM Peak Hour Intersection Volumes, With Project

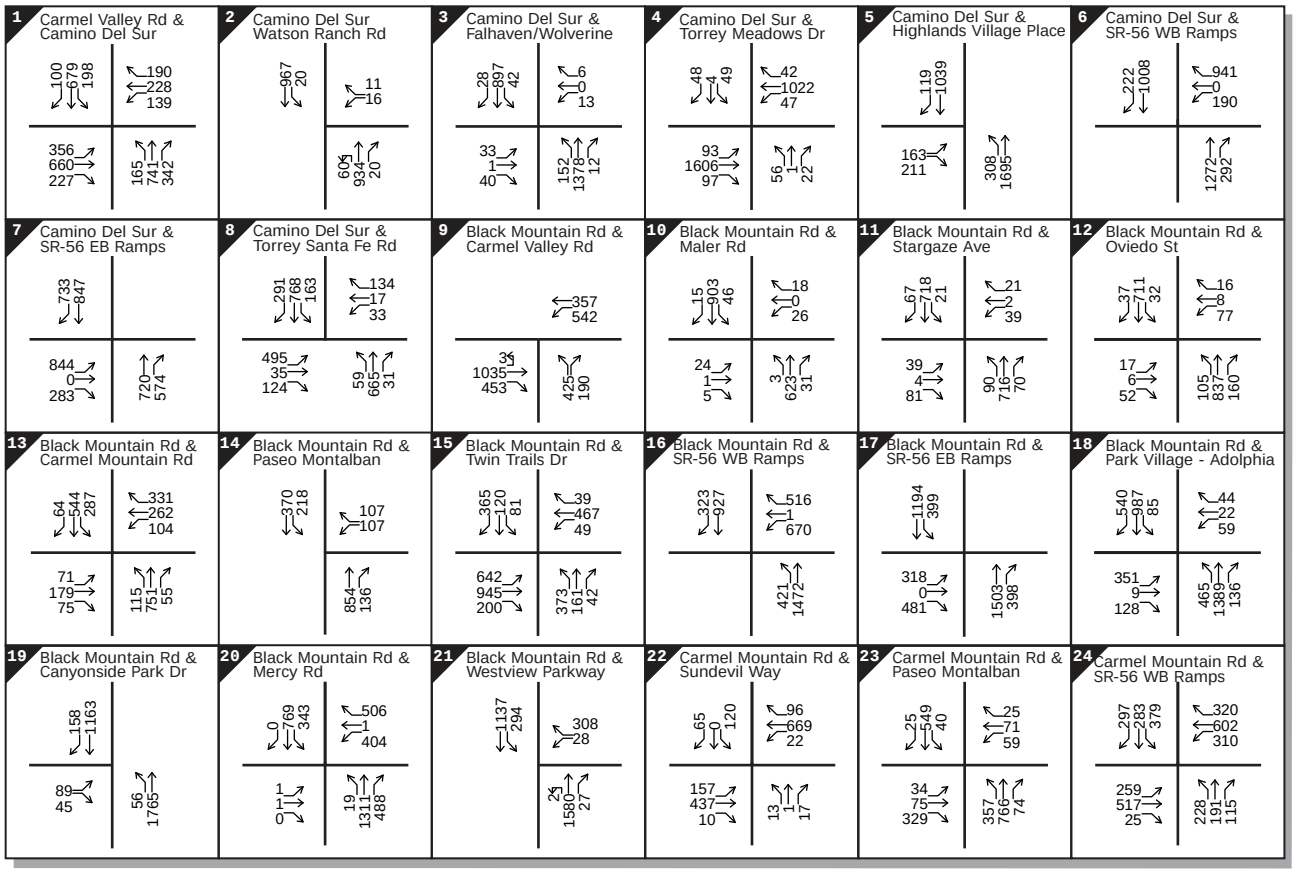


LEGEND

10 AM Peak Hour Traffic

Figure 4-7 cont.
Horizon Year AM Peak Hour Intersection Volumes, With Project





LEGEND

10 PM Peak Hour Traffic

Figure 4-8
Horizon Year PM Peak Hour Intersection Volumes, With Project

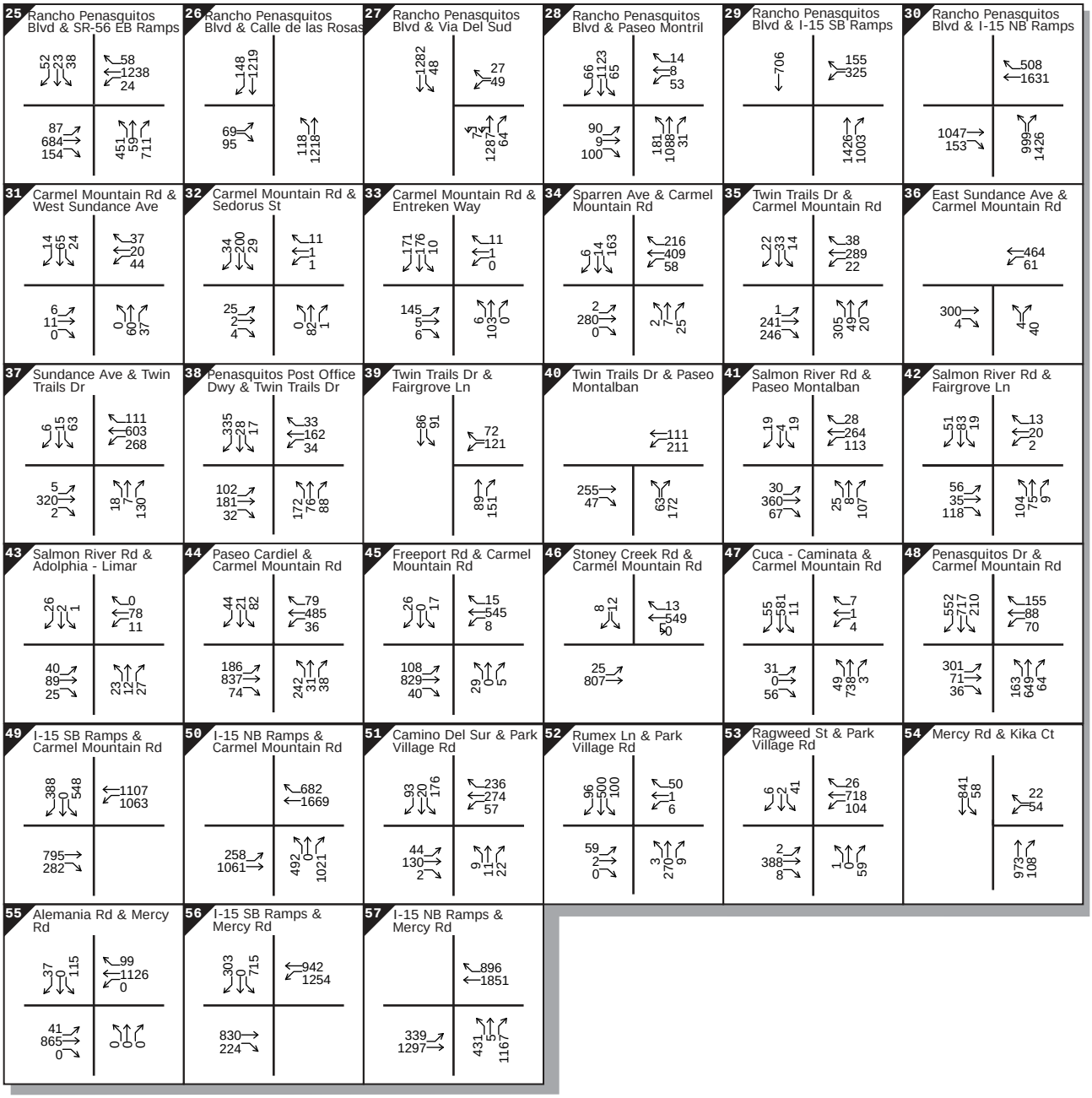


Figure 4-8 cont.
Horizon Year PM Peak Hour Intersection Volumes, With Project

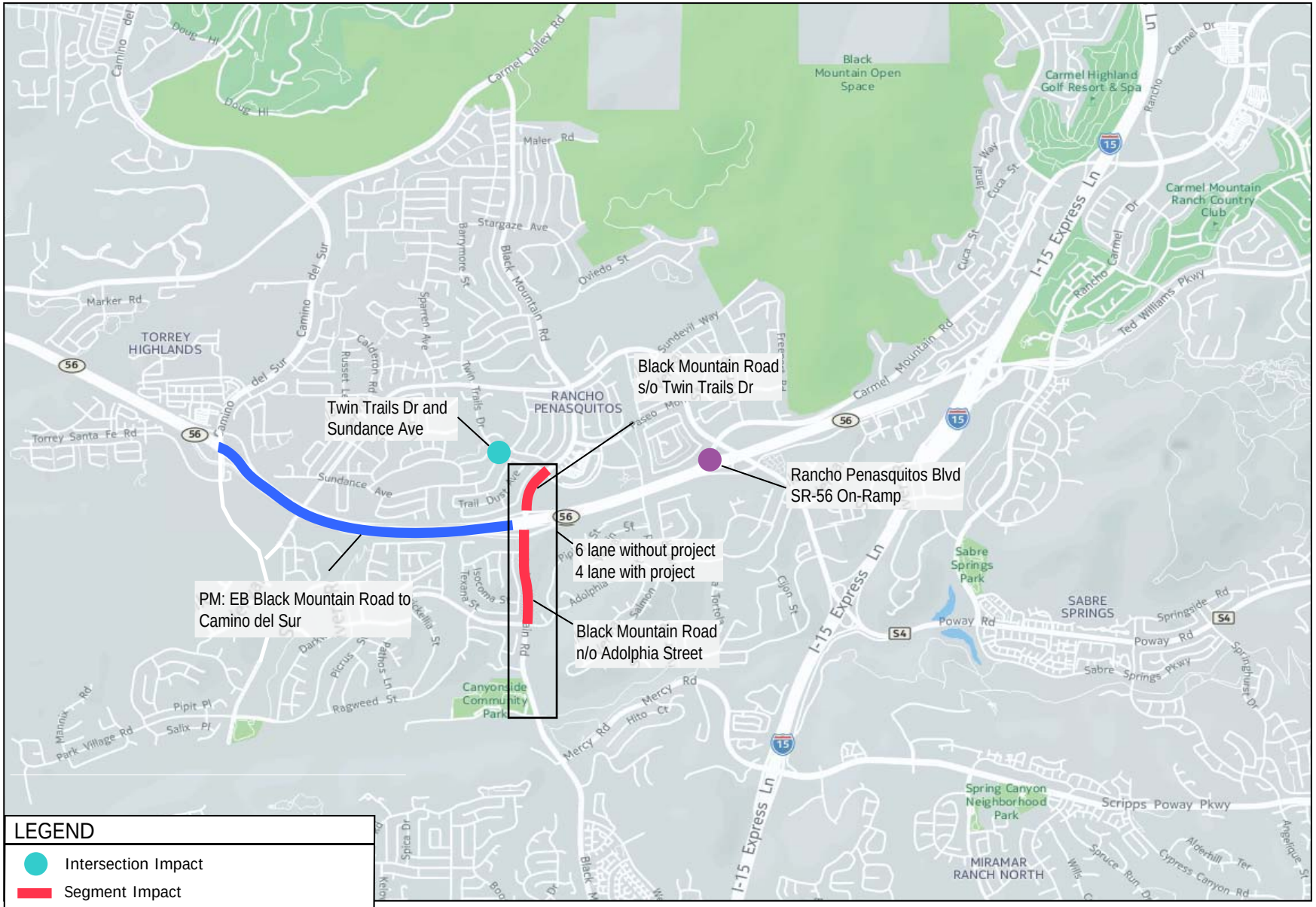


Figure 4-9
Project Impacts and Mitigation Locations

CHAPTER 5
TRANSIT, PEDESTRIAN AND BICYCLE FACILITIES

As aforementioned, the Project is the reclassification of Black Mountain Road to a 4-Lane Major from Twin Trails Drive to the southern community boundary of Rancho Peñasquitos. As the Project is not a conventional site-based development, an assessment of parking and on-site circulation conditions was not included.

TRANSIT FACILITIES

Transit service within the Rancho Peñasquitos community is limited to its eastern portion. Currently, the community is served by San Diego Metropolitan Transit System's Line 20 bus route. Line 20 runs from downtown San Diego, up I-15, and exits onto Rancho Peñasquitos Boulevard, where it travels northward to Carmel Mountain Road. Line 20 then turns right onto Carmel Mountain Road and continues to the northeast, beyond the Rancho Peñasquitos community boundary. Line 20 operates 7 days a week with modified schedules on Saturday and Sunday. The shortest headway is 30 minutes for Line 20. The longest headway observed for Line 20 is 60 minutes over Saturday and Sunday.

On the eastern periphery of the Rancho Peñasquitos community, Sabre Springs/Peñasquitos Transit Station is located near the I-15/SR-56 junction and provides express bus service along the I-15 corridor with connections to downtown San Diego and the City of Escondido. Express bus lines that stop at this station include Line 235, Line 290, and Line 944. Lines 235 and 944 have headways of 30 minutes. Line 290 has a headway of 10 minutes. Route information on routes 20, 235, 290 and 944 can be found in Appendix M.

No transit lines traverse the subject section of Black Mountain Road. The Rancho Peñasquitos Community Plan discusses a desire for future intra-community transit services but recognizes that funding for these services may not be available. The community plan does not indicate any particular routes or destinations to be served. Therefore, implementation of the Project poses no impact to transit services.

PEDESTRIAN FACILITIES

Sidewalks are provided throughout the Rancho Peñasquitos community along nearly all local, collector and major roadways. Black Mountain Road, including the subject segment between Twin Trails Drive and the southern community boundary, provides sidewalks and pedestrian links between neighborhoods and commercial areas. Should Black Mountain Road be widened pedestrian facilities would be upgraded to current standards for non-contiguous sidewalks.

BICYCLE FACILITIES

Class I bike paths are present in multiple areas of the community and serve as both recreational facilities and routes between neighborhoods. Class II bike lanes are present along many of the Major and Primary roadways within the community, including Camino Del Sur, Black Mountain Road, Carmel Valley Road, Carmel Mountain Road, Paseo Montalban, and Mercy Road. For additional bicycle facility details, refer to Appendix L for the City of San Diego Existing Bikeways and Proposed Bikeways maps.

The Rancho Peñasquitos Community Plan recommends that all of its major streets have Class II bike lanes, with on-street parking prohibited where possible. Black Mountain Road, including the subject segment between Twin Trails Drive and the southern community boundary, is consistent in this regard, as it has Class II bike lanes in each direction and no on-street parking. Implementation of the Project would maintain the existing bike lanes along Black Mountain Road.

CHAPTER 6
IMPACTS AND MITIGATIONS

As discussed in Chapter 4, future significant traffic impacts due to volume changes associated with the Project, are projected for two street segments, one intersection, a freeway mainline segment and a metered freeway on-ramp.

SIGNIFICANT IMPACTS

One significant intersection impact was identified within the study area. To mitigate this significant impact during the AM peak hour at the intersection of Sundance Avenue and Twin Trails Drive, a traffic signal is recommended to replace the all-way stop control. See Table 6-1 for the change in delay and LOS as a result of this mitigation strategy. See Appendices H and J for the LOS and signal warrant analysis for this intersection. This mitigation is not found in any PFFP or Regional Plan. Partial mitigation may be provided by modifying the PFFPs of those communities currently providing funding for the widening of Black Mountain Road to substitute this mitigation for the widening project currently included in those PFFPs. See Appendix O for potential PFFP modifications to project T-11.1 of the Pacific Highlands, project T-57 of the Black Mountain Ranch, and project T-2D of Rancho Penasquitos plans.

One significant freeway mainline impacts were found within the study area. The freeway mainline significant impact was found in the PM peak hour on eastbound SR-56 between Camino del Sur and Black Mountain Road. Mitigation can be achieved by constructing an additional lane between Camino del Sur and Black Mountain Road. The construction location for this mitigation improvement can be found in Appendix K. This mitigation is not found in any PFFP, Regional or Caltrans Plan. Partial mitigation may be provided by modifying the PFFPs of those communities currently providing funding for the widening of Black Mountain Road to substitute this mitigation for the widening project currently included in those PFFPs. See Appendix O for potential PFFP modifications to the aforementioned plans.

One significant ramp metering delay impact was also found within the study area. In the AM peak hour, the Rancho Penasquitos Blvd – SR56 WB on-ramp experiences an increase in delay of 3 minutes from about 21 minutes to 24 minutes, resulting in a significant impact. Mitigation can be achieved by constructing an additional on-ramp lane at this location. See Appendix K for the construction location for this mitigation improvement. This mitigation is not found in any PFFP, Regional or Caltrans Plan. Partial mitigation may be provided by modifying the PFFPs of those communities currently providing funding for the widening of Black Mountain Road to substitute this mitigation for the widening project currently included in those PFFPs. See Appendix O for potential PFFP modifications to the aforementioned plans.

Table 6-1
Mitigation Summary

Impact Type	Location	Peak Hour	2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		2050 W/ Project (With Mitigation)	
			Delay or V/C	LOS	Delay or V/C	LOS	Delay or V/C	LOS
Intersection	**Sundance Avenue/Twin Trails Drive** (*All-way stop control*)	AM	38.8 s	E	46.4 s	E	7.8 s	**A**[1]
Freeway Mainline	**Eastbound SR-56** from Camino del Sur to Black Mountain Rd	PM	1.098	E	1.104	E	0.879	**D**[2]
Ramp Meter	**SR-56 Westbound On-Ramp** at Rancho Penasquitos Blvd	AM	21 min	N/A	24 min	N/A	No Delay	N/A[3]

[1] Mitigation achieved by installing traffic signal in place of All Way Stop. See Signal Warrant Analysis in Appendix J.
[2] Mitigation achieved by constructing freeway lane along the impacted segment. See construction location in Appendix K.
[3] Mitigation achieved by constructing additional on-ramp lane. See construction location in Appendix K.

ADDITIONAL PROJECT EFFECTS

Significant segment impacts were identified at Black Mountain Road south of Twin Trails Drive and Black Mountain Road north of Park Village Road-Adolphia Street. If the Project was implemented, Black Mountain Road would maintain the classification of a 4-Lane Major and these segments would remain significantly impacted, operating at LOS E with volumes slightly less than its 40,000 ADT capacity. This is the nature of the project and as such, no mitigation is proposed.

CHAPTER 7
RECOMMENDATIONS

In addition to the mitigation measures discussed in Chapter 6, there is one location that this traffic study recommends improvements that could benefit traffic flow through the community. This recommendation is not proposed as mitigation for any impacts and is simply a recommendation that could be further analyzed in the future for potential implementation.

Along Black Mountain Road, it is recommended that the segment between the SR-56 westbound and eastbound ramps be restriped. (See Table 7-1) Using the available excess width on the bridge, this segment can be restriped to provide side-by-side left-turn pockets. This would increase the storage capacity for the northbound-to-westbound left-turn and the southbound-to-eastbound left-turn movements. To accommodate the offsets from this restriping, the roadway will need to be widened for NB traffic north of the bridge to accommodate a transition taper. A conceptual drawing of this strategy can be found in Appendix K.

Table 7-1
Intersection Delay/LOS

Location	Peak Hour	2050 W/O Project (BMR as 6 Lanes)		2050 W/ Project (BMR as 4 Lanes)		2050 W/ Restriping	
		Delay	LOS	Delay	LOS	Delay	LOS
#16 Black Mountain Road / SR56 - WB Ramps	AM	47.3	D	45.0	D	45.0	D
	PM	34.4	C	34.7	C	34.7	C
#17 Black Mountain Road / SR56 - EB Ramps	AM	22.4	C	23.1	C	21.6	C
	PM	26.1	C	26.2	C	23.6	C

Prepared By:

Arnold Torma – Senior Transportation Engineer
Rogelio Pelayo – Associate Transportation Planner
Ryan Whipple – Assistant Transportation Engineer
David Nyenhuis – Assistant Transportation Engineer

APPENDIX A

LEVEL OF SERVICE CONCEPTS, ANALYSIS METHODOLOGIES, & STANDARDS OF SIGNIFICANCE

Roadway Segment Level of Service Definitions

LOS	V/C	Congestion/Delay	Traffic Description
(Used for surface streets, freeways, expressways and conventional highways)			
"A"	≤0.41	None	Free flow.
"B"	>0.41-0.62	None	Free to stable flow, light to moderate volumes.
"C"	>0.62-0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	>0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	>0.92-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
(Used for surface streets and conventional highways)			
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
(Used for freeways and expressways)			
"F(0)"	>1.00-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F(1)"	>1.25-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
"F(2)"	>1.35-1.45	Very Severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F(3)"	>1.45	Extremely Severe 3+ hours of delay	Gridlock

Source: Caltrans, 1992.

Level of Service (LOS) Definitions

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. Levels of service for freeway segments can generally be categorized as shown in the table above.

City of San Diego
Roadway Capacity Standards

Street Classification	Lanes	Level of Service ADT[1]				
		A	B	C	D	E
Freeway	8 lanes	60,000	84,000	120,000	140,000	150,000
Freeway	6 lanes	45,000	63,000	60,000	70,000	80,000
Freeway	4 lanes	30,000	42,000	60,000	70,000	80,000
Expressway	6 lanes	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6 lanes	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 lanes	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 lanes	15,000	21,000	30,000	35,000	40,000
Collector	4 lanes	10,000	14,000	20,000	25,000	30,000
Collector (no center lane)	4 lanes	5,000	7,000		13,000	15,000
(continuous left-turn lane)	2 lanes			10,000		
Collector (no fronting property)	2 lanes	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2 lanes	2,500	3,500	5,000	6,500	8,000
Collector (multi-family)	2 lanes	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2 lanes	---	---	2,200	---	---

Legend:

[1]Approximate recommended ADT based upon the City of San Diego Street Design Manual.

Notes:

The volumes and the average daily level of service listed above are only intended as a general planning guideline. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

Signalized Intersection Level of Service
Highway Capacity Manual Operational Analysis Method

The operational analysis method for evaluation of signalized intersections presented in the *2000 Highway Capacity Manual* (Transportation Research Board Special Report 209) defines level of service in terms of delay, or more specifically, control stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time.

Control Stopped Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
<10	LOS A describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
>10 – 20	LOS B describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
>20 – 35	LOS C describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
>35 – 55	LOS D describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
>55 – 80	LOS E is considered to be the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80	LOS F describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Highway Capacity Manual 2000, Exhibit 16-2

Minor Street Stop and All-Way Stop Controlled
Intersection Level of Service
Highway Capacity Manual Operational Analysis Method

The Highway Capacity Manual (HCM) analysis method for evaluating minor street stop intersections is based on the average total delay for each impeded movement. For all-way stop controlled intersections it is based on the average total delay for the entire intersection. As used here, total delay is defined as the total elapsed time from when a when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The resulting delay is used to determine the level of service as shown in the following table.

Average Total Delay	Level of Service (LOS) Characteristics
0-10	*LOS A* – Little or no delay
>10 – 15	*LOS B* – Short traffic delay
>15 – 25	*LOS C* – Average traffic delay
>25 – 35	*LOS D* – Long traffic delays
>35 – 50	*LOS E* – Very long traffic delays
>50	*LOS F* – When the demand exceeds the capacity of the lane, extreme delays will be encountered and queuing may cause severe congestion to the intersection.

Source: Highway Capacity Manual 2000, Exhibit 17-22

City of San Diego
Measure of Significant Project Traffic Impacts

Level of Service with Project*	Allowable Change due to Project Impact**					
	Freeways		Roadway Sections		Intersections	Ramps***
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E	0.01	1	0.02	1	2	2
F	0.005	0.5	0.01	0.5	1	1

Notes:

* All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or an equivalent LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped locations). For metered freeway ramps, project traffic impacts are generally acceptable if they do not cause any traffic queues to exceed ramp storage capacities.

** If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. These impact changes may be measured from acceptable computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigation within the Traffic Impact Study [TIS] report that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project is "E" or "F," the project applicant shall be responsible for mitigating significant impact changes.

***See Attachment B for ramp metering analysis.

Key:

V/C	=	Volume to Capacity ratio
Speed	=	Speed measured in miles per hour
Delay	=	Average stopped delay per vehicle measured in seconds, or minutes
LOS	=	Level of Service

APPENDIX B

TRAFFIC COUNT DATA
AND SIGNAL TIMING SHEETS

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 1. Camino Del Sur, South of Carmel Valley Road

Orientation: North-South

Date of Count: Wednesday, May 28, 2014

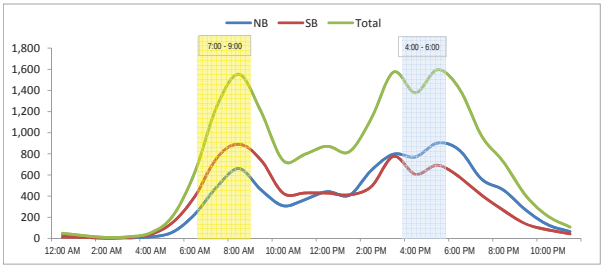
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0210

24 Hour Segment Volume			17,728				
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	36	13	49	12:00 PM - 1:00 PM	443	429	872
1:00 AM - 2:00 AM	17	9	26	1:00 PM - 2:00 PM	408	412	820
2:00 AM - 3:00 AM	7	2	9	2:00 PM - 3:00 PM	645	491	1,136
3:00 AM - 4:00 AM	6	10	16	3:00 PM - 4:00 PM	797	776	1,573
4:00 AM - 5:00 AM	15	38	53	4:00 PM - 5:00 PM	771	606	1,377
5:00 AM - 6:00 AM	60	152	212	5:00 PM - 6:00 PM	903	693	1,596
6:00 AM - 7:00 AM	230	397	627	6:00 PM - 7:00 PM	833	579	1,412
7:00 AM - 8:00 AM	489	763	1,252	7:00 PM - 8:00 PM	560	408	968
8:00 AM - 9:00 AM	661	892	1,553	8:00 PM - 9:00 PM	456	264	720
9:00 AM - 10:00 AM	459	740	1,199	9:00 PM - 10:00 PM	268	136	404
10:00 AM - 11:00 AM	309	428	737	10:00 PM - 11:00 PM	129	82	211
11:00 AM - 12:00 PM	368	430	798	11:00 PM - 12:00 AM	65	43	108
Total	2,657	3,874	6,531	Total	6,278	4,919	11,197

24-Hour NB Volume	8,935	24-Hour SB Volume	8,793



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 2. Camino Del Sur, South of Wolverine Way

Orientation: North-South

Date of Count: Wednesday, May 28, 2014

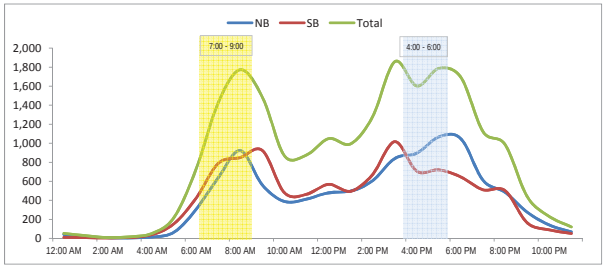
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0210

24 Hour Segment Volume			20,710				
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	41	12	53	12:00 PM - 1:00 PM	480	569	1,049
1:00 AM - 2:00 AM	20	9	29	1:00 PM - 2:00 PM	498	496	994
2:00 AM - 3:00 AM	6	3	9	2:00 PM - 3:00 PM	608	674	1,282
3:00 AM - 4:00 AM	7	11	18	3:00 PM - 4:00 PM	841	1,017	1,858
4:00 AM - 5:00 AM	14	39	53	4:00 PM - 5:00 PM	896	706	1,602
5:00 AM - 6:00 AM	66	156	222	5:00 PM - 6:00 PM	1,067	721	1,788
6:00 AM - 7:00 AM	307	425	732	6:00 PM - 7:00 PM	1,047	645	1,692
7:00 AM - 8:00 AM	639	789	1,428	7:00 PM - 8:00 PM	611	511	1,122
8:00 AM - 9:00 AM	923	850	1,773	8:00 PM - 9:00 PM	484	502	986
9:00 AM - 10:00 AM	560	924	1,484	9:00 PM - 10:00 PM	276	164	440
10:00 AM - 11:00 AM	388	479	867	10:00 PM - 11:00 PM	141	90	231
11:00 AM - 12:00 PM	413	464	877	11:00 PM - 12:00 AM	69	52	121
Total	3,384	4,161	7,545	Total	7,018	6,147	13,165

24-Hour NB Volume	10,402	24-Hour SB Volume	10,308



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 3. Camino Del Sur, North of SR 56 WB Ramps

Orientation: North-South

Date of Count: Wednesday, May 28, 2014

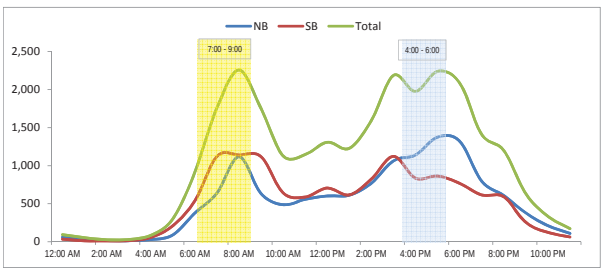
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0210

24 Hour Segment Volume			25,921				
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	60	34	94	12:00 PM - 1:00 PM	602	706	1,308
1:00 AM - 2:00 AM	43	12	55	1:00 PM - 2:00 PM	612	616	1,228
2:00 AM - 3:00 AM	14	12	26	2:00 PM - 3:00 PM	770	824	1,594
3:00 AM - 4:00 AM	16	15	31	3:00 PM - 4:00 PM	1,064	1,122	2,186
4:00 AM - 5:00 AM	28	57	85	4:00 PM - 5:00 PM	1,140	835	1,975
5:00 AM - 6:00 AM	90	211	301	5:00 PM - 6:00 PM	1,375	864	2,239
6:00 AM - 7:00 AM	377	538	915	6:00 PM - 7:00 PM	1,322	768	2,090
7:00 AM - 8:00 AM	640	1,122	1,762	7:00 PM - 8:00 PM	796	615	1,411
8:00 AM - 9:00 AM	1,117	1,140	2,257	8:00 PM - 9:00 PM	608	592	1,200
9:00 AM - 10:00 AM	632	1,118	1,750	9:00 PM - 10:00 PM	377	254	631
10:00 AM - 11:00 AM	487	642	1,129	10:00 PM - 11:00 PM	212	123	335
11:00 AM - 12:00 PM	558	588	1146	11:00 PM - 12:00 AM	110	63	173
Total	4,062	5,489	9,551	Total	8,988	7,382	16,370

24-Hour NB Volume	13,050	24-Hour SB Volume	12,871



TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CAMINO DEL SUR S-O SR-56 EB RAMPS

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00			7	10		12:00			81	46	
00:15			8	7		12:15			82	80	
00:30			4	7		12:30			90	63	
00:45			4	23	2 26 49	12:45			75 328	69 258	586
01:00			5	7		13:00			63	87	
01:15			6	3		13:15			50	65	
01:30			4	2		13:30			46	65	
01:45			3	18	5 17 35	13:45			56 215	55 272	487
02:00			2	0		14:00			47	50	
02:15			1	2		14:15			60	54	
02:30			0	2		14:30			59	66	
02:45			1	4	1 5 9	14:45			63 229	46 216	445
03:00			0	6		15:00			81	63	
03:15			1	1		15:15			95	47	
03:30			1	1		15:30			90	79	
03:45			1	3	1 9 12	15:45			108 374	59 248	622
04:00			2	2		16:00			115	69	
04:15			3	2		16:15			126	74	
04:30			5	4		16:30			131	64	
04:45			6	16	5 13 29	16:45			145 517	83 290	807
05:00			4	9		17:00			111	91	
05:15			14	4		17:15			126	102	
05:30			11	11		17:30			135	85	
05:45			12	41	17 41 82	17:45			108 480	89 367	847
06:00			16	18		18:00			114	82	
06:15			20	31		18:15			95	93	
06:30			26	25		18:30			84	86	
06:45			25	87	40 114 201	18:45			95 388	99 360	748
07:00			35	53		19:00			65	74	
07:15			40	61		19:15			70	74	
07:30			95	56		19:30			54	71	
07:45			84	254	84 254 508	19:45			66 255	58 277	532
08:00			88	90		20:00			70	54	
08:15			65	105		20:15			54	59	
08:30			70	124		20:30			62	51	
08:45			84	307	149 468 775	20:45			70 256	53 217	473
09:00			70	181		21:00			54	54	
09:15			77	193		21:15			44	35	
09:30			65	160		21:30			35	35	
09:45			58	270	93 627 897	21:45			31 164	38 162	326
10:00			58	104		22:00			33	38	
10:15			60	69		22:15			40	32	
10:30			47	68		22:30			26	24	
10:45			49	214	61 302 516	22:45			21 120	15 109	229
11:00			57	54		23:00			15	20	
11:15			57	64		23:15			11	9	
11:30			64	54		23:30			19	21	
11:45			80	258	58 230 488	23:45			9 54	11 61	115
Total Vol.			1495	2106	**3601**				3380	2837	**6217**

Daily Totals	NB	SB	EB	WB	Combined
			4875	4943	**9818**

	AM			PM		
Split %	41.5%	58.5%	**36.7%**	54.4%	45.6%	**63.3%**
Peak Hour	11:45	08:45	**08:45**	16:00	17:00	**16:45**
Volume	333	683	**979**	517	367	**878**
P.H.F.	0.93	0.88	**0.91**	0.89	0.90	**0.96**

PACIFIC TECHNICAL DATA

TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CARMEL VALLEY W-O BLACK MTN

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00			11	9		12:00			43	72	
00:15			14	5		12:15			48	67	
00:30			5	1		12:30			46	76	
00:45			4	34	3	18	52	12:45			40	177	56	271	448
01:00			6	3		13:00			40	73	
01:15			3	1		13:15			50	55	
01:30			2	2		13:30			28	67	
01:45			3	14	2	8	22	13:45			29	147	69	264	411
02:00			0	1		14:00			39	43	
02:15			1	0		14:15			43	59	
02:30			1	2		14:30			65	53	
02:45			2	4	0	3	7	14:45			34	181	50	205	386
03:00			1	1		15:00			53	62	
03:15			0	0		15:15			72	56	
03:30			0	1		15:30			71	57	
03:45			1	2	0	2	4	15:45			105	301	58	233	534
04:00			0	4		16:00			141	58	
04:15			0	4		16:15			168	66	
04:30			0	3		16:30			189	81	
04:45			1	1	6	17	18	16:45			196	694	70	275	969
05:00			2	4		17:00			215	78	
05:15			7	8		17:15			262	115	
05:30			6	9		17:30			212	94	
05:45			3	18	20	41	59	17:45			218	907	88	375	1282
06:00			6	37		18:00			192	95	
06:15			8	44		18:15			143	85	
06:30			14	67		18:30			163	114	
06:45			23	51	82	230	281	18:45			121	619	69	363	982
07:00			44	121		19:00			98	82	
07:15			55	168		19:15			102	66	
07:30			68	178		19:30			85	69	
07:45			51	218	190	657	875	19:45			54	339	44	261	600
08:00			60	184		20:00			69	52	
08:15			78	212		20:15			65	54	
08:30			81	219		20:30			29	44	
08:45			60	279	179	794	1073	20:45			40	203	48	198	401
09:00			84	170		21:00			28	32	
09:15			56	155		21:15			34	33	
09:30			38	134		21:30			31	45	
09:45			61	239	91	550	789	21:45			23	116	24	134	250
10:00			57	68		22:00			26	25	
10:15			47	80		22:15			17	9	
10:30			27	67		22:30			15	13	
10:45			8	139	71	286	425	22:45			25	83	16	63	146
11:00			14	75		23:00			21	8	
11:15			26	44		23:15			13	11	
11:30			37	70		23:30			27	4	
11:45			43	120	62	251	371	23:45			9	70	11	34	104
Total Vol.			1119		2857		**3976**				3837		2676		**6513**

Daily Totals	NB	SB	EB	WB	Combined
			4956	5533	**10489**

	AM			PM		
Split %	28.1%	71.9%	**37.9%**	58.9%	41.1%	**62.1%**
Peak Hour	08:15	07:45	**08:15**	17:00	17:15	**17:00**
Volume	303	805	**1083**	907	392	**1282**
P.H.F.	0.90	0.92	**0.90**	0.87	0.85	**0.85**

PACIFIC TECHNICAL DATA

TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CARMEL VALLEY E-O BLACK MTN

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00			11	12		12:00			82	91	
00:15			12	8		12:15			82	84	
00:30			9	15		12:30			101	84	
00:45			6	38	11	46	84	12:45			89	354	78	337	691
01:00			6	9		13:00			91	78	
01:15			3	7		13:15			104	78	
01:30			5	5		13:30			81	80	
01:45			4	18	1	22	40	13:45			76	352	67	303	655
02:00			1	0		14:00			99	57	
02:15			3	2		14:15			84	72	
02:30			2	1		14:30			108	57	
02:45			1	7	0	3	10	14:45			93	384	82	268	652
03:00			0	1		15:00			87	52	
03:15			0	2		15:15			106	80	
03:30			1	4		15:30			137	82	
03:45			2	3	5	12	15	15:45			147	477	98	312	789
04:00			1	6		16:00			155	121	
04:15			2	4		16:15			151	103	
04:30			1	12		16:30			174	126	
04:45			1	5	9	31	36	16:45			179	659	131	481	1140
05:00			11	15		17:00			207	115	
05:15			10	12		17:15			198	152	
05:30			25	18		17:30			225	128	
05:45			11	57	20	65	122	17:45			244	874	122	517	1391
06:00			29	32		18:00			256	123	
06:15			22	32		18:15			215	104	
06:30			36	40		18:30			244	88	
06:45			56	143	50	154	297	18:45			179	894	95	410	1304
07:00			68	66		19:00			155	121	
07:15			62	65		19:15			153	103	
07:30			98	70		19:30			133	84	
07:45			94	322	88	289	611	19:45			103	544	95	403	947
08:00			88	125		20:00			93	65	
08:15			94	131		20:15			80	55	
08:30			105	175		20:30			59	40	
08:45			116	403	162	593	996	20:45			58	290	35	195	485
09:00			103	184		21:00			47	40	
09:15			141	191		21:15			49	62	
09:30			128	212		21:30			35	44	
09:45			128	500	169	756	1256	21:45			34	165	40	186	351
10:00			105	151		22:00			30	28	
10:15			79	140		22:15			28	30	
10:30			70	131		22:30			29	25	
10:45			84	338	125	547	885	22:45			27	114	21	104	218
11:00			85	88		23:00			20	18	
11:15			69	91		23:15			25	20	
11:30			77	77		23:30			19	22	
11:45			92	323	88	344	667	23:45			12	76	15	75	151
Total Vol.			2157		2862		**5019**				5183		3591		**8774**

Daily Totals	NB	SB	EB	WB	Combined
			7340	6453	**13793**

	AM			PM		
Split %	43.0%	57.0%	**36.4%**	59.1%	40.9%	**63.6%**
Peak Hour	09:15	09:00	**09:00**	17:45	16:45	**17:15**
Volume	502	756	**1256**	959	526	**1448**
P.H.F.	0.89	0.89	**0.92**	0.94	0.87	**0.96**

PACIFIC TECHNICAL DATA

LINSCOTT LAW & GREENSPAN engineers

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 5. Black Mountain Road, North of Maler Road

Orientation: *North-South*

Date of Count: *Thursday, May 29, 2014*

Analysts: *DASH*

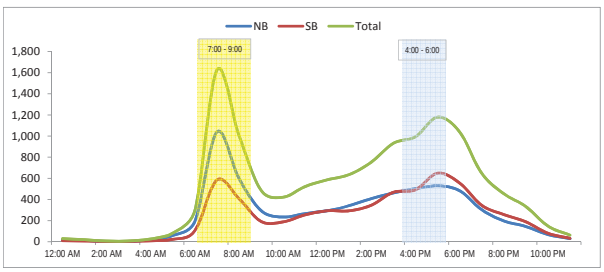
Weather: *Sunny*

AVC Proj. No: *14-0210*

24 Hour Segment Volume **12,303**

Time	Hourly Volume NB	SB	Total	Time	Hourly Volume NB	SB	Total
12:00 AM - 1:00 AM	19	11	30	12:00 PM - 1:00 PM	293	293	586
1:00 AM - 2:00 AM	13	7	20	1:00 PM - 2:00 PM	343	293	636
2:00 AM - 3:00 AM	2	5	7	2:00 PM - 3:00 PM	408	346	754
3:00 AM - 4:00 AM	5	2	7	3:00 PM - 4:00 PM	463	469	932
4:00 AM - 5:00 AM	17	11	28	4:00 PM - 5:00 PM	502	492	994
5:00 AM - 6:00 AM	60	23	83	5:00 PM - 6:00 PM	530	649	1,179
6:00 AM - 7:00 AM	193	104	297	6:00 PM - 7:00 PM	483	556	1,039
7:00 AM - 8:00 AM	1,039	585	1,624	7:00 PM - 8:00 PM	303	345	648
8:00 AM - 9:00 AM	598	408	1,006	8:00 PM - 9:00 PM	197	258	455
9:00 AM - 10:00 AM	295	192	487	9:00 PM - 10:00 PM	145	189	334
10:00 AM - 11:00 AM	234	188	422	10:00 PM - 11:00 PM	68	81	149
11:00 AM - 12:00 PM	268	255	523	11:00 PM - 12:00 AM	30	33	63
Total	**2,743**	**1,791**	**4,534**	**Total**	**3,765**	**4,004**	**7,769**

24-Hour NB Volume **6,508** ***24-Hour SB Volume*** **5,795**



LINSCOTT LAW & GREENSPAN engineers

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 6. Black Mountain Road, South of Oviedo Street

Orientation: *North-South*

Date of Count: *Thursday, May 29, 2014*

Analysts: *DASH*

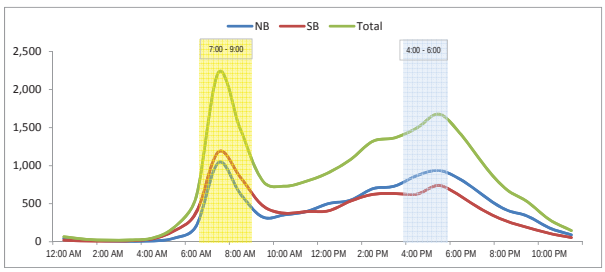
Weather: *Sunny*

AVC Proj. No: *14-0210*

24 Hour Segment Volume **18,956**

Time	Hourly Volume NB	SB	Total	Time	Hourly Volume NB	SB	Total
12:00 AM - 1:00 AM	44	22	66	12:00 PM - 1:00 PM	502	407	909
1:00 AM - 2:00 AM	23	10	33	1:00 PM - 2:00 PM	547	535	1,082
2:00 AM - 3:00 AM	11	10	21	2:00 PM - 3:00 PM	697	623	1,320
3:00 AM - 4:00 AM	9	15	24	3:00 PM - 4:00 PM	732	634	1,366
4:00 AM - 5:00 AM	10	38	48	4:00 PM - 5:00 PM	869	626	1,495
5:00 AM - 6:00 AM	48	143	191	5:00 PM - 6:00 PM	937	740	1,677
6:00 AM - 7:00 AM	208	384	592	6:00 PM - 7:00 PM	815	595	1,410
7:00 AM - 8:00 AM	1,041	1,180	2,221	7:00 PM - 8:00 PM	610	415	1,025
8:00 AM - 9:00 AM	630	848	1,478	8:00 PM - 9:00 PM	424	277	701
9:00 AM - 10:00 AM	326	477	803	9:00 PM - 10:00 PM	339	189	528
10:00 AM - 11:00 AM	354	376	730	10:00 PM - 11:00 PM	183	110	293
11:00 AM - 12:00 PM	398	398	796	11:00 PM - 12:00 AM	91	56	147
Total	**3,102**	**3,901**	**7,003**	**Total**	**6,746**	**5,207**	**11,953**

24-Hour NB Volume **9,848** ***24-Hour SB Volume*** **9,108**



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 7. Black Mountain Road, South of Carmel Mountain Road

Orientation: *North-South*

Date of Count: *Thursday, May 29, 2014*

Analysts: *DASH*

Weather: *Sunny*

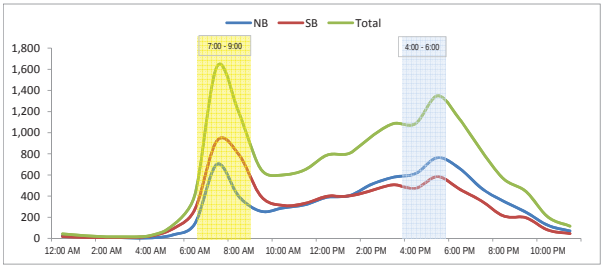
AVC Proj. No: *14-0210*

24 Hour Segment Volume			14,740

Time	Hourly Volume NB	SB	Total
12:00 AM - 1:00 AM	25	18	43
1:00 AM - 2:00 AM	16	10	26
2:00 AM - 3:00 AM	9	7	16
3:00 AM - 4:00 AM	6	9	15
4:00 AM - 5:00 AM	5	23	28
5:00 AM - 6:00 AM	33	91	124
6:00 AM - 7:00 AM	139	274	413
7:00 AM - 8:00 AM	701	924	1,625
8:00 AM - 9:00 AM	395	791	1,186
9:00 AM - 10:00 AM	256	397	653
10:00 AM - 11:00 AM	289	312	601
11:00 AM - 12:00 PM	319	332	651
Total	**2,193**	**3,188**	**5,381**

Time	Hourly Volume NB	SB	Total
12:00 PM - 1:00 PM	390	399	789
1:00 PM - 2:00 PM	404	401	805
2:00 PM - 3:00 PM	511	453	964
3:00 PM - 4:00 PM	579	507	1,086
4:00 PM - 5:00 PM	613	473	1,086
5:00 PM - 6:00 PM	764	585	1,349
6:00 PM - 7:00 PM	662	466	1,128
7:00 PM - 8:00 PM	473	353	826
8:00 PM - 9:00 PM	351	211	562
9:00 PM - 10:00 PM	249	196	445
10:00 PM - 11:00 PM	124	79	203
11:00 PM - 12:00 AM	70	46	116
Total	**5,190**	**4,169**	**9,359**

24-Hour NB Volume	7,383	24-Hour SB Volume	7,357



THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

BLACK MTN BTN PASEO MONTALBAN & TWIN TRAILS

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	12		10					12:00	98		88				
00:15	8		4					12:15	105		70				
00:30	5		9					12:30	84		95				
00:45	4	29	8	31			60	12:45	96	383	105	358			741
01:00	6		4					13:00	91		84				
01:15	8		2					13:15	121		88				
01:30	9		3					13:30	115		80				
01:45	4	27	5	14			41	13:45	84	411	97	349			760
02:00	2		4					14:00	97		103				
02:15	3		6					14:15	125		100				
02:30	2		1					14:30	135		97				
02:45	4	11	2	13			24	14:45	141	498	103	403			901
03:00	2		1					15:00	118		98				
03:15	0		2					15:15	121		77				
03:30	1		1					15:30	184		90				
03:45	0	3	0	4			7	15:45	148	571	88	353			924
04:00	1		1					16:00	199		101				
04:15	2		2					16:15	184		126				
04:30	0		6					16:30	195		116				
04:45	3	6	9	18			24	16:45	216	794	108	451			1245
05:00	3		12					17:00	222		105				
05:15	5		18					17:15	218		95				
05:30	6		22					17:30	190		99				
05:45	12	26	28	80			106	17:45	195	825	111	410			1235
06:00	18		35					18:00	184		103				
06:15	35		55					18:15	161		97				
06:30	50		84					18:30	170		106				
06:45	88	191	111	285			476	18:45	162	677	121	427			1104
07:00	121		184					19:00	158		106				
07:15	135		195					19:15	141		88				
07:30	141		226					19:30	111		97				
07:45	126	523	184	789			1312	19:45	108	518	88	379			897
08:00	151		212					20:00	111		77				
08:15	116		218					20:15	90		54				
08:30	105		162					20:30	84		51				
08:45	90	462	119	711			1173	20:45	88	373	40	222			595
09:00	66		123					21:00	75		35				
09:15	77		126					21:15	65		41				
09:30	84		115					21:30	40		33				
09:45	77	304	108	472			776	21:45	48	228	30	139			367
10:00	51		95					22:00	55		28				
10:15	62		90					22:15	35		21				
10:30	66		68					22:30	22		20				
10:45	67	246	84	337			583	22:45	28	140	15	84			224
11:00	58		95					23:00	21		11				
11:15	77		88					23:15	19		9				
11:30	69		81					23:30	21		12				
11:45	78	282	75	339			621	23:45	18	79	8	40			119
Total Vol.	2110		3093				**5203**		5497		3615				**9112**

Daily Totals	NB	SB	EB	WB	Combined
	7607	6708			**14315**

	AM			PM		
Split %	40.6%	59.4%	**36.3%**	60.3%	39.7%	**63.7%**
Peak Hour	07:15	07:30	**07:30**	16:30	16:15	**16:30**
Volume	553	840	**1374**	851	455	**1275**
P.H.F.	0.92	0.93	**0.94**	0.96	0.90	**0.97**

PACIFIC TECHNICAL DATA

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 8. Black Mountain Road, South of Twin Trails Drive

Orientation: *North-South*

Date of Count: *Thursday, May 29, 2014*

Analysts: *DASH*

Weather: *Sunny*

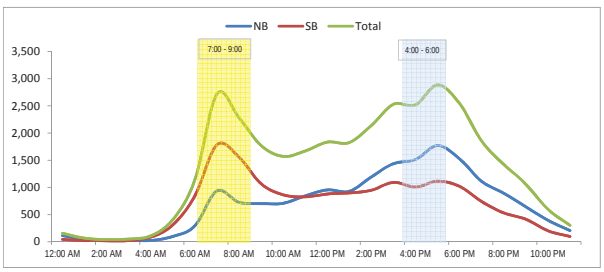
AVC Proj. No: *14-0210*

24 Hour Segment Volume			33,492

Time	Hourly Volume NB	SB	Total
12:00 AM - 1:00 AM	113	44	157
1:00 AM - 2:00 AM	45	20	65
2:00 AM - 3:00 AM	26	17	43
3:00 AM - 4:00 AM	26	23	49
4:00 AM - 5:00 AM	24	85	109
5:00 AM - 6:00 AM	98	310	408
6:00 AM - 7:00 AM	293	845	1,138
7:00 AM - 8:00 AM	935	1,784	2,719
8:00 AM - 9:00 AM	725	1,557	2,282
9:00 AM - 10:00 AM	703	1,067	1,770
10:00 AM - 11:00 AM	707	864	1,571
11:00 AM - 12:00 PM	844	826	1670
Total	**4,539**	**7,442**	**11,981**

Time	Hourly Volume NB	SB	Total
12:00 PM - 1:00 PM	954	879	1,833
1:00 PM - 2:00 PM	928	898	1,826
2:00 PM - 3:00 PM	1,192	948	2,140
3:00 PM - 4:00 PM	1,437	1,093	2,530
4:00 PM - 5:00 PM	1,512	1,006	2,518
5:00 PM - 6:00 PM	1,770	1,115	2,885
6:00 PM - 7:00 PM	1,524	1,019	2,543
7:00 PM - 8:00 PM	1,110	740	1,850
8:00 PM - 9:00 PM	893	531	1,424
9:00 PM - 10:00 PM	644	415	1,059
10:00 PM - 11:00 PM	396	203	599
11:00 PM - 12:00 AM	207	97	304
Total	**12,567**	**8,944**	**21,511**

24-Hour NB Volume	17,106	24-Hour SB Volume	16,386



THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

BLACK MTN BTN SR-56 RAMPS

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	28		40					12:00	152		199				
00:15	35		27					12:15	162		202				
00:30	23		33					12:30	151		221				
00:45	22	108	35	135			243	12:45	142	607	215	837			1444
01:00	28		28					13:00	151		195				
01:15	33		32					13:15	195		216				
01:30	23		22					13:30	177		212				
01:45	21	105	18	100			205	13:45	184	707	184	807			1514
02:00	28		11					14:00	223		218				
02:15	23		16					14:15	218		252				
02:30	22		9					14:30	221		211				
02:45	16	89	15	51			140	14:45	214	876	244	925			1801
03:00	16		11					15:00	235		235				
03:15	11		16					15:15	242		218				
03:30	18		12					15:30	226		202				
03:45	10	55	9	48			103	15:45	295	998	262	917			1915
04:00	15		12					16:00	384		277				
04:15	11		15					16:15	356		284				
04:30	12		11					16:30	419		289				
04:45	9	47	15	53			100	16:45	442	1601	315	1165			2766
05:00	16		26					17:00	418		333				
05:15	11		28					17:15	426		321				
05:30	15		33					17:30	384		318				
05:45	22	64	35	122			186	17:45	395	1623	342	1314			2937
06:00	28		44					18:00	362		316				
06:15	61		88					18:15	351		284				
06:30	84		103					18:30	299		252				
06:45	161	334	195	430			764	18:45	275	1287	244	1096			2383
07:00	248		268					19:00	265		250				
07:15	362		342					19:15	242		202				
07:30	342		381					19:30	184		162				
07:45	368	1320	419	1410			2730	19:45	218	909	177	791			1700
08:00	288		421					20:00	165		151				
08:15	215		442					20:15	151		162				
08:30	212		418					20:30	142		110				
08:45	199	914	316	1597			2511	20:45	116	574	108	531			1105
09:00	184		332					21:00	84		88				
09:15	166		305					21:15	90		70				
09:30	175		284					21:30	66		56				
09:45	142	667	268	1189			1856	21:45	65	305	42	256			561
10:00	135		244					22:00	75		44				
10:15	111		244					22:15	54		51				
10:30	135		258					22:30	44		42				
10:45	141	522	242	988			1510	22:45	42	215	35	172			387
11:00	122		226					23:00	35		42				
11:15	116		218					23:15	35		48				
11:30	128		223					23:30	42		37				
11:45	135	501	218	885			1386	23:45	37	149	44	171			320
Total Vol.	4726		7008				**11734**		9851		8982				**18833**

Daily Totals	NB	SB	EB	WB	Combined
	14577	15990			**30567**

	AM			PM		
Split %	40.3%	59.7%	**38.4%**	52.3%	47.7%	**61.6%**
Peak Hour	07:15	07:45	**07:15**	16:30	17:00	**16:30**
Volume	1360	1700	**2923**	1705	1314	**2963**
P.H.F.	0.92	0.96	**0.93**	0.96	0.96	**0.98**

PACIFIC TECHNICAL DATA

LINSCOTT LAW & GREENSPAN engineers

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 9. Black Mountain Road, North of Park Village Drive

Orientation: North-South

Date of Count: Thursday, May 29, 2014

Analysts: DASH

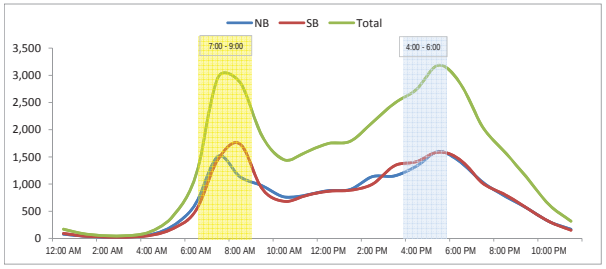
Weather: Sunny

AVC Proj. No: 14-0210

24 Hour Segment Volume			35,443
Time	Hourly Volume		
	NB	SB	Total
12:00 AM - 1:00 AM	77	92	169
1:00 AM - 2:00 AM	39	41	80
2:00 AM - 3:00 AM	25	26	51
3:00 AM - 4:00 AM	28	25	53
4:00 AM - 5:00 AM	74	60	134
5:00 AM - 6:00 AM	242	188	430
6:00 AM - 7:00 AM	644	512	1,156
7:00 AM - 8:00 AM	1,510	1,450	2,960
8:00 AM - 9:00 AM	1,133	1,739	2,872
9:00 AM - 10:00 AM	969	914	1,883
10:00 AM - 11:00 AM	764	682	1,446
11:00 AM - 12:00 PM	799	790	1589
Total	6,304	6,519	12,823

Time	Hourly Volume		
	NB	SB	Total
12:00 PM - 1:00 PM	879	868	1,747
1:00 PM - 2:00 PM	901	886	1,787
2:00 PM - 3:00 PM	1,136	997	2,133
3:00 PM - 4:00 PM	1,150	1,337	2,487
4:00 PM - 5:00 PM	1,329	1,411	2,740
5:00 PM - 6:00 PM	1,598	1,590	3,188
6:00 PM - 7:00 PM	1,400	1,442	2,842
7:00 PM - 8:00 PM	1,033	1,015	2,048
8:00 PM - 9:00 PM	781	808	1,589
9:00 PM - 10:00 PM	558	560	1,118
10:00 PM - 11:00 PM	312	311	623
11:00 PM - 12:00 AM	168	150	318
Total	11,245	11,375	22,620

24-Hour NB Volume	17,549	24-Hour SB Volume	17,894



THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

BLACK MTN BTN N-O CANYONSIDE

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	27		19					12:00	169		180				
00:15	30		11					12:15	201		165				
00:30	20		11					12:30	152		197				
00:45	21	98	10	51			149	12:45	213	735	171	713			1448
01:00	14		15					13:00	200		154				
01:15	9		6					13:15	176		170				
01:30	13		2					13:30	197		151				
01:45	5	41	7	30			71	13:45	176	749	163	638			1387
02:00	8		8					14:00	216		160				
02:15	9		2					14:15	213		188				
02:30	5		5					14:30	238		198				
02:45	5	27	4	19			46	14:45	249	916	166	712			1628
03:00	6		4					15:00	268		193				
03:15	7		4					15:15	287		189				
03:30	4		9					15:30	277		226				
03:45	9	26	9	26			52	15:45	278	1110	247	855			1965
04:00	7		6					16:00	318		277				
04:15	6		7					16:15	348		284				
04:30	7		9					16:30	362		295				
04:45	17	37	29	51			88	16:45	395	1423	288	1144			2567
05:00	9		32					17:00	415		251				
05:15	20		35					17:15	462		315				
05:30	34		59					17:30	388		325				
05:45	41	104	79	205			309	17:45	315	1580	303	1194			2774
06:00	48		101					18:00	388		284				
06:15	53		135					18:15	303		295				
06:30	69		184					18:30	319		251				
06:45	85	255	265	685			940	18:45	333	1343	237	1067			2410
07:00	195		344					19:00	295		238				
07:15	212		461					19:15	277		181				
07:30	206		418					19:30	241		203				
07:45	215	828	477	1700			2528	19:45	232	1045	174	796			1841
08:00	188		495					20:00	227		146				
08:15	180		515					20:15	185		103				
08:30	195		444					20:30	204		92				
08:45	170	733	362	1816			2549	20:45	164	780	100	441			1221
09:00	166		400					21:00	151		93				
09:15	129		367					21:15	164		70				
09:30	161		316					21:30	138		70				
09:45	164	620	220	1303			1923	21:45	129	582	69	302			884
10:00	135		237					22:00	135		58				
10:15	132		194					22:15	102		59				
10:30	134		169					22:30	72		48				
10:45	150	551	192	792			1343	22:45	72	381	58	223			604
11:00	152		196					23:00	65		43				
11:15	159		176					23:15	39		46				
11:30	160		143					23:30	44		29				
11:45	148	619	191	706			1325	23:45	30	178	32	150			328
Total Vol.	3939		7384				**11323**		10822		8235				**19057**

Daily Totals	NB	SB	EB	WB	Combined
	14761	15619			**30380**

	AM			PM		
Split %	34.8%	65.2%	**37.3%**	56.8%	43.2%	**62.7%**
Peak Hour	07:00	07:45	**07:45**	16:45	17:15	**16:45**
Volume	828	1931	**2709**	1660	1227	**2839**
P.H.F.	0.96	0.94	**0.97**	0.94	0.94	**0.91**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

BLACK MTN BTN MERCY & BABUTA

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	25		21					12:00	165		188				
00:15	21		19					12:15	198		164				
00:30	23		14					12:30	183		180				
00:45	9	78	17	71			149	12:45	232	778	152	684			1462
01:00	12		16					13:00	216		164				
01:15	6		14					13:15	184		170				
01:30	12		4					13:30	186		149				
01:45	4	34	10	44			78	13:45	190	776	163	646			1422
02:00	9		8					14:00	213		160				
02:15	7		7					14:15	194		187				
02:30	3		6					14:30	215		173				
02:45	5	24	3	24			48	14:45	256	878	168	688			1566
03:00	7		7					15:00	282		226				
03:15	5		3					15:15	243		172				
03:30	4		8					15:30	277		203				
03:45	9	25	10	28			53	15:45	238	1040	233	834			1874
04:00	12		6					16:00	288		251				
04:15	3		7					16:15	335		244				
04:30	7		10					16:30	251		284				
04:45	34	56	20	43			99	16:45	288	1162	262	1041			2203
05:00	20		20					17:00	412		241				
05:15	30		26					17:15	462		277				
05:30	43		44					17:30	351		284				
05:45	58	151	51	141			292	17:45	318	1543	262	1064			2607
06:00	66		69					18:00	312		251				
06:15	60		80					18:15	336		255				
06:30	90		103					18:30	328		268				
06:45	122	338	138	390			728	18:45	302	1278	226	1000			2278
07:00	195		366					19:00	291		218				
07:15	215		415					19:15	285		169				
07:30	222		435					19:30	259		178				
07:45	206	838	468	1684			2522	19:45	175	1010	184	749			1759
08:00	218		488					20:00	180		152				
08:15	170		512					20:15	165		107				
08:30	184		451					20:30	165		116				
08:45	170	742	332	1783			2525	20:45	141	651	101	476			1127
09:00	161		318					21:00	124		99				
09:15	146		326					21:15	140		86				
09:30	155		296					21:30	134		79				
09:45	157	619	203	1143			1762	21:45	106	504	75	339			843
10:00	139		208					22:00	125		70				
10:15	139		169					22:15	95		66				
10:30	140		141					22:30	67		56				
10:45	151	569	186	704			1273	22:45	66	353	68	260			613
11:00	154		192					23:00	63		51				
11:15	135		149					23:15	38		56				
11:30	150		151					23:30	37		31				
11:45	146	585	155	647			1232	23:45	25	163	46	184			347
Total Vol.	4059		6702				**10761**		10136		7965				**18101**

Daily Totals	NB	SB	EB	WB	Combined
	14195	14667			**28862**

	AM			PM		
Split %	37.7%	62.3%	**37.3%**	56.0%	44.0%	**62.7%**
Peak Hour	07:15	07:45	**07:30**	17:00	17:15	**17:00**
Volume	861	1919	**2719**	1543	1074	**2607**
P.H.F.	0.97	0.94	**0.96**	0.85	0.95	**0.88**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

BLACK MTN S-O WESTVIEW

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	18		28					12:00	90		70				
00:15	22		21					12:15	99		95				
00:30	16		19					12:30	84		77				
00:45	11	67	20	88			155	12:45	111	384	95	337			721
01:00	9		16					13:00	118		84				
01:15	12		11					13:15	121		111				
01:30	12		15					13:30	105		103				
01:45	10	43	9	51			94	13:45	111	455	88	386			841
02:00	7		12					14:00	135		98				
02:15	9		11					14:15	141		111				
02:30	2		5					14:30	161		142				
02:45	1	19	4	32			51	14:45	184	621	151	502			1123
03:00	5		9					15:00	177		184				
03:15	4		5					15:15	222		177				
03:30	5		4					15:30	241		161				
03:45	6	20	5	23			43	15:45	277	917	184	706			1623
04:00	4		6					16:00	288		218				
04:15	5		9					16:15	262		202				
04:30	11		15					16:30	315		262				
04:45	19	39	11	41			80	16:45	342	1207	235	917			2124
05:00	12		18					17:00	388		242				
05:15	15		15					17:15	366		288				
05:30	11		32					17:30	333		260				
05:45	15	53	42	107			160	17:45	290	1377	235	1025			2402
06:00	32		65					18:00	277		221				
06:15	54		77					18:15	284		184				
06:30	65		184					18:30	242		141				
06:45	88	239	262	588			827	18:45	222	1025	121	667			1692
07:00	177		321					19:00	218		103				
07:15	161		360					19:15	202		116				
07:30	168		288					19:30	170		98				
07:45	142	648	415	1384			2032	19:45	165	755	88	405			1160
08:00	168		442					20:00	177		97				
08:15	135		448					20:15	154		84				
08:30	133		362					20:30	111		77				
08:45	130	566	320	1572			2138	20:45	108	550	65	323			873
09:00	121		262					21:00	88		70				
09:15	116		242					21:15	98		54				
09:30	122		222					21:30	70		44				
09:45	108	467	184	910			1377	21:45	54	310	35	203			513
10:00	99		161					22:00	44		40				
10:15	98		121					22:15	65		28				
10:30	117		108					22:30	44		32				
10:45	121	435	88	478			913	22:45	42	195	28	128			323
11:00	116		95					23:00	35		20				
11:15	102		77					23:15	22		16				
11:30	95		95					23:30	28		22				
11:45	101	414	84	351			765	23:45	19	104	22	80			184
Total Vol.	3010		5625				**8635**		7900		5679				**13579**

Daily Totals	NB	SB	EB	WB	Combined
	10910	11304			**22214**

	AM			PM		
Split %	34.9%	65.1%	**38.9%**	58.2%	41.8%	**61.1%**
Peak Hour	07:00	07:45	**07:45**	16:45	16:30	**16:45**
Volume	648	1667	**2245**	1429	1027	**2454**
P.H.F.	0.92	0.93	**0.92**	0.94	0.89	**0.94**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

WESTVIEW E-O BLACK MT

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00					9		10			12:00					35		37		
00:15					12		5			12:15					41		41		
00:30					11		4			12:30					44		44		
00:45					9	41	6	25	66	12:45					35	155	29	151	306
01:00					5		10			13:00					29		39		
01:15					4		5			13:15					28		30		
01:30					5		4			13:30					33		33		
01:45					6	20	3	22	42	13:45					31	121	35	137	258
02:00					4		2			14:00					38		28		
02:15					2		1			14:15					33		41		
02:30					3		1			14:30					28		40		
02:45					2	11	2	6	17	14:45					41	140	35	144	284
03:00					1		0			15:00					44		42		
03:15					0		1			15:15					35		55		
03:30					1		2			15:30					40		68		
03:45					1	3	1	4	7	15:45					58	177	60	225	402
04:00					1		2			16:00					51		68		
04:15					2		3			16:15					50		77		
04:30					2		2			16:30					77		78		
04:45					0	5	1	8	13	16:45					62	240	51	274	514
05:00					4		4			17:00					77		70		
05:15					5		5			17:15					61		77		
05:30					9		6			17:30					78		89		
05:45					7	25	5	20	45	17:45					51	267	88	324	591
06:00					12		10			18:00					56		77		
06:15					21		18			18:15					68		54		
06:30					35		21			18:30					51		62		
06:45					40	108	40	89	197	18:45					44	219	51	244	463
07:00					66		51			19:00					41		44		
07:15					81		55			19:15					40		35		
07:30					88		62			19:30					35		40		
07:45					70	305	40	208	513	19:45					48	164	33	152	316
08:00					81		55			20:00					44		41		
08:15					77		48			20:15					35		28		
08:30					62		41			20:30					30		22		
08:45					68	288	40	184	472	20:45					36	145	26	117	262
09:00					51		48			21:00					31		28		
09:15					40		40			21:15					28		21		
09:30					35		35			21:30					22		15		
09:45					44	170	44	167	337	21:45					16	97	19	83	180
10:00					41		41			22:00					18		20		
10:15					37		48			22:15					12		16		
10:30					40		37			22:30					15		11		
10:45					32	150	33	159	309	22:45					11	56	9	56	112
11:00					33		40			23:00					9		12		
11:15					34		35			23:15					10		15		
11:30					42		48			23:30					5		11		
11:45					40	149	44	167	316	23:45					6	30	9	47	77
Total Vol.					1275		1059		**2334**						1811		1954		**3765**

	Daily Totals NB	SB	EB	WB	Combined
			3086	3013	**6099**

	AM			PM		
Split %	54.6%	45.4%	**38.3%**	48.1%	51.9%	**61.7%**
Peak Hour	07:15	07:15	**07:15**	16:45	17:15	**17:00**
Volume	320	212	**532**	278	331	**591**
P.H.F.	0.91	0.85	**0.89**	0.89	0.93	**0.88**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

CARMEL MTN BTN SUNDEVIL & PASEO ALDABRA

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00					10		3			12:00					93		61		
00:15					8		5			12:15					90		82		
00:30					9		3			12:30					91		78		
00:45					4	31	4	15	46	12:45					91	365	77	298	663
01:00					10		1			13:00					101		59		
01:15					4		1			13:15					115		72		
01:30					3		1			13:30					90		96		
01:45					5	22	0	3	25	13:45					77	383	80	307	690
02:00					0		3			14:00					86		69		
02:15					7		0			14:15					110		68		
02:30					0		1			14:30					172		108		
02:45					2	9	1	5	14	14:45					186	554	166	411	965
03:00					2		2			15:00					186		163		
03:15					3		5			15:15					163		105		
03:30					2		1			15:30					164		127		
03:45					3	10	4	12	22	15:45					160	673	178	573	1246
04:00					0		5			16:00					151		121		
04:15					1		7			16:15					168		118		
04:30					2		6			16:30					177		135		
04:45					0	3	13	31	34	16:45					151	647	108	482	1129
05:00					2		14			17:00					184		168		
05:15					2		20			17:15					195		135		
05:30					1		27			17:30					199		141		
05:45					10	15	32	93	108	17:45					142	720	111	555	1275
06:00					11		47			18:00					182		126		
06:15					12		41			18:15					170		129		
06:30					17		60			18:30					178		123		
06:45					30	70	88	236	306	18:45					175	705	97	475	1180
07:00					288		277			19:00					141		99		
07:15					318		284			19:15					99		68		
07:30					161		206			19:30					94		67		
07:45					148	915	212	979	1894	19:45					85	419	59	293	712
08:00					151		188			20:00					91		56		
08:15					121		195			20:15					103		58		
08:30					128		121			20:30					82		33		
08:45					111	511	101	605	1116	20:45					63	339	21	168	507
09:00					85		100			21:00					68		21		
09:15					65		99			21:15					54		22		
09:30					51		89			21:30					53		22		
09:45					63	264	72	360	624	21:45					41	216	27	92	308
10:00					56		69			22:00					39		10		
10:15					57		56			22:15					54		13		
10:30					52		69			22:30					30		17		
10:45					60	225	59	253	478	22:45					28	151	22	62	213
11:00					55		63			23:00					25		12		
11:15					63		59			23:15					23		10		
11:30					60		64			23:30					16		10		
11:45					59	237	60	246	483	23:45					15	79	3	35	114
Total Vol.					2312		2838		**5150**						5251		3751		**9002**

	Daily Totals NB	SB	EB	WB	Combined
			7563	6589	**14152**

	AM			PM		
Split %	44.9%	55.1%	**36.4%**	58.3%	41.7%	**63.6%**
Peak Hour	07:00	07:00	**07:00**	16:45	15:00	**16:45**
Volume	915	979	**1894**	729	573	**1281**
P.H.F.	0.72	0.86	**0.79**	0.93	0.80	**0.91**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

CARMEL MTN BTN SR-56 WB RAMPS & PASEO MONTALBNAN

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00	20		8							12:00	113		135						
00:15	29		9							12:15	131		113						
00:30	15		12							12:30	150		128						
00:45	10	74	6	35					109	12:45	114	508	120	496					1004
01:00	15		4							13:00	158		155						
01:15	10		2							13:15	138		116						
01:30	6		8							13:30	144		142						
01:45	12	43	5	19					62	13:45	116	556	134	547					1103
02:00	3		4							14:00	129		118						
02:15	8		2							14:15	154		111						
02:30	6		3							14:30	199		140						
02:45	5	22	5	14					36	14:45	240	722	221	590					1312
03:00	4		5							15:00	244		258						
03:15	5		5							15:15	228		186						
03:30	6		6							15:30	230		173						
03:45	2	17	8	24					41	15:45	216	918	222	839					1757
04:00	0		5							16:00	240		202						
04:15	1		10							16:15	251		188						
04:30	3		10							16:30	288		195						
04:45	1	5	15	40					45	16:45	262	1041	226	811					1852
05:00	5		27							17:00	295		205						
05:15	6		27							17:15	281		184						
05:30	15		34							17:30	266		223						
05:45	18	44	58	146					190	17:45	237	1079	177	789					1868
06:00	28		64							18:00	241		208						
06:15	48		98							18:15	285		213						
06:30	77		126							18:30	280		209						
06:45	184	337	198	486					823	18:45	252	1058	197	827					1885
07:00	312		315							19:00	188		186						
07:15	296		277							19:15	171		144						
07:30	202		268							19:30	164		90						
07:45	188	998	242	1102					2100	19:45	150	673	106	526					1199
08:00	175		259							20:00	121		101						
08:15	177		244							20:15	126		88						
08:30	216		206							20:30	122		109						
08:45	184	752	188	897					1649	20:45	107	476	53	351					827
09:00	138		189							21:00	113		42						
09:15	113		155							21:15	96		53						
09:30	84		145							21:30	94		53						
09:45	109	444	145	634					1078	21:45	73	376	43	191					567
10:00	101		125							22:00	84		38						
10:15	104		109							22:15	71		38						
10:30	104		138							22:30	77		28						
10:45	95	404	115	487					891	22:45	54	286	29	133					419
11:00	95		121							23:00	39		24						
11:15	97		110							23:15	56		22						
11:30	111		126							23:30	27		14						
11:45	94	397	117	474					871	23:45	23	145	14	74					219
Total Vol.		3537		4358					**7895**		7838		6174						**14012**

	Daily Totals NB	SB	EB	WB	Combined
			11375	10532	**21907**

	AM			PM		
Split %	44.8%	55.2%	**36.0%**	55.9%	44.1%	**64.0%**
Peak Hour	07:00	07:00	**07:00**	16:30	15:00	**16:45**
Volume	998	1102	**2100**	1126	839	**1942**
P.H.F.	0.80	0.87	**0.84**	0.97	0.81	**0.97**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

RANCHO PENASQUITOS BTN CALLE DE LAS ROSAS & SR-56 EB RAMPS

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00	35		24							12:00	126		158						
00:15	27		19							12:15	139		160						
00:30	26		19							12:30	144		175						
00:45	19	107	16	78					185	12:45	144	553	184	677					1230
01:00	16		12							13:00	160		179						
01:15	9		11							13:15	150		156						
01:30	15		10							13:30	142		169						
01:45	11	51	8	41					92	13:45	149	601	169	673					1274
02:00	2		11							14:00	159		172						
02:15	7		7							14:15	168		188						
02:30	6		7							14:30	186		242						
02:45	7	22	16	41					63	14:45	233	746	238	840					1586
03:00	4		3							15:00	240		259						
03:15	6		7							15:15	246		249						
03:30	8		10							15:30	194		305						
03:45	1	19	8	28					47	15:45	219	899	329	1142					2041
04:00	2		14							16:00	225		334						
04:15	4		16							16:15	298		332						
04:30	11		12							16:30	268		348						
04:45	10	27	33	75					102	16:45	328	1119	351	1365					2484
05:00	19		42							17:00	344		348						
05:15	20		45							17:15	318		345						
05:30	33		61							17:30	299		312						
05:45	50	122	88	236					358	17:45	284	1245	345	1350					2595
06:00	64		115							18:00	283		315						
06:15	88		113							18:15	251		322						
06:30	101		134							18:30	308		303						
06:45	177	430	213	575					1005	18:45	224	1066	285	1225					2291
07:00	289		328							19:00	194		265						
07:15	248		344							19:15	188		200						
07:30	241		281							19:30	180		182						
07:45	215	993	280	1233					2226	19:45	158	720	182	829					1549
08:00	188		277							20:00	160		143						
08:15	168		295							20:15	132		151						
08:30	177		271							20:30	150		138						
08:45	184	717	232	1075					1792	20:45	108	550	94	526					1076
09:00	163		245							21:00	123		104						
09:15	163		222							21:15	103		85						
09:30	129		210							21:30	104		83						
09:45	142	597	190	867					1464	21:45	106	436	84	356					792
10:00	132		177							22:00	86		70						
10:15	127		154							22:15	93		80						
10:30	129		170							22:30	83		55						
10:45	97	485	150	651					1136	22:45	53	315	50	255					570
11:00	136		162							23:00	53		43						
11:15	117		153							23:15	51		51						
11:30	134		169							23:30	32		47						
11:45	119	506	161	645					1151	23:45	27	163	28	169					332
Total Vol.		4076		5545					**9621**			8413		9407					**17820**

	Daily Totals NB	SB	EB	WB	Combined
			12489	14952	**27441**

	AM			PM		
Split %	42.4%	57.6%	**35.1%**	47.2%	52.8%	**64.9%**
Peak Hour	07:00	07:00	**07:00**	16:45	16:30	**16:30**
Volume	993	1233	**2226**	1289	1392	**2650**
P.H.F.	0.86	0.90	**0.90**	0.95	0.99	**0.96**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

RANCHO PENASQUITOS BTN VIA DEL SUD & CALLE DE LAS ROSAS

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00	33		25							12:00	157		205						
00:15	28		16							12:15	131		190						
00:30	29		23							12:30	159		162						
00:45	27	117	18	82					199	12:45	109	556	153	710					1266
01:00	21		13							13:00	126		183						
01:15	10		11							13:15	158		164						
01:30	17		10							13:30	170		171						
01:45	13	61	9	43					104	13:45	176	630	182	700					1330
02:00	4		13							14:00	204		183						
02:15	9		8							14:15	189		178						
02:30	6		6							14:30	206		246						
02:45	9	28	18	45					73	14:45	223	822	226	833					1655
03:00	5		4							15:00	225		316						
03:15	6		7							15:15	254		276						
03:30	7		11							15:30	192		275						
03:45	3	21	9	31					52	15:45	204	875	304	1171					2046
04:00	3		17							16:00	255		338						
04:15	4		17							16:15	318		316						
04:30	11		17							16:30	300		342						
04:45	10	28	37	88					116	16:45	318	1191	317	1313					2504
05:00	23		49							17:00	344		362						
05:15	17		55							17:15	326		315						
05:30	32		64							17:30	312		322						
05:45	47	119	97	265					384	17:45	288	1270	317	1316					2586
06:00	55		123							18:00	314		324						
06:15	57		121							18:15	309		314						
06:30	85		153							18:30	271		291						
06:45	101	298	226	623					921	18:45	235	1129	288	1217					2346
07:00	288		368							19:00	257		256						
07:15	195		368							19:15	236		184						
07:30	216		277							19:30	230		202						
07:45	188	887	298	1311					2198	19:45	177	900	160	802					1702
08:00	195		305							20:00	167		180						
08:15	161		288							20:15	156		115						
08:30	177		269							20:30	155		101						
08:45	168	701	266	1128					1829	20:45	120	598	112	508					1106
09:00	166		249							21:00	128		86						
09:15	154		247							21:15	158		95						
09:30	125		231							21:30	109		98						
09:45	141	586	221	948					1534	21:45	94	489	94	373					862
10:00	135		185							22:00	86		84						
10:15	134		179							22:15	87		54						
10:30	133		177							22:30	72		56						
10:45	101	503	152	693					1196	22:45	64	309	55	249					558
11:00	138		181							23:00	54		47						
11:15	129		167							23:15	65		38						
11:30	130		181							23:30	48		27						
11:45	120	517	168	697					1214	23:45	29	196	31	143					339
Total Vol.		3866		5954					**9820**			8965		9335					**18300**

Daily Totals	NB	SB	EB	WB	Combined
	12831	15289			**28120**

	AM			PM		
Split %	39.4%	60.6%	**34.9%**	49.0%	51.0%	**65.1%**
Peak Hour	07:00	07:00	**07:00**	16:45	16:15	**16:30**
Volume	887	1311	**2198**	1300	1337	**2624**
P.H.F.	0.77	0.89	**0.84**	0.95	0.92	**0.93**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

RANCHO PENASQUITOS BTN I-15 SB RAMPS & PASEO MONTRIL

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00	44		26							12:00	184		208						
00:15	41		21							12:15	176		202						
00:30	25		25							12:30	166		219						
00:45	27	137	14	86					223	12:45	186	712	200	829					1541
01:00	31		11							13:00	176		202						
01:15	13		10							13:15	200		191						
01:30	21		16							13:30	198		191						
01:45	16	81	9	46					127	13:45	197	771	207	791					1562
02:00	8		16							14:00	196		208						
02:15	9		12							14:15	203		223						
02:30	10		9							14:30	220		254						
02:45	9	36	17	54					90	14:45	252	871	257	942					1813
03:00	5		4							15:00	267		238						
03:15	10		8							15:15	299		273						
03:30	9		11							15:30	249		309						
03:45	7	31	14	37					68	15:45	269	1084	301	1121					2205
04:00	11		21							16:00	294		368						
04:15	5		19							16:15	377		355						
04:30	14		26							16:30	368		319						
04:45	13	43	46	112					155	16:45	384	1423	326	1368					2791
05:00	33		57							17:00	419		375						
05:15	32		70							17:15	404		341						
05:30	45		79							17:30	395		388						
05:45	71	181	123	329					510	17:45	370	1588	351	1455					3043
06:00	61		148							18:00	358		344						
06:15	69		202							18:15	349		289						
06:30	99		295							18:30	384		337						
06:45	138	367	384	1029					1396	18:45	254	1345	306	1276					2621
07:00	284		445							19:00	226		282						
07:15	226		426							19:15	247		224						
07:30	235		404							19:30	239		186						
07:45	218	963	384	1659					2622	19:45	207	919	189	881					1800
08:00	251		419							20:00	213		170						
08:15	202		375							20:15	163		137						
08:30	235		368							20:30	201		154						
08:45	202	890	305	1467					2357	20:45	152	729	107	568					1297
09:00	229		336							21:00	146		113						
09:15	182		281							21:15	132		98						
09:30	161		269							21:30	137		83						
09:45	169	741	255	1141					1882	21:45	147	562	100	394					956
10:00	177		233							22:00	119		66						
10:15	151		226							22:15	121		69						
10:30	149		223							22:30	98		59						
10:45	126	603	179	861					1464	22:45	87	425	62	256					681
11:00	159		218							23:00	67		53						
11:15	155		196							23:15	70		56						
11:30	168		198							23:30	46		41						
11:45	157	639	207	819					1458	23:45	42	225	29	179					404
Total Vol.		4712		7640					**12352**			10654		10060					**20714**

Daily Totals	NB	SB	EB	WB	Combined
	15366	17700			**33066**

	AM			PM		
Split %	38.1%	61.9%	**37.4%**	51.4%	48.6%	**62.6%**
Peak Hour	07:00	06:45	**07:00**	16:45	17:00	**17:00**
Volume	963	1659	**2622**	1602	1455	**3043**
P.H.F.	0.85	0.93	**0.90**	0.96	0.94	**0.96**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

POWAY E-O I-15 NB RAMPS

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00					41		34			12:00					273		254		
00:15					34		33			12:15					267		258		
00:30					30		23			12:30					296		247		
00:45					24	129	50	140	269	12:45					259	1095	307	1066	2161
01:00					17		20			13:00					288		298		
01:15					26		15			13:15					265		278		
01:30					19		20			13:30					266		288		
01:45					13	75	17	72	147	13:45					274	1093	316	1180	2273
02:00					18		8			14:00					280		281		
02:15					12		6			14:15					290		255		
02:30					15		9			14:30					339		340		
02:45					15	60	12	35	95	14:45					371	1280	375	1251	2531
03:00					13		4			15:00					397		374		
03:15					11		11			15:15					418		353		
03:30					12		9			15:30					404		303		
03:45					17	53	20	44	97	15:45					426	1645	382	1412	3057
04:00					24		21			16:00					495		404		
04:15					16		27			16:15					518		421		
04:30					29		35			16:30					415		451		
04:45					33	102	54	137	239	16:45					562	1990	426	1702	3692
05:00					51		82			17:00					518		515		
05:15					65		76			17:15					526		422		
05:30					70		125			17:30					505		413		
05:45					88	274	196	479	753	17:45					521	2070	370	1720	3790
06:00					111		213			18:00					495		399		
06:15					184		231			18:15					436		353		
06:30					202		300			18:30					403		392		
06:45					277	774	416	1160	1934	18:45					372	1706	310	1454	3160
07:00					318		589			19:00					317		289		
07:15					368		588			19:15					316		262		
07:30					404		551			19:30					296		243		
07:45					395	1485	606	2334	3819	19:45					247	1176	224	1018	2194
08:00					341		618			20:00					265		217		
08:15					318		521			20:15					198		185		
08:30					321		633			20:30					221		179		
08:45					315	1295	520	2292	3587	20:45					178	862	147	728	1590
09:00					290		495			21:00					194		150		
09:15					239		465			21:15					149		139		
09:30					239		444			21:30					164		140		
09:45					229	997	403	1807	2804	21:45					146	653	131	560	1213
10:00					229		388			22:00					155		107		
10:15					230		342			22:15					119		153		
10:30					208		305			22:30					110		73		
10:45					197	864	318	1353	2217	22:45					82	466	75	408	874
11:00					238		290			23:00					92		57		
11:15					216		274			23:15					67		58		
11:30					255		296			23:30					61		43		
11:45					254	963	260	1120	2083	23:45					46	266	42	200	466
Total Vol.						7071		10973	**18044**						14302		12699		**27001**

Daily Totals	NB	SB	EB	WB	Combined
			21373	23672	**45045**

	AM			PM		
Split %	39.2%	60.8%	**40.1%**	53.0%	47.0%	**59.9%**
Peak Hour	07:15	07:45	**07:15**	16:45	16:30	**16:45**
Volume	1508	2378	**3871**	2111	1814	**3887**
P.H.F.	0.93	0.94	**0.97**	0.94	0.88	**0.94**

PACIFIC TECHNICAL DATA

LINSCOTT LAW & GREENSPAN engineers

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 10. Carmel Mountain Road, South of Sundance Avenue

Orientation: *North-South*

Date of Count: *Thursday, May 29, 2014*

Analysts: *DASH*

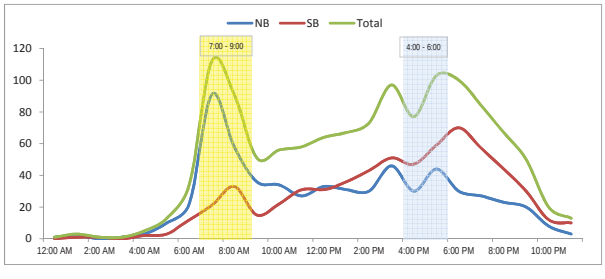
Weather: *Sunny*

AVC Proj. No: *14-0210*

24 Hour Segment Volume			*1,241*
Time	**Hourly Volume**		
	NB	**SB**	**Total**
12:00 AM - 1:00 AM	1	0	1
1:00 AM - 2:00 AM	2	1	3
2:00 AM - 3:00 AM	0	1	1
3:00 AM - 4:00 AM	1	0	1
4:00 AM - 5:00 AM	3	2	5
5:00 AM - 6:00 AM	10	3	13
6:00 AM - 7:00 AM	22	12	34
7:00 AM - 8:00 AM	91	21	112
8:00 AM - 9:00 AM	58	33	91
9:00 AM - 10:00 AM	36	15	51
10:00 AM - 11:00 AM	34	22	56
11:00 AM - 12:00 PM	27	31	58
Total	**285**	**141**	**426**

Time	**Hourly Volume**		
	NB	**SB**	**Total**
12:00 PM - 1:00 PM	33	31	64
1:00 PM - 2:00 PM	31	36	67
2:00 PM - 3:00 PM	30	43	73
3:00 PM - 4:00 PM	46	51	97
4:00 PM - 5:00 PM	30	47	77
5:00 PM - 6:00 PM	44	59	103
6:00 PM - 7:00 PM	30	70	100
7:00 PM - 8:00 PM	27	57	84
8:00 PM - 9:00 PM	23	44	67
9:00 PM - 10:00 PM	20	30	50
10:00 PM - 11:00 PM	8	12	20
11:00 PM - 12:00 AM	3	10	13
Total	**325**	**490**	**815**

24-Hour	*NB*	*Volume*	*610*	*24-Hour*	*SB*	*Volume*	*631*



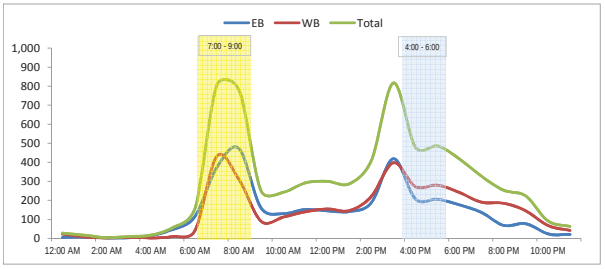
24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 11. Carmel Mountain Road, West of Sparren Avenue
Orientation: East-West
Date of Count: Thursday, May 29, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0210

24 Hour Segment Volume			6,811				
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	5	23	28	12:00 PM - 1:00 PM	145	155	300
1:00 AM - 2:00 AM	8	9	17	1:00 PM - 2:00 PM	141	146	287
2:00 AM - 3:00 AM	2	2	4	2:00 PM - 3:00 PM	188	221	409
3:00 AM - 4:00 AM	4	6	10	3:00 PM - 4:00 PM	419	398	817
4:00 AM - 5:00 AM	15	2	17	4:00 PM - 5:00 PM	207	272	479
5:00 AM - 6:00 AM	47	10	57	5:00 PM - 6:00 PM	206	280	486
6:00 AM - 7:00 AM	115	40	155	6:00 PM - 7:00 PM	176	241	417
7:00 AM - 8:00 AM	374	432	806	7:00 PM - 8:00 PM	136	190	326
8:00 AM - 9:00 AM	472	309	781	8:00 PM - 9:00 PM	68	185	253
9:00 AM - 10:00 AM	160	90	250	9:00 PM - 10:00 PM	78	145	223
10:00 AM - 11:00 AM	130	112	242	10:00 PM - 11:00 PM	24	68	92
11:00 AM - 12:00 PM	152	140	292	11:00 PM - 12:00 AM	21	42	63
Total	1,484	1,175	2,659	Total	1,809	2,343	4,152

24-Hour EB Volume	3,293	24-Hour WB Volume	3,518



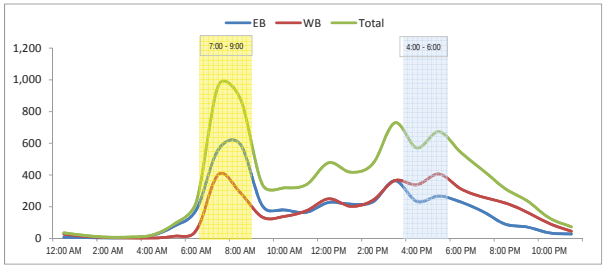
24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 12. Carmel Mountain Road, West of Black Mountain Road
Orientation: East-West
Date of Count: Thursday, May 29, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0210

24 Hour Segment Volume			8,316				
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	8	27	35	12:00 PM - 1:00 PM	227	250	477
1:00 AM - 2:00 AM	5	13	18	1:00 PM - 2:00 PM	216	202	418
2:00 AM - 3:00 AM	3	5	8	2:00 PM - 3:00 PM	230	240	470
3:00 AM - 4:00 AM	5	4	9	3:00 PM - 4:00 PM	364	365	729
4:00 AM - 5:00 AM	19	2	21	4:00 PM - 5:00 PM	233	338	571
5:00 AM - 6:00 AM	77	14	91	5:00 PM - 6:00 PM	267	406	673
6:00 AM - 7:00 AM	180	49	229	6:00 PM - 7:00 PM	229	312	541
7:00 AM - 8:00 AM	561	403	964	7:00 PM - 8:00 PM	169	260	429
8:00 AM - 9:00 AM	594	288	882	8:00 PM - 9:00 PM	90	224	314
9:00 AM - 10:00 AM	205	134	339	9:00 PM - 10:00 PM	72	165	237
10:00 AM - 11:00 AM	180	139	319	10:00 PM - 11:00 PM	35	94	129
11:00 AM - 12:00 PM	165	175	340	11:00 PM - 12:00 AM	28	45	73
Total	2,002	1,253	3,255	Total	2,160	2,901	5,061

24-Hour EB Volume	4,162	24-Hour WB Volume	4,154



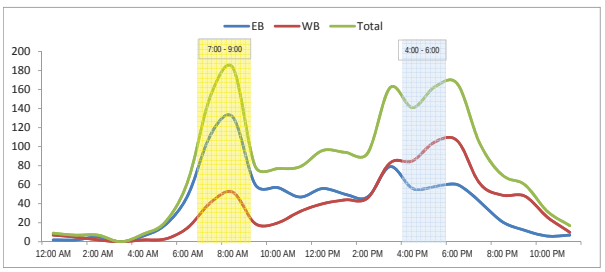
24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 13. Sundance Avenue, West of War Bonnet Street
Orientation: East-West
Date of Count: Thursday, May 29, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0210

24 Hour Segment Volume			1,884				
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	2	7	9	12:00 PM - 1:00 PM	56	40	96
1:00 AM - 2:00 AM	2	5	7	1:00 PM - 2:00 PM	50	44	94
2:00 AM - 3:00 AM	5	2	7	2:00 PM - 3:00 PM	47	46	93
3:00 AM - 4:00 AM	0	0	0	3:00 PM - 4:00 PM	79	83	162
4:00 AM - 5:00 AM	6	2	8	4:00 PM - 5:00 PM	56	85	141
5:00 AM - 6:00 AM	18	3	21	5:00 PM - 6:00 PM	58	105	163
6:00 AM - 7:00 AM	49	15	64	6:00 PM - 7:00 PM	60	106	166
7:00 AM - 8:00 AM	112	41	153	7:00 PM - 8:00 PM	42	61	103
8:00 AM - 9:00 AM	131	52	183	8:00 PM - 9:00 PM	21	49	70
9:00 AM - 10:00 AM	60	19	79	9:00 PM - 10:00 PM	12	48	60
10:00 AM - 11:00 AM	57	20	77	10:00 PM - 11:00 PM	6	26	32
11:00 AM - 12:00 PM	47	32	79	11:00 PM - 12:00 AM	7	10	17
Total	489	198	687	Total	494	703	1,197

24-Hour EB Volume	983	24-Hour WB Volume	901



TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01
CARMEL MTN E-O FREEPORT

AM Period	NB	SB	EB		WB		PM Period	NB	SB	EB		WB	
00:00			19		7		12:00			115		95	
00:15			19		15		12:15			101		95	
00:30			10		8		12:30			85		106	
00:45			18	66	9	39	12:45			63	364	77	373
01:00			10		5		13:00			107		65	
01:15			4		3		13:15			85		77	
01:30			4		3		13:30			93		67	
01:45			5	23	4	15	13:45			83	368	71	280
02:00			5		4		14:00			70		74	
02:15			5		5		14:15			75		75	
02:30			3		2		14:30			81		71	
02:45			6	19	0	11	14:45			75	301	76	296
03:00			1		2		15:00			78		86	
03:15			2		1		15:15			96		87	
03:30			2		1		15:30			99		85	
03:45			6	11	3	7	15:45			99	372	74	332
04:00			3		2		16:00			121		90	
04:15			1		4		16:15			106		91	
04:30			0		8		16:30			121		84	
04:45			1	5	10	24	16:45			162	510	91	356
05:00			6		9		17:00			154		101	
05:15			8		16		17:15			168		121	
05:30			19		24		17:30			177		106	
05:45			11	44	24	73	17:45			151	650	103	431
06:00			11		19		18:00			165		116	
06:15			8		26		18:15			134		98	
06:30			24		29		18:30			147		86	
06:45			29	72	51	125	18:45			144	590	73	373
07:00			38		62		19:00			137		83	
07:15			35		88		19:15			108		72	
07:30			70		81		19:30			102		75	
07:45			81	224	84	315	19:45			110	457	84	314
08:00			88		80		20:00			70		87	
08:15			54		96		20:15			77		81	
08:30			66		101		20:30			72		67	
08:45			81	289	105	382	20:45			76	295	58	293
09:00			83		96		21:00			56		60	
09:15			84		82		21:15			59		45	
09:30			78		80		21:30			61		44	
09:45			55	300	71	329	21:45			55	231	44	193
10:00			66		68		22:00			47		22	
10:15			80		61		22:15			45		29	
10:30			67		68		22:30			31		23	
10:45			83	296	73	270	22:45			23	146	19	93
11:00			85		75		23:00			34		20	
11:15			81		58		23:15			19		26	
11:30			76		81		23:30			22		17	
11:45			76	318	69	283	23:45			20	95	12	75
Total Vol.			1667		1873	**3540**				4379		3409	**7788**

	AM			PM		
						Daily Totals
	NB	SB		NB	SB	**Combined**
						11328
Split %	47.1%	52.9%	**31.3%**	56.2%	43.8%	**68.8%**
Peak Hour	11:45	08:15	**11:45**	16:45	17:15	**17:15**
Volume	377	398	**742**	661	446	**1107**
P.H.F.	0.82	0.95	**0.88**	0.93	0.92	**0.96**

PACIFIC TECHNICAL DATA

TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CARMEL MTN BTN PENASQUITOS & GERANA

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			12		22			12:00			119		93		
00:15			16		20			12:15			111		96		
00:30			7		28			12:30			118		94		
00:45			17	52	12	82	134	12:45			101	449	89	372	821
01:00			4		8			13:00			119		83		
01:15			5		7			13:15			106		91		
01:30			9		6			13:30			112		94		
01:45			12	30	8	29	59	13:45			83	420	90	358	778
02:00			5		8			14:00			102		101		
02:15			4		11			14:15			98		107		
02:30			9		7			14:30			97		85		
02:45			4	22	7	33	55	14:45			104	401	115	408	809
03:00			5		2			15:00			116		131		
03:15			3		4			15:15			109		109		
03:30			2		3			15:30			106		113		
03:45			3	13	9	18	31	15:45			100	431	86	439	870
04:00			4		2			16:00			105		118		
04:15			6		4			16:15			111		126		
04:30			4		6			16:30			168		101		
04:45			5	19	6	18	37	16:45			131	515	151	496	1011
05:00			9		9			17:00			170		140		
05:15			12		14			17:15			152		162		
05:30			15		10			17:30			178		162		
05:45			22	58	14	47	105	17:45			150	650	140	604	1254
06:00			32		17			18:00			164		144		
06:15			40		14			18:15			135		130		
06:30			51		24			18:30			149		132		
06:45			70	193	34	89	282	18:45			132	580	123	529	1109
07:00			81		50			19:00			114		120		
07:15			111		48			19:15			100		105		
07:30			126		66			19:30			97		127		
07:45			105	423	71	235	658	19:45			114	425	111	463	888
08:00			114		80			20:00			91		93		
08:15			90		71			20:15			87		98		
08:30			112		60			20:30			82		93		
08:45			101	417	89	300	717	20:45			74	334	95	379	713
09:00			102		74			21:00			49		94		
09:15			111		79			21:15			57		66		
09:30			119		81			21:30			70		69		
09:45			109	441	54	288	729	21:45			64	240	73	302	542
10:00			90		74			22:00			39		58		
10:15			115		72			22:15			41		57		
10:30			107		71			22:30			33		48		
10:45			107	419	72	289	708	22:45			29	142	44	207	349
11:00			114		83			23:00			31		38		
11:15			103		73			23:15			24		40		
11:30			99		97			23:30			33		40		
11:45			87	403	77	330	733	23:45			25	113	32	150	263
Total Vol.				2490		1758	**4248**					4700		4707	**9407**

Daily Totals	NB	SB	EB	WB	Combined
			7190	6465	**13655**

	AM			PM		
Split %	58.6%	41.4%	**31.1%**	50.0%	50.0%	**68.9%**
Peak Hour	07:15	11:30	**11:45**	17:00	16:45	**17:00**
Volume	456	363	**795**	650	615	**1254**
P.H.F.	0.90	0.94	**0.94**	0.91	0.95	**0.92**

PACIFIC TECHNICAL DATA

TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CARMEL MTN BTN I-15 SB RAMPS & PENASQUITOS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			21		46			12:00			193		167		
00:15			29		39			12:15			196		194		
00:30			18		36			12:30			203		159		
00:45			19	87	30	151	238	12:45			202	794	193	713	1507
01:00			23		16			13:00			171		180		
01:15			15		18			13:15			177		158		
01:30			10		17			13:30			187		171		
01:45			13	61	12	63	124	13:45			162	697	175	684	1381
02:00			11		14			14:00			182		170		
02:15			5		13			14:15			161		167		
02:30			13		12			14:30			188		165		
02:45			10	39	13	52	91	14:45			179	710	187	689	1399
03:00			7		7			15:00			176		208		
03:15			11		8			15:15			188		202		
03:30			9		5			15:30			182		219		
03:45			12	39	10	30	69	15:45			171	717	177	806	1523
04:00			18		6			16:00			191		235		
04:15			12		10			16:15			162		242		
04:30			17		9			16:30			195		268		
04:45			30	77	10	35	112	16:45			184	732	288	1033	1765
05:00			35		23			17:00			235		315		
05:15			57		29			17:15			248		326		
05:30			54		30			17:30			221		332		
05:45			100	246	29	111	357	17:45			215	919	284	1257	2176
06:00			101		51			18:00			209		280		
06:15			107		42			18:15			213		270		
06:30			166		57			18:30			228		295		
06:45			189	563	56	206	769	18:45			218	868	260	1105	1973
07:00			221		80			19:00			190		235		
07:15			262		78			19:15			159		222		
07:30			281		91			19:30			130		200		
07:45			269	1033	121	370	1403	19:45			173	652	220	877	1529
08:00			248		101			20:00			159		192		
08:15			251		114			20:15			141		173		
08:30			238		126			20:30			131		179		
08:45			212	949	133	474	1423	20:45			121	552	164	708	1260
09:00			236		116			21:00			91		177		
09:15			210		137			21:15			78		138		
09:30			212		136			21:30			100		130		
09:45			203	861	118	507	1368	21:45			93	362	142	587	949
10:00			179		114			22:00			75		110		
10:15			211		122			22:15			58		97		
10:30			166		136			22:30			52		88		
10:45			197	753	127	499	1252	22:45			54	239	89	384	623
11:00			194		147			23:00			39		69		
11:15			176		133			23:15			37		61		
11:30			182		178			23:30			31		67		
11:45			193	745	180	638	1383	23:45			32	139	61	258	397
Total Vol.				5453		3136	**8589**					7381		9101	**16482**

Daily Totals	NB	SB	EB	WB	Combined
			12834	12237	**25071**

	AM			PM		
Split %	63.5%	36.5%	**34.3%**	44.8%	55.2%	**65.7%**
Peak Hour	07:15	11:30	**11:45**	17:00	16:45	**17:00**
Volume	1060	719	**1485**	919	1261	**2176**
P.H.F.	0.94	0.93	**0.95**	0.93	0.95	**0.95**

PACIFIC TECHNICAL DATA

TUESDAY, JULY 8TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CARMEL MTN E-O I-15 NB RAMPS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			53		49			12:00			373		357		
00:15			23		69			12:15			378		353		
00:30			29		68			12:30			434		375		
00:45			19	124	47	233	357	12:45			384	1569	419	1504	3073
01:00			29		19			13:00			421		393		
01:15			33		57			13:15			364		348		
01:30			17		48			13:30			356		362		
01:45			29	108	52	176	284	13:45			313	1454	393	1496	2950
02:00			28		30			14:00			352		365		
02:15			26		28			14:15			318		349		
02:30			16		27			14:30			350		317		
02:45			28	98	41	126	224	14:45			344	1364	431	1462	2826
03:00			23		18			15:00			352		385		
03:15			26		17			15:15			358		389		
03:30			25		23			15:30			375		397		
03:45			23	97	24	82	179	15:45			342	1427	433	1604	3031
04:00			26		75			16:00			366		431		
04:15			18		26			16:15			384		452		
04:30			40		16			16:30			380		525		
04:45			45	129	45	162	291	16:45			426	1556	460	1868	3424
05:00			100		56			17:00			428		515		
05:15			66		89			17:15			462		562		
05:30			77		82			17:30			441		481		
05:45			104	347	90	317	664	17:45			462	1793	443	2001	3794
06:00			198		113			18:00			442		429		
06:15			126		80			18:15			436		436		
06:30			187		98			18:30			440		418		
06:45			209	720	157	448	1168	18:45			430	1748	410	1693	3441
07:00			280		184			19:00			406		368		
07:15			291		161			19:15			313		353		
07:30			315		170			19:30			324		366		
07:45			422	1308	182	697	2005	19:45			330	1373	350	1437	2810
08:00			341		226			20:00			304		333		
08:15			355		205			20:15			263		366		
08:30			318		223			20:30			256		267		
08:45			305	1319	198	852	2171	20:45			211	1034	290	1256	2290
09:00			305		202			21:00			154		293		
09:15			299		188			21:15			169		248		
09:30			290		207			21:30			190		198		
09:45			293	1187	234	831	2018	21:45			146	659	176	915	1574
10:00			319		206			22:00			159		152		
10:15			302		223			22:15			94		155		
10:30			287		259			22:30			94		129		
10:45			336	1244	258	946	2190	22:45			71	418	117	553	971
11:00			368		277			23:00			87		81		
11:15			342		279			23:15			67		103		
11:30			348		315			23:30			57		68		
11:45			381	1439	318	1189	2628	23:45			44	255	83	335	590
Total Vol.				8120		6059	**14179**					14650		16124	**30774**

Daily Totals	NB	SB	EB	WB	Combined
			22770	22183	**44953**

	AM			PM		
Split %	57.3%	42.7%	**31.5%**	47.6%	52.4%	**68.5%**
Peak Hour	11:45	11:45	**11:45**	17:15	16:30	**17:00**
Volume	1566	1403	**2969**	1807	2062	**3794**
P.H.F.	0.90	0.94	**0.92**	0.98	0.92	**0.93**

PACIFIC TECHNICAL DATA

WEDNESDAY, JULY 9TH, 2014 CITY: RANCHO BERNARDO PROJECT: PTD14-0711-01

CAMINO DEL SUR N-O PARK VILLAGE

AM Period	NB		SB		EB		WB			PM Period	NB		SB		EB		WB		
00:00	1		0							12:00	8		8						
00:15	1		1							12:15	7		6						
00:30	2		1							12:30	8		12						
00:45	2	6	3	5					11	12:45	7	30	8	34					64
01:00	0		0							13:00	3		8						
01:15	1		0							13:15	7		8						
01:30	0		0							13:30	14		6						
01:45	1	2	2	2					4	13:45	6	30	9	31					61
02:00	1		0							14:00	5		6						
02:15	0		0							14:15	7		10						
02:30	0		0							14:30	5		6						
02:45	0	1	0	0					1	14:45	6	23	5	27					50
03:00	2		0							15:00	7		6						
03:15	1		0							15:15	9		7						
03:30	0		0							15:30	13		5						
03:45	0	3	0	0					3	15:45	13	42	4	22					64
04:00	0		0							16:00	9		10						
04:15	0		1							16:15	10		10						
04:30	2		2							16:30	13		7						
04:45	0	2	0	3					5	16:45	11	43	10	37					80
05:00	0		0							17:00	7		8						
05:15	0		5							17:15	18		9						
05:30	0		1							17:30	25		15						
05:45	1	1	3	9					10	17:45	20	70	9	41					111
06:00	1		5							18:00	19		7						
06:15	1		10							18:15	22		11						
06:30	1		4							18:30	23		7						
06:45	1	4	12	31					35	18:45	21	85	9	34					119
07:00	1		16							19:00	15		7						
07:15	1		12							19:15	9		10						
07:30	6		19							19:30	8		5						
07:45	2	10	19	66					76	19:45	12	44	6	28					72
08:00	8		20							20:00	12		3						
08:15	7		11							20:15	9		4						
08:30	1		19							20:30	15		4						
08:45	12	28	24	74					102	20:45	7	43	5	16					59
09:00	3		9							21:00	10		3						
09:15	9		11							21:15	7		5						
09:30	8		17							21:30	10		4						
09:45	3	23	13	50					73	21:45	6	33	4	16					49
10:00	2		8							22:00	7		4						
10:15	5		7							22:15	6		2						
10:30	7		8							22:30	5		0						
10:45	8	22	9	32					54	22:45	2	20	0	6					26
11:00	5		10							23:00	4		1						
11:15	4		5							23:15	1		1						
11:30	6		4							23:30	0		0						
11:45	9	24	4	23					47	23:45	0	5	2	4					9
Total Vol.	126		295						**421**		468		296						**764**

Daily Totals	NB	SB	EB	WB	Combined
	594	591			**1185**

	AM			PM		
Split %	29.9%	70.1%	**35.5%**	61.3%	38.7%	**64.5%**
Peak Hour	08:45	08:00	**08:00**	17:30	16:45	**17:30**
Volume	32	74	**102**	86	42	**128**
P.H.F.	0.67	0.77	**0.71**	0.83	0.70	**0.80**

PACIFIC TECHNICAL DATA

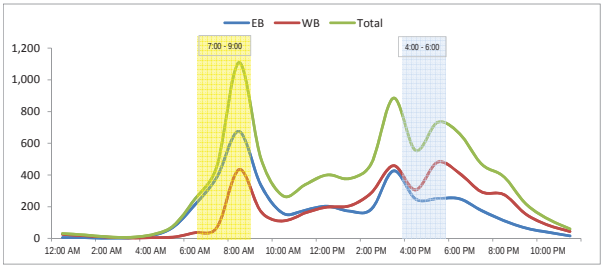
24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 14. Park Village Road, East of Camino Del Sur
Orientation: East-West
Date of Count: Wednesday, May 28, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0210

24 Hour Segment Volume			8,430				
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	5	26	31	12:00 PM - 1:00 PM	203	198	401
1:00 AM - 2:00 AM	5	17	22	1:00 PM - 2:00 PM	172	205	377
2:00 AM - 3:00 AM	1	9	10	2:00 PM - 3:00 PM	184	288	472
3:00 AM - 4:00 AM	4	3	7	3:00 PM - 4:00 PM	426	459	885
4:00 AM - 5:00 AM	17	5	22	4:00 PM - 5:00 PM	249	306	555
5:00 AM - 6:00 AM	69	8	77	5:00 PM - 6:00 PM	251	481	732
6:00 AM - 7:00 AM	212	36	248	6:00 PM - 7:00 PM	250	410	660
7:00 AM - 8:00 AM	387	68	455	7:00 PM - 8:00 PM	175	293	468
8:00 AM - 9:00 AM	675	434	1,109	8:00 PM - 9:00 PM	113	277	390
9:00 AM - 10:00 AM	333	168	501	9:00 PM - 10:00 PM	65	153	218
10:00 AM - 11:00 AM	158	110	268	10:00 PM - 11:00 PM	39	84	123
11:00 AM - 12:00 PM	178	161	339	11:00 PM - 12:00 AM	16	44	60
Total	2,044	1,045	3,089	Total	2,143	3,198	5,341

24-Hour EB Volume	4,187	24-Hour WB Volume	4,243



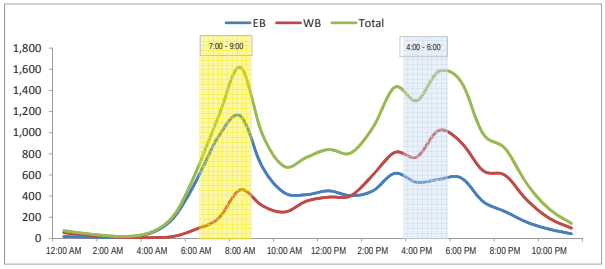
24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 15. Park Village Road , West of Black Mountain Road
Orientation: East-West
Date of Count: Wednesday, May 28, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0210

24 Hour Segment Volume			17,546				
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	18	55	73	12:00 PM - 1:00 PM	450	391	841
1:00 AM - 2:00 AM	13	33	46	1:00 PM - 2:00 PM	405	403	808
2:00 AM - 3:00 AM	7	17	24	2:00 PM - 3:00 PM	449	598	1,047
3:00 AM - 4:00 AM	13	8	21	3:00 PM - 4:00 PM	616	814	1,430
4:00 AM - 5:00 AM	55	8	63	4:00 PM - 5:00 PM	531	772	1,303
5:00 AM - 6:00 AM	202	20	222	5:00 PM - 6:00 PM	559	1,022	1,581
6:00 AM - 7:00 AM	545	88	633	6:00 PM - 7:00 PM	574	910	1,484
7:00 AM - 8:00 AM	961	188	1,149	7:00 PM - 8:00 PM	349	641	990
8:00 AM - 9:00 AM	1,159	459	1,618	8:00 PM - 9:00 PM	254	597	851
9:00 AM - 10:00 AM	674	309	983	9:00 PM - 10:00 PM	152	360	512
10:00 AM - 11:00 AM	431	249	680	10:00 PM - 11:00 PM	87	191	278
11:00 AM - 12:00 PM	414	353	767	11:00 PM - 12:00 AM	44	98	142
Total	4,492	1,787	6,279	Total	4,470	6,797	11,267

24-Hour EB Volume	8,962	24-Hour WB Volume	8,584



THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01
MERCY BTN CHABOLA & BRANICOLE

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			17		18			12:00			72		77		
00:15			20		15			12:15			65		70		
00:30			16		19			12:30			84		88		
00:45			11	64	10	62	126	12:45			70	291	84	319	610
01:00			9		11			13:00			55		70		
01:15			12		15			13:15			65		68		
01:30			7		9			13:30			70		77		
01:45			8	36	5	40	76	13:45			75	265	95	310	575
02:00			3		4			14:00			88		88		
02:15			1		5			14:15			70		98		
02:30			2		4			14:30			87		108		
02:45			3	9	1	14	23	14:45			88	333	115	409	742
03:00			2		2			15:00			70		141		
03:15			0		1			15:15			88		135		
03:30			3		0			15:30			98		121		
03:45			2	7	1	4	11	15:45			101	357	148	545	902
04:00			2		2			16:00			121		166		
04:15			4		3			16:15			148		184		
04:30			5		1			16:30			177		195		
04:45			6	17	2	8	25	16:45			195	641	226	771	1412
05:00			5		4			17:00			215		215		
05:15			11		9			17:15			202		235		
05:30			12		15			17:30			161		188		
05:45			18	46	11	39	85	17:45			142	720	162	800	1520
06:00			22		12			18:00			141		144		
06:15			54		28			18:15			148		135		
06:30			88		54			18:30			121		112		
06:45			105	269	84	178	447	18:45			108	518	118	509	1027
07:00			162		144			19:00			88		101		
07:15			177		140			19:15			95		98		
07:30			184		148			19:30			95		70		
07:45			177	700	168	600	1300	19:45			77	355	88	357	712
08:00			191		168			20:00			84		84		
08:15			198		177			20:15			65		65		
08:30			166		141			20:30			70		44		
08:45			142	697	142	628	1325	20:45			54	273	51	244	517
09:00			121		121			21:00			44		40		
09:15			128		111			21:15			51		35		
09:30			101		105			21:30			35		28		
09:45			88	438	114	451	889	21:45			44	174	22	125	299
10:00			95		99			22:00			28		28		
10:15			77		84			22:15			23		21		
10:30			84		88			22:30			32		23		
10:45			70	326	70	341	667	22:45			31	114	32	104	218
11:00			68		65			23:00			22		22		
11:15			77		77			23:15			19		28		
11:30			84		84			23:30			17		19		
11:45			91	320	72	298	618	23:45			11	69	15	84	153
Total Vol.			2929		2663		**5592**				4110		4577		**8687**

Daily Totals	NB	SB	EB	WB	Combined
			7039	7240	**14279**

	AM			PM		
Split %	52.4%	47.6%	**39.2%**	47.3%	52.7%	**60.8%**
Peak Hour	07:30	07:30	**07:30**	16:30	16:30	**16:30**
Volume	750	661	**1411**	789	871	**1660**
P.H.F.	0.95	0.93	**0.94**	0.92	0.93	**0.95**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01
MERCY N-O ALEMANIA

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			28		22			12:00			121		103		
00:15			20		18			12:15			112		97		
00:30			16		26			12:30			105		84		
00:45			11	75	21	87	162	12:45			92	430	90	374	804
01:00			19		15			13:00			95		95		
01:15			11		11			13:15			84		116		
01:30			17		19			13:30			103		99		
01:45			7	54	12	57	111	13:45			111	393	112	422	815
02:00			9		11			14:00			99		107		
02:15			12		10			14:15			107		111		
02:30			8		7			14:30			115		141		
02:45			9	38	5	33	71	14:45			126	447	165	524	971
03:00			5		9			15:00			118		177		
03:15			9		5			15:15			141		195		
03:30			7		6			15:30			154		184		
03:45			11	32	4	24	56	15:45			170	583	212	768	1351
04:00			12		5			16:00			168		235		
04:15			9		12			16:15			177		188		
04:30			16		9			16:30			215		216		
04:45			11	48	11	37	85	16:45			188	748	232	871	1619
05:00			15		16			17:00			212		284		
05:15			28		20			17:15			195		277		
05:30			31		18			17:30			216		231		
05:45			35	109	25	79	188	17:45			195	818	240	1032	1850
06:00			54		22			18:00			202		221		
06:15			70		54			18:15			195		188		
06:30			114		70			18:30			188		202		
06:45			161	399	101	247	646	18:45			170	755	184	795	1550
07:00			215		161			19:00			165		165		
07:15			208		135			19:15			141		142		
07:30			235		141			19:30			135		135		
07:45			218	876	158	595	1471	19:45			111	552	115	557	1109
08:00			251		144			20:00			121		111		
08:15			226		152			20:15			108		108		
08:30			262		226			20:30			92		121		
08:45			202	941	235	757	1698	20:45			95	416	88	428	844
09:00			184		219			21:00			74		95		
09:15			174		202			21:15			74		70		
09:30			161		188			21:30			65		54		
09:45			170	689	170	779	1468	21:45			66	279	66	285	564
10:00			151		141			22:00			50		45		
10:15			135		111			22:15			40		44		
10:30			141		126			22:30			35		40		
10:45			115	542	123	501	1043	22:45			44	169	32	161	330
11:00			108		118			23:00			28		28		
11:15			99		90			23:15			21		22		
11:30			103		115			23:30			22		35		
11:45			114	424	97	420	844	23:45			26	97	19	104	201
Total Vol.			4227		3616		**7843**				5687		6321		**12008**

Daily Totals	NB	SB	EB	WB	Combined
			9914	9937	**19851**

	AM			PM		
Split %	53.9%	46.1%	**39.5%**	47.4%	52.6%	**60.5%**
Peak Hour	07:45	08:30	**08:15**	17:00	17:00	**17:00**
Volume	957	882	**1706**	818	1032	**1850**
P.H.F.	0.91	0.94	**0.87**	0.95	0.91	**0.93**

PACIFIC TECHNICAL DATA

THURSDAY, OCTOBER 3, 2013 CITY: MIRA MESA PROJECT: PTD13-1004-01

SCRIPPS POWAY E-O I-15 NB RAMPS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			84		66			12:00			325		384		
00:15			77		70			12:15			375		377		
00:30			65		54			12:30			362		362		
00:45			54	280	44	234	514	12:45			333	1395	341	1464	2859
01:00			77		62			13:00			342		336		
01:15			50		35			13:15			328		344		
01:30			42		44			13:30			362		362		
01:45			35	204	51	192	396	13:45			356	1388	342	1384	2772
02:00			44		50			14:00			333		326		
02:15			25		28			14:15			342		338		
02:30			42		51			14:30			362		352		
02:45			33	144	44	173	317	14:45			366	1403	356	1372	2775
03:00			37		35			15:00			389		377		
03:15			40		28			15:15			375		404		
03:30			47		42			15:30			404		449		
03:45			42	166	35	140	306	15:45			445	1613	468	1698	3311
04:00			33		44			16:00			451		518		
04:15			43		45			16:15			468		568		
04:30			62		65			16:30			488		588		
04:45			54	192	54	208	400	16:45			475	1882	575	2249	4131
05:00			66		70			17:00			515		612		
05:15			70		90			17:15			558		552		
05:30			80		98			17:30			505		567		
05:45			84	300	111	369	669	17:45			542	2120	495	2226	4346
06:00			119		151			18:00			521		442		
06:15			144		205			18:15			505		452		
06:30			226		289			18:30			416		444		
06:45			388	877	377	1022	1899	18:45			377	1819	359	1697	3516
07:00			428		488			19:00			354		326		
07:15			477		462			19:15			332		342		
07:30			565		477			19:30			303		318		
07:45			535	2005	489	1916	3921	19:45			318	1307	332	1318	2625
08:00			477		451			20:00			270		284		
08:15			495		435			20:15			241		295		
08:30			488		442			20:30			245		277		
08:45			512	1972	484	1812	3784	20:45			226	982	254	1110	2092
09:00			428		412			21:00			235		222		
09:15			448		418			21:15			202		184		
09:30			404		421			21:30			162		175		
09:45			377	1657	384	1635	3292	21:45			128	727	141	722	1449
10:00			352		362			22:00			155		142		
10:15			368		345			22:15			128		116		
10:30			348		355			22:30			115		108		
10:45			368	1436	368	1430	2866	22:45			98	496	121	487	983
11:00			345		370			23:00			101		108		
11:15			344		351			23:15			84		95		
11:30			375		368			23:30			75		84		
11:45			349	1413	378	1467	2880	23:45			88	348	77	364	712
Total Vol.				10646		10598	**21244**					15480		16091	**31571**

Daily Totals

NB	SB	EB	WB	Combined
		26126	26689	**52815**

	AM			PM		
Split %	50.1%	49.9%	**40.2%**	49.0%	51.0%	**59.8%**
Peak Hour	07:30	07:00	**07:15**	17:15	16:15	**16:30**
Volume	2072	1916	**3933**	2126	2343	**4363**
P.H.F.	0.92	0.98	**0.94**	0.95	0.96	**0.97**

PACIFIC TECHNICAL DATA

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Carmel Valley Road @ Camino Del Sur

Date of Count: *Wednesday, May 28, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Carmel Valley Road @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	7	42	31	15	18	65	1	103	4	4	3	5	298
7:15 AM	8	48	35	5	27	107	6	120	15	9	11	3	394
7:30 AM	11	80	20	9	52	75	8	96	17	13	10	11	402
7:45 AM	18	89	35	21	73	35	6	93	20	22	13	21	446
8:00 AM	27	100	39	17	84	52	16	83	15	14	34	20	501
8:15 AM	51	146	70	35	124	54	25	86	42	19	52	19	723
8:30 AM	62	128	42	64	163	82	16	186	18	21	45	51	878
8:45 AM	46	92	25	63	141	183	19	135	20	27	46	21	818
Total	230	725	297	229	682	653	97	902	151	129	214	151	4,460

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.83**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	186	466	176	179	512	371	76	490	95	81	177	111	2,920
PHF	0.75	0.80	0.63	0.70	0.79	0.51	0.76	0.66	0.57	0.75	0.85	0.54	0.83
Movement PHF		0.78			0.69			0.75			0.79		0.83

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	11	107	29	39	32	48	33	132	17	33	43	43	567
4:15 PM	18	129	29	39	33	37	85	60	27	36	45	58	596
4:30 PM	21	165	48	30	28	22	86	94	36	30	76	57	693
4:45 PM	19	119	33	29	39	16	46	129	26	34	106	51	647
5:00 PM	18	85	26	30	24	23	55	145	26	42	108	66	648
5:15 PM	12	108	32	26	47	23	53	152	28	31	109	41	662
5:30 PM	16	81	31	26	31	37	52	155	27	22	84	46	608
5:45 PM	14	91	31	35	21	27	50	127	33	43	130	45	647
Total	129	885	259	254	255	233	460	994	220	271	701	407	5,068

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	70	477	139	115	138	84	240	520	116	137	399	215	2650
PHF	0.83	0.723	0.724	0.958	0.734	0.913	0.698	0.855	0.806	0.815	0.915	0.814	0.96
Movement PHF		0.73			0.88			0.94			0.87		0.96

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

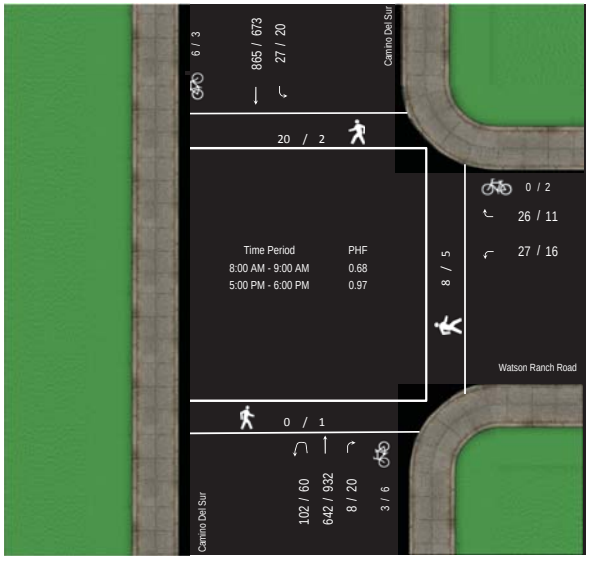
Location: Watson Ranch Road @ Camino Del Sur

Date of Count: *Wednesday, May 28, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Watson Ranch Road @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound		Westbound		Northbound				
	Thru	Left	Right	Left	Right	Thru	U-Turn		TOTAL
7:00 AM	160	1	6	5	2	94	18		286
7:15 AM	206	8	3	7	1	131	18		374
7:30 AM	210	7	4	3	3	106	13		346
7:45 AM	166	5	2	7	0	118	7		305
8:00 AM	149	4	5	5	1	110	7		281
8:15 AM	174	5	6	10	2	145	5		347
8:30 AM	203	6	11	1	1	195	24		441
8:45 AM	339	12	4	11	4	192	66		628
Total	1,607	48	41	49	14	1,091	158		3,008

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.68**

	Southbound		Westbound		Northbound				
	Thru	Left	Right	Left	Right	Thru	U-Turn		TOTAL
Volume	865	27	26	27	8	642	102		1,697
PHF	0.64	0.56	0.59	0.61	0.50	0.82	0.39		0.68
Movement PHF	0.64		0.83			0.72			0.68

PM Period (4:00 PM - 6:00 PM)

	Southbound		Westbound		Northbound				
	Thru	Left	Right	Left	Right	Thru	U-Turn		TOTAL
4:00 PM	144	7	2	3	12	182	5		355
4:15 PM	155	4	1	4	3	171	5		343
4:30 PM	135	4	0	2	3	214	4		362
4:45 PM	153	4	2	5	12	204	36		416
5:00 PM	153	3	1	4	7	225	17		410
5:15 PM	161	3	1	5	4	249	7		430
5:30 PM	167	9	6	5	2	240	19		448
5:45 PM	192	5	3	2	7	218	17		444
Total	1260	39	16	30	50	1,703	110		3,208

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.97**

	Southbound		Westbound		Northbound				
	Thru	Left	Right	Left	Right	Thru	U-Turn		TOTAL
Volume	673	20	11	16	20	932	60		1732
PHF	0.876	0.556	0.458	0.8	0.714	0.936	0.789		0.97
Movement PHF	0.88		0.61			0.97			0.97

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

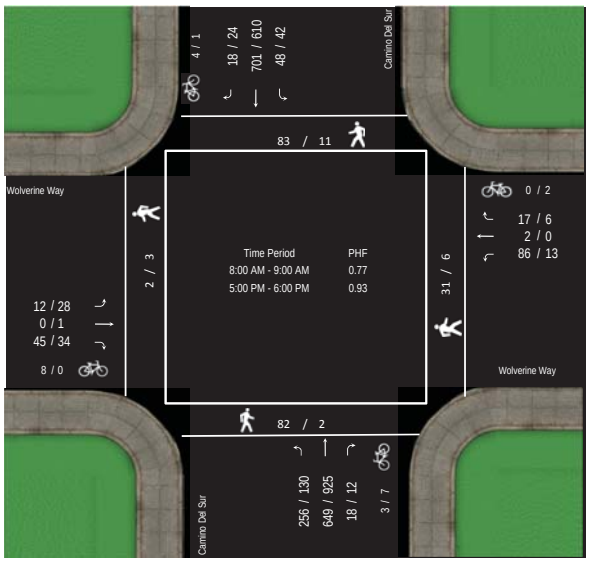
Location: Wolverine Way @ Camino Del Sur

Date of Count: *Wednesday, May 28, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



www.accuratevideocounts.com P.O. Box 261425 San Diego CA 92196 6/10/2014

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Wolverine Way @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	2	170	4	1	0	4	0	110	36	9	0	3	339
7:15 AM	17	194	0	1	0	6	0	149	32	14	0	0	413
7:30 AM	10	207	3	1	0	4	0	106	39	0	0	4	374
7:45 AM	16	129	3	2	0	15	2	111	54	22	0	3	357
8:00 AM	8	161	3	2	0	10	0	110	19	12	0	4	329
8:15 AM	4	174	5	4	1	8	1	136	38	11	0	5	387
8:30 AM	2	174	12	3	1	14	3	197	114	10	0	1	531
8:45 AM	4	192	28	8	0	54	14	206	85	12	0	2	605
Total	63	1,401	58	22	2	115	20	1,125	417	90	0	22	3,335

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.77**

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
Volume	18	701	48	17	2	86	18	649	256	45	0	12	1,852
PHF	0.56	0.91	0.43	0.53	0.50	0.40	0.32	0.79	0.56	0.94	#####	0.60	0.77
Movement PHF		0.86			0.42			0.73			0.89		0.77

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	3	131	7	1	1	4	3	174	18	10	1	18	371
4:15 PM	11	156	7	0	0	4	3	167	37	14	0	4	403
4:30 PM	7	128	3	0	0	1	3	208	29	26	1	13	419
4:45 PM	10	168	8	0	0	0	4	220	30	19	0	16	475
5:00 PM	3	150	5	1	0	3	3	230	19	16	0	10	440
5:15 PM	8	139	17	2	0	6	4	221	46	8	0	11	462
5:30 PM	2	160	10	2	0	1	2	243	8	4	0	3	435
5:45 PM	11	161	10	1	0	3	3	231	57	6	1	4	488
Total	55	1193	67	7	1	22	25	1,694	244	103	3	79	3,493

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
Volume	24	610	42	6	0	13	12	925	130	34	1	28	1825
PHF	0.55	0.947	0.618	0.75	#####	0.542	0.75	0.952	0.57	0.531	0.25	0.636	0.93
Movement PHF		0.93			0.59			0.92			0.61		0.93

www.accuratevideocounts.com P.O. Box 261425 San Diego CA 92196 6/10/2014

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Torrey Meadows Drive @ Camino Del Sur

Date of Count: *Wednesday, May 28, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



www.accuratevideocounts.com P.O. Box 261425 San Diego CA 92196 6/10/2014

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Torrey Meadows Drive @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	1	192	0	6	0	15	1	116	2	14	0	11	358
7:15 AM	4	206	1	1	0	16	5	151	2	16	0	23	425
7:30 AM	9	195	2	4	0	16	6	119	3	21	0	9	384
7:45 AM	2	167	6	8	0	29	10	146	9	19	1	9	406
8:00 AM	4	190	5	1	0	20	7	111	12	21	1	9	381
8:15 AM	5	190	2	4	0	16	9	150	6	17	1	7	407
8:30 AM	4	194	7	11	2	14	11	275	19	30	1	28	596
8:45 AM	5	225	16	13	0	39	31	322	28	13	3	27	722
Total	34	1,559	39	48	2	165	80	1,390	81	151	7	123	3,679

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.73**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	18	799	30	29	2	89	58	858	65	81	6	71	2,106
PHF	0.90	0.89	0.47	0.56	0.25	0.57	0.47	0.67	0.58	0.68	0.50	0.63	0.73
Movement PHF		0.86			0.58			0.64			0.67		0.73

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	7	135	13	2	1	4	13	186	19	9	2	4	395
4:15 PM	6	175	10	2	0	12	11	184	26	3	0	15	444
4:30 PM	11	165	12	3	1	11	15	235	21	12	0	9	495
4:45 PM	11	199	8	7	1	8	17	256	12	16	0	8	543
5:00 PM	8	189	8	3	0	14	13	267	21	9	1	9	542
5:15 PM	16	172	11	3	1	15	21	259	18	12	0	9	537
5:30 PM	9	155	8	10	0	17	29	269	25	15	2	14	553
5:45 PM	9	177	13	6	0	10	20	280	29	5	0	10	559
Total	77	1367	83	36	4	91	139	1,936	171	81	5	78	4,068

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	42	693	40	22	1	56	83	1075	93	41	3	42	2191
PHF	0.66	0.917	0.769	0.55	0.25	0.824	0.716	0.96	0.802	0.683	0.375	0.75	0.98
Movement PHF		0.95			0.73			0.95			0.69		0.98

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Highlands Village Place @ Camino Del Sur
Date of Count: *Wednesday, May 28, 2014*
Analysts: *LV/CD*
Weather: *Sunny*
AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Highlands Village Place @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound				Northbound		Eastbound		
	Right	Thru			Thru	Left	Right	Left	TOTAL
7:00 AM	18	207			104	34	49	15	427
7:15 AM	22	212			145	26	75	13	493
7:30 AM	22	210			120	17	64	8	441
7:45 AM	17	212			148	46	57	17	497
8:00 AM	27	190			118	41	54	12	442
8:15 AM	19	204			142	55	58	23	501
8:30 AM	25	213			269	59	52	36	654
8:45 AM	29	248			352	81	56	29	795
Total	179	1,696			1,398	359	465	153	4,250

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.75**

	Southbound			Northbound		Eastbound		TOTAL
	Right	Thru		Thru	Left	Right	Left	
Volume	100	855		881	236	220	100	2,392
PHF	0.86	0.86		0.63	0.73	0.95	0.69	0.75
Movement PHF		0.86		0.64		0.91		0.75

PM Period (4:00 PM - 6:00 PM)

	Southbound			Northbound		Eastbound		
	Right	Thru		Thru	Left	Right	Left	TOTAL
4:00 PM	13	133		198	49	44	20	457
4:15 PM	19	183		191	77	29	30	529
4:30 PM	22	152		245	74	35	26	554
4:45 PM	26	189		256	50	41	29	591
5:00 PM	26	182		263	66	52	38	627
5:15 PM	18	170		266	66	37	32	589
5:30 PM	27	166		292	49	50	31	615
5:45 PM	31	181		291	82	41	38	664
Total	182	1356		2,002	513	329	244	4,626

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.94**

	Southbound			Northbound		Eastbound		TOTAL
	Right	Thru		Thru	Left	Right	Left	
Volume	102	699		1112	263	180	139	2495
PHF	0.82	0.96		0.952	0.802	0.865	0.914	0.94
Movement PHF		0.94		0.92		0.89		0.94

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 WB Ramps @ Camino Del Sur
Date of Count: *Wednesday, May 28, 2014*
Analysts: *LV/CD*
Weather: *Sunny*
AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 WB Ramps @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	112	128	0	100	0	36	0	38	27	0	0	0	441
7:15 AM	153	157	0	117	4	29	0	54	21	0	0	0	535
7:30 AM	137	153	0	94	1	65	0	43	31	0	0	0	524
7:45 AM	115	167	0	126	9	68	0	68	25	0	0	0	578
8:00 AM	99	168	0	106	7	68	0	53	36	0	0	0	537
8:15 AM	116	172	0	153	0	62	0	44	25	0	0	0	572
8:30 AM	95	196	0	228	0	95	0	100	29	0	0	0	743
8:45 AM	86	208	0	342	2	142	0	91	18	0	0	0	889
Total	913	1,349	0	1,266	23	565	0	491	212	0	0	0	4,819

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.77**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	396	744	0	829	9	367	0	288	108	0	0	0	2,741
PHF	0.85	0.89	#####	0.61	0.32	0.65	#####	0.72	0.75	#####	#####	#####	0.77
Movement PHF		0.97			0.62			0.77			#DIV/0!		0.77

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	31	159	0	130	2	21	0	117	15	0	0	0	475
4:15 PM	55	155	0	152	0	25	0	116	18	0	0	0	521
4:30 PM	41	175	0	176	0	43	0	143	17	0	0	0	595
4:45 PM	28	191	0	181	0	28	0	125	19	0	0	0	572
5:00 PM	38	193	0	185	0	28	0	144	21	0	0	0	609
5:15 PM	39	187	0	170	0	48	0	162	50	0	0	0	656
5:30 PM	37	157	0	203	0	39	0	138	43	0	0	0	617
5:45 PM	42	171	0	245	0	47	0	128	32	0	0	0	665
Total	311	1388	0	1,442	2	279	0	1,073	215	0	0	0	4,710

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	156	708	0	803	0	162	0	572	146	0	0	0	2547
PHF	0.93	0.917	#####	0.819	#####	0.844	#####	0.883	0.73	#####	#####	#####	0.96
Movement PHF		0.94			0.83			0.85			#DIV/0!		0.96

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 EB Ramps @ Camino Del Sur
Date of Count: *Wednesday, May 28, 2014*
Analysts: *LV/CD*
Weather: *Sunny*
AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 EB Ramps @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	48	116	0	0	0	35	42	0	19	0	23	283
7:15 AM	0	59	127	0	0	0	43	36	0	16	0	39	320
7:30 AM	0	112	106	0	0	0	43	53	0	38	0	21	373
7:45 AM	0	102	133	0	0	0	35	60	0	33	0	33	396
8:00 AM	0	118	118	0	0	0	42	53	0	39	0	36	406
8:15 AM	0	109	125	0	0	0	45	45	0	40	0	24	388
8:30 AM	0	143	148	0	0	0	72	104	0	43	1	25	536
8:45 AM	0	197	153	0	0	0	26	73	0	62	0	36	547
Total	0	888	1,026	0	0	0	341	466	0	290	1	237	3,249

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.86**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	567	544	0	0	0	185	275	0	184	1	121	1,877
PHF	#####	0.72	0.89	#####	#####	#####	0.64	0.66	#####	0.74	0.25	0.84	0.86
Movement PHF		0.79			#DIV/0!			0.65			0.78		0.86

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	52	128	0	0	0	54	40	0	22	0	92	388
4:15 PM	0	44	136	0	0	0	65	43	0	24	0	91	403
4:30 PM	0	94	124	0	0	0	77	58	0	26	0	102	481
4:45 PM	0	51	168	0	0	0	75	43	0	18	0	101	456
5:00 PM	0	85	136	0	0	0	107	63	0	25	0	102	518
5:15 PM	0	56	179	0	0	0	125	113	0	45	0	99	617
5:30 PM	0	73	123	0	0	0	137	71	0	38	1	110	553
5:45 PM	0	85	133	0	0	0	78	62	0	28	0	98	484
Total	0	540	1127	0	0	0	718	493	0	226	1	795	3,900

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.88**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	299	571	0	0	0	447	309	0	136	1	409	2172
PHF	#####	0.879	0.797	#####	#####	#####	0.816	0.684	#####	0.756	0.25	0.93	0.88
Movement PHF		0.93			#DIV/0!			0.79			0.92		0.88

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Torrey Santa Fe Road @ Camino Del Sur
Date of Count: *Wednesday, May 28, 2014*
Analysts: *LV/CD*
Weather: *Sunny*
AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Torrey Santa Fe Road @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound		Westbound			Eastbound		
	Right	Left	Right	Thru		Thru	Left	TOTAL
7:00 AM	45	22	20	1		2	55	145
7:15 AM	59	16	22	3		2	57	159
7:30 AM	115	35	28	2		5	68	253
7:45 AM	111	24	31	2		0	64	232
8:00 AM	131	26	21	2		5	68	253
8:15 AM	129	20	23	2		2	67	243
8:30 AM	161	25	26	5		5	146	368
8:45 AM	226	33	29	4		3	70	365
Total	977	201	200	21		24	595	2,018

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.83**

	Southbound		Westbound			Eastbound		TOTAL
	Right	Left	Right	Thru		Thru	Left	
Volume	647	104	99	13		15	351	1,229
PHF	0.72	0.79	0.85	0.65		0.75	0.60	0.83
Movement PHF	0.72		0.85			0.61		0.83

PM Period (4:00 PM - 6:00 PM)

	Southbound		Westbound			Eastbound		
	Right	Left	Right	Thru		Thru	Left	TOTAL
4:00 PM	46	28	36	2		4	58	174
4:15 PM	41	27	23	5		6	73	175
4:30 PM	81	39	43	1		8	89	261
4:45 PM	40	29	27	4		4	91	195
5:00 PM	74	36	32	4		8	138	292
5:15 PM	51	50	47	7		17	191	363
5:30 PM	73	38	48	3		4	153	319
5:45 PM	81	32	40	3		6	100	262
Total	487	279	296	29		57	893	2,041

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.85**

	Southbound		Westbound			Eastbound		TOTAL
	Right	Left	Right	Thru		Thru	Left	
Volume	279	156	167	17		35	582	1236
PHF	0.86	0.78	0.87	0.607		0.515	0.762	0.85
Movement PHF	0.96		0.85			0.74		0.85

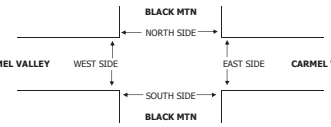
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: BLACK MTN
EAST & WEST: CARMEL VALLEY
PROJECT #: PTD14-0711-01
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

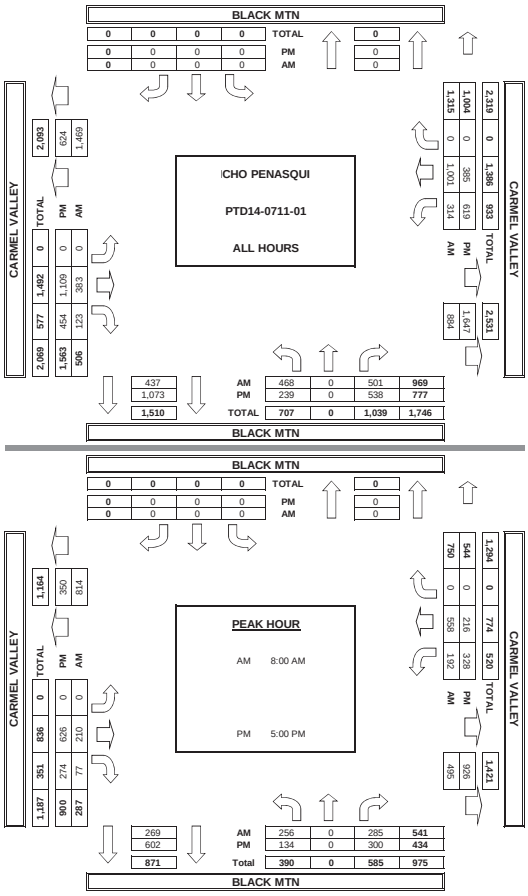
		NORTHBOUND (BLACK MTN)			SOUTHBOUND (BLACK MTN)			EASTBOUND (CARMEL VALLEY)			WESTBOUND (CARMEL VALLEY)				U-TURNS				
	LANES:	NL 2	NT X	NR 1	SL X	ST X	SR X	EL X	ET 1	ER 1	WL 1	WT 1	WR X	TOTAL	NB X	SB X	EB 1	WB X	TTL
AM	7:00 AM	30		37					41	8	14	101		231				1	1
	7:15 AM	42		52					41	10	22	115		282			2		2
	7:30 AM	59		62					50	10	45	115		341					0
	7:45 AM	81		65					41	18	41	112		358				1	1
	8:00 AM	52		67					40	21	47	145		372			2		2
	8:15 AM	69		79					53	18	49	138		406				1	1
	8:30 AM	75		73					63	23	52	149		435				1	1
	8:45 AM	60		66					54	15	44	126		365					0
	VOLUMES	468	0	501	0	0	0	0	383	123	314	1,001	0	2,790	0	0	4	4	8
	APPROACH %	48%	0%	52%	0%	0%	0%	0%	76%	24%	24%	76%	0%						
	APP/DEPART	969	/	0	0	/	437	506	/	884	1,315	/	1,469	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	256	0	285	0	0	0	0	210	77	192	558	0	1,578					
	APPROACH %	47%	0%	53%	0%	0%	0%	0%	73%	27%	26%	74%	0%						
	PEAK HR FACTOR	0.914			0.000			0.834			0.933			0.907					
	APP/DEPART	541	/	0	0	/	269	287	/	495	750	/	814	0					
PM	4:00 PM	11		56					102	38	72	39		318					0
	4:15 PM	19		57					117	35	61	44		333					0
	4:30 PM	40		59					129	47	70	44		389			1		1
	4:45 PM	35		66					135	60	88	42		426					0
	5:00 PM	29		63					125	75	76	44		412					0
	5:15 PM	38		57					182	67	82	67		493			1		1
	5:30 PM	39		80					162	62	89	50		482					0
	5:45 PM	28		100					157	70	81	55		491			1		1
	VOLUMES	239	0	538	0	0	0	0	1,109	454	619	385	0	3,344	0	0	3	0	3
	APPROACH %	31%	0%	69%	0%	0%	0%	0%	71%	29%	62%	38%	0%						
	APP/DEPART	777	/	0	0	/	1,073	1,563	/	1,647	1,004	/	624	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	134	0	300	0	0	0	0	626	274	328	216	0	1,878					
	APPROACH %	31%	0%	69%	0%	0%	0%	0%	70%	30%	60%	40%	0%						
	PEAK HR FACTOR	0.848			0.000			0.904			0.913			0.952					
	APP/DEPART	434	/	0	0	/	602	900	/	926	544	/	350	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



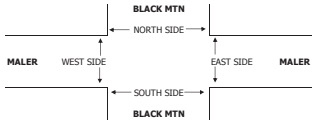
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: BLACK MTN
EAST & WEST: MALER
PROJECT #: PTD14-0711-01
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

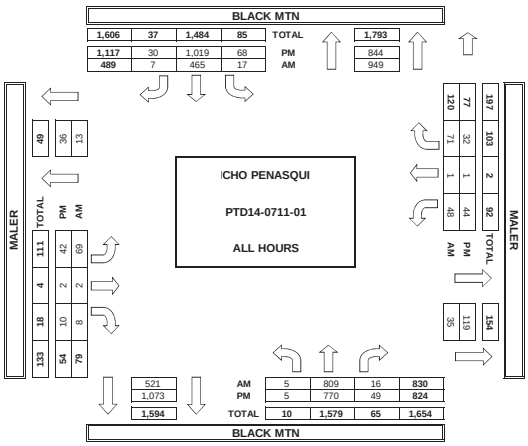
		NORTHBOUND (BLACK MTN)			SOUTHBOUND (BLACK MTN)			EASTBOUND (MALER)			WESTBOUND (MALER)				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	1	61	0	0	24	0	3	0	1	8	0	4	102					0
	7:15 AM	1	75	1	1	43	1	11	0	0	3	0	6	142					0
	7:30 AM	0	100	3	3	56	0	10	0	1	8	0	12	193		1			1
	7:45 AM	0	118	0	2	61	1	6	1	0	8	0	9	206					0
	8:00 AM	0	99	5	1	72	3	8	0	1	6	0	13	208					0
	8:15 AM	1	123	2	0	78	1	12	0	3	7	0	10	237					0
	8:30 AM	0	120	1	6	66	1	8	1	2	4	0	7	216					0
	8:45 AM	2	113	4	4	65	0	11	0	0	4	1	10	214	1	1			2
	VOLUMES	5	809	16	17	465	7	69	2	8	48	1	71	1,518	1	2	0	0	3
	APPROACH %	1%	97%	2%	3%	95%	1%	87%	3%	10%	40%	1%	59%						
	APP/DEPART	830	/	949	489	/	521	79	/	35	120	/	13	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	3	455	12	11	281	5	39	1	6	21	1	40	875					
	APPROACH %	1%	97%	3%	4%	95%	2%	85%	2%	13%	34%	2%	65%						
	PEAK HR FACTOR	0.933			0.940			0.767			0.816			0.923					
	APP/DEPART	470	/	534	297	/	308	46	/	24	62	/	9	0					
PM	4:00 PM	0	67	6	5	103	2	1	0	1	3	0	4	192		3			3
	4:15 PM	0	88	5	3	76	0	2	1	1	5	1	2	184					0
	4:30 PM	1	119	8	14	148	4	8	1	1	12	0	3	319		1			1
	4:45 PM	1	90	6	9	135	4	4	0	2	4	0	5	260		2			2
	5:00 PM	0	86	7	11	131	4	6	0	1	6	0	6	258		1			1
	5:15 PM	1	95	10	8	149	3	6	0	1	4	0	4	281					0
	5:30 PM	0	106	2	7	145	9	8	0	1	4	0	4	286		1			1
	5:45 PM	2	119	5	11	132	4	7	0	2	6	0	4	292		2			2
	VOLUMES	5	770	49	68	1,019	30	42	2	10	44	1	32	2,072	0	10	0	0	10
	APPROACH %	1%	93%	6%	6%	91%	3%	78%	4%	19%	57%	1%	42%						
	APP/DEPART	824	/	844	1,117	/	1,073	54	/	119	77	/	36	0					
	BEGIN PEAK HR	4:30 PM																	
	VOLUMES	3	390	31	42	563	15	24	1	5	26	0	18	1,118					
	APPROACH %	1%	92%	7%	7%	91%	2%	80%	3%	17%	59%	0%	41%						
	PEAK HR FACTOR	0.828			0.934			0.750			0.733			0.876					
	APP/DEPART	424	/	432	620	/	594	30	/	74	44	/	18	0					

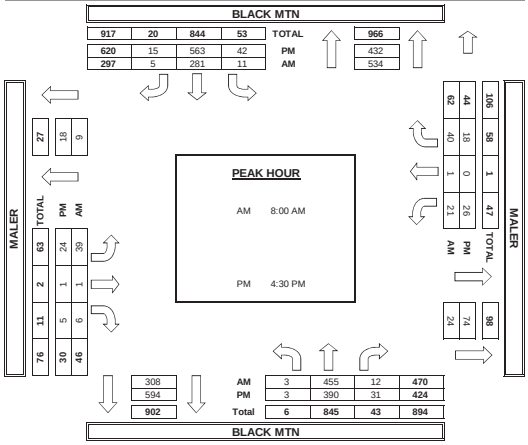


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

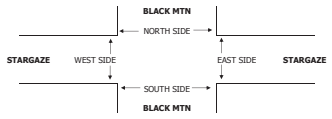
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/24/14 THURSDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: BLACK MTN
EAST & WEST: STARGAZE
PROJECT #: PTD14-0711-01
LOCATION #: 23
CONTROL: SIGNAL

NOTES:

	LANES:	NORTHBOUND BLACK MTN NL 1	NT 2	NR 0	SOUTHBOUND BLACK MTN SL 1	ST 2	SR 0	EASTBOUND STARGAZE EL 1	ET 1	ER 0	WESTBOUND STARGAZE WL 1	WT 1	WR 0	TOTAL
AM	7:00 AM	5	54	1	2	40	4	12	0	26	10	1	4	159
	7:15 AM	4	61	2	1	42	3	14	1	30	9	2	4	173
	7:30 AM	6	60	1	2	56	3	16	1	35	15	0	3	198
	7:45 AM	3	87	4	2	52	7	15	2	35	11	1	8	227
	8:00 AM	8	88	3	2	71	6	15	0	30	10	1	9	243
	8:15 AM	10	82	5	1	74	2	20	1	33	11	4	10	253
	8:30 AM	3	94	3	1	60	5	20	0	26	17	1	7	237
	8:45 AM	8	78	6	1	82	3	26	0	20	5	1	6	238
	VOLUMES	47	604	25	14	477	33	138	5	235	88	11	51	1,728
	APPROACH %	7%	89%	4%	3%	91%	6%	37%	1%	62%	59%	7%	34%	
	APP/DEPART	676	/	793	524	/	800	378	/	44	150	/	91	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	29	342	17	7	287	16	81	1	109	43	7	32	971
	APPROACH %	7%	88%	4%	2%	93%	5%	42%	1%	57%	52%	9%	39%	
	PEAK HR FACTOR		0.970			0.881			0.884			0.820		0.959
	APP/DEPART	388	/	455	310	/	439	191	/	25	82	/	52	0
PM	4:00 PM	29	86	4	6	69	9	7	0	13	5	0	3	231
	4:15 PM	13	82	14	5	93	17	8	1	13	6	0	2	254
	4:30 PM	23	92	9	5	93	14	7	0	24	4	0	4	275
	4:45 PM	19	118	14	7	95	16	7	0	27	8	0	5	316
	5:00 PM	27	103	17	6	107	15	8	1	23	8	0	14	329
	5:15 PM	19	112	16	5	135	15	12	0	20	13	0	2	349
	5:30 PM	19	120	23	4	113	18	11	1	18	8	0	1	336
	5:45 PM	25	106	14	6	106	19	8	2	20	10	2	4	322
	VOLUMES	174	819	111	44	811	123	68	5	158	62	2	35	2,412
	APPROACH %	16%	74%	10%	4%	83%	13%	29%	2%	68%	63%	2%	35%	
	APP/DEPART	1,104	/	922	978	/	1,031	231	/	160	99	/	299	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	90	441	70	21	461	67	39	4	81	39	2	21	1,336
	APPROACH %	15%	73%	12%	4%	84%	12%	31%	3%	65%	63%	3%	34%	
	PEAK HR FACTOR		0.927			0.885			0.969			0.705		0.957
	APP/DEPART	601	/	501	549	/	581	124	/	95	62	/	159	0

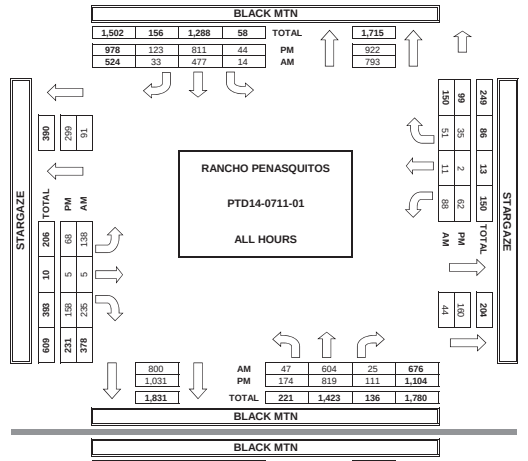
U-TURNS	NB X	SB X	EB X	WB X	TTL
					0
					0
					0
					0
					0
	2				2
					0
					0
	2	0	0	0	2
		1			1
					0
					0
					0
					0
					0
	0	1	0	0	1

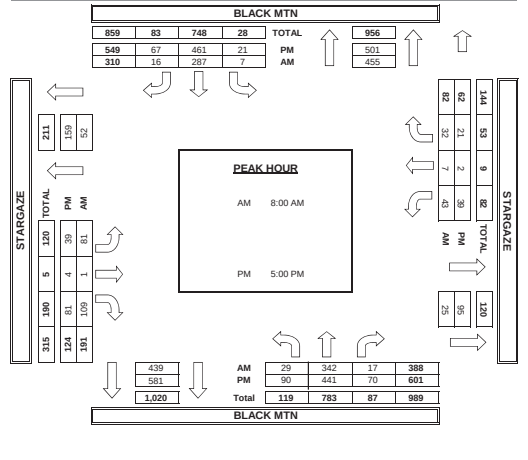


		PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	PEDESTRIAN ACTIVATIONS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	BICYCLE CROSSINGS NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

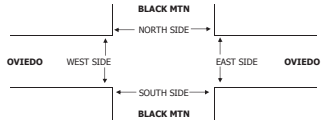
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: BLACK MTN
EAST & WEST: OVIEDO
PROJECT #: PTD14-0711-01
LOCATION #: 3
CONTROL: SIGNAL

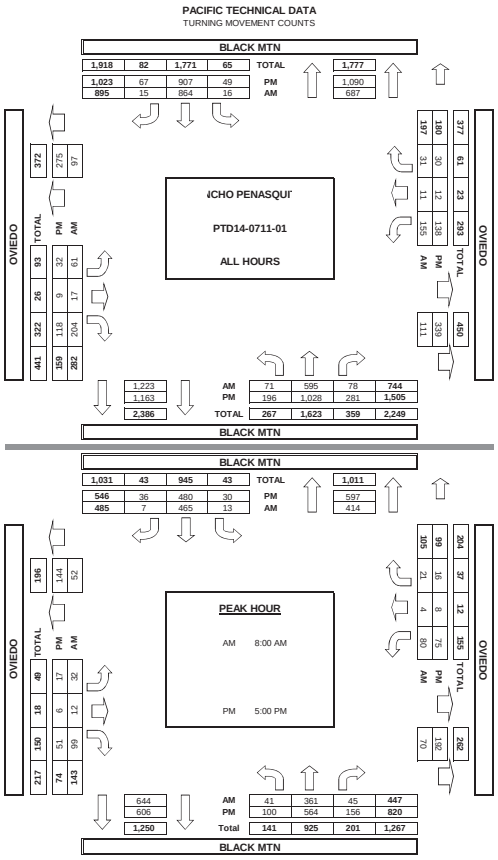
NOTES:

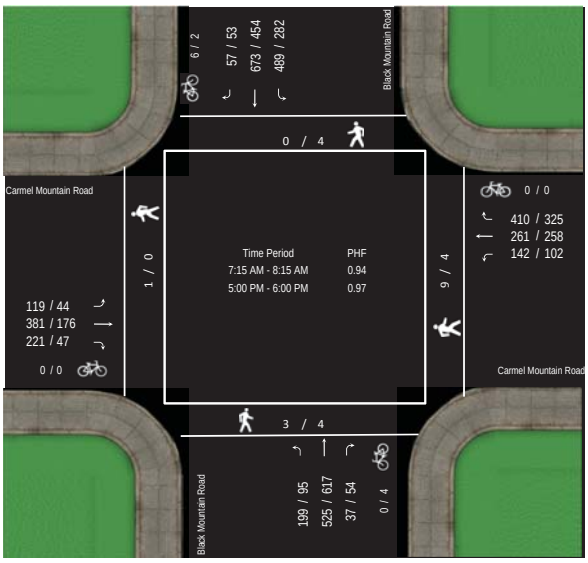
	LANES:	NORTHBOUND BLACK MTN NL 1	NT 2	NR 1	SOUTHBOUND BLACK MTN SL 1	ST 2	SR 0	EASTBOUND OVIEDO EL 0.5	ET 0.5	ER 1	WESTBOUND OVIEDO WL 1.3	WT 0.3	WR 0.3	TOTAL
AM	7:00 AM	7	41	8	1	74	1	4	1	31	19	0	0	187
	7:15 AM	9	61	8	1	84	2	3	2	25	20	1	2	218
	7:30 AM	5	63	5	1	119	4	7	1	24	21	4	4	258
	7:45 AM	9	69	12	0	122	1	15	1	25	15	2	4	275
	8:00 AM	8	75	10	1	130	0	8	4	24	24	2	9	295
	8:15 AM	10	93	14	2	112	2	10	3	19	20	0	5	290
	8:30 AM	15	99	9	4	115	2	8	3	28	21	1	5	310
	8:45 AM	8	94	12	6	108	3	6	2	28	15	1	2	285
	VOLUMES	71	595	78	16	864	15	61	17	204	155	11	31	2,118
	APPROACH %	10%	80%	10%	2%	97%	2%	22%	6%	72%	79%	6%	16%	
	APP/DEPART	744	/	687	895	/	1,223	282	/	111	197	/	97	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	41	361	45	13	465	7	32	12	99	80	4	21	1,180
	APPROACH %	9%	81%	10%	3%	96%	1%	22%	8%	69%	76%	4%	20%	
	PEAK HR FACTOR		0.909			0.926			0.917			0.750		0.952
	APP/DEPART	447	/	414	485	/	644	143	/	70	105	/	52	0
PM	4:00 PM	27	98	32	1	109	4	0	1	13	19	0	3	307
	4:15 PM	25	122	26	10	92	9	4	0	26	19	1	5	339
	4:30 PM	20	120	28	3	107	9	3	2	13	10	1	6	322
	4:45 PM	24	124	39	5	119	9	8	0	15	15	2	0	360
	5:00 PM	24	128	21	4	92	8	4	2	11	12	0	2	308
	5:15 PM	21	152	46	8	142	11	5	1	11	22	1	5	425
	5:30 PM	27	135	38	7	128	7	3	1	14	23	3	4	390
	5:45 PM	28	149	51	11	118	10	5	2	15	18	4	5	416
	VOLUMES	196	1,028	281	49	907	67	32	9	118	138	12	30	2,867
	APPROACH %	13%	68%	19%	5%	89%	7%	20%	6%	74%	77%	7%	17%	
	APP/DEPART	1,505	/	1,090	1,023	/	1,163	159	/	339	180	/	275	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	100	564	156	30	480	36	17	6	51	75	8	16	1,539
	APPROACH %	12%	69%	19%	5%	88%	7%	23%	8%	69%	76%	8%	16%	
	PEAK HR FACTOR		0.899			0.848			0.841			0.825		0.905
	APP/DEPART	820	/	597	546	/	606	74	/	192	99	/	144	0

U-TURNS	NB X	SB X	EB X	WB X	TTL
					0
					0
					0
					0
					0
					0
					0
					0
	0	0	0	0	0
	1				1
					0
					0
					0
					0
					0
					0
	1	1			2
	3	1	0	0	4



		PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	PEDESTRIAN ACTIVATIONS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	BICYCLE CROSSINGS NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Black Mountain Road

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*

LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Black Mountain Road

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	11	120	120	88	17	35	22	104	6	11	84	9	627
7:15 AM	10	171	149	142	30	69	15	198	34	23	71	14	926
7:30 AM	13	223	158	97	64	38	7	132	31	46	92	33	934
7:45 AM	21	135	94	78	102	18	5	110	64	52	88	38	805
8:00 AM	13	144	88	93	65	17	10	85	70	100	130	34	849
8:15 AM	9	185	83	91	28	20	8	92	16	71	89	33	725
8:30 AM	8	120	99	43	27	29	8	59	10	12	47	16	478
8:45 AM	5	99	53	35	27	12	5	53	10	12	38	12	361
Total	90	1,197	844	667	360	238	80	833	241	327	639	189	5,705

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	57	673	489	410	261	142	37	525	199	221	381	119	3,514
PHF	0.68	0.75	0.77	0.72	0.64	0.51	0.62	0.66	0.71	0.55	0.73	0.78	0.94
Movement PHF		0.77			0.84			0.77			0.68		0.94

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	6	98	62	60	53	20	7	105	21	12	37	13	494
4:15 PM	11	103	61	98	60	19	11	140	17	13	32	8	573
4:30 PM	11	83	61	89	47	20	15	133	30	14	45	8	556
4:45 PM	9	85	68	106	58	26	9	123	15	12	30	9	550
5:00 PM	12	103	52	84	59	23	18	162	22	13	46	10	604
5:15 PM	11	122	86	71	68	26	11	157	20	10	39	14	635
5:30 PM	12	97	71	95	68	23	15	141	36	8	40	13	619
5:45 PM	18	132	73	75	63	30	10	157	17	16	51	7	649
Total	90	823	534	678	476	187	96	1,118	178	98	320	82	4,680

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	53	454	282	325	258	102	54	617	95	47	176	44	2507
PHF	0.74	0.86	0.82	0.855	0.949	0.85	0.75	0.952	0.66	0.734	0.863	0.786	0.97
Movement PHF		0.88			0.92			0.95			0.90		0.97

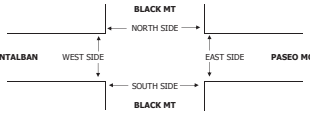
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: BLACK MT
EAST & WEST: PASEO MONTALBAN
PROJECT #: PTD13-1004-01
LOCATION #: 11
CONTROL: SIGNAL

NOTES:

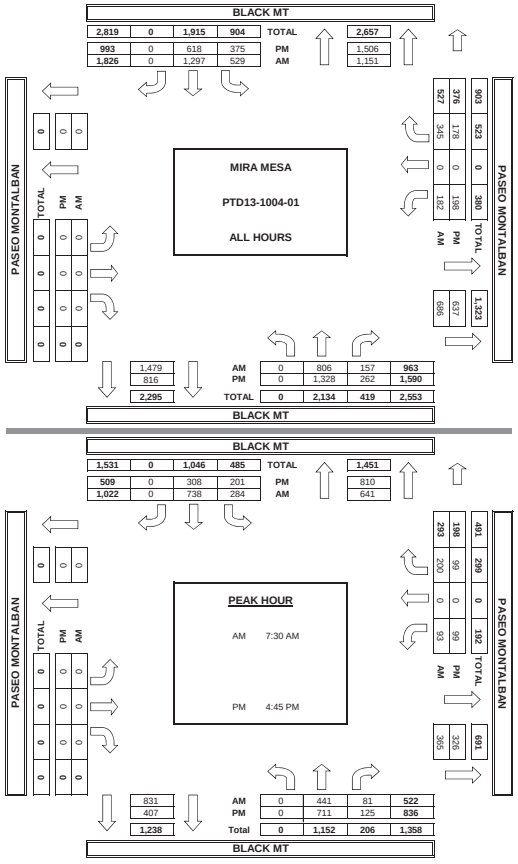
		NORTHBOUND (BLACK MT)			SOUTHBOUND (BLACK MT)			EASTBOUND (PASEO MONTALBAN)			WESTBOUND (PASEO MONTALBAN)				U-TURNS				
	LANES:	NL 2	NT 2	NR 0	SL 1	ST 2	SR	EL	ET	ER	WL 1.5	WT	WR 1.5	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM		109	8	44	158					21		39	379					0
	7:15 AM		109	19	64	163					28		45	428					0
	7:30 AM		115	16	70	197					24		62	484					0
	7:45 AM		118	17	56	160					32		71	454					0
	8:00 AM		123	25	76	183					15		43	465					0
	8:15 AM		85	23	82	198					22		24	434					0
	8:30 AM		77	27	67	126					18		31	346					0
	8:45 AM		70	22	70	112					22		30	326					0
	VOLUMES	0	806	157	529	1,297	0	0	0	0	182	0	345	3,316	0	0	0	0	0
	APPROACH %	0%	84%	16%	29%	71%	0%	0%	0%	0%	35%	0%	65%						
	APP/DEPART	963	/	1,151	1,826	/	1,479	0	/	686	527	/	0	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	441	81	284	738	0	0	0	0	93	0	200	1,837					
	APPROACH %	0%	84%	16%	28%	72%	0%	0%	0%	0%	32%	0%	68%						
	PEAK HR FACTOR		0.882			0.913			0.000			0.711		0.949					
	APP/DEPART	522	/	641	1,022	/	831	0	/	365	293	/	0	0					
PM	4:00 PM		148	42	37	70					28		17	342					0
	4:15 PM		137	42	49	77					21		23	349					0
	4:30 PM		162	28	39	77					27		18	351					0
	4:45 PM		191	26	71	96					23		22	429					0
	5:00 PM		171	30	40	69					31		24	365					0
	5:15 PM		189	38	44	77					19		28	395					0
	5:30 PM		160	31	46	66					26		25	354					0
	5:45 PM		170	25	49	86					23		21	374					0
	VOLUMES	0	1,328	262	375	618	0	0	0	0	198	0	178	2,959	0	0	0	0	0
	APPROACH %	0%	84%	16%	38%	62%	0%	0%	0%	0%	53%	0%	47%						
	APP/DEPART	1,590	/	1,506	993	/	816	0	/	637	376	/	0	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	0	711	125	201	308	0	0	0	0	99	0	99	1,543					
	APPROACH %	0%	85%	15%	39%	61%	0%	0%	0%	0%	50%	0%	50%						
	PEAK HR FACTOR		0.921			0.762			0.000			0.900		0.899					
	APP/DEPART	836	/	810	509	/	407	0	/	326	198	/	0	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM	1				1					0					0
7:15 AM	1		2		3					0					0
7:30 AM	2	1	3		6					0					0
7:45 AM			5		5					0					0
8:00 AM					0					0					0
8:15 AM			2		2					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	4	1	12	0	17	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM	1	1	3		5					0					0
4:30 PM					0					0					0
4:45 PM			2		2					0					0
5:00 PM		1	1		2					0					0
5:15 PM		2			2					0					0
5:30 PM					0					0					0
5:45 PM	1		1		2					0					0
TOTAL	2	4	7	0	13	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

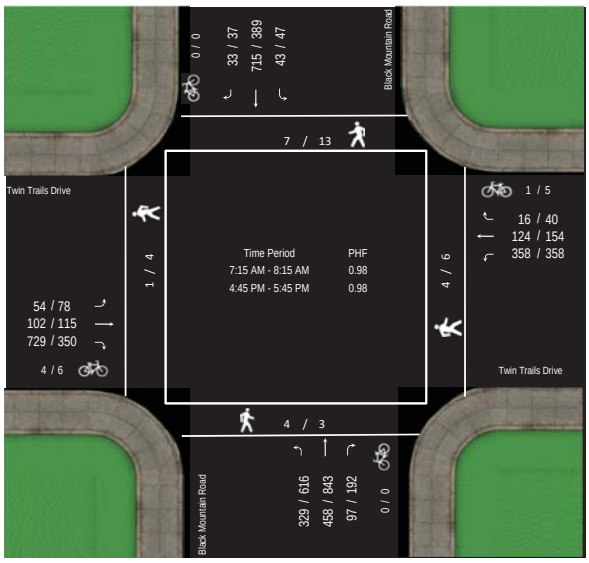
Location: Twin Trails Drive @ Black Mountain Road

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Twin Trails Drive @ Black Mountain Road

AM Period (7:00 AM - 9:00 AM)	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	4	152	1	3	10	85	7	122	36	162	16	10	608
7:15 AM	7	146	8	6	29	86	17	155	61	196	22	8	741
7:30 AM	6	232	14	3	19	103	20	86	80	187	18	14	782
7:45 AM	11	198	8	4	41	73	25	121	97	164	24	10	776
8:00 AM	9	139	13	3	35	96	35	96	91	182	38	22	759
8:15 AM	5	213	12	3	16	79	20	100	58	157	37	23	723
8:30 AM	5	184	12	9	14	84	14	87	40	122	30	14	615
8:45 AM	5	66	8	6	13	90	17	101	45	145	33	13	542
Total	52	1,330	76	37	177	696	155	868	508	1,315	218	114	5,546

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	33	715	43	16	124	358	97	458	329	729	102	54	3,058
PHF	0.75	0.77	0.77	0.67	0.76	0.87	0.69	0.74	0.85	0.93	0.67	0.61	0.98
Movement PHF		0.78			0.93			0.91			0.91		0.98

PM Period (4:00 PM - 6:00 PM)	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	10	70	8	10	44	100	34	176	123	63	30	19	687
4:15 PM	5	97	15	11	52	90	38	191	102	67	18	18	704
4:30 PM	5	51	13	15	52	94	40	218	132	104	29	13	766
4:45 PM	13	84	15	11	42	99	51	209	142	87	29	14	796
5:00 PM	11	78	8	13	41	94	46	214	147	98	29	19	798
5:15 PM	7	105	12	6	39	80	55	221	149	75	30	23	802
5:30 PM	6	122	12	10	32	85	40	199	178	90	27	22	823
5:45 PM	7	81	19	6	51	112	39	193	151	95	22	14	790
Total	64	688	102	82	353	754	343	1,621	1,124	679	214	142	6,166

PM Intersection Peak Hour : **4:45 PM - 5:45 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	37	389	47	40	154	358	192	843	616	350	115	78	3219
PHF	0.71	0.797	0.783	0.769	0.917	0.904	0.873	0.954	0.865	0.893	0.958	0.848	0.98
Movement PHF		0.84			0.91			0.97			0.93		0.98

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

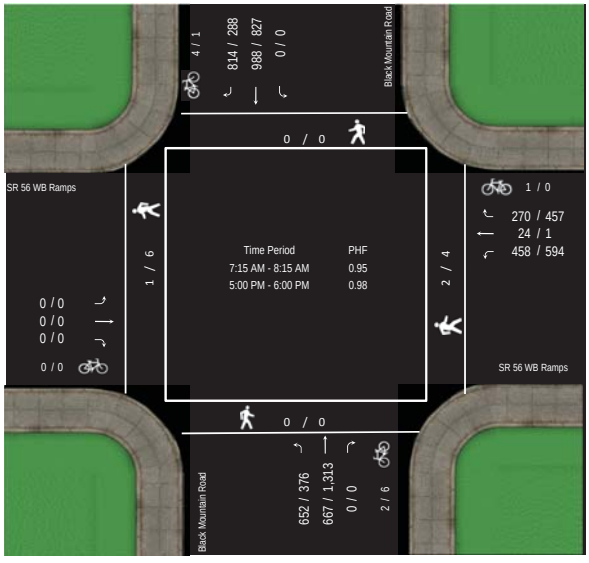
Location: SR 56 WB Ramps @ Black Mountain Road

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 WB Ramps @ Black Mountain Road

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	189	210	0	90	0	80	0	130	146	0	0	0	845
7:15 AM	227	201	0	93	0	104	0	182	176	0	0	0	983
7:30 AM	246	276	0	57	10	113	0	129	186	0	0	0	1,017
7:45 AM	163	272	0	63	11	101	0	191	174	0	0	0	975
8:00 AM	178	239	0	57	3	140	0	165	116	0	0	0	898
8:15 AM	127	322	0	47	0	71	0	131	188	0	0	0	886
8:30 AM	110	280	0	49	0	38	0	100	234	0	0	0	811
8:45 AM	111	190	0	60	0	116	0	116	122	0	0	0	715
Total	1,351	1,990	0	516	24	763	0	1,144	1,342	0	0	0	7,130

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	814	988	0	270	24	458	0	667	652	0	0	0	3,873
PHF	0.83	0.89	#####	0.73	0.55	0.82	#####	0.87	0.88	#####	#####	#####	0.95
Movement PHF		0.86			0.94			0.90			#DIV/0!		0.95

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	38	195	0	98	0	85	0	239	77	0	0	0	732
4:15 PM	60	194	0	113	1	62	0	253	85	0	0	0	768
4:30 PM	60	189	0	134	0	90	0	260	79	0	0	0	812
4:45 PM	65	205	0	102	0	152	0	313	70	0	0	0	907
5:00 PM	75	195	0	113	0	204	0	296	92	0	0	0	975
5:15 PM	54	206	0	111	0	145	0	355	85	0	0	0	956
5:30 PM	83	214	0	117	1	134	0	344	89	0	0	0	982
5:45 PM	76	212	0	116	0	111	0	318	110	0	0	0	943
Total	511	1610	0	904	2	983	0	2,378	687	0	0	0	7,075

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	288	827	0	457	1	594	0	1313	376	0	0	0	3856
PHF	0.87	0.966	#####	0.976	0.25	0.728	#####	0.925	0.855	#####	#####	#####	0.98
Movement PHF		0.94			0.83			0.96			#DIV/0!		0.98

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 EB Ramps @ Black Mountain Road
Date of Count: *Thursday, May 29, 2014*
Analysts: *LV/CD*
Weather: *Sunny*
AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 EB Ramps @ Black Mountain Road

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	195	95	0	0	0	92	232	0	55	0	44	713
7:15 AM	0	216	89	0	0	0	73	299	0	82	0	59	818
7:30 AM	0	291	98	0	0	0	63	271	0	79	0	44	846
7:45 AM	0	295	78	0	0	0	110	320	0	107	0	45	955
8:00 AM	0	278	101	0	0	0	100	224	0	119	0	57	879
8:15 AM	0	292	101	0	0	0	62	280	0	78	0	39	852
8:30 AM	0	222	96	0	0	0	69	261	0	88	0	73	809
8:45 AM	0	229	77	0	0	0	99	196	0	97	0	42	740
Total	0	2,018	735	0	0	0	668	2,083	0	705	0	403	6,612

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	1,156	378	0	0	0	335	1,095	0	383	0	185	3,532
PHF	#####	0.98	0.94	#####	#####	#####	0.76	0.86	#####	0.80	#####	0.81	0.92
Movement PHF		0.98			#DIV/0!			0.83			0.81		0.92

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	192	88	0	0	0	92	202	0	126	0	114	814
4:15 PM	0	203	53	0	0	0	104	248	0	116	0	90	814
4:30 PM	0	196	83	0	0	0	79	209	0	139	0	130	836
4:45 PM	0	266	91	0	0	0	100	316	0	117	0	67	957
5:00 PM	0	290	109	0	0	0	79	327	0	92	0	61	958
5:15 PM	0	259	92	0	0	0	77	369	0	108	0	71	976
5:30 PM	0	257	91	0	0	0	99	374	0	126	0	59	1,006
5:45 PM	0	259	64	0	0	0	112	314	0	135	0	114	998
Total	0	1922	671	0	0	0	742	2,359	0	959	0	706	7,359

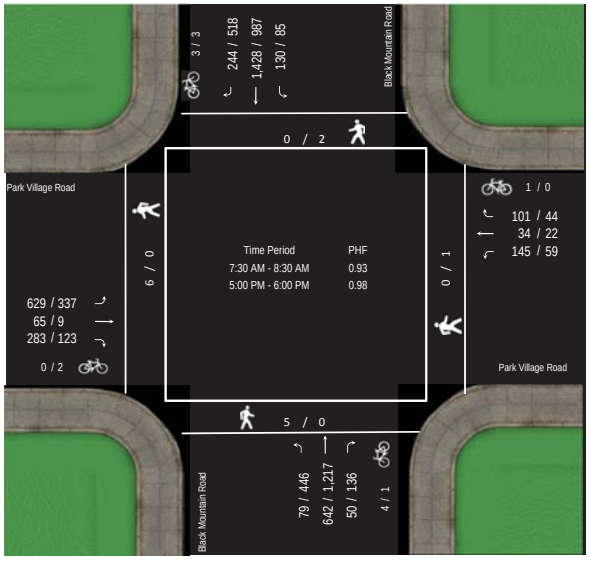
PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	1065	356	0	0	0	367	1384	0	461	0	305	3938
PHF	#####	0.918	0.817	#####	#####	#####	0.819	0.925	#####	0.854	#####	0.669	0.98
Movement PHF		0.89			#DIV/0!			0.93			0.77		0.98

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Park Village Road @ Black Mountain Road
Date of Count: *Thursday, May 29, 2014*
Analysts: *LV/CD*
Weather: *Sunny*
AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Park Village Road @ Black Mountain Road

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	36	224	13	14	1	19	1	162	8	82	1	123	684
7:15 AM	34	248	29	18	0	24	3	213	18	83	6	168	844
7:30 AM	35	342	34	27	4	29	17	189	8	69	21	211	986
7:45 AM	51	352	52	27	8	39	14	200	15	82	35	158	1,033
8:00 AM	67	343	29	34	16	41	14	121	27	64	7	155	918
8:15 AM	91	391	15	13	6	36	5	132	29	68	2	105	893
8:30 AM	102	362	12	10	9	19	9	148	33	90	1	118	913
8:45 AM	62	251	14	13	7	34	6	134	29	82	6	150	788
Total	478	2,513	198	156	51	241	69	1,299	167	620	79	1,188	7,059

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	244	1,428	130	101	34	145	50	642	79	283	65	629	3,830
PHF	0.67	0.91	0.63	0.74	0.53	0.88	0.74	0.80	0.68	0.86	0.46	0.75	0.93
Movement PHF		0.91			0.77			0.84			0.81		0.93

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	103	205	15	4	6	17	22	212	61	33	6	87	771
4:15 PM	98	214	19	9	7	17	24	219	91	42	2	84	826
4:30 PM	109	205	16	2	4	13	18	260	75	39	2	84	827
4:45 PM	121	292	14	8	0	17	34	281	81	25	4	79	956
5:00 PM	139	227	23	9	5	19	30	309	103	29	0	80	973
5:15 PM	129	240	21	15	6	12	40	307	118	29	3	80	1,000
5:30 PM	117	267	21	12	6	14	37	305	106	34	5	94	1,018
5:45 PM	133	253	20	8	5	14	29	296	119	31	1	83	992
Total	949	1903	149	67	39	123	234	2,189	754	262	23	671	7,363

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	518	987	85	44	22	59	136	1217	446	123	9	337	3983
PHF	0.93	0.924	0.924	0.733	0.917	0.776	0.85	0.985	0.937	0.904	0.45	0.896	0.98
Movement PHF		0.98			0.95			0.97			0.88		0.98

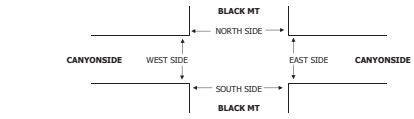
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: BLACK MT
EAST & WEST: CANYONSIDE
PROJECT #: PTD13-1004-01
LOCATION #: 16
CONTROL: SIGNAL

NOTES:

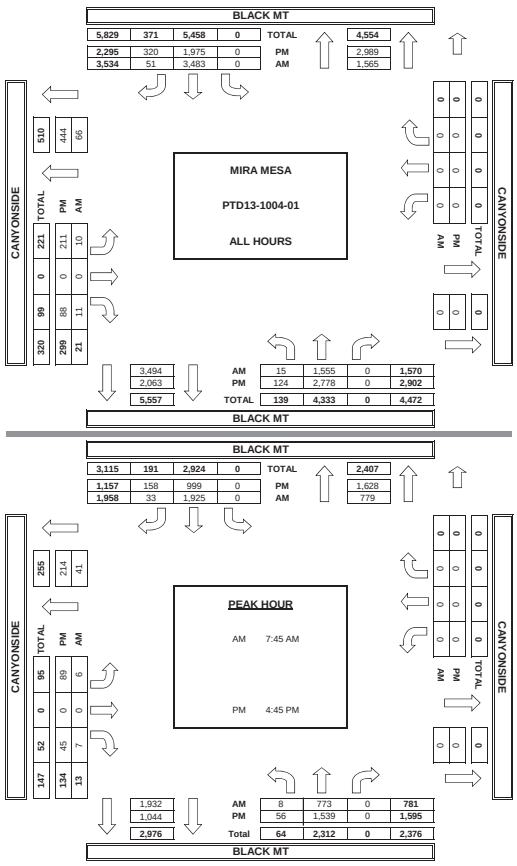
	LANES:	NORTHBOUND (BLACK MT) NL 1	NT 2	NR X	SOUTHBOUND (BLACK MT) SL X	ST 2	SR 1	EASTBOUND (CANYONSIDE) EL 1	ET X	ER 1	WESTBOUND (CANYONSIDE) WL X	WT X	WR X	TOTAL	U-TURNS NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	2	197			345	0	0		0				544					0
	7:15 AM	2	215			452	8	1		1				679					0
	7:30 AM	2	194			429	2	2		0				629					0
	7:45 AM	1	212			484	3	0		1				701					0
	8:00 AM	0	198			496	2	3		1				700					0
	8:15 AM	5	174			503	17	1		3				703					0
	8:30 AM	2	189			442	11	2		2				648					0
	8:45 AM	1	176			332	8	1		3				521					0
	VOLUMES	15	1,555	0	0	3,483	51	10	0	11	0	0	0	5,125	0	0	0	0	0
	APPROACH %	1%	99%	0%	0%	99%	1%	48%	0%	52%	0%	0%	0%						
	APP/DEPART	1,570	/	1,565	3,534	/	3,494	21	/	0	0	/	66	0					
	BEGIN PEAK HR	7:45 AM																	
	VOLUMES	8	773	0	0	1,925	33	6	0	7	0	0	0	2,752					
	APPROACH %	1%	99%	0%	0%	98%	2%	46%	0%	54%	0%	0%	0%						
	PEAK HR FACTOR		0.917			0.941			0.813			0.000		0.979					
	APP/DEPART	781	/	779	1,958	/	1,932	13	/	0	0	/	41	0					
PM	4:00 PM	20	270			238	37	30		8				603					0
	4:15 PM	27	337			222	54	29		9				678					0
	4:30 PM	10	329			264	31	37		15				686					0
	4:45 PM	19	362			244	42	25		8				700					0
	5:00 PM	9	395			225	24	17		11				681					0
	5:15 PM	13	442			262	44	25		14				800					0
	5:30 PM	15	340			268	48	22		12				705					0
	5:45 PM	11	303			252	40	26		11				643					0
	VOLUMES	124	2,778	0	0	1,975	320	211	0	88	0	0	0	5,496	0	0	0	0	0
	APPROACH %	4%	96%	0%	0%	86%	14%	71%	0%	29%	0%	0%	0%						
	APP/DEPART	2,902	/	2,989	2,295	/	2,063	299	/	0	0	/	444	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	56	1,539	0	0	999	158	89	0	45	0	0	0	2,886					
	APPROACH %	4%	96%	0%	0%	86%	14%	66%	0%	34%	0%	0%	0%						
	PEAK HR FACTOR		0.876			0.915			0.859			0.000		0.902					
	APP/DEPART	1,595	/	1,628	1,157	/	1,044	134	/	0	0	/	214	0					



		PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	PEDESTRIAN ACTIVATIONS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	BICYCLE CROSSINGS NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM				1	1					0					0
	8:15 AM					0					0					0
	8:30 AM				2	2					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM				1	1					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM				2	2					0					0
	5:15 PM					0					0					0
	5:30 PM				1	1					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Mercy Road @ Black Mountain Road

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Mercy Road @ Black Mountain Road

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	237	75	54	0	80	58	132	8	0	0	0	644
7:15 AM	1	257	89	61	0	98	50	124	12	0	0	0	692
7:30 AM	0	317	107	58	0	102	90	130	7	0	0	0	811
7:45 AM	0	371	105	73	0	86	85	122	4	0	0	0	846
8:00 AM	1	327	111	67	0	105	62	137	9	0	0	0	819
8:15 AM	0	350	103	70	0	93	77	138	3	0	0	0	834
8:30 AM	0	295	113	67	0	99	91	128	11	0	0	0	804
8:45 AM	0	317	93	43	0	116	81	116	1	0	0	0	767
Total	2	2,471	796	493	0	779	594	1,027	55	0	0	0	6,217

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	1	1,365	426	268	0	386	314	527	23	0	0	0	3,310
PHF	0.25	0.92	0.96	0.92	#####	0.92	0.87	0.95	0.64	#####	#####	#####	0.98
Movement PHF		0.94			0.95			0.95			#DIV/0!		0.98

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	172	59	71	21	54	58	197	9	0	0	0	641
4:15 PM	0	189	68	98	0	95	86	239	6	0	0	0	781
4:30 PM	0	173	69	80	0	76	96	247	4	0	0	0	745
4:45 PM	0	127	80	94	0	86	105	270	5	0	1	0	768
5:00 PM	0	166	82	118	0	94	104	267	3	0	0	0	834
5:15 PM	0	185	81	113	0	104	107	289	5	0	0	0	884
5:30 PM	0	157	75	103	1	80	92	264	6	0	0	0	778
5:45 PM	0	166	66	114	0	80	129	329	5	0	1	1	891
Total	0	1335	580	791	22	669	777	2,102	43	0	2	1	6,322

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	674	304	448	1	358	432	1149	19	0	1	1	3387
PHF	#####	0.911	0.927	0.949	0.25	0.861	0.837	0.873	0.792	#####	0.25	0.25	0.95
Movement PHF		0.92			0.93			0.86			0.25		0.95

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: BLACK MT
EAST & WEST: WESTVIEW
PROJECT #: PTD13-1004-01
LOCATION #: 18
CONTROL: SIGNAL

NOTES:

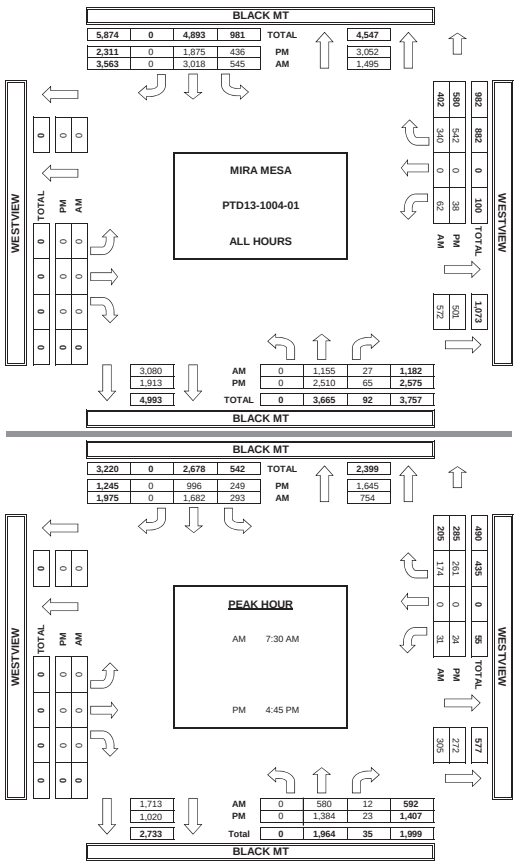
	NORTHBOUND (BLACK MT)			SOUTHBOUND (BLACK MT)			EASTBOUND (WESTVIEW)			WESTBOUND (WESTVIEW)				U-TURNS				
LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR X	EL X	ET X	ER X	WL 1	WT X	WR 2	TOTAL	NB X	SB X	EB X	WB X	TTL
AM 7:00 AM		183	2	51	300					14		42	592					0
7:15 AM		137	8	76	374					3		49	647	1				1
7:30 AM		163	2	70	384					6		46	671	1				1
7:45 AM		130	3	69	428					9		39	678	1				1
8:00 AM		168	5	84	446					8		44	755					0
8:15 AM		119	2	70	424					8		45	668					0
8:30 AM		121	2	65	344					7		40	579					0
8:45 AM		134	3	60	318					7		35	557					0
VOLUMES	0	1,155	27	545	3,018	0	0	0	0	62	0	340	5,147	3	0	0	0	3
APPROACH %	0%	98%	2%	15%	85%	0%	0%	0%	0%	15%	0%	85%						
APP/DEPART	1,182	/	1,495	3,563	/	3,080	0	/	572	402	/	0	0					
BEGIN PEAK HR	7:30 AM																	
VOLUMES	0	580	12	293	1,682	0	0	0	0	31	0	174	2,772					
APPROACH %	0%	98%	2%	15%	85%	0%	0%	0%	0%	15%	0%	85%						
PEAK HR FACTOR		0.855			0.932			0.000			0.967		0.918					
APP/DEPART	592	/	754	1,975	/	1,713	0	/	305	205	/	0	0					
PM 4:00 PM		262	9	44	221					3		59	598					0
4:15 PM		268	7	42	189					2		71	579	1				1
4:30 PM		312	16	55	251					2		68	704					0
4:45 PM		319	6	53	226					4		48	656	1				1
5:00 PM		368	7	68	228					5		68	744					0
5:15 PM		371	5	62	277					8		68	791	1				1
5:30 PM		326	5	66	265					7		77	746					0
5:45 PM		284	10	46	218					7		83	648					0
VOLUMES	0	2,510	65	436	1,875	0	0	0	0	38	0	542	5,466	3	0	0	0	3
APPROACH %	0%	97%	3%	19%	81%	0%	0%	0%	0%	7%	0%	93%						
APP/DEPART	2,575	/	3,052	2,311	/	1,913	0	/	501	580	/	0	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	0	1,384	23	249	996	0	0	0	0	24	0	261	2,937					
APPROACH %	0%	98%	2%	20%	80%	0%	0%	0%	0%	8%	0%	92%						
PEAK HR FACTOR		0.936			0.918			0.000			0.848		0.928					
APP/DEPART	1,407	/	1,645	1,245	/	1,020	0	/	272	285	/	0	0					

BLACK MT — NORTH SIDE
WESTVIEW — WEST SIDE — EAST SIDE — WESTVIEW
SOUTH SIDE — BLACK MT

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM	1		2		3					0					0
7:30 AM					0					0					0
7:45 AM	1		3		4					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	2	0	5	0	7	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM			1		1					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: CARMEL MT
EAST & WEST: SUNDEVIL
PROJECT #: PTD13-1004-01
LOCATION #: 9
CONTROL: SIGNAL

NOTES:

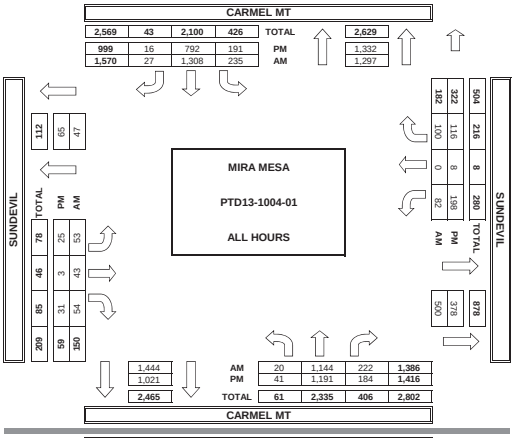
	NORTHBOUND (CARMEL MT)			SOUTHBOUND (CARMEL MT)			EASTBOUND (SUNDEVIL)			WESTBOUND (SUNDEVIL)				U-TURNS				
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 0.5	ER 0.5	WL 1	WT 0.5	WR 0.5	TOTAL	NB X	SB X	EB X	WB X	TTL
AM 7:00 AM	6	235	101	59	215	13	16	22	23	16	0	23	729		35			35
7:15 AM	5	192	38	59	224	6	12	19	17	23	0	26	621		22			22
7:30 AM	2	148	9	15	193	1	0	1	2	7	0	13	391		6			6
7:45 AM	0	126	7	16	176	0	8	0	3	4	0	9	349		11			11
8:00 AM	2	135	18	21	175	2	5	0	4	7	0	8	377		10			10
8:15 AM	0	98	21	36	135	2	6	0	2	8	0	7	315		20			20
8:30 AM	4	104	17	13	106	0	2	0	1	12	0	8	267	2	8			10
8:45 AM	1	106	11	16	84	3	4	1	2	5	0	6	239		7			7
VOLUMES	20	1,144	222	235	1,308	27	53	43	54	82	0	100	3,288	2	119	0	0	121
APPROACH %	1%	83%	16%	15%	83%	2%	35%	29%	36%	45%	0%	55%						
APP/DEPART	1,386	/	1,297	1,570	/	1,444	150	/	500	182	/	47	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	13	701	155	149	808	20	36	42	45	50	0	71	2,090					
APPROACH %	1%	81%	18%	15%	83%	2%	29%	34%	37%	41%	0%	59%						
PEAK HR FACTOR		0.635			0.845			0.504			0.617		0.717					
APP/DEPART	869	/	808	977	/	903	123	/	346	121	/	33	0					
PM 4:00 PM	7	121	28	21	88	2	2	0	3	20	1	10	303		6			6
4:15 PM	4	142	22	25	97	1	3	0	2	17	1	13	327		8			8
4:30 PM	6	152	24	19	102	1	4	0	2	23	2	16	351		9			9
4:45 PM	4	142	16	18	95	2	3	2	7	21	0	14	324	1	9			10
5:00 PM	2	172	22	31	119	4	1	1	2	20	1	14	389		15			15
5:15 PM	6	155	14	22	97	2	4	0	4	17	0	21	342	1	10			11
5:30 PM	9	168	26	25	116	3	4	0	5	28	0	18	402		8			8
5:45 PM	3	139	32	30	78	1	4	0	6	52	3	10	358	1	12			13
VOLUMES	41	1,191	184	191	792	16	25	3	31	198	8	116	2,796	3	77	0	0	80
APPROACH %	3%	84%	13%	19%	79%	2%	42%	5%	53%	61%	2%	36%						
APP/DEPART	1,416	/	1,332	999	/	1,021	59	/	378	322	/	65	0					
BEGIN PEAK HR	5:00 PM																	
VOLUMES	20	634	94	108	410	10	13	1	17	117	4	63	1,491					
APPROACH %	3%	85%	13%	20%	78%	2%	42%	3%	55%	64%	2%	34%						
PEAK HR FACTOR		0.921			0.857			0.775			0.708		0.927					
APP/DEPART	748	/	710	528	/	544	31	/	203	184	/	34	0					

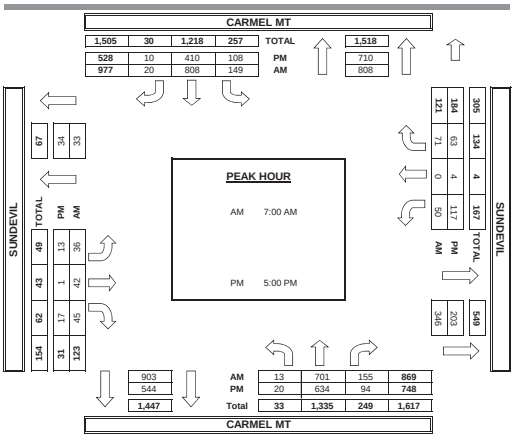
CARMEL MT — NORTH SIDE
SUNDEVIL — WEST SIDE — EAST SIDE — SUNDEVIL
SOUTH SIDE — CARMEL MT

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM	64		25		89					0					0
7:15 AM	35		8		43					0					0
7:30 AM	3		1		4					0					0
7:45 AM	2		2		4					0					0
8:00 AM			1		1					0					0
8:15 AM	4		1		5					0					0
8:30 AM	1		2		3					0					0
8:45 AM					0					0					0
TOTAL	109	0	40	0	149	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM			1		1					0					0
4:30 PM				1	1					0					0
4:45 PM			2		2					0					0
5:00 PM	1	2	1		4					0					0
5:15 PM					0					0					0
5:30 PM	2		2		4					0					0
5:45 PM			1		1					0					0
TOTAL	3	2	7	1	13	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





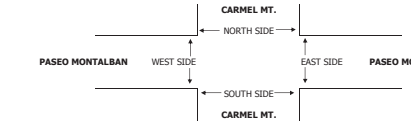
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: CARMEL MT.
EAST & WEST: PASEO MONTALBAN
PROJECT #: PTD13-1004-01
LOCATION #: 8
CONTROL: SIGNAL

NOTES:

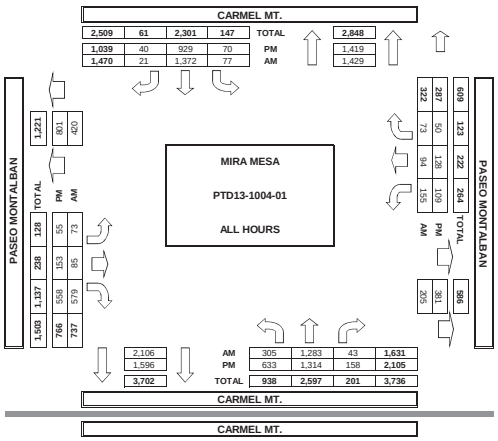
		NORTHBOUND (CARMEL MT.)			SOUTHBOUND (CARMEL MT.)			EASTBOUND (PASEO MONTALBAN)			WESTBOUND (PASEO MONTALBAN)				U-TURNS				
	LANES:	NL 2	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 0.5	ER 0.5	WL 1	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	36	313	11	17	245	1	31	12	79	25	11	24	805					0
	7:15 AM	45	200	5	16	253	2	9	19	102	20	21	8	700					0
	7:30 AM	37	145	4	6	199	1	7	11	93	27	10	7	547					0
	7:45 AM	35	151	3	11	164	4	6	13	71	13	13	5	489					0
	8:00 AM	48	117	7	8	168	3	8	6	61	14	8	12	460					0
	8:15 AM	33	108	3	9	149	3	4	11	56	18	6	6	406					0
	8:30 AM	39	148	4	4	113	4	8	8	60	21	11	5	425					0
	8:45 AM	32	101	6	6	81	3	0	5	57	17	14	6	328					0
	VOLUMES	305	1,283	43	77	1,372	21	73	85	579	155	94	73	4,160	0	0	0	0	0
	APPROACH %	19%	79%	3%	5%	93%	1%	10%	12%	79%	48%	29%	23%						
	APP/DEPART	1,631	/	1,429	1,470	/	2,106	737	/	205	322	/	420	0					
	BEGIN PEAK HR	7:00 AM																	
	VOLUMES	153	809	23	50	861	8	53	55	345	85	55	44	2,541					
	APPROACH %	16%	82%	2%	5%	94%	1%	12%	12%	76%	46%	30%	24%						
	PEAK HR FACTOR		0.684			0.848			0.871			0.767		0.789					
	APP/DEPART	985	/	906	919	/	1,291	453	/	128	184	/	216	0					
PM	4:00 PM	76	152	20	5	93	5	2	23	55	11	13	6	461	1				1
	4:15 PM	62	145	15	7	105	5	5	23	59	11	13	4	454					0
	4:30 PM	68	141	26	8	98	2	5	13	58	12	17	9	457					0
	4:45 PM	79	163	23	10	112	4	10	21	65	16	14	6	523					0
	5:00 PM	84	172	10	12	140	6	10	17	81	18	20	4	574					0
	5:15 PM	95	166	22	9	132	5	4	24	81	12	18	8	576					0
	5:30 PM	77	174	28	9	128	4	13	9	79	15	17	7	560					0
	5:45 PM	92	201	14	10	121	9	6	23	80	14	16	6	592					0
	VOLUMES	633	1,314	158	70	929	40	55	153	558	109	128	50	4,197	1	0	0	0	1
	APPROACH %	30%	62%	8%	7%	89%	4%	7%	20%	73%	38%	45%	17%						
	APP/DEPART	2,105	/	1,419	1,039	/	1,596	766	/	381	287	/	801	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	348	713	74	40	521	24	33	73	321	59	71	25	2,302					
	APPROACH %	31%	63%	7%	7%	89%	4%	8%	17%	75%	38%	46%	16%						
	PEAK HR FACTOR		0.924			0.926			0.979			0.923		0.972					
	APP/DEPART	1,135	/	771	585	/	901	427	/	187	155	/	443	0					

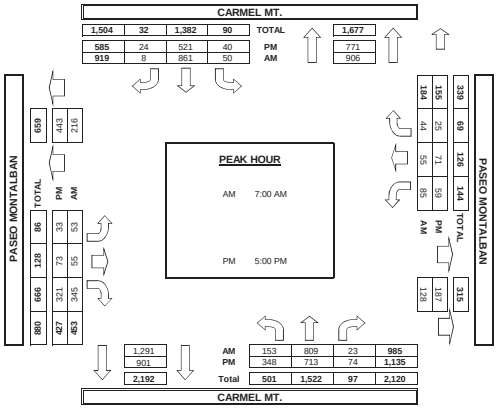


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS					
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	2	1	20		23					0				1	1
	7:15 AM	2	10		4	16					0				1	1
	7:30 AM	1	2	4		7					0				2	2
	7:45 AM	1	5	1		7					0					0
	8:00 AM		1	1		2					0					0
	8:15 AM		5	1	1	7					0					0
	8:30 AM	2	2	2	1	7					0					0
	8:45 AM		3	1	1	5					0					0
	TOTAL	8	29	30	7	74	0	0	0	0	0	0	0	0	4	4
PM	4:00 PM		1	11	7	19					0					0
	4:15 PM	1	1	19		21					0				1	2
	4:30 PM			2	1	3					0				1	2
	4:45 PM	1	1	3		5					0					0
	5:00 PM	1	3	4		8					0					0
	5:15 PM					0					0					0
	5:30 PM		2	1		3					0					0
	5:45 PM	1	1	1		3					0					0
	TOTAL	4	9	41	8	62	0	0	0	0	0	1	0	2	1	4

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: SR 56 WB Ramps @ Carmel Mountain Road

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: SR 56 WB Ramps @ Carmel Mountain Road

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	12	177	68	71	60	67	59	195	122	10	36	90	967
7:15 AM	28	217	79	90	73	59	38	146	92	6	17	54	899
7:30 AM	17	190	114	47	66	68	38	98	115	6	13	32	804
7:45 AM	11	198	118	53	62	64	78	104	99	18	27	40	872
8:00 AM	13	221	50	64	47	65	57	155	82	9	25	71	859
8:15 AM	19	197	114	51	73	96	38	111	115	6	17	47	884
8:30 AM	12	138	53	60	63	57	43	165	104	11	32	67	805
8:45 AM	3	132	40	40	58	64	39	75	68	8	18	22	567
Total	115	1,470	636	476	502	540	390	1,049	797	74	185	423	6,657

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	68	782	379	261	261	258	213	543	428	40	93	216	3,542
PHF	0.61	0.90	0.80	0.73	0.89	0.95	0.68	0.70	0.88	0.56	0.65	0.60	0.92
Movement PHF		0.94			0.88			0.79			0.64		0.92

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	6	113	56	53	37	44	76	130	68	22	31	39	675
4:15 PM	2	108	48	52	38	53	71	145	58	27	23	38	663
4:30 PM	4	91	62	47	44	50	88	120	71	26	37	46	686
4:45 PM	4	78	58	48	39	74	68	146	70	24	41	53	703
5:00 PM	8	125	60	61	41	56	85	143	75	28	39	49	770
5:15 PM	3	148	59	61	75	83	58	117	78	9	38	35	764
5:30 PM	8	117	54	67	49	72	79	150	74	28	46	61	805
5:45 PM	5	104	74	45	58	87	95	187	80	37	46	57	875
Total	40	884	471	434	381	519	620	1,138	574	201	301	378	5,941

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	24	494	247	234	223	298	317	597	307	102	169	202	3214
PHF	0.75	0.834	0.834	0.873	0.743	0.856	0.834	0.798	0.959	0.689	0.918	0.828	0.92
Movement PHF		0.91			0.86			0.84			0.84		0.92

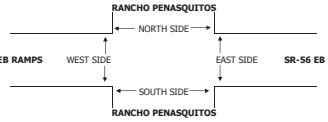
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

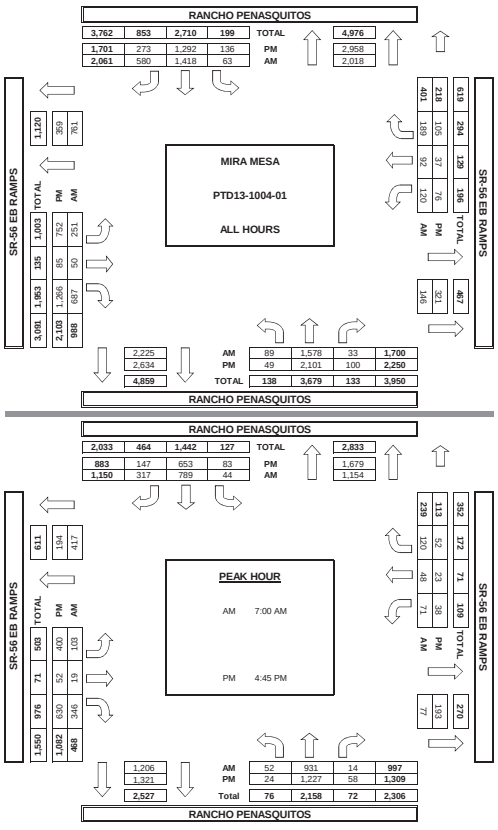
DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: RANCHO PENASQUITOS
EAST & WEST: SR-56 EB RAMPS
PROJECT #: PTD13-1004-01
LOCATION #: 6
CONTROL: SIGNAL

NOTES:

	NORTHBOUND (RANCHO PENASQUITOS)			SOUTHBOUND (RANCHO PENASQUITOS)			EASTBOUND (SR-56 EB RAMPS)			WESTBOUND (SR-56 EB RAMPS)				U-TURNS				
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 0	EL 1	ET 0	ER 1	WL 1	WT 0.5	WR 0.5	TOTAL	NB X	SB X	EB X	WB X	TTL
AM 7:00 AM	8	305	2	9	213	79	22	7	91	15	6	37	794		1			1
7:15 AM	11	209	5	12	224	85	22	4	93	26	10	34	735					0
7:30 AM	17	215	6	12	201	78	28	3	61	16	20	31	688					0
7:45 AM	16	202	1	11	151	75	31	5	101	14	12	18	637					0
8:00 AM	9	166	4	5	153	78	43	22	77	10	16	16	599					0
8:15 AM	11	155	3	8	158	76	42	2	98	17	10	21	601					0
8:30 AM	10	159	4	4	160	66	31	4	83	10	10	23	564					0
8:45 AM	7	167	8	2	158	43	32	3	83	12	8	9	532		2			2
VOLUMES	89	1,578	33	63	1,418	580	251	50	687	120	92	189	5,150	0	3	0	0	3
APPROACH %	5%	93%	2%	3%	69%	28%	25%	5%	70%	30%	23%	47%						
APP/DEPART	1,700	/	2,018	2,061	/	2,225	988	/	146	401	/	761	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	52	931	14	44	789	317	103	19	346	71	48	120	2,854					
APPROACH %	5%	93%	1%	4%	69%	28%	22%	4%	74%	30%	20%	50%						
PEAK HR FACTOR		0.791			0.896			0.854			0.854		0.899					
APP/DEPART	997	/	1,154	1,150	/	1,206	468	/	77	239	/	417	0					
PM 4:00 PM	5	184	5	1	162	30	77	6	152	9	4	5	640					0
4:15 PM	6	219	14	15	155	31	75	5	168	10	0	19	717					0
4:30 PM	7	245	8	16	160	33	111	8	164	9	5	9	775					0
4:45 PM	8	324	8	18	165	35	98	10	164	9	5	18	862					0
5:00 PM	7	320	20	20	173	43	111	15	168	4	5	8	894					0
5:15 PM	3	306	11	24	157	35	93	16	153	7	9	10	824					0
5:30 PM	6	277	19	21	158	34	98	11	145	18	4	16	807					0
5:45 PM	7	226	15	21	162	32	89	14	152	10	5	20	753					0
VOLUMES	49	2,101	100	136	1,292	273	752	85	1,266	76	37	105	6,272	0	0	0	0	0
APPROACH %	2%	93%	4%	8%	76%	16%	36%	4%	60%	35%	17%	48%						
APP/DEPART	2,250	/	2,958	1,701	/	2,634	2,103	/	321	218	/	359	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	24	1,227	58	83	653	147	400	52	630	38	23	52	3,387					
APPROACH %	2%	94%	4%	9%	74%	17%	37%	5%	58%	34%	20%	46%						
PEAK HR FACTOR		0.943			0.935			0.920			0.743		0.947					
APP/DEPART	1,309	/	1,679	883	/	1,321	1,082	/	193	113	/	194	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM		1			1					0					0
7:15 AM		4	3		7					0					0
7:30 AM		1		2	3					0					0
7:45 AM		1	1		2					0					0
8:00 AM				1	1					0					0
8:15 AM					0					0					0
8:30 AM			1		1					0		5			5
8:45 AM		2			2					0		3			3
TOTAL	0	9	5	3	17	0	0	0	0	0	0	8	0	0	8
PM 4:00 PM			1		1					0	3		2		5
4:15 PM				1	1					0					0
4:30 PM	1				1					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM	1				1					0	3		2		5
5:30 PM					0					0					0
5:45 PM		3	2		5					0		2	2		4
TOTAL	2	3	3	1	9	0	0	0	0	0	6	2	6	0	14



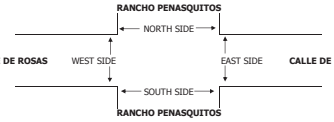
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: RANCHO PENASQUITOS
EAST & WEST: CALLE DE ROSAS
PROJECT #: PTD13-1004-01
LOCATION #: 5
CONTROL: SIGNAL

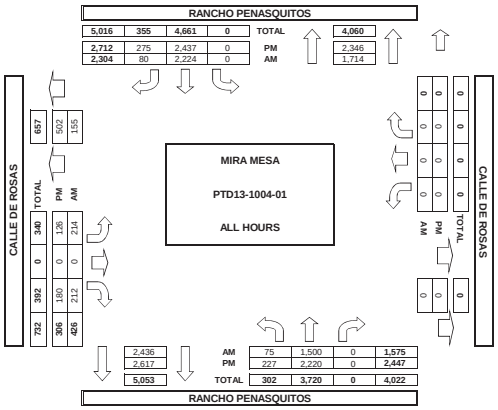
NOTES:

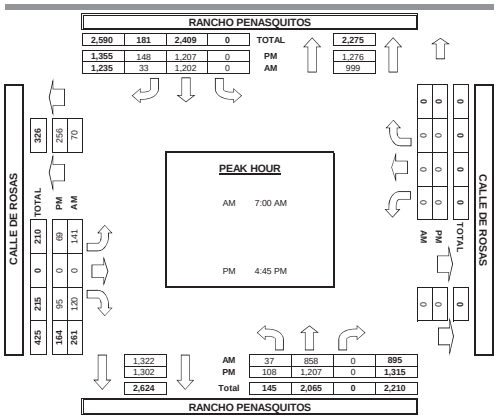
	NORTHBOUND (RANCHO PENASQUITOS)			SOUTHBOUND (RANCHO PENASQUITOS)			EASTBOUND (CALLE DE ROSAS)			WESTBOUND (CALLE DE ROSAS)				U-TURNS				
LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 1	EL 1	ET X	ER 1	WL X	WT X	WR X	TOTAL	NB X	SB X	EB X	WB X	TTL
AM 7:00 AM	3	301			340	8	29		43				724	1				1
7:15 AM	8	181			335	7	40		22				593	2				2
7:30 AM	15	200			254	8	42		34				553	1				1
7:45 AM	11	176			273	10	30		21				521	2				2
8:00 AM	10	169			264	18	21		29				511	1				1
8:15 AM	8	147			280	12	20		24				491	2				2
8:30 AM	7	158			252	9	15		15				456					0
8:45 AM	13	168			226	8	17		24				456					0
VOLUMES	75	1,500	0	0	2,224	80	214	0	212	0	0	0	4,305	9	0	0	0	9
APPROACH %	5%	95%	0%	0%	97%	3%	50%	0%	50%	0%	0%	0%						
APP/DEPART	1,575	/	1,714	2,304	/	2,436	426	/	0	0	/	155	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	37	858	0	0	1,202	33	141	0	120	0	0	0	2,391					
APPROACH %	4%	96%	0%	0%	97%	3%	54%	0%	46%	0%	0%	0%						
PEAK HR FACTOR		0.736			0.887			0.859			0.000		0.826					
APP/DEPART	895	/	999	1,235	/	1,322	261	/	0	0	/	70	0					
PM 4:00 PM	30	212			311	32	20		26				631	4				4
4:15 PM	27	280			312	30	16		16				681	5				5
4:30 PM	34	251			301	33	12		25				656					0
4:45 PM	18	311			285	47	21		22				704	2				2
5:00 PM	30	337			317	31	11		24				750	2				2
5:15 PM	27	284			299	34	16		27				687	4				4
5:30 PM	33	275			306	36	21		22				693	2				2
5:45 PM	28	270			306	32	9		18				663					0
VOLUMES	227	2,220	0	0	2,437	275	126	0	180	0	0	0	5,465	19	0	0	0	19
APPROACH %	9%	91%	0%	0%	90%	10%	41%	0%	59%	0%	0%	0%						
APP/DEPART	2,447	/	2,346	2,712	/	2,617	306	/	0	0	/	502	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	108	1,207	0	0	1,207	148	69	0	95	0	0	0	2,834					
APPROACH %	8%	92%	0%	0%	89%	11%	42%	0%	58%	0%	0%	0%						
PEAK HR FACTOR		0.896			0.973			0.953			0.000		0.945					
APP/DEPART	1,315	/	1,276	1,355	/	1,302	164	/	0	0	/	256	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM				1	1					0					0
7:15 AM					0					0				1	1
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM		1			1					0					0
8:30 AM					0					0					0
8:45 AM		1			1					0					0
TOTAL	0	2	0	1	3	0	0	0	0	0	0	0	0	1	1
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0				1	1
5:00 PM					0					0				1	1
5:15 PM		2			2					0				1	1
5:30 PM	1				1					0					0
5:45 PM					0					0					0
TOTAL	1	2	0	0	3	0	0	0	0	0	0	0	0	3	3

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



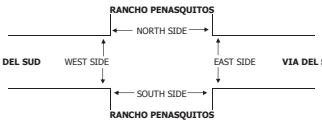


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: RANCHO PENASQUITOS
EAST & WEST: VIA DEL SUD
PROJECT #: PTD13-1004-01
LOCATION #: 4
CONTROL: SIGNAL

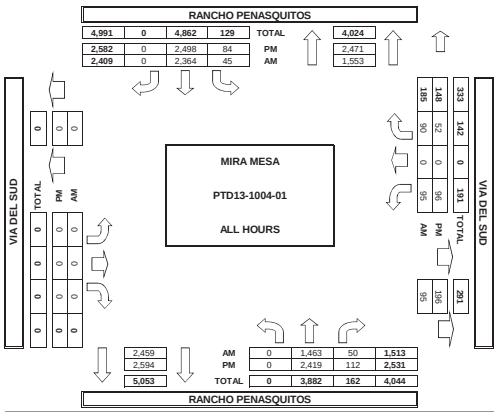
NOTES:

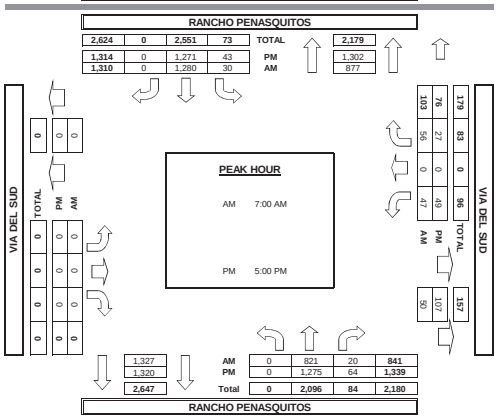
		NORTHBOUND RANCHO PENASQUITOS			SOUTHBOUND RANCHO PENASQUITOS			EASTBOUND VIA DEL SUD			WESTBOUND VIA DEL SUD				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR X	EL X	ET X	ER X	WL 0.5	WT X	WR 0.5	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM		271	5	3	347					15		20	661	1				1
	7:15 AM		193	6	12	349					5		10	575	4	4			8
	7:30 AM		189	6	7	298					18		14	532	6	2			8
	7:45 AM		168	3	8	286					9		12	486	2	12			14
	8:00 AM		173	8	3	288					8		9	489	1	5			6
	8:15 AM		144	9	7	284					13		7	464	1	3			4
	8:30 AM		157	7	4	257					18		11	454	4	2			6
	8:45 AM		168	6	1	255					9		7	446	1	1			2
	VOLUMES	0	1,463	50	45	2,364	0	0	0	0	95	0	90	4,107	20	29	0	0	49
	APPROACH %	0%	97%	3%	2%	98%	0%	0%	0%	0%	51%	0%	49%						
	APP/DEPART	1,513	/	1,553	2,409	/	2,459	0	/	95	185	/	0	0					
	BEGIN PEAK HR	7:00 AM																	
	VOLUMES	0	821	20	30	1,280	0	0	0	0	47	0	56	2,254					
	APPROACH %	0%	98%	2%	2%	98%	0%	0%	0%	0%	46%	0%	54%						
	PEAK HR FACTOR		0.762			0.907			0.000			0.736		0.852					
	APP/DEPART	841	/	877	1,310	/	1,327	0	/	50	103	/	0	0					
PM	4:00 PM		237	14	10	323					13		2	599	1	2			3
	4:15 PM		308	14	6	328					9		9	674	1	2			3
	4:30 PM		288	9	12	305					11		8	633					0
	4:45 PM		311	11	13	271					14		6	626	1	2			3
	5:00 PM		371	12	9	321					13		5	731	3	2			5
	5:15 PM		306	17	7	339					16		6	691	1				1
	5:30 PM		291	15	13	301					13		13	646	2	2			4
	5:45 PM		307	20	14	310					7		3	661	1	1			2
	VOLUMES	0	2,419	112	84	2,498	0	0	0	0	96	0	52	5,261	10	11	0	0	21
	APPROACH %	0%	96%	4%	3%	97%	0%	0%	0%	0%	65%	0%	35%						
	APP/DEPART	2,531	/	2,471	2,582	/	2,594	0	/	196	148	/	0	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	0	1,275	64	43	1,271	0	0	0	0	49	0	27	2,729					
	APPROACH %	0%	95%	5%	3%	97%	0%	0%	0%	0%	64%	0%	36%						
	PEAK HR FACTOR		0.874			0.949			0.000			0.731		0.933					
	APP/DEPART	1,339	/	1,302	1,314	/	1,320	0	/	107	76	/	0	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM			1		1					0					0
	7:30 AM	2		1		3					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM			2		2					0					0
	8:45 AM	1	1			2					0					0
	TOTAL	3	1	4	0	8	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM			2		2					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM	1		2		3					0					0
	5:15 PM					0					0					0
	5:30 PM	1				1					0					0
	5:45 PM					0					0					0
	TOTAL	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



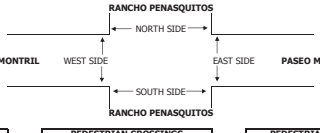


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/9/14 WEDNESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: RANCHO PENASQUITOS
EAST & WEST: PASEO MONTRIL
PROJECT #: PTD14-0711-01
LOCATION #: 15
CONTROL: SIGNAL

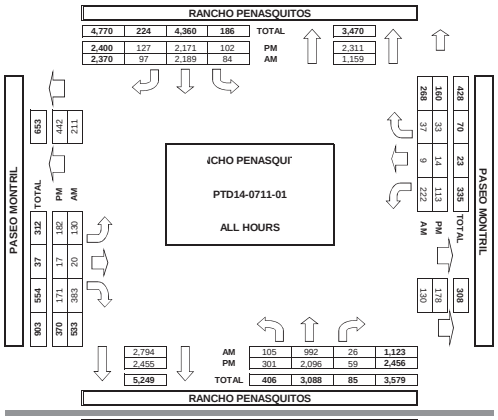
NOTES:

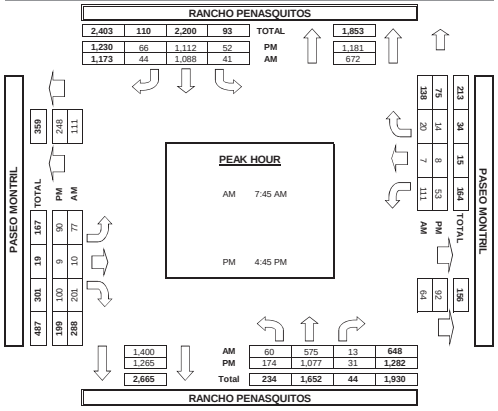
		NORTHBOUND RANCHO PENASQUITOS			SOUTHBOUND RANCHO PENASQUITOS			EASTBOUND PASEO MONTRIL			WESTBOUND PASEO MONTRIL				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 1	ER 1	WL 1	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	13	91	3	8	264	16	10	1	41	25	0	4	476	1	2			3
	7:15 AM	3	101	3	18	278	11	13	3	44	27	0	4	505		3			3
	7:30 AM	17	94	3	9	291	15	15	2	53	33	1	4	537	1	1			2
	7:45 AM	25	150	4	11	264	8	21	0	58	26	1	1	569	2	1			3
	8:00 AM	11	145	1	9	254	17	18	3	40	26	4	6	534	1	1			2
	8:15 AM	13	140	5	9	285	13	20	4	54	29	1	6	579	1	2			3
	8:30 AM	11	140	3	12	285	6	18	3	49	30	1	7	565	1	1			2
	8:45 AM	12	131	4	8	268	11	15	4	44	26	1	5	529	1	1			2
	VOLUMES	105	992	26	84	2,189	97	130	20	383	222	9	37	4,294	8	12	0	0	20
	APPROACH %	9%	88%	2%	4%	92%	4%	24%	4%	72%	83%	3%	14%						
	APP/DEPART	1,123	/	1,159	2,370	/	2,794	533	/	130	268	/	211	0					
	BEGIN PEAK HR	7:45 AM																	
	VOLUMES	60	575	13	41	1,088	44	77	10	201	111	7	20	2,247					
	APPROACH %	9%	89%	2%	3%	93%	4%	27%	3%	70%	80%	5%	14%						
	PEAK HR FACTOR		0.905			0.955			0.911			0.908		0.970					
	APP/DEPART	648	/	672	1,173	/	1,400	288	/	64	138	/	111	0					
PM	4:00 PM	24	220	7	12	243	12	25	2	17	19	1	2	584	2				2
	4:15 PM	33	268	8	14	280	10	24	1	12	19	2	2	676	1	1			2
	4:30 PM	34	260	8	14	244	23	20	4	13	16	0	7	643		3			3
	4:45 PM	31	290	9	10	300	18	23	0	32	10	2	2	727	2	2			4
	5:00 PM	55	252	7	20	253	17	23	1	20	21	1	6	676	2	5			7
	5:15 PM	37	281	9	6	272	19	16	3	25	14	4	2	688	2	2			4
	5:30 PM	51	254	6	16	287	12	28	5	23	8	1	4	695	1	4			5
	5:45 PM	36	271	5	10	292	16	23	1	29	6	3	5	697	2	2			4
	VOLUMES	301	2,096	59	102	2,171	127	182	17	171	113	14	33	5,386	12	19	0	0	31
	APPROACH %	12%	85%	2%	4%	90%	5%	49%	5%	46%	71%	9%	21%						
	APP/DEPART	2,456	/	2,311	2,400	/	2,455	370	/	178	160	/	442	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	174	1,077	31	52	1,112	66	90	9	100	53	8	14	2,786					
	APPROACH %	14%	84%	2%	4%	90%	5%	45%	5%	50%	71%	11%	19%						
	PEAK HR FACTOR		0.971			0.938			0.888			0.670		0.958					
	APP/DEPART	1,282	/	1,181	1,230	/	1,265	199	/	92	75	/	248	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



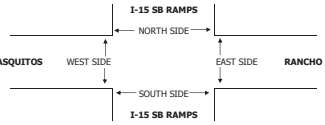


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: I-15 SB RAMPS
EAST & WEST: RANCHO PENASQUITOS
PROJECT #: PTD13-1004-01
LOCATION #: 2
CONTROL: SIGNAL

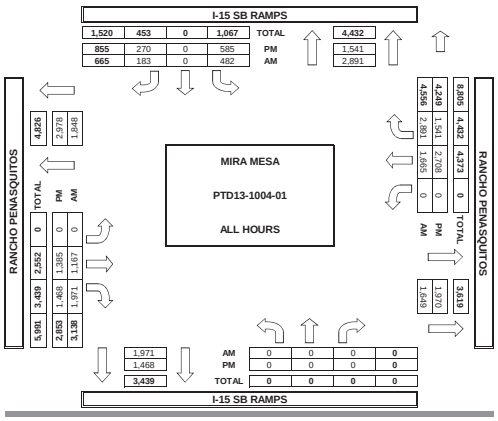
NOTES:

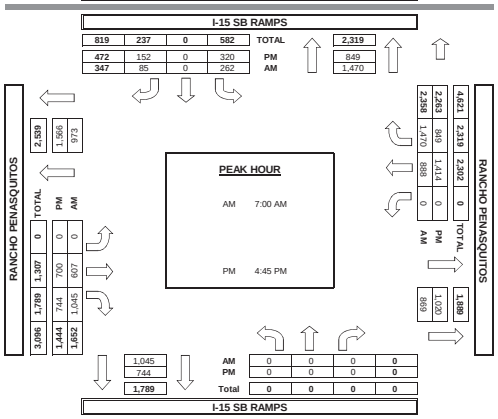
		NORTHBOUND I-15 SB RAMPS			SOUTHBOUND I-15 SB RAMPS			EASTBOUND RANCHO PENASQUITOS			WESTBOUND RANCHO PENASQUITOS				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 2	ST X	SR 1	EL X	ET 2	ER 1	WL X	WT 2	WR 1	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM				52		20		159	301		277	353	1,162					0
	7:15 AM				64		23		146	273		200	352	1,058					0
	7:30 AM				68		17		160	241		208	364	1,058					0
	7:45 AM				78		25		142	230		203	401	1,079					0
	8:00 AM				47		26		161	244		215	366	1,059					0
	8:15 AM				54		22		151	235		169	355	986					0
	8:30 AM				68		26		139	238		199	345	1,015					0
	8:45 AM				51		24		109	209		194	355	942					0
	VOLUMES	0	0	0	482	0	183	0	1,167	1,971	0	1,665	2,891	8,359	0	0	0	0	0
	APPROACH %	0%	0%	0%	72%	0%	28%	0%	37%	63%	0%	37%	63%						
	APP/DEPART	0	/	2,891	665	/	1,971	3,138	/	1,649	4,556	/	1,848	0					
	BEGIN PEAK HR	7:00 AM																	
	VOLUMES	0	0	0	262	0	85	0	607	1,045	0	888	1,470	4,357					
	APPROACH %	0%	0%	0%	76%	0%	24%	0%	37%	63%	0%	38%	62%						
	PEAK HR FACTOR		0.000			0.842			0.898			0.936		0.937					
	APP/DEPART	0	/	1,470	347	/	1,045	1,652	/	869	2,358	/	973	0					
PM	4:00 PM				68		26		184	203		280	177	938					0
	4:15 PM				61		25		179	170		344	189	968					0
	4:30 PM				67		32		141	176		332	160	908					0
	4:45 PM				78		34		159	179		343	201	994					0
	5:00 PM				80		40		175	201		384	248	1,128					0
	5:15 PM				79		41		176	172		346	201	1,015					0
	5:30 PM				83		37		190	192		341	199	1,042					0
	5:45 PM				69		35		181	175		338	166	964					0
	VOLUMES	0	0	0	585	0	270	0	1,385	1,468	0	2,708	1,541	7,957	0	0	0	0	0
	APPROACH %	0%	0%	0%	68%	0%	32%	0%	49%	51%	0%	64%	36%						
	APP/DEPART	0	/	1,541	855	/	1,468	2,853	/	1,970	4,249	/	2,978	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	0	0	0	320	0	152	0	700	744	0	1,414	849	4,179					
	APPROACH %	0%	0%	0%	68%	0%	32%	0%	48%	52%	0%	62%	38%						
	PEAK HR FACTOR		0.000			0.983			0.945			0.895		0.926					
	APP/DEPART	0	/	849	472	/	744	1,444	/	1,020	2,263	/	1,566	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0	1				1
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



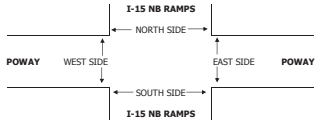


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: I-15 NB RAMPS
EAST & WEST: POWAY
PROJECT #: PTD13-1004-01
LOCATION #: 1
CONTROL: SIGNAL

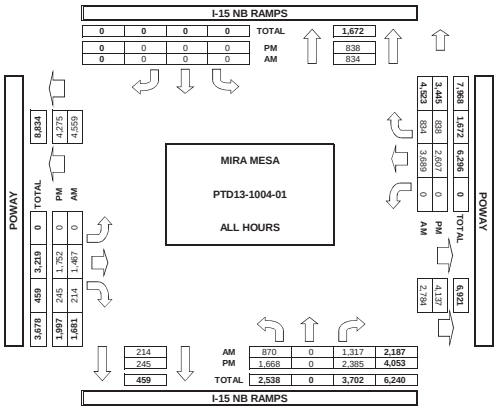
NOTES:

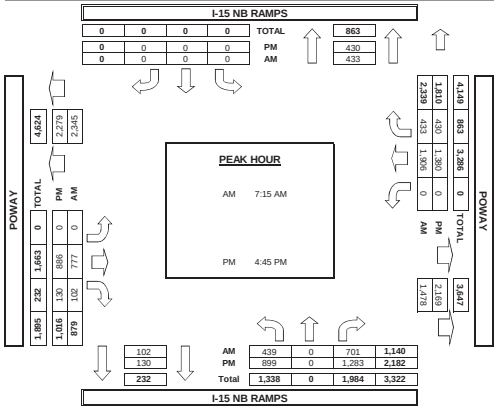
		NORTHBOUND I-15 NB RAMPS			SOUTHBOUND I-15 NB RAMPS			EASTBOUND POWAY			WESTBOUND POWAY				U-TURNS				
	LANES:	NL 2	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 1	WL X	WT 2	WR 1	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	97		130					198	22		498	106	1,051					0
	7:15 AM	99		170					184	18		482	95	1,048					0
	7:30 AM	103		175					220	30		442	126	1,096					0
	7:45 AM	116		184					201	21		487	111	1,120					0
	8:00 AM	121		172					172	33		495	101	1,094					0
	8:15 AM	118		148					178	26		421	97	988					0
	8:30 AM	127		184					161	31		446	101	1,050					0
	8:45 AM	89		154					153	33		418	97	944					0
	VOLUMES	870	0	1,317	0	0	0	0	1,467	214	0	3,689	834	8,391	0	0	0	0	0
	APPROACH %	40%	0%	60%	0%	0%	0%	0%	87%	13%	0%	82%	18%						
	APP/DEPART	2,187	/	834	0	/	214	1,681	/	2,784	4,523	/	4,559	0					
	BEGIN PEAK HR	7:15 AM																	
	VOLUMES	439	0	701	0	0	0	0	777	102	0	1,906	433	4,358					
	APPROACH %	39%	0%	61%	0%	0%	0%	0%	88%	12%	0%	81%	19%						
	PEAK HR FACTOR		0.950			0.000			0.879			0.978		0.973					
	APP/DEPART	1,140	/	433	0	/	102	879	/	1,478	2,339	/	2,345	0					
PM	4:00 PM	148		298					222	31		318	95	1,112					0
	4:15 PM	217		332					206	31		320	88	1,194					0
	4:30 PM	176		171					212	29		321	121	1,030					0
	4:45 PM	240		354					219	22		312	108	1,255					0
	5:00 PM	249		313					230	38		407	123	1,360					0
	5:15 PM	220		313					222	32		317	101	1,205					0
	5:30 PM	190		303					215	38		344	98	1,188					0
	5:45 PM	228		301					226	24		268	104	1,151					0
	VOLUMES	1,668	0	2,385	0	0	0	0	1,752	245	0	2,607	838	9,495	0	0	0	0	0
	APPROACH %	41%	0%	59%	0%	0%	0%	0%	88%	12%	0%	76%	24%						
	APP/DEPART	4,053	/	838	0	/	245	1,997	/	4,137	3,445	/	4,275	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	899	0	1,283	0	0	0	0	886	130	0	1,380	430	5,008					
	APPROACH %	41%	0%	59%	0%	0%	0%	0%	87%	13%	0%	76%	24%						
	PEAK HR FACTOR		0.918			0.000			0.948			0.854		0.921					
	APP/DEPART	2,182	/	430	0	/	130	1,016	/	2,169	1,810	/	2,279	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0		1			1
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0	1				1
	8:15 AM		2			2					0			1		1
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	2	0	0	2	0	0	0	0	0	1	3	1	0	5
PM	4:00 PM					0					0	2	1			3
	4:15 PM		1			1					0	1	1			2
	4:30 PM	1	1		1	3					0					0
	4:45 PM		1			1					0		2			2
	5:00 PM		1	2		3					0		1			1
	5:15 PM					0					0					0
	5:30 PM					0					0		1			1
	5:45 PM			1		1					0					0
	TOTAL	1	4	3	1	9	0	0	0	0	0	3	6	0	0	9

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



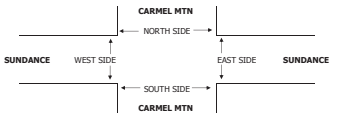


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/16/14 WEDNESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: CARMEL MTN
EAST & WEST: SUNDANCE
PROJECT #: PTD14-0711-01
LOCATION #: 5
CONTROL: SIGNAL

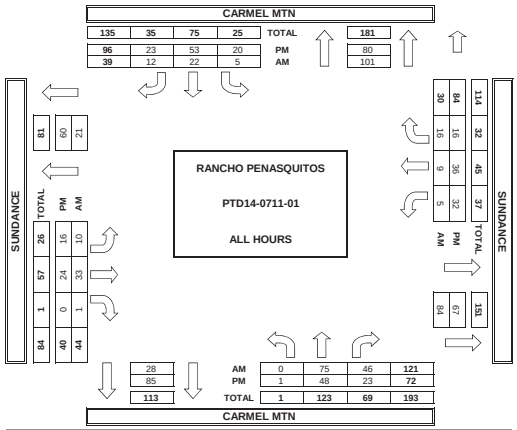
NOTES:

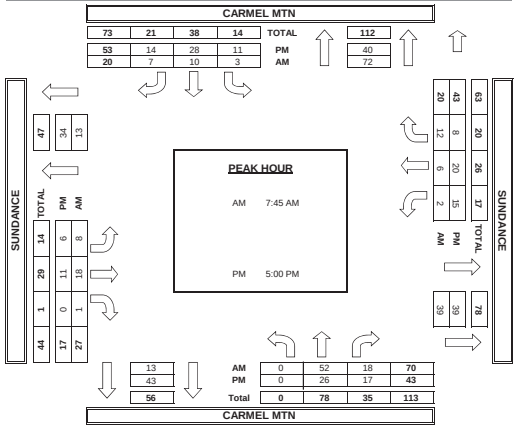
		NORTHBOUND (CARMEL MTN)			SOUTHBOUND (CARMEL MTN)			EASTBOUND (SUNDANCE)			WESTBOUND (SUNDANCE)				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	0	4	5	1	2	2	1	4	0	0	0	1	20					0
	7:15 AM	0	7	9	0	3	1	0	4	0	0	1	0	25					0
	7:30 AM	0	4	10	0	2	1	0	4	0	2	1	0	24					0
	7:45 AM	0	11	6	1	1	4	1	8	0	0	3	1	36					0
	8:00 AM	0	15	5	1	2	1	1	2	0	1	2	2	32					0
	8:15 AM	0	12	4	0	4	1	4	3	0	0	0	5	33					0
	8:30 AM	0	14	3	1	3	1	2	5	1	1	1	4	36					0
	8:45 AM	0	8	4	1	5	1	1	3	0	1	1	3	28					0
	VOLUMES	0	75	46	5	22	12	10	33	1	5	9	16	234	0	0	0	0	0
	APPROACH %	0%	62%	38%	13%	56%	31%	23%	75%	2%	17%	30%	53%						
	APP/DEPART	121	/	101	39	/	28	44	/	84	30	/	21	0					
	BEGIN PEAK HR	7:45 AM																	
	VOLUMES	0	52	18	3	10	7	8	18	1	2	6	12	137					
	APPROACH %	0%	74%	26%	15%	50%	35%	30%	67%	4%	10%	30%	60%						
	PEAK HR FACTOR		0.875			0.833			0.750			0.833		0.951					
	APP/DEPART	70	/	72	20	/	13	27	/	39	20	/	13	0					
PM	4:00 PM	0	4	2	2	8	2	1	2	0	3	3	2	29					0
	4:15 PM	0	5	2	2	9	1	2	1	0	4	5	3	34					0
	4:30 PM	0	11	1	4	4	4	1	6	0	4	4	3	42					0
	4:45 PM	1	2	1	1	4	2	6	4	0	6	4	0	31					0
	5:00 PM	0	13	3	2	8	1	2	2	0	3	5	3	42					0
	5:15 PM	0	5	6	4	4	6	1	4	0	3	6	2	41					0
	5:30 PM	0	4	5	3	9	3	1	3	0	4	7	2	41					0
	5:45 PM	0	4	3	2	7	4	2	2	0	5	2	1	32					0
	VOLUMES	1	48	23	20	53	23	16	24	0	32	36	16	292	0	0	0	0	0
	APPROACH %	1%	67%	32%	21%	55%	24%	40%	60%	0%	38%	43%	19%						
	APP/DEPART	72	/	80	96	/	85	40	/	67	84	/	60	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	0	26	17	11	28	14	6	11	0	15	20	8	156					
	APPROACH %	0%	60%	40%	21%	53%	26%	35%	65%	0%	35%	47%	19%						
	PEAK HR FACTOR		0.672			0.883			0.425			0.827		0.929					
	APP/DEPART	43	/	40	53	/	43	17	/	39	43	/	34	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



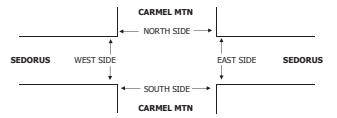


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: CARMEL MTN
EAST & WEST: SEDORUS
PROJECT #: PTD14-0711-01
LOCATION #: 4
CONTROL: 4-WAY STOP

NOTES:

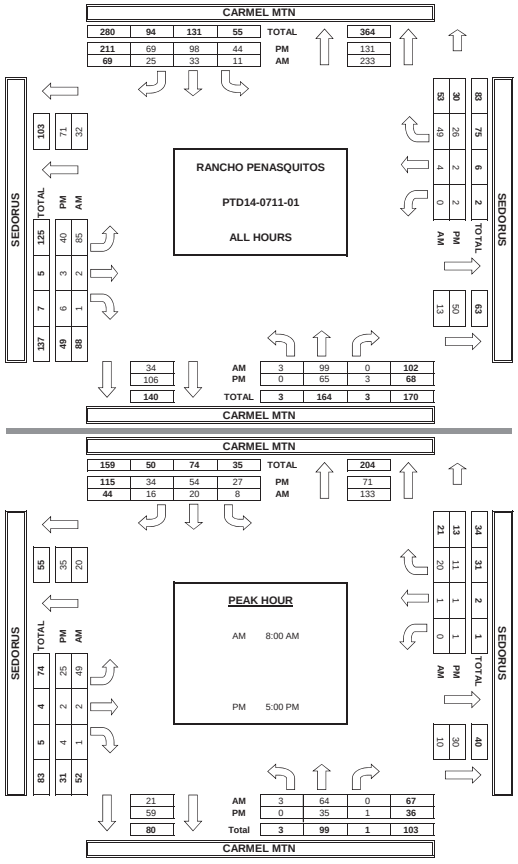
		NORTHBOUND (CARMEL MTN)			SOUTHBOUND (CARMEL MTN)			EASTBOUND (SEDORUS)			WESTBOUND (SEDORUS)				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	0	5	0	3	5	2	4	0	0	0	2	5	26		1			1
	7:15 AM	0	11	0	0	3	4	8	0	0	0	0	4	30					0
	7:30 AM	0	10	0	0	1	1	17	0	0	0	1	10	40					0
	7:45 AM	0	9	0	0	4	2	7	0	0	0	0	10	32					0
	8:00 AM	0	20	0	4	3	7	17	0	0	0	0	5	56					0
	8:15 AM	1	16	0	1	4	2	14	0	0	0	0	2	40					0
	8:30 AM	1	19	0	2	7	4	9	1	1	0	1	7	52					0
	8:45 AM	1	9	0	1	5	3	9	1	0	0	0	6	36		1			1
	VOLUMES	3	99	0	11	33	25	85	2	1	0	4	49	312	0	2	0	0	2
	APPROACH %	3%	97%	0%	16%	48%	36%	97%	2%	1%	0%	8%	92%						
	APP/DEPART	102	/	233	69	/	34	88	/	13	53	/	32	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	3	64	0	8	20	16	49	2	1	0	1	20	184					
	APPROACH %	4%	96%	0%	18%	45%	36%	94%	4%	2%	0%	5%	95%						
	PEAK HR FACTOR		0.838			0.786			0.765			0.656		0.821					
	APP/DEPART	67	/	133	44	/	21	52	/	10	21	/	20	0					
PM	4:00 PM	0	7	2	4	12	10	4	0	0	0	0	2	41		1			1
	4:15 PM	0	7	0	6	10	15	2	0	1	1	0	5	47					0
	4:30 PM	0	6	0	2	8	8	6	0	0	0	1	5	36					0
	4:45 PM	0	10	0	5	14	2	3	1	1	0	0	3	39					0
	5:00 PM	0	6	0	6	7	9	9	1	3	0	0	0	41		2			2
	5:15 PM	0	12	0	9	16	4	8	0	1	1	0	3	54					0
	5:30 PM	0	11	0	6	17	11	4	0	0	0	0	4	53					0
	5:45 PM	0	6	1	6	14	10	4	1	0	0	1	4	47					0
	VOLUMES	0	65	3	44	98	69	40	3	6	2	2	26	358	0	3	0	0	3
	APPROACH %	0%	96%	4%	21%	46%	33%	82%	6%	12%	7%	7%	87%						
	APP/DEPART	68	/	131	211	/	106	49	/	50	30	/	71	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	0	35	1	27	54	34	25	2	4	1	1	11	195					
	APPROACH %	0%	97%	3%	23%	47%	30%	81%	6%	13%	8%	8%	85%						
	PEAK HR FACTOR		0.750			0.846			0.596			0.650		0.903					
	APP/DEPART	36	/	71	115	/	59	31	/	30	13	/	35	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Entreken Way

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Entreken Way

AM Period (7:00 AM - 9:00 AM)	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	0	34	19	5	2	3	2	0	0	17	0	82
7:15 AM	4	0	47	61	11	1	4	3	0	0	29	7	167
7:30 AM	8	0	84	110	13	0	2	7	1	0	30	8	263
7:45 AM	12	4	77	158	48	4	4	16	0	0	43	15	381
8:00 AM	12	7	111	108	69	1	3	2	1	0	69	1	384
8:15 AM	6	2	124	64	11	1	2	1	0	0	37	1	249
8:30 AM	0	2	39	18	12	3	6	0	0	0	25	2	107
8:45 AM	3	2	30	11	8	3	5	0	0	0	21	1	84
Total	45	17	546	549	177	15	29	31	2	0	271	35	1,717

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.83**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	38	13	396	440	141	6	11	26	2	0	179	25	1,277
PHF	0.79	0.46	0.80	0.70	0.51	0.38	0.69	0.41	0.50	#####	0.65	0.42	0.83
Movement PHF		0.85			0.70			0.49			0.73		0.83

PM Period (4:00 PM - 6:00 PM)	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	0	24	31	28	5	3	0	0	0	23	1	115
4:15 PM	4	2	21	33	27	7	3	1	0	0	12	1	111
4:30 PM	2	0	37	48	26	3	3	0	0	0	25	1	145
4:45 PM	1	3	41	41	21	2	2	1	0	0	13	2	127
5:00 PM	3	1	38	41	22	5	5	0	0	0	19	1	135
5:15 PM	0	1	29	41	31	0	1	0	0	0	17	2	122
5:30 PM	3	0	24	35	31	2	1	1	0	0	14	2	113
5:45 PM	1	3	37	43	22	7	5	3	0	0	16	5	142
Total	14	10	251	313	208	31	23	6	0	0	139	15	1,010

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.91**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	6	5	145	171	100	10	11	1	0	0	74	6	529
PHF	0.50	0.417	0.884	0.891	0.806	0.5	0.55	0.25	#####	#####	0.74	0.75	0.91
Movement PHF		0.87			0.91			0.60			0.77		0.91

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

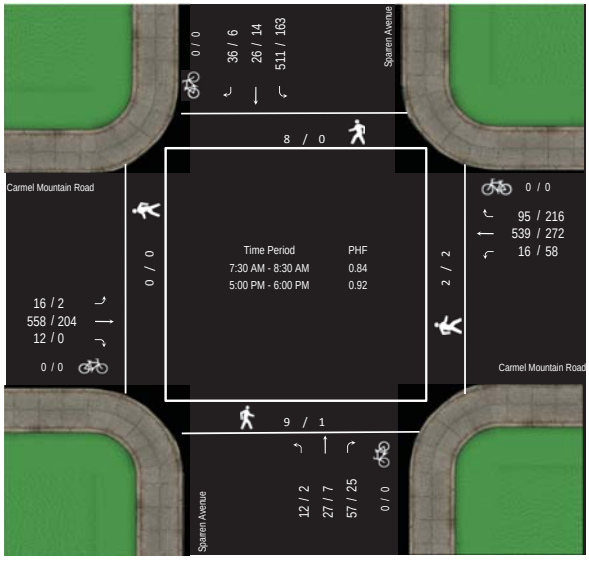
Location: Carmel Mountain Road @ Sparren Avenue

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Sparren Avenue

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	0	64	11	26	3	9	1	0	1	52	1	168
7:15 AM	1	1	81	28	69	9	11	1	3	1	78	1	284
7:30 AM	4	2	122	36	113	4	10	11	6	2	112	2	424
7:45 AM	19	10	143	19	188	3	18	12	3	4	111	9	539
8:00 AM	9	9	153	22	166	2	21	2	3	3	177	3	570
8:15 AM	4	5	93	18	72	7	8	2	0	3	158	2	372
8:30 AM	0	9	68	13	32	5	9	2	1	0	68	2	209
8:45 AM	2	1	54	17	20	3	9	3	0	0	53	3	165
Total	39	37	778	164	686	36	95	34	16	14	809	23	2,731

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.84**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	36	26	511	95	539	16	57	27	12	12	558	16	1,905
PHF	0.47	0.65	0.83	0.66	0.72	0.57	0.68	0.56	0.50	0.75	0.79	0.44	0.84
Movement PHF		0.83			0.77			0.73			0.80		0.84

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	1	2	40	44	62	15	9	1	1	1	47	2	225
4:15 PM	2	2	42	61	64	17	13	0	1	0	33	3	238
4:30 PM	4	2	33	53	73	8	10	0	0	1	61	3	248
4:45 PM	2	2	52	57	62	9	6	1	0	0	53	3	247
5:00 PM	1	2	32	49	66	12	9	1	1	0	61	1	235
5:15 PM	2	1	39	49	69	16	7	2	1	0	47	0	233
5:30 PM	0	2	45	57	68	18	5	4	0	0	38	1	238
5:45 PM	3	9	47	61	69	12	4	0	0	0	58	0	263
Total	15	22	330	431	533	107	63	9	4	2	398	13	1,927

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	6	14	163	216	272	58	25	7	2	0	204	2	969
PHF	0.50	0.389	0.867	0.885	0.986	0.806	0.694	0.438	0.5	#####	0.836	0.5	0.92
Movement PHF		0.78			0.95			0.77			0.83		0.92

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

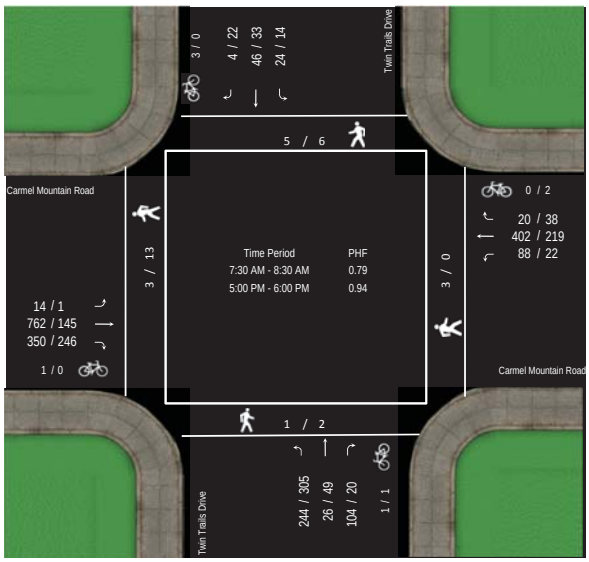
Location: Carmel Mountain Road @ Twin Trails Drive

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Twin Trails Drive

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	1	19	15	0	21	2	0	1	18	54	70	1	202
7:15 AM	3	12	11	6	60	4	2	2	43	75	94	1	313
7:30 AM	0	16	3	9	91	10	18	5	62	89	153	2	458
7:45 AM	1	11	6	2	144	45	16	3	65	85	186	1	565
8:00 AM	3	12	10	8	103	30	47	12	84	94	248	9	660
8:15 AM	0	7	5	1	64	3	23	6	33	82	175	2	401
8:30 AM	2	11	3	1	35	5	2	3	13	69	76	0	220
8:45 AM	0	10	5	1	31	2	2	5	9	54	62	0	181
Total	10	98	58	28	549	101	110	37	327	602	1,064	16	3,000

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.79**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	4	46	24	20	402	88	104	26	244	350	762	14	2,084
PHF	0.33	0.72	0.60	0.56	0.70	0.49	0.55	0.54	0.73	0.93	0.77	0.39	0.79
Movement PHF		0.74			0.67			0.65			0.80		0.79

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	2	4	0	3	61	1	2	12	58	40	54	2	239
4:15 PM	0	9	3	9	83	2	3	9	59	38	50	0	265
4:30 PM	0	10	2	9	69	7	1	14	65	52	52	0	281
4:45 PM	0	7	7	2	72	7	2	11	56	55	55	1	275
5:00 PM	1	6	3	10	67	5	5	14	59	61	41	0	272
5:15 PM	6	8	3	11	39	6	6	13	89	61	32	0	274
5:30 PM	7	10	2	9	55	5	4	12	81	68	20	0	273
5:45 PM	8	9	6	8	58	6	5	10	76	56	52	1	295
Total	24	63	26	61	504	39	28	95	543	431	356	4	2,174

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	22	33	14	38	219	22	20	49	305	246	145	1	1114
PHF	0.69	0.825	0.583	0.864	0.817	0.917	0.833	0.875	0.857	0.904	0.697	0.25	0.94
Movement PHF		0.75			0.85			0.87			0.90		0.94

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Sundance Avenue

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Carmel Mountain Road @ Sundance Avenue

AM Period (7:00 AM - 9:00 AM)

	Westbound		Northbound		Eastbound		
	Thru	Left	Right	Left	Right	Thru	TOTAL
7:00 AM	28	6	20	0	0	73	127
7:15 AM	66	4	17	2	1	91	181
7:30 AM	96	7	21	4	5	150	283
7:45 AM	176	6	26	10	2	150	370
8:00 AM	136	3	11	13	11	243	417
8:15 AM	64	3	17	1	7	198	290
8:30 AM	36	2	3	1	0	75	117
8:45 AM	41	9	4	0	1	63	118
Total	643	40	119	31	27	1,043	1,903

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.82**

	Westbound		Northbound		Eastbound		TOTAL
	Thru	Left	Right	Left	Right	Thru	
Volume	472	19	75	28	25	741	1,360
PHF	0.67	0.68	0.72	0.54	0.57	0.76	0.82
Movement PHF	0.67		0.72			0.75	0.82

PM Period (4:00 PM - 6:00 PM)

	Westbound		Northbound		Eastbound		
	Thru	Left	Right	Left	Right	Thru	TOTAL
4:00 PM	66	7	6	0	1	54	134
4:15 PM	71	17	5	2	2	42	139
4:30 PM	93	7	5	1	1	64	171
4:45 PM	70	9	8	0	0	45	132
5:00 PM	89	11	10	2	3	58	173
5:15 PM	81	17	9	0	0	54	161
5:30 PM	94	20	10	0	1	49	174
5:45 PM	95	13	11	2	0	67	188
Total	659	101	64	7	8	433	1,272

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.93**

	Westbound		Northbound		Eastbound		TOTAL
	Thru	Left	Right	Left	Right	Thru	
Volume	359	61	40	4	4	228	696
PHF	0.945	0.763	0.909	0.5	0.333	0.851	0.93
Movement PHF	0.92		0.85			0.87	0.93

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Twin Trails Drive @ Sundance Avenue

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Twin Trails Drive @ Sundance Avenue

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	2	2	18	4	30	13	54	4	0	0	106	1	234
7:15 AM	3	1	23	3	63	12	63	3	2	0	98	2	273
7:30 AM	2	1	18	4	76	7	37	7	7	1	114	2	276
7:45 AM	10	0	9	6	120	20	40	3	18	1	110	3	340
8:00 AM	6	1	15	6	104	28	60	3	14	3	132	7	379
8:15 AM	1	3	13	7	58	17	55	2	1	2	136	5	300
8:30 AM	0	0	14	8	26	16	39	1	0	1	90	1	196
8:45 AM	1	1	23	6	30	9	48	0	1	1	84	0	204
Total	25	9	133	44	507	122	396	23	43	9	870	21	2,202

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.85**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	19	5	55	23	358	72	192	15	40	7	492	17	1,295
PHF	0.48	0.42	0.76	0.82	0.75	0.64	0.80	0.54	0.56	0.58	0.90	0.61	0.85
Movement PHF		0.90			0.78			0.80			0.90		0.85

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	1	3	13	17	82	40	26	3	3	2	51	0	241
4:15 PM	5	1	14	16	99	46	25	1	1	2	65	2	277
4:30 PM	2	1	15	16	83	41	36	3	0	0	67	1	265
4:45 PM	0	1	11	18	119	51	30	2	1	2	65	1	301
5:00 PM	1	1	21	32	123	54	23	3	0	0	82	1	341
5:15 PM	1	6	5	21	111	70	27	1	5	0	61	1	309
5:30 PM	3	2	11	24	155	50	37	1	8	2	62	1	356
5:45 PM	0	4	17	18	126	55	24	1	2	0	68	1	316
Total	13	19	107	162	898	407	228	15	20	8	521	8	2,406

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	5	13	54	95	515	229	111	6	15	2	273	4	1322
PHF	0.42	0.542	0.643	0.742	0.831	0.818	0.75	0.5	0.469	0.25	0.832	1	0.93
Movement PHF		0.78			0.92			0.72			0.84		0.93

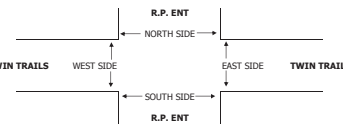
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: R.P. ENT
EAST & WEST: TWIN TRAILS
PROJECT #: PTD14-0711-01
LOCATION #: 22
CONTROL: SIGNAL

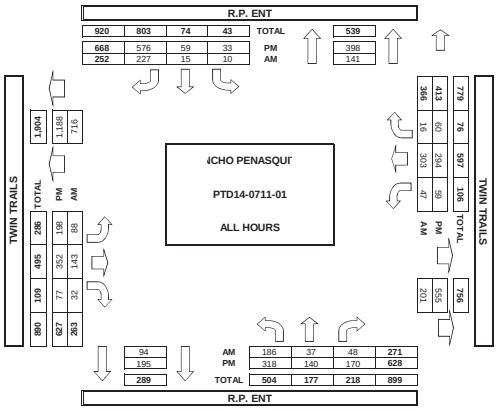
NOTES:

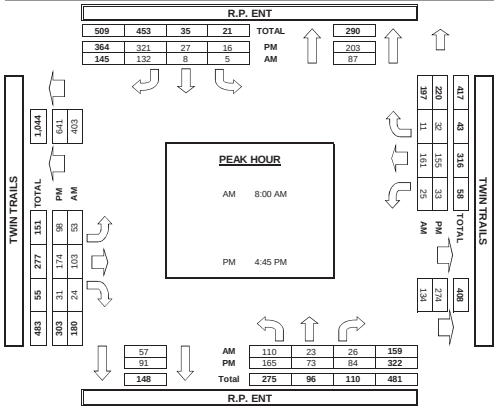
		NORTHBOUND R.P. ENT			SOUTHBOUND R.P. ENT			EASTBOUND TWIN TRAILS			WESTBOUND TWIN TRAILS				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 1	ER 1	WL 1	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	15	1	4	1	0	28	8	6	3	3	43	2	114					0
	7:15 AM	24	6	4	0	5	30	5	14	3	5	43	3	142					0
	7:30 AM	20	5	8	4	1	15	11	10	1	7	28	0	110					0
	7:45 AM	17	2	6	0	1	22	11	10	1	7	28	0	105					0
	8:00 AM	27	4	10	0	2	28	9	29	9	7	52	2	179					0
	8:15 AM	27	5	8	4	3	26	15	21	2	4	51	4	170					0
	8:30 AM	33	8	4	0	3	42	15	23	6	7	36	1	178					0
	8:45 AM	23	6	4	1	0	36	14	30	7	7	22	4	154					0
	VOLUMES	186	37	48	10	15	227	88	143	32	47	303	16	1,152	0	0	0	0	0
	APPROACH %	69%	14%	18%	4%	6%	90%	33%	54%	12%	13%	83%	4%						
	APP/DEPART	271	/	141	252	/	94	263	/	201	366	/	716	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	110	23	26	5	8	132	53	103	24	25	161	11	681					
	APPROACH %	69%	14%	16%	3%	6%	91%	29%	57%	13%	13%	82%	6%						
	PEAK HR FACTOR		0.883			0.806			0.882			0.807		0.951					
	APP/DEPART	159	/	87	145	/	57	180	/	134	197	/	403	0					
PM	4:00 PM	48	17	22	0	8	54	27	57	8	7	28	7	283					0
	4:15 PM	35	18	29	8	9	57	25	37	12	8	47	5	290					0
	4:30 PM	35	18	21	4	7	65	23	47	20	4	35	9	288					0
	4:45 PM	39	23	19	6	6	77	31	36	15	10	33	4	299					0
	5:00 PM	47	20	19	1	5	71	22	44	8	10	34	9	290					0
	5:15 PM	45	13	28	6	8	88	27	45	2	6	44	9	321					0
	5:30 PM	34	17	18	3	8	85	18	49	6	7	44	10	299				1	1
	5:45 PM	35	14	14	5	8	79	25	37	6	7	29	7	266					0
	VOLUMES	318	140	170	33	59	576	198	352	77	59	294	60	2,336	0	0	0	1	1
	APPROACH %	51%	22%	27%	5%	9%	86%	32%	56%	12%	14%	71%	15%						
	APP/DEPART	628	/	398	668	/	195	627	/	555	413	/	1,188	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	165	73	84	16	27	321	98	174	31	33	155	32	1,209					
	APPROACH %	51%	23%	26%	4%	7%	88%	32%	57%	10%	15%	70%	15%						
	PEAK HR FACTOR		0.936			0.892			0.924			0.902		0.942					
	APP/DEPART	322	/	203	364	/	91	303	/	274	220	/	641	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



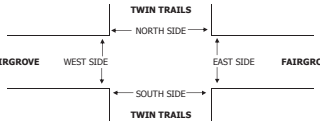


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: TWIN TRAILS
EAST & WEST: FAIRGROVE
PROJECT #: PTD14-0711-01
LOCATION #: 20
CONTROL: 3-WAY STOP

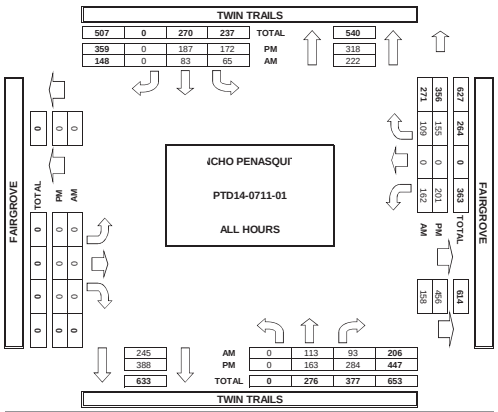
NOTES:

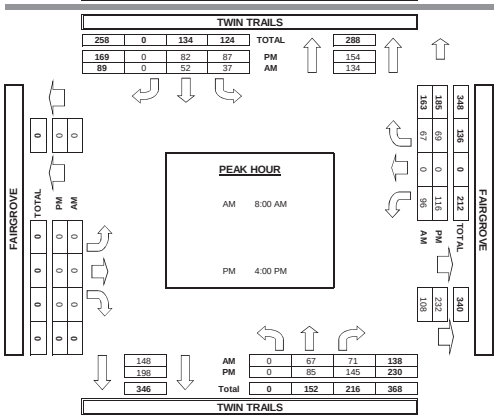
		NORTHBOUND TWIN TRAILS			SOUTHBOUND TWIN TRAILS			EASTBOUND FAIRGROVE			WESTBOUND FAIRGROVE				U-TURNS				
	LANES:	NL X	NT 1	NR 0	SL 1	ST 1	SR X	EL X	ET X	ER X	WL 1	WT X	WR 1	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM		9	1	4	5					16		12	47					0
	7:15 AM		12	6	8	6					20		10	62					0
	7:30 AM		14	6	8	7					11		10	56					0
	7:45 AM		11	9	8	13					19		10	70					0
	8:00 AM		21	25	11	11					24		21	113					0
	8:15 AM		19	16	9	18					29		18	109					0
	8:30 AM		10	7	8	11					22		18	76					0
	8:45 AM		17	23	9	12					21		10	92					0
	VOLUMES	0	113	93	65	83	0	0	0	0	162	0	109	625	0	0	0	0	0
	APPROACH %	0%	55%	45%	44%	56%	0%	0%	0%	0%	60%	0%	40%						
	APP/DEPART	206	/	222	148	/	245	0	/	158	271	/	0	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	0	67	71	37	52	0	0	0	0	96	0	67	390					
	APPROACH %	0%	49%	51%	42%	58%	0%	0%	0%	0%	59%	0%	41%						
	PEAK HR FACTOR		0.750			0.824			0.000			0.867		0.863					
	APP/DEPART	138	/	134	89	/	148	0	/	108	163	/	0	0					
PM	4:00 PM		21	42	20	16					23		13	135					0
	4:15 PM		23	45	19	25					33		18	163					0
	4:30 PM		24	39	26	16					37		20	162					0
	4:45 PM		17	19	22	25					23		18	124					0
	5:00 PM		15	34	18	24					19		20	130					0
	5:15 PM		26	34	15	24					26		20	145					0
	5:30 PM		13	30	21	22					23		24	133					0
	5:45 PM		24	41	31	35					17		22	170					0
	VOLUMES	0	163	284	172	187	0	0	0	0	201	0	155	1,162	0	0	0	0	0
	APPROACH %	0%	36%	64%	48%	52%	0%	0%	0%	0%	56%	0%	44%						
	APP/DEPART	447	/	318	359	/	388	0	/	456	356	/	0	0					
	BEGIN PEAK HR	4:00 PM																	
	VOLUMES	0	85	145	87	82	0	0	0	0	116	0	69	584					
	APPROACH %	0%	37%	63%	51%	49%	0%	0%	0%	0%	63%	0%	37%						
	PEAK HR FACTOR		0.846			0.899			0.000			0.811		0.896					
	APP/DEPART	230	/	154	169	/	198	0	/	232	185	/	0	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



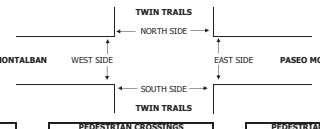


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: TWIN TRAILS
EAST & WEST: PASEO MONTALBAN
PROJECT #: PTD14-0711-01
LOCATION #: 18
CONTROL: SIGNAL

NOTES:

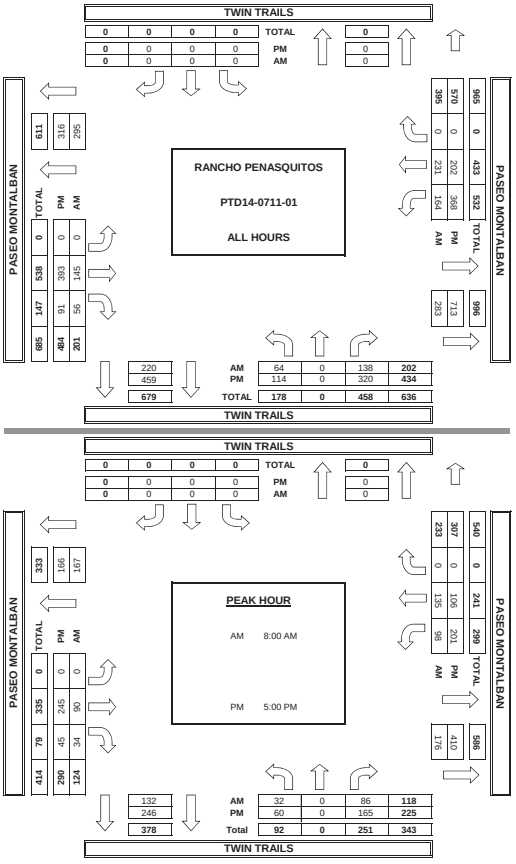
		NORTHBOUND TWIN TRAILS			SOUTHBOUND TWIN TRAILS			EASTBOUND PASEO MONTALBAN			WESTBOUND PASEO MONTALBAN				U-TURNS				
	LANES:	NL 1	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	9		9					9	5	8	14		54					0
	7:15 AM	8		10					13	4	21	29		85					0
	7:30 AM	7		20					18	9	18	28		100					0
	7:45 AM	8		13					15	4	19	25		84					0
	8:00 AM	10		21					13	13	13	30		100			2		2
	8:15 AM	11		24					15	6	33	37		126			2		2
	8:30 AM	6		17					27	7	18	38		113					0
	8:45 AM	5		24					35	8	34	30		136				1	1
	VOLUMES	64	0	138	0	0	0	0	145	56	164	231	0	798	0	0	4	1	5
	APPROACH %	32%	0%	68%	0%	0%	0%	0%	72%	28%	42%	58%	0%						
	APP/DEPART	202	/	0	0	/	220	201	/	283	395	/	295	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	32	0	86	0	0	0	0	90	34	98	135	0	475					
	APPROACH %	27%	0%	73%	0%	0%	0%	0%	73%	27%	42%	58%	0%						
	PEAK HR FACTOR		0.843			0.000			0.721			0.832		0.873					
	APP/DEPART	118	/	0	0	/	132	124	/	176	233	/	167	0					
PM	4:00 PM	13		50					22	17	31	32		165					0
	4:15 PM	14		39					47	10	42	21		173				1	1
	4:30 PM	12		34					37	9	45	22		159				2	2
	4:45 PM	15		32					42	10	49	21		169					0
	5:00 PM	11		41					70	11	60	26		219					0
	5:15 PM	16		39					57	10	52	26		200				1	1
	5:30 PM	19		42					62	12	41	23		199	1				1
	5:45 PM	14		43					56	12	48	31		204					0
	VOLUMES	114	0	320	0	0	0	0	393	91	368	202	0	1,488	1	0	0	4	5
	APPROACH %	26%	0%	74%	0%	0%	0%	0%	81%	19%	65%	35%	0%						
	APP/DEPART	434	/	0	0	/	459	484	/	713	570	/	316	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	60	0	165	0	0	0	0	245	45	201	106	0	822					
	APPROACH %	27%	0%	73%	0%	0%	0%	0%	84%	16%	65%	35%	0%						
	PEAK HR FACTOR		0.922			0.000			0.895			0.892		0.938					
	APP/DEPART	225	/	0	0	/	246	290	/	410	307	/	166	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



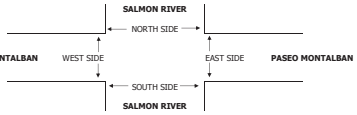
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: SALMON RIVER
EAST & WEST: PASEO MONTALBAN
PROJECT #: PTD14-0711-01
LOCATION #: 17
CONTROL: SIGNAL

NOTES:

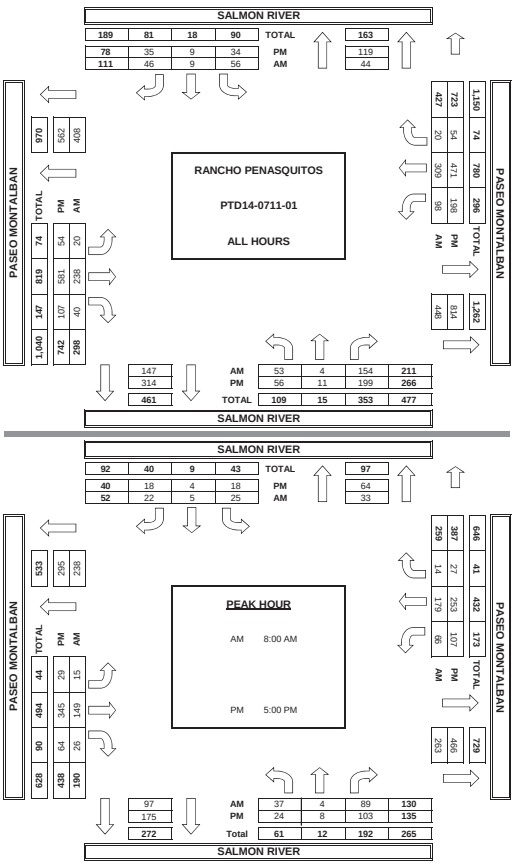
		NORTHBOUND (SALMON RIVER)			SOUTHBOUND (SALMON RIVER)			EASTBOUND (PASEO MONTALBAN)			WESTBOUND (PASEO MONTALBAN)				U-TURNS				
	LANES:	NL 1	NT 0.5	NR 0.5	SL 1	ST 0.5	SR 0.5	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	1	0	15	5	1	6	1	14	3	10	18	1	75					0
	7:15 AM	5	0	10	7	1	6	2	19	2	6	40	1	99				1	1
	7:30 AM	6	0	15	9	0	8	2	33	4	8	35	2	122					0
	7:45 AM	4	0	25	10	2	4	0	23	5	8	37	2	120					0
	8:00 AM	8	1	20	6	2	5	0	32	8	18	35	1	136					0
	8:15 AM	14	1	25	9	1	6	4	28	11	17	47	3	166					0
	8:30 AM	9	0	23	8	2	5	3	47	2	13	35	4	151					0
	8:45 AM	6	2	21	2	0	6	8	42	5	18	62	6	178					0
	VOLUMES	53	4	154	56	9	46	20	238	40	98	309	20	1,047	0	0	0	1	1
	APPROACH %	25%	2%	73%	50%	8%	41%	7%	80%	13%	23%	72%	5%						
	APP/DEPART	211	/	44	111	/	147	298	/	448	427	/	408	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	37	4	89	25	5	22	15	149	26	66	179	14	631					
	APPROACH %	28%	3%	68%	48%	10%	42%	8%	78%	14%	25%	69%	5%						
	PEAK HR FACTOR		0.813			0.813			0.864			0.753		0.886					
	APP/DEPART	130	/	33	52	/	97	190	/	263	259	/	238	0					
PM	4:00 PM	5	1	25	4	2	3	4	52	19	21	56	6	198				1	1
	4:15 PM	11	1	21	4	1	3	8	60	10	24	51	5	199					0
	4:30 PM	10	0	32	6	2	5	5	62	9	29	49	10	219					0
	4:45 PM	6	1	18	2	0	6	8	62	5	17	62	6	193					0
	5:00 PM	7	3	22	5	0	7	8	91	23	22	71	2	261					0
	5:15 PM	5	1	22	4	2	4	9	79	16	31	63	8	244					0
	5:30 PM	8	2	31	4	1	4	6	91	13	28	61	9	258				1	1
	5:45 PM	4	2	28	5	1	3	6	84	12	26	58	8	237					0
	VOLUMES	56	11	199	34	9	35	54	581	107	198	471	54	1,809	0	0	0	2	2
	APPROACH %	21%	4%	75%	44%	12%	45%	7%	78%	14%	27%	65%	7%						
	APP/DEPART	266	/	119	78	/	314	742	/	814	723	/	562	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	24	8	103	18	4	18	29	345	64	107	253	27	1,000					
	APPROACH %	18%	6%	76%	45%	10%	45%	7%	79%	15%	28%	65%	7%						
	PEAK HR FACTOR		0.823			0.833			0.898			0.949		0.958					
	APP/DEPART	135	/	64	40	/	175	438	/	466	387	/	295	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



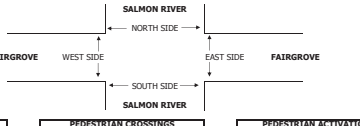
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: SALMON RIVER
EAST & WEST: FAIRGROVE
PROJECT #: PTD14-0711-01
LOCATION #: 19
CONTROL: 4-WAY STOP

NOTES:

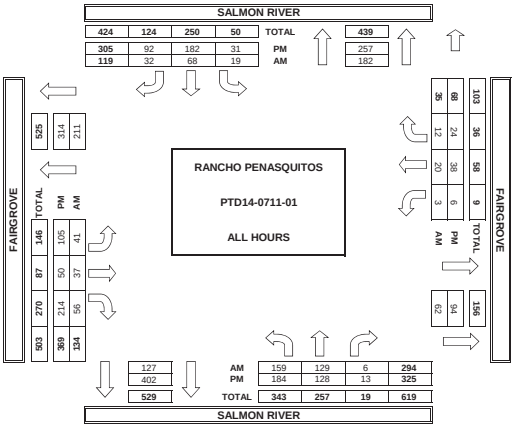
		NORTHBOUND (SALMON RIVER)			SOUTHBOUND (SALMON RIVER)			EASTBOUND (FAIRGROVE)			WESTBOUND (FAIRGROVE)				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	22	12	1	0	1	8	3	0	7	0	0	0	54					0
	7:15 AM	12	10	0	0	5	3	4	1	4	0	0	0	39					0
	7:30 AM	13	14	0	1	3	4	2	2	5	1	0	0	45					0
	7:45 AM	9	21	0	2	5	1	2	4	8	0	1	0	53					0
	8:00 AM	28	18	2	8	10	4	5	7	6	1	2	0	91					0
	8:15 AM	26	24	0	8	19	4	6	18	9	0	10	11	135					0
	8:30 AM	25	20	3	0	10	3	13	4	7	1	6	1	93					0
	8:45 AM	24	10	0	0	15	5	6	1	10	0	1	0	72					0
	VOLUMES	159	129	6	19	68	32	41	37	56	3	20	12	582	0	0	0	0	0
	APPROACH %	54%	44%	2%	16%	57%	27%	31%	28%	42%	9%	57%	34%						
	APP/DEPART	294	/	182	119	/	127	134	/	62	35	/	211	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	103	72	5	16	54	16	30	30	32	2	19	12	391					
	APPROACH %	57%	40%	3%	19%	63%	19%	33%	33%	35%	6%	58%	36%						
	PEAK HR FACTOR		0.900			0.694			0.697			0.393		0.724					
	APP/DEPART	180	/	114	86	/	88	92	/	51	33	/	138	0					
PM	4:00 PM	39	27	1	6	27	2	17	16	26	0	2	1	164					0
	4:15 PM	17	9	5	5	22	13	15	7	28	1	0	1	123					0
	4:30 PM	27	18	3	5	15	15	15	7	28	0	19	5	157					0
	4:45 PM	17	18	0	2	16	19	7	4	31	0	1	1	116					0
	5:00 PM	21	10	0	2	23	8	12	1	23	2	3	2	107					0
	5:15 PM	20	15	1	4	32	11	7	5	23	0	6	2	126					0
	5:30 PM	20	16	2	4	21	12	17	2	22	1	3	7	127			2		2
	5:45 PM	23	15	1	3	26	12	15	8	33	2	4	5	147					0
	VOLUMES	184	128	13	31	182	92	105	50	214	6	38	24	1,067	0	0	2	0	2
	APPROACH %	57%	39%	4%	10%	60%	30%	28%	14%	58%	9%	56%	35%						
	APP/DEPART	325	/	257	305	/	402	369	/	94	68	/	314	0					
	BEGIN PEAK HR	4:00 PM																	
	VOLUMES	100	72	9	18	80	49	54	34	113	1	22	8	560					
	APPROACH %	55%	40%	5%	12%	54%	33%	27%	17%	56%	3%	71%	26%						
	PEAK HR FACTOR		0.675			0.919			0.852			0.323		0.854					
	APP/DEPART	181	/	134	147	/	194	201	/	61	31	/	171	0					

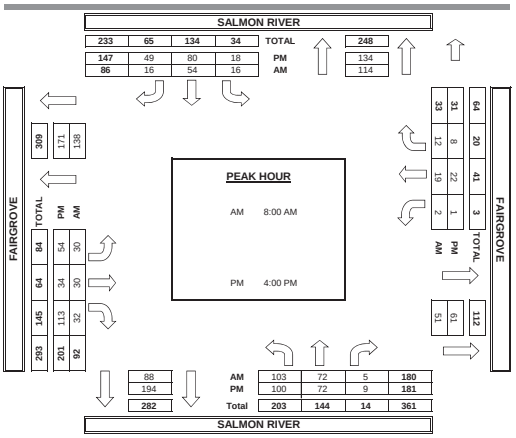


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

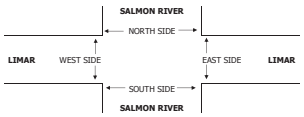
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: WEDNESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: SALMON RIVER
EAST & WEST: LIMAR
PROJECT #: PTD14-0711-01
LOCATION #: 21
CONTROL: 4-WAY STOP

NOTES:

LANES:	NORTHBOUND (SALMON RIVER) NL 0	NT 1	NR 0	SOUTHBOUND (SALMON RIVER) SL 0	ST 1	SR 0	EASTBOUND (LIMAR) EL 0	ET 1	ER 0	WESTBOUND (LIMAR) WL 0	WT 1	WR 0	TOTAL
7:00 AM	1	0	1	0	1	4	0	14	0	2	10	0	33
7:15 AM	3	1	1	0	0	6	0	5	0	6	9	0	31
7:30 AM	3	0	6	0	6	7	1	10	1	8	10	0	52
7:45 AM	5	5	5	1	5	11	5	17	3	5	11	0	73
8:00 AM	3	1	6	0	7	8	1	14	3	8	18	0	69
8:15 AM	2	1	6	0	3	8	4	12	6	4	11	0	57
8:30 AM	1	2	1	0	4	11	2	8	2	2	13	0	46
8:45 AM	4	0	1	0	4	3	4	18	1	5	15	0	55
AM VOLUMES	22	10	27	1	30	58	17	98	16	40	97	0	416
AM APPROACH %	37%	17%	46%	1%	34%	65%	13%	75%	12%	29%	71%	0%	
AM APP/DEPART	59	/	27	89	/	86	131	/	126	137	/	177	0
AM BEGIN PEAK HR	7:30 AM												
AM VOLUMES	13	7	23	1	21	34	11	53	13	25	50	0	251
AM APPROACH %	30%	16%	53%	2%	38%	61%	14%	69%	17%	33%	67%	0%	
AM PEAK HR FACTOR		0.717			0.824			0.770			0.721		0.860
AM APP/DEPART	43	/	18	56	/	59	77	/	77	75	/	97	0
4:00 PM	10	4	4	0	3	4	2	18	6	11	14	2	78
4:15 PM	4	2	5	0	4	7	4	21	5	2	15	0	69
4:30 PM	4	5	4	0	4	3	10	20	5	2	19	0	76
4:45 PM	7	2	4	0	6	9	6	22	1	4	21	1	83
5:00 PM	3	4	6	0	1	6	3	21	6	4	15	0	69
5:15 PM	7	0	5	0	0	6	11	26	7	2	17	0	81
5:30 PM	6	4	5	0	1	6	19	21	8	3	17	0	90
5:45 PM	6	4	11	1	0	8	7	21	4	2	29	0	93
PM VOLUMES	47	25	44	1	19	49	62	170	42	30	147	3	639
PM APPROACH %	41%	22%	38%	1%	28%	71%	23%	62%	15%	17%	82%	2%	
PM APP/DEPART	116	/	90	69	/	91	274	/	215	180	/	243	0
PM BEGIN PEAK HR	5:00 PM												
PM VOLUMES	22	12	27	1	2	26	40	89	25	11	78	0	333
PM APPROACH %	36%	20%	44%	3%	7%	90%	26%	58%	16%	12%	88%	0%	
PM PEAK HR FACTOR		0.726			0.806			0.802			0.718		0.895
PM APP/DEPART	61	/	52	29	/	38	154	/	117	89	/	126	0

U-TURNS	NB X	SB X	EB X	WB X	TTL
AM					0
					0
					0
					0
			1		1
				1	1
					0
					0
AM	0	0	1	1	2
PM					0
					0
			3		3
					0
					0
					0
					1
PM	1	0	3	0	4



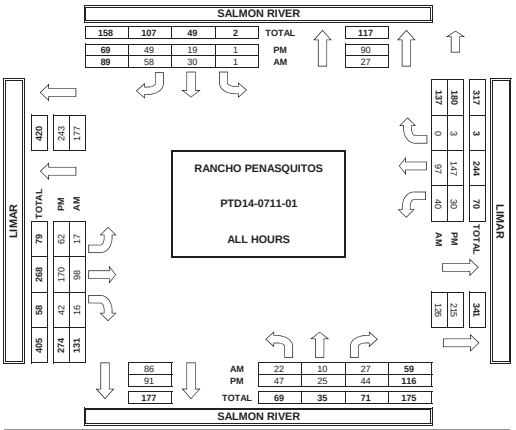
	PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	0	0	0

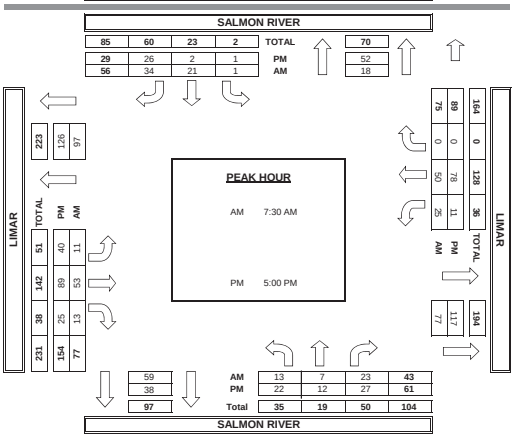
PEDESTRIAN ACTIVATIONS	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM					0
					0
					0
					0
					0
					0
					0
					0
AM TOTAL	0	0	0	0	0
PM					0
					0
					0
					0
					0
					0
					0
					0
PM TOTAL	0	0	0	0	0

BICYCLE CROSSINGS	NS	SS	ES	WS	TOTAL
AM					0
					0
					0
					0
					0
					0
					0
					0
AM	0	0	0	0	0
PM					0
					0
					0
					0
					0
					0
					0
PM	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

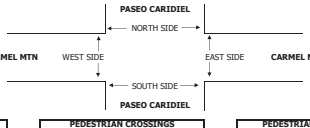
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: TUESDAY
LOCATION: PASEO CARIDIEL
NORTH & SOUTH: PASEO CARIDIEL
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 13
CONTROL: SIGNAL

NOTES:

LANES:	NORTHBOUND (PASEO CARIDIEL) NL 0	NT 1	NR 0	SOUTHBOUND (PASEO CARIDIEL) SL 1	ST 1	SR 0	EASTBOUND (CARMEL MTN) EL 1	ET 2	ER 0	WESTBOUND (CARMEL MTN) WL 1	WT 2	WR 0	TOTAL
7:00 AM	27	2	1	8	5	25	10	38	4	1	81	5	207
7:15 AM	25	2	1	12	0	34	7	31	2	3	82	1	200
7:30 AM	26	2	0	20	0	25	9	52	7	0	81	6	228
7:45 AM	29	3	2	18	4	25	8	88	8	4	62	12	263
8:00 AM	33	7	1	12	6	17	18	62	10	2	82	8	258
8:15 AM	30	4	3	8	2	24	15	72	9	1	84	6	258
8:30 AM	19	6	3	17	2	23	8	65	7	4	112	8	274
8:45 AM	17	2	7	18	6	10	16	71	10	2	92	15	266
AM VOLUMES	206	28	18	113	25	183	91	479	57	17	676	61	1,954
AM APPROACH %	82%	11%	7%	35%	8%	57%	15%	76%	9%	2%	90%	8%	
AM APP/DEPART	252	/	180	321	/	99	627	/	610	754	/	1,065	0
AM BEGIN PEAK HR	8:00 AM												
AM VOLUMES	99	19	14	55	16	74	57	270	36	9	370	37	1,056
AM APPROACH %	75%	14%	11%	38%	11%	51%	16%	74%	10%	2%	89%	9%	
AM PEAK HR FACTOR		0.805			0.863			0.936			0.839		0.964
AM APP/DEPART	132	/	113	145	/	61	363	/	339	416	/	543	0
4:00 PM	44	5	9	19	7	10	20	93	13	4	69	7	300
4:15 PM	37	5	5	16	3	15	18	102	15	9	74	17	316
4:30 PM	44	10	10	14	5	10	14	102	21	6	75	6	317
4:45 PM	47	7	12	21	6	14	26	147	23	3	79	24	409
5:00 PM	59	9	8	22	8	13	32	120	22	6	71	13	383
5:15 PM	50	8	9	14	6	8	36	172	16	13	98	29	459
5:30 PM	47	6	13	28	2	9	28	148	19	7	82	12	401
5:45 PM	76	7	6	18	5	14	30	164	14	5	106	25	470
PM VOLUMES	404	57	72	152	42	93	204	1,048	143	53	654	133	3,055
PM APPROACH %	76%	11%	14%	53%	15%	32%	15%	75%	10%	6%	78%	16%	
PM APP/DEPART	533	/	394	287	/	238	1,395	/	1,272	840	/	1,151	0
PM BEGIN PEAK HR	5:00 PM												
PM VOLUMES	232	30	36	82	21	44	126	604	71	31	357	79	1,713
PM APPROACH %	78%	10%	12%	56%	14%	30%	16%	75%	9%	7%	76%	17%	
PM PEAK HR FACTOR		0.837			0.855			0.894			0.834		0.911
PM APP/DEPART	298	/	235	147	/	123	801	/	722	467	/	633	0

U-TURNS	NB X	SB X	EB X	WB X	TTL
AM			1		1
			3	1	4
			5		5
			2	1	3
			4	1	5
			5		5
			3		3
			7	1	8
			10		10
			16	1	17
			13	2	15
			15		15
			16	1	17
AM	0	0	81	6	87
PM					0
					0
					0
					0
					0
					0
					0
					0
PM	0	0	0	0	0



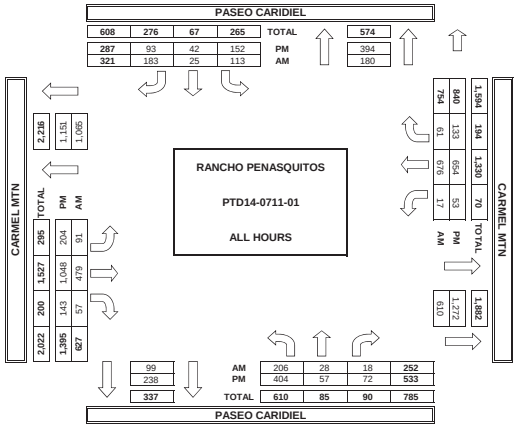
	PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	0	0	0

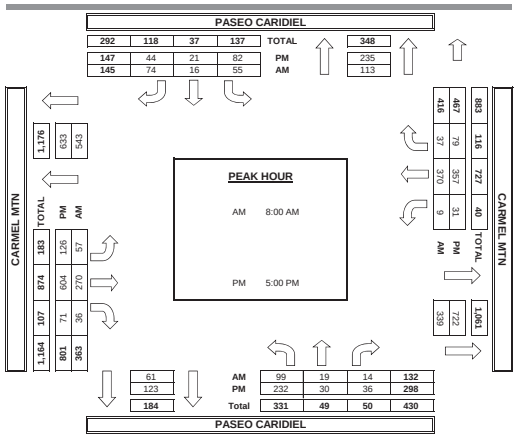
PEDESTRIAN ACTIVATIONS	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM					0
					0
					0
					0
					0
					0
					0
					0
AM TOTAL	0	0	0	0	0
PM					0
					0
					0
					0
					0
					0
					0
					0
PM TOTAL	0	0	0	0	0

BICYCLE CROSSINGS	NS	SS	ES	WS	TOTAL
AM					0
					0
					0
					0
					0
					0
					0
					0
AM	0	0	0	0	0
PM					0
					0
					0
					0
					0
					0
					0
PM	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





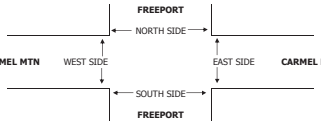
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: FREEPORT
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 11
CONTROL: SIGNAL

NOTES:

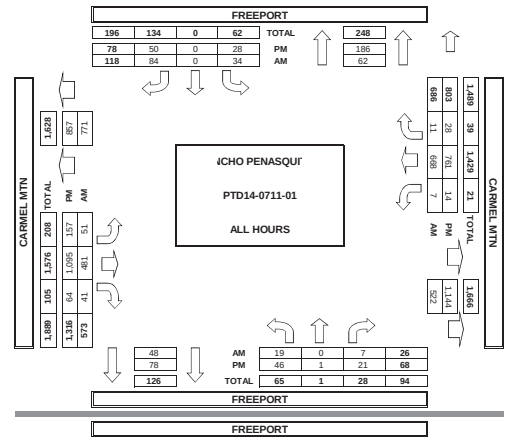
	NORTHBOUND (FREEPORT)			SOUTHBOUND (FREEPORT)			EASTBOUND (CARMEL MTN)			WESTBOUND (CARMEL MTN)				U-TURNS				
LANES:	NL 1	NT 0.5	NR 0.5	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM 7:00 AM	7	0	0	2	0	12	2	31	10	0	73	1	138			1		1
7:15 AM	0	0	0	5	0	14	5	29	2	0	70	1	126			4		4
7:30 AM	1	0	0	4	0	11	7	67	2	2	70	2	166			5		5
7:45 AM	2	0	0	4	0	6	7	92	7	1	80	0	199			7		7
8:00 AM	1	0	2	7	0	11	5	70	4	0	82	1	183			4		4
8:15 AM	4	0	3	4	0	11	7	52	6	2	87	1	177			3		3
8:30 AM	2	0	2	3	0	6	8	59	4	2	104	3	193			1	1	2
8:45 AM	2	0	0	5	0	13	10	81	6	0	102	2	221			4		4
VOLUMES	19	0	7	34	0	84	51	481	41	7	668	11	1,403	0	0	29	1	30
APPROACH %	73%	0%	27%	29%	0%	71%	9%	84%	7%	1%	97%	2%						
APP/DEPART	26	/	62	118	/	48	573	/	522	686	/	771	0					
BEGIN PEAK HR	8:00 AM																	
VOLUMES	9	0	7	19	0	41	30	262	20	4	375	7	774					
APPROACH %	56%	0%	44%	32%	0%	68%	10%	84%	6%	1%	97%	2%						
PEAK HR FACTOR	0.571			0.833			0.804			0.885			0.876					
APP/DEPART	16	/	37	60	/	24	312	/	288	386	/	425	0					
PM 4:00 PM	4	0	4	5	0	5	16	103	8	1	77	4	227			6		6
4:15 PM	2	0	1	2	0	6	13	111	5	2	89	2	233			5		5
4:30 PM	8	1	9	2	0	5	19	112	5	3	76	5	245			9	1	10
4:45 PM	4	0	2	2	0	8	22	148	8	0	95	2	291			8		8
5:00 PM	8	0	2	2	0	7	19	142	10	2	93	4	289			3		3
5:15 PM	8	0	0	6	0	5	15	160	14	3	118	8	337			6		6
5:30 PM	5	0	0	5	0	8	23	169	7	2	107	0	326			8		8
5:45 PM	7	0	3	4	0	6	30	150	7	1	106	3	317			4		4
VOLUMES	46	1	21	28	0	50	157	1,095	64	14	761	28	2,265	0	0	49	1	50
APPROACH %	68%	1%	31%	36%	0%	64%	12%	83%	5%	2%	95%	3%						
APP/DEPART	68	/	186	78	/	78	1,316	/	1,144	803	/	857	0					
BEGIN PEAK HR	5:00 PM																	
VOLUMES	28	0	5	17	0	26	87	621	38	8	424	15	1,269					
APPROACH %	85%	0%	15%	40%	0%	60%	12%	83%	5%	2%	95%	3%						
PEAK HR FACTOR	0.825			0.827			0.937			0.866			0.941					
APP/DEPART	33	/	102	43	/	46	746	/	643	447	/	478	0					

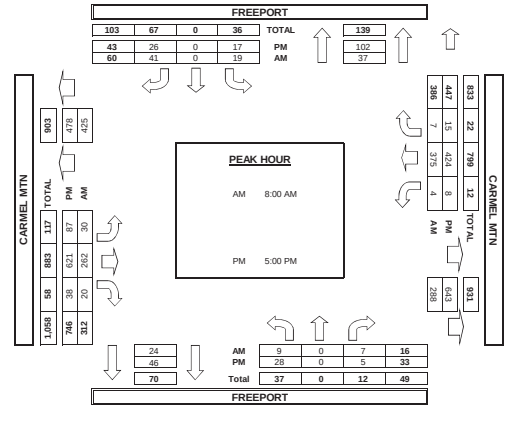


	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





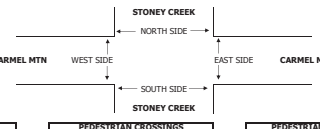
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: STONEY CREEK
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 10
CONTROL: SIGNAL

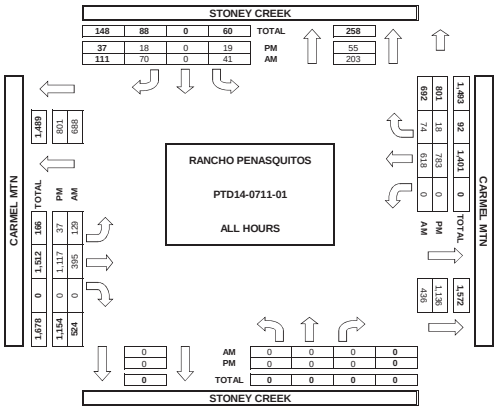
NOTES:

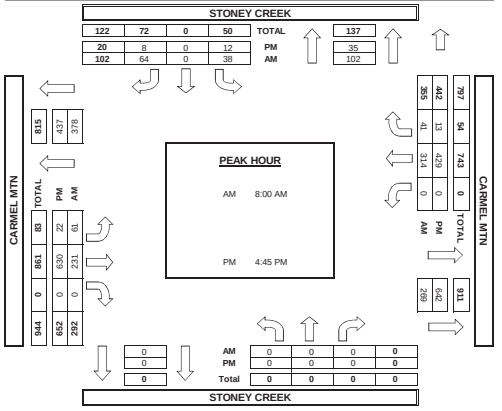
	NORTHBOUND (STONEY CREEK)			SOUTHBOUND (STONEY CREEK)			EASTBOUND (CARMEL MTN)			WESTBOUND (CARMEL MTN)				U-TURNS				
LANES:	NL X	NT X	NR X	SL 1	ST X	SR 1	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM 7:00 AM				1		5	3	27			74	2	112					0
7:15 AM				2		0	3	30			64	6	105					0
7:30 AM				0		0	13	58			84	10	165					0
7:45 AM				0		1	49	49			82	15	196			1		1
8:00 AM				2		3	8	58			76	8	155			3		3
8:15 AM				1		9	15	46			80	9	160			5		5
8:30 AM				31		38	10	57			82	7	225			3		3
8:45 AM				4		14	28	70			76	17	209			3		3
VOLUMES	0	0	0	41	0	70	129	395	0	0	618	74	1,327	0	0	15	0	15
APPROACH %	0%	0%	0%	37%	0%	63%	25%	75%	0%	0%	89%	11%						
APP/DEPART	0	/	203	111	/	0	524	/	436	692	/	688	0					
BEGIN PEAK HR	8:00 AM																	
VOLUMES	0	0	0	38	0	64	61	231	0	0	314	41	749					
APPROACH %	0%	0%	0%	37%	0%	63%	21%	79%	0%	0%	88%	12%						
PEAK HR FACTOR	0.000			0.370			0.745			0.954			0.832					
APP/DEPART	0	/	102	102	/	0	292	/	269	355	/	378	0					
PM 4:00 PM				3		3	5	118			75	1	205			1		1
4:15 PM				1		4	3	115			95	2	220					0
4:30 PM				1		0	4	112			85	2	204					0
4:45 PM				3		3	5	152			95	2	260					0
5:00 PM				3		2	3	140			106	2	256					0
5:15 PM				4		1	10	155			110	5	285			2		2
5:30 PM				2		2	4	183			118	4	313			1		1
5:45 PM				2		3	3	142			99	0	249			1		1
VOLUMES	0	0	0	19	0	18	37	1,117	0	0	783	18	1,992	0	0	5	0	5
APPROACH %	0%	0%	0%	51%	0%	49%	3%	97%	0%	0%	98%	2%						
APP/DEPART	0	/	55	37	/	0	1,154	/	1,136	801	/	801	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	0	0	0	12	0	8	22	630	0	0	429	13	1,114					
APPROACH %	0%	0%	0%	60%	0%	40%	3%	97%	0%	0%	97%	3%						
PEAK HR FACTOR	0.000			0.833			0.872			0.906			0.890					
APP/DEPART	0	/	35	20	/	0	652	/	642	442	/	437	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS





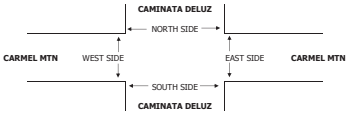
INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: CAMINATA DELUZ
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 9
CONTROL: SIGNAL

NOTES:

	LANES:	NORTHBOUND CAMINATA DELUZ NL 0	NT 1	NR 0	SOUTHBOUND CAMINATA DELUZ SL 0	ST 1	SR 0	EASTBOUND CARMEL MTN EL 1	ET 2	ER 0	WESTBOUND CARMEL MTN WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	1	2	0	8	3	47	0	4	40	1	106
	7:15 AM	2	0	0	13	0	5	4	51	1	0	46	4	126
	7:30 AM	1	0	1	13	0	5	4	79	0	4	62	4	173
	7:45 AM	2	0	1	11	0	15	15	68	2	2	57	9	182
	8:00 AM	1	0	1	14	0	17	9	67	0	0	70	4	183
	8:15 AM	0	0	2	8	0	19	2	61	0	6	71	5	175
	8:30 AM	0	0	1	11	0	10	4	71	0	1	67	2	167
	8:45 AM	2	0	3	8	0	13	12	78	0	2	76	9	203
	VOLUMES	8	0	10	80	1	92	53	522	3	19	489	38	1,315
	APPROACH %	44%	0%	56%	46%	1%	53%	9%	90%	1%	3%	90%	7%	
	APP/DEPART	18	/	91	173	/	23	578	/	612	546	/	589	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	3	0	7	41	1	59	27	277	0	9	284	20	728
	APPROACH %	30%	0%	70%	41%	1%	58%	9%	91%	0%	3%	91%	6%	
	PEAK HR FACTOR		0.500			0.815			0.844			0.899		0.897
	APP/DEPART	10	/	47	101	/	10	304	/	325	313	/	346	0
PM	4:00 PM	1	0	2	13	1	8	9	96	2	2	83	10	227
	4:15 PM	0	0	0	6	0	6	9	91	1	5	102	8	228
	4:30 PM	0	0	4	5	0	9	10	122	2	5	85	13	255
	4:45 PM	1	0	0	6	0	4	10	105	1	2	120	7	256
	5:00 PM	1	0	3	5	0	14	15	135	1	0	100	10	284
	5:15 PM	1	0	1	4	0	12	8	144	0	4	126	11	311
	5:30 PM	2	0	1	7	0	14	15	154	2	5	107	14	321
	5:45 PM	0	1	2	10	0	16	11	137	0	2	110	20	309
	VOLUMES	6	1	13	56	1	83	87	984	9	25	833	93	2,191
	APPROACH %	30%	5%	65%	40%	1%	59%	8%	91%	1%	3%	88%	10%	
	APP/DEPART	20	/	181	140	/	35	1,080	/	1,053	951	/	922	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	4	1	7	26	0	56	49	570	3	11	443	55	1,225
	APPROACH %	33%	8%	58%	32%	0%	68%	8%	92%	0%	2%	87%	11%	
	PEAK HR FACTOR		0.750			0.788			0.909			0.902		0.954
	APP/DEPART	12	/	105	82	/	14	622	/	603	509	/	503	0

U-TURNS	NB	SB	EB	WB	TTL
	X	X	X	X	
		4			4
					0
		3			3
		2			2
					0
		4			4
		1			1
					0
	0	14	0	0	14

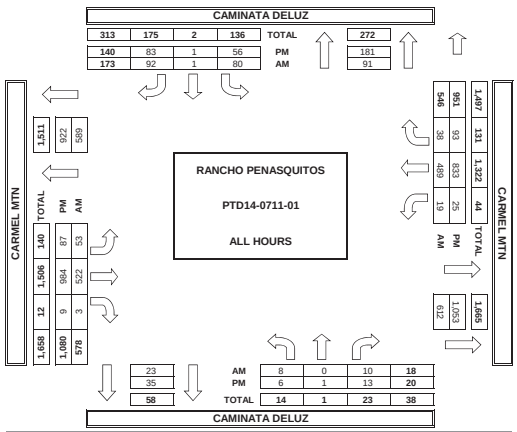


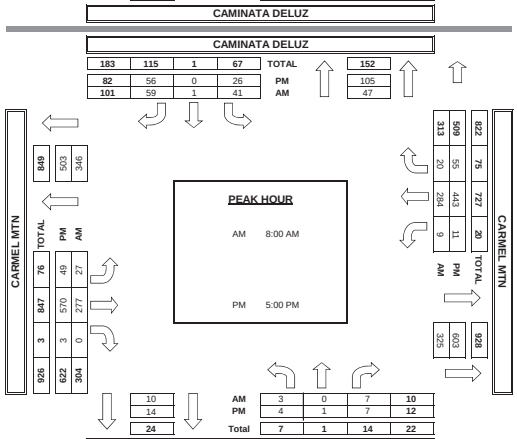
	PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

BICYCLE CROSSINGS	NS	SS	ES	WS	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS





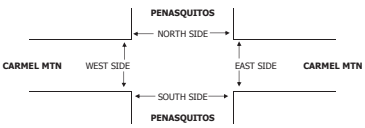
INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: PENASQUITOS
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 8
CONTROL: SIGNAL

NOTES:

	LANES:	NORTHBOUND PENASQUITOS NL 1.5	NT 0.5	NR 1	SOUTHBOUND PENASQUITOS SL 1.5	ST 0.5	SR 1	EASTBOUND CARMEL MTN EL 1	ET 2.5	ER 0.5	WESTBOUND CARMEL MTN WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	3	1	31	103	19	12	5	68	5	17	30	30	324
	7:15 AM	6	6	20	161	26	17	1	91	9	23	21	32	413
	7:30 AM	7	4	26	145	14	17	8	105	7	21	43	29	426
	7:45 AM	6	4	21	157	16	25	12	89	10	27	43	30	440
	8:00 AM	6	2	27	123	17	23	14	88	8	16	41	50	415
	8:15 AM	7	4	24	150	13	15	7	89	3	16	50	38	416
	8:30 AM	3	2	17	125	12	14	7	86	9	30	48	41	394
	8:45 AM	9	7	22	116	10	21	11	80	13	22	66	48	425
	VOLUMES	47	30	188	1,080	127	144	65	696	64	172	342	298	3,253
	APPROACH %	18%	11%	71%	80%	9%	11%	8%	84%	8%	21%	42%	37%	
	APP/DEPART	265	/	393	1,351	/	363	825	/	1,964	812	/	533	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	26	14	98	575	60	80	41	371	28	80	177	147	1,697
	APPROACH %	19%	10%	71%	80%	8%	11%	9%	84%	6%	20%	44%	36%	
	PEAK HR FACTOR		0.932			0.903			0.917			0.944		0.964
	APP/DEPART	138	/	202	715	/	168	440	/	1,044	404	/	283	0
PM	4:00 PM	9	7	30	71	15	9	17	89	7	39	103	78	474
	4:15 PM	20	18	26	58	14	11	22	74	7	45	96	108	499
	4:30 PM	13	18	33	53	14	4	35	105	12	58	90	121	556
	4:45 PM	14	23	34	62	14	13	30	88	19	52	117	111	577
	5:00 PM	21	21	25	83	15	5	31	116	17	51	121	124	630
	5:15 PM	16	13	39	68	22	5	31	124	10	46	145	157	676
	5:30 PM	16	31	43	86	18	18	38	118	16	61	112	137	694
	5:45 PM	14	19	42	64	16	8	45	105	18	40	125	134	630
	VOLUMES	123	150	272	545	128	73	249	819	106	392	909	970	4,736
	APPROACH %	23%	28%	50%	73%	17%	10%	21%	70%	9%	17%	40%	43%	
	APP/DEPART	545	/	1,369	746	/	626	1,174	/	1,636	2,271	/	1,105	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	67	84	149	301	71	36	145	463	61	198	503	552	2,630
	APPROACH %	22%	28%	50%	74%	17%	9%	22%	69%	9%	16%	40%	44%	
	PEAK HR FACTOR		0.833			0.836			0.972			0.900		0.947
	APP/DEPART	300	/	781	408	/	330	669	/	913	1,253	/	606	0

U-TURNS	NB	SB	EB	WB	TTL
	X	X	X	X	
					0
		2			2
		4			4
		1			1
1		1			2
					0
		1			1
		2			2
1	0	11	0		12

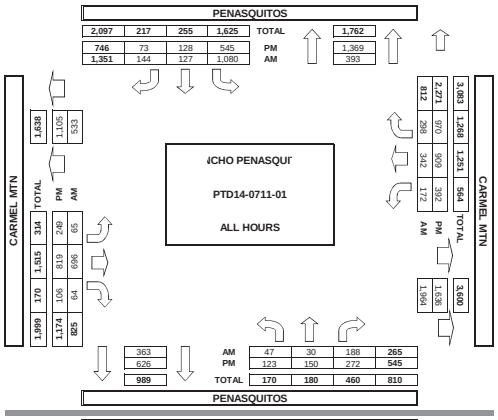


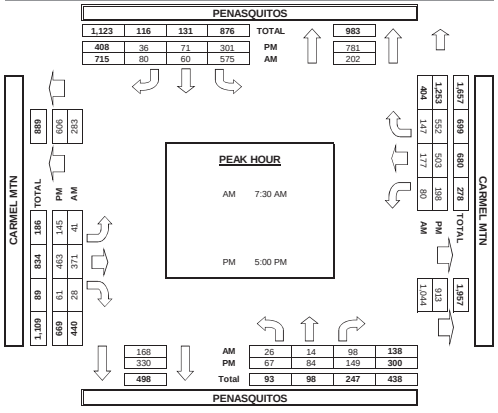
	PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

BICYCLE CROSSINGS	NS	SS	ES	WS	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



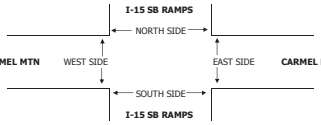


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: I-15 SB RAMPS
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 7
CONTROL: SIGNAL

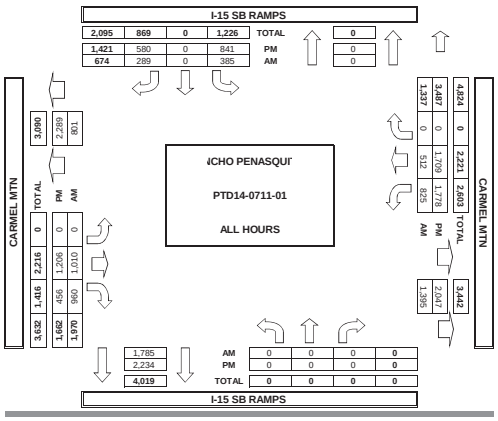
NOTES:

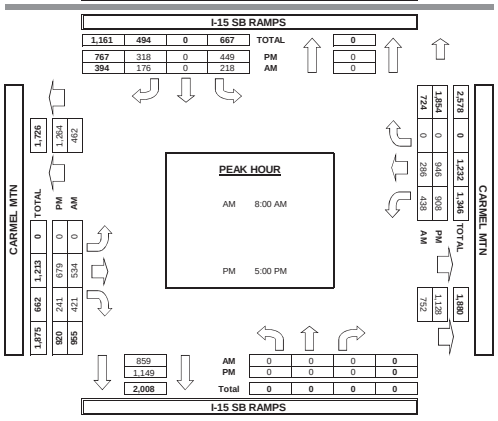
		NORTHBOUND (I-15 SB RAMPS)			SOUTHBOUND (I-15 SB RAMPS)			EASTBOUND (CARMEL MTN)			WESTBOUND (CARMEL MTN)				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 1.3	ST 0.3	SR 1.3	EL X	ET 2	ER 1	WL 2	WT 2	WR X	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM				39	0	23		92	124	110	43		431					0
	7:15 AM				41	0	29		101	169	88	57		485					0
	7:30 AM				45	0	35		147	133	98	52		510					0
	7:45 AM				42	0	26		136	113	91	74		482					0
	8:00 AM				49	0	30		144	112	119	77		531					0
	8:15 AM				50	0	35		126	127	103	71		512					0
	8:30 AM				58	0	48		133	90	107	69		505					0
	8:45 AM				61	0	63		131	92	109	69		525					0
	VOLUMES	0	0	0	385	0	289	0	1,010	960	825	512	0	3,981	0	0	0	0	0
	APPROACH %	0%	0%	0%	57%	0%	43%	0%	51%	49%	62%	38%	0%						
	APP/DEPART	0	/	0	674	/	1,785	1,970	/	1,395	1,337	/	801	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	0	0	0	218	0	176	0	534	421	438	286	0	2,073					
	APPROACH %	0%	0%	0%	55%	0%	45%	0%	56%	44%	60%	40%	0%						
	PEAK HR FACTOR		0.000			0.794			0.933			0.923		0.976					
	APP/DEPART	0	/	0	394	/	859	955	/	752	724	/	462	0					
PM	4:00 PM				80	0	57		146	48	194	166		691					0
	4:15 PM				107	0	66		123	41	199	178		714					0
	4:30 PM				90	0	62		140	73	245	215		825					0
	4:45 PM				115	0	77		118	53	232	204		799					0
	5:00 PM				101	0	77		178	59	245	234		894					0
	5:15 PM				116	0	100		173	67	256	274		986					0
	5:30 PM				110	0	72		161	73	201	221		838					0
	5:45 PM				122	0	69		167	42	206	217		823					0
	VOLUMES	0	0	0	841	0	580	0	1,206	456	1,778	1,709	0	6,570	0	0	0	0	0
	APPROACH %	0%	0%	0%	59%	0%	41%	0%	73%	27%	51%	49%	0%						
	APP/DEPART	0	/	0	1,421	/	2,234	1,662	/	2,047	3,487	/	2,289	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	0	0	0	449	0	318	0	679	241	908	946	0	3,541					
	APPROACH %	0%	0%	0%	59%	0%	41%	0%	74%	26%	49%	51%	0%						
	PEAK HR FACTOR		0.000			0.888			0.958			0.875		0.898					
	APP/DEPART	0	/	0	767	/	1,149	920	/	1,128	1,854	/	1,264	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



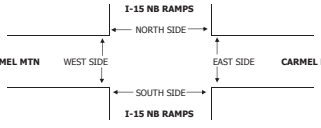


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/8/14 TUESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: I-15 NB RAMPS
EAST & WEST: CARMEL MTN
PROJECT #: PTD14-0711-01
LOCATION #: 6
CONTROL: SIGNAL

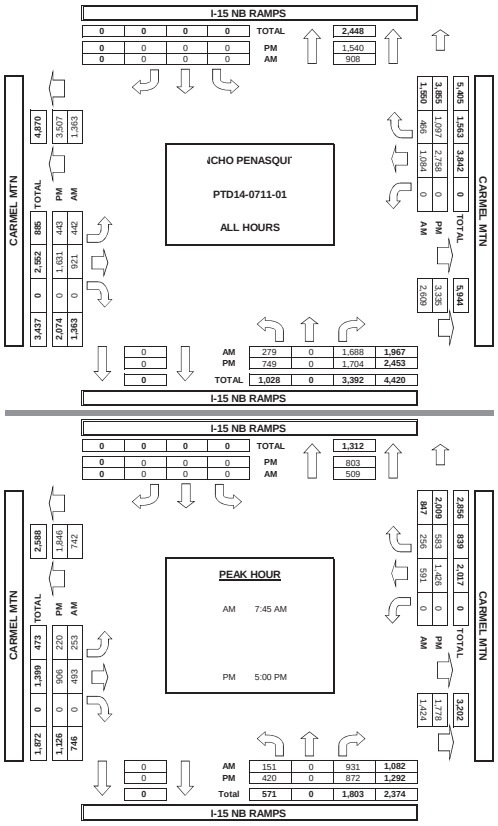
NOTES:

		NORTHBOUND (I-15 NB RAMPS)			SOUTHBOUND (I-15 NB RAMPS)			EASTBOUND (CARMEL MTN)			WESTBOUND (CARMEL MTN)				U-TURNS				
	LANES:	NL 1.5	NT 0.5	NR 2	SL X	ST X	SR X	EL 2	ET 3	ER X	WL X	WT 2	WR 1	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	28	0	169				31	93			129	45	495					0
	7:15 AM	31	0	207				61	86			103	54	542					0
	7:30 AM	32	0	206				56	112			115	57	578					0
	7:45 AM	43	0	270				72	139			127	65	716					0
	8:00 AM	46	0	221				51	121			157	58	654					0
	8:15 AM	25	0	231				71	120			152	68	667					0
	8:30 AM	37	0	209				59	113			155	65	638					0
	8:45 AM	37	0	175				41	137			146	54	590					0
	VOLUMES	279	0	1,688	0	0	0	442	921	0	0	1,084	466	4,880	0	0	0	0	0
	APPROACH %	14%	0%	86%	0%	0%	0%	32%	68%	0%	0%	70%	30%						
	APP/DEPART	1,967	/	908	0	/	0	1,363	/	2,609	1,550	/	1,363	0					
	BEGIN PEAK HR	7:45 AM																	
	VOLUMES	151	0	931	0	0	0	253	493	0	0	591	256	2,675					
	APPROACH %	14%	0%	86%	0%	0%	0%	34%	66%	0%	0%	70%	30%						
	PEAK HR FACTOR		0.864			0.000			0.884			0.963		0.934					
	APP/DEPART	1,082	/	509	0	/	0	746	/	1,424	847	/	742	0					
PM	4:00 PM	67	0	183				68	171			306	128	923					0
	4:15 PM	67	0	203				65	172			325	115	947					0
	4:30 PM	103	0	209				40	176			360	142	1,030					0
	4:45 PM	92	0	237				50	206			341	129	1,055					0
	5:00 PM	91	0	195				49	218			372	135	1,060					0
	5:15 PM	105	0	224				50	231			418	159	1,187					0
	5:30 PM	111	0	232				60	221			317	157	1,098					0
	5:45 PM	113	0	221				61	236			319	132	1,082					0
	VOLUMES	749	0	1,704	0	0	0	443	1,631	0	0	2,758	1,097	8,382	0	0	0	0	0
	APPROACH %	31%	0%	69%	0%	0%	0%	21%	79%	0%	0%	72%	28%						
	APP/DEPART	2,453	/	1,540	0	/	0	2,074	/	3,335	3,855	/	3,507	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	420	0	872	0	0	0	220	906	0	0	1,426	583	4,427					
	APPROACH %	33%	0%	67%	0%	0%	0%	20%	80%	0%	0%	71%	29%						
	PEAK HR FACTOR		0.942			0.000			0.948			0.870		0.932					
	APP/DEPART	1,292	/	803	0	/	0	1,126	/	1,778	2,009	/	1,846	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Park Village Rd @ Camino Del Sur

Date of Count: *Wednesday, May 28, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Park Village Rd @ Camino Del Sur

AM Period (7:00 AM - 9:00 AM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	0	17	1	7	0	0	1	1	1	71	0	99
7:15 AM	0	0	16	2	8	1	2	0	0	1	66	0	96
7:30 AM	0	1	18	6	7	1	1	0	0	0	99	0	133
7:45 AM	0	0	21	3	17	4	0	0	0	0	84	0	129
8:00 AM	0	1	12	9	20	1	0	2	0	0	82	0	127
8:15 AM	3	2	19	8	24	1	1	0	0	1	85	4	148
8:30 AM	13	5	83	27	23	16	3	1	2	6	115	25	319
8:45 AM	11	0	153	48	23	15	4	4	3	4	95	29	389
Total	27	9	339	104	129	39	11	8	6	13	697	58	1,440

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.63**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	27	8	267	92	90	33	8	7	5	11	377	58	983
PHF	0.52	0.40	0.44	0.48	0.94	0.52	0.50	0.44	0.42	0.46	0.82	0.50	0.63
Movement PHF		0.46			0.63			0.45			0.76		0.63

PM Period (4:00 PM - 6:00 PM)

	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	1	0	16	13	48	8	3	0	1	2	41	0	133
4:15 PM	0	0	14	11	64	6	3	0	1	0	34	0	133
4:30 PM	0	0	12	13	45	7	1	0	3	0	46	0	127
4:45 PM	0	1	9	14	62	27	5	0	2	0	39	0	159
5:00 PM	0	0	13	23	84	17	16	0	3	0	30	0	186
5:15 PM	1	0	8	19	95	5	3	0	1	0	48	0	180
5:30 PM	0	0	14	21	74	22	5	1	0	0	44	1	182
5:45 PM	0	1	10	17	89	25	3	2	4	2	39	0	192
Total	2	2	96	131	561	117	39	3	15	4	321	1	1,292

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	1	1	45	80	342	69	27	3	8	2	161	1	740
PHF	0.25	0.25	0.804	0.87	0.9	0.69	0.422	0.375	0.5	0.25	0.839	0.25	0.96
Movement PHF		0.84			0.94			0.50			0.85		0.96

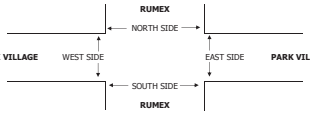
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 7/9/14 WEDNESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: RUMEX
EAST & WEST: PARK VILLAGE
PROJECT #: PTD14-0711-01
LOCATION #: 14
CONTROL: SIGNAL

NOTES:

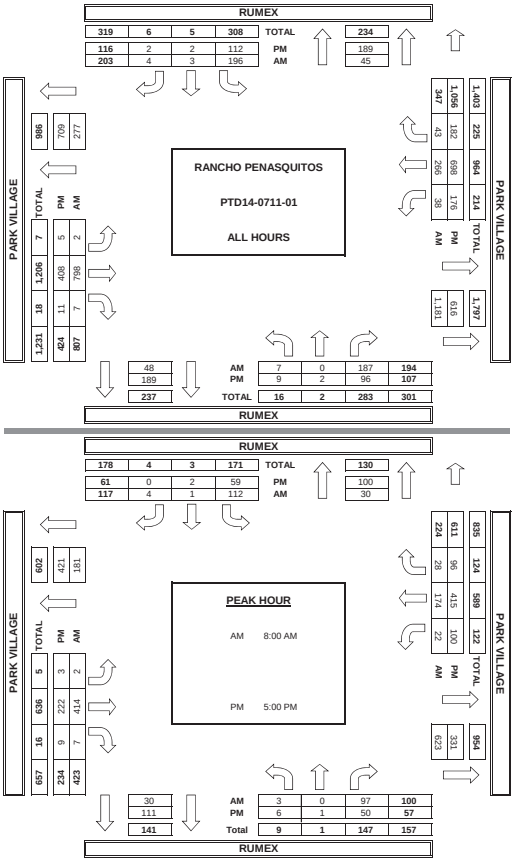
		NORTHBOUND (RUMEX)			SOUTHBOUND (RUMEX)			EASTBOUND (PARK VILLAGE)			WESTBOUND (PARK VILLAGE)				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	2	0	21	24	2	0	0	81	0	2	12	3	147					0
	7:15 AM	1	0	23	19	0	0	0	104	0	3	25	3	178					0
	7:30 AM	0	0	21	23	0	0	0	104	0	5	18	5	176					0
	7:45 AM	1	0	25	18	0	0	0	95	0	6	37	4	186					0
	8:00 AM	0	0	16	27	1	1	0	97	3	4	28	9	186					0
	8:15 AM	3	0	31	31	0	1	0	93	3	4	47	5	218					0
	8:30 AM	0	0	23	22	0	2	2	125	0	4	43	9	230					0
	8:45 AM	0	0	27	32	0	0	0	99	1	10	56	5	230	1				1
	VOLUMES	7	0	187	196	3	4	2	798	7	38	266	43	1,551	1	0	1	0	0	1
	APPROACH %	4%	0%	96%	97%	1%	2%	0%	99%	1%	11%	77%	12%							
	APP/DEPART	194	/	45	203	/	48	807	/	1,181	347	/	277	0						
	BEGIN PEAK HR		8:00 AM																	
	VOLUMES	3	0	97	112	1	4	2	414	7	22	174	28	864						
	APPROACH %	3%	0%	97%	96%	1%	3%	0%	98%	2%	10%	78%	13%							
	PEAK HR FACTOR		0.735			0.914			0.833			0.789		0.939						
	APP/DEPART	100	/	30	117	/	30	423	/	623	224	/	181	0						
PM	4:00 PM	0	0	11	10	0	2	0	48	0	23	62	24	180					0	
	4:15 PM	1	0	12	15	0	0	0	39	1	18	79	22	187					0	
	4:30 PM	1	0	12	14	0	0	1	54	1	14	63	18	178	1				1	
	4:45 PM	1	1	11	14	0	0	1	45	0	21	79	22	195					0	
	5:00 PM	4	0	17	12	0	0	0	53	1	13	90	21	211					0	
	5:15 PM	1	0	8	7	0	0	2	57	1	39	117	22	254					0	
	5:30 PM	0	1	10	17	2	0	1	68	3	19	101	27	249					0	
	5:45 PM	1	0	15	23	0	0	0	44	4	29	107	26	249		1			1	
	VOLUMES	9	2	96	112	2	2	5	408	11	176	698	182	1,703	1	1	0	0	2	
	APPROACH %	8%	2%	90%	97%	2%	2%	1%	96%	3%	17%	66%	17%							
	APP/DEPART	107	/	189	116	/	189	424	/	616	1,056	/	709	0						
	BEGIN PEAK HR		5:00 PM																	
	VOLUMES	6	1	50	59	2	0	3	222	9	100	415	96	963						
	APPROACH %	11%	2%	88%	97%	3%	0%	1%	95%	4%	16%	68%	16%							
	PEAK HR FACTOR		0.679			0.663			0.813			0.858		0.948						
	APP/DEPART	57	/	100	61	/	111	234	/	331	611	/	421	0						



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

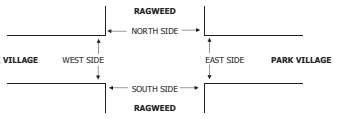
DATE: WEDNESDAY

LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: RAGWEED
EAST & WEST: PARK VILLAGE

PROJECT #: PTD14-0711-01
LOCATION #: 12
CONTROL: SIGNAL

NOTES:

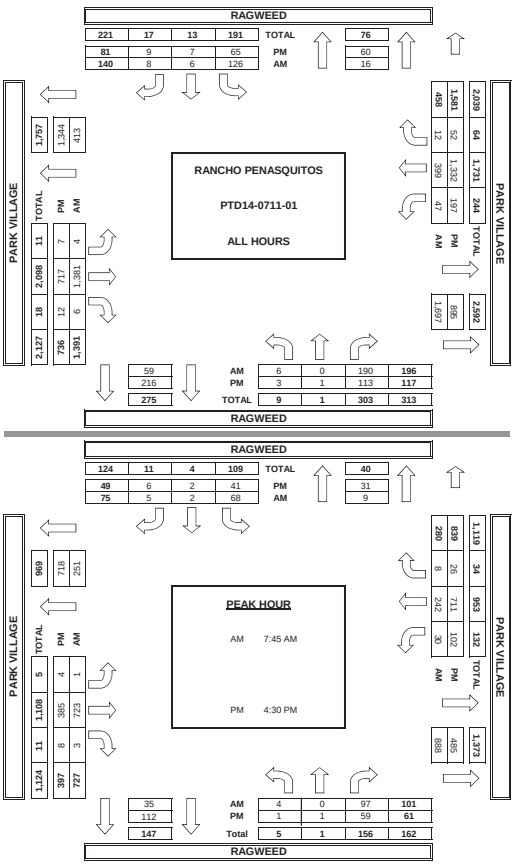
LANES:	NORTHBOUND RAGWEED NL 0	NT 1	NR 0	SOUTHBOUND RAGWEED SL 0	ST 1	SR 0	EASTBOUND PARK VILLAGE EL 1	ET 2	ER 0	WESTBOUND PARK VILLAGE WL 1	WT 2	WR 0	TOTAL	U-TURNS NB X	SB X	EB X	WB X	TTL
AM 7:00 AM	1	0	29	12	0	1	1	143	0	1	28	0	216					0
7:15 AM	1	0	18	13	0	0	1	185	1	4	38	0	261					0
7:30 AM	0	0	23	17	0	1	0	184	0	6	35	1	267				1	1
7:45 AM	3	0	20	16	1	1	1	171	2	3	59	1	278					0
8:00 AM	0	0	17	20	0	1	0	162	0	10	59	1	270					0
8:15 AM	0	0	27	9	0	0	0	192	0	9	61	5	303					0
8:30 AM	1	0	33	23	1	3	0	198	1	8	63	1	332					0
8:45 AM	0	0	23	16	4	1	1	146	2	6	56	3	258					0
VOLUMES	6	0	190	126	6	8	4	1,381	6	47	399	12	2,185	0	0	0	1	1
APPROACH %	3%	0%	97%	90%	4%	6%	0%	99%	0%	10%	87%	3%						
APP/DEPART	196	/	16	140	/	59	1,391	/	1,697	458	/	413	0					
BEGIN PEAK HR	7:45 AM																	
VOLUMES	4	0	97	68	2	5	1	723	3	30	242	8	1,183					
APPROACH %	4%	0%	96%	91%	3%	7%	0%	99%	0%	11%	86%	3%						
PEAK HR FACTOR		0.743			0.694			0.913			0.933		0.891					
APP/DEPART	101	/	9	75	/	35	727	/	888	280	/	251	0					
PM 4:00 PM	0	0	15	4	2	0	0	94	1	17	154	5	292					0
4:15 PM	0	0	15	6	0	1	1	82	0	21	131	8	265					0
4:30 PM	0	0	11	10	0	0	1	93	2	20	139	6	282					0
4:45 PM	1	1	15	11	2	1	1	91	1	33	178	6	341				1	1
5:00 PM	0	0	23	14	0	1	2	100	2	28	189	7	366			1		1
5:15 PM	0	0	10	6	0	4	0	101	3	21	205	7	357				1	1
5:30 PM	1	0	9	6	1	1	1	70	0	17	125	6	237					0
5:45 PM	1	0	15	8	2	1	1	86	3	40	211	7	375					0
VOLUMES	3	1	113	65	7	9	7	717	12	197	1,332	52	2,515	0	0	1	2	3
APPROACH %	3%	1%	97%	80%	9%	11%	1%	97%	2%	12%	84%	3%						
APP/DEPART	117	/	60	81	/	216	736	/	895	1,581	/	1,344	0					
BEGIN PEAK HR	4:30 PM																	
VOLUMES	1	1	59	41	2	6	4	385	8	102	711	26	1,346					
APPROACH %	2%	2%	97%	84%	4%	12%	1%	97%	2%	12%	85%	3%						
PEAK HR FACTOR		0.663			0.817			0.954			0.900		0.919					
APP/DEPART	61	/	31	49	/	112	397	/	485	839	/	718	0					



	PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	PEDESTRIAN ACTIVATIONS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	BICYCLE CROSSINGS NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

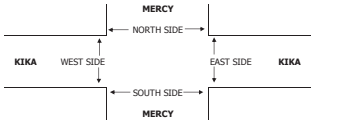
DATE: THURSDAY

LOCATION: MIRA MESA
NORTH & SOUTH: MERCY
EAST & WEST: KIKA

PROJECT #: PTD13-1004-01
LOCATION #: 19
CONTROL: SIGNAL

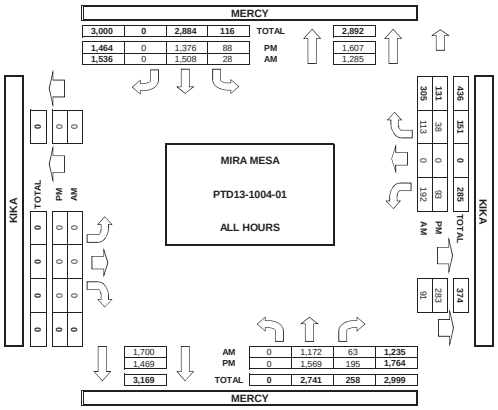
NOTES:

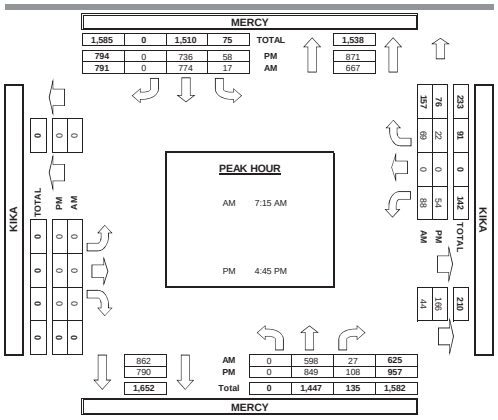
LANES:	NORTHBOUND MERCY NL X	NT 2	NR 0	SOUTHBOUND MERCY SL 1	ST 2	SR X	EASTBOUND KIKA EL X	ET X	ER X	WESTBOUND KIKA WL 1	WT X	WR 1	TOTAL	U-TURNS NB X	SB X	EB X	WB X	TTL
AM 7:00 AM		129	2	2	175					27		17	352					0
7:15 AM		134	10	5	187					25		24	385					0
7:30 AM		158	6	7	212					22		19	424					0
7:45 AM		155	3	1	161					25		16	361					0
8:00 AM		151	8	4	214					16		10	403					0
8:15 AM		130	12	2	189					37		7	377					0
8:30 AM		143	12	4	221					20		13	413					0
8:45 AM		172	10	3	149					20		7	361					0
VOLUMES	0	1,172	63	28	1,508	0	0	0	0	192	0	113	3,076	0	0	0	0	0
APPROACH %	0%	95%	5%	2%	98%	0%	0%	0%	0%	63%	0%	37%						
APP/DEPART	1,235	/	1,285	1,536	/	1,700	0	/	91	305	/	0	0					
BEGIN PEAK HR	7:15 AM																	
VOLUMES	0	598	27	17	774	0	0	0	0	88	0	69	1,573					
APPROACH %	0%	96%	4%	2%	98%	0%	0%	0%	0%	56%	0%	44%						
PEAK HR FACTOR		0.953			0.903			0.000			0.801		0.927					
APP/DEPART	625	/	667	791	/	862	0	/	44	157	/	0	0					
PM 4:00 PM		158	18	3	127					10		2	318					0
4:15 PM		170	20	7	184					8		4	393					0
4:30 PM		199	21	8	160					9		3	400					0
4:45 PM		225	25	15	150					11		6	432					0
5:00 PM		221	24	13	196					14		5	473					0
5:15 PM		192	26	16	189					9		5	437					0
5:30 PM		211	33	14	201					20		6	485					0
5:45 PM		193	28	12	169					12		7	421					0
VOLUMES	0	1,569	195	88	1,376	0	0	0	0	93	0	38	3,359	0	0	0	0	0
APPROACH %	0%	89%	11%	6%	94%	0%	0%	0%	0%	71%	0%	29%						
APP/DEPART	1,764	/	1,607	1,464	/	1,469	0	/	283	131	/	0	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	0	849	108	58	736	0	0	0	0	54	0	22	1,827					
APPROACH %	0%	89%	11%	7%	93%	0%	0%	0%	0%	71%	0%	29%						
PEAK HR FACTOR		0.957			0.923			0.000			0.731		0.942					
APP/DEPART	957	/	871	794	/	790	0	/	166	76	/	0	0					



	PEDESTRIAN CROSSINGS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	PEDESTRIAN ACTIVATIONS N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	BICYCLE CROSSINGS NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM				2	2					0					0
7:45 AM		1			1					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM	1			1	2					0					0
TOTAL	1	1	0	3	5	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM		1			1					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



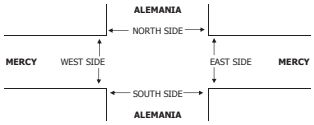


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 10/3/13 THURSDAY
LOCATION: MIRA MESA
NORTH & SOUTH: ALEMANIA
EAST & WEST: MERCY
PROJECT #: PTD13-1004-01
LOCATION #: 20
CONTROL: SIGNAL

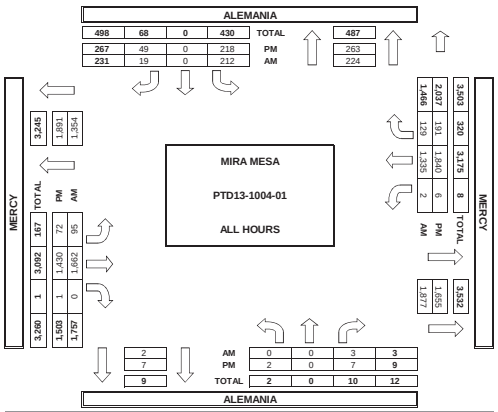
NOTES:

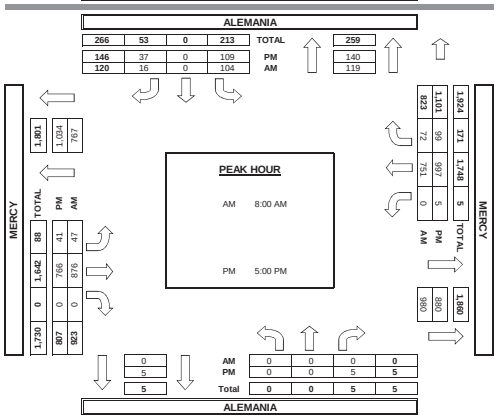
		NORTHBOUND ALEMANIA			SOUTHBOUND ALEMANIA			EASTBOUND MERCY			WESTBOUND MERCY				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 1	ST 0	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	0	0	2	31	0	1	15	183	0	1	151	9	393		5			5
	7:15 AM	0	0	0	25	0	0	7	197	0	0	132	13	374		1			1
	7:30 AM	0	0	1	23	0	0	17	219	0	1	163	14	438					0
	7:45 AM	0	0	0	29	0	2	9	187	0	0	138	21	386		1			1
	8:00 AM	0	0	0	28	0	1	11	235	0	0	147	17	439		2			2
	8:15 AM	0	0	0	23	0	2	9	226	0	0	141	18	419		2			2
	8:30 AM	0	0	0	32	0	5	17	234	0	0	222	17	527		3			3
	8:45 AM	0	0	0	21	0	8	10	181	0	0	241	20	481					0
	VOLUMES	0	0	3	212	0	19	95	1,662	0	2	1,335	129	3,457	0	14	0	0	14
	APPROACH %	0%	0%	100%	92%	0%	8%	5%	95%	0%	0%	91%	9%						
	APP/DEPART	3	/	224	231	/	2	1,757	/	1,877	1,466	/	1,354	0					
	BEGIN PEAK HR	8:00 AM																	
	VOLUMES	0	0	0	104	0	16	47	876	0	0	751	72	1,866					
	APPROACH %	0%	0%	0%	87%	0%	13%	5%	95%	0%	0%	91%	9%						
	PEAK HR FACTOR	0.000			0.811			0.919			0.788			0.885					
	APP/DEPART	0	/	119	120	/	0	923	/	980	823	/	767	0					
PM	4:00 PM	1	0	1	35	0	4	8	147	0	0	229	27	452		2			2
	4:15 PM	0	0	0	17	0	1	4	151	1	0	171	18	363		1			1
	4:30 PM	1	0	0	24	0	4	10	188	0	0	218	22	467		2			2
	4:45 PM	0	0	1	33	0	3	9	178	0	1	225	25	475		3			3
	5:00 PM	0	0	1	30	0	11	13	203	0	1	263	30	552		2			2
	5:15 PM	0	0	4	28	0	9	10	181	0	4	268	21	525					0
	5:30 PM	0	0	0	30	0	8	8	192	0	0	226	29	493		1			1
	5:45 PM	0	0	0	21	0	9	10	190	0	0	240	19	489		3			3
	VOLUMES	2	0	7	218	0	49	72	1,430	1	6	1,840	191	3,816	0	14	0	0	14
	APPROACH %	22%	0%	78%	82%	0%	18%	5%	95%	0%	0%	90%	9%						
	APP/DEPART	9	/	263	267	/	7	1,503	/	1,655	2,037	/	1,891	0					
	BEGIN PEAK HR	5:00 PM																	
	VOLUMES	0	0	5	109	0	37	41	766	0	5	997	99	2,059					
	APPROACH %	0%	0%	100%	75%	0%	25%	5%	95%	0%	0%	91%	9%						
	PEAK HR FACTOR	0.313			0.890			0.934			0.936			0.933					
	APP/DEPART	5	/	140	146	/	5	807	/	880	1,101	/	1,034	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM	1			1	2					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS



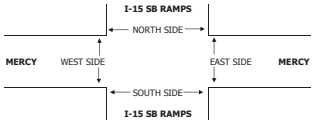


INTERSECTION TURNING MOVEMENT COUNTS
PREPARED BY: PACIFIC TECHNICAL DATA

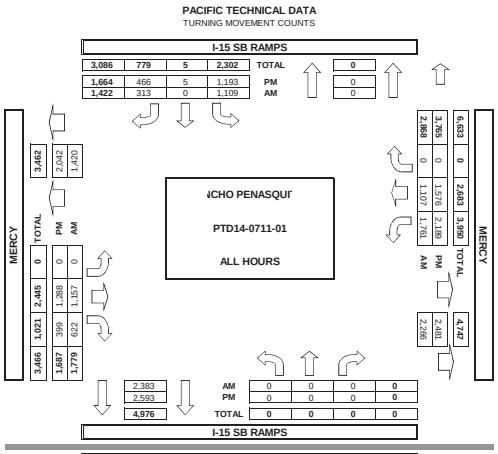
DATE: 7/9/14 WEDNESDAY
LOCATION: RANCHO PENASQUITOS
NORTH & SOUTH: I-15 SB RAMPS
EAST & WEST: MERCY
PROJECT #: PTD14-0711-01
LOCATION #: 16
CONTROL: SIGNAL

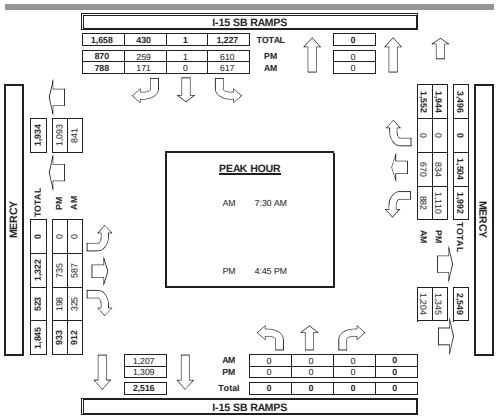
NOTES:

		NORTHBOUND I-15 SB RAMPS			SOUTHBOUND I-15 SB RAMPS			EASTBOUND MERCY			WESTBOUND MERCY				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 1.3	ST 0.3	SR 1.3	EL X	ET 2.5	ER 1.5	WL 2	WT 2	WR X	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM				100	0	23		137	70	206	73		609				1	1
	7:15 AM				119	0	25		126	83	243	101		697					0
	7:30 AM				225	0	75		152	88	199	266		1,005					0
	7:45 AM				127	0	34		161	79	219	126		746					0
	8:00 AM				125	0	31		132	85	231	160		764					0
	8:15 AM				140	0	31		142	73	233	118		737					0
	8:30 AM				125	0	48		125	63	222	120		703					0
	8:45 AM				148	0	46		182	81	208	143		808					0
	VOLUMES	0	0	0	1,109	0	313	0	1,157	622	1,761	1,107	0	6,069	0	0	0	1	1
	APPROACH %	0%	0%	0%	78%	0%	22%	0%	65%	35%	61%	39%	0%						
	APP/DEPART	0	/	0	1,422	/	2,383	1,779	/	2,266	2,868	/	1,420	0					
	BEGIN PEAK HR	7:30 AM																	
	VOLUMES	0	0	0	617	0	171	0	587	325	882	670	0	3,252					
	APPROACH %	0%	0%	0%	78%	0%	22%	0%	64%	36%	57%	43%	0%						
	PEAK HR FACTOR	0.000			0.657			0.950			0.834			0.809					
	APP/DEPART	0	/	0	788	/	1,207	912	/	1,204	1,552	/	841	0					
PM	4:00 PM				132	4	46		131	54	319	172		858					0
	4:15 PM				148	0	52		125	38	302	184		849					0
	4:30 PM				146	0	54		133	57	220	201		811					0
	4:45 PM				143	0	63		183	50	307	222		968					0
	5:00 PM				156	0	60		145	46	297	212		916					0
	5:15 PM				147	1	73		182	48	296	203		950					0
	5:30 PM				164	0	63		225	54	210	197		913					0
	5:45 PM				157	0	55		164	52	238	185		851					0
	VOLUMES	0	0	0	1,193	5	466	0	1,288	399	2,189	1,576	0	7,116	0	0	0	0	0
	APPROACH %	0%	0%	0%	72%	0%	28%	0%	76%	24%	58%	42%	0%						
	APP/DEPART	0	/	0	1,664	/	2,593	1,687	/	2,481	3,765	/	2,042	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	0	0	0	610	1	259	0	735	198	1,110	834	0	3,747					
	APPROACH %	0%	0%	0%	70%	0%	30%	0%	79%	21%	57%	43%	0%						
	PEAK HR FACTOR	0.000			0.958			0.836			0.919			0.968					
	APP/DEPART	0	/	0	870	/	1,309	933	/	1,345	1,944	/	1,093	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





INTERSECTION TURNING MOVEMENT COUNTS

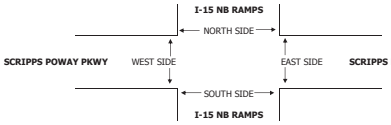
PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:		PROJECT #:	
10/3/13	NORTH & SOUTH:	MIRA MESA	LOCATION #:	PTD13-1004-01
THURSDAY	EAST & WEST:	I-15 NB RAMPS	CONTROL:	22
		SCRIPPS POWAY PKWY		SIGNAL

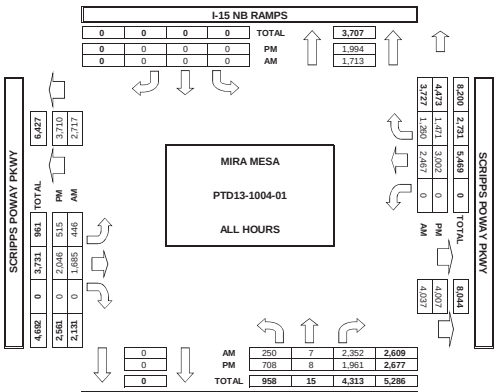
NOTES:

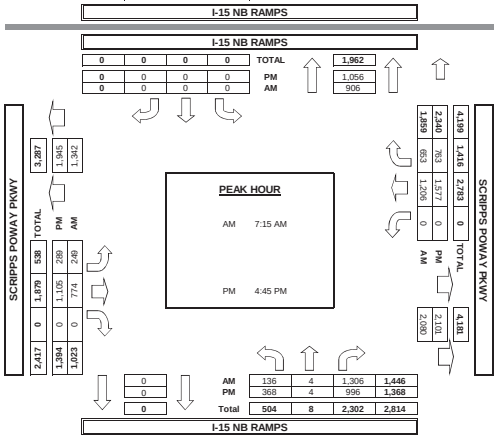
AM / PM / MD / OTHER / OTHER — ◄ W — ▲ N / S ▼ — E ►

		NORTHBOUND (I-15 NB RAMPS)			SOUTHBOUND (I-15 NB RAMPS)			EASTBOUND (SCRIPPS POWAY PKWY)			WESTBOUND (SCRIPPS POWAY PKWY)				U-TURNS				
	LANES:	NL 1.5	NT 0.5	NR 2	SL X	ST X	SR X	EL 2	ET 2	ER X	WL X	WT 2	WR 1	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM	21	0	265				40	190			318	174	1,008					0
	7:15 AM	36	2	319				49	168			281	169	1,024					0
	7:30 AM	33	0	352				75	209			314	160	1,143					0
	7:45 AM	33	2	348				69	198			316	170	1,136					0
	8:00 AM	34	0	287				56	199			295	154	1,025					0
	8:15 AM	33	1	260				56	230			292	131	1,003					0
	8:30 AM	30	2	260				50	238			307	155	1,042					0
	8:45 AM	30	0	261				51	253			344	147	1,086					0
	VOLUMES	250	7	2,352	0	0	0	446	1,685	0	0	2,467	1,260	8,467	0	0	0	0	0
	APPROACH %	10%	0%	90%	0%	0%	0%	21%	79%	0%	0%	66%	34%						
	APP/DEPART	2,609	/	1,713	0	/	0	2,131	/	4,037	3,727	/	2,717	0					
	BEGIN PEAK HR	7:15 AM																	
	VOLUMES	136	4	1,306	0	0	0	249	774	0	0	1,206	653	4,328					
	APPROACH %	9%	0%	90%	0%	0%	0%	24%	76%	0%	0%	65%	35%						
	PEAK HR FACTOR		0.939			0.000			0.901			0.956		0.947					
	APP/DEPART	1,446	/	906	0	/	0	1,023	/	2,080	1,859	/	1,342	0					
PM	4:00 PM	89	1	248				66	198			334	193	1,129					0
	4:15 PM	83	0	230				41	220			387	177	1,138	1		1		2
	4:30 PM	67	1	221				62	237			383	169	1,140					0
	4:45 PM	100	0	241				62	256			413	181	1,253					0
	5:00 PM	84	2	250				56	282			420	188	1,282					0
	5:15 PM	102	2	263				77	281			360	186	1,271			1		1
	5:30 PM	82	0	242				94	286			384	208	1,296					0
	5:45 PM	101	2	266				57	286			321	169	1,202					0
	VOLUMES	708	8	1,961	0	0	0	515	2,046	0	0	3,002	1,471	9,711	1	0	2	0	3
	APPROACH %	26%	0%	73%	0%	0%	0%	20%	80%	0%	0%	67%	33%						
	APP/DEPART	2,677	/	1,994	0	/	0	2,561	/	4,007	4,473	/	3,710	0					
	BEGIN PEAK HR	4:45 PM																	
	VOLUMES	368	4	996	0	0	0	289	1,105	0	0	1,577	763	5,102					
	APPROACH %	27%	0%	73%	0%	0%	0%	21%	79%	0%	0%	67%	33%						
	PEAK HR FACTOR		0.932			0.000			0.917			0.962		0.984					
	APP/DEPART	1,368	/	1,056	0	/	0	1,394	/	2,101	2,340	/	1,945	0					

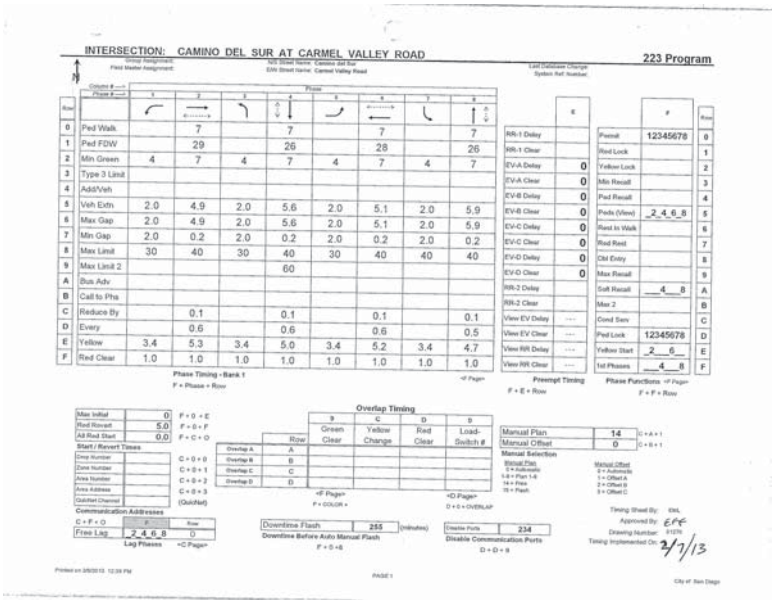


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0	1		2		3
	8:00 AM					0					0			2		2
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	1	0	4	0	5
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM			1		1					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0





Camino Del Sur



INTERSECTION: CAMINO DEL SUR AT CARMEL VALLEY ROAD — 223 Program

Phase Timing - Bank 1 (F + Phase + Row)

Row	Ped Walk	Ped FDW	Min Green	Type 3 Limit	Add/Veh	Veh Extn	Max Gap	Min Gap	Max Limit	Max Limit 2	Bus Adv	Call to Phs	Reduce By	Every	Yellow	Red Clear
0		7														
1		29														
2		26														
3	4	7	4	7	4	7	4	7								
4																
5	2.0	4.9	2.0	5.6	2.0	5.1	2.0	5.9								
6	2.0	4.9	2.0	5.6	2.0	5.1	2.0	5.9								
7	2.0	0.2	2.0	0.2	2.0	0.2	2.0	0.2								
8	30	40	30	40	30	40	40	40								
9				60												
A																
B																
C		0.1		0.1		0.1		0.1								
D		0.6		0.6		0.6		0.5								
E	3.4	5.3	3.4	5.0	3.4	5.2	3.4	4.7								
F	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0								

Preempt Timing (F + E + Row)

Row		E
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	0
5	EV-B Clear	0
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	0
9	EV-D Clear	0
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Phase Functions (F + F + Row)

Row		F
0	Permit	12345678
1	Red Lock	
2	Yellow Lock	
3	Min Recall	
4	Ped Recall	
5	Peds (View)	_2_4_6_8
6	Rest In Walk	
7	Red Rest	
8	Old Entry	
9	Max Recall	
A	Soft Recall	__4__8
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	_2__6_
F	1st Phases	__4__8

Max Initial	0	F + 0 + E
Red Rovart	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Grop Number		C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
QuikNet Channel		(QuikNet)

Communication Addresses (C + F + O)

	F	Row
Free Lag	_2_4_6_8	D

Lag Phases <C Page>

Overlap Timing

Row	9 Green Clear	C Yellow Change	D Red Clear	9 Load-Switch #
Overlap A	A			
Overlap B	B			
Overlap C	C			
Overlap D	D			

<F Page> F + COLOR + ; <D Page> D + 0 + OVERLAP

Downtime Flash: 255 (minutes) — Downtime Before Auto Manual Flash (F + 0 + 6)

Disable Ports: 234 — Disable Communication Ports (D + D + 9)

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

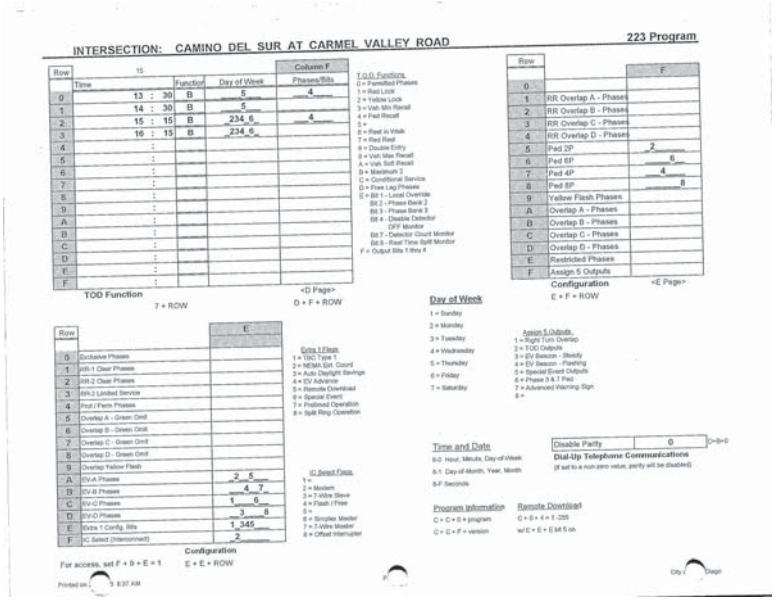
Manual Selection

Manual Plan: 0 = Automatic; 1-6 = Plan 1-6; 14 = Free; 15 = Flash.

Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C.

Timing Sheet By: EML
Approved By: EPF
Drawing Number: 5127b
Timing Implemented On: 2/7/13

Printed on 3/8/2013 12:39 PM — PAGE 1 — City of San Diego



INTERSECTION: CAMINO DEL SUR AT CARMEL VALLEY ROAD — 223 Program

TOD Function (7 + ROW; <D Page> D + F + ROW)

Row	Time	Function	Day of Week	Column F: Phases/Bits
0	13 : 30	B	_5_	__4__
1	14 : 30	B	_5_	
2	15 : 15	B	_234_6_	__4__
3	16 : 15	B	_234_6_	
4	:			
5	:			
6	:			
7	:			
8	:			
9	:			
A	:			
B	:			
C	:			
D	:			
E	:			
F	:			

TOD Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest in Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Configuration (E + F + ROW; <E Page>)

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P: _2_
6	Ped 6P: __6__
7	Ped 4P: __4__
8	Ped 8P: ___8___
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Configuration (E + E + ROW)

Row	E
0	Exclusive Phases
1	WR-1 Clear Phases
2	WR-2 Clear Phases
3	RR-2 Limited Service
4	Ped / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases: _2_5_
B	EV-B Phases: _4_7_
C	EV-C Phases: 1___6___
D	EV-D Phases: ___3___8
E	Extra 1 Config. Bits: 1_345_
F	IC Select (Interconnect): _2_

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ped. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Time and Date
b-D Hour, Minute, Day-of-Week
b-1 Day-of-Month, Year, Month
b-F Seconds

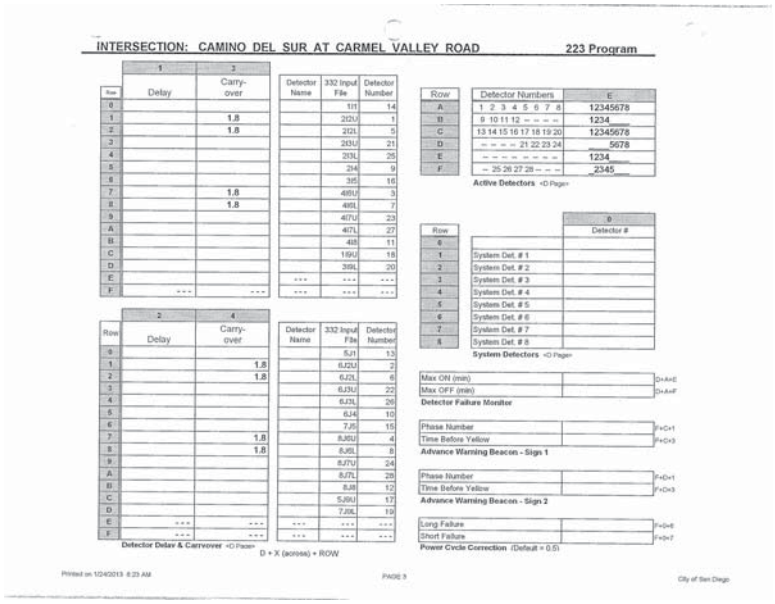
Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-255
w/ E + E = E bit 5 on

Disable Parity: 0 (D+B+0)
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

For access, set F + 0 + E = 1

Printed on 1/24/2013 8:37 AM — City of San Diego



INTERSECTION: CAMINO DEL SUR AT CARMEL VALLEY ROAD — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1,8
2		1,8
3		
4		
5		
6		
7		1,8
8		1,8
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
	---	---
	---	---

Row	2 Delay	4 Carry-over
0		
1		1,8
2		1,8
3		
4		
5		
6		
7		1,8
8		1,8
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover (<D Page>; D + X (across) + ROW)

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	___5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min): (D+A+E)
Max OFF (min): (D+A+F)
Detector Failure Monitor

Phase Number: (F+C+1)
Time Before Yellow: (F+C+3)
Advance Warning Beacon - Sign 1

Phase Number: (F+D+1)
Time Before Yellow: (F+D+3)
Advance Warning Beacon - Sign 2

Long Failure: (F+C+6)
Short Failure: (F+D+7)
Power Cycle Correction (Default = 0.5)

Printed on 1/24/2013 8:23 AM — PAGE 3 — City of San Diego

Camino Del Sur

INTERSECTION: ~~Camino Ruiz~~ & Watson Ranch Rd — 22 rogram

Group Assignment: MO #10837 | Field Master Assignment: None

N/S Street Name: Camino Ruiz | E/W Street Name: Watson Ranch Rd

Last Change: | Timing Sheet By: JMV | Approved By:

Drawing Number: 9330-3-0 | System Pat. Number: | Timing implemented on: 8/23/02

#1

Row	Phase # --->	1	2	3	4	5	6	7	8
		↙	⇢ ↓			↻	←		↑ ↓
0	Ped Walk		7						7
1	Ped FDW		10						24
2	Min Green	4	10			4	10		4
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	5.4			2.5 2.0	5.4		2.0
6	Max Gap	2.0	5.4			2.5 2.0	5.4		2.0
7	Min Gap	2.0	0.2			2.5 2.0	0.2		2.0
8	Max Limit	30 ~~40~~ 40	~~60~~ 60			~~50~~ 50 ~~30~~ 30	~~40~~ 40 ~~60~~ 60		~~50~~ 50 ~~40~~ 40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.6				0.6		
E	Yellow	~~3.5~~ 3.0	5.0			~~3.5~~ 3.0	5.0		~~3.5~~ 3.0
F	Red Clear	1.0	1.0			1.0	1.0		1.0

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing — F + E + Row

Row	F
Permit	12 56 8
Red Lock	
Yellow Lock	
Min Recall	~~2~~ 6
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	
Soft Recall	~~X~~ X
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	2 6
1st Phases	8

Phase Functions — F + Row — <F Page>

EFF 8/16/04

DWH 7/21/03

DWH 8/31/04

Max Initial	0
Red Revert	5.0
All Red Start	0.0

Start / Revert Times — F + C + O

Drop Number	0
Zone Number	0
Area Number	0
Area Address	0
Ducknet Channel	

C + 0 + 0 / C + 0 + 1 / C + 0 + 2 / C + 0 + 3 (DuckNet)

Row	9 Green Clear	C Yellow Change	D Red Clear	9 Load-Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing — <F Page> — F + COLOR + — <D Page> — D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + 1 + 1 / C + 0 + 1

Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 14 = Free; 15 = Flash

Manual Offset: F = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

LWH 1/14/04 — LWH 9/14/04

Communication Addresses — C + F + O

	F	Row
Free Lag	2 6 8	0

Lag Phases — <C Page>

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash — F + 0 + 8

Disable Ports	234

Disable Communications Ports — D + D + 9

(1)

INTERSECTION: Camino Ruiz & Watson Ranch Rd — 223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector (Diff Monitor)
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	
7	Ped 4P	
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Row	E
0 Exclusive Phases	
1 RR-1 Clear Phases	
2 RR-2 Clear Phases	
3 RR-2 Limited Service	
4 Prot / Perm Phases	
5 Overlap A - Green Omit	
6 Overlap B - Green Omit	
7 Overlap C - Green Omit	
8 Overlap D - Green Omit	
9 Overlap Yellow Flash	
A EV-A Phases	2 5
B EV-B Phases	
C EV-C Phases	1 6
D EV-D Phases	8
E Extra 1 Config. Bits	1 345
F IC Select (Interconnect)	2

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Program Information — C + C + 0 = program — C + C + F = version

Remote Download — C + 0 + 4 + 1 -255 — w/ E + E = Set 5 on

Disable Parity	0

D+8+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Camino Del Sur

INTERSECTION: ~~Camino Ruiz~~ & Watson Ranch Rd — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.0
2		1.0
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E		---
F	---	---

Row	2 Delay	4 Carry-over
0		
1		1.0
2		1.0
3		
4		
5		
6		
7		
8		
9		
A	10.0	
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	1(1	14
	2(2U	1
	2(2L	5
	2(3U	21
	2(3L	25
	2(4	9
	3(5	16
	4(6U	3
	4(6L	7
	4(7U	23
	4(7L	27
	4(8	11
	1(9U	18
	3(9L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	0
Max OFF (min)	60

D+A=E / D+A=F

Detector Failure Monitor

Phase Number	0
Time Before Yellow	0.0

F+D=1 / F+D=3

Advance Warning Beacon - Sign 1

Phase Number	0
Time Before Yellow	0.0

F+D=1 / F+D=3

Advance Warning Beacon - Sign 2

Long Failure	0.5
Short Failure	0.5

F+D=6 / F+D=7

Power Cycle Correction (Default = 0.5)
(These parameters are NOT downloaded.)

INTERSECTION: CAM DEL SUR @ WATSON RAN — Or — 223 Proc

DWH 8/31/04

Coordination Timing By: WXH
Implemented On: 1/14/2004

FOR OBSERVATION ONLY

Master Plan	C + A + 3
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 0
Ring B Cycle	C + D + 0
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Plan Name --->	1	2	3	4	5	6	7	8	9
0	Cycle Length		150							
1	Phase 1 - ForceOff		78							
2	Phase 2 - ForceOff		0							
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff									
5	Phase 5 - ForceOff		95 26							
6	Phase 6 - ForceOff		0							
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff		38							
9	Ring Offset									
A	Offset A		145							
B	Offset B									
C	Offset C									
D	Permissive		15							
E	Hold Release		255							
F	Ped Shift		0							

Coordination — C + Plan + ROW — <C Page>

Row	Time	Plan	Offset	Day of Week
0	07 : 30	2	A	23456
1	08 : 30	E	A	1234567
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<9 Key with C+D+9+1>

Plan Select
1 thru 8 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row	8	Row	F
		0	Free Lag
Plan 1		1	Plan 1 - Lag
Plan 2	2 6	2	Plan 2 - Lag 2 6 8
Plan 3		3	Plan 3 - Lag
Plan 4		4	Plan 4 - Lag
Plan 5		5	Plan 5 - Lag
Plan 6		6	Plan 6 - Lag
Plan 7		7	Plan 7 - Lag
Plan 8		8	Plan 8 - Lag
Plan 9		9	Plan 9 - Lag
Coord Ped*		A	Coord Max * X X
NEMA Hold		B	Coord Lag *
		C	
		D	
		E	
		F	

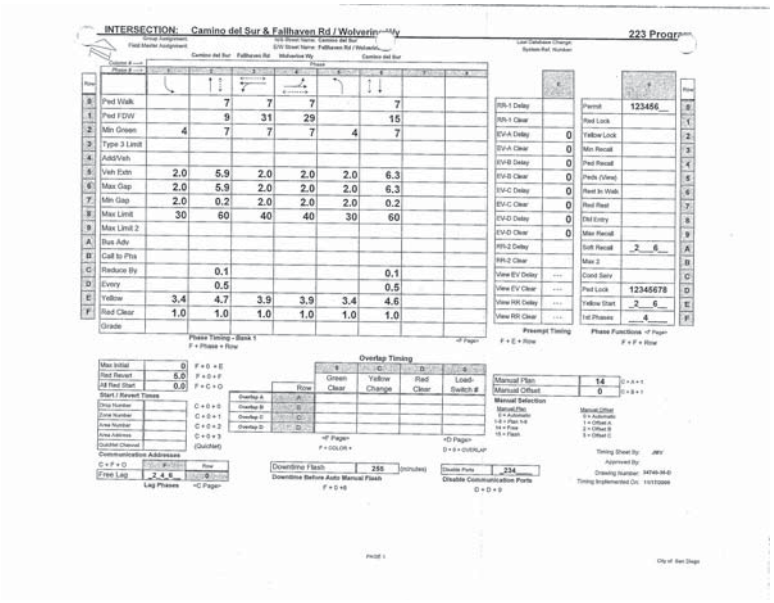
Sync Phases — C + E + FUNCTION #

Lag Phases — <C Page> — C + F + FUNCTION #

Transition Type	0

TSC Transition
C + D + 0

Transition Type
0 = Shortway
Rem-zero = Longtwo



INTERSECTION: Camino del Sur & Fallhaven Rd / Wolverine Wy — 223 Program

Phase Timing - Bank 1 (F + Phase + Row)

Row	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
0								
1	Ped Walk		7	7	7		7	
2	Ped FDW		9	31	29		15	
3	Min Green	4	7	7	7	4	7	
4	Type 3 Limit							
5	Add/Veh							
6	Veh Extn	2.0	5.9	2.0	2.0	2.0	6.3	
7	Max Gap	2.0	5.9	2.0	2.0	2.0	6.3	
8	Min Gap	2.0	0.2	2.0	2.0	2.0	0.2	
9	Max Limit	30	60	40	40	30	60	
A	Max Limit 2							
B	Bus Adv							
C	Call to Pts							
D	Reduce By		0.1				0.1	
E	Every		0.5				0.5	
F	Yellow	3.4	4.7	3.9	3.9	3.4	4.6	
	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	
	Grade							

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing — F + E + Row

Permit	123456
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	
Max Recall	
Soft Recall	2 6
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	2 6
1st Phases	4

Phase Functions — <F Page> — F + F + Row

Row	
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

Max Initial	0 (F + 0 + E)
Red Revert	5.0 (F + 0 + F)
Alt Red Start	0.0 (F + C + O)

Start / Revert Times

Drop Number	C + 0 + 0
Zone Number	C + 0 + 1
Area Number	C + 0 + 2
Area Address	C + 0 + 3
Cold/Hot Channel	(Cold/Hot)

Communication Addresses — C + F + O

F	Row
Free Lag	2 4 6 8 / 0

Lag Phases — <C Page>

Overlap Timing

Row	A Green Clear	B Yellow Change	C Red Clear	D Load-Switch #
Overlap A	A			
Overlap B	B			
Overlap C	C			
Overlap D	D			

<F Page> — F + COLOR + — <D Page> — D + 0 + OVERLAP

Manual Plan	14 (C + A + 1)
Manual Offset	0 (C + B + 1)

Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 10 = Free; 15 = Flash

Manual Offset: 1 = Automatic; 2 = Offset A; 3 = Offset B; 5 = Offset C

Timing Sheet By: JMV
Approved By:
Drawing Number: 34749-94-0
Timing Implemented On: 11/17/2006

Downtime Flash	255 (minutes)

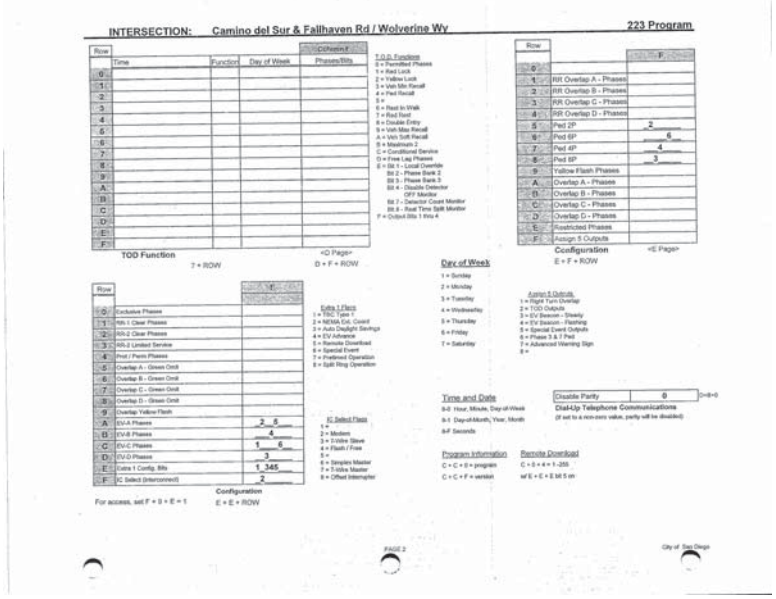
Downtime Before Auto Manual Flash — F + 0 + 8

Disable Ports	234

Disable Communication Ports — D + D + 9

PAGE 1

City of San Diego



INTERSECTION: Camino del Sur & Fallhaven Rd / Wolverine Wy — 223 Program

Row	Time	Function	Day of Week	C (Week) F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phase
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Double Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	3
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row		E
G	Exclusive Phases	
H	Veh-1 Clear Phases	
I	Veh-2 Clear Phases	
J	Veh-2 Limited Service	
K	Prot / Perm Phases	
L	Overlap A - Green Cmd	
M	Overlap B - Green Cmd	
N	Overlap C - Green Cmd	
O	Overlap D - Green Cmd	
P	Overlap Yellow Flash	
Q	EV-A Phases	2 6
R	EV-B Phases	4
S	EV-C Phases	1 5
T	EV-D Phases	3
U	Extra 1 Config. Bits	1 345
V	IC Select (Interconnect)	2

Configuration — E + E + ROW

For access, set F + 0 + E = 1

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Cnt. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preferred Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 3-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = T-Wire Master
8 = Offset Interrupter

Time and Date
b-0 Hour, Minute, Day-of-Week
b-1 Day-of-Month, Year, Month
b-F Seconds

Program Information
C + C + E = program
C + C + F = version

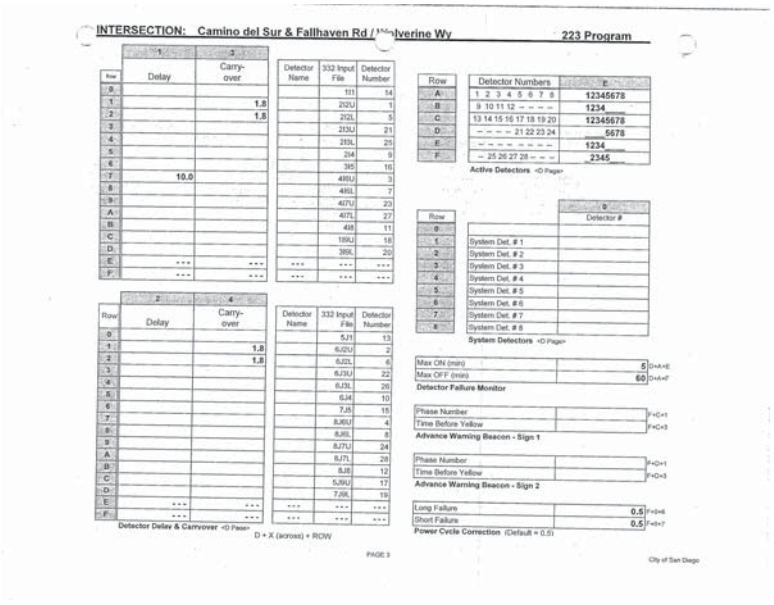
Remote Download
C + 0 + 4 = 1-255
wE + E + E bit 5 on

Disable Parity	0 (0=8-0)

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

PAGE 2

City of San Diego



INTERSECTION: Camino del Sur & Fallhaven Rd / Wolverine Wy — 223 Program

Row	1 Delay	1 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	11/1	14
	212U	1
	212L	5
	213U	21
	213L	25
	214	9
	315	16
	406U	3
	406L	7
	407U	23
	407L	27
	408	11
	116U	18
	316L	20
---	---	---
---	---	---

Row	2 Delay	2 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J6	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J6U	17
	7J6L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5 (D+A+E)
Max OFF (min)	60 (D+A+F)

Detector Failure Monitor

Phase Number	(F+C+1)
Time Before Yellow	(F+C+3)

Advance Warning Beacon - Sign 1

Phase Number	(F+D+1)
Time Before Yellow	(F+D+3)

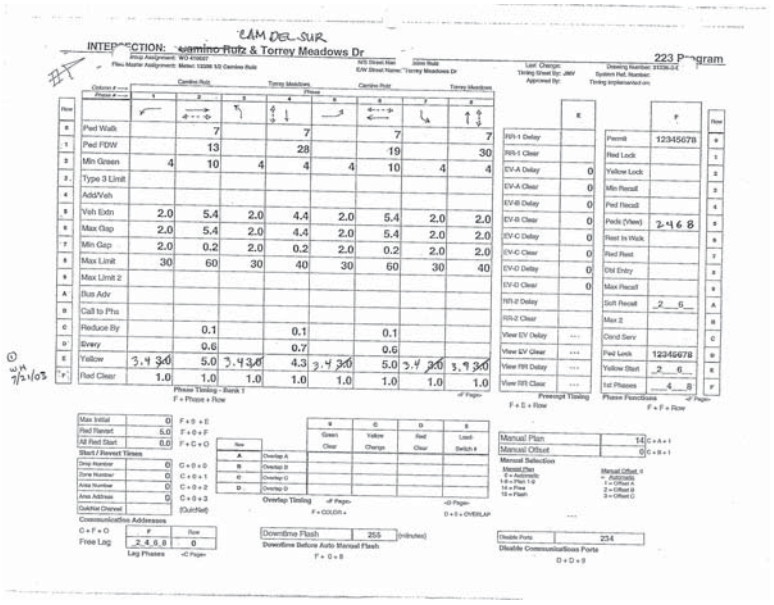
Advance Warning Beacon - Sign 2

Long Failure	0.5 (F+0+6)
Short Failure	0.5 (F+0+7)

Power Cycle Correction (Default = 0.5)

PAGE 3

City of San Diego



CAM DEL SUR

INTERSECTION: ~~Camino Ruiz~~ & Torrey Meadows Dr — 223 Program

Drop Assignment: W3 410007
Flex Master Assignment: Motor: 13206 1/2 Camino Ruiz
N/S Street Name: Camino Ruiz
E/W Street Name: Torrey Meadows Dr
Last Change: Timing Sheet By: JMV Approved By:
Drawing Number: 31036-D-2
System Ref. Number:
Timing Implemented on:

Row	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
0								
1	Ped Walk		7	7	7		7	
2	Ped FDW		13	28	19		30	
3	Min Green	4	10	4	4	4	10	4	4
4	Type 3 Limit							
5	Add/Veh							
6	Veh Extn	2.0	5.4	2.0	4.4	2.0	5.4	2.0	2.0
7	Max Gap	2.0	5.4	2.0	4.4	2.0	5.4	2.0	2.0
8	Min Gap	2.0	0.2	2.0	0.2	2.0	0.2	2.0	2.0
9	Max Limit	30	60	30	40	30	60	30	40
A	Max Limit 2								
B	Bus Adv								
C	Call to Phs								
D	Reduce By		0.1		0.1		0.1		
E	Every		0.5		0.7		0.5		
F	Yellow	3.4 ~~3.0~~	5.0	3.4 ~~3.0~~	4.3	3.4 ~~3.0~~	5.0	3.4 ~~3.0~~	3.9 ~~3.0~~
	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing — F + E + Row

Permit	12345678
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	2 4 6 8
Rest In Walk	
Red Rest	
Dbl Entry	
Max Recall	
Soft Recall	2 6
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	2 6
1st Phases	4 8

Phase Functions — <F Page> — F + F + Row

Row	
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

Max Initial	0 (F + 0 + E)
Red Revert	5.0 (F + 0 + F)
Alt Red Start	0.0 (F + C + O)

Start / Revert Times

Drop Number	C + 0 + 0
Zone Number	C + 0 + 1
Area Number	C + 0 + 2
Area Address	C + 0 + 3
Cold/Hot Channel	(Cold/Hot)

Communication Addresses — C + F + O

F	Row
Free Lag	2 4 6 8 / 0

Lag Phases — <C Page>

Overlap Timing

Row	A Green Clear	B Yellow Change	C Red Clear	D Load-Switch #
Overlap A	A			
Overlap B	B			
Overlap C	C			
Overlap D	D			

<F Page> — F + COLOR + — <D Page> — D + 0 + OVERLAP

Manual Plan	14 (C + A + 1)
Manual Offset	0 (C + B + 1)

Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 10 = Free; 15 = Flash

Manual Offset: 1 = Automatic; 2 = Offset A; 3 = Offset B; 5 = Offset C

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash — F + 0 + 8

Disable Ports	234

Disable Communications Ports — D + D + 9

© WM 7/21/03

INTERSECTION: CAM DEL SUR ~~Camino Ruiz~~ & Torrey Meadows Dr — 223 Program

Row	Time	Function	Day of Week	Column F: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 = ROW — <D Page> — D + F = ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Maximize Interval
B = Modified Service
C = Conditional Service
D = Free Leg Phases
E = Bit 1 - Local Override
Bit 2 - Phase Rank 2
Bit 3 - Phase Rank 3
Bit 4 - Disable Detector CPT Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Red Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P — 2
6	Ped 4P — 6
7	Ped 4P — 4
8	Ped 8P — 8
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 8 Outputs

Configuration — <E Page> — E + F = ROW

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-3 Limited Service
4	Pool / Perm Phases
5	Overlap A - Green Cntl
6	Overlap B - Green Cntl
7	Overlap C - Green Cntl
8	Overlap D - Green Cntl
9	Overlap Yellow Flash
A	EV-A Phases — 2 5
B	EV-B Phases — 4 7
C	EV-C Phases — 1 6
D	EV-D Phases — 3 8
E	Extra 1 Config. Bits — 1 345
F	IC Select (Interconnect) — 2

Configuration — For access, set F + 8 + E = 1 — E + C + ROW

Extra 1 Flags
1 = TBC Type 1
0 = NEMA Ext. Coord.
4 = Auto Daylight Savings
5 = Pool Operation
6 = Remote Download
8 = Special Event
7 = Preferred Operation
9 = Split Ring Operation

IC Select Flags
1 =
0 = Modbus
2 = 7-Wire Slave
4 = Flash / Free
8 =
6 = 4-Wire Slave Master
7 = 7-Wire Master
9 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 8 Outputs
1 = High Side Overlap
2 = TOD Output
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
B-0 Hour, Minute, Day-of-Week
B-1 Day-of-Month, Year, Month
B-F Seconds

Disable Parity — 0 — D+5=E
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 6 = program
C + C + F = version

Remote Download
C + D + 6 = 1-555
w/ E + B + E bit 5 on

Printed on 8/30/2004 1:48 PM — PAGE 4 — City of San Diego

INTERSECTION: CAM DEL SUR ~~Camino Ruiz~~ & Torrey Meadows Dr — 223 Program

Row	1 Delay	1 Carry-over	Detector Name	332 Input File	Detector Number
0				1(1)	14
1		1.0		2(2)	1
2		1.0		3(3)	5
3				4(4)	21
4		-		5(5)	25
5				6(6)	9
6		1.0		7(7)	16
7				8(8)	3
8				9(9)	7
9				10(A)	23
A				11(B)	27
B				12(C)	11
C				13(D)	18
D				14(E)	20
E	---	---	---	---	---
F	---	---	---	---	---

Row	2 Delay	2 Carry-over	Detector Name	332 Input File	Detector Number
0				5(1)	13
1		1.0		6(2)	2
2		1.0		6(3)	6
3				6(4)	22
4				6(5)	26
5				6(6)	10
6				7(7)	15
7				6(8)	4
8				6(9)	8
9				6(A)	24
A	10.0			6(B)	28
B				6(C)	12
C				5(D)	17
D				7(E)	19
E	---	---	---	---	---
F	---	---	---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers
A	1 2 3 4 5 6 7 8 — 12345678
B	9 10 11 12 - - - - — 1234
C	13 14 15 16 17 18 19 20 — 12345678
D	- - - - - - 23 22 23 24 — 8678
E	- - - - - - - - - - - - — 1234
F	- - 25 26 27 28 - - - - — 2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1 — 0
2	System Det. # 2 — 0
3	System Det. # 3 — 0
4	System Det. # 4 — 0
5	System Det. # 5 — 0
6	System Det. # 6 — 0
7	System Det. # 7 — 0
8	System Det. # 8 — 0

System Detectors <D Page>

Max CPI (min) — 0 — D+5=E
Max CPF (min) — 60 — D+5=F
Detector Failure Monitor

Phase Number — 0 — F+D=1
Time Before Yellow — 0.0 — F+D=5
Advance Warning Beacon - Sign 1

Phase Number — 0 — F+D=1
Time Before Yellow — 0.0 — F+D=5
Advance Warning Beacon - Sign 2

Long Failure — 0.5 — F+D=6
Short Failure — 0.5 — F+D=7
Power Cycle Correction (Default = 0.5)
(These parameters are NOT downloaded.)

INTERSECTION: CAM DEL SUR @ TORREY MEADOWS Dr — 223 Program 1

Coordination Timing By: WWH
Implemented On: 1/14/2004

FOR OBSERVATION ONLY
Master Plan — C + A + 2
Current Plan — C + A + 3
Next Plan — C + A + 4
T.O.D. Plan — C + A + 5
Master Cycle — C + A + 0
Ring A Cycle — C + B + 0
Ring B Cycle — C + D + 0
Min Cycle — C + A + E
Max Cycle — C + B + E

Row	Plan Name --->	1	2	3	4	5	6	7	8	9
0	Cycle Length	150								
1	Phase 1 - ForceOff	84								
2	Phase 2 - ForceOff	0								
3	Phase 3 - ForceOff	22								
4	Phase 4 - ForceOff	63								
5	Phase 5 - ForceOff	84								
6	Phase 6 - ForceOff	0								
7	Phase 7 - ForceOff	22								
8	Phase 8 - ForceOff	63								
9	Ring Offset									
A	Offset A	28								
B	Offset B									
C	Offset C									
D	Permissive	15								
E	Hold / Release	255								
F	Ped Walk	0								

Coordination — C + Plan + ROW — <C Page>

Row	Time	Plan	Offset	Day of Week
0	07 : 30	2	A	23456
1	08 : 30	E	A	1234567
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination — <9 Key with C+D+9+1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

	0	Row	7
Plan 1		0 Free Leg	
Plan 2	2 6	1 Plan 1 - Lag	
Plan 3		2 Plan 2 - Lag	2 4 6 8
Plan 4		3 Plan 3 - Lag	
Plan 5		4 Plan 4 - Lag	
Plan 6		5 Plan 5 - Lag	
Plan 7		6 Plan 6 - Lag	
Plan 8		7 Plan 7 - Lag	
Plan 9		8 Plan 8 - Lag	
Coord Pwr*		9 Plan 9 - Lag	
NEMA Hold		A Coord Max *	
		B Coord Lag *	
		C	
		D	
		E	
		F	

Sync Phases — C + E + FUNCTION # — Lag Phases — <C Page> — C + F + FUNCTION #

Transition Type — 0
TBC Transition
C + D + D
Transition Type
0 = Shortway
Non-zero = Longtime

Printed on 8/30/2004 1:48 PM — PAGE 4 — City of San Diego

Village

INTERSECTION: Camino Del Sur & Highland Valley Pl — 223 Program

Group Assignment: — NS Street Name: Camino Del Sur — Last Database Change:
Field Master Assignment: — EW Street Name: Highland Valley Pl — System Ref. Number:

Row	Phase ---> 1	2	3	4	5	6	7	8
0	Ped Walk			7		7		
1	Ped FDW			31		19		
2	Min Green	7		4	4	7		
3	Type 3 Limit							
4	AddlVeh							
5	Veh Extn	5.4		2.0	2.0	5.4		
6	Max Gap	5.4		2.0	2.0	5.4		
7	Min Gap	0.2		2.0	2.0	0.2		
8	Max Limit	60		40	30	60		
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By	0.1				0.1		
D	Every	0.6				0.6		
E	Yellow	5.0		3.9	3.4	5.0		
F	Red Clear	1.0		1.0	1.0	1.0		
	Grade							

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

Row		
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	
3	EV-A Clear	
4	EV-B Delay	
5	EV-B Clear	
6	EV-C Delay	
7	EV-C Clear	
8	EV-D Delay	
9	EV-D Clear	
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Preempt Timing — F + E + Row

Row		
0	Permit	2 456
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	Peds (View)	
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	2 6
F	1st Phases	4

Phase Functions <F Page> — F + 2 + Row

Max InStd — 0 — F+9 +5
Red Revert — 5.0 — F+9 +F
All Red Start — 0.0 — F+C +0

Overlap Timing

Row	Green Clear	Yellow Change	Red Clear	Load-Switch #
Overlap A				
Overlap B				
Overlap C				
Overlap D				

<F Page> — F + COLOR +

Start / Rewalt Times

Drop Number		C + D + 0
Zone Number		C + D + 1
Area Address		C + D + 2
Gate/Ref Channel		C + D + 3 (Gold/Ind)

<D Page> — D + 0 + 0 = OVERLAP

Communication Addresses

C + F + 0	Row
Free Lag	
Lag Phases	<C Page>

Downtime Flash — 255 — (minutes)
Downtime Before Auto Manual Flash — F + D +8

Disable Ports — 234
Disable Communication Ports — D + D + 9

Manual Plan — 10 — C + A + 1
Manual Offset — 0 — C + B + 1
Manual Selection
Manual Dial: 0 = Automatic, 1 = Plan 1-8, 16 = Free, 16 = Flash
Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

WM 1/14/04

Timing Sheet By: EPF
Approved By:
Drawing Number:
Timing Implemented On:

Printed on 2/20/2004 8:05 AM — PAGE 1 — City of San Diego

INTERSECTION:

223 Program

Row	Time	Function	Day of Week	Column 1 Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function

7 + ROW

<D Page>

D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Red to Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Coord/Bkend Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P
6	Ped 6P: 6
7	Ped 4P: 4
8	Ped 8P
9	Yellow Flash Phases
A	Overlap A - Phases: 45
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs: 1

Configuration

E + F + ROW

<E Page>

Row	E
0	Exclusive Phases
1	285-1 Clear Phases
2	285-2 Clear Phases
3	992-2 Limited Service
4	Ped / Perm Phases
5	Overlap A - Green Omit: 4
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases: 2 5
B	EV-B Phases: 4
C	EV-C Phases: 6
D	EV-D Phases
E	Extra 1 Config. Bits: 1 345
F	IC Select (Interconnect): 2

Configuration

For access, set F + 9 + E = 1

E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity: 0 (D+0+3)

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-255
w/ E + E + E bit 5 on

Printed on 2/20/2004 8:06 AM

PAGE 2

City of San Diego

INTERSECTION:

223 Program

Row	1 Delay	2 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8		
9		
A	10.0	
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	202U	1
	202L	5
	203U	21
	283L	25
	294	9
	395	16
	486U	3
	486L	7
	417U	23
	417L	27
	418	11
	1I9U	18
	319L	20
---	---	---
---	---	---

Row	2 Delay	3 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers E
A	1 2 3 4 5 6 7 8: 12345678
B	9 10 11 12 - - - -: 1234
C	13 14 15 16 17 18 19 20: 12345678
D	- - - - 21 22 23 24: 5678
E	- - - - - - - -: 1234
F	- 25 26 27 28 - - -: 2345

Active Detectors <D Page>

Row	8 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

Printed on 2/20/2004 8:07 AM

PAGE 3

City of San Diego

INTERSECTION: CAM DEL SUR @ HIGHLAND VI GE PI

223 Proc 1

Row	Column # --> Plan Name --> 1	2	3	4	5	6	7	8	9
0	Cycle Length:	150							
1	Phase 1 - ForceOff	0							
2	Phase 2 - ForceOff	0							
3	Phase 3 - ForceOff								
4	Phase 4 - ForceOff	44							
5	Phase 5 - ForceOff	64							
6	Phase 6 - ForceOff	0							
7	Phase 7 - ForceOff								
8	Phase 8 - ForceOff								
9	Ring Offset								
A	Offset A	99							
B	Offset B								
C	Offset C								
D	Permissive	15							
E	Hold / Release	255							
F	Ped Shift	0							

Coordination

C + Plan + ROW

<C Page>

Coordination Timing By: WDH
Implemented On: 1/14/2004

FOR OBSERVATION ONLY
Master Plan C + A + 2
Current Plan C + A + 3
Next Plan C + A + 4
T.O.D. Plan C + A + 5
Master Cycle C + A + 6
Ring A Cycle C + B + 5
Ring B Cycle C + D + 5
Min Cycle C + A + E
Max Cycle C + B + E

Row	Time	Plan	Offset	Day of Week
0	07 : 30	2	A	23466
1	08 : 30	E	A	1234567
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination

<9 Key with C+D+9+1>

	6 Coord
Plan 1	
Plan 2	2 6
Plan 3	
Plan 4	
Plan 5	
Plan 6	
Plan 7	
Plan 8	
Plan 9	
Coord Ped*	
NEMA Hold	

Sync Phases

C + E + FUNCTION #

Row	7 Coord
0	Free Lag
1	Plan 1 - Lag
2	Plan 2 - Lag: 2 4 6
3	Plan 3 - Lag
4	Plan 4 - Lag
5	Plan 5 - Lag
6	Plan 6 - Lag
7	Plan 7 - Lag
8	Plan 8 - Lag
9	Plan 9 - Lag
A	Coord Max *
B	Coord Lag *
C	
D	
E	
F	

Lag Phases <C Page>

C + F + FUNCTION #

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Transition Type	0

TBD Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Longtime

Printed on 8/30/2004 1:48 PM

PAGE 4

City of San Diego

LOCATION: RTE 56 WB @ CAMINO DEL SUR
CALTRANS C8 Version 3
F PAGE

DATE: 4/6/2015

PAGE 1

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		FLAGS	F 1	2	3	4	5	6	7	8	
0	WALK	1	7	1	1	1	7	1	1	CLK RST	KV SKL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	DONT WALK	1	20	1	1	1	23	1	1		RR1 CLR	5	RED LOCK									1
2	MIN GREEN	5	12	1	1	5	16	1	5		EVA DLY	0	YEL LOCK									2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	2.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0		EVB CLR	5	PED PHASES		2				6			5
6	MAX GAP	2.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0		EVC DLY	0	RT OLA									6
7	MIN GAP	2.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0		EVC CLR	5	RT OLB									7
8	MAX EXT	25	40	9	9	25	40	9	30		EVD DLY	0	DBL ENTRY									8
9	MAX 2									YR	EVD CLR	5	MAX 2 PHASES									9
A	MAX 3									NO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR			MAX 3 PHASES									D
E	YELLOW	3.7	4.8	3.0	3.0	3.7	4.8	3.0	4.8	MIN			YEL START UP		2				6			E
F	RED	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	SEC			FIRST PHASE								8	F
	PED XING FT		70				80							1	2	3	4	5	6	7	8	
	HIKE XING FT		85				135															

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0
FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1
CC0 FLASH TYPE	1
CC2 DOWNLOAD	1

LOCATION: **RTE 56 EB @ CAMINO DEL SUR**
CALTRANS C8 Version 3 DATE: 7/18/2004 PAGE 2
C PAGE

		CONTROL PLANS									Y-COORD		LAG PHASE	FLAGS								
		1	2	3	4	5	6	7	8	9	C	D	E	F	1	2	3	4	5	6	7	8
0	CYCLE LENGTH													LAG PZ FREE		2		4		6		8
1	PZ1 GRN FCTR												GAPOUT CP1	LAG PZ CP 1								
2													GAPOUT CP2	LAG PZ CP 2								
3	PZ3 GRN FCTR												GAPOUT CP3	LAG PZ CP 3								
4	PZ4 GRN FCTR										PERM TIME		GAPOUT CP4	LAG PZ CP 4								
5	PZ5 GRN FCTR										LAG OFFSET		GAPOUT CP5	LAG PZ CP 5								
6											FORCE OFF		GAPOUT CP6	LAG PZ CP 6								
7	PZ7 GRN FCTR										LONG GRN		GAPOUT CP7	LAG PZ CP 7								
8	PZ8 GRN FCTR										NO GREEN		GAPOUT CP8	LAG PZ CP 8								
9	MULTI CYCLE												GAPOUT CP9	LAG PZ CP 9								
A	OFFSET A										OFFSET			LAG C COORD								
B	OFFSET B													LAG D COORD								
C	OFFSET C													COORD FAZES		2				6		
D	PZ 3 EXT																					
E	PZ 7 EXT																					
F	OFFSET INTRPT																					
															1	2	3	4	5	6	7	8

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP *SYSTEM MASTER:*
CO4 LAST CP *EB RAMP*
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = 1

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: **RTE 56 EB @ CAMINO DEL SUR**
CALTRANS C8 Version 3 DATE: 7/18/2004 PAGE 3
D PAGE E PAGE

	D MAX	FLAGS								E MIN	FLAGS								F PED	FLAGS							
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

	E FUNCTION	FLAGS								F FUNCTION	FLAGS								
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED	2								5
6										6 PED						6			6
7										4 PED				4					7
8										8 PED								8	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: **RTE 56 EB @ CAMINO DEL SUR**
CALTRANS C8 Version 3 DATE: 7/18/2004 PAGE 4
7 PAGE 9 PAGE CO9 = 0 or 1 9 PAGE CO9 = 2

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	07	30	2	1		2	3	4	5	6	
1	09	00	2	0		2	3	4	5	6	
2	14	00	2	1		2	3	4	5	6	
3	18	00	2	0		2	3	4	5	6	
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE
1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: **RTE 56 EB @ CAMINO DEL SUR**
CALTRANS C8 Version 3 DATE: 4/6/2015 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	7	1	7	1	7	1	1	CLK RST	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	DONT WALK	1	21	1	34	1	20	1	1		RR1 CLR	5	RED LOCK									1
2	MIN GREEN	16	14	1	5	5	12	1	1		EVA DLY	0	YEL LOCK									2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9		EVB CLR	5	PED PHASES		2		4		6			5
6	MAX GAP	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9		EVC DLY	0	RT OLA									6
7	MIN GAP	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9		EVC CLR	5	RT OLB									7
8	MAX EXT	25	40	9	30	25	30	9	9		EVD DLY	0	DBL ENTRY									8
9	MAX 2	45								YR	EVD CLR	5	MAX 2 PHASES	1								9
A	MAX 3									MO	MAX EV	255	LAG PHASES						READ ONLY			A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR			MAX 3 PHASES									D
E	YELLOW	3.7	4.8	3.0	4.1	3.0	4.8	3.0	3.0	MIN			YEL START UP		2				6			E
F	RED	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	SEC			FIRST PHASE				4					F
	PED XING FT		74		120		69							1	2	3	4	5	6	7	8	
	BIKE XING FT	145	109				84															

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0
FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1
CC5 FLASH TYPE	1
CC2 DOWNLOAD	1

LOCATION: RTE 56 WB @ CAMINO DEL SUR
CALTRANS C8 Version 3 DATE: 7/18/2004 PAGE 2
C PAGE

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS								
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8
0	CYCLE LENGTH														LAG PZ FREE								
1	FZ1 GRN FCTR													GAPOUT CP1	LAG PZ CP 1								
2														GAPOUT CP2	LAG PZ CP 2								
3	FZ3 GRN FCTR													GAPOUT CP3	LAG PZ CP 3								
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG PZ CP 4								
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG PZ CP 5								
6											FORCE OFF			GAPOUT CP6	LAG PZ CP 6								
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG PZ CP 7								
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG PZ CP 8								
9	MULTI CYCLE													GAPOUT CP9	LAG PZ CP 9								
A	OFFSET A										OFFSET				LAG C COORD								
B	OFFSET B														LAG D COORD								
C	OFFSET C														COORD FAZES	2				6			
D	FZ 3 EXT																						
E	FZ 7 EXT																						
F	OFFSET INTRPT																						
																1	2	3	4	5	6	7	8

C01 MANUAL CP
C02 MASTER CP
C03 CURRENT CP
C04 LAST CP
C07 TRNSMT CP
C0D MANUAL OFFSET
CA0 LOCAL CYCLE TIMER
CB0 MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
EB RAMP

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		
2		1
3		
4		
5		
6		
7		
8		

C00 = 2

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 56 WB @ CAMINO DEL SUR
CALTRANS C8 Version 3 DATE: 7/18/2004 PAGE 3
D PAGE E PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL		2			4		6		8	RCL							
1	CP 1									CP 1										CP 1							
2	CP 2									CP 2										CP 2							
3	CP 3									CP 3										CP 3							
4	CP 4									CP 4										CP 4							
5	CP 5									CP 5										CP 5							
6	CP 6									CP 6										CP 6							
7	CP 7									CP 7										CP 7							
8	CP 8									CP 8										CP 8							
9	CP 9									CP 9										CP 9							
A																				RCL 1							
B																				RCL 2							
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E	FLAGS								F	FLAGS							
FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
0									CODE 4								
1									CODE 5								
2									C-RECALL								
3									D-RECALL								
4									EXCLUSIVE								
5									2 PED	2							
6									6 PED					6			
7									4 PED			4					
8									8 PED							8	
9																	
A	OLA NOT								OLA ON								
B	OLB NOT								OLB ON								
C	OLC NOT								OLC ON								
D	OLD NOT								OLD ON								
E																	
F																	
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: RTE 56 WB @ CAMINO DEL SUR
CALTRANS C8 Version 3 DATE: 7/18/2004 PAGE 4
7 PAGE

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE
1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

9 PAGE C09 = 0 or 1

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

9 PAGE C09 = 2

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

INTERSECTION: CAMINO DEL SUR & TORREY SANTA FE 233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:
N/S Street: Camino del Sur
E/W Street: Torrey Santa Fe Rd
Last Database Change:
Timing sheets by: JMV
Approved by:
Timing implemented on: 7/27/2010

Phase Timing - Bank 1 <F/1+Phase+Row>

Row	Phase Numbers-->	1	2	3	4	5	6	7	8
		0+A			0+A				
0	Ped Walk		7		7	7			
1	Ped FDW		7		25	21			
2	Min Green	4	18	4	7	32			
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	0.5	2.0	3.8	0.5			
6	Max Gap	2.0	0.5	2.0	3.8	0.5			
7	Min Gap	2.0	0.5	2.0	0.2	0.5			
8	Max Limit	35	18	45	70	32			
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change	3.4	3.9	3.9	3.9	3.9			
F	Red Clear	1.0	1.0	1.0	1.0	1.0			

Preempt Timing <F/1+E+Row>

Row	E	
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	
3	EV-A Clear	
4	EV-B Delay	0
5	EV-B Clear	0
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	0
9	EV-D Clear	0
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Phase Functions <F/1+F+Row>

Row	F	
0	Permit	12345
1	Red Lock	
2	Yellow Lock	
3	Min Recall	4
4	Ped Recall	
5	+Max Rel Pnts	
6	Rest In Walk	
7	Red Rest	
8	Double Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	
D	Man Cntrl Calls	
E	Yellow Start	3
F	First Phases	4

Current Calculated Cycle Length: C0 + B + F

	0 & 5	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Free Lag 2,4 <C/1+F+D>

How to Set Page Access Code: F/1 – C + 0 + F + 1

Drop Number		<C/0+0+0>
Zone Number		<C/0+0+1>
Area Address		<C/0+0+2>
QuickNet Channel		<C/0+0+3> (QuickNet)

Communication Addresses

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

(C+)bits specified in Assignable Outputs at 5/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

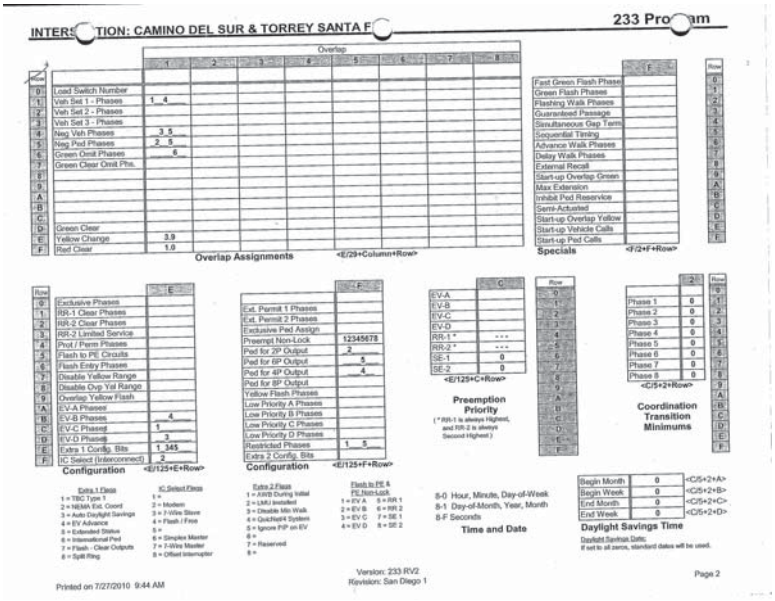
Manual Plan: 0 = Automatic; 1-6 = Plan 1-6; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Notes: Dwg: 31328-6-D

Printed on 7/27/2010 9:44 AM
Version: 233 RV
Revision: San Diego 1
Page 1



INTERSECTION: CAMINO DEL SUR & TORREY SANTA F

233 Program

Overlap

Row		1	2	3	4	5	6	7	8
0	Load Switch Number								
1	Veh Set 1 - Phases	1	4						
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases	3	5						
5	Neg Ped Phases	2	5						
6	Green Omit Phases		6						
7	Green Clear Omit Phs.								
8									
9									
A									
B									
C									
D	Green Clear								
E	Yellow Change	3.9							
F	Red Clear	1.0							

Overlap Assignments <E/29+Column+Row>

Row		F
0	Fast Green Flash Phase	
1	Green Flash Phases	
2	Flashing Walk Phases	
3	Guaranteed Passage	
4	Simultaneous Gap Term	
5	Sequential Timing	
6	Advance Walk Phases	
7	Delay Walk Phases	
8	External Recall	
9	Start-up Overlap Green	
A	Max Extension	
B	Inhibit Ped Reservice	
C	Semi-Actuated	
D	Start-up Overlap Yellow	
E	Start-up Vehicle Calls	
F	Start-up Ped Calls	

Specials <F/2+F+Row>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Ped / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	
B	EV-B Phases	4
C	EV-C Phases	1
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration <E/125+E+Row>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Extended Stiploe
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F
	Ext. Permit 1 Phases	
	Ext. Permit 2 Phases	
	Exclusive Ped Assign	
	Preempt Non-Lock	12345678
	Ped for 2P Output	2
	Ped for 6P Output	5
	Ped for 4P Output	4
	Ped for 8P Output	
	Yellow Flash Phases	
	Low Priority A Phases	
	Low Priority B Phases	
	Low Priority C Phases	
	Low Priority D Phases	
	Restricted Phases	1 5
	Extra 2 Config. Bits	

Configuration <E/125+F+Row>

Extra 2 Flags
1 = AWS During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore PIP on EV
6 =
7 = Reserved
8 =

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

Row		C
	EV-A	
	EV-B	
	EV-C	
	EV-D	
	RR-1 *	---
	RR-2 *	---
	SE-1	0
	SE-2	0

<E/125+C+Row>

Preemption Priority
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row		2
	Phase 1	0
	Phase 2	0
	Phase 3	0
	Phase 4	0
	Phase 5	0
	Phase 6	0
	Phase 7	0
	Phase 8	0

<C/5+2+Row>

Coordination Transition Minimums

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Time and Date

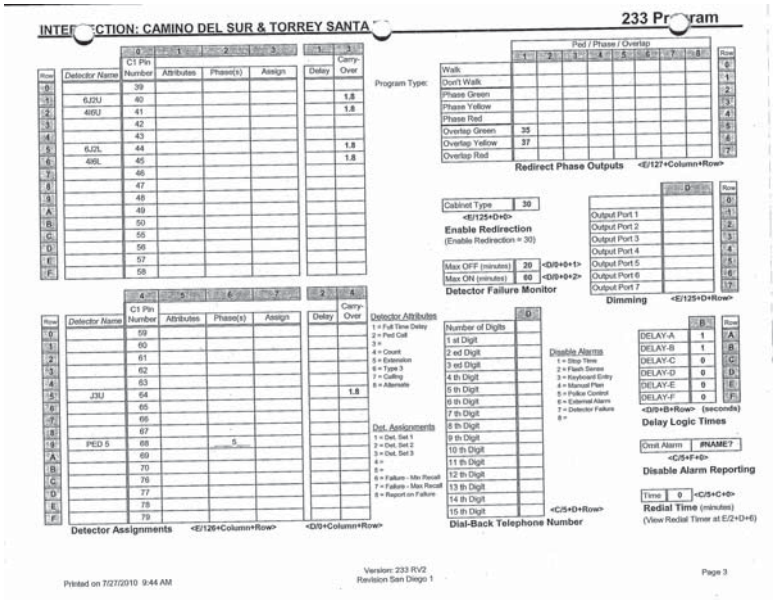
Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time
Daylight Savings Diffc
If set to all zeros, standard dates will be used.

Printed on 7/27/2010 9:44 AM

Version: 233 RV2
Revision: San Diego 1

Page 2



INTERSECTION: CAMINO DEL SUR & TORREY SANTA

233 Program

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-Over
0		39					
1	6J2U	40					1.8
2	4I6U	41					1.8
3		42					
4		43					
5	6J2L	44					1.8
6	4I6L	45					1.8
7		46					
8		47					
9		48					
A		49					
B		50					
C		56					
D		56					
E		57					
F		58					

Program Type:

Ped / Phase / Overlap

	1	2	3	4	5	6	7	8
Walk								
Don't Walk								
Phase Green								
Phase Yellow								
Phase Red								
Overlap Green	35							
Overlap Yellow	37							
Overlap Red								

Redirect Phase Outputs <E/127+Column+Row>

Row		D
	Output Port 1	
	Output Port 2	
	Output Port 3	
	Output Port 4	
	Output Port 5	
	Output Port 6	
	Output Port 7	

Dimming <E/125+D+Row>

Cabinet Type 30
<E/125+D+D>
Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes) 20 <D/0+D+1>
Max ON (minutes) 60 <D/0+D+2>
Detector Failure Monitor

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-Over
0		59					
1		60					
2		61					
3		62					
4		63					
5	J3U	64					1.8
6		65					
7		66					
8		67					
9	PED 5	68		5			
A		69					
B		70					
C		76					
D		77					
E		78					
F		79					

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Row	Number of Digits
0	
1	1 st Digit
2	2 nd Digit
3	3 rd Digit
4	4 th Digit
5	5 th Digit
6	6 th Digit
7	7 th Digit
8	8 th Digit
9	9 th Digit
A	10 th Digit
B	11 th Digit
C	12 th Digit
D	13 th Digit
E	14 th Digit
F	15 th Digit

<C/5+D+Row>
Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

Row		B
	DELAY-A	1
	DELAY-B	1
	DELAY-C	0
	DELAY-D	0
	DELAY-E	0
	DELAY-F	0

<D/0+B+Row> (seconds)
Delay Logic Times

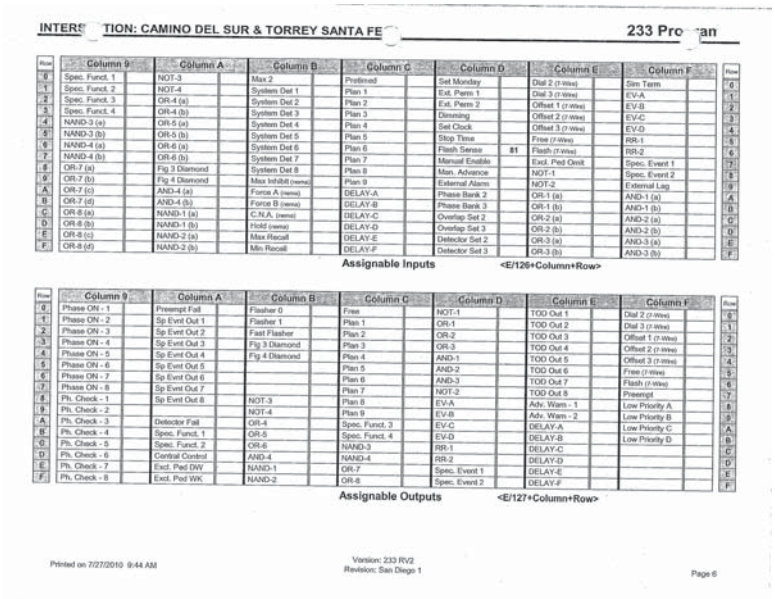
Omit Alarm #NAME?
<C/5+F+6>
Disable Alarm Reporting

Time 0 <C/5+C+6>
Redial Time (minutes)
(View Redial Timer at E/2+D+6)

Printed on 7/27/2010 9:44 AM

Version: 233 RV2
Revision San Diego 1

Page 3



INTERSECTION: CAMINO DEL SUR & TORREY SANTA FE

233 Program

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F	
0	Spec. Funct. 1		NOT-3		Max 2		Prettimed		Set Monday		Dial 2 (7-Wire)		Sim Term	
1	Spec. Funct. 2		NOT-4		System Det 1		Plan 1		Ext. Perm 1		Dial 3 (7-Wire)		EV-A	
2	Spec. Funct. 3		OR-4 (a)		System Det 2		Plan 2		Ext. Perm 2		Offset 1 (7-Wire)		EV-B	
3	Spec. Funct. 4		OR-4 (b)		System Det 3		Plan 3		Dimming		Offset 2 (7-Wire)		EV-C	
4	NAND-3 (a)		OR-5 (a)		System Det 4		Plan 4		Set Clock		Offset 3 (7-Wire)		EV-D	
5	NAND-3 (b)		OR-5 (b)		System Det 5		Plan 5		Stop Time		Free (7-Wire)		RR-1	
6	NAND-4 (a)		OR-6 (a)		System Det 6		Plan 6		Flash Sense	81	Flash (7-Wire)		RR-2	
7	NAND-4 (b)		OR-6 (b)		System Det 7		Plan 7		Manual Enable		Excl. Ped Omit		Spec. Event 1	
8	OR-7 (a)		Fig 3 Diamond		System Det 8		Plan 8		Man. Advance		NOT-1		Spec. Event 2	
9	OR-7 (b)		Fig 4 Diamond		Max Inhibit (remo)		Plan 9		External Alarm		NOT-2		External Leg	
A	OR-7 (c)		AND-4 (a)		Force A (remo)		DELAY-A		Phase Bank 2		OR-1 (a)		AND-1 (a)	
B	OR-7 (d)		AND-4 (b)		Force B (remo)		DELAY-B		Phase Bank 3		OR-1 (b)		AND-1 (b)	
C	OR-8 (a)		NAND-1 (a)		C.N.A. (remo)		DELAY-C		Overlap Set 2		OR-2 (a)		AND-2 (a)	
D	OR-8 (b)		NAND-1 (b)		Hold (remo)		DELAY-D		Overlap Set 3		OR-2 (b)		AND-2 (b)	
E	OR-8 (c)		NAND-2 (a)		Max Recall		DELAY-E		Detector Set 2		OR-3 (a)		AND-3 (a)	
F	OR-8 (d)		NAND-2 (b)		Min Recall		DELAY-F		Detector Set 3		OR-3 (b)		AND-3 (b)	

Assignable Inputs <E/126+Column+Row>

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F	
0	Phase ON - 1		Preempt Fail		Flasher 0		Free		NOT-1		TOD Out 1		Dial 2 (7-Wire)	
1	Phase ON - 2		Sp Evnt Out 1		Flasher 1		Plan 1		OR-1		TOD Out 2		Dial 3 (7-Wire)	
2	Phase ON - 3		Sp Evnt Out 2		Fast Flasher		Plan 2		OR-2		TOD Out 3		Offset 1 (7-Wire)	
3	Phase ON - 4		Sp Evnt Out 3		Fig 3 Diamond		Plan 3		OR-3		TOD Out 4		Offset 2 (7-Wire)	
4	Phase ON - 5		Sp Evnt Out 4		Fig 4 Diamond		Plan 4		AND-1		TOD Out 5		Offset 3 (7-Wire)	
5	Phase ON - 6		Sp Evnt Out 5				Plan 5		AND-2		TOD Out 6		Free (7-Wire)	
6	Phase ON - 7		Sp Evnt Out 6				Plan 6		AND-3		TOD Out 7		Flash (7-Wire)	
7	Phase ON - 8		Sp Evnt Out 7				Plan 7		NOT-2		TOD Out 8		Preempt	
8	Ph. Check - 1		Sp Evnt Out 8		NOT-3		Plan 8		EV-A		Adv. Warn - 1		Low Priority A	
9	Ph. Check - 2				NOT-4		Plan 9		EV-B		Adv. Warn - 2		Low Priority B	
A	Ph. Check - 3		Detector Fail		OR-4		Spec. Funct. 3		EV-C		DELAY-A		Low Priority C	
B	Ph. Check - 4		Spec. Funct. 1		OR-5		Spec. Funct. 4		EV-D		DELAY-B		Low Priority D	
C	Ph. Check - 5		Spec. Funct. 2		OR-6		NAND-3		RR-1		DELAY-C			
D	Ph. Check - 6		Central Control		AND-4		NAND-4		RR-2		DELAY-D			
E	Ph. Check - 7		Excl. Ped OW		NAND-1		OR-7		Spec. Event 1		DELAY-E			
F	Ph. Check - 8		Excl. Ped WK		NAND-2		OR-8		Spec. Event 2		DELAY-F			

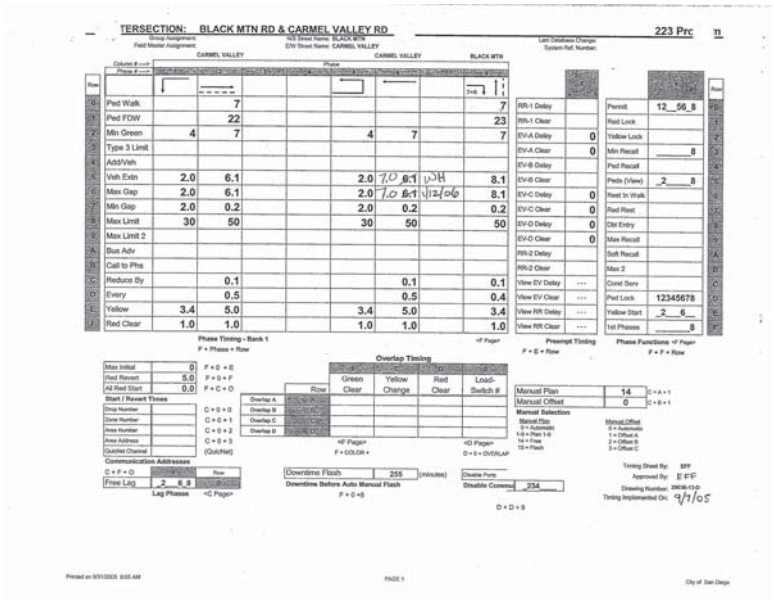
Assignable Outputs <E/127+Column+Row>

Printed on 7/27/2010 9:44 AM

Version: 233 RV2
Revision: San Diego 1

Page 6

Black Mountain Rd



TERSECTION: BLACK MTN RD & CARMEL VALLEY RD

223 Prc

Group Assignment:
Field Master Assignment:

N/S Street Name: BLACK MTN
E/W Street Name: CARMEL VALLEY

Last Database Change:
System Ref. Number:

CARMEL VALLEY | CARMEL VALLEY | BLACK MTN

Phase

Row		1	2	3	4	5	6	7+8
0	Ped Walk		7					7
1	Ped FDW		22					23
2	Min Green	4	7		4	7		7
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	6.1		2.0	7.0 6.1 WH 1/12/06		8.1
6	Max Gap	2.0	6.1		2.0	7.0 6.1 WH 1/12/06		8.1
7	Min Gap	2.0	0.2		2.0	0.2		0.2
8	Max Limit	30	50		30	50		50
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		0.1
D	Every		0.5			0.5		0.4
E	Yellow	3.4	5.0		3.4	5.0		3.4
F	Red Clear	1.0	1.0		1.0	1.0		1.0

Phase Timing - Bank 1
F + Phase + Row

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay		
EV-B Clear		
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing
F + E + Row

Permit	12__56_8
Red Lock	
Yellow Lock	
Min Recall	____8
Ped Recall	
Peds (View)	_2___8
Rest In Walk	
Red Rest	
Dbl Entry	
Max Recall	
Soft Recall	
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	_2__6__
1st Phases	____8

Phase Functions <F Page>
F + F + Row

Row		
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Ped / Pairs Phases	
5	Overlap A - Green Omit	_2___
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	_2_5__
B	EV-B Phases	
C	EV-C Phases	1__6__
D	EV-D Phases	____8
E	Extra 1 Config. Bits	1_345__
F	IC Select (Interconnect)	_2___

Configuration
E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Overlap Timing
<F Page>
F + COLOR +

Row	Green Clear	Yellow Change	Red Clear	Load-Switch #
Overlap A				
Overlap B				
Overlap C				
Overlap D				

<D Page>
D + 0 + OVERLAP

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number		C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
Quickset Channel		(QuickNet)

Communication Addresses

C + F + O	Phase	Row
Free Lag	_2__6_8	

Lag Phases <C Page>

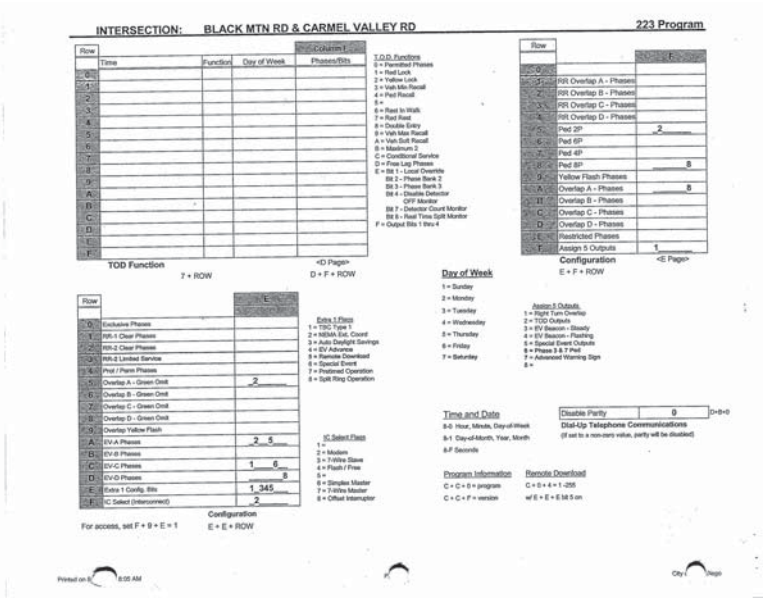
Downtime Flash: 255 (minutes)
Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports
Disable Comms: 234
D + D + 9

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection
Manual Plan: 0 = Automatic; 1-8 = Plan 1-8; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Timing Sheet By: EFF
Approved By: EFF
Drawing Number: 29E96-13-0
Timing Implemented On: 9/7/05



INTERSECTION: BLACK MTN RD & CARMEL VALLEY RD

223 Program

Row	Time	Function	Day of Week	Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	_2___
6	Ped 6P	
7	Ped 4P	
8	Ped 8P	____8
9	Yellow Flash Phases	
A	Overlap A - Phases	____8
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	1____

Configuration
E + F + ROW
<E Page>

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

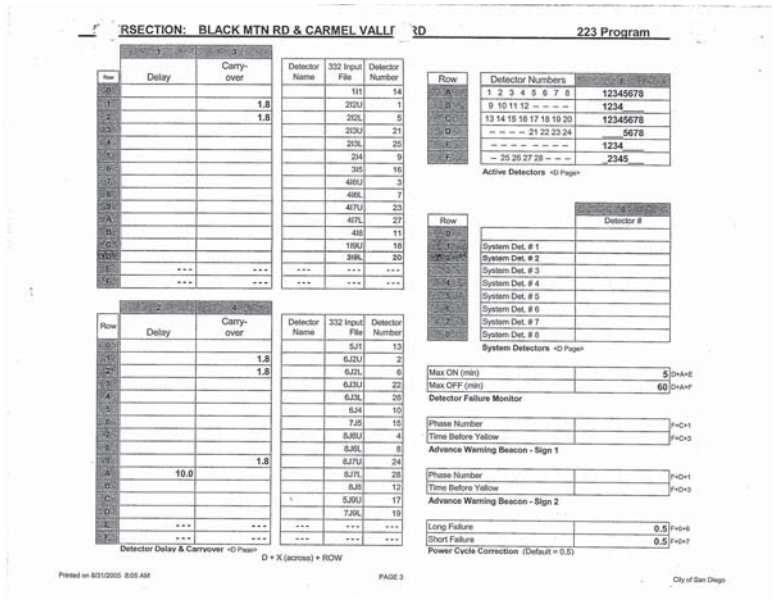
Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity: 0 (D+B+0)
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 6 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E M 5 on



RSECTION: BLACK MTN RD & CARMEL VALLE RD

223 Program

Row	1 Delay	1 Carry-over	Detector Name	332 Input File	Detector Number
0				1I1	14
1		1.8		2I2U	1
2		1.8		2I2L	5
3				2I3U	21
4				2I3L	25
5				2I4	9
6				3I5	16
7				4I6U	3
8				4I6L	7
9				4I7U	23
A				4I7L	27
B				4I8	11
C				1I9U	18
D				3I9L	20
E	---	---	---	---	---
F	---	---	---	---	---

Row	2 Delay	2 Carry-over	Detector Name	332 Input File	Detector Number
0				5J1	13
1		1.8		6J2U	2
2		1.8		6J2L	6
3				6J3U	22
4				6J3L	26
5				6J4	10
6				7J5	15
7				8J6U	4
8				8J6L	8
9		1.8		8J7U	24
A		10.0		8J7L	28
B				8J8	12
C				5J9U	17
D				7J9L	19
E	---	---	---	---	---
F	---	---	---	---	---

Detector Delay & Carryover <D Page>
D + X (across) + ROW

Row	Detector Numbers	
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row		Detector #
0		
1	System Det. # 1	
2	System Det. # 2	
3	System Det. # 3	
4	System Det. # 4	
5	System Det. # 5	
6	System Det. # 6	
7	System Det. # 7	
8	System Det. # 8	

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

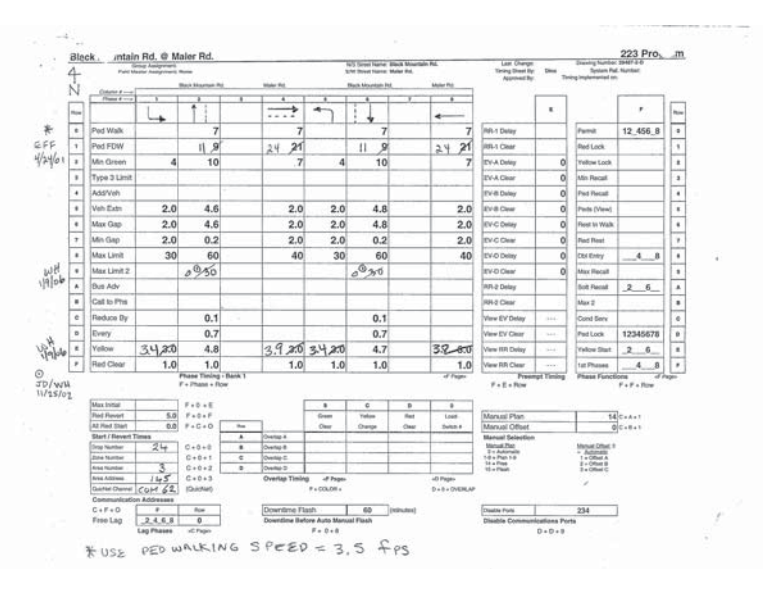
Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)



Black . ntain Rd. @ Maler Rd.

223 Pro. m

Group Assignment:
Field Master Assignment: None

N/S Street Name: Black Mountain Rd.
E/W Street Name: Maler Rd.

Last Change:
Timing Sheet By: Bike
Approved By:

Drawing Number: 29497-2-0
System Ref. Number:
Timing Implemented on:

Black Mountain Rd. | Maler Rd. | Black Mountain Rd. | Maler Rd.

Row	1	2	3	4	5	6	7	8
0	Ped Walk		7			7		7
1	Ped FDW		11 9		24 21		11 9	24 21
2	Min Green	4	10		7	4	10	7
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	4.6		2.0	2.0	4.8	2.0
6	Max Gap	2.0	4.6		2.0	2.0	4.8	2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2	2.0
8	Max Limit	30	60		40	30	60	40
9	Max Limit 2		0 30				0 30	
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1				0.1	
D	Every		0.7				0.7	
E	Yellow	3 4 2.0	4.8		3 9 2.0	3 4 2.0	4.7	3 2 8.0
F	Red Clear	1.0	1.0		1.0	1.0	1.0	1.0

EFF 4/24/01

WH 1/9/06

WH 1/9/06

JD/WH 11/25/02

Phase Timing - Bank 1
F + Phase + Row

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing
F + E + Row

Permit	12_456_8
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	___4___8
Max Recall	
Soft Recall	_2___6__
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	_2___6__
1st Phases	___4___8

Phase Functions <F Page>
F + F + Row

Max Initial		F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	24	C + 0 + 0
Zone Number		C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	145	C + 0 + 3
Quickset Channel	Conf 22	(QuickNet)

Communication Addresses

C + F + O	Phase	Row
Free Lag	2,4,6,8	0

Lag Phases <C Page>

Row	9 Green Clear	A Yellow Change	B Red Clear	C Load-Switch #
A				
B				
C				
D				

Overlap Timing
<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

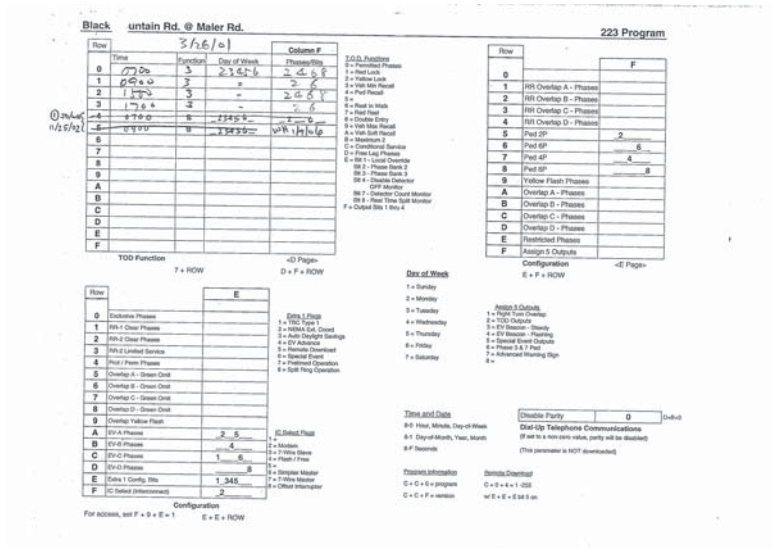
Downtime Flash: 60 (minutes)
Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports: 234
Disable Communications Ports
D + D + 9

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection
Manual Plan: 0 = Automatic; 1-8 = Plan 1-8; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

* USE PED WALKING SPEED = 3.5 fps



Black untain Rd. @ Maler Rd.

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0	700	3	23456	2 6 8
1	0600	3	2	2 6
2	1700	3	-	2 6 8
3	1764	3	-	- 6
4	0700	5	-2345-	- - 6
5	0900	8	23456	with 1/1/06
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector
DPF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preferred Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

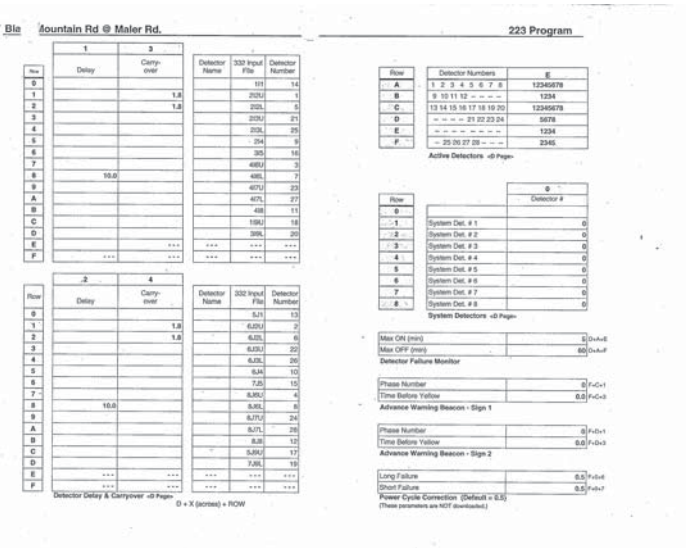
Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0	D+8=0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + D + 4 + 1 -255
w' E + E + E bit 5 on



Bla Mountain Rd @ Maler Rd.

223 Program

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0				1I1	14
1		1.8		202U	1
2		1.8		203L	5
3				203U	21
4				210L	25
5				214	9
6				3I5	16
7				466U	3
8	10.0			466L	7
9				467U	23
A				467L	27
B				468	11
C				159U	18
D				399L	20
E	---	---	---	---	---
F	---	---	---	---	---

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0				5J1	13
1		1.8		6J2U	2
2		1.8		6J2L	6
3				6J3U	22
4				6J3L	26
5				6JA	10
6				7J5	15
7				8J6U	4
8	10.0			8J6L	8
9				8J7U	24
A				8J7L	28
B				8J8	12
C				5J9U	17
D				7J9L	19
E	---	---	---	---	---
F	---	---	---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- 25 26 27 28 - - -	2345

Active Detectors <D Page>

Row	0 Detector #	
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5	D+A=E
Max OFF (min)	60	D+A=F

Detector Failure Monitor

Phase Number	0	F+C=1
Time Before Yellow	0.0	F+C=3

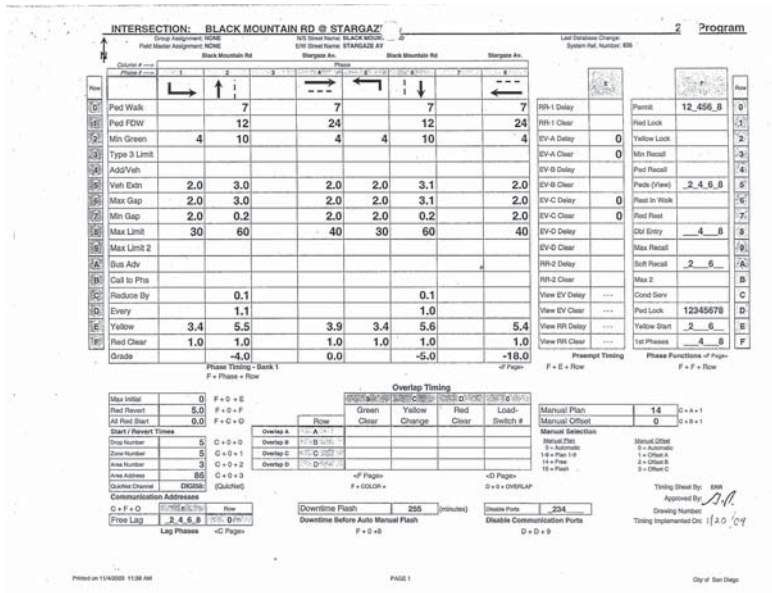
Advance Warning Beacon - Sign 1

Phase Number	0	F+D=1
Time Before Yellow	0.0	F+D=3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+5=E
Short Failure	0.5	F+6=7

Power Cycle Correction (Default = 0.5)
(These parameters are NOT downloaded.)



INTERSECTION: BLACK MOUNTAIN RD @ STARGAZ' 2 Program

Group Assignment: NONE
Field Master Assignment: NONE
N/S Street Name: BLACK MOUN.
S/W Street Name: STARGAZE AV
Last Database Change:
System Ref. Number: 835

Row	Column # ---> Phase # ---> 1	2	3	4	5	6	7	8	Row
	Black Mountain Rd	Stargaze Av.		Black Mountain Rd		Stargaze Av.			
0	Ped Walk	7		7		7		7	0
1	Ped FDW	12		24		12		24	1
2	Min Green	4	10	4	4	10		4	2
3	Type 3 Limit								3
4	Add/Veh								4
5	Veh Extn	2.0	3.0	2.0	2.0	3.1		2.0	5
6	Max Gap	2.0	3.0	2.0	2.0	3.1		2.0	6
7	Min Gap	2.0	0.2	2.0	2.0	0.2		2.0	7
8	Max Limit	30	60	40	30	60		40	8
9	Max Limit 2								9
A	Bus Adv								A
B	Call to Phs								B
C	Reduce By		0.1			0.1			C
D	Every		1.1			1.0			D
E	Yellow	3.4	5.5	3.9	3.4	5.6		5.4	E
F	Red Clear	1.0	1.0	1.0	1.0	1.0		1.0	F
	Grade		-4.0	0.0		-5.0		-18.0	

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay		
EV-B Clear		
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay		
EV-D Clear		
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing — F + E + Row

Permit	12_456_8	
Red Lock		
Yellow Lock		
Min Recall		
Ped Recall		
Peds (View)	_2_4_6_8	
Rest In Walk		
Red Rest		
Dbl Entry	__4__8	
Max Recall		
Soft Recall	_2__6__	
Max 2		
Cond Serv		
Ped Lock	12345678	
Yellow Start	_2__6__	
1st Phases	__4__8	

Phase Functions <F Page> — F + F + Row

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + G

Start / Revert Times

Drop Number	5	C + 0 + 0
Zone Number	5	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	86	C + 0 + 3
Quickset Channel	DIG258	(QuickNet)

Communication Addresses

C + F + O	Row
Free Lag	2_4_6_8

Lag Phases <C Page>

Overlap Timing

Row	Green Clear	Yellow Change	Red Clear	Load-Switch #
Overlap A				
Overlap B				
Overlap C				
Overlap D				

<F Page> F + COLOR +

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash — F + 0 +8

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection
Manual Plan
0 = Automatic
1-6 = Plan 1-6
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

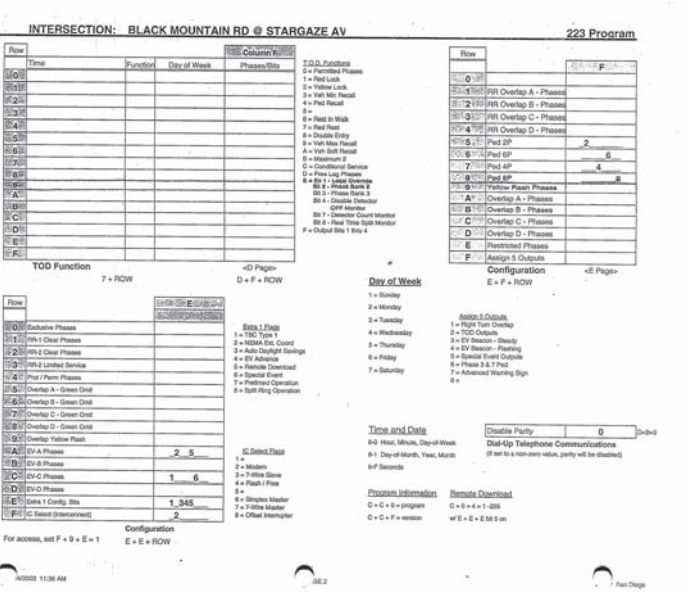
<D Page> D + 0 + OVERLAP

Disable Ports	234

Disable Communication Ports — D + D + 9

Timing Sheet By: ERR
Approved By:
Drawing Number:
Timing Implemented On: 11/20/04

Printed on 11/4/2003 11:38 AM — PAGE 1 — City of San Diego



INTERSECTION: BLACK MOUNTAIN RD @ STARGAZE AV

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Red In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector
DPF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preferred Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

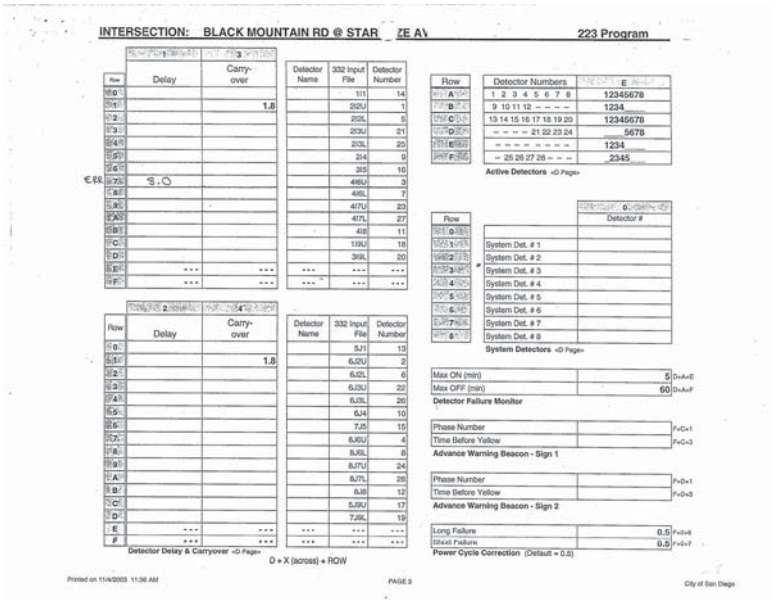
Disable Parity	0	D+8=0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + D + 4 + 1 -255
w' E + E + E bit 5 on

Printed on 11/4/2003 11:38 AM — PAGE 2 — City of San Diego



INTERSECTION: BLACK MOUNTAIN RD @ STAR ZE AV — 223 Program

Detector Delay & Carryover <D Page>

Row	1 Delay	1 Carry-over	2 Delay	2 Carry-over
0				
1		1.8		1.8
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	202U	1
	202L	5
	203U	21
	203L	25
	214	9
	315	16
	416U	3
	416L	7
	417U	23
	417L	27
	418	11
	119U	18
	319L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Active Detectors <D Page>

Row	Detector Numbers 1 2 3 4 5 6 7 8	E
A	12345678	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	_2345

System Detectors <D Page>

Row	Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

Detector Failure Monitor

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Advance Warning Beacon - Sign 1

Phase Number		F+C+1
Time Before Yellow		F+C+3

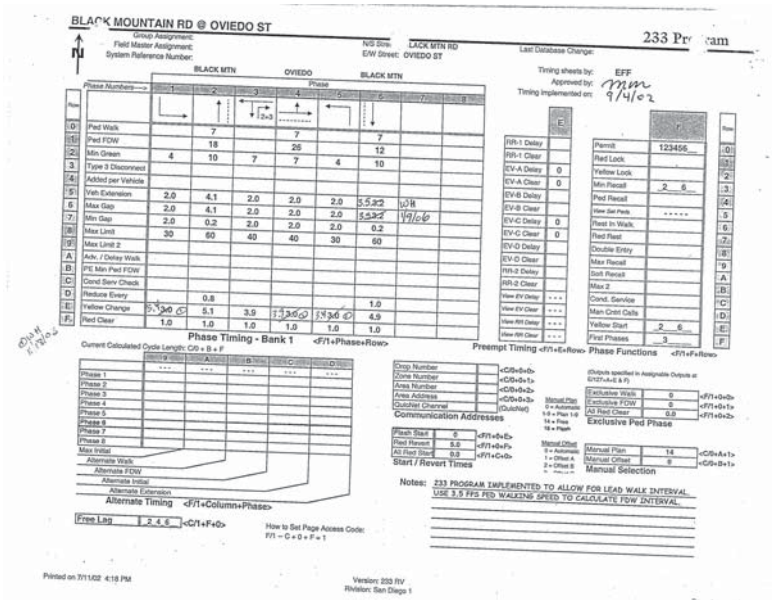
Advance Warning Beacon - Sign 2

Phase Number		F+D+1
Time Before Yellow		F+D+3

Power Cycle Correction (Default = 0.5)

Long Failure	0.5	F+D+6
Short Failure	0.5	F+D+7

Printed on 11/4/2005 11:36 AM — PAGE 3 — City of San Diego



BLACK MOUNTAIN RD @ OVIEDO ST — 233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:
N/S Street: BLACK MTN RD
E/W Street: OVIEDO ST
Last Database Change:
Timing sheets by: EFF
Approved by: mm
Timing Implemented on: 9/4/02

Phase Timing - Bank 1 <F/1+Phase+Row>

Row	Phase Numbers →	1	2	3	4	5	6	7	8
		BLACK MTN		OVIEDO		BLACK MTN			
0	Ped Walk		7		7		7		
1	Ped FDW		18		26		12		
2	Min Green	4	10	7	7	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.1	2.0	2.0	2.0	5.5 3.2	0.8	
6	Max Gap	2.0	4.1	2.0	2.0	2.0	5.5 3.2	9/4/02	
7	Min Gap	2.0	0.2	2.0	2.0	2.0	0.2		
8	Max Limit	30	60	40	40	30	60		
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every		0.8				1.0		
E	Yellow Change	5.3 5.0	5.1	3.9	7.3 6.9	5.3 5.0	4.9		
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0		

Current Calculated Cycle Length: C/0 + B + F

Alternate Timing <F/1+Column+Phase>

	A	B	C	D
Phase 1	---	---	---	---
Phase 2				
Phase 3				
Phase 4				
Phase 5				
Phase 6				
Phase 7				
Phase 8				
Max Initial				
Alternate Walk				
Alternate FDW				
Alternate Initial				
Alternate Extension				

Free Lag: 2 4 6 <C/1+F+0>

How to Set Page Access Code: F/1 – C + 0 + F = 1

Preempt Timing <F/1+E+Row>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Phase Functions <F/1+F+Row>

Row	
Permit	123456
Red Lock	
Yellow Lock	
Min Recall	2 6
Ped Recall	
Veh Set Pets	------
Rest In Walk	
Red Rest	
Double Entry	
Max Recall	
Soft Recall	
Max 2	
Cond. Service	
Man Cntrl Calls	
Yellow Start	2 6
First Phases	3

Communication Addresses

Drop Number	<C/0+0+0>
Zone Number	<C/0+0+1>
Area Number	<C/0+0+2>
Area Address	<C/0+0+3>
QuicNet Channel	(QuicNet)

Start / Revert Times

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Exclusive Ped Phase

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

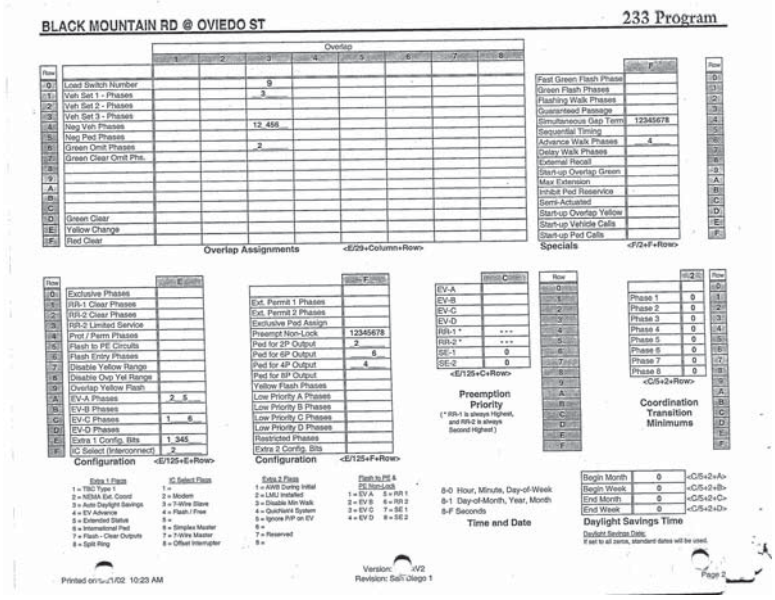
Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Notes: 233 PROGRAM IMPLEMENTED TO ALLOW FOR LEAD WALK INTERVAL. USE 3.5 FPS PED WALKING SPEED TO CALCULATE FDW INTERVAL.

Printed on 7/11/02 4:18 PM — Version: 233 RV — Revision: San Diego 1



BLACK MOUNTAIN RD @ OVIEDO ST — 233 Program

Overlap Assignments <E/29+Column+Row>

Row	Overlap 1	2	3	4	5	6	7	8
0	Load Switch Number		9					
1	Veh Sat 1 - Phases		3					
2	Veh Set 2 - Phases							
3	Veh Set 3 - Phases							
4	Neg Veh Phases		12_466					
5	Neg Ped Phases							
6	Green Omit Phases		2					
7	Green Clear Omit Phs.							
8								
9								
A								
B								
C								
D	Green Clear							
E	Yellow Change							
F	Red Clear							

Specials <F/2+F+Row>

Row	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Overlap Ped Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	4
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	
Start-up Ped Calls	

Configuration <E/125+E+Row>

Row	E	Extra 1 Plans
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Extra 1 Plans: 1 = TBC Type 1; 2 = NEMA Ext. Coord; 3 = Auto Daylight Savings; 4 = EV Advance; 5 = Extended Status; 6 = Intermotnnal Ped; 7 = Flash - Clear Outputs; 8 = Split Ring

IC Select Plans: 1 = ; 2 = Modem; 3 = 7-Wire Slave; 4 = Flash / Free; 5 = ; 6 = Simplex Master; 7 = 7-Wire Master; 8 = Offset Interrupter

Configuration <E/125+F+Row>

Row	F	Extra 2 Plans
	Ext. Permit 1 Phases	
	Ext. Permit 2 Phases	
	Exclusive Ped Assign	
	Preempt Non-Lock	12345678
	Ped for 2P Output	2
	Ped for 6P Output	6
	Ped for 4P Output	4
	Ped for 8P Output	
	Yellow Flash Phases	
	Low Priority A Phases	
	Low Priority B Phases	
	Low Priority C Phases	
	Low Priority D Phases	
	Restricted Phases	
	Extra 2 Config. Bits	

Extra 2 Plans: 1 = AWB During Initial; 2 = LMU Installed; 3 = Disable Min Walk; 4 = QuicNet System; 5 = Ignore RIP on EV; 6 = ; 7 = Reserved; 8 = ; Flash to PE & PE Non-Lock: 1 = EV A, 2 = EV B, 3 = EV C, 4 = EV D, 5 = RR 1, 6 = RR 2, 7 = SE 1, 8 = SE 2

Preemption Priority <E/125+C+Row>

(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	C
EV-A	
EV-B	
EV-C	
EV-D	
RR-1 *	---
RR-2 *	---
SE-1	0
SE-2	0

Coordination Transition Minimums <C/5+2+Row>

Row	2
Phase 1	0
Phase 2	0
Phase 3	0
Phase 4	0
Phase 5	0
Phase 6	0
Phase 7	0
Phase 8	0

Time and Date

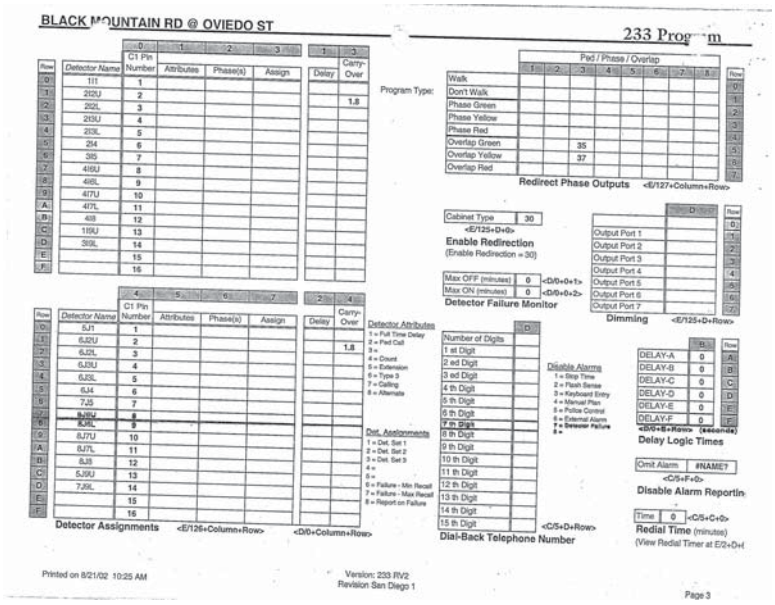
8-0 Hour, Minutes, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Daylight Savings Time

Daylight Savings Delay
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Printed on 8/21/02 10:23 AM — Version: 233 RV2 — Revision: San Diego 1 — Page 2



BLACK MOUNTAIN RD @ OVIEDO ST — 233 Program

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Row	0 Detector Name	0 C1 Pin Number	1 Attributes	2 Phase(s)	3 Assign	1 Delay	2 Carry-Over
0	1I1	1					
1	202U	2					1.8
2	202L	3					
3	203U	4					
4	203L	5					
5	214	6					
6	315	7					
7	416U	8					
8	416L	9					
9	417U	10					
A	417L	11					
B	418	12					
C	119U	13					
D	319L	14					
E		15					
F		16					

Row	4 Detector Name	4 C1 Pin Number	5 Attributes	6 Phase(s)	7 Assign	2 Delay	3 Carry-Over
0	5J1	1					
1	6J2U	2					1.8
2	6J2L	3					
3	6J3U	4					
4	6J3L	5					
5	6J4	6					
6	7J5	7					
7	8J6U	8					
8	8J6L	9					
9	8J7U	10					
A	8J7L	11					
B	8J8	12					
C	5J9U	13					
D	7J9L	14					
E		15					
F		16					

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = -
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 = -
5 = -
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Program Type:

Redirect Phase Outputs <E/127+Column+Row>

Row	Ped / Phase / Overlap 1	2	3	4	5	6	7	8
0	Walk							
1	Don't Walk							
2	Phase Green							
3	Phase Yellow							
4	Phase Red							
5	Overlap Green		35					
6	Overlap Yellow		37					
7	Overlap Red							

Enable Redirection <E/125+D+0>

(Enable Redirection = 30)

Cabinet Type	30

Detector Failure Monitor <D/0+0+Row>

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>

Dimming <E/125+D+Row>

Row	D
Output Port 1	
Output Port 2	
Output Port 3	
Output Port 4	
Output Port 5	
Output Port 6	
Output Port 7	

Dial-Back Telephone Number <C/5+D+Row>

Row	D Number of Digits
0	1 st Digit
1	2 ed Digit
2	3 ed Digit
3	4 th Digit
4	5 th Digit
5	6 th Digit
6	7 th Digit
7	8 th Digit
8	9 th Digit
9	10 th Digit
A	11 th Digit
B	12 th Digit
C	13 th Digit
D	14 th Digit
E	15 th Digit

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarms
7 = Detector Failure
8 =

Delay Logic Times <D/0+E+Row> (seconds)

Row	D
A	DELAY-A 0
B	DELAY-B 0
C	DELAY-C 0
D	DELAY-D 0
E	DELAY-E 0
F	DELAY-F 0

Disable Alarm Reportin <C/5+F+0>

Omit Alarm	#NAME?

Redial Time (minutes) <C/5+C+0>

(View Redial Timer at E/2+D+

Time	0

Printed on 8/21/02 10:25 AM — Version: 233 RV2 — Revision San Diego 1 — Page 3

BLACK MOUNTAIN RD @ OVIEDO ST

233 Program

TOD Coordination <S/0.1+Row> (Bank 1)

TOD Function <7/0.1+Row>

<E/27+4+Row>

Holiday Dates <S/1.1+Row> (Bank 1)

Holiday Events <S/1.1+Row> (Bank 1)

TOD Coordination <S/0.2+Row> (Bank 2)

Holiday TOD Function <7/0.2+Row>

<E/28+Row>

Holiday Dates <S/1.2+Row> (Bank 2)

Holiday Events <S/1.2+Row> (Bank 2)

Printed on 7/02 10:23 AM

Version: 233 RV2

Revision: San Diego 1

Page 4

BLACK MOUNTAIN RD @ OVIEDO ST

233 Progra 1

Assignable Inputs

<E/126+Column+Row>

Assignable Outputs

<E/127+Column+Row>

Printed on 7/9/02 9:15 AM

Version: 233 RV2

Revision: San Diego 1

Page 6

BLACK MOUNTAIN RD @ OVIEDO ST

233 Program

Row	Ped Walk	Ped FDW	Min Green	Type 3 Disconnect	Added per Vehicle	Veh Extension	Max Gap	Min Gap	Max Limit	Max Limit 2	Adv. / Delay Walk	PE Min Ped FDW	Cond Serv Check	Reduce Every	Yellow Change	Red Clear
0		7				2.0	2.0	2.0	30						3.5	1.0
1		18				4.1	2.0	0.2	60						5.1	1.0
2	4	10	7			2.0	2.0	2.0	40						3.9	1.0
3		10	7			2.0	2.0	2.0	40		6				3.9	1.0
4		7	4			2.0	2.0	2.0	30						2.0	1.0
5		12	10			3.5	4.9	0.2	60						4.9	1.0
6																
7																
8																
9																
A																
B																
C																
D																
E																
F																

Phase Timing - Bank 2 <C=0+F=2>

Alternate Timing

Phase Timing - Bank 3 <C=0+F=3>

Alternate Timing

Transition Type 0.8 <C/5+1+9>

TBC Transition

Lag Hold Phases #NAME? <C/5+1+A>

Coordinated Lag Hold Phases

Sync Output Time 6.0 <C/5+1+C>

7-Wire Master

Time B4 Yellow 6.0 <F/1+C+E>

Phase Number 0 <F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow 6.0 <F/1+D+E>

Phase Number 0 <F/1+D+F>

Advance Warning Beacon - Sign 2

Long Failure 0.0 <F/1+0+B>

Short Failure 0.0 <F/1+0+7>

Power Cycle Correction (Default = 0.7)

Min Time (seconds) 0 <F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes) 0 <F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds) 0 <F/1+0+A>

Min Time Between Same Preempts

(Does Not Apply To Railroad Preempt)

Low Priority 1 = Channel A, 2 = Channel B, 3 = Channel C, 4 = Channel D

Low Pri. Channel #NAME? <E/125+C+8>

Disable Low Priority Channel

Printed on 7/02 10:27 AM

Version: 233 RV2

Revision: San Diego 1

Page 7

INTERSECTION: BLACK MOUNTAIN RD @ CARMEL M /TAIN RD

223 P /am

Row	Ped Walk	Ped FDW	Min Green	Type 3 Limit	Add/Veh	Veh Extn	Max Gap	Min Gap	Max Limit	Max Limit 2	Bus Adv	Call to Phs	Reduce By	Every	Yellow	Red Clear	Grade
0		7				2.0	2.0	2.0	30	15					3.4	1.0	
1		24				3.8	3.8	0.2	40	25			0.1	0.8	4.6	1.0	0.0%
2	4	10	4			2.0	2.0	2.0	30	15					3.4	1.0	
3		10	4			3.9	3.9	0.2	60	25			0.1	0.8	4.9	1.0	-3.0%
4		7	4			2.0	2.0	2.0	30	15					3.4	1.0	
5		25	10			4.1	4.1	0.2	60	25			0.1	0.8	4.9	1.0	-4.0%
6		7	4			2.0	2.0	2.0	30	15					3.4	1.0	
7		24	10			4.5	4.5	0.2	60	25			0.1	0.7	4.4	1.0	-2.0%
8																	
9																	
A																	
B																	
C																	
D																	
E																	
F																	

Phase Timing - Bank 1

F = Phase + Row

Overlap Timing

Preempt Timing

Phase Functions

Max Initial 0 F+0=E

Red Revert 5.0 F+0=F

All Red Start 0.0 F+C=O

Start / Rewert Times

Manual Plan 14

Manual Offset 0

Manual Selection

Permit 12345678

Red Lock

Yellow Lock

Min Recall

Ped Recall

Ped Rest

Ped Recycle

Max Recall

Soft Recall 2 6

Max 2

Cond Serv

Ped Lock 12345678

Yellow Start 2 6

1st Phases 4 8

Timing Sheet By: WOW

Approved By: EFF

Drawing Number: (NONE)

Timing Implemented On: 12/2/03

* USE 3.5 FPS PED WALKING SPEED TO CALCULATE FDW.

Printed on 11/26/03 8:37 AM

PAGE 1

City of San Diego

INTERSECTION: BLACK MOUNTAIN RD @ CARMEL MOUNTAIN RD — 223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0	06 : 30	B	23456	12345678
1	06 : 30	B	1234567	
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configurations — E + F + ROW — <E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4 7
C	EV-C Phases	1 6
D	EV-D Phases	3 8
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration — E + E + ROW

For access, set F + 9 + E = 1

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity 0 (D+8+0)
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 + 1 -255
w/ E + E + E bit 6 on

Printed on 11/26/03 8:57 AM — Page 2 — City of San Diego

INTERSECTION: BLACK MOUNTAIN RD @ CAR L MOUNTAIN RD — 223 Program

Row	1 Delay	1 Carry-over	Detector Name	332 Input File	Detector Number
0				11I	14
1		1.8		202U	1
2				202L	6
3				213U	21
4				213L	26
5				214	9
6				39S	16
7		1.8		416U	9
8				416L	7
9				417U	23
A				417L	27
B				418	11
C				119U	18
D				119L	20
E	---	---	---	---	---
F	---	---	---	---	---

Row	2 Delay	2 Carry-over	Detector Name	332 Input File	Detector Number
0				5J1	13
1		1.8		5J2U	2
2				5J2L	6
3				5J3U	22
4				5J3L	26
5				5J4	10
6				7J5	15
7		1.8		8J6U	4
8				8J6L	8
9				8J7U	24
A				8J7L	28
B				8J8	12
C				5J9U	17
D				7J9L	19
E	---	---	---	---	---
F	---	---	---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	1
	1 2 3 4 5 6 7 8	12345678
A	9 10 11 12 – – – –	1234
B	13 14 15 16 17 18 19 20	12345678
C	– – – – 21 22 23 24	5678
D	– – – – – – – –	1234
E	– 25 26 27 28 – – –	2345
F		

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5 (D+A+E)
Max OFF (min)	60 (D+A+F)

Detector Failure Monitor

Phase Number	0 (F+D+1)
Time Before Yellow	0.0 (F+D+3)

Advance Warning Beacon - Sign 1

Phase Number	0 (F+D+1)
Time Before Yellow	0.0 (F+D+3)

Advance Warning Beacon - Sign 2

Long Failure	0.5 (F+D+6)
Short Failure	0.5 (F+D+7)

Power Cycle Correction (Default = 0.5)

Printed on 11/26/03 8:59 AM — PAGE 3 — City of San Diego

INTERSECTION: BLACK MOUNTAIN & PASEO MONTA[illegible]N — 2 Program

Group Assignment:
Field Master Assignment:
N/S Street Name: BLACK MOUNTAIN
E/W Street Name: PASEO MONTALBAN
Timing Sheet By: MM/WBF
Approved By: [illegible]
Last Database Change: 10/05/2001 8:24
System Ref. Number:
Drawing Number: 21315-A-D
Timing Implemented On: 10/9/01

Row	Column # → / Phase # ↓	1	2	3	4	5	6	7	8
			PASEO BLACK MT. RD.	MONTALBAN			BLACK MT. RD.		
0	Ped Walk		7	7					
1	Ped FDW		20	20					
2	Min Green	4	10	06 10			10		
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	5.2	4.4			4.5		
6	Max Gap	2.0	5.2	4.4			4.5		
7	Min Gap	2.0	0.2	0.2			0.2		
8	Max Limit	30	60	60			60		
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1	0.1			0.1		
D	Every		0.6	0.7			0.7		
E	Yellow	3.5	3.9	3.45 3.0			4.2		
F	Red Clear	1.0	1.0	1.0			1.0		

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

Row		E
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	
5	EV-B Clear	
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	
9	EV-D Clear	0
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Preempt Timing — E + E + Row

Row		F
0	Permit	123 6
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	Peds (View)	
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	
E	Yellow Start	2 6
F	1st Phases	34

Phase Functions — F + F + Row — <F Page>

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Grey Number		C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
Quickfet Channel		(QuickNet)

Communication Addresses

C + F + O — Row — Free Lag 2 6 — Lag Phases — <C Page>

Row	A	B	C	D	9
	Green	Yellow	Red	Load-	
	Clear	Change	Clear	Switch #	
A	Overlap A				
B	Overlap B				
C	Overlap C				
D	Overlap D				

Overlap Timing — <F Page> — F + COLOR + — <D Page> — D + 0 + OVERLAP

Manual Plan	14 (C + A + 1)
Manual Offset	0 (C + B + 1)

Manual Selection
Manual Plan: 0 = Automatic; 1-0 = Plan 1-0; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash — F + 0 + 0

Disable Ports	234

Disable Communication Ports — D + D + 9

Printed on 10/26/2001 8:24 AM — Page1 — City of San Diego

INTERSECTION: BLACK MOUNTAIN & PASEO MONTALBAN — 223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	
7	Ped 4P	3
8	Ped 8P	
9	Yellow Flash Phases	
A	Overlap A - Phases	25
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration — E + E + ROW

For access, set F + 9 + E = 1

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity 0 (D+8+0)
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 + 1 -255
w/ E + E + E bit 6 on

Printed on 10/26/2001 8:24 AM — PAGE 2

INTERSECTION: BLACK MOUNTAIN & PASEO ONTALBAN — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		1.8
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5 D+A+E
Max OFF (min)	60 D+A+F

Detector Failure Monitor

Phase Number	F+C+1
Time Before Yellow	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	F+D+1
Time Before Yellow	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+G+6
Short Failure	0.5 F+G+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: BLACK MOUNTAIN & TWIN TRAILS — 22 rogram

Group Assignment:
Field Master Assignment:

N/S Street Name: BLACK MOUNTAIN
E/W Street Name: TWIN TRAILS

Timing Sheet By: RMH/MGF
Approved By:

Last Database Change: 09/16/2ct1 9:15
System Ref. Number:
Drawing Number: 27951-3
Timing Implemented On:

Row	Column # ---> Phase # ---> 1	2	3	4	5	6	7	8
		BLACK MT. NO.		TWIN TRAILS DR.		BLACK MT. SO.		TWIN TRAILS DR.
				Phase				
0	Ped Walk	7		7	OLPT	7		7
1	Ped FDW	19		25		16		22
2	Min Green	4	10	4	4	4	10	4	4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	5.2	2.0	3.0 3.1	2.0	4.5	2.0	2.1
6	Max Gap	2.0	5.2	2.0	3.0 3.1	2.0	4.5	2.0	2.1
7	Min Gap	2.0	0.2	2.0	0.2	2.0	0.2	2.0	0.2
8	Max Limit	30	60	30	30	40	60	30	30
9	Max Limit 2		@ 40	@ 25	@ 40 30		@ 40		
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1		0.1		0.1		0.1
D	Every		0.6		1.6		0.7		1.6
E	Yellow	3.4 3.0	4.2	3.4 3.0	4.0	3.4 3.0	4.5	3.4 3.0	3.9 3.7
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

NOTE: PHASE 4 DO NOT DEDUCT YELLOW FROM WALK TIME.

Max Initial	0 F + 0 + E
Red Revert	5.0 F + 0 + F
All Red Start	0.0 F + C + 0

Start / Revert Times

Dmy Number	C + 0 + 0
Zone Number	C + 0 + 1
Area Number	C + 0 + 2
Area Address	C + 0 + 3
Gulchlet Channel	(QuickNet)

Communication Addresses

C + F + 0	F	Row
Free Lag	2 4 6 8	0

Lag Phases <C Page>

Row	A	B	C	D
	Overlap A	Overlap B	Overlap C	Overlap D
9	Green Clear	Yellow Change	Red Clear	Look Switch #
A				
B				
C				
D				

Overlap Timing <F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Manual Plan	14 C + A + 1
Manual Offset	8 C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-8 = Plan 1-8
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Disable Ports	234

Disable Communication Ports
D + D + 9

Row	E	F
		Permit 12345678
		Red Lock
		Yellow Lock
		Min Recall
		Ped Recall
		Peds (View)
		Rest In Walk
		Red Rest
		Old Entry
		Max Recall
		Soft Recall 2 6
		Max 2
		Cond Serv
		Ped Lock
		Yellow Start 2 6
		1st Phases 4 8

Preempt Timing
F + E + Row

Phase Functions
<F Page>
F + F + Row

INTERSECTION: BLACK MOUNTAIN & TWIN TRAILS — 223 Program

Row	Time	Function	Day of Week	Coloumn # (Phases/Slts)
0	07:00	5	2345	2&4 6
1	08:15	8	1234567	
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P 2
6	Ped 4P 6
7	Ped 4P 4
8	Ped 8P 8
9	Yellow Flash Phases
A	Overlap A - Phases 45
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs 1

Configuration
E + F + ROW
<E Page>

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit 4
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases 2 5
B	EV-B Phases 4 7
C	EV-C Phases 1 6
D	EV-D Phases
E	Extra 1 Config. Bits 1 3 4
F	IC Select (Interconnect) 2

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E bit 3 on

Disable Parity	0 D+B+6

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

For access, set F + 9 + E = 1

Configuration
E + E + ROW

INTERSECTION: BLACK MOUNTAIN & TWIN TR — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		1.8
8		1.3
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		1.8
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5 D+A+E
Max OFF (min)	60 D+A+F

Detector Failure Monitor

Phase Number	F+C+1
Time Before Yellow	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	F+D+1
Time Before Yellow	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+G+6
Short Failure	0.5 F+G+7

Power Cycle Correction (Default = 0.5)

LOCATION: **RTE 56 WB @ BLACK MOUNTAIN ROAD**
CALTRANS C8 Version 3 DATE: 4/6/2015 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	7	1	1	1	7	1	1	CLK RST	EV SEL	0	PERMIT	1	2			5	6		8	0
1	DONT WALK	1	17	1	1	1	17	1	1		RR1 CLR	5	RED LOCK									1
2	MIN GREEN	5	11	1	1	5	13	1	5		EVA DLY	0	YEL LOCK									2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	1.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0		EVB CLR	5	PED PHASES		2				6			5
6	MAX GAP	1.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0		EVC DLY	0	RT OLA									6
7	MIN GAP	1.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0		EVC CLR	5	RT OLB									7
8	MAX EXT	20	40	9	9	30	40	9	40		EVD DLY	0	DBL ENTRY									8
9	MAX 2					45				YR	EVD CLR	5	MAX 2 PHASES						5			9
A	MAX 3									NO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR			MAX 3 PHASES									D
E	YELLOW	3.7	4.8	3.0	3.0	3.7	4.8	3.0	4.1	MIN			YEL START UP		2				6			E
F	RED	1.0	2.0	1.0	1.0	1.0	2.0	1.0	2.0	SEC			FIRST PHASE								8	F
	PED XING FT		60				61							1	2	3	4	5	6	7	8	
	BIKE XING FT		71				98															

NOTES:

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FCO	3
FC1	3
FC2	10
FCA	6.0
FCB	0.0
FCC	0.0
FCD	0.0
FD0 YR SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 GS SEEKING	1
CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

LOCATION: **RTE 56 WB @ BLACK MOUNTAIN ROAD**
CALTRANS C8 Version 3 DATE: 6/29/2010 PAGE 2
C PAGE

	CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD C	D	LAG PHASE E	FLAGS F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH	136	130	120									LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR	11	8	15								GAPOUT CP1	LAG FZ CP 1		2		4		6		8	1
2												GAPOUT CP2	LAG FZ CP 2		2		4		6		8	2
3	FZ3 GRN FCTR	0	0	0								GAPOUT CP3	LAG FZ CP 3		2		4		6		8	3
4	FZ4 GRN FCTR	0	0	0						PERM TIME		GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR	46	55	25						LAG OFFSET		GAPOUT CP5	LAG FZ CP 5									5
6										FORCE OFF		GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR	0	0	0						LONG GRN		GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR	30	30	32						NO GREEN		GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE	0	0	0								GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A	42	0	0						OFFSET			LAG C COORD									A
B	OFFSET B												LAG D COORD									B
C	OFFSET C												COORD FAZES		2				6			C
D	FZ 3 EXT																					D
E	FZ 7 EXT																					E
F	OFFSET INTRPT																					F
														1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CA0 LOCAL CYCLE TIMER
CB0 MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

SYSTEM MASTER:
WB OFF Ramp

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

CO0 = 1

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: **RTE 56 WB @ BLACK MOUNTAIN ROAD**
CALTRANS C8 Version 3 DATE: 10/7/2004 PAGE 3
D PAGE

	D MAX	FLAGS 1	2	3	4	5	6	7	8	E MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1						5			CP 1									CP 1								
2	CP 2						5			CP 2									CP 2								
3	CP 3						5			CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

E FUNCTION	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8	
0									CODE 4									0
1									CODE 5									1
2									C-RECALL									2
3									D-RECALL									3
4									EXCLUSIVE									4
5									2 PED		2							5
6									6 PED						6			6
7									4 PED			4						7
8									8 PED								8	8
9																		9
A	OLA NOT								OLA ON									A
B	OLB NOT								OLB ON									B
C	OLC NOT								OLC ON									C
D	OLD NOT								OLD ON									D
E																		E
F																		F
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: **RTE 56 WB @ BLACK MOUNTAIN ROAD**
CALTRANS C8 Version 3 DATE: 6/29/2010 PAGE 4
7 PAGE

9 PAGE CO9 = 0 or 1

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	06	30	2			2	3	4	5	6	
1	09	00	2			2	3	4	5	6	
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE
1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	07	00	1	A		2	3	4	5	6	
1	09	00	E			2	3	4	5	6	
2	16	00	3	A		2	3	4	5	6	
3	18	30	E			2	3	4	5	6	
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

9 PAGE CO9 = 2

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: RTE 56 EB @ BLACK MOUNTAIN ROAD
CALTRANS C8 Version 3 DATE: 4/6/2015 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	7	20	1	1	7	1	1	CLR RST
1	DONT WALK	1	18	17	1	1	20	1	1	
2	MIN GREEN	5	14	37	5	5	12	1	1	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
6	MAX GAP	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
7	MIN GAP	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
8	MAX EXT	40	40	40	35	15	40	9	9	
9	MAX 2									YR
A	MAX 3									NO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.7	4.0	3.0	4.5	3.7	4.8	3.0	3.0	MIN
F	RED	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	SEC
	PED XING FT		64	60			76			
	BIKE XING FT		108				82			

NOTES: C/M 27' 54

	PRE-EMPTION E		F FLAGS 1	2	3	4	5	6	7	8	
EV SEL		0	PERMIT	1	2	3	4	5	6	7	8	0
RR1 CLR		5	RED LOCK									1
EVA DLY		0	YEL LOCK									2
EVA CLR		5	V RECALL		2				6			3
EVB DLY		0	P RECALL									4
EVB CLR		5	FSD PHASES		2	3			6			5
EVC DLY		0	RT OLA									6
EVC CLR		5	RT OLB									7
EVD DLY		0	DBL ENTRY									8
EVD CLR		5	MAX 2 PHASES	1								9
MAX EV		255	LAG PHASES	READ ONLY								A
RR2 CLR		5	RED REST									B
			REST-IN-WALK									C
			MAX 3 PHASES									D
			YEL START UP		2				6			E
			FIRST PHASE				4					F
				1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0
FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD6 OS SEEKING	1
CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ☐

LOCATION: RTE 56 EB @ BLACK MOUNTAIN ROAD
CALTRANS C8 Version 3 DATE: 10/6/2004 PAGE 2
C PAGE

		CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD	C	D	LAG PHASE E	FLAGS F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH	136	130	120											LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR	30	35	35										GAPOUT CP1	LAG FZ CP 1		2		4		6		8	1
2														GAPOUT CP2	LAG FZ CP 2		2		4		6		8	2
3	FZ3 GRN FCTR	37	37	37										GAPOUT CP3	LAG FZ CP 3		2		4		6		8	3
4	FZ4 GRN FCTR	17	15	25							PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR	10	12	15							LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR	0	0	0							LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR	0	0	0							NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE	0	0	0										GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A	43	65	60							OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		2				6			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		
2		1
3		
4		
5		
6		
7		
8		

COO = 2

C01 MANUAL CP
C02 MASTER CP
C03 CURRENT CP **SYSTEM MASTER:**
C04 LAST CP **NB OFF RAMP**
C07 TRNSMT CP
C0D MANUAL OFFSET
CA0 LOCAL CYCLE TIMER
CB0 MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 56 EB @ BLACK MOUNTAIN ROAD
CALTRANS C8 Version 3 DATE: 6/29/2010 PAGE 3
D PAGE E PAGE

	D MAX	FLAGS 1	2	3	4	5	6	7	8	E MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8
0	RCL									RCL									RCL							
1	CP 1									CP 1				4					CP 1							
2	CP 2									CP 2	1			4					CP 2							
3	CP 3									CP 3	1			4					CP 3							
4	CP 4									CP 4									CP 4							
5	CP 5									CP 5									CP 5							
6	CP 6									CP 6									CP 6							
7	CP 7									CP 7									CP 7				4			
8	CP 8									CP 8									CP 8			3				
9	CP 9									CP 9									CP 9							
A										RCL 1									RCL							
B										RCL 2									RCL							
C																										
D																										
E																										
F																										
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

	E FUNCTION	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED	2								5
6										6 PED						6			6
7										4 PED				4					7
8										8 PED			3						8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT	2		4						OLB ON		3				6			B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: RTE 56 EB @ BLACK MOUNTAIN ROAD
CALTRANS C8 Version 3 DATE: 6/29/2010 PAGE 4
7 PAGE 9 PAGE C09 = 0 or 1 9 PAGE C09 = 2

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE
1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	E	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	07	00	1	A		2	3	4	5	6		
1	09	00	E	A		2	3	4	5	6		
2	16	00	3	A		2	3	4	5	6		
3	18	30	E			2	3	4	5	6		
4												
5												
6												
7												
8												
9												
A												
B												
C												
D												
E												
F												

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	E	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0												
1												
2												
3												
4												
5												
6												
7												
8												
9												
A												
B												
C												
D												
E												
F												

INTERSECTION: ADOLPHIA/PARK VILLAGE & BLACK MTN — 233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street: PK VILLAGE
E/W Street: BLK MTN

Last Database Change:
Timing sheets by: MC
Approved by: ???
Timing implemented on:

Phase Numbers → 1 2 3 4 5 6 7 8 (Phase: BLK. MTN / PK VILLAGE / BLK. MTN)

Row		1	2	3	4	5	6	7	8
0	Ped Walk		7	7	7		7		
1	Ped FDW		16	27	25		23		
2	Min Green	4	10	7	7	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.7	2.0	5.1	2.0	4.7		
6	Max Gap	2.0	4.7	2.0	5.1	2.0	4.7		
7	Min Gap	2.0	0.2	2.0	0.2	2.0	0.2		
8	Max Limit	30	60	40	40	30	60		
9	Max Limit 2		50	25			50		
A	Adv. / Delay Walk								
B	PE Min Ped FDW		1	1	1		1		
C	Cond Serv Check								
D	Reduce Every		0.7		0.6		0.7		
E	Yellow Change	3.4	4.7	3.9	5.3	3.4	5.5		
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0		

Phase Timing - Bank 1 <F/1+Phase+Row>

Row	E	
RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	- - -	
View EV Clear	- - -	
View RR Delay	- - -	
View RR Clear	- - -	

Row	F	
Permit	123456	
Red Lock		
Yellow Lock		
Min Recall	2 6	
Ped Recall		
View Set Peds		
Rest In Walk		
Red Rest		
Double Entry		
Max Recall		
Soft Recall		
Max 2		
Cond. Service		
Man Cntrl Calls		
Yellow Start	2 6	
First Phases	3	

Preempt Timing <F/1+F+Row> **Phase Functions** <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing <F/1+Column+Phase>

Free Lag: 2 4 6 <C/1+F+0>

How to Set Page Access Code: F/1 – C + 0 + F + 1

Drop Number	12 <C/0+0+0>
Zone Number	12 <C/0+0+1>
Area Number	3 <C/0+0+2>
Area Address	119 <C/0+0+3>
QuickNet Channel (COM)	62 (QuickNet)

Communication Addresses

Flash Start	8 <F/1+0+E>
Red Revert	5.0 <F/1+0+F>
All Red Start	0.0 <F/1+C+0>

Start / Revert Times

Manual Plan: 0 = Automatic; 1-8 = Plan 1-8; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Manual Plan	14 <C/0+A+1>
Manual Offset	0 <C/0+B+1>

Manual Selection

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0 <F/1+0+0>
Exclusive FDW	0 <F/1+0+1>
All Red Clear	0.0 <F/1+0+2>

Exclusive Ped Phase

Notes: System detectors added as part of TLSP 1-15 Project
USED PED WALKING SPEED = 3.5 FPS TO CALCULATE FDW TIME.

INTERSECTION: ADOLPHIA/PARK VILLAGE & BLACK MTN — 233 Program

Overlap Assignments <E/29+Column+Row>

Row	Overlap 1	2	3	4	5	6	7	8
0	Load Switch Number							
1	Veh Set 1 - Phases							
2	Veh Set 2 - Phases							
3	Veh Set 3 - Phases							
4	Neg Veh Phases							
5	Neg Ped Phases							
6	Green Omit Phases							
7	Green Clear Omit Phs.							
8								
9								
A								
B								
C								
D	Green Clear							
E	Yellow Change							
F	Red Clear							

Row	F	
Fast Green Flash Phase		0
Green Flash Phases		1
Flashing Walk Phases		2
Guaranteed Passage		3
Simultaneous Gap Term	12345678	4
Sequential Timing		5
Advance Walk Phases		6
Delay Walk Phases		7
External Recall		8
Start-up Overlap Green		9
Max Extension		A
Inhibit Ped Reservice		B
Semi-Actuated		C
Start-up Overlap Yellow		D
Start-up Vehicle Calls	12345678	E
Start-up Ped Calls	12345678	F

Specials <F/2+F+Row>

Row	E	
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 3 5
F	IC Select (Interconnect)	2

Configuration <E/125+E+Row>

Row	F	
0	Ext. Permit 1 Phases	
1	Ext. Permit 2 Phases	
2	Exclusive Ped Assign	
3	Preempt Non-Lock	12345678
4	Ped for 2P Output	2
5	Ped for 6P Output	6
6	Ped for 4P Output	4
7	Ped for 8P Output	3
8	Yellow Flash Phases	
9	Low Priority A Phases	
A	Low Priority B Phases	
B	Low Priority C Phases	
C	Low Priority D Phases	
D	Restricted Phases	
E	Extra 2 Config. Bits	3

Configuration <E/125+F+Row>

Row	C	
0	EV-A	
1	EV-B	
2	EV-C	
3	EV-D	
4	RR-1 *	- - -
5	RR-2 *	- - -
6	SE-1	0
7	SE-2	0

Preemption Priority <E/125+C+Row>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	2	
0		0
1	Phase 1	0
2	Phase 2	0
3	Phase 3	0
4	Phase 4	0
5	Phase 5	0
6	Phase 6	0
7	Phase 7	0
8	Phase 8	0

Coordination Transition Minimums <C/5+2+Row>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore P/P on EV
6 =
7 = Reserved
8 =

Flash to PE 4
PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Time and Date

Begin Month	0 <C/5+2+A>
Begin Week	0 <C/5+2+B>
End Month	0 <C/5+2+C>
End Week	0 <C/5+2+D>

Daylight Savings Time

Daylight Savings Date:
If set to all zeros, standard dates will be used.

INTERSECTION: ADOLPHIA/PARK VILLAGE & BLACK MTN — 233 Program

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-Over
0	212U	39	45_7	2	123		1.8
1	6JJU	40	45_7	6	123		1.8
2	486U	41	45_7	4	123		1.8
3		42	45_7	8	123		
4		43	45_7	2	123		
5		44	45_7	6	123		
6		45	45_7	4	123		
7		46	45_7	8	123		
8		47	67	2	123		
9		48	67	6	123		
A		49	67	4	123		
B		50	67	8	123		
C		55	45_7	5	123		
D		56	45_7	1	123		
E		57	45_7	7	123		
F		58	45_7	3	123		

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-Over
0		59	45_7	5	123		
1		60	45_7	1	123		
2		61	45_7	7	123		
3		62	45_7	3	123		
4		63	45_7	2	123		
5		64	45_7	6	123		
6		65	45_7	4	123		
7		66	45_7	8	123		
8		67	2	2	123		
9		68	2	6	123		
A		69	2	4	123		
B	PHASE 3 PED	70	2	3	123		
C		76	45_7	2	123		
D		77	45_7	6	123		
E	467L	78	45_7	4	123	10.0	
F		79	45_7	8	123		

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Program Type:

Row	Ped / Phase / Overlap 1	2	3	4	5	6	7	8
Walk								
Don't Walk								
Phase Green								
Phase Yellow								
Phase Red								
Overlap Green								
Overlap Yellow								
Overlap Red								

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type: 0
Enable Redirection (Enable Redirection = 30)

Max OFF (minutes): 5 <D/0+0+1>
Max ON (minutes): 60 <D/0+0+2>
Detector Failure Monitor

Row	D	
Output Port 1		0
Output Port 2		1
Output Port 3		2
Output Port 4		3
Output Port 5		4
Output Port 6		5
Output Port 7		6

Dimming <E/125+D+Row>

Row	Number of Digits	
1st Digit		0
2 ed Digit		1
3 ed Digit		2
4 th Digit		3
5 th Digit		4
6 th Digit		5
7 th Digit		6
8 th Digit		7
9 th Digit		8
10 th Digit		9
11 th Digit		A
12 th Digit		B
13 th Digit		C
14 th Digit		D
15 th Digit		E

Dial-Back Telephone Number <C/5+D+Row>

Disable Alarms
1 = Stop-Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

Row	B	
DELAY-A	1	A
DELAY-B	1	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

<D/0+B+Row> (seconds)
Delay Logic Times

Omit Alarm: #NAME? <C/5+F+0>
Disable Alarm Reporting

Time: 0 <C/5+C+0>
Redial Time (minutes)
(View Redial Timer at E/2+D+6)

INTERSECTION: ADOLPHIA/PARK VILLAGE & BLACK MTN — 233 Program

TOD Coordination <9/0.1+Row> (Bank 1)

Row	Time	Plan	Other	Day of Week
0	07 : 00	1	A	23456
1	09 : 00	E	0	23456
2	15 : 00	2	A	23456
3	18 : 00	E	0	1234567

TOD Function <7/0.1+Row>

Row	Time	Func.	Day of Week
0	07 : 00	B	23456
1	08 : 30	B	23456

<E/27+4+Row>

Row	Column 4 Phases/Bits
0	23 6

Holiday Dates <8/1.1+Row> (Bank 1)

Row	Day	Year	Month	Holiday Type
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Holiday Events <9/1.1+Row> (Bank 1)

Row	Time	Plan	Other	Holiday Type
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

T.O.D. Functions:
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phase
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select:
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Month Select:
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Cycle Timer:
Master: C/0 + A + 0
Ring A: C/0 + B + 0
Ring B: C/0 + D + 0

Interval Timer:
Ring A: F/0 + A + Interval Row
Ring B: F/0 + B + Interval Row

Master Plan: C/0 + A + 2
Current Plan: C/0 + A + 3
TOD Plan: C/0 + A + 5

TOD Coordination <9/0.2+Row> (Bank 2)

Row	Time	Plan	Other	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Holiday TOD Function <7/0.2+Row>

Row	Time	Func.	Holiday Type
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
A			
B			
C			
D			
E			
F			

<E/28+Row>

Row	Column 4 Phases/Bits
0	

Holiday Dates <8/1.2+Row> (Bank 2)

Row	Day	Year	Month	Holiday Type
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Holiday Events <9/1.2+Row> (Bank 2)

Row	Time	Plan	Other	Holiday Type
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

INTERSECTION: ADOLPHIA/PARK VILLAGE & BLACK MTN — 233 Program

Coord Ring: 1 = Programmed WALK Time for Sync Phases; 2 = Always Terminate Sync Phase Pads

Row	Plan Name --->	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
0	Cycle Length	190	150							
1	Phase 1 - ForceOff	140	75							
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff	45	17							
4	Phase 4 - ForceOff	196	57							
5	Phase 5 - ForceOff	124	91							
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff									
9	Ring Offset									
A	Offset 1	108	129							
B	Offset 2									
C	Offset 3									
D	Perm 1 - End	10	10							
E	Hold Release	255	255							
F	Zone Offset	0	0							

Coordination - Timing Plans <C/1+Plan+Row>

Row	Plan Name --->	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
8	Ped Adjustment									
9	Perm 2 - Start									
A	Perm 2 - End									
B	Perm 3 - Start									
C	Perm 3 - End									
D	Reservice Time									
E	Reservice Phases									
F										
8	Prelimed Phases									
9	Max Recall									
A	Perm 1 Veh Phase									
B	Perm 1 Ped Phase									
C	Perm 2 Veh Phase									
D	Perm 2 Ped Phase									
E	Perm 3 Veh Phase									
F	Perm 3 Ped Phase									

Coordination - Parameters <C/2+Plan+Row>

Row		1
0	Plan 1 - Sync	
1	Plan 2 - Sync	2 6
2	Plan 3 - Sync	2 6
3	Plan 4 - Sync	
4	Plan 5 - Sync	
5	Plan 6 - Sync	
6	Plan 7 - Sync	
7	Plan 8 - Sync	
8	Plan 9 - Sync	
9	NEMA Sync	
A	NEMA Hold	
B		
C		
D		
E	Coord Extra	
F		

Sync Phases <C/1+E+Row>

Row		F
0	Free Lag	2 4 6
1	Plan 1 - Lag	2 4 67
2	Plan 2 - Lag	2 4 67
3	Plan 3 - Lag	
4	Plan 4 - Lag	
5	Plan 5 - Lag	
6	Plan 6 - Lag	
7	Plan 7 - Lag	
8	Plan 8 - Lag	
9	Plan 9 - Lag	
A	External Lag	
B		
C		
D		
E		
F		

Lag Phases <C/1+F+Row>

Coordination Timing By:

INTERSECTION: ADOLPHIA/PARK VILLAGE & BLACK MTN — 233 Program

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Spec. Funct. 1	NOT-3	Max 2	Prelimed	Set Monday	Dial 2 (1-Wire)	Sim Term	0
1	Spec. Funct. 2	NOT-4	System Det 1 60	Plan 1	Ext. Perm 1	Dial 3 (1-Wire)	EV-A 71	1
2	Spec. Funct. 3	OR-4 (a)	System Det 2 62	Plan 2	Ext. Perm 2	Offset 1 (1-Wire)	EV-B 72	2
3	Spec. Funct. 4	OR-4 (b)	System Det 3	Plan 3	Dimming	Offset 2 (1-Wire)	EV-C 73	3
4	NAND-3 (a)	OR-5 (a)	System Det 4	Plan 4	Set Clock	Offset 3 (1-Wire)	EV-D 74	4
5	NAND-3 (b)	OR-5 (b)	System Det 5 60	Plan 5	Stop Time	Free (1-Wire)	RR-1 51	5
6	NAND-4 (a)	OR-6 (a)	System Det 6 53	Plan 6	Flash Sense 81	Flash (1-Wire)	RR-2 52	6
7	NAND-4 (b)	OR-6 (b)	System Det 7	Plan 7	Manual Enable	Excl. Ped Omit	Spec. Event 1	7
8	OR-7 (a)	Flg 3 Diamond	System Det 8	Plan 8	Man. Advance	NOT-1	Spec. Event 2	8
9	OR-7 (b)	Flg 4 Diamond	Max Inhibit (nema)	Plan 9	External Alarm	NOT-2	External Lag	9
A	OR-7 (c)	AND-4 (a)	Force A (nema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a)	A
B	OR-7 (d)	AND-4 (b)	Force B (nema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b)	B
C	OR-8 (a)	NAND-1 (a)	C.N.A. (nema)	DELAY-C	Overlap Set 2	OR-2 (a)	AND-2 (a)	C
D	OR-8 (b)	NAND-1 (b)	Hold (nema)	DELAY-D	Overlap Set 3	OR-2 (b)	AND-2 (b)	D
E	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)	E
F	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)	F

Assignable Inputs <E/126+Column+Row>

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1	TOD Out 1	Dial 2 (1-Wire)	0
1	Phase ON - 2	Sp Evnt Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dial 3 (1-Wire)	1
2	Phase ON - 3	Sp Evnt Out 2	Fast Flasher	Plan 2	OR-2	TOD Out 3	Offset 1 (1-Wire)	2
3	Phase ON - 4	Sp Evnt Out 3	Flg 3 Diamond	Plan 3	OR-3	TOD Out 4	Offset 2 (1-Wire)	3
4	Phase ON - 5	Sp Evnt Out 4	Flg 4 Diamond	Plan 4	AND-1	TOD Out 5	Offset 3 (1-Wire)	4
5	Phase ON - 6	Sp Evnt Out 5		Plan 5	AND-2	TOD Out 6	Free (1-Wire)	5
6	Phase ON - 7	Sp Evnt Out 6		Plan 6	AND-3	TOD Out 7	Flash (1-Wire)	6
7	Phase ON - 8	Sp Evnt Out 7		Plan 7	NOT-2	TOD Out 8	Preempt	7
8	Ph. Check - 1	Sp Evnt Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A	8
9	Ph. Check - 2		NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B	9
A	Ph. Check - 3	Detector Fail	OR-4	Spec. Funct. 3	EV-C	DELAY-A	Low Priority C	A
B	Ph. Check - 4	Spec. Funct. 1	OR-5	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D	B
C	Ph. Check - 5	Spec. Funct. 2	OR-6	NAND-3	RR-1	DELAY-C		C
D	Ph. Check - 6	Central Control	AND-4	NAND-4	RR-2	DELAY-D		D
E	Ph. Check - 7	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E		E
F	Ph. Check - 8	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F		F

Assignable Outputs <E/127+Column+Row>

INTERSECTION: BLACK MOUNTAIN Rd & CANYONSIDE PARK — 223 Program

Group Assignment: Field Master Assignment: BLACK MTN Rd
MIN Street Name: BLACK MTN Rd; ENV Street Name: CANYONSIDE PARK Dwy; CANYONSIDE PARK; BLACK MTN Rd
Lane Database Change: System Ref. Number:

Row	Column # ---> / Phase # --->	1	2	3	4	5	6	7	8
0	Ped Walk				7		7		
1	Ped FDW				20		20		
2	Min Green		10		4	4	10		
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn		3.2		2.0	2.0	3.5		
6	Max Gap		3.2		2.0	2.0	3.5		
7	Min Gap		0.2		2.0	2.0	0.2		
8	Max Limit		50		40	30	50		
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		1.0				0.9		
E	Yellow		5.3		3.4	3.4	4.7		
F	Red Clear		1.0		1.5 1.0	1.5 1.0	1.0		
	Grade								

Phase Timing - Bank 1 (F + Phase + Row) <F Page>

Row	C	F
	RR-1 Delay	Permit 2 456
	RR-1 Clear	Red Lock
0	EV-A Delay	Yellow Lock
0	EV-A Clear	Min Recall 2 6
0	EV-B Delay	Ped Recall
0	EV-B Clear	Peds (View) 4 6
0	EV-C Delay	Rest In Walk
0	EV-C Clear	Red Rest
	EV-D Delay	Dbl Entry
	EV-D Clear	Max Recall
	RR-2 Delay	Soft Recall
	RR-2 Clear	Max 2
---	View EV Delay	Cond Serv
---	View EV Clear	Ped Lock 1234567
---	View RR Delay	Yellow Start 2 6
---	View RR Clear	1st Phases 4

Preempt Timing (F + E + Row) <F Page>

Phase Functions <F Page> (F + F + Row)

Max Initial	0 F + 0 + E
Red Revert	5.0 F + 0 + F
Alt Red Start	0.0 F + C + O

Start / Revert Times

Group Number	11	C + 0 + 0
Zone Number	11	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	114	C + 0 + 3
Qualified Channel	DIG87	(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	2 4 6	0

Lag Phases <C Page>

Overlap Timing

Row	C Green Clear	D Yellow Change	D Red Clear	D Load-Switch #
Overlap A				
Overlap B				
Overlap C				
Overlap D				

<F Page> (F + COLOR +) <D Page> (D + 0 + OVERLAP)

Manual Plan	0	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 14 = Free; 15 = Flash
Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Downtime Flash 255 (minutes) — Downtime Before Auto Manual Flash (F + 0 + 8)

Disable Communication Ports: Disable Ports 234 (D + D + 9)

Timing Sheet By: MXW
Approved By: EFF
Drawing Number:
Timing Implemented On: 5/19/05

PAGE 1
City of San Diego

INTERSECTION: BLACK MOUNTAIN Rd & CANYONSIDE PARK — 223 Program

Row	Time (00)	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function: 7 + ROW <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override; Bit 2 - Phase Bank 2; Bit 3 - Phase Bank 3; Bit 4 - Double Detector OFF Monitor; Bit 7 - Detector Count Monitor; Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P
6	Ped 6P 6
7	Ped 4P 4
8	Ped 8P
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration <E Page> E + F + ROW

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases 2 5
B	EV-B Phases 4
C	EV-C Phases 6
D	EV-D Phases
E	Extra 1 Config. Bits 1_345
F	IC Select (Interconnect) 2

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Configuration (For access, set F + 9 + E = 1) E + E + ROW

Time and Date
8-0: Hour, Minute, Day-of-Week
8-1: Day-of-Month, Year, Month
8-F: Seconds

Disable Parity 0 (0+9+0)
Dial-Up Telephone Communications (If set to a non-zero value, parity will be disabled)

Program Information: C + C + 0 = program; C + C + F = version
Remote Download: C + 0 + 4 = 1 -255; w/ E + E + E bit 5 on

ITERSECTION: BLACK MOUNTAIN Rd & CANYO IDE PARK — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6	10.0	
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		1.8
3	10.0	
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1 — 0
2	System Det. # 2 — 0
3	System Det. # 3 — 0
4	System Det. # 4 — 0
5	System Det. # 5 — 0
6	System Det. # 6 — 0
7	System Det. # 7 — 0
8	System Det. # 8 — 0

System Detectors <D Page>

Max ON (min)	5 D+A=E
Max OFF (min)	60 D+A=F

Detector Failure Monitor

Phase Number	0 F+D+1
Time Before Yellow	0.0 F+D+3

Advance Warning Beacon - Sign 1

Phase Number	0 F+D+1
Time Before Yellow	0.0 F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+D+5
Short Failure	0.5 F+D+7

Power Cycle Correction (Default = 0.0)

INTERSECTION: BLACK MOUNTAIN Rd & CANYONSIDE PARK — 223 Program

Coordination Timing By: WH
Implemented On: 4/4/2005

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + D
Ring A Cycle	C + B + D
Ring B Cycle	C + D + D
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Column # →	1	2	3	4	5	6	7	8	9
	Plan Name →									
0	Cycle Length	95	80	150						
1	Phase 1 - ForceOff									
2	Phase 2 - ForceOff	0		0						
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff	34	24	37						
5	Phase 5 - ForceOff	46	38	56						
6	Phase 6 - ForceOff	0		0						
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff									
9	Ring Offset									
A	Offset A	63	43	58	650					
B	Offset B									
C	Offset C									
D	Permissive	10	8	15						
E	Hold Release	255		255						
F	Ped Shift	10	30	0						

Coordination <C Page>

C + Plan + ROW

Row	Time	Plan	Offset	Day of Week
0	21 16 : 48	1	A	23456
1	04 18 : 3900	E	A	1234567
2	15:00	2	A	- 23456 -
3	18:00	3	A	- 23456 -

TOD Coordination
<9 Key with C+0+9+1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

		Row	
Plan 1	2 8	0	Free Lag
Plan 2		1	Plan 1 - Lag — 2 4 6
Plan 3		2	Plan 2 - Lag
Plan 4		3	Plan 3 - Lag
Plan 5		4	Plan 4 - Lag
Plan 6		5	Plan 5 - Lag
Plan 7		6	Plan 6 - Lag
Plan 8		7	Plan 7 - Lag
Plan 9		8	Plan 8 - Lag
Coord Ped*		9	Plan 9 - Lag
NEMA Hold		A	Coord Max *
		B	Coord Lag *
		C	
		D	
		E	
		F	

Sync Phases
C + E + FUNCTION #

Lag Phases <C Page>
C + F + FUNCTION #

Transition Type	0

TBC Transitions
C + D + D

Transition Type
0 = Shortway
Non-zero = Longtwo

INTERSECTION: BLACK MOUNTAIN RD @ CANYONSIDE PARK DWY — Page 1 (of 9)

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street Name: BLACK MOUNTAIN
E/W Street Name: CANYONSIDE PARK
Last Database Change:

Change Record

Change	By	Date	Change	By	Date
	MSS				

Notes:

Manual Plan: 0 <C0+A+1>
Manual Offset: 0 <C0+B+1>

Communication Addresses

Drop Number	11	<C/S+0+0>
Zone Number	11	<C/S+0+1>
Area Number	3	<C/S+0+2>
Area Address	114	<C/S+0+3>
QuicNet Channel	CDMA	(QuicNet)

Manual Selection

Flash Start	0 <F/T+0+E>
Red Revert	5.0 <F/T+0+F>
All Red Start	0.0 <F/T+C+D>
FYA Red Revert	0.0 <F/T+0+5>
OVLP CRO Red	0.0 <F/T+0+3>

Start / Revert Times

Exclusive Walk	0 <F/T+0+D>
Exclusive FDW	0 <F/T+0+1>
All Red Clear	0.0 <F/T+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at 8/12/7/A+E & F)

Row	Column Numbers →	1	2	3	4	5	6	7	8
	Phase →		BLACK MTN		CANYONSIDE		BLACK MTN		
			↑		→	↰	↓		
6	Ped Walk				7		7		
7	Ped FDW				19		7		
8	Min Green		10		4	4	10		
9	Type 3 Disconnect								
A	Added per Vehicle								
B	Veh Extension		3.4		2.0	2.0	3.4		
C	Max Gap		3.4		2.0	2.0	3.4		
D	Min Gap		0.2		2.0	2.0	0.2		
E	Max Limit		60		40	30	60		
F	Max Limit 2								
0	Actv / Delay Walk								
1	Ped Min Ped FDW								
2	Cond Serv Check								
3	Reduce Every		0.9				0.9		
4	Yellow Change		5.0		3.9	3.4	5.0		
5	Red Clear		1.0		1.5				

Phase Timing - Bank 1

Santa Street
Div. to implement
Mariana
7/30/15

Phase 1								
Phase 2								
Phase 3								
Phase 4								
Phase 5								
Phase 6								
Phase 7								
Phase 8								
Max Initial	---	---	---	---	---	---	---	---
Alternate Walk								
Alternate FDW								
Alternate Initial								
Alternate Extension								

Alternate Timing <C+0+F+1>

RR-1 Delay	
RR-1 Clear	
EV-A Delay	
EV-A Clear	
EV-B Delay	
EV-B Clear	
EV-C Delay	
EV-C Clear	
EV-D Delay	
EV-D Clear	
Max Recall	
Soft Recall	
RR-2 Clear	
RR-2 Delay	
(New EV Delay)	---
(New EV Clear)	---
(New RR Delay)	---
(New RR Clear)	---

Preempt Timing

Permit	2 4 6
Red Lock	
Yellow Lock	
Min Recall	2 6
Ped Recall	
(New Set Phos	4 6
Rest In Walk	
Red Rest	
Dual Entry	
Max Recall	
Soft Recall	
Max 2	
Cond. Service	
Man Cntrl Calls	
Yellow Start	2 6
First Phases	4

Phase Functions <C+0+F+1>

INTERSECTION: BLACK MOUNTAIN RD @ CANYONSIDE PARK DWY — Page 2 (of 9)

Row	Column Numbers →	1	2	3	4	5	6	7	8
	Overlap Name →								
0	Load Switch Number								
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Pha.								
8	Overlap Recall								
9	Queue Jump Phase								
A	Queue Jump Time								
B	Minimum Green								
C	Maximum Green								
D	Green Clear								
E	Yellow Change								
F	Red Clear								

Overlap Assignments <C+0+E+29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWS During Initial
2 = Reserved
3 = Disable Min Walk
4 = Quicknet System
5 = Ignore PIP on EV
6 = Manual Hold in FDW
7 = Allow Quicknet PE
8 = Flash Grn B4 Yellow

	C
EV-A	0
EV-B	0
EV-C	0
EV-D	0
RR-1 *	---
RR-2 *	---
SE-1	0
SE-2	0

Preempt Priority
<C+0+E+125>
(* RR-1 is always Highest, and RR-2 is always Second Highest.)

Row	Column Numbers →	D
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 6
B	EV-B Phases	4
C	EV-C Phases	6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration <C+0+E+125>

Row	Column Numbers →	E
0	Ext. Permit 1 Phases	
1	Ext. Permit 2 Phases	
2	Exclusive Ped Assign	
3	Preempt Non-Lock	
4	Ped for 2P Output	6
5	Ped for 4P Output	4
6	Ped for 6P Output	
7	Yellow Flash Phases	
8	Low Priority A Phases	
9	Low Priority B Phases	
A	Low Priority C Phases	
B	Low Priority D Phases	
C	Restricted Phases	
D	Extra 2 Config. Bits	3

Configuration <C+0+E+125>

Row	Column Numbers →	F
0	Fast Green Flash Phase	
1	Green Flash Phases	
2	Flashing Walk Phases	
3	Guaranteed Passage	
4	Simultaneous Gap Term	
5	Sequential Timing	
6	Advance Walk Phases	
7	Delay Walk Phases	
8	External Recall	
9	Start-up Overlap Green	
A	Max Extension	
B	Inhibit Ped Reservice	
C	Semi-Actuated	
D	Start-up Overlap Yellow	
E	Start-up Vehicle Calls	
F	Start-up Ped Calls	

Specials <C+0+F+2>

Flash to PE 4:
PE Non-Lock
1 = EV-A — 5 = RR-1
2 = EV-B — 6 = RR-2
3 = EV-C — 7 = SE-1
4 = EV-D — 8 = SE-2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2
Phase 1	10
Phase 2	10
Phase 3	10
Phase 4	10
Phase 5	10
Phase 6	10
Phase 7	10
Phase 8	10

Coordination Transition Minimums
<C+D+C+5>

INTERSECTION: BLACK MOUNTAIN RD @ CANYONSIDE PARK DWY

Coordination - Bank 1 <C+0+D+E>

Row	Column Numbers → / Plan Name →	1	2	3	4	5	6	7	8	9
0	Cycle Length	95	150							
1	Phase 1 - ForceOff									
2	Phase 2 - ForceOff	0	0							
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff	34	37							
5	Phase 5 - ForceOff	46	65							
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff									
9	Ring Offset									
A	Offset 1	63	55							
B	Offset 2									
C	Offset 3									
D	Perm 1 - End	10	15							
E	Hold Release	255	255							
F	Reserved	0	0							

Coordination - Bank 2 <C+0+D+2>

Row		1	2	3	4	5	6	7	8	9
0	Ped Adjustment	0	0							
1	Perm 2 - Start									
2	Perm 2 - End									
3	Perm 3 - Start									
4	Perm 3 - End									
5	Reservice Time									
6	Reservice Phases									
7										
8	Prefimed Phases									
9	Max Recall									
A	Perm 1 Veh Phase									
B	Perm 1 Ped Phase									
C	Perm 2 Veh Phase									
D	Perm 2 Ped Phase									
E	Perm 3 Veh Phase									
F	Perm 3 Ped Phase									

Sync Phases <C+0+C+1>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row		E
0		
1	Plan 1 - Sync	2 6
2	Plan 2 - Sync	2 6
3	Plan 3 - Sync	
4	Plan 4 - Sync	
5	Plan 5 - Sync	
6	Plan 6 - Sync	
7	Plan 7 - Sync	
8	Plan 8 - Sync	
9	Plan 9 - Sync	
A	NEMA Sync	
B	NEMA Hold	
C		
D	Coord Extra	
E		
F		

Lag Phases <C+0+C+1>

Row		F
0		
1	Free Lag	
2	Plan 1 - Lag	2 4 6
3	Plan 2 - Lag	2 4 6
4	Plan 3 - Lag	
5	Plan 4 - Lag	
6	Plan 5 - Lag	
7	Plan 6 - Lag	
8	Plan 7 - Lag	
9	Plan 8 - Lag	
A	Plan 9 - Lag	
B	External Lag	
C	Lag Hold	
D		
E		
F		

INTERSECTION: Main St & Broadway

Assignable Inputs <C+0+E+136>

Row	Column 5	Column 9	Column A	Column B	Column C	Column D	Column E	Column F
0	One-Shot Timer	Latch 1 Set	NOT-3	Max 2	Preempt	Set Monday	Dial 2 (1-Wire)	Sim Term 0
1	AND-5 (a)	Latch 1 Reset	NOT-4	Reserved	Plan 1	Ext. Perm 1	Dial 3 (1-Wire)	EV-A 71
2	AND-5 (b)	Latch 2 Set	OR-4 (a)	Reserved	Plan 2	Ext. Perm 2	Offset 1 (1-Wire)	EV-B 72
3	AND-5 (c)	Latch 2 Reset	OR-4 (b)	Reserved	Plan 3	Gate Down	Offset 2 (1-Wire)	EV-C 73
4	AND-5 (d)	NAND-3 (a)	OR-5 (a)	Reserved	Plan 4	Set Clock	Offset 3 (1-Wire)	EV-D 74
5	Reserved	NAND-3 (b)	OR-5 (b)	Reserved	Plan 5	Stop Time 82	Free (1-Wire)	BR-1 81
6	Reserved	NAND-4 (a)	OR-6 (a)	Reserved	Plan 6	Flash Sense 81	Flash (1-Wire)	BR-2 82
7	Reserved	NAND-4 (b)	OR-6 (b)	Reserved	Plan 7	Manual Enable	Exit. Ped Omit	Spec. Event 1
8	Spec. Funct. 1	OR-7 (a)	EXTMR	Reserved	Plan 8	Man. Advance	NOT-1	Spec. Event 2
9	Spec. Funct. 2	OR-7 (b)	Reserved	Max Inhibit (nema)	Plan 9	External Alarm	NOT-2	External Lag
A	Spec. Funct. 3	OR-7 (c)	AND-4 (a)	Force A (nema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a)
B	Spec. Funct. 4	OR-7 (d)	AND-4 (b)	Force B (nema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b)
C	Reserved	OR-8 (a)	NAND-1 (a)	C.N.A. (nema)	DELAY-C	Overlap Set 2	OR-2 (a)	AND-2 (a)
D	Reserved	OR-8 (b)	NAND-1 (b)	Hold (nema)	DELAY-D	Overlap Set 3	OR-2 (b)	AND-2 (b)
E	Reserved	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)
F	Reserved	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)

Assignable Outputs <C+0+E+127>

Row	Column 8	Column 9	Column A	Column B	Column C	Column D	Column E	Column F
0	Reserved	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1	TOD Out 1	Dial 2 (1-Wire)
1	Reserved	Phase ON - 2	Sp Event Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dial 3 (1-Wire)
2	Reserved	Phase ON - 3	Sp Event Out 2	Fast Flasher	Plan 2	OR-2	TOD Out 3	Offset 1 (1-Wire)
3	Reserved	Phase ON - 4	Sp Event Out 3	EXTMR	Plan 3	OR-3	TOD Out 4	Offset 2 (1-Wire)
4	Reserved	Phase ON - 5	Sp Event Out 4	One-Shot Timer	Plan 4	AND-1	TOD Out 5	Offset 3 (1-Wire)
5	Reserved	Phase ON - 6	Sp Event Out 5	Reserved	Plan 5	AND-2	TOD Out 6	Free (1-Wire)
6	Reserved	Phase ON - 7	Sp Event Out 6	Latch 1	Plan 6	AND-3	TOD Out 7	Flash (1-Wire)
7	Reserved	Phase ON - 8	Sp Event Out 7	Latch 2	Plan 7	NOT-3	TOD Out 8	Preempt
8	Green 3	Ph. Check - 1	Sp Event Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A
9	Ffh Yell Arrow 1	Ph. Check - 2		NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B
A	Green 1	Ph. Check - 3		Spec. Funct. 3	EV-C	DELAY-A	Low Priority C
B	Ffh Yell Arrow 3	Ph. Check - 4	Detector Fail	OR-4	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D
C	Green 3	Ph. Check - 5	Spec. Funct. 1	OR-5	Spec. Funct. 5	DELAY-B	DELAY-C	AND-5
D	Ffh Yell Arrow 5	Ph. Check - 6	Spec. Funct. 2	OR-6	NAND-3	BR-1	DELAY-C	AND-6
E	Green 5	Ph. Check - 7	Central Control	AND-4	NAND-4	BR-2	DELAY-D	AND-6
F	Ffh Yell Arrow 7	Ph. Check - 8	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E	Reserved
F	Green 7	Ph. Check - 9	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F	Reserved

INTERSECTION: Main St & Broadway

Phase Timing - Bank 2 <C+0+F+2>

Row	Column Numbers → / Phase Names →	1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Alternate Timing

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Transition Type
0,4 = Shortway
1,X = Longway
X,1 thru X,4 = Number of cycles when lengthing

Daylight Savings Date
If set to all zeros, standard dates will be used.

TBC Transition
Transition Type: 0.3 <C/5+1+9>

Hawk Select
Hawk Select: 0 <C/1+0+4> (7/1+0+4>)
200 = Mid-Block, 201 = Hawk

AB3418 Comm 2
Address: 0 <C/1+0+6>
Select Parity: 0 <C/1+0+5>
0 = No Parity, 1 = Even

Daylight Savings Time
Begin Month: 3 <C/5+2+A>
Begin Week: 2 <C/5+2+B>
End Month: 11 <C/5+2+C>
End Week: 1 <C/5+2+D>

Advance Warning Beacon - Sign 1
Time B4 Yellow: 0.0 <F/1+C+E>
Phase Number: 0 <F/1+C+F>

Advance Warning Beacon - Sign 2
Time B4 Yellow: 0.0
Phase Number: 0 <F/1+D+F>

Yellow Yield Coordination
Offset Time: 0 <C/5+2+E>
Max Cycle Time: 20 <C/5+2+F>

Local Alarm Disable
Omit Alarm: 12345678
#NAME?
<C/5+F+0>

Other Parameters
IEN Status: 1 <C/5+1+B>
Synch Time: 0.0 <C/5+1+C>

Phase Timing - Bank 3 <C+0+F+3>

Row		1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Alternate Timing

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

INTERSECTION: BLACK MOUNTAIN RD @ CANYONSIDE PARK DWY

Detector Assignments <C+0+E+126>

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0	22U	39	45_7	2	123		1.0
1	6J2U	40	45_7	6	123		1.0
2	44U	41	45_7	4	123	10.0	
3		42	45_7	8	123		
4	2J2L	43	45_7	2	123		1.0
5	6J2L	44	45_7	6	123		1.0
6		45	45_7	4	123		
7		46	45_7	8	123		
8		47	67	2	123		
9		48	67	6	123		
A		49	67	4	123		
B		50	67	8	123		
C		55	45_7	1	123		
D		56	45_7	1	123		
E		57	45_7	7	123		
F		58	45_7	3	123		

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	45_7	5	123		
1		60	45_7	1	123		
2		61	45_7	7	123		
3		62	45_7	3	123		
4		63	45_7	2	123		
5		64	45_7	6	123		
6		65	45_7	4	123		
7		66	45_7	8	123		
8		67	2	2	123		
9		68	2	6	123		
A		69	2	4	123		
B		70	2	8	123		
C		76	45_7	2	123		
D		77	45_7	6	123		
E		78	45_7	4	123		
F		79	45_7	8	123		

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 =
7 = Failure - Min Recall
8 = Failure - Max Recall
9 = Report on Failure

Redirect Phase Outputs <C+0+E+127>

Column Numbers → /	1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green									5
Overlap Yellow									6
Overlap Red									7

Enable Redirection
(Enable Redirection = 30)
Cabinet Type: 0 <E/125+D+0>

Detector Failure Monitor
Max OFF (minutes): 20 <C/d0+0+1>
Max ON (minutes): 7 <C/d0+0+2>
Chatter Fail Time: 0 <C/d0+0+4>

Delay Logic Times
<C+0+D+0> (seconds)

	D	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

INTERSECTION: BLACK MOUNTAIN RD @ CANYONSIDEPARK DWY

Page 7 (of 9)

Row	Time	Plan	Overlap	Day of Week
0	07 : 00	1	A	_23456
1	09 : 00	E	A	_23456
2	15 : 00	2	A	_23456
3	18 : 00	E	A	_23456
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0,1> (Bank 1)

Time	Function	Day of Week	Column 4 Phases/Bits

TOD Function <C+0+7=0,1> <C+0+E=27>

Dat	Year	Month	Holiday Type

Holiday Dates <C+0+8=1,1> (Bank 1)

Time	Plan	Overlap	Holiday Type

Holiday Events <C+0+9=1,1> (Bank 1)

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Overlap	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0,2> (Bank 2)

Time	Function	Holiday Type	Column 4 Phases/Bits

Holiday TOD Function <C+0+7=0,2> <C+0+E=28>

Dat	Year	Month	Holiday Type

Holiday Dates <C+0+8=1,2> (Bank 2)

Time	Plan	Overlap	Holiday Type

Holiday Events <C+0+9=1,2> (Bank 2)

Month Select: October = A, November = B, December = C

Printed on 6/3/2015 1:52 PM

Timing Sheet Version: 233 MC1

Version: 4.5.3.3

INTERSECTION: BLACK MOUNTAIN & MERCY

2 Program

Group Assignment:
Field Master Assignment:

Street Name: BLACK MOUNTAIN
Cnr Street Name: MERCY

Last Database Change: 9/5 / 10:44
Timing Sheet By: MMH/MSF
System Det. Number:
Approved by: MMH
Drawing Number: 20626-13
Timing Implemented On: 10/16/01

Row	Phase # --->	1	3	5	4	6	7	8	Row
			↑			↓		↓+8	
0	Ped Walk		7			7	7	7	0
1	Ped FDW		26			11	32	28	1
2	Min Green	4	10		4	10	4	6	2
3	Type 3 Limit								3
4	Add'Veh								4
5	Veh Extn	2.0	3.0		2.0	3.1	2.0	2.0	5
6	Max Gap	2.0	3.0		2.0	3.1	2.0	2.0	6
7	Min Gap	2.0	0.2		2.0	0.2	2.0	2.0	7
8	Max Limit	30	60		30	60	40	50	8
9	Max Limit 2								9
A	Bus Adv								A
B	Call to Phs								B
C	Reduce By		0.1			0.1			C
D	Every		1.1			1.1			D
E	Yellow	3.0	5.1		3.0	4.8	3.0	3.0	E
F	Red Clear	1.0	1.0		1.0	1.0	1.0	1.0	F

Phase Timing - Bank 1
F + Phase + Row

<F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row	F	Row
Permit	12__5678	0
Red Lock		1
Yellow Lock		2
Min Recall		3
Ped Recall		4
Peds (View)		5
Rest In Walk		6
Red Rest		7
Dbl Entry		8
Max Recall		9
Soft Recall	_2__6__	A
Max 2		B
Cond Serv		C
Ped Lock		D
Yellow Start	_2__6__	E
1st Phases	_____8	F

Phase Functions
F + Row

<F Page>

NOTE: PHASE 2 DO NOT DEDUCT YELLOW FROM WALK TIME.

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + D

Start / Revert Times

Drop Number		C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
Quic-Net Channel		(QuicNet)

Communication Addresses

C + F + 0	F [illegible]	Row
Free Lag	2 6 8	0

Lag Phases <C Page>

Row	9 Green Clear	C Yellow Change	D Red Clear	8 Local-Switch #
A				
B				
C				
D				

Overlap A
Overlap B
Overlap C
Overlap D

Overlap Timing
<F Page>
F + COLOR +

<D Page>
D + 0 + OVERLAP

Manual Plan	6	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	...234___

Disable Communication Ports
D + D + 9

Printed on 09/24/2001 10:45 AM

Page1

City of San Diego

INTERSECTION: BLACK MOUNTAIN & MERCY

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW

<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	7
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	2 8
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	1

Configuration
E + F + ROW

<E Page>

Row	E
0	Excludes Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit 2
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases 2 5
B	EV-B Phases
C	EV-C Phases 1 6
D	EV-D Phases 8
E	Extra 1 Config. Bits 1 34
F	IC Select (Interconnect) 2

Configuration
E + E + ROW

For access, set F + 9 + E = 1

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Postioned Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 8 + 4 = 1 -255
w/ E + E + E bit 5 on

Disable Parity	0

D+B+5

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Printed [illegible] 2001 10:45 AM

PAGE 2

[illegible] San Diego

INTERSECTION: BLACK MOUNTAIN & MERCY

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2	10.0	
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	212U	1
	212L	5
	203U	21
	203L	25
	2I4	9
	3I5	16
	406U	3
	406L	7
	407U	23
	407L	27
	4I8	11
	119U	18
	369L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234___
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	____5678
E	– – – – – – – –	1234___
F	– 25 26 27 28 – – –	2345___

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		#+D+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+D+6
Short Failure	0.5	F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 09/24/2001 10:45 AM

Page 3

City of San Diego

INTERSECTION: BLACK MOUNTAIN Rd & MERCY

223 Program

Coordination Timing By: WH
Implemented On: 4/4/2005

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + D
Ring A Cycle	C + B + D
Ring B Cycle	C + D + D
Min Cycle	C + A + E
Max Cycle	C + B + E

Plan

Row	Column # → / Plan Name →	1	2	3	4	5	6	7	8	9
8	Cycle Length	160								
9	Phase 1 - ForceOff	90								
A	Phase 2 - ForceOff	0								
B	Phase 3 - ForceOff									
C	Phase 4 - ForceOff									
D	Phase 5 - ForceOff	84								
E	Phase 6 - ForceOff	0								
F	Phase 7 - ForceOff	29								
0	Phase 8 - ForceOff	69								
1	Ring Offset									
2	Offset A	107								
3	Offset B									
4	Offset C									
5	Permissive	16								
6	Hold Release	255								
7	Ped Skip	10								

Coordination
C + Plan + ROW
<C Page>

TOD Coordination
<9 Key with C+D+9=1>

Row	Time	Plan	Offset	Day of Week
0	16 : 45	1	A	23456
1	18 : 30	E	A	1234567
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Sync Phases
C + E + FUNCTION #

Row	E	Row	F
		0 Free Leg	
	Plan 1	1 Plan 1 - Leg	2 6 8
	Plan 2	2 Plan 2 - Leg	
	Plan 3	3 Plan 3 - Leg	
	Plan 4	4 Plan 4 - Leg	
	Plan 5	5 Plan 5 - Leg	
	Plan 6	6 Plan 6 - Leg	
	Plan 7	7 Plan 7 - Leg	
	Plan 8	8 Plan 8 - Leg	
	Plan 9	9 Plan 9 - Leg	
	Coord Ped*	A Coord Max *	
	NEMA Hold	B Coord Lag *	
		C	
		D	
		E	
		F	

Lag Phases
<C Page>
C + F + FUNCTION #

Transition Type: 0
TBC Transition
C + D + D

Tangthen Type
0 = Shortway
Non-zero = Longthen

Printed on 4/21/2005 4:10 PM — PAGE 4 — City of San Diego

INTERSECTION: BLACK MOUNTAIN & WESTVIEW

223 Program

Group Assignment:
Field Master Assignment:
TEU Asset Name: BLACK MOUNTAIN
CIM Sheet Name: WESTVIEW
Timing Sheet By: MSP/JD
Approved By:
Last Database Change:
System Ref. Number:
Drawing Number: 23686-10-D
Timing Implemented On: 1/23/2002

Row	Phase # →	1	2	3	4	5	6	7	8
			↑				↓		←
		BLACK MOUNTAIN RD				BLACK MOUNTAIN RD			WESTVIEW PKWY
8	Ped Walk		7						7
9	Ped FDW		17						25
A	Min Green	4	10			4	10		4
B	Type 3 Limit								
C	Add/Veh								
D	Veh Extn	2.0	3.9			2.0	4.8		4.2
E	Max Gap	2.0	3.9			2.0	4.8		4.2
F	Min Gap	2.0	0.2			2.0	0.2		0.2
0	Max Limit	30	60			30	60		40
1	Max Limit 2	80							
2	Bus Adv								
3	Call to Phs								
4	Reduce By		0.1				0.1		0.1
5	Every		0.8				0.7		0.8
6	Yellow	3.4 3.0	6.0			3.4 3.0	4.9		3.4 3.1
7	Red Clear	1.0	1.0			1.0	1.0		1.0

WH 12/29/05

Phase Timing - Bank 1
F + Phase + Row

Row	E		F	
8	RR1-1 Delay		Permit	12 56 8
9	RR1-1 Clear		Red Lock	
A	EV-A Delay	0	Yellow Lock	
B	EV-A Clear	0	Min Recall	2 6
C	EV-B Delay		Ped Recall	
D	EV-B Clear		Peds (View)	2 8
E	EV-C Delay	0	Rest In Walk	
F	EV-C Clear	0	Red Rest	
0	EV-D Delay	0	Dbl Entry	
1	EV-D Clear	0	Max Recall	
2	RR1-2 Delay		Soft Recall	
3	RR1-2 Clear		Max 2	
4	View EV Delay	---	Cond Serv	
5	View EV Clear	---	Ped Lock	12345678
6	View RR Delay	---	Yellow Start	2 6
7	View RR Clear	---	1st Phases	8

Preempt Timing
<F Page>
F + E + Row

Phase Functions
<F Page>
F + F + Row

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	C + 0 + 0
Done Number	C + 0 + 1
Area Number	C + 0 + 2
Area Address	C + 0 + 3
Quickfret Channel	(QuickNet)

Communication Addresses

C + F + O

Row	Free Lag	Row
	2 6 8	0

Lag Phases <C Page>

Row	A Green	B Yellow Change	C Red Clear	D Load-Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing
<F Page>
F + COLOR +

<D Page>
D + 0 + OVERLAP

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash: 255 (minutes)
Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports: 234
Disable Communication Ports
D + D + 9

Printed on 11/05/2001 11:05 AM — Page1 — City of San Diego

INTERSECTION: BLACK MOUNTAIN & WESTVIEW

223 Program

Row	Time	ForceDir	Day of Week	Column F Phases/Bits
0	06 : 50	B	23456	1
1	08 : 50	B	23456	
2	06 : 50	3	23456	4
3	08 : 50	3	23456	2 6
4	16 : 02	3	23456	8
5	18 : 15	3	23456	2 6
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Rtc 1 - Local Overide
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped OP
6	Ped 6P
7	Ped 4P
8	Ped 8P
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

2 8

Configuration
E + F + ROW
<E Page>

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases: 2 5
B	EV-B Phases
C	EV-C Phases: 1 6
D	EV-D Phases: 8
E	Extra 1 Config. Bits: 1 345
F	IC Select (Interconnect): 2

Configuration
For access, set F + 9 + E = 1
E + E + ROW

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Master
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E bit 5 on

Disable Parity: 0 (D+0+0)
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Printed on 11/05/2001 11:05 AM — PAGE 2 — City of San Diego

INTERSECTION: BLACK MOUNTAIN & WESTVIE

223 Program

Row	1 Delay	1 Carry-over
0		
1		1.8
2		
3		1.8
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1/1	14
	202U	1
	202L	5
	203U	21
	203L	25
	204	9
	305	16
	406U	3
	406L	7
	407U	23
	407L	27
	408	11
	106U	18
	306L	20
---	---	---
---	---	---

Row	2 Delay	2 Carry-over
0		
1		1.8
2		
3		1.8
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>
D + X (across) + ROW

Row	E Detector Numbers
A	1 2 3 4 5 6 7 8 — 12345678
B	9 10 11 12 — — — — — 1234
C	13 14 15 16 17 18 19 20 — 12345678
D	— — — — 21 22 23 24 — 5678
E	— — — — — — — — — 1234
F	— 25 26 27 28 — — — — 2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5 (D+A+E
Max OFF (min)	60 D+A+F

Detector Failure Monitor

Phase Number	F+C+1
Time Before Yellow	F+C+3

Advance Warning Beacon - Sign 1

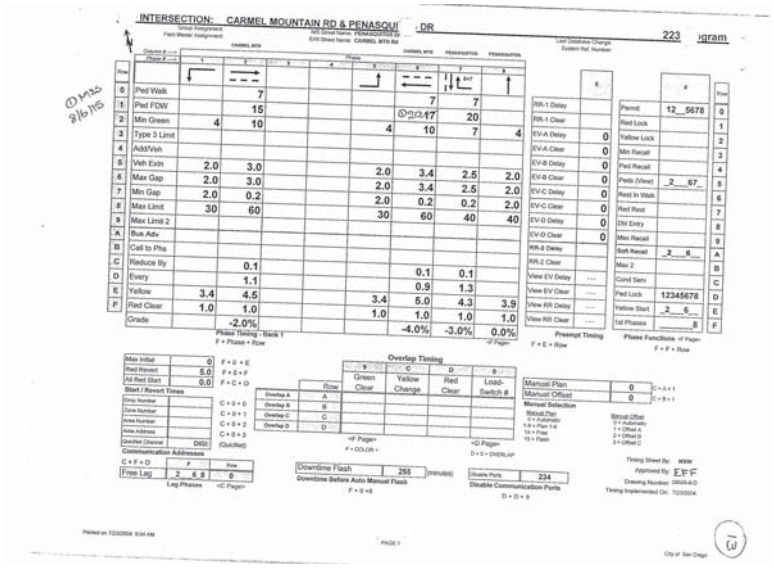
Phase Number	F+D+1
Time Before Yellow	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+D+6
Short Failure	0.5 F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 11/05/2001 11:05 AM — Page 3 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PENASQUI - DR 223 Program

Phase Timing - Bank 1

Row	Phase # →	1	2	3	4	5	6	7	8
0	Ped Walk		7				7	7	
1	Ped FDW		15				17	20	
2	Min Green	4	10			4	10	7	4
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	3.0			2.0	3.4	2.5	2.0
6	Max Gap	2.0	3.0			2.0	3.4	2.5	2.0
7	Min Gap	2.0	0.2			2.0	0.2	0.2	2.0
8	Max Limit	30	60			30	60	40	40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1	0.1	
D	Every		1.1				0.9	1.3	
E	Yellow	3.4	4.5			3.4	5.0	4.3	3.9
F	Red Clear	1.0	1.0			1.0	1.0	1.0	1.0
	Grade		-2.0%				-4.0%	-3.0%	0.0%

<F Page>

	E	F
RR-1 Delay		Permit 12_5678
RR-1 Clear		Red Lock
EV-A Delay	0	Yellow Lock
EV-A Clear	0	Min Recall
EV-B Delay	0	Ped Recall
EV-B Clear	0	Peds (Veg) _2_67_
EV-C Delay	0	Rest In Walk
EV-C Clear	0	Red Rest
EV-D Delay	0	Dbl Entry
EV-D Clear	0	Max Recall
RR-2 Delay		Soft Recall _2_6_
RR-2 Clear		Max 2
View EV Delay	---	Cond Serv
View EV Clear	---	Ped Lock 12345678
View RR Delay	---	Yellow Start _2_6_
View RR Clear	---	1st Phases _8

Preempt Timing — F + E + Row

Phase Functions <F Page> — F + F + Row

Overlap Timing

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page> F + COLOR + — <D Page> D + 0 + OVERLAP

Start / Revert Times

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
Alt Red Start	5.0	F + C + O

Ethernet Address		C + 0 + 0
Time Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
Quicher Channel	D932	(Quic/Net)

Coordination Addresses

C + F + O	F	Row
Free Lag	2_6_8	8

Lag Phases <C Page>

Manual Selection

Manual Plan	0 C + A + 1
Manual Offset	0 C + B + 1

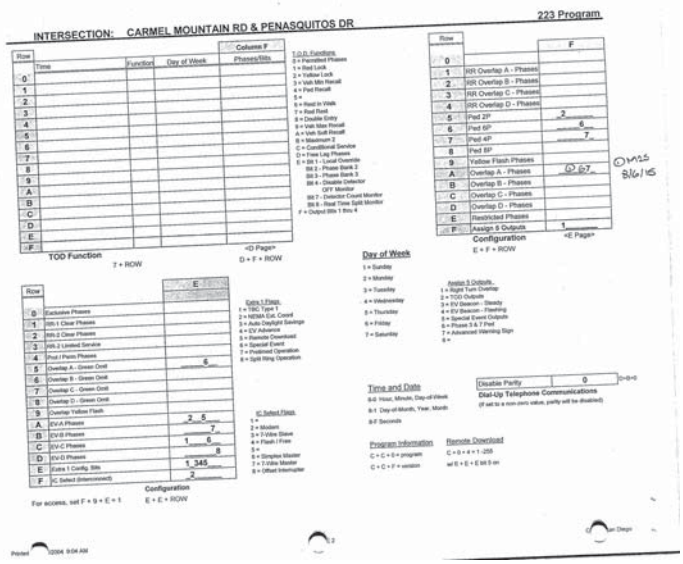
Manual Plan: 0 = Automatic, 1-4 = Plan 1-4, 10 = Free, 10 = Flash

Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

Downtime Flash	255 (minutes)
Downtime Before Auto Manual Flash	F + 0 + 8
Disable Ports	234
Disable Communication Ports	D + D + 9

Timing Sheet By: WWW
Approved By: EFF
Drawing Number: 2800-9-C
Timing Implemented On: 7/23/2004

Printed on 7/23/2004 9:04 AM — PAGE 1 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PENASQUITOS DR 223 Program

Row	Time	Function	Day of Week	Column F Phases/Ints
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2	_2_
6	Ped 6	6
7	Ped 4	7
8	Ped 8	
9	Yellow Flash Phases	
A	Overlap A - Phases	67
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	1

Configuration — E + F + ROW — <E Page>

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	6
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2_5
B	EV-B Phases	7
C	EV-C Phases	1_6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1_345
F	IC Select (Interconnect)	2

Configuration — E + E + ROW

For access, set F + 9 + E + 1

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preferred Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 3-Wire Slave
4 = Flash I Free
5 =
6 = Simplex Master
7 = 3-Wire Master
8 = Offset Interrupter

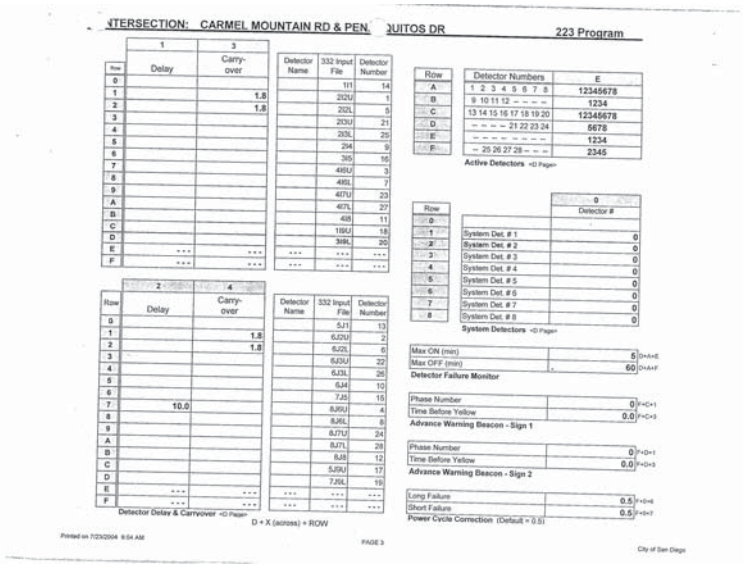
Time and Date
B-0: Hour, Minute, Day-of-Week
B-1: Day-of-Month, Year, Month
B-F: Seconds

Disable Parity 0 D+0+0
Dial-Up Telephone Communications
(F set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-255
set E + E = E bit 5 on

Printed 7/23/2004 9:04 AM — 2 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PEN QUITOS DR 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- 25 26 27 28 - - -	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1 0
2	System Det. # 2 0
3	System Det. # 3 0
4	System Det. # 4 0
5	System Det. # 5 0
6	System Det. # 6 0
7	System Det. # 7 0
8	System Det. # 8 0

System Detectors <D Page>

Max ON (min)	5 D+A+E
Max OFF (min)	60 D+A+F

Detector Failure Monitor

Phase Number	0 F+C+1
Time Before Yellow	0.0 F+C+3

Advance Warning Beacon - Sign 1

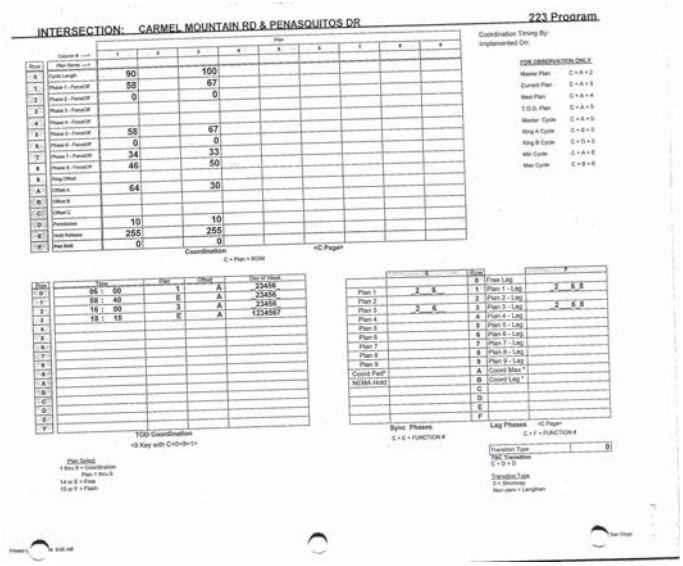
Phase Number	0 F+D+1
Time Before Yellow	0.0 F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+D+6
Short Failure	0.5 F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 7/23/2004 9:04 AM — PAGE 3 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PENASQUITOS DR 223 Program

Coordination Timing By:
Implemented On:

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 3
Ring B Cycle	C + B + 0
Min Cycle	C + A + E
Max Cycle	C + B + 6

Row	Plan →	1	2	3	4	5	6	7	8	9
0	Plan Name →									
1	Cycle Length	90		100						
2	Phase 1 - Force Off	58		67						
3	Phase 2 - Force Off	0		0						
4	Phase 3 - Force Off									
5	Phase 4 - Force Off									
6	Phase 5 - Force Off	58		67						
7	Phase 6 - Force Off	0		0						
8	Phase 7 - Force Off	34		33						
9	Phase 8 - Force Off	46		50						
A	Ring Offset									
B	Offset A	64		30						
C	Offset B									
D	Offset C									
E	Permissive	10		10						
F	Hold Release	255		255						
	Ped Shift	0		0						

Coordination — C + Plan + ROW — <C Page>

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	08 : 40	E	A	23456
2	15 : 00	3	A	23456
3	18 : 15	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination — <0 Key with C+D+9=1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

	E	Row	F
Plan 1	2_6_	0	Free Lag
Plan 2		1	Plan 1 - Lag 2_6_
Plan 3	3_6_	2	Plan 2 - Lag
Plan 4		3	Plan 3 - Lag 2_6_
Plan 5		4	Plan 4 - Lag
Plan 6		5	Plan 5 - Lag
Plan 7		6	Plan 6 - Lag
Plan 8		7	Plan 7 - Lag
Plan 9		8	Plan 8 - Lag
Coord Ped*		9	Plan 9 - Lag
NEMA Hold		A	Coord Max *
		B	Coord Lag *
		C	
		D	
		E	
		F	

Sync Phases — C + E + FUNCTION # — Lag Phases <C Page> C + F + FUNCTION #

Transition Type 0
TBC Transition C + D + 0
Transition Type 0 = Shortway, Non-zero = Longway

Printed on 7/23/2004 9:05 AM — 4 — City of San Diego

LOCATION: RTE 56 WB @ RANCHO PENSQUITOS BLVD / CARMEL MOUNTAIN RD
CALTRANS C8 Version 3 DATE: 4/6/2015 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	7	1	7	1	7	1	1	CLR RST
1	DONT WALK	1	31	1	35	1	29	1	1	
2	MIN GREEN	5	15	5	5	15	15	14	5	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	2.0	1.0	1.0	1.5	2.0	1.0	1.0	
6	MAX GAP	2.0	2.0	1.0	1.0	1.5	2.0	1.0	1.0	
7	MIN GAP	2.0	2.0	1.0	1.0	1.5	2.0	1.0	1.0	
8	MAX EXT	20	45	30	30	20	45	20	30	
9	MAX 2	35								YR
A	MAX 3			40						MO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOM
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.7	5.0	3.7	5.0	3.7	5.0	3.7	4.1	MIN
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC
	PED XING FT		108		124		100			
	BIKE XING FT		125			130	132	115		

PRE-EMPTION E		FLAGS F	1	2	3	4	5	6	7	8	
EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
RR1 CLR	5	RED LOCK	1		3		5		7		1
EVA DLY	0	YEL LOCK				4				8	2
EVA CLR	5	V RECALL		2				6			3
EVB DLY	0	P RECALL									4
EVB CLR	5	PED PHASES		2		4		6			5
EVC DLY	0	RT OLA									6
EVC CLR	5	RT OLB									7
EVD DLY	0	DBL ENTRY									8
EVD CLR	5	MAX 2 PHASES	1								9
MAX EV	255	LAG PHASES	READ ONLY								A
RR2 CLR	5	RED REST									B
		REST-IN-WALK									C
		MAX 3 PHASES			3						D
		YEL START UP		2				6			E
		FIRST PHASE			3				7		F
			1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0
FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 GS SEEKING	1
CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ☐

LOCATION: RTE 56 EB @ RANCHO PENASQUITO BLVD / AZUAGA STREET
CALTRANS C8 Version 3 DATE: 8/26/2004 PAGE 2
C PAGE

	CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD C	D	LAG PHASE E	FLAGS F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH	90	80	120									LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR	8	8	10								GAPOUT CP1	LAG FZ CP 1		2		4		6		8	1
2												GAPOUT CP2	LAG FZ CP 2		2		4		6		8	2
3	FZ3 GRN FCTR	0	0	0								GAPOUT CP3	LAG FZ CP 3		2		4		6		8	3
4	FZ4 GRN FCTR	0	0	0						PERM TIME		GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR	8	8	10						LAG OFFSET		GAPOUT CP5	LAG FZ CP 5									5
6										FORCE OFF		GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR	10	10	10						LONG GRN		GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR	26	14	40						NO GREEN		GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE	0	0	0								GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A	69	68	85						OFFSET			LAG C COORD									A
B	OFFSET B												LAG D COORD									B
C	OFFSET C												COORD FAZES		2				6			C
D	FZ 3 EXT																					D
E	FZ 7 EXT																					E
F	OFFSET INTRPT																					F
														1	2	3	4	5	6	7	8	

FEATURE	OPP	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OPP	ON
1		1
2		
3		
4		
5		
6		
7		
8		

CO0 = 1

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP *SYSTEM MASTER:*
CO4 LAST CP *RTE 56 EB RAMP*
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 56 EB @ RANCHO PENASQUITOS BLVD / AZUAGA STREET
CALTRANS C8 DATE 2/1/94 PAGE 3
D PAGE

	D MAX	FLAGS 1	2	3	4	5	6	7	8	E MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8
0	RCL									RCL									RCL							
1	CP 1									CP 1									X CP 1							
2	CP 2									CP 2									X CP 2							
3	CP 3									CP 3									X CP 3							
4	CP 4									CP 4									CP 4							
5	CP 5									CP 5									CP 5							
6	CP 6									CP 6									CP 6							
7	CP 7									CP 7									CP 7							
8	CP 8									CP 8									CP 8							
9	CP 9									CP 9									CP 9							
A										RCL 1									RCL							
B										RCL 2									RCL							
C																										
D																										
E																										
F																										

E PAGE

E FUNCTION	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8	
0									CODE 4									0
1									CODE 5									1
2									C-RECALL									2
3									D-RECALL									3
4									EXCLUSIVE									4
5									2 PED	X								5
6									6 PED					X				6
7									4 PED						X			7
8									8 PED								X	8
9																		9
A	OLA NOT								OLA ON									A
B	OLB NOT								OLB ON									B
C	OLC NOT								OLC ON									C
D	OLD NOT								OLD ON									D
E																		E
F																		F
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION RTE 56 EB @ RANCHO PENASQUITOS BLVD / AZUAGA STREET
CALTRANS C8 DATE : 2/1/94 PAGE 4
7 PAGE 9 PAGE CO9 = 0 or 1 9 PAGE CO9 = 2

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	E	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	06	00	1	A		X	X	X	X	X		
1	08	40	E			X	X	X	X	X		
2												
3												
4	16	00	3	A		X	X	X	X	X		
5	18	15	E			X	X	X	X	X		
6												
7												
8												
9												
A												
B												
C												
D												
E												
F												

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	E	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0												
1												
2												
3												
4												
5												
6												
7												
8												
9												
A												
B												
C												
D												
E												
F												

LOCATION: RTE 56 EB @ RANCHO PENASQUITO BLVD / AZUAGA STREET
CALTRANS C8 Version 3 DATE: 4/6/2015 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	7	1	1	1	7	1	7	CLK RST
1	DONT WALK	1	34	1	1	1	23	1	29	
2	MIN GREEN	5	14	1	1	10	14	10	5	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	2.0	0.9	0.9	2.0	2.0	2.0	2.0	
6	MAX GAP	2.0	2.0	0.9	0.9	2.0	2.0	2.0	2.0	
7	MIN GAP	2.0	2.0	0.9	0.9	2.0	2.0	2.0	2.0	
8	MAX EXT	20	45	9	9	20	45	20	35	
9	MAX 2									YR
A	MAX 3									NO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOM
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.7	5.0	3.0	3.0	3.7	5.0	4.1	4.1	MIN
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC
	PED XING FT		119				79		103	
	BIKE XING FT		118			90	110	90		

NOTES: 7/8 SPLIT

	PRE-EMPTION E	
	EV SEL	0
	EVA CLR	5
	EVA DLY	0
	EVB CLR	5
	EVB DLY	0
	EVC CLR	5
	EVC DLY	0
	EVD CLR	5
	EVD DLY	0
	MAX EV	255
	RR2 CLR	5

F

FLAGS	1	2	3	4	5	6	7	8	
PERMIT	1	2	3	4	5	6	7	8	0
RED LOCK								8	1
YEL LOCK									2
V RECALL		2				6			3
P RECALL									4
PED PHASES		2				6		8	5
RT OLA									6
RT OLB									7
DBL ENTRY									8
MAX 2 PHASES									9
LAG PHASES	READ ONLY								A
RED REST									B
REST-IN-WALK									C
MAX 3 PHASES									D
YEL START UP		2				6			E
FINST PHASE							7		F
	1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0
FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1
CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ☐

LOCATION: RTE 56 WB @ RANCHO PENASQUITOS BLVD / CARMEL MOUNTAIN ROAD
CALTRANS C8 Version 3 DATE: 1/3/02 PAGE 2
C PAGE

		CONTROL PLANS 1	2	3	4	5	6	7	8	9
0	CYCLE LENGTH									
1	FZ1 GRN FCTR									
2										
3	FZ3 GRN FCTR									
4	FZ4 GRN FCTR									
5	FZ5 GRN FCTR									
6										
7	FZ7 GRN FCTR									
8	FZ8 GRN FCTR									
9	MULTI CYCLE									
A	OFFSET A									
B	OFFSET B									
C	OFFSET C									
D	FZ 3 EXT									
E	FZ 7 EXT									
F	OFFSET INTRPT									

	Y-COORD C	D
PERM TIME		
LAG OFFSET		
FORCE OFF		
LONG GRN		
NO GREEN		
OFFSET		

	LAG PHASE E	FLAG F	1	2	3	4	5	6	7	8	
		LAG FZ FREE		2		4		6		8	0
	GAPOUT CP1	LAG FZ CP 1									1
	GAPOUT CP2	LAG FZ CP 2									2
	GAPOUT CP3	LAG FZ CP 3									3
	GAPOUT CP4	LAG FZ CP 4									4
	GAPOUT CP5	LAG FZ CP 5									5
	GAPOUT CP6	LAG FZ CP 6									6
	GAPOUT CP7	LAG FZ CP 7									7
	GAPOUT CP8	LAG FZ CP 8									8
	GAPOUT CP9	LAG FZ CP 9									9
		LAG C COORD									A
		LAG D COORD									B
		COORD FAZES		2				6			C
											D
											E
			1	2	3	4	5	6	7	8	F

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP ***SYSTEM MASTER:***
C04 LAST CP ***RTE 56 EB RAMP***
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		
2		1
3		
4		
5		
6		
7		
8		

COO = 2

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 56 WB @ RANCHO PENASQUITOS BLVD / CARMEL MOUNTAIN ROAD
CALTRANS C8 Version 3 DATE: 1/3/02 PAGE 3
D PAGE

	D MAX	FLAGS 1	2	3	4	5	6	7	8	E MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8
0	RCL									RCL									RCL							
1	CP 1									CP 1									CP 1							
2	CP 2									CP 2									CP 2							
3	CP 3									CP 3									CP 3							
4	CP 4									CP 4									CP 4							
5	CP 5									CP 5									CP 5							
6	CP 6									CP 6									CP 6							
7	CP 7									CP 7									CP 7							
8	CP 8									CP 8									CP 8							
9	CP 9									CP 9									CP 9							
A																			RCL 1							
B																			RCL 2							
C																											
D																											
E																											
F																											

E PAGE

E FUNCTION	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8
0									CODE 4								0
1									CODE 5								1
2									C-RECALL								2
3									D-RECALL								3
4									EXCLUSIVE								4
5									2 PED		2						5
6									6 PED					6			6
7									4 PED				4				7
8									8 PED								8
9																	9
A	OLA NOT								OLA ON								A
B	OLB NOT								OLB ON								B
C	OLC NOT								OLC ON								C
D	OLD NOT								OLD ON								D
E																	E
F																	F

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: RTE 56 WB @ RANCHO PENSQUITOS BLVD / CARMEL MOUNTAIN RD
CALTRANS C8 Version 3 DATE: 11/3/2011 PAGE 4
7 PAGE

9 PAGE C09 = 0 or 1

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+OH/OFF+DOW LTS

	HR	MIN	ACT	OH/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	15	00	3	X	1	2	3	4	5	6	7
1	19	00	3		1	2	3	4	5	6	7
2	07	00	2	X		2	3	4	5	6	
3	09	00	2			2	3	4	5	6	
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE
1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

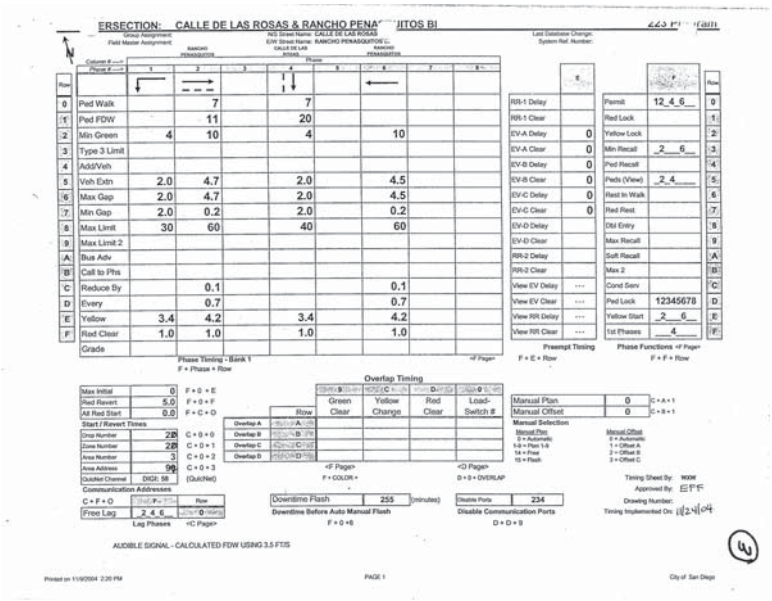
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

9 PAGE C09 = 2

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

Rancho Penasquitos Blvd



ERSECTION: CALLE DE LAS ROSAS & RANCHO PENA[illegible]UITOS BI

Row	Ped Walk	Ped FDW	Min Green	Type 3 Limit	Add/Veh	Veh Extn	Max Gap	Min Gap	Max Limit	Max Limit 2	Bus Adv	Call to Phs	Reduce By	Every	Yellow	Red Clear	Grade
0		7												7			
1		11												20			
2	4	10				4	10										
3																	
4																	
5	2.0	4.7				2.0	4.5										
6	2.0	4.7				2.0	4.5										
7	2.0	0.2				2.0	0.2										
8	30	60				40	60										
9																	
A																	
B																	
C													0.1				
D													0.7				
E	3.4	4.2				3.4	4.2										
F	1.0	1.0				1.0	1.0										

Phase Timing - Bank 1 (F + Phase + Row)

Row	Delay	Clear	Green	Change	Clear	Switch #
Overlap A						
Overlap B						
Overlap C						
Overlap D						

Overlap Timing (<F Page>, F + COLOR +; <O Page>, D + 0 + OVERLAP)

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
Alt Red Start	0.0	F + C + D

Start / Rewrt Times

Drop Number	22	C + 0 + 0
Zone Number	22	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	99	C + 0 + 3
QuicNet Channel	DIGI: 58	(QuicNet)

Communication Addresses: C + F + O; Free Lag 2 4 6 (Row); Lag Phases <C Page>

Manual Plan	0	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection (Manual Plan: 0 = Automatic, 1-9 = Plan 1-9, 14 = Free, 15 = Flash; Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C)

Downtime Flash	255	(minutes)
Disable Ports	234	

Downtime Before Auto Manual Flash (F + 0 +8); Disable Communication Ports (D + D + 9)

Permit	12_4_6_	0
Red Lock		1
Yellow Lock		2
Min Recall	_2___6__	3
Ped Recall		4
Peds (View)	_2_4____	5
Rest In Walk		6
Red Rest		7
Dbl Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond Serv		C
Ped Lock	12345678	D
Yellow Start	_2___6__	E
1st Phases	___4____	F

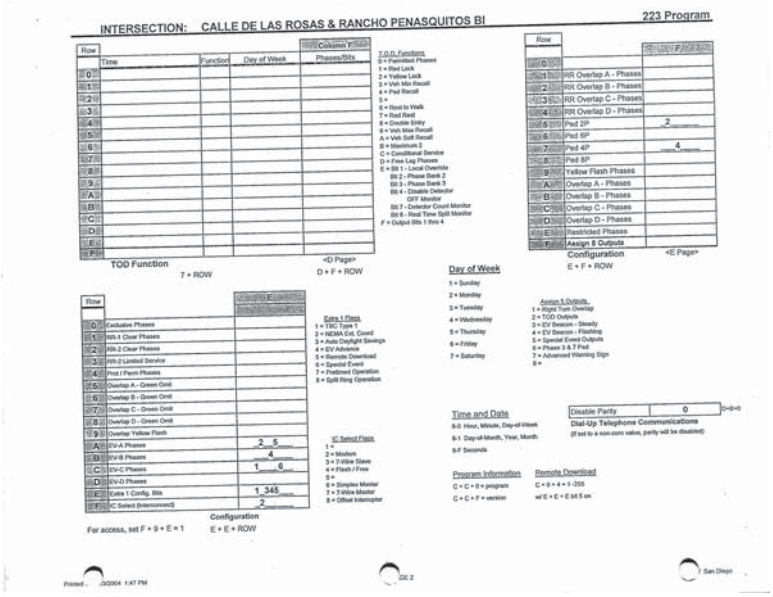
Phase Functions <F Page> (F + F + Row)

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay		
EV-D Clear		
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing (F + E + Row)

AUDIBLE SIGNAL - CALCULATED FDW USING 3.5 FT/S

Printed on 11/9/2004 2:26 PM PAGE 1 City of San Diego



INTERSECTION: CALLE DE LAS ROSAS & RANCHO PENASQUITOS BI 223 Program

Row	Time	Function	Day of Week	Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function: 7 + ROW; <D Page>, D + F + ROW

T.O.D. Functions: 0 = Permitted Phases; 1 = Red Lock; 2 = Yellow Lock; 3 = Veh Min Recall; 4 = Ped Recall; 5 = ; 6 = Rest In Walk; 7 = Red Rest; 8 = Double Entry; 9 = Veh Max Recall; A = Veh Soft Recall; B = Maximum 2; C = Conditional Service; D = Free Lag Phases; E = Bit 1 - Local Override; Bit 2 - Phase Bank 2; Bit 3 - Phase Bank 3; Bit 4 - Disable Detector OFF Monitor; Bit 7 - Detector Count Monitor; Bit 8 - Real Time Split Monitor; F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	
7	Ped 4P	4
8	Ped 8P	
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration: E + F + ROW; <E Page>

Row		E
0	Exclusive Phases	
1	Veh-1 Clear Phases	
2	Veh-2 Clear Phases	
3	Veh-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration: E + E + ROW

For access, set F + 9 + E = 1

Extra 1 Flags: 1 = TBC Type 1; 2 = NEMA Ext. Coord; 3 = Auto Daylight Savings; 4 = EV Advance; 5 = Remote Download; 6 = Special Event; 7 = Preempt Operation; 8 = Split Ring Operation

IC Select Flags: 1 = ; 2 = Modem; 3 = 7-Wire Slave; 4 = Flash / Free; 5 = ; 6 = Simplex Master; 7 = 7-Wire Master; 8 = Offset Interrupter

Day of Week: 1 = Sunday; 2 = Monday; 3 = Tuesday; 4 = Wednesday; 5 = Thursday; 6 = Friday; 7 = Saturday

Assign 5 Outputs: 1 = Right Turn Overlap; 2 = TOD Outputs; 3 = EV Beacon - Steady; 4 = EV Beacon - Flashing; 5 = Special Event Outputs; 6 = Phase 3 & 7 Ped; 7 = Advanced Warning Sign; 8 =

Time and Date: B-0 Hour, Minute, Day-of-Week; B-1 Day-of-Month, Year, Month; B-F Seconds

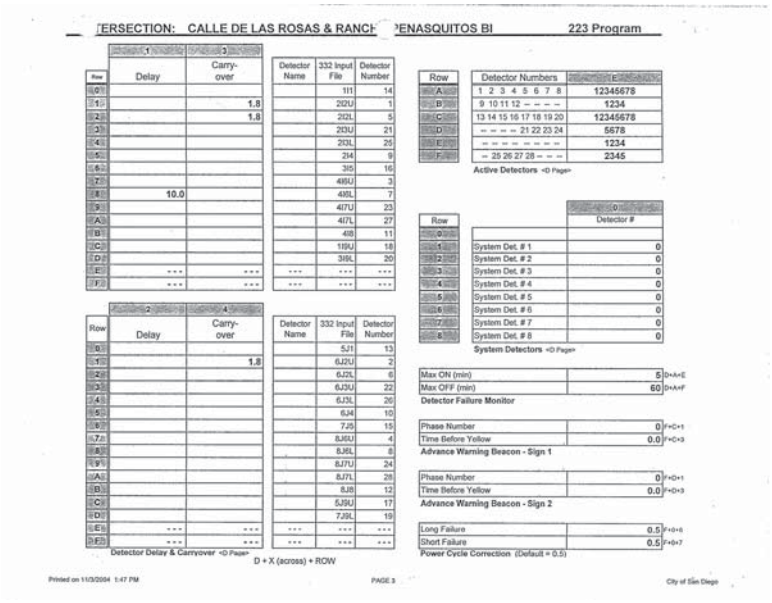
Disable Parity: 0 (D+B+0)

Dial-Up Telephone Communications (If set to a non-zero value, parity will be disabled)

Program Information: C + C + 0 = program; C + C + F = version

Remote Download: C + 8 + 4 = 1-255; w/ E + E + E bit 5 on

Printed ... /3/2004 1:47 PM [illegible]GE 2 [illegible] San Diego



ERSECTION: CALLE DE LAS ROSAS & RANCH[illegible]ENASQUITOS BI 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8	10.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>; D + X (across) + ROW

Row	Detector Numbers	
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1 0
2	System Det. # 2 0
3	System Det. # 3 0
4	System Det. # 4 0
5	System Det. # 5 0
6	System Det. # 6 0
7	System Det. # 7 0
8	System Det. # 8 0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

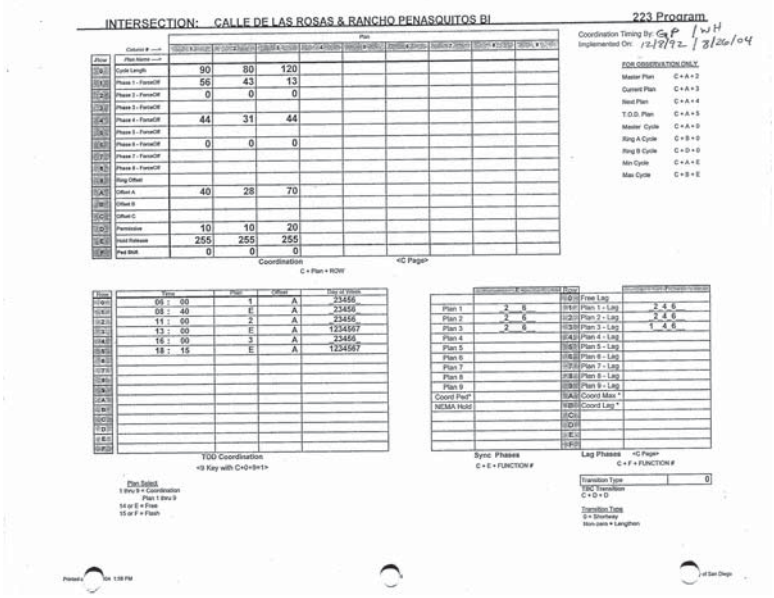
Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

Printed on 11/3/2004 1:47 PM PAGE 3 City of San Diego



INTERSECTION: CALLE DE LAS ROSAS & RANCHO PENASQUITOS BL

223 Program

Coordination Timing By: GAP 1/WH
Implemented On: 12/19/92 / 3/26/04

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 9
Xing A Cycle	C + B + 0
Xing B Cycle	C + D + 0
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Plan Name --->	1	2	3
0	Cycle Length	90	80	120
1	Phase 1 - ForceOff	56	43	13
2	Phase 2 - ForceOff	0	0	0
3	Phase 3 - ForceOff			
4	Phase 4 - ForceOff	44	31	44
5	Phase 5 - ForceOff			
6	Phase 6 - ForceOff	0	0	0
7	Phase 7 - ForceOff			
8	Phase 8 - ForceOff			
9	Xing Offset			
A	Offset A	40	28	70
B	Offset B			
C	Offset C			
D	Permissive	10	10	20
E	Inhibit Release	255	255	255
F	Ped Shift	0	0	0

Coordination
C + Plan + ROW

<C Page>

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	08 : 40	E	A	23456
2	11 : 00	2	A	23456
3	13 : 00	E	A	1234567
4	16 : 00	3	A	23456
5	18 : 15	E	A	1234567

TOD Coordination
<9 Key with C+0+9+1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

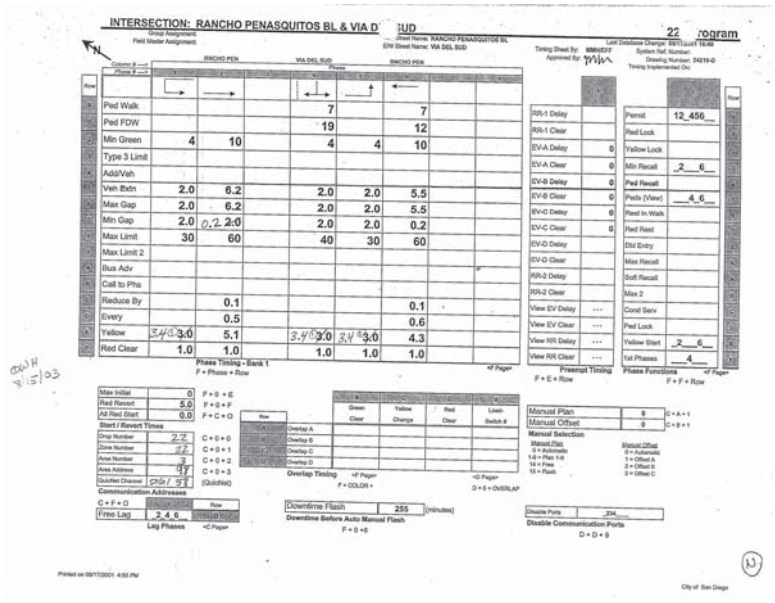
	Coordination Phases	Ped
Plan 1	2 6	
Plan 2	2 6	
Plan 3	2 6	
Plan 4		
Plan 5		
Plan 6		
Plan 7		
Plan 8		
Plan 9		
Coord Ped*		
NEMA Hold		

Sync Phases
C + E + FUNCTION #

Row	Lag Phases	Coord Phases
0	Free Lag	
1	Plan 1 - Lag	2 4 6
2	Plan 2 - Lag	2 4 6
3	Plan 3 - Lag	1 4 6
4	Plan 4 - Lag	
5	Plan 5 - Lag	
6	Plan 6 - Lag	
7	Plan 7 - Lag	
8	Plan 8 - Lag	
9	Plan 9 - Lag	
A	Coord Max *	
B	Coord Lag *	
C		
D		
E		
F		

Lag Phases <C Page>
C + F + FUNCTION #

Transition Type	0
TBC Transition C + D + D	
Transition Type 0 = Shortway Non-zero = Longtime	



INTERSECTION: RANCHO PENASQUITOS BL & VIA D[illegible]UD

22 [illegible]rogram

Group Assignment:
Field Master Assignment:

Sheet Name: RANCHO PENASQUITOS BL
SW Street Name: VIA DEL SUD

Last Database Change: 09/1[illegible]/01 10:48
System Ref. Number:
Drawing Number: 24219-0
Timing Implemented On:

Timing Sheet By: MBH/EEF
Approved By:

Row	Phase # --->	1	2	3	4	5	6
		RANCHO PEN		VIA DEL SUD		RANCHO PEN	
0	Ped Walk				7		7
1	Ped FDW				19		12
2	Min Green	4	10		4	4	10
3	Type 3 Limit						
4	Add/Veh						
5	Veh Extn	2.0	6.2		2.0	2.0	5.5
6	Max Gap	2.0	6.2		2.0	2.0	5.5
7	Min Gap	2.0	0.2 2.0		2.0	2.0	0.2
8	Max Limit	30	60		40	30	60
9	Max Limit 2						
A	Bus Adv						
B	Call to Phs						
C	Reduce By		0.1				0.1
D	Every		0.5				0.6
E	Yellow	3.4 3.0	5.1	3.4 3.0	3.4 3.0		4.3
F	Red Clear	1.0	1.0		1.0	1.0	1.0

Phase Timing - Bank 1
F = Phase + Row

<F Page>

RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row		
0	Permit	12_456
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	Peds (Veh)	4 6
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	
E	Yellow Start	2 6
F	1st Phases	4

Phase Functions
F + F + Row

<F Page>

Max Initial	0
Red Revert	5.0
Ad Red Start	0.0

F + D + E
F + G + F
F + C + O

Start / Revert Times

Drop Number	22
Zone Number	22
Area Number	3
Area Address	97
Dutchtel Channel	2161 51

C + C + 0
C + C + 1
C + C + 2
C + C + 3
(Dutchtel)

Communication Addresses

C + F + O

		Row
Free Lag	2 4 6	

Lag Phases <C Page>

Row		Green Clear	Yellow Change	Red Clear	Load-Switch #
A	Overlap A				
B	Overlap B				
C	Overlap C				
D	Overlap D				

Overlap Timing
<F Page>
F + COLOR +
<D Page>
D + 9 + OVERLAP

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + D + 6

Manual Plan	0
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

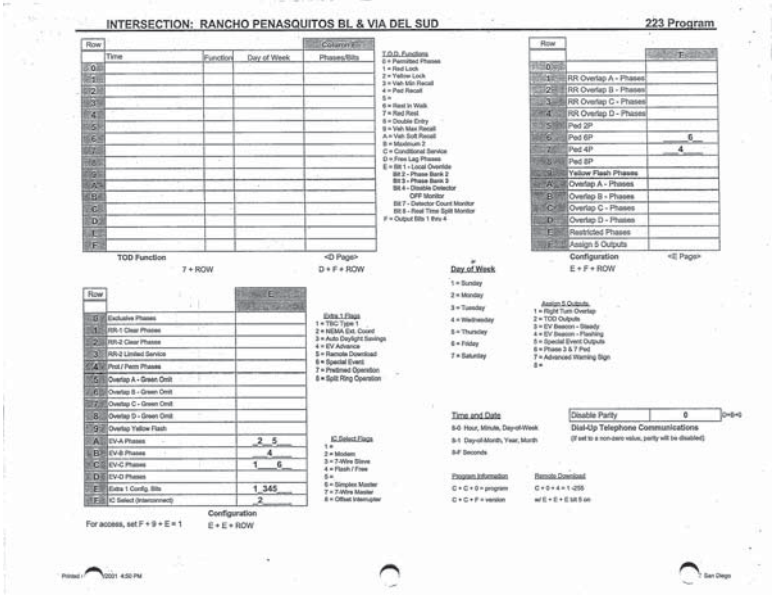
Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Disable Ports	234

Disable Communication Ports
D + D + 9

Printed on 09/17/2001 4:50 PM

City of San Diego



INTERSECTION: RANCHO PENASQUITOS BL & VIA DEL SUD

223 Program

Row	Time	Function	Day of Week	Column #C: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW

<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 = Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		T
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration
E + F + ROW

<E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Ped / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration
E + E + ROW

For access, set F + 9 + E = 1

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0 (0=8+0)

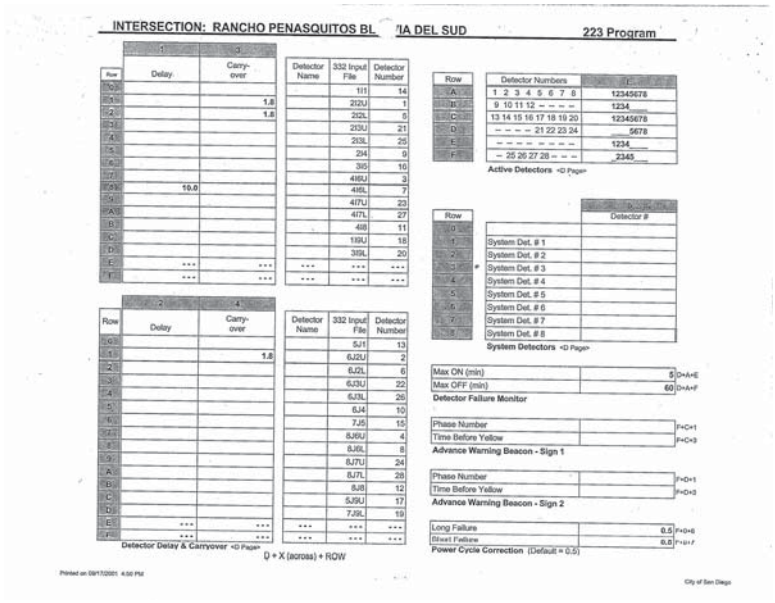
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + D + 4 = 1-255
w/ E + E + E bit 5 on

Printed on 09/17/2001 4:50 PM

San Diego



INTERSECTION: RANCHO PENASQUITOS BL [illegible]IA DEL SUD

223 Program

Row	1 Delay	1 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8	10.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Row	2 Delay	2 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	10
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers	
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	
F	-- -- -- -- -- -- -- --	1234
	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5 (D+A+E)
Max OFF (min)	60 (D+A+F)

Detector Failure Monitor

Phase Number	(F+C+1)
Time Before Yellow	(F+C+3)

Advance Warning Beacon - Sign 1

Phase Number	(F+D+1)
Time Before Yellow	(F+D+3)

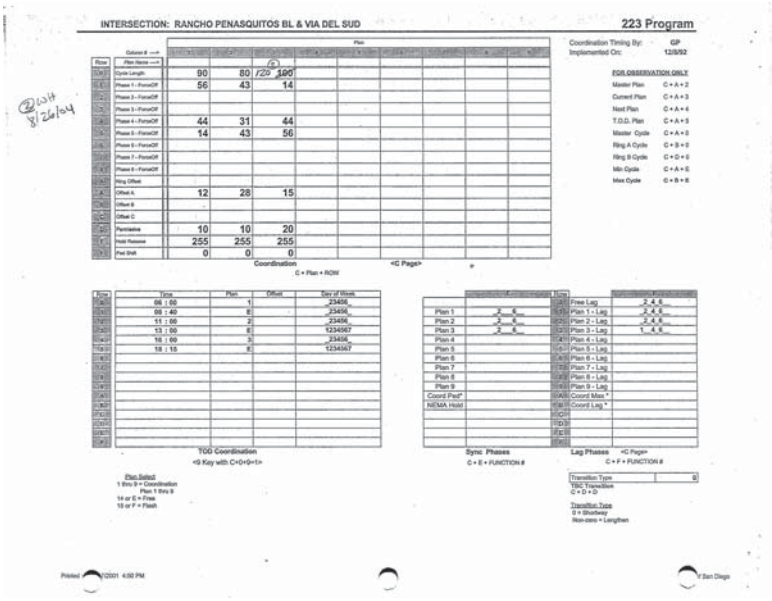
Advance Warning Beacon - Sign 2

Long Failure	0.5 (F+D+6)
Rtvel Failure	6.0 (F+D+7)

Power Cycle Correction (Default = 0.5)

Printed on 09/17/2001 4:50 PM

City of San Diego



INTERSECTION: RANCHO PENASQUITOS BL & VIA DEL SUD

223 Program

Coordination Timing By: GP
Implemented On: 12/8/92

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 6
Ring A Cycle	C + B + 8
Ring B Cycle	C + B + 9
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Plan Name --->	1	2	3	4	5	6	7	8	9
0	Cycle Length	90	80	120	180					
1	Phase 1 - ForceOff	56	43	14						
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff	44	31	44						
5	Phase 5 - ForceOff	14	43	56						
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff									
9	Ring Offset									
A	Offset A	12	28	15						
B	Offset B									
C	Offset C									
D	Permissive	10	10	20						
E	Hold Release	255	255	255						
F	Ped Shift	0	0	0						

Coordination
C + Plan + ROW

<C Page>

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	09 : 40	E	A	23456
2	11 : 00	2	A	23456
3	13 : 00	E	A	1234567
4	16 : 00	3	A	23456
5	18 : 15	E	A	1234567

TOD Coordination
<9 Key with C+D+9=1>

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row		
0	Free Lag	2 4 6 8
1	Plan 1 - Lag	2 4 6
2	Plan 2 - Lag	2 4 6
3	Plan 3 - Lag	1 4 6
4	Plan 4 - Lag	
5	Plan 5 - Lag	
6	Plan 6 - Lag	
7	Plan 7 - Lag	
8	Plan 8 - Lag	
9	Plan 9 - Lag	
A	Coord Max *	
B	Coord Lag *	
C		
D		
E		
F		

Sync Phases
C + E + FUNCTION #

Lag Phases <C Page>
C + F + FUNCTION #

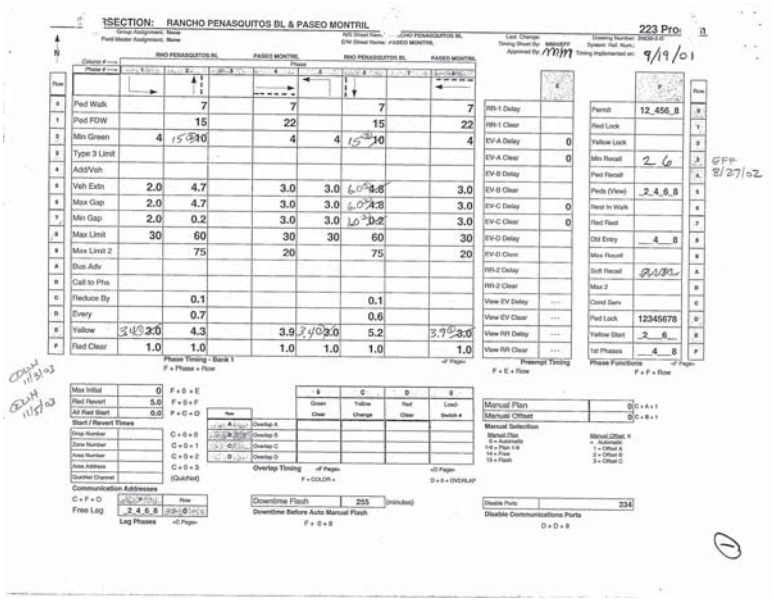
Transition Type	0

TSC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Longthen

Printed 12/2001 4:50 PM

San Diego



INTERSECTION: RANCHO PENASQUITOS BL & PASEO MONTRIL

223 Pro:

Group Assignment: None
Field Master Assignment: None

NIS Sheet Nam... RPO PENASQUITOS BL
D/M Sheet Name: PASEO MONTRIL

Last Change
Timing Sheet By: MMW/EFF
Approved By: MMM

Drawing Number: 20830-D-E
System Ref. Num.:
Timing Implemented on: 9/19/01

Row	Phase # --->	1	2	3	4	5	6	7	8
		RHO PENASQUITOS BL		PASEO MONTRIL		RHO PENASQUITOS BL		PASEO MONTRIL	
		Phase							
0	Ped Walk		7		7		7		7
1	Ped FDW		15		22		15		22
2	Min Green	4	15 10		4	4	15 10		4
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	4.7		3.0	3.0	6.0 4.8		3.0
6	Max Gap	2.0	4.7		3.0	3.0	6.0 4.8		3.0
7	Min Gap	2.0	0.2		3.0	3.0	10 3.0 2		3.0
8	Max Limit	30	60		30	30	60		30
9	Max Limit 2		75		20		75		20
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.7				0.6		
E	Yellow	3.4 3.0	4.3		3.9 3.4 3.0		5.2	3.9 3.0	
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Back 1
F + Phase + Row

<F Page>

RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Permit	12_456_8
Red Lock	
Yellow Lock	
Min Recall	2 6
Ped Recall	
Peds (View)	2_4_6_8
Rest In Walk	
Red Rest	
Dbl Entry	4 8
Max Recall	
Soft Recall	
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	2 6
1st Phases	4 8

Phase Functions
F + F + Row

<F Page>

Max Initial	0
Red Revert	5.0
All Red Start	0.0

Start / Revert Times
F + 0 + E
F + 0 + F
F + C + D

Drop Number	
Zone Number	
Area Number	
Area Address	
QuikNet Channel	

C + 0 + 8
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuikNet)

Communication Addresses
C + F + O

Row	Free Lag
0	2 4 6 8

Lag Phases <C Page>

Row	A	B	C	D
0	Overlap A			
1	Overlap B			
2	Overlap C			
3	Overlap D			

A	B	C	D
Green	Yellow Change	Red Clear	Load-Switch #

Overlap Timing
<F Page>
F = COLOR =
<D Page>
D + 9 = OVERLAP

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + 0 + 9

Manual Plan	0 C + A + 1
Manual Offset	0 C + B + 1

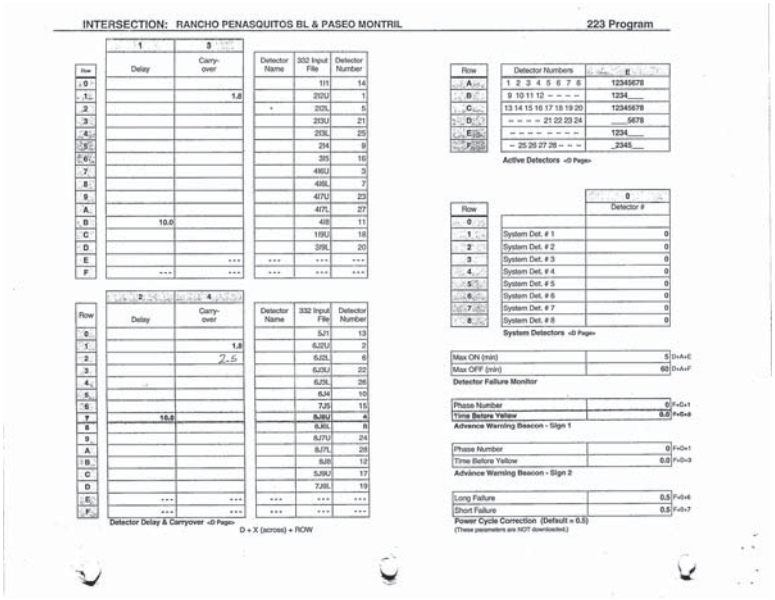
Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Disable Ports	234

Disable Communications Ports
D + D + 9



INTERSECTION: RANCHO PENASQUITOS BL & PASEO MONTRIL

223 Program

Row	1 Delay	1 Carry-over	3 Delay	3 Carry-over
0				
1		1.8		
2				
3				
4				
5				
6				
7				
8				
9				
A				
B		10.0		
C				
D				
E		---	---	---
F	---	---	---	---

Row	2 Delay	2 Carry-over	4 Delay	4 Carry-over
0				
1		1.8		
2		2.5		
3				
4				
5				
6				
7		10.0		
8				
9				
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	1I1	13
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234___
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	___5678
E	– – – – – – – –	1234___
F	– 25 26 27 28 – – –	___2345

Active Detectors <D Page>

Row	0 Detector #	
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5 D+A+E
Max OFF (min)	60 D+A+F

Detector Failure Monitor

Phase Number	0 F+D+1
Time Before Yellow	0.0 F+D+8

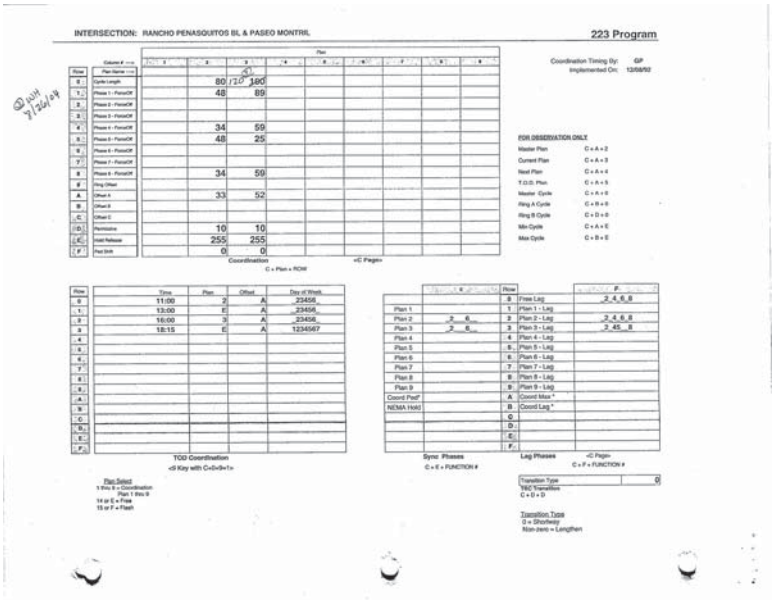
Advance Warning Beacon - Sign 1

Phase Number	0 F+D+1
Time Before Yellow	0.0 F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+D+6
Short Failure	0.5 F+D+7

Power Cycle Correction (Default = 0.5)
(These parameters are NOT downloaded.)



INTERSECTION: RANCHO PENASQUITOS BL & PASEO MONTRIL

223 Program

Coordination Timing By: GP
Implemented On: 12/8/92

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 6
Ring A Cycle	C + B + 8
Ring B Cycle	C + B + 9
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Plan Name --->	1	2	3	4	5	6	7	8	9
0	Cycle Length		80	120	180					
1	Phase 1 - ForceOff		48	89						
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff		34	59						
5	Phase 5 - ForceOff		48	25						
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff		34	59						
9	Ring Offset									
A	Offset A		33	52						
B	Offset B									
C	Offset C									
D	Permissive		10	10						
E	Hold Release		255	255						
F	Ped Shift		0	0						

Coordination
C + Plan + ROW

<C Page>

Row	Time	Plan	Offset	Day of Week
0	11:00	2	A	23456
1	13:00	E	A	23456
2	16:00	3	A	23456
3	18:15	E	A	1234567

TOD Coordination
<9 Key with C+D+9=1>

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row		
0	Free Lag	2 4 6 8
1	Plan 1 - Lag	
2	Plan 2 - Lag	2 4 6 8
3	Plan 3 - Lag	2 45 8
4	Plan 4 - Lag	
5	Plan 5 - Lag	
6	Plan 6 - Lag	
7	Plan 7 - Lag	
8	Plan 8 - Lag	
9	Plan 9 - Lag	
A	Coord Max *	
B	Coord Lag *	
C		
D		
E		
F		

Sync Phases
C + E + FUNCTION #

Lag Phases <C Page>
C + F + FUNCTION #

Transition Type	0

TSC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Longthen

RSECTION: RANCHO PENASQUITOS BL & PASEO MC **TIL** **223 Program**

Row	Time	Function	Day of Week	Column F: Phases/Bits
0	06:00	B	_23456_	_2_4_6_8
1	08:40	B	_23456_	
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Red In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phase
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P _2_
6	Ped 6P _6_
7	Ped 4P _4_
8	Ped 8P _8_
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration — <E Page> E + F + ROW

Row	E: Flags (Page 2)
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases _2_5_
B	EV-B Phases
C	EV-C Phases _1___6_
D	EV-D Phases
E	Extra 1 Config. Bits _1_345_
F	IC Select (Interconnect) _2_

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
0-0 Hour, Minute, Day-of-Week
0-1 Day-of-Month, Year, Month
0-F Seconds

Disable Parity	0	0=8+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-255
w/ E + E + E bit 5 on

LOCATION: **RTE 15 SB / RANCHO PENASQUITOS BLVD**
CALTRANS C8 Version 3 DATE: 10/15/2012 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	1	1	1	1	7	1	1	CLK RST	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	DONT WALK	1	1	1	1	1	14	1	1		RR1 CLR	5	RED LOCK									1
2	MIN GREEN	1	10	1	5	1	13	1	1		EVA DLY	0	YEL LOCK				4					2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVB CLR	5	PED PHASES						6			5
6	MAX GAP	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVC DLY	0	RT OLA									6
7	MIN GAP	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVC CLR	5	RT OLB									7
8	MAX EXT	9	30	9	25	9	30	9	9		EVD DLY	0	DBL ENTRY									8
9	MAX 2						60			YR	EVD CLR	5	MAX 2 PHASES						6			9
A	MAX 3									MO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR			MAX 3 PHASES									D
E	YELLOW	3.0	4.5	3.0	3.6	3.0	4.5	3.0	3.0	MIN			YEL START UP		2				6			E
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC			FIRST PHASE				4					F
	PED XING FT						50							1	2	3	4	5	6	7	8	
	BIKE XING FT		37				100															

ENTRIES IN THESE LOCATIONS ARE NOT TO BE CHANGED

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CC5 FLASH TYPE	1
CC2 DOWNLOAD	1

LOCATION: **RTE 15 SB / RANCHO PENASQUITOS BLVD**
CALTRANS C8 Version 3 DATE: 5/26/2011 PAGE 2
C PAGE

	CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD C	D	LAG PHASE E	FLAGS F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH												LAG FI FREE	2		4		6			8	0
1	FZ1 GRN FCTR											GAPOUT CP1	LAG FI CP 1									1
2												GAPOUT CP2	LAG FI CP 2									2
3	FZ3 GRN FCTR											GAPOUT CP3	LAG FI CP 3									3
4	FZ4 GRN FCTR											GAPOUT CP4	LAG FI CP 4									4
5	FZ5 GRN FCTR											GAPOUT CP5	LAG FI CP 5									5
6												GAPOUT CP6	LAG FI CP 6									6
7	FZ7 GRN FCTR											GAPOUT CP7	LAG FI CP 7									7
8	FZ8 GRN FCTR											GAPOUT CP8	LAG FI CP 8									8
9	MULTI CYCLE												LAG FI CP 9									9
A	OFFSET A												LAG C COORD									A
B	OFFSET B												LAG D COORD									B
C	OFFSET C												COORD FAILS		2				6			C
D	FZ 3 EXT																					D
E	FZ 7 EXT																					E
F	OFFSET INTRPT																					F
														1	2	3	4	5	6	7	8	

	FEATURE	OFF	ON
C01	MANUAL CP	1	
C02	MASTER CP	2	
C03	CURRENT CP	3	
C04	LAST CP	4	
C07	TRNSMT CP	5	
C00	MANUAL OFFSET	6	
CA0	LOCAL CYCLE TIMER	7	
CB0	MASTER CYCLE TIMER	8	
CAA	LOCAL OFFSET		
CBA	MASTER OFFSET		

SYSTEM MASTER: RTE 15 SB RAMP

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = 1

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: **RTE 15 SB / RANCHO PENASQUITOS BLVD**
CALTRANS C8 DATE 10/21/93 PAGE 3
D PAGE K PAGE

	D MAX	FLAGS 1	2	3	4	5	6	7	8	K MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8	
0	RCL									RCL									RCL									0
1	CP 1									CP 1									CP 1									1
2	CP 2									CP 2									CP 2									2
3	CP 3									CP 3									CP 3									3
4	CP 4									CP 4									CP 4									4
5	CP 5									CP 5									CP 5									5
6	CP 6									CP 6									CP 6									6
7	CP 7									CP 7									CP 7									7
8	CP 8									CP 8									CP 8									8
9	CP 9									CP 9									CP 9									9
A										RCL 1																		A
B										RCL 2																		B
C																												C
D																												D
E																												E
F																												F

	E FUNCT1&4ON	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED	X								5
6										6 PED				X					6
7										4 PED			X						7
8										8 PED								X	8
9																			9
A	GLA NOT									GLA ON									A
B	GLB NOT									GLB ON									B
C	GLC NOT									GLC ON									C
D	GLD NOT									GLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES (CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES (CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: RTE 15 SB / RANCHO PENASQUITOS BLVD
CALTRANS C8 DATE : 10/21/93 PAGE 4
7 PAGE 9 PAGE CO9 = 0 or 1 9 PAGE CO9 = 2

TIME OF DAY ACTIVITY TABLE

7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	16	30	2	X		X	X	X	X	X	
1	18	30	2			X	X	X	X	X	
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY

9+EVENT+HR+MIN+CP+OS+E+DON

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

CONTROL PLAN TIME OF DAY

9+EVENT+HR+MIN+CP+OS+E+DON

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: RTE 15 NB / POWAY ROAD
CALTRANS C8 Version 3 DATE: 10/15/2012 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	7	1	7	1	1	1	1	CLR RST	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	DONT WALK	1	10	1	22	1	1	1	1		BR1 CLR	5	RED LOCK									1
2	MIN GREEN	1	11	1	5	1	10	1	1		EVA DLY	0	YEL LOCK				4					2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVB CLR	5	PED PHASES		2		4					5
6	MAX GAP	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVC DLY	0	RT OLA									6
7	MIN GAP	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVC CLR	5	RT OLB									7
8	MAX EXT	9	35	9	35	9	35	9	9		EVD DLY	0	DBL ENTRY									8
9	MAX 2				20		40			YR	EVD CLR	5	MAX 2 PHASES					4		6		9
A	MAX 3				60					MO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	BR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	0.5	1.0	1.0	1.0	0.5	1.0	1.0	HR			MAX 3 PHASES				4					D
E	YELLOW	3.0	4.7	3.0	3.6	3.0	4.7	3.0	3.0	MIN			YEL START UP		2				6			E
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC			FIRST PHASE				4					F
	PED XING FT		35		76									1	2	3	4	5	6	7	8	
	Bike XING FT		72				37															

ENTRIES IN THESE LOCATIONS ARE NOT TO BE CHANGED

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD6 OS SEEKING	1

CC0 FLASH TYPE	1
CC2 DOWNLOAD	1

LOCATION: RTE 15 NB / POWAY ROAD
CALTRANS C8 Version 3 DATE: 7/9/2009 PAGE 2
C PAGE

		CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD C	D	LAG PHASE E	FLAGS F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH													LAG F2 FREE	2			4		6		8	0
1	F21 GRN FCTR												GAPOUT CP1	LAG F2 CP 1									1
2													GAPOUT CP2	LAG F2 CP 2									2
3	F23 GRN FCTR												GAPOUT CP3	LAG F2 CP 3									3
4	F24 GRN FCTR									PERM TIME			GAPOUT CP4	LAG F2 CP 4									4
5	F25 GRN FCTR									LAG OFFSET			GAPOUT CP5	LAG F2 CP 5									5
6										FORCE OFF			GAPOUT CP6	LAG F2 CP 6									6
7	F27 GRN FCTR									LONG GRN			GAPOUT CP7	LAG F2 CP 7									7
8	F28 GRN FCTR									NO GREEN			GAPOUT CP8	LAG F2 CP 8									8
9	MULTI CYCLE												GAPOUT CP9	LAG F2 CP 9									9
A	OFFSET A									OFFSET				LAG C COORD									A
B	OFFSET B													LAG D COORD									B
C	OFFSET C													COORD PASS	2								C
D	F2 3 EXT																						D
E	F2 7 EXT																						E
F	OFFSET INTRPT																						F
															1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
RTE 15 SB RAMP

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		
2		1
3		
4		
5		
6		
7		
8		

COO = 2

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 15 NB / POWAY ROAD
CALTRANS C8 Version 3 DATE: 7/9/2009 PAGE 3
D PAGE

	D FLAGS MAX	1	2	3	4	5	6	7	8	E FLAGS MIN	1	2	3	4	5	6	7	8	F FLAGS PED	1	2	3	4	5	6	7	8	
0	RCL									RCL									RCL									0
1	CP 1									CP 1									CP 1									1
2	CP 2									CP 2									CP 2									2
3	CP 3									CP 3									CP 3									3
4	CP 4									CP 4									CP 4									4
5	CP 5									CP 5									CP 5									5
6	CP 6									CP 6									CP 6									6
7	CP 7									CP 7									CP 7									7
8	CP 8									CP 8									CP 8									8
9	CP 9									CP 9									CP 9									9
A																			RCL 1									A
B																			RCL 2									B
C																												C
D																												D
E																												E
F																												F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

	E FLAGS FUNCTION	1	2	3	4	5	6	7	8	F FLAGS FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 3									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED	2								5
6										6 PED					6				6
7										4 PED				4					7
8										8 PED								8	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: **RTE 15 NB / POWAY ROAD**
CALTRANS C8 Version 3 : DATE: 7/9/2009
7 PAGE 9 PAGE CO9 = 0 or 1 9 PAGE CO9 = 2 PAGE 4

TIME OF DAY ACTIVITY TABLE

9+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	06	00	2	X		2	3	4	5	6	
1	08	15	2			2	3	4	5	6	
2	16	30	3	X		2	3	4	5	6	
3	18	30	3			2	3	4	5	6	
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY

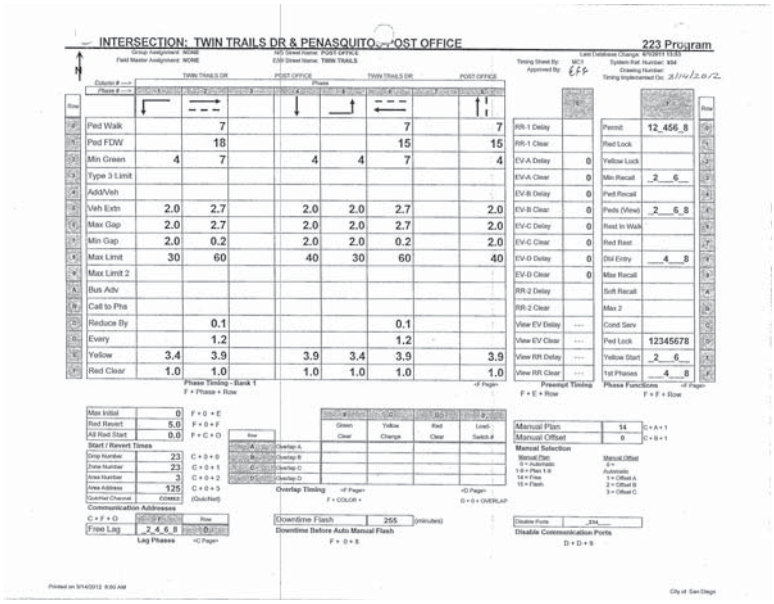
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

CONTROL PLAN TIME OF DAY

9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											



INTERSECTION: TWIN TRAILS DR & PENASQUITOS POST OFFICE — 223 Program

Group Assignment: NONE
Field Master Assignment: NONE
N/S Street Name: POST OFFICE
E/W Street Name: TWIN TRAILS
Timing Sheet By: MCT
Approved By: EFF
Last Database Change: 4/1/2011 13:53
System Ref. Number: 934
Drawing Number:
Timing Implemented On: 3/14/2012

Row	Column # →	1	2	3	4	5	6	7	8
	Phase # →	1	2	3	4	5	6	7	8
		TWIN TRAILS DR		POST OFFICE		TWIN TRAILS DR		POST OFFICE	
F	Ped Walk		7				7		7
G	Ped FDW		18				15		15
H	Min Green	4	7		4	4	7		4
J	Type 3 Limit								
K	Add/Veh								
L	Veh Extn	2.0	2.7		2.0	2.0	2.7		2.0
V	Max Gap	2.0	2.7		2.0	2.0	2.7		2.0
P	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
K	Max Limit	30	60		40	30	60		40
W	Max Limit 2								
A	Bus Adv								
B	Call to Pha								
C	Reduce By		0.1				0.1		
G	Every		1.2				1.2		
L	Yellow	3.4	3.9		3.9	3.4	3.9		3.9
R	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 (F + Phase + Row) <F Page>

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing (F + E + Row)

Permit	12_456_8
Red Lock	
Yellow Lock	
Min Recall	_2__6__
Ped Recall	
Peds (View)	_2__6_8
Rest In Walk	
Red Rest	
Dbl Entry	__4__8
Max Recall	
Soft Recall	
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	_2__6__
1st Phases	__4__8

Phase Functions (F + F + Row) <F Page>

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + 0

Start / Revert Times

Drop Number	23	C + 0 + 0
Zone Number	23	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	125	C + 0 + 3
Overlap Channel	(Unless)	(Quick Red)

Communication Addresses (C + F + G)

Free Lag	2_4_6_8	0

Lag Phases <D Page>

Row	Green Clear	Yellow Change	Red Clear	Lock-Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing <F Page> (F + COLOR +) <D Page> (D + 0 + OVERLAP)

Manual Plan	14	C + A + 1
Manual Offset	9	C + B + 1

Manual Selection

Manual Dpn: 0 = Automatic, 1-8 = Plan 1-8, 14 = Free, 15 = Flash

Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash (F + 0 + 8)

Disable Ports	234

Disable Communication Ports (D + D + 9)

Printed on 3/14/2012 8:00 AM — City of San Diego

INTERSECTION: TWIN TRAILS DR & PENASQUITOS POST OFFICE — 223 Program

TOD Function (7 + ROW) <D Page> (D + F + ROW)

Row	Time	Function	Day of Week	Column F: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Max/Auto 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Sybl Monitor
F = Output Bits 1 thru 4

Configuration (E + F + ROW) <E Page>

Row	F:
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P: 2
6	Ped 6P: 6
7	Ped 4P:
8	Ped 8P: 8
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration (For access, set F + 9 + E = 1 — E + E + ROW)

Row	E:
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases: 2_5
B	EV-B Phases: 4
C	EV-C Phases: 1_6
D	EV-D Phases: 8
E	Extra 1 Config. Bits: 1_345
F	IC Select (Interconnect): 2

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord.
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preshroud Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity (Row 0, Column 0) (0=8=0)

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 + 1 -255
w/ E + E + E bit 5 on

Printed on 3/14/2012 8:54 AM — City of San Diego

INTERSECTION: TWIN TRAILS DR & PENASQUITOS POST OFFICE — 223 Program

Detector Delay & Carryover <D Page> (D + X (across) + ROW)

Row	1 Delay	1 Carry-over	3 Delay	3 Carry-over
0				
1		1.8		
2				
3				
4				
5				
6				
7	10.0			
8				
9				
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Row	2 Delay	2 Carry-over	4 Delay	4 Carry-over
0				
1		1.8		
2				
3				
4				
5				
6				
7	10.0			
8				
9				
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	202U	1
	202L	5
	203U	21
	203L	25
	214	9
	315	16
	406U	3
	406L	7
	407U	23
	407L	27
	408	11
	109U	18
	309L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Row	E: Detector Numbers
A	1 2 3 4 5 6 7 8 — 12345678
B	9 10 11 12 - - - - — 1234
C	13 14 15 16 17 18 19 20 — 12345678
D	- - - - 21 22 23 24 — 5678
E	- - - - - - - - — 1234
F	25 26 27 28 - - - - — 2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1: 0
2	System Det. # 2: 0
3	System Det. # 3: 0
4	System Det. # 4: 0
5	System Det. # 5: 0
6	System Det. # 6: 0
7	System Det. # 7: 0
8	System Det. # 8: 0

System Detectors <D Page>

Detector Failure Monitor

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Advance Warning Beacon - Sign 1

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

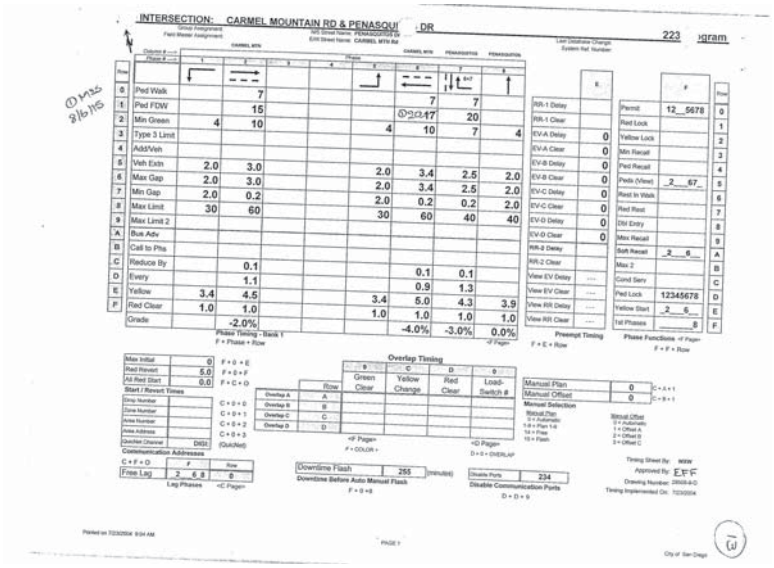
Advance Warning Beacon - Sign 2

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Power Cycle Correction (Default = 0.5) (These parameters are NOT downloaded.)

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Printed on 3/14/2012 7:56 AM — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PENASQUI - DR 223 Program

Phase Timing - Bank 1

Row	Phase # →	1	2	3	4	5	6	7	8
0	Ped Walk		7				7	7	
1	Ped FDW		15				17	20	
2	Min Green	4	10			4	10	7	4
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	3.0			2.0	3.4	2.5	2.0
6	Max Gap	2.0	3.0			2.0	3.4	2.5	2.0
7	Min Gap	2.0	0.2			2.0	0.2	0.2	2.0
8	Max Limit	30	60			30	60	40	40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1	0.1	
D	Every		1.1				0.9	1.3	
E	Yellow	3.4	4.5			3.4	5.0	4.3	3.9
F	Red Clear	1.0	1.0			1.0	1.0	1.0	1.0
	Grade		-2.0%				-4.0%	-3.0%	0.0%

<F Page>

	E	F
RR-1 Delay		Permit 12_5678
RR-1 Clear		Red Lock
EV-A Delay	0	Yellow Lock
EV-A Clear	0	Min Recall
EV-B Delay	0	Ped Recall
EV-B Clear	0	Peds (Veg) _2_67_
EV-C Delay	0	Rest In Walk
EV-C Clear	0	Red Rest
EV-D Delay	0	Dbl Entry
EV-D Clear	0	Max Recall
RR-2 Delay		Soft Recall _2_6_
RR-2 Clear		Max 2
View EV Delay	---	Cond Serv
View EV Clear	---	Ped Lock 12345678
View RR Delay	---	Yellow Start _2_6_
View RR Clear	---	1st Phases _8

Preempt Timing — F + E + Row

Phase Functions <F Page> — F + F + Row

Overlap Timing

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page> F + COLOR + — <D Page> D + 0 + OVERLAP

Start / Revert Times

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
Alt Red Start	5.0	F + C + O

Ethernet Address		C + 0 + 0
Time Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
Quicher Channel	D932	(Quic/Net)

Coordination Addresses

C + F + O	F	Row
Free Lag	2_6_8	8

Lag Phases <C Page>

Manual Selection

Manual Plan	0 C + A + 1
Manual Offset	0 C + B + 1

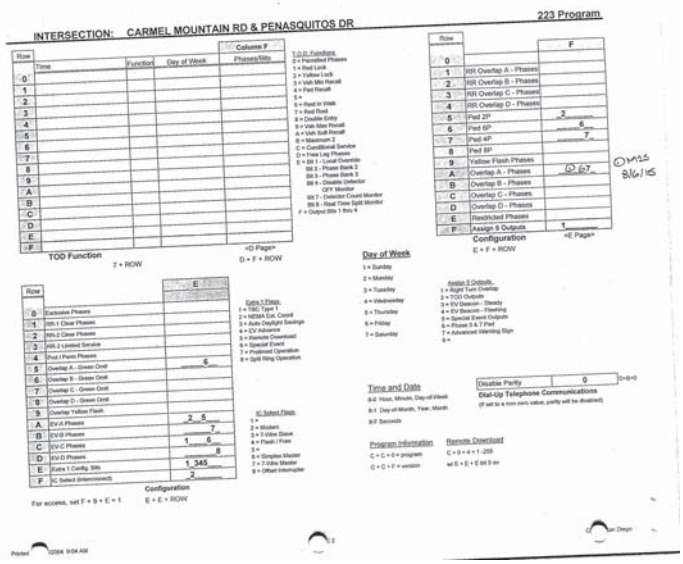
Manual Plan: 0 = Automatic, 1-4 = Plan 1-4, 10 = Free, 10 = Flash

Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

Downtime Flash	255 (minutes)
Downtime Before Auto Manual Flash	F + 0 + 8
Disable Ports	234
Disable Communication Ports	D + D + 9

Timing Sheet By: WWW
Approved By: EFF
Drawing Number: 2800-9-C
Timing Implemented On: 7/23/2004

Printed on 7/23/2004 9:04 AM — PAGE 1 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PENASQUITOS DR 223 Program

Row	Time	Function	Day of Week	Column F Phases/Ints
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2	_2_
6	Ped 6	6
7	Ped 4	7
8	Ped 8	
9	Yellow Flash Phases	
A	Overlap A - Phases	67
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	1

Configuration — E + F + ROW — <E Page>

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	6
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2_5
B	EV-B Phases	7
C	EV-C Phases	1_6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1_345
F	IC Select (Interconnect)	2

Configuration — E + E + ROW

For access, set F + 9 + E + 1

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preferred Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 3-Wire Slave
4 = Flash I Free
5 =
6 = Simplex Master
7 = 3-Wire Master
8 = Offset Interrupter

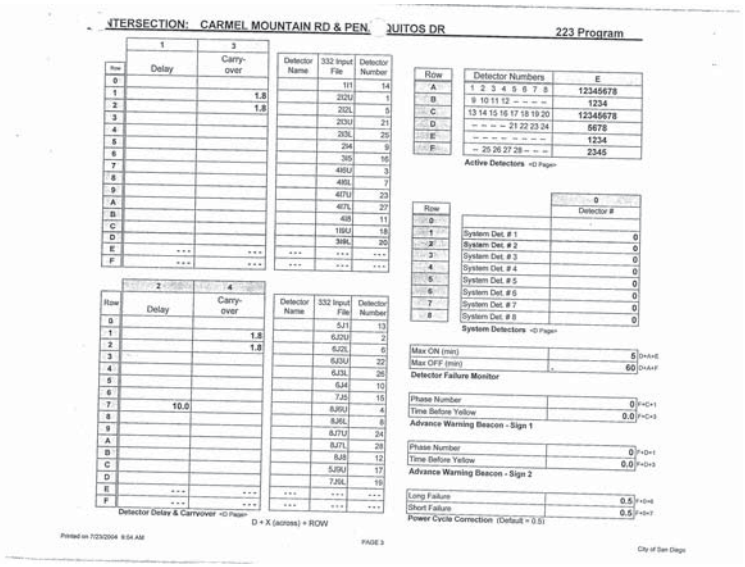
Time and Date
B-0: Hour, Minute, Day-of-Week
B-1: Day-of-Month, Year, Month
B-F: Seconds

Disable Parity 0 D+0+0
Dial-Up Telephone Communications
(F set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-255
set E + E = E bit 5 on

Printed 7/23/2004 9:04 AM — 2 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PEN QUITOS DR 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		1.8
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- 25 26 27 28 - - -	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1 0
2	System Det. # 2 0
3	System Det. # 3 0
4	System Det. # 4 0
5	System Det. # 5 0
6	System Det. # 6 0
7	System Det. # 7 0
8	System Det. # 8 0

System Detectors <D Page>

Max ON (min)	5 D+A+E
Max OFF (min)	60 D+A+F

Detector Failure Monitor

Phase Number	0 F+C+1
Time Before Yellow	0.0 F+C+3

Advance Warning Beacon - Sign 1

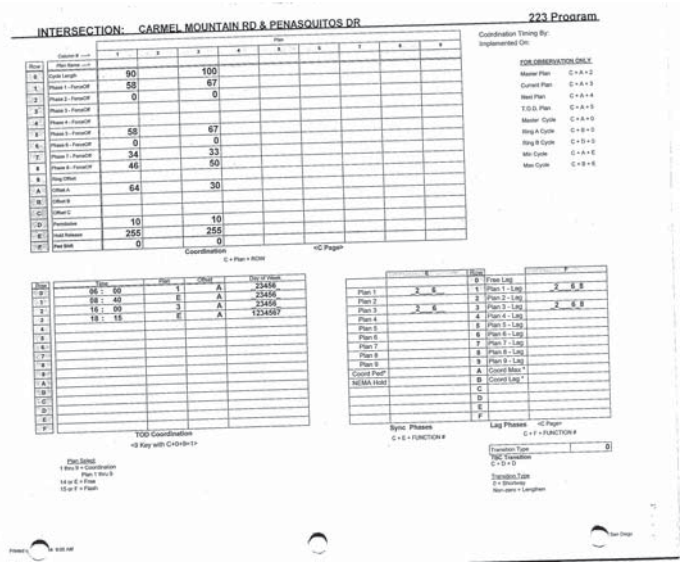
Phase Number	0 F+D+1
Time Before Yellow	0.0 F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5 F+D+6
Short Failure	0.5 F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 7/23/2004 9:04 AM — PAGE 3 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD & PENASQUITOS DR 223 Program

Coordination Timing By:
Implemented On:

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 3
Ring B Cycle	C + B + 0
Min Cycle	C + A + E
Max Cycle	C + B + 6

Row	Plan →	1	2	3	4	5	6	7	8	9
0	Plan Name →									
1	Cycle Length	90		100						
2	Phase 1 - Force Off	58		67						
3	Phase 2 - Force Off	0		0						
4	Phase 3 - Force Off									
5	Phase 4 - Force Off									
6	Phase 5 - Force Off	58		67						
7	Phase 6 - Force Off	0		0						
8	Phase 7 - Force Off	34		33						
9	Phase 8 - Force Off	46		50						
A	Ring Offset									
B	Offset A	64		30						
C	Offset B									
D	Offset C									
E	Permissive	10		10						
F	Hold Release	255		255						
	Ped Shift	0		0						

Coordination — C + Plan + ROW — <C Page>

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	08 : 40	E	A	23456
2	15 : 00	3	A	23456
3	18 : 15	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination — <0 Key with C+D+9=1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

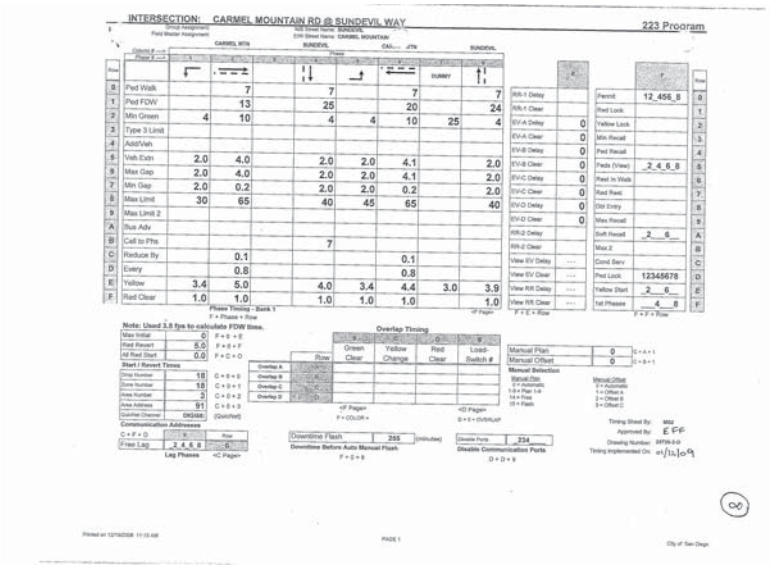
	E	Row	F
Plan 1	2_6_	0	Free Lag
Plan 2		1	Plan 1 - Lag 2_6_
Plan 3	3_6_	2	Plan 2 - Lag
Plan 4		3	Plan 3 - Lag 2_6_
Plan 5		4	Plan 4 - Lag
Plan 6		5	Plan 5 - Lag
Plan 7		6	Plan 6 - Lag
Plan 8		7	Plan 7 - Lag
Plan 9		8	Plan 8 - Lag
Coord Ped*		9	Plan 9 - Lag
NEMA Hold		A	Coord Max *
		B	Coord Lag *
		C	
		D	
		E	
		F	

Sync Phases — C + E + FUNCTION # — Lag Phases <C Page> C + F + FUNCTION #

Transition Type 0
TBC Transition C + D + 0
Transition Type 0 = Shortway, Non-zero = Longway

Printed on 7/23/2004 9:05 AM — 4 — City of San Diego

Carmel Mountain Rd



INTERSECTION: CARMEL MOUNTAIN RD @ SUNDEVIL WAY — 223 Program

Row		1	2	3	4	5	6	7
		←	↓	→	↑	DUMMY		
0	Ped Walk		7		7		7	
1	Ped FDW		13		25		20	24
2	Min Green	4	10		4	4	10	25	4
3	Type 3 Limit							
4	AddVeh							
5	Veh Extn	2.0	4.0		2.0	2.0	4.1		2.0
6	Max Gap	2.0	4.0		2.0	2.0	4.1		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	65		40	45	65		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs				7				
C	Reduce By		0.1				0.1		
D	Every		0.8				0.8		
E	Yellow	3.4	5.0		4.0	3.4	4.4	3.0	3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 — F = Phase + Row — <F Page>

RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	...	
View EV Clear	...	
View RR Delay	...	
View RR Clear	...	

F = E + Row — <F Page>

Permit	12_456_8	
Red Lock		
Yellow Lock		
Min Recall		
Ped Recall		
Peds (View)	_2_4_6_8	
Rest In Walk		
Red Rest		
Dbl Entry		
Max Recall		
Soft Recall	_2__6_	
Max 2		
Cond Serv		
Ped Lock	12345678	
Yellow Start	_2__6_	
1st Phase	___4__8	

F = F + Row

Note: Used 3.8 fps to calculate FDW time.

Max Initial	0	F = B + F
Red Revert	5.0	F = B + F
Alt Red Start	0.0	F = C + D

Start / Revert Times

Drop Number	18	C = B + E
Zone Number	18	C = D + 1
Area Number	3	C = D + 2
Area Address	91	C = B + 3
Cushion Channel	DG(dd)	(Quic/Ref)

Communication Addresses

C + F + D		
F Veh Lag	_2_4_6_8	<C Page>

Lag Phases

Overlap Timing

Row	A Overlap	B Green Clear	C Yellow Change	D Red Clear	E Load-Switch #
0	Overlap A				
1	Overlap B				
2	Overlap C				
3	Overlap D				

<F Page> — F = COLOR + — <D Page> — D + 6 = OVERLAP

Manual Plan	0	C = A + 1
Manual Offset	0	C = B + 1

Manual Selection

Manual Plan: 0 = Automatic, 1 = Plan 1, 2 = Plan 2, 3 = Plan 3, 4 = Plan 4, 5 = Plan 5

Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

Downtime Flash	285 (minutes)

Downtime Before Auto Manual Flash — F = B + E

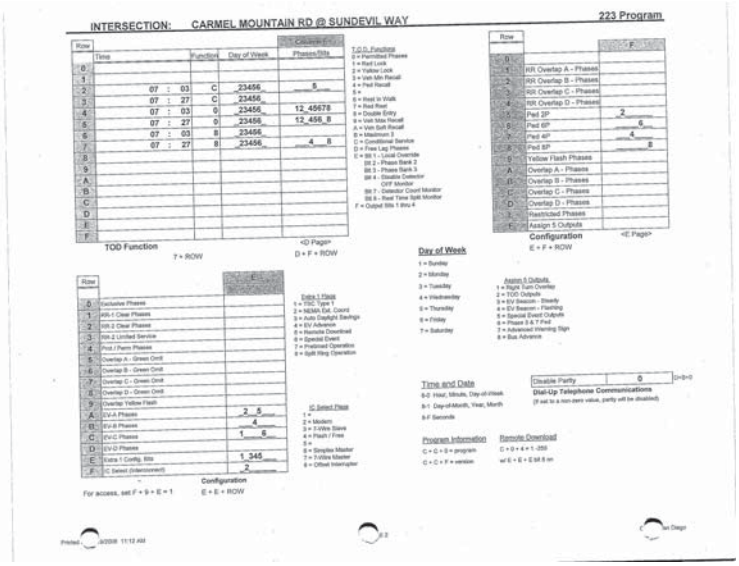
Disable Ports	234

Disable Communication Ports — D + D + 9

Timing Sheet By: MM2
Approved By: EFF
Drawing Number: RPP4-9-0
Timing Implemented On: 4/14/09

8

Printed on 12/16/2008 11:12 AM — PAGE 1 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD @ SUNDEVIL WAY — 223 Program

Row	Time		Function	Day of Week	Phases/Bits
0					
1					
2	07 : 03	C		23456	5
3	07 : 27	C		23456	6
4	07 : 03	9		23456	12_45678
5	07 : 27	9		23456	12_456_8
6	07 : 03	8		23456	
7	07 : 27	8		23456	4__8
8					
9					
A					
B					
C					
D					
E					
F					

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 3
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Red Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P — 2
6	Ped 6P — 6
7	Ped 4P — 4
8	Ped 8P — 8
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration — E + F + ROW — <E Page>

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 = Bus Advance

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR 2 Clear Phase
3	RR-2 Limited Service
4	Ped / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases — 2_5
B	EV-B Phases — 4
C	EV-C Phases — 1__6
D	EV-D Phases
E	Extra 1 Config. Bits — 1_345
F	IC Select (Interconnect) — 2

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 3-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Time and Date
6-0 Hour, Minute, Day-of-Week
9-1 Day-of-Month, Year, Month
8-F Seconds

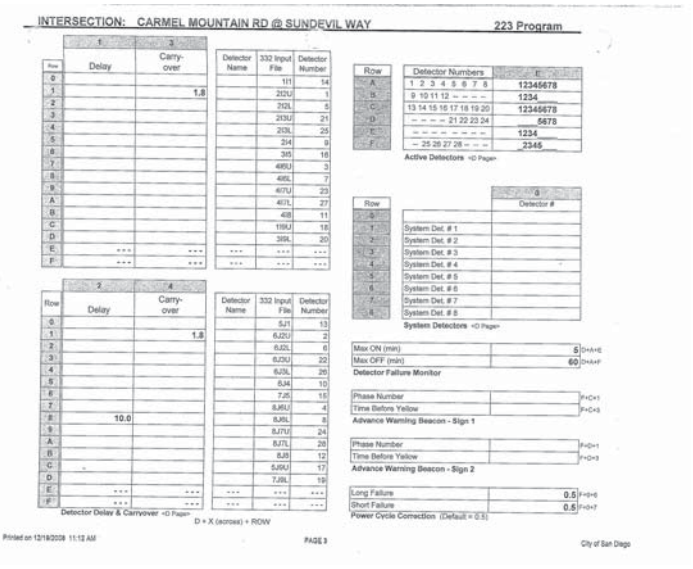
Disable Parity — 0 — D+D+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information — C + C + D = program; C + C + F = version

Remote Download — C + D + 4 + 1 - 255; w/ E + E = Set 8 on

Printed on 12/16/2008 11:12 AM — PAGE 2 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD @ SUNDEVIL WAY — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	18
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	15
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8	10.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- -- 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
6	
7	System Det. # 1
8	System Det. # 2
9	System Det. # 3
A	System Det. # 4
B	System Det. # 5
C	System Det. # 6
D	System Det. # 7
E	System Det. # 8

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+D+6
Short Failure	0.5	F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 12/16/2008 11:12 AM — PAGE 3 — City of San Diego

INTERSECTION: CARMEL MOUNTAIN RD @ SUNDEVIL WAY

223 Program

Coordination Timing By: MXM
Implemented On: 03/09/99

FOR OBSERVATION ONLY
Master Plan: C + A + 2
Current Plan: C + A + 3
Next Plan: C + A + 4
T.O.D. Plan: C + A + 5
Master Cycle: C + A + 9
Ring A Cycle: C + B + 9
Ring B Cycle: C + D + 0
Min Cycle: C + A + E
Max Cycle: C + B + E

Row	Plan Name →	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8
3	Cycle Length	90	100						
4	Phase 1 - Force/Off	54	59						
5	Phase 2 - Force/Off	0	0						
6	Phase 3 - Force/Off								
7	Phase 4 - Force/Off	33	33						
8	Phase 5 - Force/Off	54	49						
9	Phase 6 - Force/Off	0	0						
A	Phase 7 - Force/Off								
B	Phase 8 - Force/Off	33	33						
C	Ring Offset								
D	Offset A	66	72						
E	Offset B								
F	Offset C								
10	Permissive	10	10						
11	Inhibit Max	255	255						
12	Ped Min	4	4						

Coordination
C + Plan + ROW
<C Page>

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	07 : 03	E	A	23456
2	07 : 27	1	A	23456
3	08 : 40	E	A	23456
4	16 : 00	3	A	23456
5	18 : 15	E	A	1234567

TOD Coordination
<9 Key with C+D+8=1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row	F
Plan 1	2 8
Plan 2	
Plan 3	3 6
Plan 4	
Plan 5	
Plan 6	
Plan 7	
Plan 8	
Plan 9	
Coord Pwd*	
NEMA Hold	

Sync Phases
C + E + FUNCTION #

Row	F
Free Lag	
Plan 1 - Lag	2 4 6 8
Plan 2 - Lag	
Plan 3 - Lag	2 4 6 8
Plan 4 - Lag	
Plan 5 - Lag	
Plan 6 - Lag	
Plan 7 - Lag	
Plan 8 - Lag	
Plan 9 - Lag	
Coord Max *	
Coord Lag *	

Lag Phases
<C Page>
C + F + FUNCTION #

Transition Type	0
TBC Transition	
C + D + D	

Transition Type
0 = Shortway
Non-zero = Longtime

Printed 08/08 11:12 AM

CARMEL MOUNTAIN RD & PASEO MONTALBAN

223 Program

Last Change: 04/10/03
Timing Sheet By: SLK
Approved By:

Drawing Number: 33907-1-2
Sys. Ref. Number:
Timing Implemented on: 11/14/07 @ 11:05

Row	Column # →	1 CARMEL MTN	2 PASEO MONT	3	4 CARMEL MTN	5	6 PASEO MONT	7	8
	Phase # →	1	2		4		6		8
		↑ N 1 + 8	← PSLT		↑ PSLT		↓		↓
0	Ped Walk		7		7		7		7
1	Ped FDW		17		23		19		22
2	Min Green	4	10	4	4	4	10	4	4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	3.7	2.0	2.0	2.0	3.7	2.0	2.0
6	Max Gap	2.0	3.7	2.0	2.0	2.0	3.7	2.0	2.0
7	Min Gap	2.0	0.2	2.0	2.0	2.0	0.2	2.0	2.0
8	Max Limit	30	60	30	40	30	60	30	40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.7				0.7		
E	Yellow	3.4	4.2	3.4	3.9	3.4	4.2	3.4	3.9
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

Max Initial	0
Red Revert	5.0
All Red Start	0.0

Start / Reset Times
F + 0 + E
F + 0 + F
F + C + D

Omit Number	16
Zone Number	16
Area Number	3
Area Address	92
QuicNet Channel	DIGI58;

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuicNet)

Communication Addresses
C + F + O

Free Lag	F	Row
	2 4 6 8	0

Lag Phases
<C Page>

Row	A Green / Clear	B Yellow / Change	C Red / Clear	D Lead-Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing
<F Page>
F + COLOR +
<D Page>
D + 9 + OVERLAP

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + D + E

Manual Plan	0
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection
Manual Plan
0 = Automatic
1-8 = Plan 1-8
14 = Free
15 = Flash

Manual Offset, if
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Disable Ports	234

Disable Communications Ports
D + D + 9

Row	F
NN-1 Delay	
NN-1 Clear	
EV-A Delay	
EV-A Clear	0 *
EV-B Delay	0 *
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0 *
EV-D Clear	0 *
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row
<F Page>

Row	F
Permit	12345678
Red Lock	
Yellow Lock	
Min Recall	2 6
Ped Recall	
Peds (/Veh)	2 4 6 8
Rest In Walk	
Red Rest	
Dbl Entry	4 8
Max Recall	
Soft Recall	
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	2 6
1st Phase	4 8

Phase Functions
F + F + Row
<F Page>

* SEE Page 2.

INTERSECTION: CARMEL MOUNTAIN RD & PASEO MONTALBAN

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
T + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases
A	Overlap A - Phases	1
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs	1

Configuration
E + F + ROW
<E Page>

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases	3 7
5	Overlap A - Green Omit	8
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases	* 1 2 6
B	EV-B Phases	* 3 4 5 7
C	EV-C Phases	
D	EV-D Phases	
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration
E + E + ROW

Extra 1 Flags
1 = TBC Type
2 = NEMA Ext. Coord.
3 = Auto Daylight Savings
4 = DVI Enable
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 3-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 3-Wire Master
8 = Offset Interrupter

* = only one discriminator

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Ready
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
Disable Parity | 0 | D+0+0
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 0 = program
C + C + F = version

Sounds Organized
C + D + 4 = 1.286
w/ E + E = 0.5 on

pg. 2

INTERSECTION: CARMEL MOUNTAIN RD & PASEO MONTALBAN

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	3.0	
8	3.0	
9		
A		
B		
C		
D		
E		
F	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E		
F	---	---

Detector Delay & Carryover
<D Page>

Detector Name	332 Input File	Detector Number
	1I1	14
	202U	1
	203L	5
	203U	21
	203L	25
	204	9
	3I5	18
	486U	3
	486L	7
	407U	23
	407L	27
	408	11
	109U	18
	398L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	7J8U	17
	7J8L	19
---	---	---
---	---	---

D + X (across) + ROW

CARMEL MOUNTAIN RD & PASEO MONTALBAN

223 Program

Row	Detector Numbers	F
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- 25 26 27 28 - - -	2345

Active Detectors
<D Page>

Row	Detector #
0	
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors
<D Page>

Max ON (min)	5
Max OFF (min)	60

D+A+0
D+A+F

Detector Failure Monitor

Phase Number	0
Time Before Yellow	0.0

F+D+1
F+D+3

Advance Warning Beacon - Sign 1

Phase Number	0
Time Before Yellow	0.0

F+D+1
F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5
Short Failure	0.5

F+D+6
F+D+7

Power Cycle Correction (Default = 0.5)
(These parameters are NOT downloaded.)

pg. 3

INTERSECTION: CARMEL MOUNTAIN RD & PASEO MONTALBAN

223 Program

Coordination Timing By: EFF
Implemented On: 11/14/2007

FOR OBSERVATION ONLY
Master Plan: C + A + 2
Current Plan: C + A + 3
Next Plan: C + A + 4
T.O.D. Plan: C + A + 5
Master Cycle: D + A + 9
Ring A Cycle: C + B + 6
Ring B Cycle: D + B + 9
Min Cycle: C + A + E
Max Cycle: C + B + D

Row	Column # ---> / Plan # --->	1	2	3	4	5	6	7	8
0	Plan Name --->								
1	Cycle Length	90	80	100					
2	Phase 1 - Force Off	20	49	70					
3	Phase 2 - Force Off	0	0	0					
4	Phase 3 - Force Off	38	14	25					
5	Phase 4 - Force Off	52	33	43					
6	Phase 5 - Force Off	62	49	11					
7	Phase 6 - Force Off	0	0	0					
8	Phase 7 - Force Off	38	17	25					
9	Phase 8 - Force Off	52	33	43					
A	Ring Offset								
B	Offset A	21	76	15					
C	Offset B								
D	Offset C								
E	Permissive	10	10	10					
F	Max Release	255	255	255					
	Ped Shift	14	14	14					

Coordination
C + Plan + ROW
<C Page>

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	08 : 40	E	A	23456
2	11 : 00	2	A	23456
3	13 : 00	E	A	23456
4	16 : 00	3	A	23456
5	18 : 15	E	A	1234567
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<9 Key with C+D+E+9>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row	Column # --->	1
0	Plan 1	2 6
1	Plan 2	2 6
2	Plan 3	2 6
3	Plan 4	
4	Plan 5	
5	Plan 6	
6	Plan 7	
7	Plan 8	
8	Plan 9	
9	Coord Fwd*	
A	NEMA Hold	
B		
C		
D		
E		
F		

Sync Phases
C + E + FUNCTION 8

Row	Free Leg	2 4 6 8
0	Plan 1 - Leg	1 4 6 8
1	Plan 2 - Leg	2 4 6 8
2	Plan 3 - Leg	2 45 8
3	Plan 4 - Leg	
4	Plan 5 - Leg	
5	Plan 6 - Leg	
6	Plan 7 - Leg	
7	Plan 8 - Leg	
8	Plan 9 - Leg	
9	Coord Max*	
A	Coord Leg*	
B		
C		
D		
E		
F		

Leg Phases
<C Page>
C + F + FUNCTION 9

Transition Type: 0
TBC Transition
D + D = 0

Transition Type
0 = Shortway
Numbers = Longtime

INTERSECTION: Carmel Mountain Road & Sundance Avenue (south intersection)

223 Program

Group Assignment:
Field Master Assignment:
N/S Street Name: Sundance Avenue
E/W Street Name: Carmel Mountain Roa...
Last Database Change:
System Ref. Number:

Row	Column # ---> / Phase # --->	1	2	3	4	5	6	7	8
0	Ped Walk		7		7		7		7
1	Ped FDW		11		21		11		21
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	4.4		2.0	2.0	4.1		2.0
6	Max Gap	2.0	4.4		2.0	2.0	4.1		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By								
D	Every		0.7				0.8		
E	Yellow	3.4	4.2		3.9	3.4	4.4		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row		
0	Permit	12_456_8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	Peds (Veh)	2_4_6_8
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	4 8
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	2 6
F	1st Phases	4 8

Phase Functions <F Page>
F + F + Row

Overlap Timing

Row	A Green Clear	B Yellow Change	C Red Clear	D Load-Switch #
Overlap A				
Overlap B				
Overlap C				
Overlap D				

<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Max Initial	0
Red Revert	5.0
Alt Red Start	0.0

F + D + E
F + G + F
F + C + O

Start / Revert Times

Ring Number	
Zone Number	
Area Number	
Area Address	
Quick'net Channel	

C + D + 0
C + D + 1
C + D + 2
C + D + 3
(Quic'Net)

Communication Addresses
C + F + O

Row	Free Leg
0	2_4_6_8

Leg Phases
<C Page>

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection
Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + G + 8

Disable Ports	234

Disable Communication Ports
D + D + 9

Timing Sheet By: PAT
Approved By: EFF
Drawing Number: 2501-S
Timing Implemented On: 5/21/14

Printed on 10/22/2013 9:09 AM
PAGE 1
City of San Diego

INTERSECTION: Carmel Mountain Road & Sundance Avenue (south intersection)

223 Program

Row	Time	Function	Day of Week	Column # ---> / Phases/Ring
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 = -
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Leg Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration
E + F + ROW
<E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Ped / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 34
F	AC Select (Interconnect)	2

Configuration
For access, set F + 9 + E = 1
E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Phaseout Operation
8 = Split Ring Operation

AC Select Flags
1 = -
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 = -
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 = -

Time and Date

Disable Parity: 0 (D+0+0)

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = I-256
w/ E + E + E bit 5 on

Printed on 10/22/2013 9:09 AM
PAGE 2
City of San Diego

INTERSECTION: Carmel Mountain Road & Sundance Avenue (south intersection)

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	202U	1
	212L	5
	203U	21
	213L	25
	204	9
	395	16
	496U	3
	486L	7
	487U	23
	497L	27
	488	11
	189U	18
	399L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	5J0U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>
D + X (across) + ROW

Row	Detector Numbers	C
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- 25 26 27 28 - - -	2345

Active Detectors <D Page>

Row	Detector #
0	
1	System Det. # 1 0
2	System Det. # 2 0
3	System Det. # 3 0
4	System Det. # 4 0
5	System Det. # 5 0
6	System Det. # 6 0
7	System Det. # 7 0
8	System Det. # 8 0

System Detectors <D Page>

Max ON (min)	5 (D+A+E)
Max OFF (min)	60 (D+A+F)

Detector Failure Monitor

Phase Number	0 (F+C+1)
Time Before Yellow	0.0 (F+C+3)

Advance Warning Beacon - Sign 1

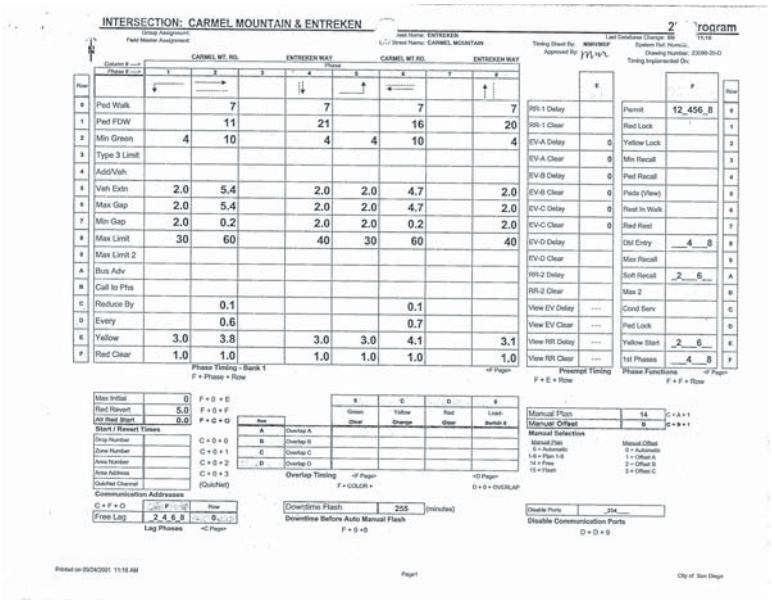
Phase Number	0 (F+D+1)
Time Before Yellow	0.0 (F+D+3)

Advance Warning Beacon - Sign 2

Long Failure	0.5 (F+D+6)
Short Failure	0.5 (F+D+7)

Power Cycle Correction (Default = 0.5)

Printed on 10/22/2013 9:09 AM
PAGE 3
City of San Diego



INTERSECTION: CARMEL MOUNTAIN & ENTREKEN

2 Program

Group Assignment:
Field Master Assignment:

Lead Name: ENTREKEN
Cross Street Name: CARMEL MOUNTAIN

Timing Sheet By: MMK/MKF
Approved By:

Last Database Change: 05/ 11:18
System Ref. Numbers
Drawing Number: 23098-20-D
Timing Implemented On:

Row	Phase # --->	1	3	3	4	5	6	7	8
		CARMEL MT. RD.		ENTREKEN WAY		CARMEL MT. RD.		ENTREKEN WAY	
0	Ped Walk		7		7		7		7
1	Ped FDW		11		21		16		20
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	5.4		2.0	2.0	4.7		2.0
6	Max Gap	2.0	5.4		2.0	2.0	4.7		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.6				0.7		
E	Yellow	3.0	3.8		3.0	3.0	4.1		3.1
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1
F = Phase + Row

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row	F
Permit	12_456_8
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	4 8
Max Recall	
Soft Recall	2 6
Max 2	
Cond Serv	
Ped Lock	
Yellow Start	2 6
1st Phases	4 8

Phase Functions
F + F + Row

Max Initial	0
Red Revert	5.0
Alt Red Start	0.0

Start / Revert Times

F + 0 + E
F + 0 + F
F + C + O

Dmp Number	
Zone Number	
Area Number	
Area Address	
QuikNet Channel	

Communication Addresses

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuikNet)

	9	C	D	8
	Green Clear	Yellow Change	Red Clear	Load-Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing
<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
6 = Automatic
1-5 = Plan 1-5
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

C + F + O	Row
Free Lag	2 4 6 8

Lag Phases
<C Page>

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + 0 +8

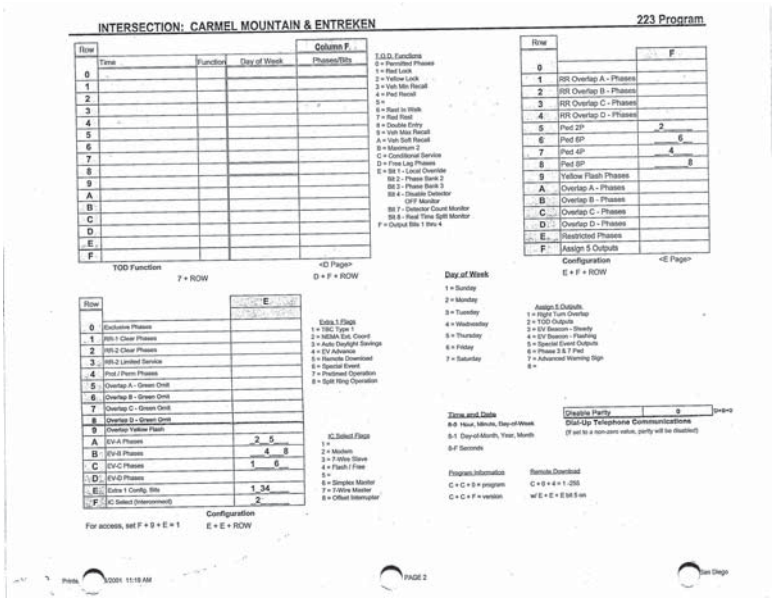
Disable Ports	234

Disable Communication Ports
D + D + 9

Printed on 09/24/2001 11:19 AM

Page1

City of San Diego



INTERSECTION: CARMEL MOUNTAIN & ENTREKEN

223 Program

Row	Time	Function	Day of Week	Column F: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P 2
6	Ped 6P 6
7	Ped 4P 4
8	Ped 8P 8
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration
<E Page>
E + F + ROW

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Ped / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases
B	EV-B Phases
C	EV-C Phases
D	EV-D Phases
E	Extra 1 Config. Bits 2 5
F	IC Select (Interconnect) 1 34 2

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 2 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-B Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -256
w/ E + E = 0 to 5 on

Checkbk Parity	0

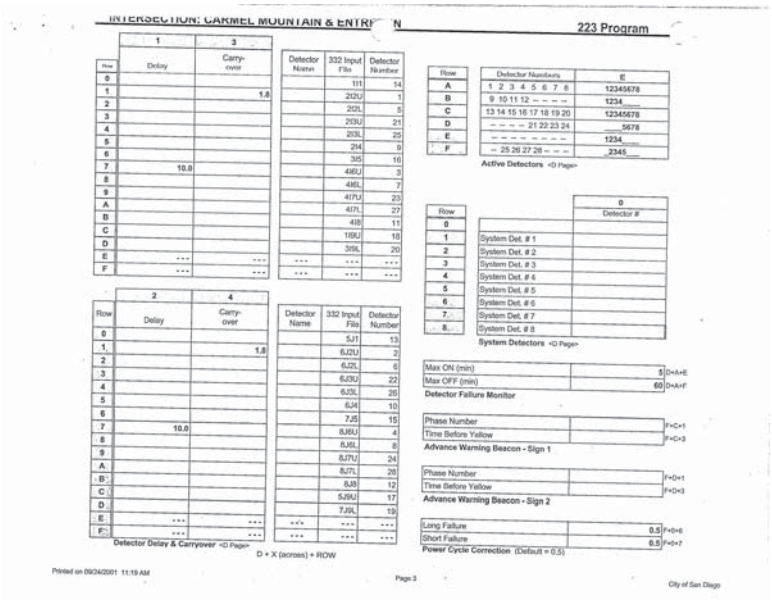
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Configuration
For access, set F + 9 + E = 1
E + E + ROW

Printed on 09/24/2001 11:19 AM

PAGE 2

City of San Diego



INTERSECTION: CARMEL MOUNTAIN & ENTREKEN

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.8	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.8	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>
D + X (across) + ROW

Detector Name	332 Input Pin	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	0
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Detector Name	332 Input Pin	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Numbers

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5
Max OFF (min)	60

D+A+E
D+A+F

Detector Failure Monitor

Phase Number	F+C+1
Time Before Yellow	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	F+D+1
Time Before Yellow	F+D+3

Advance Warning Beacon - Sign 2

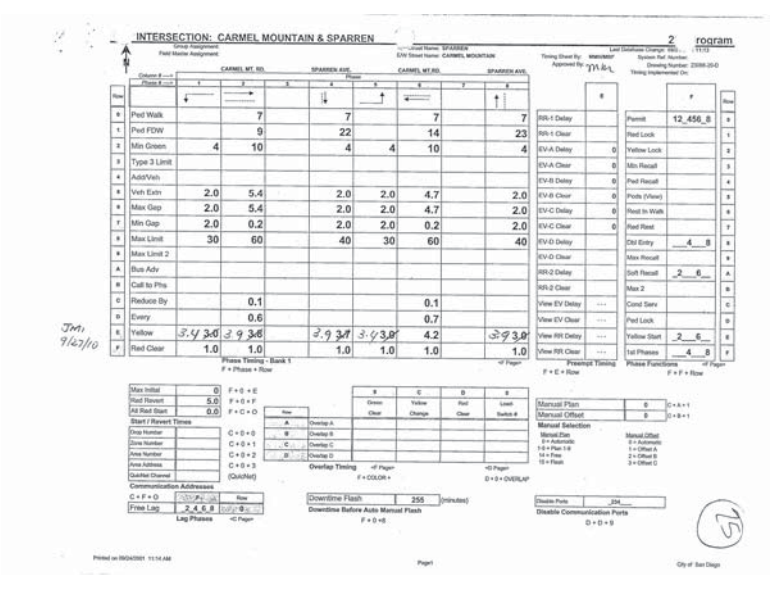
Long Failure	0.5 F+D+6
Short Failure	0.5 F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 09/24/2001 11:19 AM

Page 3

City of San Diego



INTERSECTION: CARMEL MOUNTAIN & SPARREN

2 Program

Group Assignment:
Field Master Assignment:

Local Name: SPARREN
Cross Street Name: CARMEL MOUNTAIN

Timing Sheet By: MMK/MKF
Approved By:

Last Database Change: 05/ 11:13
System Ref. Number:
Drawing Number: 23098-20-D
Timing Implemented On:

Row	Phase # --->	1	2	3	4	5	6	7	8
		CARMEL MT. RD.		SPARREN AVE.		CARMEL MT. RD.		SPARREN AVE.	
0	Ped Walk		7		7		7		7
1	Ped FDW		9		22		14		23
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	5.4		2.0	2.0	4.7		2.0
6	Max Gap	2.0	5.4		2.0	2.0	4.7		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.6				0.7		
E	Yellow	3.4 3.0	3.9 3.8		3.9 3.7	3.4 3.0	4.2		3.9 3.0
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

JMI 9/27/10

Phase Timing - Bank 1
F + Phase + Row

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row	F
Permit	12_456_8
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	4 8
Max Recall	
Soft Recall	2 6
Max 2	
Cond Serv	
Ped Lock	
Yellow Start	2 6
1st Phases	4 8

Phase Functions
F + F + Row

Max Initial	0
Red Revert	5.0
Alt Red Start	0.0

Start / Revert Times

F + 0 + E
F + 0 + F
F + C + O

Dmp Number	
Zone Number	
Area Number	
Area Address	
QuikNet Channel	

Communication Addresses

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuikNet)

	9	C	D	8
	Green Clear	Yellow Change	Red Clear	Load-Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing
<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Manual Plan	0
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-5 = Plan 1-5
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

C + F + O	Row
Free Lag	2 4 6 8

Lag Phases
<C Page>

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	234

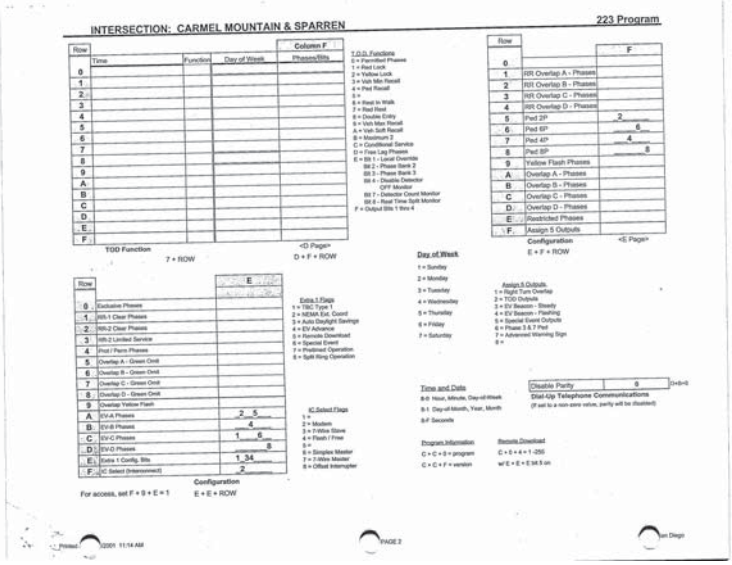
Disable Communication Ports
D + D + 9

25

Printed on 09/24/2001 11:14 AM

Page1

City of San Diego



INTERSECTION: CARMEL MOUNTAIN & SPARREN

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Red In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Row		E
0	Exclusive Phases	
1	68-1 Clear Phases	
2	68-2 Clear Phases	
3	68-2 Limited Service	
4	Ped / Pace Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

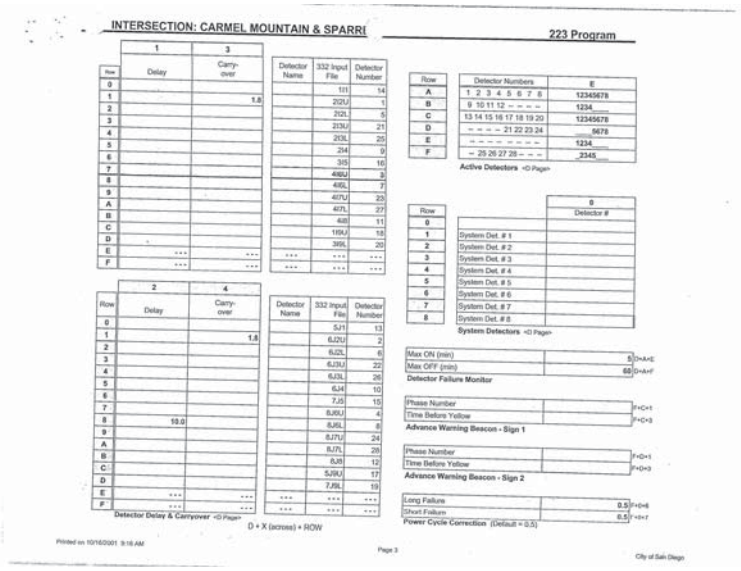
Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
B-0 Hour, Minute, Day-of-Week
B-1 Day-of-Month, Year, Month
B-F Seconds

Disable Parity: 0 — D+0+0
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 5 + 4 + 1 -255
w/ E + E = 5#4 5 on



INTERSECTION: CARMEL MOUNTAIN & SPARRI

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	202U	1
	202L	5
	213U	21
	203L	25
	214	9
	3I5	16
	486U	3
	486L	7
	407U	23
	407L	27
	4I8	11
	199U	18
	399L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8	10.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1I	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

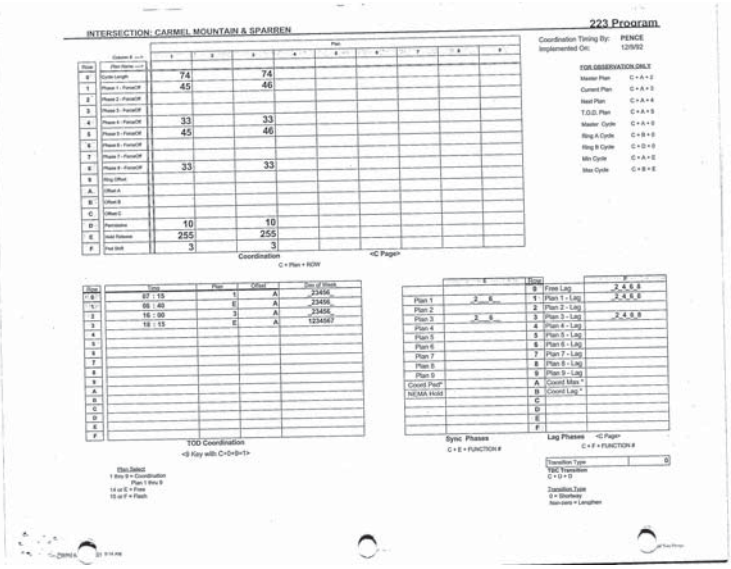
System Detectors <D Page>

Max ON (min): 5 — D+A+E
Max OFF (min): 60 — D+A+F
Detector Failure Monitor

Phase Number — F+C+1
Time Before Yellow — F+C+3
Advance Warning Beacon - Sign 1

Phase Number — F+D+1
Time Before Yellow — F+D+3
Advance Warning Beacon - Sign 2

Long Failure: 0.5 — F+D+6
Short Failure: 6.5 — F+D+7
Power Cycle Correction (Default = 0.5)



INTERSECTION: CARMEL MOUNTAIN & SPARREN

223 Program

Row	Plan Name -->	1	2	3	4	5	6	7	8	9
0	Cycle Length	74		74						
1	Phase 1 - Force Off	45		46						
2	Phase 2 - Force Off									
3	Phase 3 - Force Off									
4	Phase 4 - Force Off	33		33						
5	Phase 5 - Force Off	45		46						
6	Phase 6 - Force Off									
7	Phase 7 - Force Off									
8	Phase 8 - Force Off	33		33						
9	Ring Offset									
A	Offset A									
B	Offset B									
C	Offset C									
D	Permissive	10		10						
E	Walk Rollover	255		255						
F	Ped Shift	3		3						

Coordination — C + Plan + ROW — <C Page>

Coordination Timing By: PENCE
Implemented On: 12/9/92

FOR OBSERVATION ONLY
Master Plan — C + A + 2
Current Plan — C + A + 3
Next Plan — C + A + 4
T.O.D. Plan — C + A + 5
Master Cycle — C + A + 8
Ring A Cycle — C + B + 8
Ring B Cycle — C + D + 8
Min Cycle — C + A + E
Max Cycle — C + B + E

Row	Time	Plan	Offset	Day of Week
0	07 : 15	1	A	23456
1	09 : 40	E	A	23456
2	16 : 00	3	A	23456
3	18 : 15	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

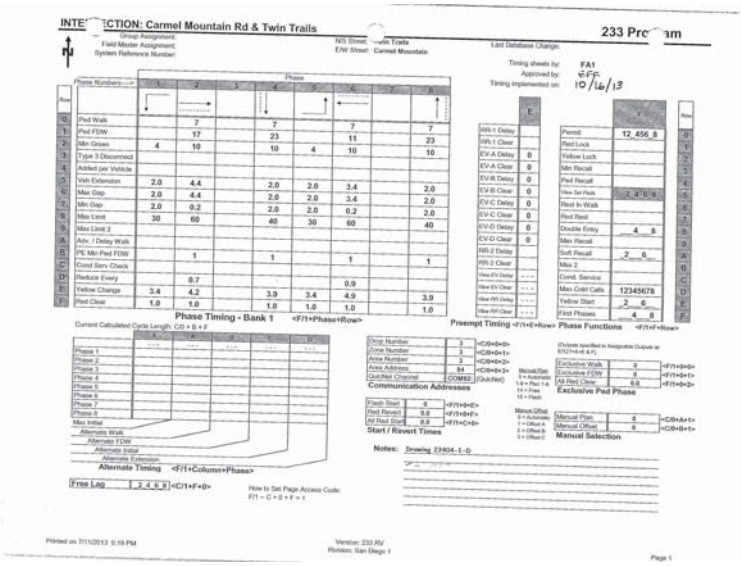
TOD Coordination
<0 Key with C+D+D+1>

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row	8	9
0		
1	Plan 1	2 4 6 8
2	Plan 2	2 4 6 8
3	Plan 3	2 4 6 8
4	Plan 4	
5	Plan 5	
6	Plan 6	
7	Plan 7	
8	Plan 8	
9	Plan 9	
A	Coord Pat7	
B	NEMA Hold	
C		
D		
E		
F		

Sync Phases — C + E + FUNCTION # — Lag Phases — <C Page> — C + F + FUNCTION #

Transition Type	0
TBC Transition C + D + 0	
Transition Type 0 = Shortway Non-zero = Longhen	



INTERSECTION: Carmel Mountain Rd & Twin Trails

233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street: Twin Trails
E/W Street: Carmel Mountain

Last Database Change:
Timing sheets by: FA1
Approved by: EFF
Timing implemented on: 10/16/13

Row	Phase Numbers -->	1	2	3	4	5	6	7	8
0	Ped Walk		7		7		7		
1	Ped FDW		17		23		11		23
2	Min Green	4	10		10	4	10		10
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.4		2.0	2.0	3.4		2.0
6	Max Gap	2.0	4.4		2.0	2.0	3.4		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Adv. / Delay Walk								
B	Pt. Min Ped FDW		1		1		1		
C	Cond Serv Check								1
D	Reduce Every		0.7				0.9		
E	Yellow Change	3.4	4.2		3.9	3.4	4.9		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 <F/1+Phase+Row>

Current Calculated Cycle Length: C/0 + B + F

Row	1	2	3	4	5	6	7	8
Phase 1								
Phase 2								
Phase 3								
Phase 4								
Phase 5								
Phase 6								
Phase 7								
Phase 8								
Max Initial								
Alternate Walk								
Alternate FDW								
Alternate Initial								
Alternate Extension								

Alternate Timing <F/1+Column+Phase>

Free Lag: 2 4 6 8 <F/1+F+B>

How to Set Page Access Code:
F/1 – C + B + F = 1

Row	E	F
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E		
F		

Row		F
0	Permit	12 456 8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	
4	Ped Recall	
5	Max Set Pnts	2 4 6 8
6	Red In Walk	
7	Red Rest	
8	Double Entry	4 8
9	Max Recall	
A	Soft Recall	2 6
B	Max 2	
C	Cond. Service	
D	Max Cold Calls	12345678
E	Yellow Start	2 6
F	First Phases	4 8

Preempt Timing <F/1+E+Row> — Phase Functions <F/1+F+Row>

Drop Number	3	<C/B+B+B>
Zone Number	3	<C/B+B+1>
Area Address	3	<C/B+B+2>
Area Address	84	<C/B+B+3>
Quic/Net Channel	COMSD	(Quic/Net)

Communication Addresses

Flash Start	0	<F/1+B+E>
Red Revert	5.0	<F/1+B+F>
All Red Start	6.0	<F/1+C+9>

Start / Revert Times

Manual Plan: 1+ Automatic, 1+1 Manual, 2+ Offset A, 3+ Offset B, 4+ Offset C

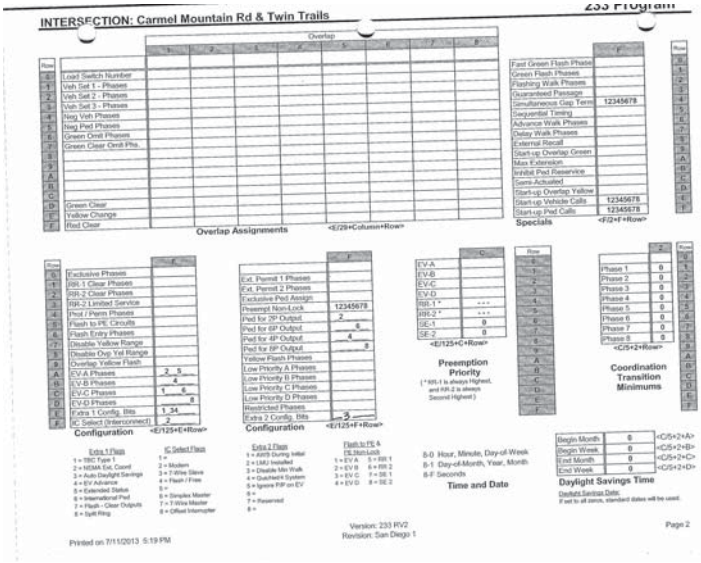
Exclusive Walk	0	<F/1+B+0>
Exclusive FDW	0	<F/1+B+1>
Alt Red Clear	0.0	<F/1+B+2>

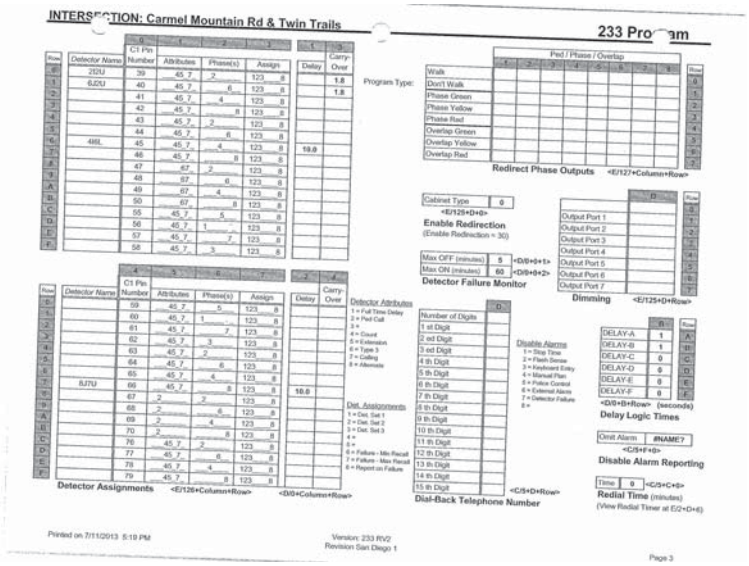
Exclusive Ped Phase

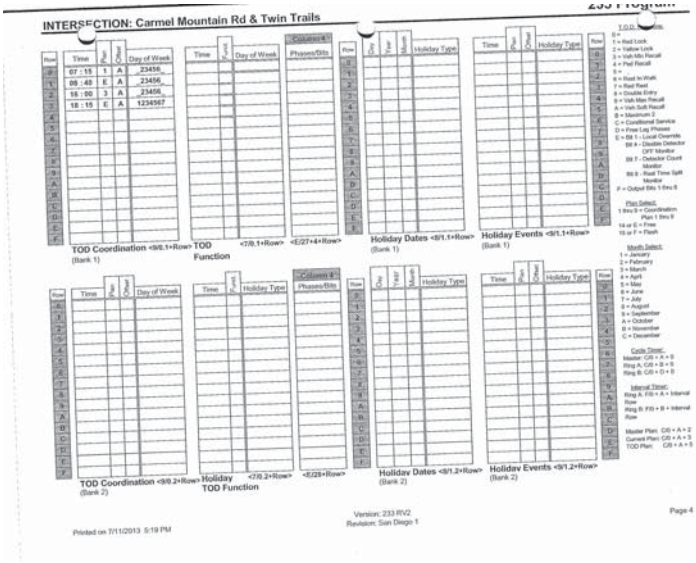
Manual Plan	0	<C/B+A+1>
Manual Offset	0	<C/B+B+1>

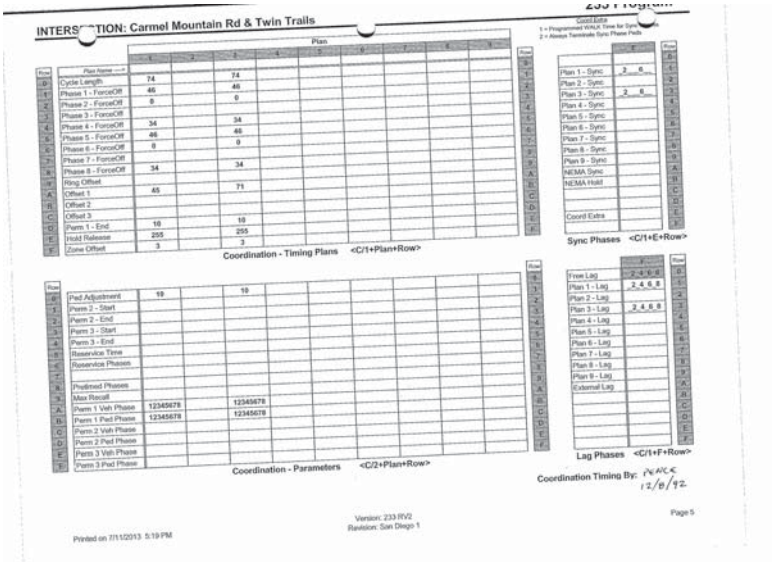
Manual Selection

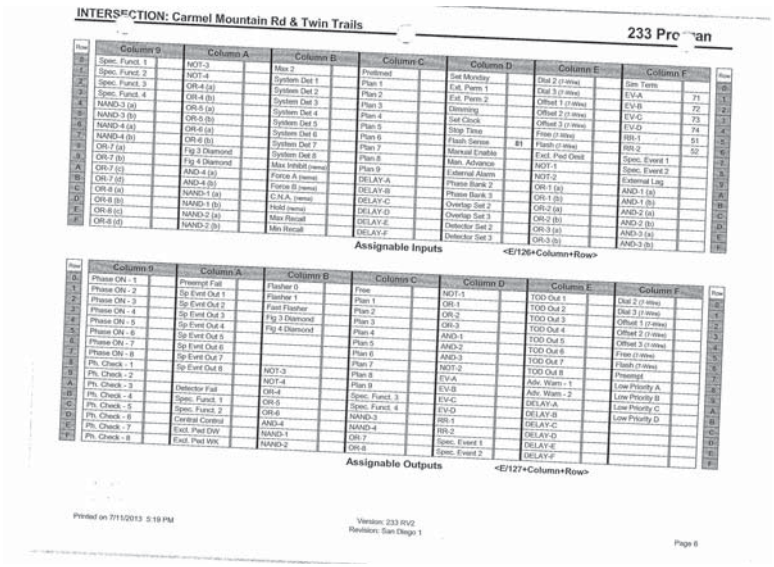
Notes: Drawing 23404-1-D


INTERSECTION: Carmel Mountain Rd & Twin Trails
233 Program
Overlap Assignments
Specials
Configuration
Configuration
Preemption Priority
Coordination Transition Minimums
Time and Date
Daylight Savings Time
Printed on 7/11/2013 5:19 PM
Version: 233 RV2
Revision: San Diego 1
Page 2


INTERSECTION: Carmel Mountain Rd & Twin Trails
233 Program
Detector Assignments
Redirect Phase Outputs
Enable Redirection
Detector Failure Monitor
Dimming
Delay Logic Times
Disable Alarm Reporting
Dial-Back Telephone Number
Redial Time
Printed on 7/11/2013 5:19 PM
Version: 233 RV2
Revision: San Diego 1
Page 3


INTERSECTION: Carmel Mountain Rd & Twin Trails
TOD Coordination
TOD Function
Holiday Dates
Holiday Events
Holiday TOD Function
Printed on 7/11/2013 5:19 PM
Version: 233 RV2
Revision: San Diego 1
Page 4


INTERSECTION: Carmel Mountain Rd & Twin Trails
Coordination - Timing Plans
Sync Phases
Coordination - Parameters
Lag Phases
Coordination Timing By: PEACE 12/8/92
Printed on 7/11/2013 5:19 PM
Version: 233 RV2
Revision: San Diego 1
Page 5



INTERSECTION: Carmel Mountain Rd & Twin Trails — 233 Program

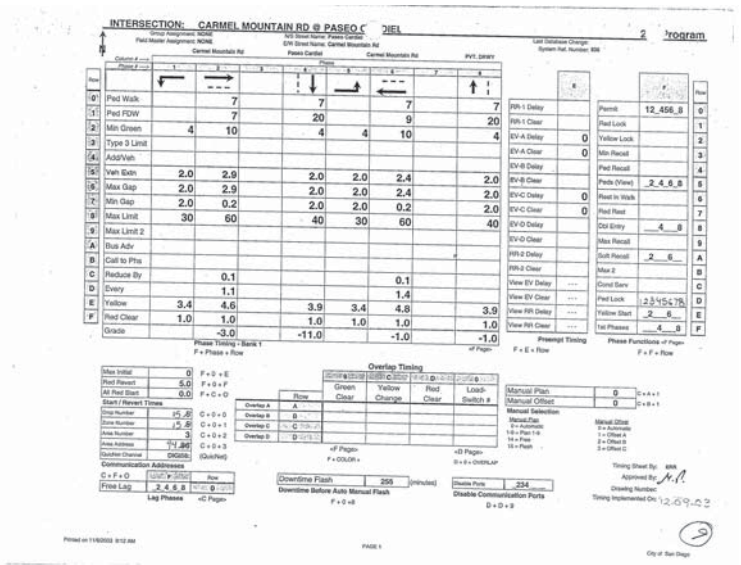
Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
8	Spec. Funct. 1	NOT-3	Max 2	Prelimed	Set Monday	Dist 2 (7-Wire)	Sim Term	0
9	Spec. Funct. 2	NOT-4	System Det 1	Plan 1	Ext. Perm 1	Dist 3 (7-Wire)	EV-A	71 1
A	Spec. Funct. 3	OR-4 (a)	System Det 2	Plan 2	Ext. Perm 2	Offset 1 (7-Wire)	EV-B	72 2
B	Spec. Funct. 4	OR-4 (b)	System Det 3	Plan 3	Dimming	Offset 2 (7-Wire)	EV-C	73 3
C	NAND-3 (a)	OR-5 (a)	System Det 4	Plan 4	Set Clock	Offset 3 (7-Wire)	EV-D	74 4
D	NAND-3 (b)	OR-5 (b)	System Det 5	Plan 5	Stop Time	Free (7-Wire)	RR-1	51 5
E	NAND-4 (a)	OR-6 (a)	System Det 6	Plan 6	Flash Sense 81	Flash (7-Wire)	RR 2	52 6
F	NAND-4 (b)	OR-6 (b)	System Det 7	Plan 7	Manual Enable	Excl. Ped Omit	Spec. Event 1	7
	OR-7 (a)	Fig 3 Diamond	System Det 8	Plan 8	Man. Advance	NOT-1	Spec. Event 2	8
	OR-7 (b)	Fig 4 Diamond	Max Inhibit (rema)	Plan 9	External Alarm	NOT-2	External Lag	9
	OR-7 (c)	AND-4 (a)	Force A (rema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a)	A
	OR-7 (d)	AND-4 (b)	Force B (rema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b)	B
	OR-8 (a)	NAND-1 (a)	C.N.A. (rema)	DELAY-C	Overlap Set 2	OR-2 (a)	AND-2 (a)	C
	OR-8 (b)	NAND-1 (b)	Hold (rema)	DELAY-D	Overlap Set 3	OR-2 (b)	AND-2 (b)	D
	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)	E
	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)	F

Assignable Inputs — <E/126+Column+Row>

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1	TOD Out 1	Dist 2 (7-Wire)	0
1	Phase ON - 2	Sp Evnt Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dist 3 (7-Wire)	1
2	Phase ON - 3	Sp Evnt Out 2	Fast Flasher	Plan 2	OR-2	TOD Out 3	Offset 1 (7-Wire)	2
3	Phase ON - 4	Sp Evnt Out 3	Fig 3 Diamond	Plan 3	OR-3	TOD Out 4	Offset 2 (7-Wire)	3
4	Phase ON - 5	Sp Evnt Out 4	Fig 4 Diamond	Plan 4	AND-1	TOD Out 5	Offset 3 (7-Wire)	4
5	Phase ON - 6	Sp Evnt Out 5		Plan 5	AND-2	TOD Out 6	Free (7-Wire)	5
6	Phase ON - 7	Sp Evnt Out 6		Plan 6	AND-3	TOD Out 7	Flash (7-Wire)	6
7	Phase ON - 8	Sp Evnt Out 7		Plan 7	NOT-2	TOD Out 8	Preempt	7
8	Ph. Check - 1	Sp Evnt Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A	8
9	Ph. Check - 2		NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B	9
A	Ph. Check - 3	Detector Fail	OR-4	Spec. Funct. 3	EV-C	DELAY-A	Low Priority C	A
B	Ph. Check - 4	Spec. Funct. 1	OR-5	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D	B
C	Ph. Check - 5	Spec. Funct. 2	OR-6	NAND-3	RR-1	DELAY-C		C
D	Ph. Check - 6	Central Control	AND-4	NAND-4	RR-2	DELAY-D		D
E	Ph. Check - 7	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E		E
F	Ph. Check - 8	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F		F

Assignable Outputs — <E/127+Column+Row>

Printed on 7/11/2013 5:19 PM — Version: 233 RV2 — Revision: San Diego 1 — Page 6



INTERSECTION: CARMEL MOUNTAIN RD @ PASEO C[illegible]DIEL — 2[illegible]rogram

Street Assignment: NONE
Field Master Assignment: NONE
Carmel Mountain Rd
N/S Street Name: Paseo Cardiel
E/W Street Name: Carmel Mountain Rd
Paseo Cardiel
Carmel Mountain Rd
PVT. DWWY
Last Database Change:
System Ref. Number: 936

Row	Phase 1	2	3	4	5	6	7	8
0	Ped Walk		7		7		7	7
1	Ped FDW		7		20		9	20
2	Min Green	4	10		4	4	10	4
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	2.9		2.0	2.0	2.4	2.0
6	Max Gap	2.0	2.9		2.0	2.0	2.4	2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2	2.0
8	Max Limit	30	60		40	30	60	40
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		
D	Every		1.1			1.4		
E	Yellow	3.4	4.6		3.9	3.4	4.8	3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0	1.0
	Grade		-3.0		-11.0		-1.0	-1.0

Phase Timing - Bank 1 — F + Phase + Row — <F Page>

Row	E	F
RR-1 Delay		Permit 12_456_8
RR-1 Clear		Red Lock
EV-A Delay 0		Yellow Lock
EV-A Clear 0		Min Recall
EV-B Delay		Ped Recall
EV-B Clear		Peds (View) 2_4_6_8
EV-C Delay 0		Rest in Walk
EV-C Clear 0		Red Rest
EV-D Delay		Old Entry 4__8
EV-D Clear		Max Recall
RR-2 Delay		Soft Recall 2__6__
RR-2 Clear		Max 2
View EV Delay ---		Cond Serv
View EV Clear ---		Ped Lock 23456_8
View RR Delay ---		Yellow Start 2__6__
View RR Clear ---		1st Phases 4__8

Preempt Timing — F + E + Row — Phase Functions <F Page> — F + F + Row

Overlap Timing

Row	Overlap	Green	Yellow Change	Red Clear	Lead-Switch #
	A				
	B				
	C				
	D				

<F Page> — F + COLOR + — <D Page> — D + 0 + OVERLAP

Max Initial	0	F + 0 + E
Ped Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + 0

Start / Revert Times

Ring Number	1 5 6	C + 0 + 0
Zone Number	1 5 6	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	1 4 3 6	C + 0 + 3
Qualifier Channel	DIGI56	(Quic/Net)

Communication Addresses

C + F + 0	Unit Number	Row
Free Lag	2 4 6 8	Ped 0

Lag Phases — <C Page>

Manual Plan	0	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection — Manual Plan — Manual Offset

Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Downtime Flash	255	(minutes)

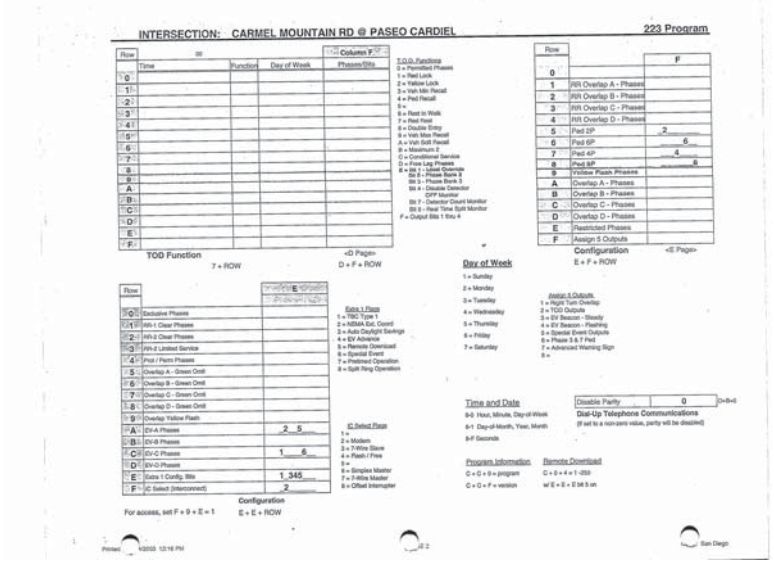
Downtime Before Auto Manual Flash — F + 0 + 8

Disable Ports	234	

Disable Communication Ports — D + D + 3

Timing Sheet By: [illegible]
Approved By: [illegible]
Drawing Number:
Timing Implemented On: 12-09-03

Printed on 11/6/2003 9:12 AM — PAGE 1 — City of San Diego



INTERSECTION: CARMEL MOUNTAIN RD @ PASEO CARDIEL — 223 Program

Row	Time	Function	Day of Week	Column F: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function — 7 + ROW — <D Page> — D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 = ?
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Leg Phase
E = Bit 1 - Load Outputs
Bit 0 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 6 - Real Time Split Monitor
F = Output Bits 1 thru 4

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration — E + F + ROW — <E Page>

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 = ?

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases 2 5
B	EV-B Phases
C	EV-C Phases 1 6
D	EV-D Phases
E	Extra 1 Config. Bits 1 345
F	I/O Select (Interconnect) 2

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Overload
6 = Special Event
7 = Preimed Operation
8 = Split Ring Operation

I/O Select Flags
1 = ?
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 = ?
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Configuration — E + E + ROW

For access, set F + 9 + E = 1

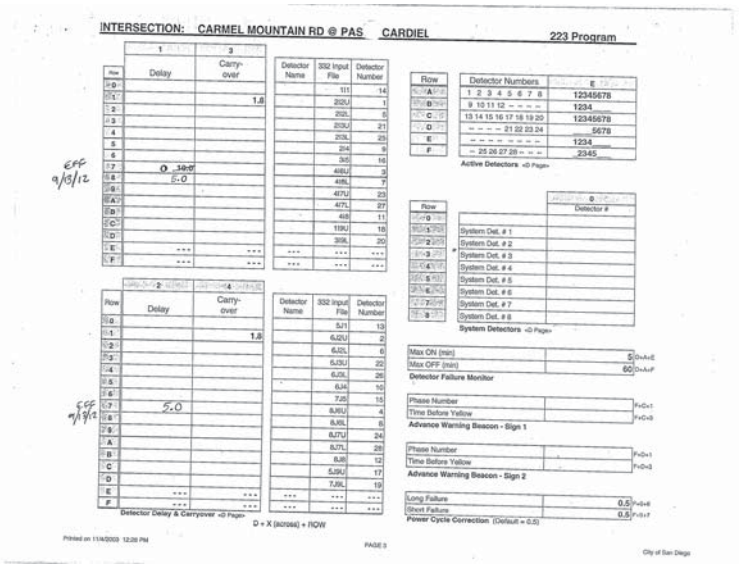
Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity 0 — D+B+0
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-200
w/ E + E = 0 bit 5 on

Printed [illegible] 12:16 PM — [illegible]2 — San Diego



INTERSECTION: CARMEL MOUNTAIN RD @ PAS[illegible] CARDIEL — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	0 ~~3.0~~ 5.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

EFF 9/8/12

Detector Name	332 Input File	Detector Number
	111	14
	202U	1
	202L	5
	203U	21
	203L	25
	204	9
	305	16
	446U	3
	446L	7
	447U	23
	447L	27
	448	11
	109U	18
	308L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	5.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

EFF 9/8/12

Detector Name	332 Input File	Detector Number
	5J1	13
	5J2U	2
	5J2L	6
	5J3U	22
	5J3L	26
	5J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+8
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

Printed on 11/4/2003 12:20 PM — PAGE 3 — City of San Diego

INTERSECTION: CARMEL MOUNTAIN RD @ PASEO CARDIEL

223 Program

Coordination Timing By: PENCE
Implemented On: 12/8/1992

FOR OBSERVATION ONLY
Master Plan C + A + 2
Current Plan C + A + 3
Next Plan C + A + 4
T.O.D. Plan C + A + 5
Master Cycle C + A + 6
Ring A Cycle C + B + 5
Ring B Cycle C + D + 6
Min Cycle C + A + E
Max Cycle C + B + E

Row	Plan Name	1	2	3	4	5	6	7	8	9
0	Cycle Length	90		100						
1	Phase 1 - Force Off	50 46		49						
2	Phase 2 - Force Off	0								
3	Phase 3 - Force Off									
4	Phase 4 - Force Off	29 33		33						
5	Phase 5 - Force Off	87 46		49						
6	Phase 6 - Force Off	0								
7	Phase 7 - Force Off									
8	Phase 8 - Force Off	39 33		33						
9	Ring Offset									
A	Offset A	39		74						
B	Offset B									
C	Offset C									
D	Permissive	10		10						
E	Inhibit Reference	255		255						
F	Ped Walk	0		0						

Coordination
C + Plan + ROW
<C Page>

9:00 9/11/12

Row	Time	Plan	Offset	Day of Week
0	~~7:00 - 09~~	1		23456
1	~~9:00 - 15~~	E		23456
2	~~15:00 - 00~~	3		23456
3	~~18:00 - 15~~	E		1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<9 Key with C+D+9+1>

Plan Select
1 thru 8 = Coordination Plan 1 thru 8
14 or E = Free
15 or F = Flash

		Row	F
Plan 1	2 6	0	Free Lag
Plan 2		1	Plan 1 - Lag
Plan 3	2 6	2	Plan 2 - Lag
Plan 4		3	Plan 3 - Lag
Plan 5		4	Plan 4 - Lag
Plan 6		5	Plan 5 - Lag
Plan 7		6	Plan 6 - Lag
Plan 8		7	Plan 7 - Lag
Plan 9		8	Plan 8 - Lag
Coord Pref*		9	Plan 9 - Lag
NEMA Hold		A	Coord Max *
		B	Coord Lag *
		C	
		D	
		E	
		F	

Sync Phases
C + E + FUNCTION #

Lag Phases
<C Page>
C + F + FUNCTION #

Transition Type 0
TBC Transitions
C + D + D

Transition Type
0 = Shortway
Non-zero = Longhen

Printed on 11/6/2003 10:27 PM

INTERSECTION: Carmel Mountain Rd @ Freeport Rd

2 Program

Group Assignment: NONE
Field Master Assignment: NONE
N/S Street Name: Freeport Rd
S/W Street Name: Carmel Mountain rd
Carmel Mountain Rd.
Freeport Rd.
Carmel Mountain Rd.
Last Database Change:
System Det. Number: 845

Row	Phase # ---> 1	2	3	4	5	6	7	8
0	Ped Walk			7		7		
1	Ped FDW		10	20		10		
2	Min Green	4	10	4	4	10		
3	Type 3 Limit							
4	Add'Veh							
5	Veh Extn	2.0	4.3	2.0	2.0	3.7		
6	Max Gap	2.0	4.3	2.0	2.0	3.7		
7	Min Gap	2.0	0.2	2.0	2.0	0.2		
8	Max Limit	30	60	40	30	60		
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		
D	Every		0.7			0.9		
E	Yellow	3.4	4.3	3.9	3.4	5.1		
F	Red Clear	1.0	1.0	1.0	1.0	1.0		
	Grade		0.0	-8.0		-3.0		

Phase Timing - Bank 1
F + Phase + Row
<F Page>

E		Row
RR-1 Delay		0
RR-1 Clear		1
EV-A Delay	0	2
EV-A Clear	0	3
EV-B Delay		4
EV-B Clear		5
EV-C Delay	0	6
EV-C Clear	0	7
EV-D Delay		8
EV-D Clear		9
RR-2 Delay		A
RR-2 Clear		B
View EV Delay	---	C
View EV Clear	---	D
View RR Delay	---	E
View RR Clear	---	F

Preempt Timing
F + E + Row

F	Row
Permit 12_456_	0
Red Lock	1
Yellow Lock	2
Min Recall	3
Ped Recall	4
Peds (View) 2_4_6_	5
Rest In Walk	6
Red Rest	7
Dbl Entry	8
Max Recall	9
Soft Recall 2_6_	A
Max 2	B
Cond Serv	C
Ped Lock 1234567_8_	D
Yellow Start 2_6_	E
1st Phases 4	F

Phase Functions <F Page>
F + F + Row

Overlap Timing

Row	Green Clear	Yellow Change	Red Clear	Lead-Switch #
Overlap A A				
Overlap B B				
Overlap C C				
Overlap D D				

<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
Alt Red Start	0.0	F + G + O

Start / Revert Times

Dmp Number	14	C + 0 + 0
Zone Number	14	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	95	C + 0 + 3
Gridlet Channel	DIG094	(Gridlet)

Communication Addresses

C + F + O	F	Row
Free Lag	2_4_6_	0

Lag Phases <C Page>

Manual Plan	0 C + A + 1
Manual Offset	0 C + B + 1

Manual Selection
Manual Plan: 0 = Automatic, 1-9 = Plan 1-9, 14 = Free, 15 = Flash
Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

Downtime Flash 255 (minutes)
Downtime Before Auto Manual Flash
F + 0 + 8

Disable Ports 234
Disable Communication Ports
D + 0 + 9

Timing Sheet By: ERR
Approved By: M.A
Drawing Number:
Timing Implemented 12-08-03

Printed on 11/6/2003 9:10 AM
PAGE 1
City of San Diego

INTERSECTION: Carmel Mountain Rd @ Freeport Rd

223 Program

Row	Time	Function	Day of Week	Column F Phases/Slits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phase
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P 2
6	Ped 6P 6
7	Ped 4P 4
8	Ped 8P
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration
E + F + ROW
<E Page>

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases 2_5_
B	EV-B Phases
C	EV-C Phases 1_6_
D	EV-D Phases
E	Extra 1 Config. Bits 1_345_
F	IC Select (Interconnect) 2

Configuration
E + E + ROW
For access, set F + 9 + E = 1

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity 0 C+B+0
Dial-Up Telephone Communications
(if set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E bit 5 on

Printed 11/6/2003 12:58 PM
PAGE 2
City of San Diego

INTERSECTION: Carmel Mountain Rd @ Freeport

223 Program

Row	1 Delay	1 Carry-over	3 Delay	3 Carry-over
0				
1		1.8		1.8
2				
3				
4				
5				
6				
7				
8	10.0			
9	4.0			
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Detector Delay & Carryover <D Page>
D + X (across) + ROW

Detector Name	332 Input File	Detector Number
	111	14
	202U	1
	202L	5
	203U	21
	203L	25
	234	9
	385	16
	468U	3
	468L	7
	417U	23
	417L	27
	418	11
	119U	18
	369L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Row	Detector Numbers E	
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+D+6
Short Failure	0.5	F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 11/6/2003 12:09 PM
PAGE 3
City of San Diego

INTERSECTION: Carmel Mountain Rd @ Freeport Rd

223 Program

Coordination Timing By: PENCE
Implemented On: 12/8/1992

FOR OBSERVATION ONLY
Master Plan C + A + 2
Current Plan C + A + 3
Next Plan C + A + 4
T.O.D. Plan C + A + 5
Master Cycle C + A + 9
Ring A Cycle C + B + 0
Ring B Cycle C + D + 0
Min Cycle C + A + E
Max Cycle G + B + E

Row	Plan Name ==>	1	2	3	4	5	6	7	8	9
0	Cycle Length	90		100						
1	Phase 1 - ForceOff	43 47		47						
2	Phase 2 - ForceOff	0								
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff	27 34		31						
5	Phase 5 - ForceOff	43 47		47						
6	Phase 6 - ForceOff	0								
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff									
9	Ring Offset									
A	Offset A	39		94						
B	Offset B									
C	Offset C									
D	Permissive	10		10						
E	Hold Release	255		255						
F	Ped Shift	0		0						

Coordination
C + Plan + ROW
<C Page>

Jan

Row	Date	Plan	Offset	Day of Week
0	7/20 08--09	1		23456
1	8/9 09--10	E		23456
2	1/1 2010--00	3		23456
3	1/1 2011--15	E		1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<9 Key with C+0+9+1>

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row	E	Row	F
Plan 1	2 6	0 Free Lag	
Plan 2		1 Plan 1 - Lag	2 4 6
Plan 3	2 6	2 Plan 2 - Lag	
Plan 4		3 Plan 3 - Lag	2 4 6
Plan 5		4 Plan 4 - Lag	
Plan 6		5 Plan 5 - Lag	
Plan 7		6 Plan 6 - Lag	
Plan 8		7 Plan 7 - Lag	
Plan 9		8 Plan 8 - Lag	
Coord Ped*		9 Plan 9 - Lag	
NEMA Hold		A Coord Max *	
		B Coord Lag *	
		C	
		D	
		E	
		F	

Sync Phases
C + E + FUNCTION #

Lag Phases <C Page>
C + F + FUNCTION #

Transition Type	0

TBC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Longthen

Printed on 7/2/2009 1:00 PM

INTERSECTION: Carmel Mountain Rd & Stoney Creek Rd

223 Program

Ring Assignment: FIVE
Field Master Assignment: NONE
Carmel Mtn Rd
N/S Street Name: Mooney Creek Rd
E/W Street Name: Carmel Mountain Rd
Mooney Creek Rd
Carmel Mtn Rd
Last Database Change:
System Ref. Number:

Column # ==>
Phase # ==>

Row	1	2	3	4	5	6	7	8
0	Ped Walk				7		7	
1	Ped FDW				23		13	
2	Min Green	4	7		4	4	7	
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	4.3		2.0	2.0	3.7	
6	Max Gap	2.0	4.3		2.0	2.0	3.7	
7	Min Gap	2.0	0.2		2.0	2.0	0.2	
8	Max Limit	30	60		40	30	60	
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	ReduceBy		0.1				0.1	
D	Every		0.7				0.9	
E	Yellow	3.4	4.3	3.4 3.8	3.4	4.7		
F	Red Clear	1.0	1.0		1.0	1.0	1.0	

Phase Timing - Bank 1
F + Phase + Row
<F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
Vlew EV Delay	---
Vlew EV Clear	---
Vlew RR Delay	---
Vlew RR Clear	---

Preempt Timing
F + E + Row

Row	F	
Permit	12_456	0
Red Lock		1
Yellow Lock		2
Min Recall	2 6	3
Ped Recall		4
Peds (Vlew)	4 6	5
Rest in Walk		6
Red Rest		7
Ctrl Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond Serv		C
Ped Lock	12345678	D
Yellow Start	2 6	E
1st Phases	4	F

Phase Functions <F Page>
F + F + Row

Overlap Timing

Row	B Green Clear	C Yellow Change	D Red Clear	E Load-Switch #
Overlap A	A			
Overlap B	B			
Overlap C	C			
Overlap D	D			

<F Page>
F + COLOR +
<D Page>
D + 0 = OVERLAP

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + 0 + E
F + 0 + F
F + C + 0

Start / Revert Times

Zone Number	1
Area Number	1
Area Address	100
Quarter Channel	D62/358

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(Out/Net)

Communication Addresses

C + F + D:	F	Row
Free Lag	2 4 6	6

Lag Phases <C Page>

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + 0 +6

Disable Ports	234

Disable Communication Ports
D + D + 9

Manual Plan	0
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection
Manual Plan
1 = Automatic
1+0 = Plan 1+0
1+1 = Free
1+F = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Timing Sheet By: BMS
Approved By: DTF
Drawing Number: 243569-1-D
Timing Implemented On: 2/1/2009

Printed on 7/2/2009 2:43 PM
PAGE 1
City of San Diego

INTERSECTION: Carmel Mountain Rd & Stoney Creek Rd

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function
7 + ROW
<D Page>
D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 = ---
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P
6	Ped 6P 6
7	Ped 4P 4
8	Ped 8P
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration
E + F + ROW
<E Page>

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-3 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases 2 5
B	EV-B Phases
C	EV-C Phases 1 6
D	EV-D Phases
E	Extra 1 Config. Bits 1 345
F	IC Select (Interconnect) 2

Configuration
E + E + ROW

For access, set F + 9 + E = 1

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord.
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 3-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
3 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0

D+B=0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 3 = program
C + C + F = version

Remote Download
C + 0 + 4 + 1 -255
w/ E + E + E bit 5 on

Printed on 7/2/2009 2:44 PM
PAGE 2
City of San Diego

INTERSECTION: Carmel Mountain Rd & Stoney Creek Rd

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1(1	14
	2(2U	1
	2(2L	5
	2(3U	21
	2(3L	25
	2(4	9
	3(0	16
	4(6U	3
	4(6L	7
	4(7U	23
	4(7L	27
	4(8	11
	1(9U	18
	3(9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5(1	13
	6(2U	2
	6(2L	6
	6(3U	22
	6(3L	26
	6(4	10
	7(0	15
	8(6U	4
	8(6L	8
	8(7U	24
	8(7L	28
	8(8	12
	5(9U	17
	7(9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>
D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- - 25 26 27 28 - - -	2345

Active Detectors <D Page>

Row	0 Detector #
9	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5
Max OFF (min)	60

D+A+E
D+A+F

Detector Failure Monitor

Phase Number	
Time Before Yellow	

F+C+1
F+D+5

Advance Warning Beacon - Sign 1

Phase Number	
Time Before Yellow	

F+D+1
F+D+2

Advance Warning Beacon - Sign 2

Long Failure	0.5
Short Failure	0.5

F+D+6
F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 7/2/2009 2:44 PM
PAGE 3
City of San Diego

INTERSECTION: Carmel Mountain Rd & Stoney Creek Rd

223 Program

Coordination Timing By: PENCE
Implemented On: 12/8/1992

FOR OBSERVATION ONLY
Master Plan C + A + 2
Current Plan C + A + 3
Next Plan C + A + 4
T.O.D. Plan C + A + 5
Master Cycle C + A + 6
Ring A Cycle C + B + 0
Ring B Cycle C + D + 0
Min Cycle C + A + E
Max Cycle C + B + 5

Row	Plan Name →	1	3	5	6	7	8	9
0	Cycle Length	90		100				
1	Phase 1 - ForceOff	47		47				
2	Phase 2 - ForceOff							
3	Phase 5 - ForceOff							
4	Phase 4 - ForceOff	35		35				
5	Phase 6 - ForceOff	47		47				
6	Phase 8 - ForceOff							
7	Phase 7 - ForceOff							
8	Phase 3 - ForceOff							
9	Ring Offset							
A	Offset A	77		34				
B	Offset B							
C	Offset C							
D	Permissive	10		25				
E	Hold Release	255		255				
F	Ped Split	0		0				

Coordination <C Page>

C = Plan + ROW

Row	Time	Plan	Offset	Day of Week
0	06 : 00	1	A	23456
1	08 : 40	E	A	23456
2	16 : 00	3	A	23456
3	18 : 15	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<B Key with C+D+9+1>

Plan Select
1 thru 8 = Coordination Plan 1 thru 8
14 or E = Free
15 or F = Flash

	E	Row	F
Plan 1	2 6	0	2 4 8
Plan 2		1	
Plan 3	2 6	2	2 4 8
Plan 4		3	
Plan 5		4	
Plan 6		5	
Plan 7		6	
Plan 8		7	
Plan 9		8	
Coord Ped*		9	
NEMA Hold		A	
		B	
		C	
		D	
		E	
		F	

Sync Phases
C + E + FUNCTION #

Lag Phases <C Page>
C + F + FUNCTION #

Transition Type	0
TSC Transition C + 2 + D	

Transition Type
0 = Shortway
Non-zero = Longhan

Printed on 7/22/xx 3:48 PM

PAGE 1

City of San Diego

INTERSECTION: Cuca Street & Carmel Mountain Road

233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street: Cuca Street
E/W Street: Carmel Mountain Road

Last Database Change:

Timing sheets by: FA1
Approved by: APP
Timing implemented on: 3/10/14

Row	Phase Numbers →	1	2	3	4	5	6	7	8
0	Ped Walk		7		7		7		7
1	Ped FDW		4		20		11		21
2	Min Green	4	10		7	4	10		7
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.3		2.0	2.0	3.8		2.0
6	Max Gap	2.0	4.3		2.0	2.0	3.8		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	40	60		40
9	Max Limit 2								
A	Actv. / Delay Walk								
B	PE Min Ped FDW		1		1		1		1
C	Cond Serv Check								
D	Reduce Every		0.7				0.8		
E	Yellow Change	3.4	4.3		3.9	3.4	4.4		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 <F/1+Phase+Row>

Current Calculated Cycle Length: G0 + B + F

Row	E	F	Row
RR-1 Delay		Permit	12_456_8
RR-1 Clear		Red Lock	
EV-A Delay	0	Yellow Lock	
EV-A Clear	0	Min Recall	2 6
EV-B Delay		Ped Recall	
EV-B Clear		Max Set Peds	2 4 6 8
EV-C Delay	0	Rest In Walk	
EV-C Clear	0	Red Rest	
EV-D Delay		Double Entry	4 8
EV-D Clear		Max Recall	
RR-2 Delay		Soft Recall	
RR-2 Clear		Max 2	
Max EV Delay	- - -	Cond. Service	
Max EV Clear	- - -	Min Cntrl Calls	12345678
Max RR Delay	- - -	Yellow Start	2 6
Max RR Clear	- - -	First Phases	4 8

Preempt Timing <F/1+E+Row>

Phase Functions <F/1+F+Row>

Row	A	B	C	D
Phase 1				
Phase 2				
Phase 3				
Phase 4				
Phase 5				
Phase 6				
Phase 7				
Phase 8				

Min Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing <F/1+Column+Phase>

Free Lag 2 4 6 8 <C/1+F+0>

How to Set Page Access Code:
F/1 → C + 0 + F + 1

Drop Number	27	<C/0+0+0>
Conn Number	27	<C/0+0+1>
Area Number	1	<C/0+0+2>
Area Address	191	<C/0+0+3>
Quicknet Channel	COM02	(Quicknet)

Communication Addresses

(Outputs specified in Assignable Outputs at 6/12/14+A & B)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
Alt Ped Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
Alt Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Plan	0	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Notes: Drawing: 27614-D

Printed on 3/13/2014 8:25 AM

Version: 233 RV
Revision: San Diego 1

Page 1

Z1

INTERSECTION: Cuca Street & Carmel Mountain Road

233 Program

Overlap Assignments <E/29+Column+Row>

Row	Load Switch Number	1	2	3	4	5	6	7	8
0	Veh Set 1 - Phases								
1	Veh Set 2 - Phases								
2	Veh Set 3 - Phases								
3	Neg Veh Phases								
4	Neg Ped Phases								
5	Green Omit Phases								
6	Green Clear Omit Pha.								
7									
8									
9									
A									
B									
C									
D	Green Clear								
E	Yellow Change								
F	Red Clear								

Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	12345678
Start-up Ped Calls	12345678

Specials <F/2+F+Row>

Row		
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration <E/125+F+Row>

Row		
0	Ext. Permit 1 Phases	
1	Ext. Permit 2 Phases	
2	Exclusive Ped Assign	
3	Preempt Non-Lock	12345678
4	Ped for 2P Output	2
5	Ped for 6P Output	6
6	Ped for 4P Output	4
7	Ped for 8P Output	8
8	Yellow Flash Phases	
9	Low Priority A Phases	
A	Low Priority B Phases	
B	Low Priority C Phases	
C	Low Priority D Phases	
D	Restricted Phases	
E	Extra 2 Config. Bits	3
F		

Configuration <E/125+F+Row>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 3-Wire Master
8 = Offset Interrupter

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = Quicknet System
5 = Ignore PIP on EV
6 =
7 = Reserved
8 =

Flash to PE A
PE Recy Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

EV-A		
EV-B		
EV-C		
EV-D		
RR-1 *	- - -	
RR-2 *	- - -	
SE-1	6	
SE-2	0	

Preemption Priority
(* RR-1 is always Highest, and RR-2 is always Second Highest)

<E/124+C+Row>

Row		
0	Phase 1	0
1	Phase 2	0
2	Phase 3	0
3	Phase 4	0
4	Phase 5	0
5	Phase 6	0
6	Phase 7	0
7	Phase 8	0

<C/5+2+Row>

Coordination Transition Minimums

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Daylight Savings Data:
If set to all zeros, standard dates will be used.

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Time and Date

Version: 233 RV2
Revision: San Diego 1

Printed on 3/13/2014 8:25 AM

Page 2

INTERSECTION: Cuca Street & Carmel Mountain Road

233 Program

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-Over
0	202U	39	45_7	2	123_8		1.8
1	62DU	40	45_7	6	123_8		1.8
2		41	45_7	4	123_8		
3	82DU	42	45_7	8	123_8	5.6	
4		43	45_7	2	123_8		
5		44	45_7	6	123_8		
6		45	45_7	4	123_8		
7		46	45_7	8	123_8		
8		47	67	2	123_8		
9		48	67	6	123_8		
A		49	67	4	123_8		
B		50	67	8	123_8		
C		55	45_7	5	123_8		
D		56	45_7	1	123_8		
E		57	45_7	7	123_8		
F		58	45_7	3	123_8		

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-Over
0		59	45_7	5	123_8		
1		60	45_7	1	123_8		
2		61	45_7	7	123_8		
3		62	45_7	3	123_8		
4		63	45_7	2	123_8		
5		64	45_7	6	123_8		
6		65	45_7	4	123_8		
7		66	45_7	8	123_8		
8		67	2	2	123_8		
9		68	2	6	123_8		
A		69	2	4	123_8		
B		70	2	8	123_8		
C		76	45_7	2	123_8		
D		77	45_7	6	123_8		
E		78	45_7	4	123_8		
F		79	45_7	8	123_8		

Detector Assignments <E/126+Column+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Count
4 = Extension
5 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

<D/0+Column+Row>

Program Type:

	Ped / Phase / Overlap	1	2	3	4	5	6	7	8
0	Walk								
1	Don't Walk								
2	Phase Green								
3	Phase Yellow								
4	Phase Red								
5	Overlap Green								
6	Overlap Yellow								
7	Overlap Red								

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	6

<E/125+D+D>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	5	<D/0+B+1>
Max ON (minutes)	60	<D/0+B+2>

Detector Failure Monitor

Row		D
0	Output Port 1	
1	Output Port 2	
2	Output Port 3	
3	Output Port 4	
4	Output Port 5	
5	Output Port 6	
6	Output Port 7	

Dimming <E/125+D+Row>

Number of Digits	D
1 st Digit	
2 nd Digit	
3 rd Digit	
4 th Digit	
5 th Digit	
6 th Digit	
7 th Digit	
8 th Digit	
9 th Digit	
10 th Digit	
11 th Digit	
12 th Digit	
13 th Digit	
14 th Digit	
15 th Digit	

<C/5+D+Row>

Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

Row		B
0	DELAY-A	1
1	DELAY-B	1
2	DELAY-C	0
3	DELAY-D	0
4	DELAY-E	0
5	DELAY-F	0

<D/0+B+Row> (seconds)

Delay Logic Times

Omit Alarm	#NAME?

<C/5+F+B>

Disable Alarm Reporting

Time	0

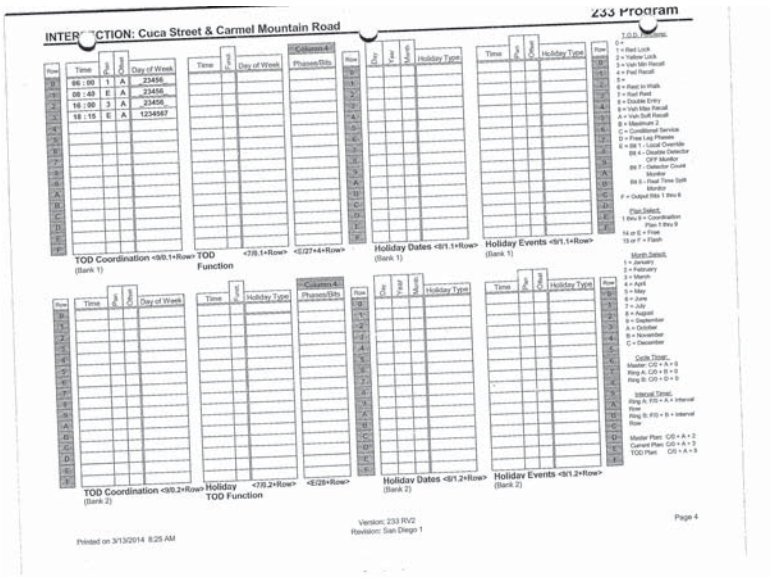
<C/5+C+0>

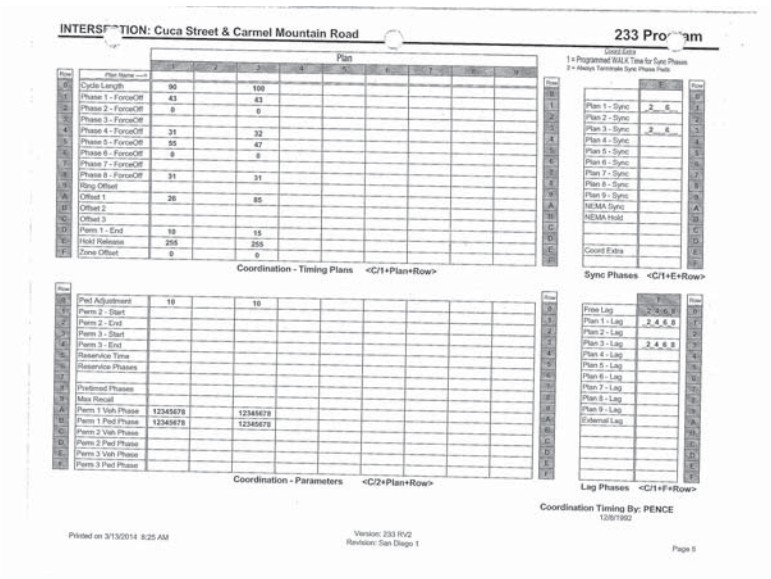
Redial Time (minutes)
(View Redial Timer at E/2+D+6)

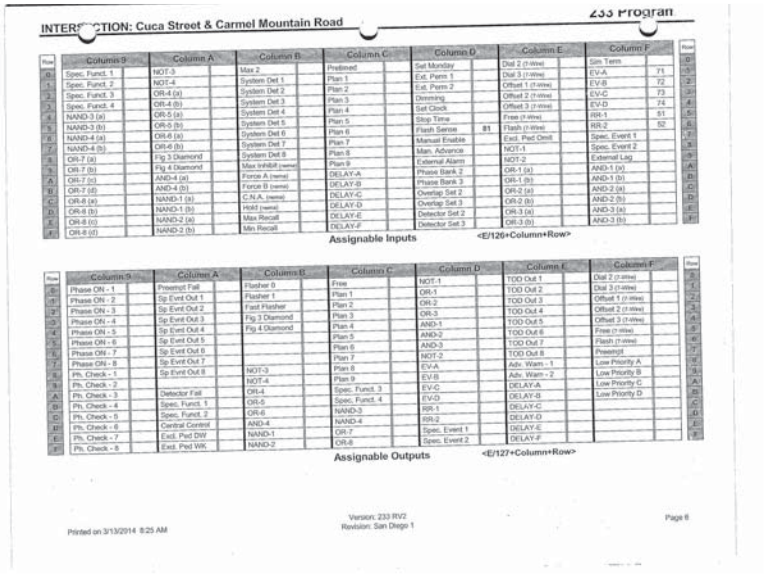
Printed on 3/13/2014 8:25 AM

Version: 233 RV2
Revision: San Diego 1

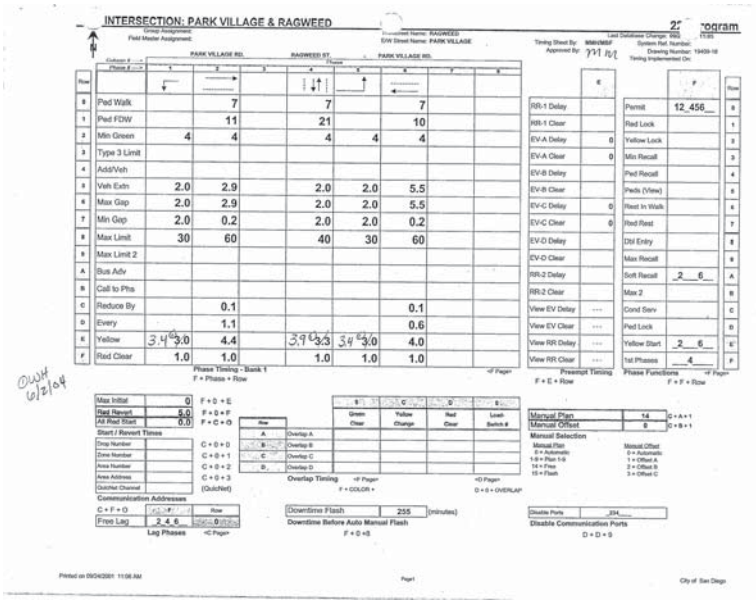
Page 3







Park Village Rd



INTERSECTION: PARK VILLAGE & RAGWEED

2[illegible] Program

Row	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
	←	→		↑	↓	←	→	
0	Ped Walk	7		7		7		
1	Ped FDW	11		21		10		
2	Min Green	4	4	4	4	4		
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	2.9	2.0	2.0	5.5		
6	Max Gap	2.0	2.9	2.0	2.0	5.5		
7	Min Gap	2.0	0.2	2.0	2.0	0.2		
8	Max Limit	30	60	40	30	60		
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		
D	Every		1.1			0.6		
E	Yellow	3.4 3.0	4.4	3.9 3.3	3.4 3.0	4.0		
F	Red Clear	1.0	1.0	1.0	1.0	1.0		

Phase Timing - Bank 1 (F + Phase + Row) <F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing (F + E + Row)

Row	F
Permit	12_456__
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	
Max Recall	
Soft Recall	_2__6__
Max 2	
Cond Serv	
Ped Lock	
Yellow Start	_2__6__
1st Phases	___4___

Phase Functions <F Page> (F + F + Row)

OWH 6/2/09

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number		C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
QuickNet Channel		(QuickNet)

Communication Addresses

C + F + O [illegible] Row

Free Lag 2_4_6 0

Lag Phases <C Page>

Row	A Green Clear	B Yellow Change	C Red Clear	D Load-Switch #
A Overlap A				
B Overlap B				
C Overlap C				
D Overlap D				

Overlap Timing <F Page> (F + COLOR +) <D Page> (D + 0 + OVERLAP)

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 14 = Free; 15 = Flash

Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

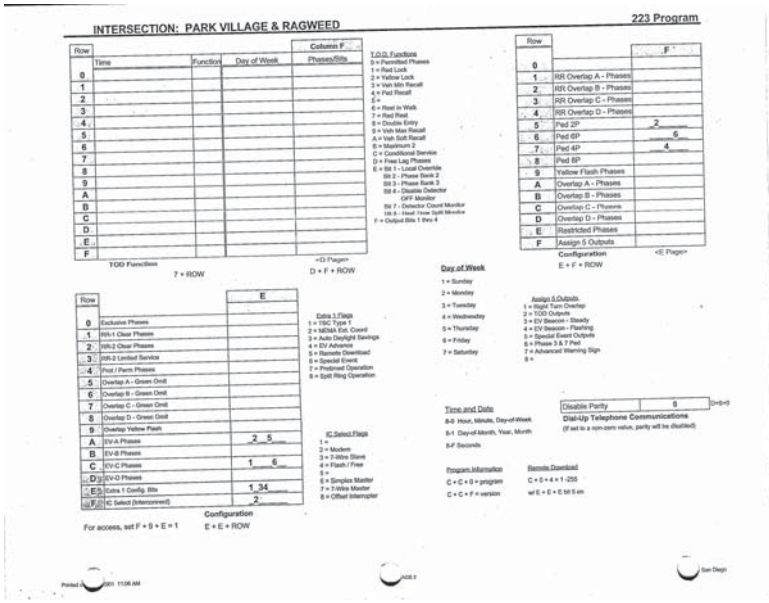
Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash (F + 0 +5)

Disable Ports	234	

Disable Communication Ports (D + D + 9)

Printed on 09/04/2001 11:06 AM — Page1 — City of San Diego



INTERSECTION: PARK VILLAGE & RAGWEED

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Functions <D Page> (D + F + ROW)

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest in Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Hwd Time Split Monitor
F = Output Bits 1 thru 4

Row	F
0	
1 - RR Overlap A - Phases	
2 - RR Overlap B - Phases	
3 - RR Overlap C - Phases	
4 - RR Overlap D - Phases	
5 - Ped 2P	_2__
6 - Ped 6P	___6___
7 - Ped 4P	___4___
8 - Ped 8P	
9 - Yellow Flash Phases	
A - Overlap A - Phases	
B - Overlap B - Phases	
C - Overlap C - Phases	
D - Overlap D - Phases	
E - Restricted Phases	
F - Assign 5 Outputs	

Configuration <E Page> (E + F + ROW)

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row	E
0	
1 - Exclusive Phases	
2 - RR-1 Clear Phases	
3 - RR-2 Clear Phases	
4 - RR-3 Limited Service	
5 - Ped / Perm Phases	
6 - Overlap A - Green Omit	
7 - Overlap B - Green Omit	
8 - Overlap C - Green Omit	
9 - Overlap D - Green Omit	
A - Overlap Yellow Flash	
B - EV-A Phases	2_5
C - EV-B Phases	
D - EV-C Phases	1_6
E - EV-D Phases	
F - Extra 1 Config. Bits	1_34
IC Select (Interconnect)	2

Configuration (E + E + ROW)

For access, set F + 9 + E = 1

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

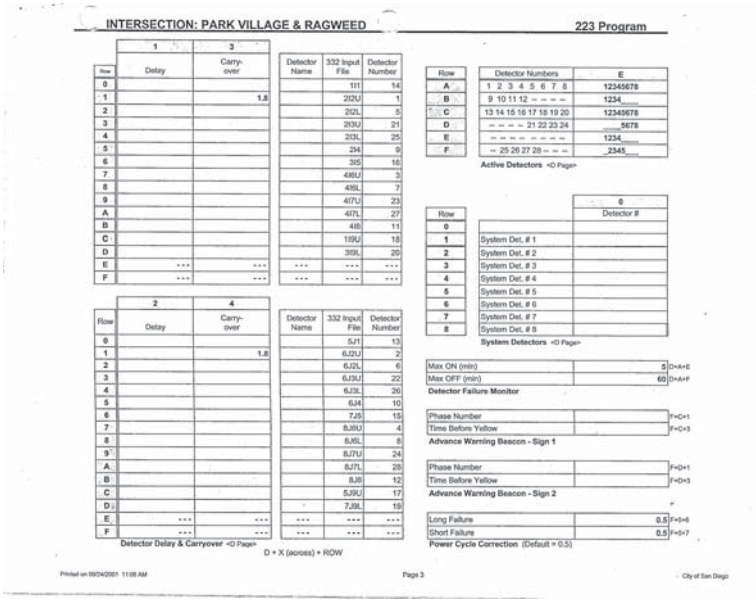
Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1-255
w/ E + E + E bit 5 on

Disable Parity 0 (D+D+0)

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Printed on [illegible] 2001 11:06 AM — Page2 — San Diego



INTERSECTION: PARK VILLAGE & RAGWEED

223 Program

Row	1 Delay	1 Carry-over	3 Delay	3 Carry-over
0				
1		1.8		
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Row	2 Delay	2 Carry-over	4 Delay	4 Carry-over
0				
1		1.8		
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E	---	---	---	---
F	---	---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Row	Detector Numbers 1 2 3 4 5 6 7 8	E
A		12345678
B	9 10 11 12 - - - -	1234
C	13 14 15 16 17 18 19 20	12345678
D	- - - - 21 22 23 24	5678
E	- - - - - - - -	1234
F	- 25 26 27 28 - - -	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1 System Det. # 1	
2 System Det. # 2	
3 System Det. # 3	
4 System Det. # 4	
5 System Det. # 5	
6 System Det. # 6	
7 System Det. # 7	
8 System Det. # 8	

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

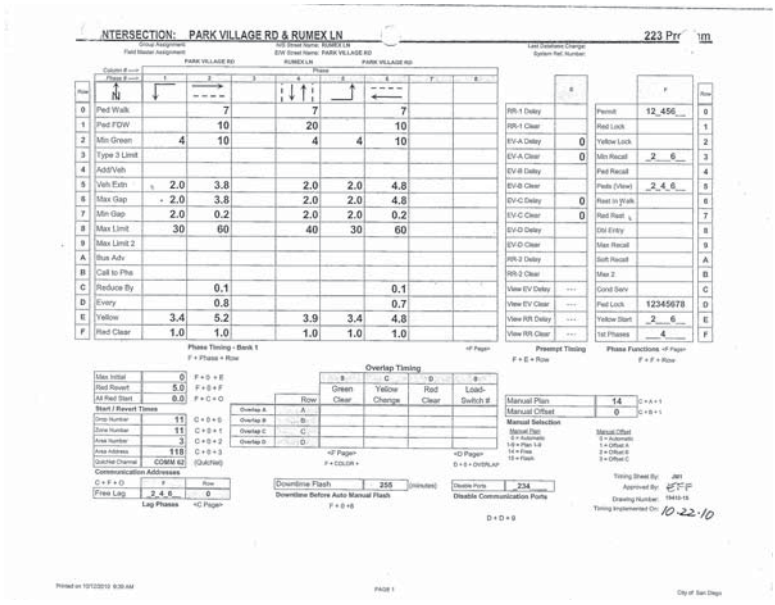
Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+D+6
Short Failure	0.5	F+D+7

Power Cycle Correction (Default = 0.5)

Printed on 09/04/2001 11:06 AM — Page 3 — City of San Diego



INTERSECTION: PARK VILLAGE RD & RUMEX LN

223 Pr[illegible]m

Group Assignment: Field Master Assignment: PARK VILLAGE RD

NS Street Name: RUMEX LN

EW Street Name: PARK VILLAGE RD

RUMEX LN

PARK VILLAGE RD

Last Database Change: System Ref. Number:

Row	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
	↑ N	→		↑	↓	←	→	
0	Ped Walk	7		7		7		
1	Ped FDW	10		20		10		
2	Min Green	4	10	4	4	10		
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	3.8	2.0	2.0	4.8		
6	Max Gap	2.0	3.8	2.0	2.0	4.8		
7	Min Gap	2.0	0.2	2.0	2.0	0.2		
8	Max Limit	30	60	40	30	60		
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		
D	Every		0.8			0.7		
E	Yellow	3.4	5.2	3.9	3.4	4.8		
F	Red Clear	1.0	1.0	1.0	1.0	1.0		

Phase Timing - Bank 1 (F + Phase + Row) <F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing (F + E + Row)

Row	F
Permit	12_456__
Red Lock	
Yellow Lock	
Min Recall	_2__6__
Ped Recall	
Peds (View)	_2_4_6__
Rest In Walk	
Red Rest	
Dbl Entry	
Max Recall	
Soft Recall	
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	_2__6__
1st Phases	___4___

Phase Functions <F Page> (F + F + Row)

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	11	C + 0 + 0
Zone Number	11	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	118	C + 0 + 3
QuickNet Channel	COMM 62	(QuickNet)

Communication Addresses

C + F + O F Row

Free Lag 2_4_6 0

Lag Phases <C Page>

Row	A Green Clear	B Yellow Change	C Red Clear	D Load-Switch #
A Overlap A				
B Overlap B				
C Overlap C				
D Overlap D				

Overlap Timing <F Page> (F + COLOR +) <D Page> (D + 0 + OVERLAP)

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan: 0 = Automatic; 1-9 = Plan 1-9; 14 = Free; 15 = Flash

Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash (F + 0 +5)

Disable Ports	234	

Disable Communication Ports (D + D + 9)

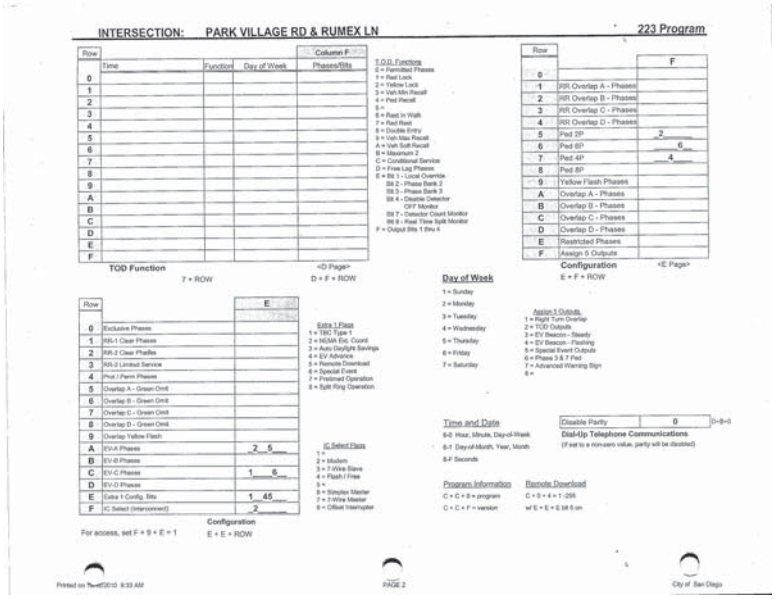
Timing Sheet By: JM

Approved By: [illegible]

Drawing Number: 10410-19

Timing Implemented On: 10-22-10

Printed on 10/12/2010 9:39 AM — PAGE 1 — City of San Diego



INTERSECTION: PARK VILLAGE RD & RUMEX LN — 223 Program

TOD Function — 7 + ROW — <D Page> D + F + ROW

Configuration — E + F + ROW

Day of Week

Time and Date

Disable Parity: 0 (D+B+0)

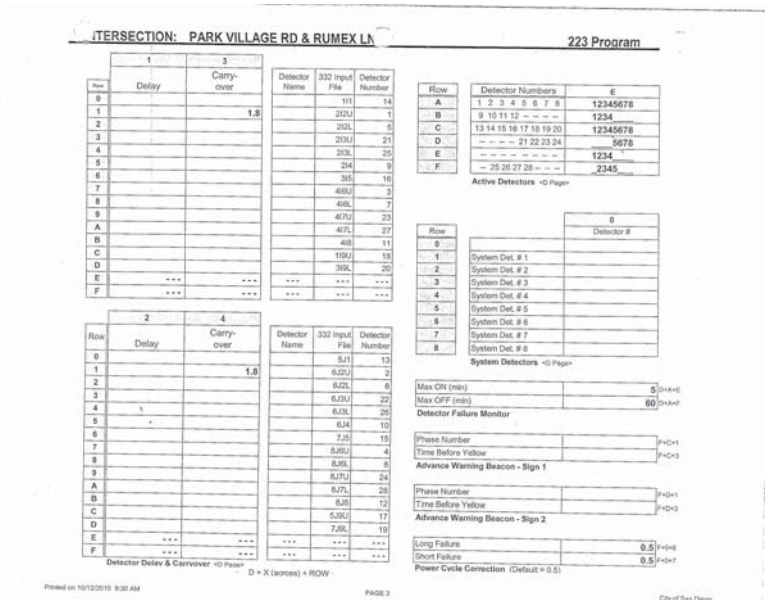
Dial-Up Telephone Communications (If set to a non-zero value, parity will be disabled)

Program Information: C + C + D + program; C + C + F + version

Remote Download: C + D + 4 + 1-255; w/ E + E + E bit 5 on

For access, set F + 9 + E + 1

Printed on Tue 9/7/2010 9:33 AM — PAGE 2 — City of San Diego



ITERSECTION: PARK VILLAGE RD & RUMEX LN — 223 Program

Detector Delay & Carryover <D Page> — D + X (across) + ROW

Active Detectors <D Page>

System Detectors <D Page>

Detector Failure Monitor

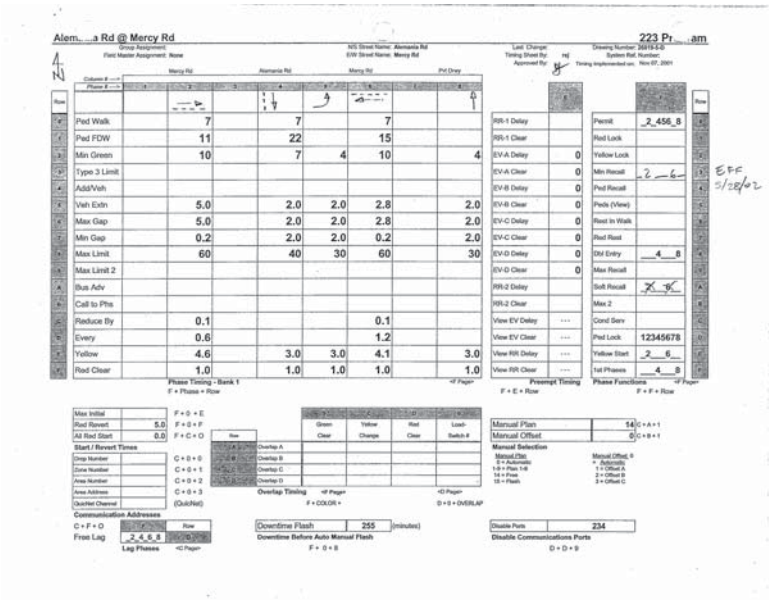
Advance Warning Beacon - Sign 1

Advance Warning Beacon - Sign 2

Power Cycle Correction (Default = 0.5)

Printed on 10/12/2010 9:30 AM — PAGE 3

Mercy Rd



Alem...a Rd @ Mercy Rd — 223 Pr...am

Phase Timing - Bank 1 — F + Phase + Row

Start / Revert Times

Communication Addresses

Overlap Timing — F + COLOR +

Downtime Flash: 255 (minutes) — Downtime Before Auto Manual Flash — F + 0 + 8

Manual Selection

Preempt Timing — F + E + Row

Phase Functions — F + F + Row

Disable Ports: 234 — Disable Communications Ports — D + D + 9

EFF 5/28/02

Alemania Rd @ Mercy Rd — 223 Program

Row	Time	Function	Day of Week	Column F: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

TOD Function — 7 + ROW

<D Page>
D + F + ROW

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P: 2
6	Ped 6P: 6
7	Ped 4P: 4
8	Ped 8P:
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration — E + F + ROW

<E Page>

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-3 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases: 2 5
B	EV-B Phases: 4
C	EV-C Phases: 6
D	EV-D Phases: 8
E	Extra 1 Config. Bits: 1 345
F	IC Select (Interconnect): 2

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity: 0 — D+B+0
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 + 1 -255
w/ E + E + E bit 5 on

Alemania Rd @ Mercy Rd — 223 Program

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0				1I1	14
1		1.0		202U	1
2		1.0		202L	5
3				203U	21
4				203L	25
5				204	9
6				305	16
7	12.0			406U	3
8				406L	7
9				407U	23
A				407L	27
B				408	11
C				119U	18
D				369L	20
E		***	***	***	***
F	***	***	***	***	***

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0				5J1	13
1		1.0		6J2U	2
2		1.0		6J2L	6
3				6J3U	22
4				6J3L	26
5				6J4	10
6				7J5	15
7	10.0			8J6U	4
8				8J6L	8
9				8J7U	24
A				8J7L	28
B				8J8	12
C				5J9U	17
D				7J9L	19
E	***	***	***	***	***
F	***	***	***	***	***

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	F
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row	Detector #
0	
1	System Det. # 1: 0
2	System Det. # 2: 0
3	System Det. # 3: 0
4	System Det. # 4: 0
5	System Det. # 5: 0
6	System Det. # 6: 0
7	System Det. # 7: 0
8	System Det. # 8: 0

System Detectors <D Page>

Max ON (min): 5 — D+A+E
Max OFF (min): 60 — D+A+F
Detector Failure Monitor

Phase Number: 0 — F+D+1
Time Before Yellow: 6.0 — F+D+3
Advance Warning Beacon - Sign 1

Phase Number: 0 — F+D+1
Time Before Yellow: 6.0 — F+D+3
Advance Warning Beacon - Sign 2

Long Failure: 0.5 — F+D+6
Short Failure: 0.5 — F+D+7
Power Cycle Correction (Default = 0.5)
(These parameters are NOT downloaded.)

INTERSECTION: MERCY RD & KIKA CT — 223 Program

Group Assignment:
Field Master Assignment:
AVG Street Name: MERCY RD
GW Street Name: KIKA CT
Last Database Change:
System Ref. Number:

Row	Column # ---> Phase # ---> 1	2	3	4	5	6	7	8
0	Ped Walk		7					7
1	Ped FDW		12					18
2	Min Green	4	10			10		4
3	Type 3 Limit							
4	Add/Veh							
5	Veh Extn	2.0	2.8			2.6		2.0
6	Max Gap	2.0	2.8			2.6		2.0
7	Min Gap	2.0	0.2			0.2		2.0
8	Max Limit	30	60			60		40
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		
D	Every		1.2			1.3		
E	Yellow	3.4	5.3			5.0		3.9
F	Red Clear	1.0	1.0			1.0		1.0
	Grade							

Phase Timing - Bank 1
F + Phase + Row

<F Page>

Row	C	
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	
5	EV-B Clear	
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	
9	EV-D Clear	
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Preempt Timing
F + E + Row

Row	F	
0	Permit	12 6 8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	Peds (View)	2 8
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	2 6
F	1st Phases	8

Phase Functions <F Page>
F + F + Row

Max Initial	0
Red Revert	5.0
Ad Red Start	0.0

F + 0 + E
F + 0 + F
F + C + 0

Start / Reset Times

Drop Number	
Zone Number	
Area Number	
Area Address	
Quicknet Channel	DIGI

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuickNet)

Communication Addresses

C + F + 0	F	Row
Free Lag	2 6 8	0

<D Page>

Overlap Timing

Row	9	C Green Clear	C Yellow Change	D Red Clear	D Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page>
F + COLOR +

<D Page>
D + E + OVERLAP

Manual Plan: 14 — C + 4 + 1
Manual Offset: 0 — C + B + 1
Manual Selection
Manual Plan
0 = Automatic
1-9 = Plan 1-9
10 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash: 255 (minutes)
Downtime Before Auto Manual Flash
F + 0 + 9

Disable Ports: 234
Disable Communication Ports
D + D + 9

Timing Sheet By: MC1
Approved By:
Ordering Number: R-89784-4
Timing Implemented On: 8/19/14

Printed on 7/29/2014 12:10 PM — PAGE 1 — City of San Diego

INTERSECTION: MERCY RD & KIKA CT — 223 Program

Row	Time	Function	Day of Week	Column F: Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

TOD Function — 7 + ROW

<D Page>
D + F + ROW

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P: 2
6	Ped 6P:
7	Ped 4P:
8	Ped 8P: 8
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration — E + F + ROW

<E Page>

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-3 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases: 2
B	EV-B Phases:
C	EV-C Phases: 1 6
D	EV-D Phases:
E	Extra 1 Config. Bits: 1 34
F	IC Select (Interconnect): 2

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity: 0 — D+B+0
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 + 1 -255
w/ E + E + E bit 5 on

Printed on 7/29/2014 10:07 AM — PAGE 2 — City of San Diego

INTERSECTION: MERCY RD & KIKA CT — 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	6J6U	4
	6J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers 1 2 3 4 5 6 7 8	E
A		12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1 0
2	System Det. # 2 0
3	System Det. # 3 0
4	System Det. # 4 0
5	System Det. # 5 0
6	System Det. # 6 0
7	System Det. # 7 0
8	System Det. # 8 0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+G+6
Short Failure	0.5	F+G+7

Power Cycle Correction (Default = 0.5)

Printed on 7/25/2014 10:57 AM

PAGE 3

City of San Diego

LOCATION: RTE 15 SB / MERCY ROAD - SCRIPPS POWAY PARKWAY
CALTRANS C8 Version 3 DATE: 9/10/2013 PAGE 1
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	7	1	1	1	7	1	1	CLK RST	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	DONT WALK	1	21	1	1	1	15	1	1		RR1 CLR	5	RED LOCK				4	5				1
2	MIN GREEN	5	15	1	5	1	11	1	1		EVA DLY	0	YEL LOCK									2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	2.0	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVB CLR	5	PED PHASES		2				6			5
6	MAX GAP	2.0	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVC DLY	0	RT OLA									6
7	MIN GAP	2.0	2.0	0.9	2.0	0.9	2.0	0.9	0.9		EVC CLR	5	RT OLB									7
8	MAX EXT	35	30	9	45	9	40	9	1		EVD DLY	0	DBL ENTRY								8	8
9	MAX 2	30	20				85			YR	EVD CLR	5	MAX 2 PHASES	1	2				6			9
A	MAX 3	45	20							NO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR			MAX 3 PHASES	1	2							D
E	YELLOW	3.2	4.5	3.0	3.6	3.0	4.5	3.0	3.0	MIN			YEL START UP		2				6			E
F	RED	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	SEC			FIRST PHASE				4					F
	PED XING FT		73				51							1	2	3	4	5	6	7	8	
	BIKE XING FT		129				71															

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5
FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0
FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1
CC5 FLASH TYPE	1
CC2 DOWNLOAD	1

ENTRIES IN THESE LOCATIONS ARE NOT TO BE CHANGED

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

LOCATION: RTE 15 SB / MERCY ROAD - SCRIPPS POWAY PARKWAY
CALTRANS C8 Version 3 DATE: 9/13/2010 PAGE 2
C PAGE

	CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD	C	D	LAG PHASE E	FLAGS F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH	110												LAG FX FREE		2		4		6		8	0
1	FZ1 GRN FCTR	46											GAPOUT CP1	LAG FX CP 1		2		4		6		8	1
2													GAPOUT CP2	LAG FX CP 2									2
3	FZ3 GRN FCTR	0											GAPOUT CP3	LAG FX CP 3									3
4	FZ4 GRN FCTR	22								PERM TIME			GAPOUT CP4	LAG FX CP 4									4
5	FZ5 GRN FCTR	0								LAG OFFSET			GAPOUT CP5	LAG FX CP 5									5
6										FORCE OFF			GAPOUT CP6	LAG FX CP 6									6
7	FZ7 GRN FCTR	0								LONG GRN			GAPOUT CP7	LAG FX CP 7									7
8	FZ8 GRN FCTR	0								NO GREEN			GAPOUT CP8	LAG FX CP 8									8
9	MULTI CYCLE	0											GAPOUT CP9	LAG FX CP 9									9
A	OFFSET A	10								OFFSET				LAG C COORD									A
B	OFFSET B													LAG D COORD									B
C	OFFSET C													COORD FAZES		2				6			C
D	FZ 3 EXT																						D
E	FZ 7 EXT																						E
F	OFFSET INTRPT														1	2	3	4	5	6	7	8	F

	FEATURE	OFF	ON
C01	MANUAL CP		
C02	MASTER CP		
C03	CURRENT CP		
C04	LAST CP		
C07	TRNSMT CP		
C0D	MANUAL OFFSET		
CA0	LOCAL CYCLE TIMER		
CB0	MASTER CYCLE TIMER		
CAA	LOCAL OFFSET		
CBA	MASTER OFFSET		

SYSTEM MASTER:
SB 15 @ MERCY

LOCATION	OFF	ON
1		
2		1
3		
4		
5		
6		
7		
8		

COO = 2

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 15 SB / MERCY ROAD - SCRIPPS POWAY PARKWAY
CALTRANS C8 Version 3 DATE: 7/9/2009 PAGE 3
D PAGE
E PAGE

	D MAX	FLAGS 1	2	3	4	5	6	7	8	E MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8
0	BCL									BCL									BCL								
1	CP 1	1								CP 1				4					CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											

	E FUNCTION	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8	
0										CODE 4	1								0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED		2							5
6										6 PED					6				6
7										4 PED				4					7
8										8 PED								8	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F

LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: **RTE 15 SB / MERCY ROAD - SCRIPPS POWAY PARKWAY**
CALTRANS C8 Version 3 DATE: 9/13/2010
7 PAGE 9 PAGE C09 = 0 or 1 9 PAGE C09 = 2 PAGE 4

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	06	45	3	1		2	3	4	5	6	
1	09	00	3			2	3	4	5	6	
2	14	00	2	1		2	3	4	5	6	
3	14	01	4	1		2	3	4	5	6	
4	18	00	4			2	3	4	5	6	
5	18	01	2			2	3	4	5	6	
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	07	00	1	X		2	3	4	5	6	
1	09	00	E			2	3	4	5	6	
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: **RTE 15 NB / MERCY ROAD - SCRIPPS POWAY PARKWAY**
CALTRANS C8 Version 3 DATE: 10/15/2012
F PAGE PAGE 1

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	7	1	23	1	7	1	1	CLK RST
1	DONT WALK	1	25	1	18	1	25	1	1	
2	MIN GREEN	5	15	1	1	5	15	23	5	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0	
6	MAX GAP	2.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0	
7	MIN GAP	2.0	2.0	0.9	0.9	2.0	2.0	0.9	2.0	
8	MAX EXT	20	30	9	43	35	30	9	30	
9	MAX 2						60			YR
A	MAX 3									MO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.2	4.5	3.0	3.6	3.2	4.5	3.0	3.6	MIN
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC
	PED XING FT		86		62		86			
	BIKE XING FT		86				120			
					71					

	PRE-EMPTION E	
	EV SEL	0
	EV DLY	0
	EVA CLR	5
	EVA DLY	0
	EVB CLR	5
	EVB DLY	0
	EVC CLR	5
	EVC DLY	0
	EVD CLR	5
	EVD DLY	0
YR	MAX EV	255
MO	RR2 CLR	5
DAY		
DOW		
HR		
MIN		
SEC		

	F FLAGS	1	2	3	4	5	6	7	8
	PERMIT	1	2	3	4	5	6	7	8
	RED LOCK								1
	YEL LOCK							7	2
	V RECALL		2				6		3
	P RECALL								4
	PED PHASES		2		4		6		5
	RT OLA								6
	RT OLB								7
	DBL ENTRY								8
	MAX 2 PHASES							6	9
	LAG PHASES	READ ONLY							A
	RED REST								B
	REST-IN-WALK								C
	MAX 3 PHASES								D
	YEL START UP		2				6		E
	FIRST PHASE							8	F
		1	2	3	4	5	6	7	8

	FOC LONG FAILURE
	FOD SHORT FAILURE
FOE	D
FOF	5

FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD6 OS SEEKING	1

CC5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES: C/M = 26'

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

LOCATION: **RTE 15 NB / MERCY ROAD - SCRIPPS POWAY PARKWAY**
CALTRANS C8 Version 3 DATE: 11/15/2011
C PAGE PAGE 2

	CONTROL PLANS 1	2	3	4	5	6	7	8	9	Y-COORD C	D	LAG PHASE E
0	CYCLE LENGTH	110										
1	FZ1 GRN FCTR	5										GAPOUT CP1
2												GAPOUT CP2
3	FZ3 GRN FCTR	0										GAPOUT CP3
4	FZ4 GRN FCTR	30										GAPOUT CP4
5	FZ5 GRN FCTR	20										GAPOUT CP5
6												GAPOUT CP6
7	FZ7 GRN FCTR	24										GAPOUT CP7
8	FZ8 GRN FCTR	25										GAPOUT CP8
9	MULTI CYCLE	0										GAPOUT CP9
A	OFFSET A	0										
B	OFFSET B											
C	OFFSET C											
D	FZ 3 EXT											
E	FZ 7 EXT											
F	OFFSET INTRPT											

	FLAGS F	1	2	3	4	5	6	7	8
	LAG FZ FREE		2		4		6		8
	LAG FZ CP 1		2		4		6		8
	LAG FZ CP 2								
	LAG FZ CP 3								
	LAG FZ CP 4								
	LAG FZ CP 5								
	LAG FZ CP 6								
	LAG FZ CP 7								
	LAG FZ CP 8								
	LAG FZ CP 9								
	LAG C COORD								
	LAG D COORD								
	COORD FAREA		2				6		
		1	2	3	4	5	6	7	8

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = 1

C01 MANUAL CP
C02 MASTER CP
C03 CURRENT CP
C04 LAST CP
C07 TRNSMT CP
C0D MANUAL OFFSET
CA0 LOCAL CYCLE TIMER
CB0 MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
SB 15 @ MERCY

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: **RTE 15 NB / MERCY ROAD - SCRIPPS POWAY PARKWAY**
CALTRANS C8 Version 3 DATE: 5/4/1999
D PAGE E PAGE PAGE 3

	D MAX	FLAGS 1	2	3	4	5	6	7	8	E MIN	FLAGS 1	2	3	4	5	6	7	8	F PED	FLAGS 1	2	3	4	5	6	7	8
0	RCL									RCL									RCL							
1	CP 1									CP 1									CP 1							
2	CP 2									CP 2									CP 2							
3	CP 3									CP 3									CP 3							
4	CP 4									CP 4									CP 4							
5	CP 5									CP 5									CP 5							
6	CP 6									CP 6									CP 6							
7	CP 7									CP 7									CP 7							
8	CP 8									CP 8									CP 8							
9	CP 9									CP 9									CP 9							
A																			RCL 1							
B																			RCL 2							
C																											
D																											
E																											
F																											

	E FUNCTION	FLAGS 1	2	3	4	5	6	7	8	F FUNCTION	FLAGS 1	2	3	4	5	6	7	8
0										CODE 4								
1										CODE 5								
2										C-RECALL								
3										D-RECALL								
4										EXCLUSIVE								
5										2 PED		2						
6										6 PED						6		
7										4 PED				4				
8										8 PED							8	
9																		
A										OLA NOT								
B										OLB NOT								
C										OLC NOT								
D										OLD NOT								
E																		
F																		

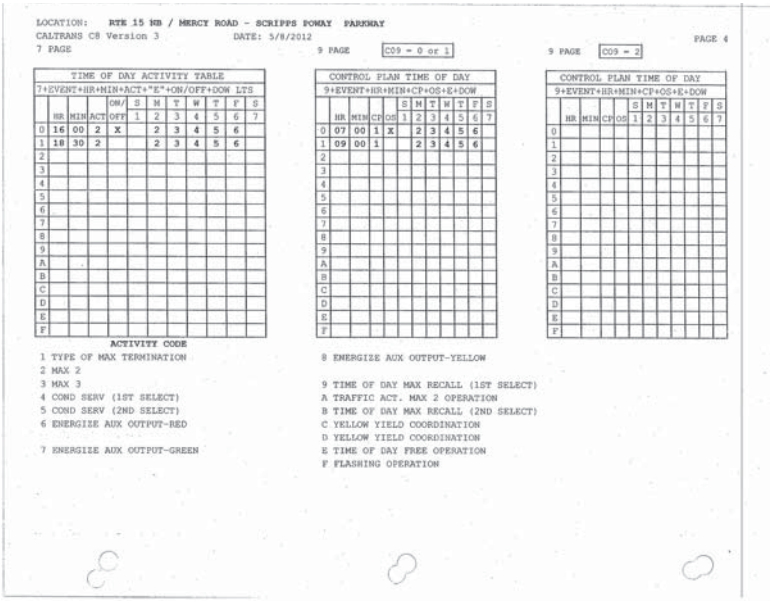
LAST POWER FAILURE REGISTER
HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

LAST FLASH TIME REGISTER
HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

Paseo Montalban



LOCATION: RTE 15 NB / MERCY ROAD - SCRIPPS POWAY PARKWAY
CALTRANS C8 Version 3 DATE: 5/8/2012 PAGE 4
7 PAGE 9 PAGE C09 = 0 or 1 9 PAGE C09 = 2

TIME OF DAY ACTIVITY TABLE
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS

	HR	MIN	ACT	ON/OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	16	00	2	X		2	3	4	5	6	
1	18	30	2			2	3	4	5	6	
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

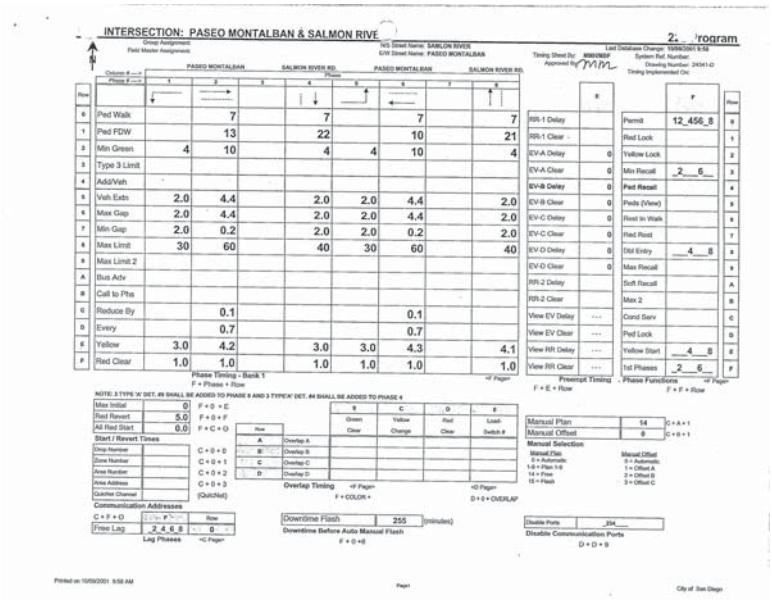
1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	07	00	1	X		2	3	4	5	6	
1	09	00	1			2	3	4	5	6	
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

CONTROL PLAN TIME OF DAY
9+EVENT+HR+MIN+CP+OS+E+DOW

	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											



INTERSECTION: PASEO MONTALBAN & SALMON RIVE ... 2: ...rogram

Group Assignment:
Field Master Assignment:
NS Street Name: SAMLON RIVER
EW Street Name: PASEO MONTALBAN
Timing Sheet By: MWWBF
Approved By: mm
Last Database Change: 10/09/2001 9:58
System Ref. Number:
Drawing Number: 24341-D
Timing Implemented On:

Row		PASEO MONTALBAN Phase 1	2	3	SALMON RIVER RD. Phase 4	5	PASEO MONTALBAN Phase 6	7	SALMON RIVER RD. Phase 8
		↓	→		↓	←	←		↑
0	Ped Walk		7		7		7		7
1	Ped FDW		13		22		10		21
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add'Veh								
5	Veh Extn	2.0	4.4		2.0	2.0	4.4		2.0
6	Max Gap	2.0	4.4		2.0	2.0	4.4		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.7				0.7		
E	Yellow	3.0	4.2		3.0	3.0	4.3		4.1
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 (F + Phase + Row) <F Page>

Row	E	
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	0
5	EV-B Clear	0
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	0
9	EV-D Clear	0
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Preempt Timing (F + E + Row)

Row	F	
0	Permit	12_456_8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	Peds (View)	
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	4 8
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	
E	Yellow Start	4 8
F	1st Phases	2 6

Phase Functions (F + F + Row) <F Page>

NOTE: 3 TYPE 'A' DET. #9 SHALL BE ADDED TO PHASE 8 AND 3 TYPE'A' DET. #4 SHALL BE ADDED TO PHASE 4

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + D

Start / Revert Times

Drop Number	C + 0 + 0
Zone Number	C + 0 + 1
Area Number	C + 0 + 2
Area Address	C + 0 + 3
Quicknet Channel	(Quicknet)

Communication Addresses

		Row
C + F + D	12345678	0
Free Lag	2 4 6 8	<C Page>

Lag Phases

Row	9 Green Clear	C Yellow Change	D Red Clear	E Load Switch #
A	Overlap A			
B	Overlap B			
C	Overlap C			
D	Overlap D			

Overlap Timing <F Page> F + COLOR + <D Page> D + D + OVERLAP

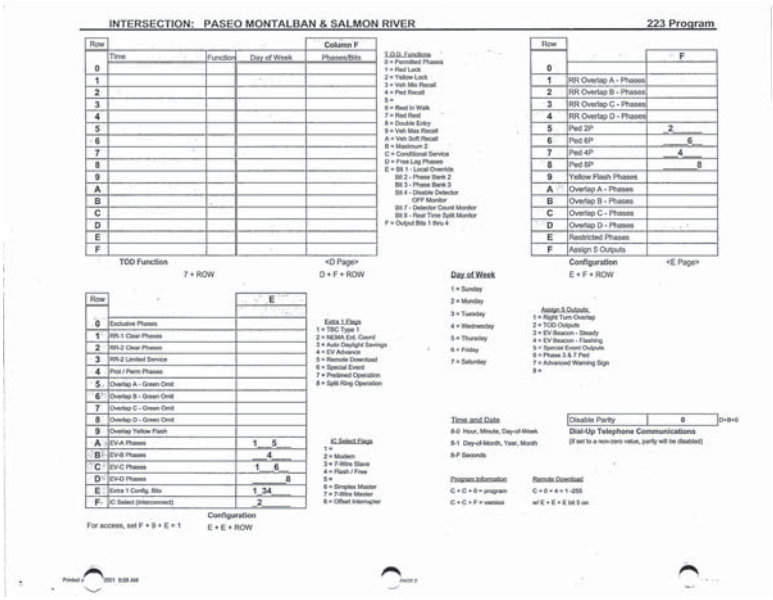
Manual Plan	14 (C + A + 1)
Manual Offset	8 (C + B + 1)

Manual Selection
Manual Dwell: 0 = Automatic, 1-8 = Phas 1-8, 14 = Free, 15 = Flash
Manual Offset: 0 = Automatic, 1 = Offset A, 2 = Offset B, 3 = Offset C

Downtime Flash 255 (minutes)
Downtime Before Auto Manual Flash (F + 0 +8)

Disable Ports 254
Disable Communication Ports (D + D + 9)

Printed on 10/09/2001 9:58 AM Page1 City of San Diego



INTERSECTION: PASEO MONTALBAN & SALMON RIVER 223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function (7 + ROW) <D Page> (D + F + ROW)

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration <E Page> (E + F + ROW)

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Pnd / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	1 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration (E + E + ROW)
For access, set F + 9 + E = 1

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Preempt Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity 0 (D + 8 + 0)
Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information (C + C + 0 = program, C + C + F = version)
Remote Download (C + 0 + 4 = 1 -255, w/ E + E + E bit 5 on)

Printed on ...2001 9:58 AM

INTERSECTION: PASEO MONTALBAN & TWIN TRAILS

Program

Row	1	2	3	4	5	6	7	8
	PASEO MONTALBAN		TWIN			PASEO MONTALBAN		TWIN TRAILS
0	Ped Walk		7					7
1	Ped FDW		18					20
2	Min Green	4	4			4		4
3	Type 3 Limit							
4	Add'Veh							
5	Veh Extn	2.0	3.2			3.2		2.1
6	Max Gap	2.0	3.2			3.2		2.1
7	Min Gap	2.0	0.2			0.2		0.2
8	Max Limit	30	60			60		40
9	Max Limit 2							
A	Bus Adv							
B	Call to Phs							
C	Reduce By		0.1			0.1		0.1
D	Every		1.0			1.0		1.6
E	Yellow	3.0	4.2			4.5		3.0
F	Red Clear	1.0	1.0			1.0		1.0

Phase Timing - Bank 1 (F + Phase + Row) <F Page>

Row	E	F	Row
RR-1 Delay		Permit 12 6 8	9
RR-1 Clear		Red Lock	1
EV-A Delay	0	Yellow Lock	2
EV-A Clear	0	Min Recall 2 6	3
EV-B Delay		Ped Recall	4
EV-B Clear		Peds (View)	5
EV-C Delay	0	Rest In Walk	6
EV-C Clear	0	Red Rest	7
EV-D Delay		Obl Entry	8
EV-D Clear		Max Recall	9
RR-2 Delay		Soft Recall	A
RR-2 Clear		Max 2	B
View EV Delay	---	Cond Serv	C
View EV Clear	---	Ped Lock	D
View RR Delay	---	Yellow Start 2 6	E
View RR Clear	---	1st Phase 8	F

Preempt Timing (F + E + Row) — Phase Functions (F + F + Row) <F Page>

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + G + E; F + G + F; F + C + O

Start / Revert Times

Omo Number	
Zone Number	
Area Number	
Area Address	
QuickNet Channel	

C + O + 0; C + O + 1; C + O + 2; C + O + 3 (QuickNet)

Communication Addresses

C + F + O	F	Row
Free Lag	2 6 8	0

Lag Phases <C Page>

Row	B Green Clear	C Yellow Change	D Red Clear	E Load-Switch #
A Overlap A				
B Overlap B				
C Overlap C				
D Overlap D				

Overlap Timing <F Page> F + COLOR + <D Page> D + G + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1; C + B + 1

Manual Selection

Manual Plan: 0 = Automatic; 1-13 = Plan 1-13; 14 = Free; 15 = Flash

Manual Offset: 0 = Automatic; 1 = Offset A; 2 = Offset B; 3 = Offset C

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash (F + G + 0)

Disable Ports	234

Disable Communication Ports (D + D + 9)

INTERSECTION: PASEO MONTALBAN & TWIN TRAILS

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

TOD Function — 7 + ROW — <D Page> D + F + ROW

Row	F
0	
1	RR Overlap A - Phases
2	RR Overlap B - Phases
3	RR Overlap C - Phases
4	RR Overlap D - Phases
5	Ped 2P 2
6	Ped 6P
7	Ped 4P
8	Ped 8P 8
9	Yellow Flash Phases
A	Overlap A - Phases
B	Overlap B - Phases
C	Overlap C - Phases
D	Overlap D - Phases
E	Restricted Phases
F	Assign 5 Outputs

Configuration — <E Page> E + F + ROW

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row	E
0	Exclusive Phases
1	RR-1 Clear Phases
2	RR-2 Clear Phases
3	RR-2 Limited Service
4	Prot / Perm Phases
5	Overlap A - Green Omit
6	Overlap B - Green Omit
7	Overlap C - Green Omit
8	Overlap D - Green Omit
9	Overlap Yellow Flash
A	EV-A Phases
B	EV-B Phases
C	EV-C Phases 1 6
D	EV-D Phases
E	Extra 1 Config. Bits 1 34
F	IC Select (Interconnect) 2

Configuration — For access, set F + 9 + E = 1 — E + E + ROW

Extra 1 Flags
1 = TSC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Portlined Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0

D+B+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information: C + C + 0 = program; C + C + F = version

Remote Download: C + 0 + 4 = 1-255; w/ 8 + E + E bit 5 on

INTERSECTION: PASEO MONTALBAN & TWI RAILS

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		1.8
8	10.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Max ON (min)	5
Max OFF (min)	60

D+A+E; D+A+F

Detector Failure Monitor

Phase Number	
Time Before Yellow	

F+C+1; F+C+3

Advance Warning Beacon - Sign 1

Phase Number	
Time Before Yellow	

F+D+1; F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5
Short Failure	0.5

F+D+6; F+D+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: PASEO MONTALBAN & SALM RIVER

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	5.0	
8	2.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	5.0	
8	2.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Max ON (min)	5
Max OFF (min)	60

D+A+E; D+A+F

Detector Failure Monitor

Phase Number	
Time Before Yellow	

F+C+1; F+C+3

Advance Warning Beacon - Sign 1

Phase Number	
Time Before Yellow	

F+D+1; F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5
Short Failure	0.5

F+D+6; F+D+7

Power Cycle Correction (Default = 0.5)

APPENDIX C

PEAK-HOUR INTERSECTION ANALYSIS WORKSHEETS
EXISTING CONDITIONS

Existing Conditions
1: Camino Del Sur & Carmel Valley Rd

AM Pk Hr
9/14/2015

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	176	466	186	95	490	76	111	177	81	371	512	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1549	1770	3539	1527	1770	1863	1551	3433	1863	1550
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1549	1770	3539	1527	1770	1863	1551	3433	1863	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	185	491	196	100	516	80	117	186	85	391	539	188
RTOR Reduction (vph)	0	0	142	0	0	60	0	0	60	0	0	98
Lane Group Flow (vph)	185	491	54	100	516	20	117	186	25	391	539	90
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	13.4	29.2	29.2	9.9	26.0	26.0	9.3	31.6	31.6	14.4	36.8	36.8
Effective Green, g (s)	13.4	29.2	29.2	9.9	26.0	26.0	9.3	31.6	31.6	14.4	36.8	36.8
Actuated g/C Ratio	0.13	0.27	0.27	0.09	0.24	0.24	0.09	0.30	0.30	0.14	0.35	0.35
Clearance Time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Vehicle Extension (s)	2.0	5.6	5.6	2.0	5.9	5.9	2.0	4.9	4.9	2.0	5.1	5.1
Lane Grp Cap (vph)	223	973	425	165	866	373	155	554	461	465	645	537
v/s Ratio Prot	c0.10	c0.14		0.06	c0.15		0.07	0.10		c0.11	c0.29	
v/s Ratio Perm			0.03			0.01			0.02			0.06
v/c Ratio	0.83	0.50	0.13	0.61	0.60	0.05	0.75	0.34	0.05	0.84	0.84	0.17
Uniform Delay, d1	45.3	32.4	28.9	46.3	35.5	30.7	47.3	29.1	26.6	44.8	31.9	24.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.9	1.0	0.3	4.3	2.0	0.2	16.8	0.7	0.1	12.4	10.2	0.3
Delay (s)	66.2	33.5	29.3	50.5	37.5	30.8	64.1	29.8	26.7	57.2	42.1	24.4
Level of Service	E	C	C	D	D	C	E	C	C	E	D	C
Approach Delay (s)		39.5			38.6			39.5			44.4	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	78.2%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
2: Camino Del Sur & Watson Ranch Rd

AM Pk Hr
9/8/2015

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	27	26	102	642	8	27	865
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1744	1542	1770	3530		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1744	1542	1770	3530		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	27	107	676	8	28	911
RTOR Reduction (vph)	0	25	0	0	0	0	0
Lane Group Flow (vph)	28	2	107	684	0	28	911
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Perm	Perm	Prot	NA		Prot	NA
Protected Phases			5	2		1	6
Permitted Phases	8	8					
Actuated Green, G (s)	10.3	10.3	15.7	120.0		4.9	109.2
Effective Green, g (s)	10.3	10.3	15.7	120.0		4.9	109.2
Actuated g/C Ratio	0.07	0.07	0.10	0.80		0.03	0.73
Clearance Time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.5	5.4		2.0	5.4
Lane Grp Cap (vph)	119	105	185	2824		57	2576
v/s Ratio Prot			c0.06	0.19		0.02	c0.26
v/s Ratio Perm	c0.02	0.00					
v/c Ratio	0.24	0.02	0.58	0.24		0.49	0.35
Uniform Delay, d1	66.1	65.1	64.0	3.7		71.3	7.5
Progression Factor	1.00	1.00	0.67	0.17		1.00	1.00
Incremental Delay, d2	0.4	0.0	3.4	0.2		2.4	0.4
Delay (s)	66.5	65.2	46.4	0.8		73.7	7.9
Level of Service	E	E	D	A		E	A
Approach Delay (s)	65.8			7.0			9.8
Approach LOS	E			A			A

Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	51.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
3: Camino Del Sur & Wolverine Way/Fallhaven Rd

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	0	45	86	2	17	256	649	18	48	701	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.89	1.00	0.90		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1770	1405	1770	1454		3433	3509		1770	3539	1558
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1770	1405	1770	1454		3433	3509		1770	3539	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	0	47	91	2	18	269	683	19	51	738	19
RTOR Reduction (vph)	0	0	43	0	15	0	0	1	0	0	0	10
Lane Group Flow (vph)	0	13	4	91	5	0	269	701	0	51	738	9
Confl. Peds. (#/hr)			82			83			31			2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.4	11.4	27.9	27.9		16.5	83.0		7.1	74.4	74.4
Effective Green, g (s)		11.4	11.4	27.9	27.9		16.5	83.0		7.1	74.4	74.4
Actuated g/C Ratio		0.08	0.08	0.19	0.19		0.11	0.55		0.05	0.50	0.50
Clearance Time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Vehicle Extension (s)		2.0	2.0	6.3	6.3		2.0	5.9		2.0	2.0	2.0
Lane Grp Cap (vph)		134	106	329	270		377	1941		83	1755	772
v/s Ratio Prot		c0.01		c0.05	0.00		c0.08	0.20		c0.03	c0.21	
v/s Ratio Perm			0.00									0.01
v/c Ratio		0.10	0.03	0.28	0.02		0.71	0.36		0.61	0.42	0.01
Uniform Delay, d1		64.5	64.2	52.4	49.9		64.5	18.7		70.1	24.1	19.2
Progression Factor		1.00	1.00	1.00	1.00		0.75	0.43		1.04	0.79	1.00
Incremental Delay, d2		0.1	0.0	1.4	0.1		4.9	0.5		8.8	0.7	0.0
Delay (s)		64.6	64.2	53.8	50.0		53.4	8.5		81.8	19.8	19.2
Level of Service		E	E	D	D		D	A		F	B	B
Approach Delay (s)		64.3			53.1			21.0			23.7	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	90.4%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
4: Camino Del Sur & Torrey Meadows Dr

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	858	58	30	799	18	89	2	29	71	6	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Lane Util. Factor		1.00		1.00	0.95		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	0.97		1.00	0.97	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected		0.95		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1770	3524		1770	1557		1770	2947	
Flt Permitted		0.95		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1770		1770	3524		1770	1557		1770	2947	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	903	61	32	841	19	94	2	31	75	6	85
RTOR Reduction (vph)	0	3	0	0	1	0	0	28	0	0	78	0
Lane Group Flow (vph)	68	961	0	32	859	0	94	5	0	75	13	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.0	95.8		9.4	95.8		12.3	13.2		11.9	12.8	
Effective Green, g (s)	9.0	95.8		9.4	95.8		12.3	13.2		11.9	12.8	
Actuated g/C Ratio	0.06	0.64		0.06	0.64		0.08	0.09		0.08	0.09	
Clearance Time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	4.4		2.0	5.4		2.0	5.4	
Lane Grp Cap (vph)	106	2235		110	2250		145	137		140	251	
v/s Ratio Prot	c0.04	c0.27		0.02	c0.24		c0.05	0.00		c0.04	0.00	
v/s Ratio Perm												
v/c Ratio	0.64	0.43		0.29	0.38		0.65	0.03		0.54	0.05	
Uniform Delay, d1	68.9	13.5		67.1	13.0		66.8	62.6		66.4	63.0	
Progression Factor	1.08	0.83		0.55	0.14		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.2	0.6		0.5	0.5		7.3	0.2		2.0	0.2	
Delay (s)	84.0	11.8		37.5	2.3		74.0	62.8		68.4	63.2	
Level of Service	F	B		D	A		E	E		E	E	
Approach Delay (s)		16.6			3.5			71.1			65.6	
Approach LOS		B			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.1	
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	220	236	881	855	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.4	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1537	3433	3539	3475	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1537	3433	3539	3475	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	232	248	927	900	105
RTOR Reduction (vph)	0	208	0	0	4	0
Lane Group Flow (vph)	105	24	248	927	1001	0
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	15.6	15.6	16.1	123.5	103.0	
Effective Green, g (s)	15.6	15.6	16.1	123.5	103.0	
Actuated g/C Ratio	0.10	0.10	0.11	0.82	0.69	
Clearance Time (s)	4.9	4.9	4.4	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	184	159	368	2913	2386	
v/s Ratio Prot	c0.06		c0.07	0.26	c0.29	
v/s Ratio Perm		0.02				
v/c Ratio	0.57	0.15	0.67	0.32	0.42	
Uniform Delay, d1	64.0	61.2	64.4	3.2	10.3	
Progression Factor	1.00	1.00	1.00	1.00	0.59	
Incremental Delay, d2	4.2	0.4	4.8	0.3	0.5	
Delay (s)	68.2	61.6	69.2	3.5	6.7	
Level of Service	E	E	E	A	A	
Approach Delay (s)	63.7			17.3	6.7	
Approach LOS	E			B	A	

Intersection Summary				
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	61.3%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



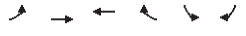
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	367	9	829	108	288	0	0	744	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.5	4.5			5.0	5.0
Lane Util. Factor				0.95	0.95	0.88	0.97	0.95			0.95	0.88
Frpb, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	0.96
Flpb, ped/bikes				0.99	0.99	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1661	1670	2677	3433	3539			3539	2677
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1661	1670	2677	3433	3539			3539	2677
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	386	9	873	114	303	0	0	783	417
RTOR Reduction (vph)	0	0	0	0	0	590	0	0	0	0	0	262
Lane Group Flow (vph)	0	0	0	197	198	283	114	303	0	0	783	155
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				20.4	20.4	20.4	5.7	34.1			23.4	23.4
Effective Green, g (s)				20.4	20.4	20.4	5.7	34.1			23.4	23.4
Actuated g/C Ratio				0.32	0.32	0.32	0.09	0.54			0.37	0.37
Clearance Time (s)				4.0	4.0	4.0	4.5	4.5			5.0	5.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				537	540	866	310	1915			1314	994
v/s Ratio Prot							c0.03	0.09			c0.22	
v/s Ratio Perm				c0.12	0.12	0.11						0.06
v/c Ratio				0.37	0.37	0.33	0.37	0.16			0.60	0.16
Uniform Delay, d1				16.3	16.3	16.1	27.0	7.2			16.0	13.2
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.4	0.4	0.2	0.7	0.0			0.7	0.1
Delay (s)				16.8	16.8	16.3	27.7	7.3			16.7	13.3
Level of Service				B	B	B	C	A			B	B
Approach Delay (s)		0.0			16.5			12.9			15.5	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	1	184	0	0	0	0	275	185	544	567	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5	4.5	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.96					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	0.99	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1656	1662	2664					3539	1542	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1656	1662	2664					3539	1542	3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	127	1	194	0	0	0	0	289	195	573	597	0
RTOR Reduction (vph)	0	0	171	0	0	0	0	0	131	0	0	0
Lane Group Flow (vph)	63	65	23	0	0	0	0	289	64	573	597	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	9.2	9.2	9.2					25.6	25.6	30.6	60.2	
Effective Green, g (s)	9.2	9.2	9.2					25.6	25.6	30.6	60.2	
Actuated g/C Ratio	0.12	0.12	0.12					0.33	0.33	0.39	0.77	
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5	4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	194	195	312					1155	503	1339	2717	
v/s Ratio Prot								c0.08		c0.17	0.17	
v/s Ratio Perm	0.04	0.04	0.01						0.04			
v/c Ratio	0.32	0.33	0.07					0.25	0.13	0.43	0.22	
Uniform Delay, d1	31.7	31.8	30.8					19.4	18.5	17.5	2.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	1.0	0.1					0.5	0.5	0.2	0.2	
Delay (s)	32.7	32.8	30.9					19.9	19.1	17.7	2.7	
Level of Service	C	C	C					B	B	B	A	
Approach Delay (s)		31.6			0.0			19.6			10.1	
Approach LOS		C			A			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	351	15	13	99	104	647
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.0		4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		0.99	1.00
Frt	1.00	1.00	0.88		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.95	1.00
Satd. Flow (prot)	1681	1692	1612		1756	1539
Flt Permitted	0.95	0.96	1.00		0.95	1.00
Satd. Flow (perm)	1681	1692	1612		1756	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	369	16	14	104	109	681
RTOR Reduction (vph)	0	0	90	0	0	490
Lane Group Flow (vph)	192	193	28	0	109	191
Confl. Peds. (#/hr)	10			10	10	10
Turn Type	Split	NA	NA		Perm	Perm
Protected Phases	4	4	8			
Permitted Phases					6	6
Actuated Green, G (s)	12.7	12.7	6.0		12.4	12.4
Effective Green, g (s)	12.7	12.7	6.0		12.4	12.4
Actuated g/C Ratio	0.29	0.29	0.14		0.28	0.28
Clearance Time (s)	4.5	4.5	4.0		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	484	487	219		493	432
v/s Ratio Prot	c0.11	0.11	c0.02			
v/s Ratio Perm					0.06	c0.12
v/c Ratio	0.40	0.40	0.13		0.22	0.44
Uniform Delay, d1	12.6	12.6	16.8		12.1	13.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.5	0.3		0.2	0.7
Delay (s)	13.2	13.2	17.0		12.4	13.7
Level of Service	B	B	B		B	B
Approach Delay (s)		13.2	17.0		13.6	
Approach LOS		B	B		B	

Intersection Summary				
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	44.1	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Existing Conditions
9: Black Mountain Rd & Carmel Valley Rd

AM Pk Hr
9/8/2015

Movement	NWL	NWR	NEU	NET	NER	SWL	SWT
Lane Configurations							
Volume (vph)	256	285	2	210	77	192	558
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0	4.4	4.4	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1531	1751	1863	1570	1770	1863
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1531	1751	1863	1570	1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	300	2	221	81	202	587
RTOR Reduction (vph)	0	185	0	0	28	0	0
Lane Group Flow (vph)	269	115	2	221	53	202	587
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	8		5	2	8	1	6
Permitted Phases		8			2		
Actuated Green, G (s)	30.4	30.4	0.8	21.6	52.0	12.4	33.2
Effective Green, g (s)	30.4	30.4	0.8	21.6	52.0	12.4	33.2
Actuated g/C Ratio	0.38	0.38	0.01	0.27	0.66	0.16	0.42
Clearance Time (s)	4.4	4.4	4.4	6.0	4.4	4.4	6.0
Vehicle Extension (s)	8.0	8.0	2.0	6.1	8.0	2.0	7.0
Lane Grp Cap (vph)	1317	587	17	508	1030	277	780
v/s Ratio Prot	c0.08		0.00	0.12	0.02	c0.11	c0.32
v/s Ratio Perm		0.08			0.01		
v/c Ratio	0.20	0.20	0.12	0.44	0.05	0.73	0.75
Uniform Delay, d1	16.3	16.3	38.9	23.8	4.8	31.8	19.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.7	1.1	1.7	0.1	7.9	5.9
Delay (s)	16.7	17.0	40.0	25.5	4.9	39.7	25.4
Level of Service	B	B	D	C	A	D	C
Approach Delay (s)	16.8			20.1			29.1
Approach LOS	B			C			C

Intersection Summary				
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Existing Conditions
10: Black Mountain Rd & Maler Rd

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1	6	21	1	40	4	455	12	12	281	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	1.00	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1747			1652		1756	3522		1759	3529	
Flt Permitted		0.76			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1378			1459		1756	3522		1759	3529	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	1	6	22	1	42	4	479	13	13	296	5
RTOR Reduction (vph)	0	5	0	0	37	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	43	0	0	28	0	4	491	0	13	300	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		4.9			5.0		0.5	23.8		0.6	24.0	
Effective Green, g (s)		4.9			5.0		0.5	23.8		0.6	24.0	
Actuated g/C Ratio		0.11			0.11		0.01	0.54		0.01	0.54	
Clearance Time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Vehicle Extension (s)		2.0			2.0		2.0	4.6		2.0	4.8	
Lane Grp Cap (vph)		152			164		19	1887		23	1907	
v/s Ratio Prot							0.00	c0.14		c0.01	0.09	
v/s Ratio Perm		c0.03			0.02							
v/c Ratio		0.28			0.17		0.21	0.26		0.57	0.16	
Uniform Delay, d1		18.1			17.8		21.8	5.6		21.8	5.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.2		2.0	0.1		17.6	0.1	
Delay (s)		18.5			18.0		23.8	5.7		39.3	5.2	
Level of Service		B			B		C	A		D	A	
Approach Delay (s)		18.5			18.0			5.8			6.6	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	34.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Existing Conditions
11: Black Mountain Rd & Stargaze Ave

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	1	109	43	7	32	31	342	17	7	287	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.88		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1763	2965		1763	1609		1758	3511		1763	3505	
Flt Permitted	0.73	1.00		0.68	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1355	2965		1260	1609		1758	3511		1763	3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	1	115	45	7	34	33	360	18	7	302	17
RTOR Reduction (vph)	0	90	0	0	28	0	0	4	0	0	4	0
Lane Group Flow (vph)	85	26	0	45	13	0	33	374	0	7	315	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	9.3	9.3		7.8	7.8		0.8	16.5		0.6	16.2	
Effective Green, g (s)	9.3	9.3		7.8	7.8		0.8	16.5		0.6	16.2	
Actuated g/C Ratio	0.22	0.22		0.18	0.18		0.02	0.39		0.01	0.38	
Clearance Time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.1	
Lane Grp Cap (vph)	298	653		232	297		33	1372		25	1345	
v/s Ratio Prot		0.01			0.01		c0.02	c0.11		0.00	0.09	
v/s Ratio Perm	c0.06			0.04								
v/c Ratio	0.29	0.04		0.19	0.04		1.00	0.27		0.28	0.23	
Uniform Delay, d1	13.7	12.9		14.5	14.1		20.7	8.8		20.6	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.0		156.7	0.1		2.2	0.1	
Delay (s)	13.9	12.9		14.7	14.2		177.4	8.9		22.8	8.9	
Level of Service	B	B		B	B		F	A		C	A	
Approach Delay (s)		13.3			14.4			22.4			9.2	
Approach LOS		B			B			C			A	

Intersection Summary				
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	17.4	
Intersection Capacity Utilization	43.5%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Existing Conditions
12: Black Mountain Rd & Oviedo St

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	12	99	80	4	21	41	361	45	13	465	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9		4.4	6.1	4.9	6.4	5.9	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1798	1548	1681	1619		1770	3539	1537	1752	3530	
Flt Permitted		0.97	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1798	1548	1681	1619		1770	3539	1537	1752	3530	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	13	104	84	4	22	43	380	47	14	489	7
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	47	104	56	34	0	43	380	47	14	495	0
Confl. Peds. (#/hr)	10		10	10			10		10	10		10
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		7.5	7.5	5.9	5.9		2.1	21.3	27.2	0.8	22.2	
Effective Green, g (s)		7.5	7.5	5.9	5.9		2.1	21.3	27.2	0.8	22.2	
Actuated g/C Ratio		0.13	0.13	0.10	0.10		0.04	0.37	0.47	0.01	0.38	
Clearance Time (s)		4.9	4.9	4.9	4.9		4.4	6.1	4.9	6.4	5.9	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	4.1	2.0	2.0	3.5	
Lane Grp Cap (vph)		233	200	171	165		64	1304	723	24	1355	
v/s Ratio Prot		0.03		c0.03	0.02		c0.02	0.11	0.01	0.01	c0.14	
v/s Ratio Perm			c0.07						0.02			
v/c Ratio		0.20	0.52	0.33	0.21		0.67	0.29	0.07	0.58	0.37	
Uniform Delay, d1		22.5	23.5	24.1	23.8		27.5	12.9	8.4	28.3	12.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	1.1	0.4	0.2		19.6	0.2	0.0	21.1	0.2	
Delay (s)		22.6	24.6	24.5	24.0		47.1	13.1	8.4	49.5	13.0	
Level of Service		C	C	C	C		D	B	A	D	B	
Approach Delay (s)		24.0			24.3			15.7			14.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	22.3	
Intersection Capacity Utilization	41.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Existing Conditions AM Pk Hr
13: Black Mountain Rd & Carmel Mountain Rd 9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	381	221	142	261	410	199	525	37	489	673	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3315		1770	3169		1770	3499		3433	3491	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3315		1770	3169		1770	3499		3433	3491	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	401	233	149	275	432	209	553	39	515	708	60
RTOR Reduction (vph)	0	0	0	0	236	0	0	4	0	0	5	0
Lane Group Flow (vph)	125	634	0	149	471	0	209	588	0	515	763	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.4	28.8		13.8	29.9		18.0	38.8		21.5	41.8	
Effective Green, g (s)	12.4	28.8		13.8	29.9		18.0	38.8		21.5	41.8	
Actuated g/C Ratio	0.10	0.23		0.11	0.24		0.15	0.32		0.18	0.34	
Clearance Time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.1		2.0	4.5		2.0	3.9	
Lane Grp Cap (vph)	178	778		199	772		259	1106		601	1189	
v/s Ratio Prot	0.07	c0.19		c0.08	0.15		0.12	0.17		c0.15	c0.22	
v/s Ratio Perm												
v/c Ratio	0.70	0.81		0.75	0.61		0.81	0.53		0.86	0.64	
Uniform Delay, d1	53.4	44.4		52.8	41.2		50.7	34.5		49.1	34.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.8	6.8		12.6	1.7		15.7	1.8		11.2	2.7	
Delay (s)	63.1	51.3		65.4	42.9		66.4	36.3		60.3	36.8	
Level of Service	E	D		E	D		E	D		E	D	
Approach Delay (s)		53.2			46.8			44.2			46.2	
Approach LOS		D			D			D			D	

Intersection Summary					
HCM 2000 Control Delay	47.4	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	122.7	Sum of lost time (s)		20.6	
Intersection Capacity Utilization	85.8%	ICU Level of Service		E	
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group

Existing Conditions AM Pk Hr
14: Black Mountain Rd & Paseo Montalban 9/8/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	93	200	441	81	284	738
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.9		4.5	5.2
Lane Util. Factor	0.97	0.91	0.95		1.00	0.95
Frpb, ped/bikes	0.98	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	0.92	0.85	0.98		1.00	1.00
Flt Protected	0.98	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3202	1414	3447		1770	3539
Flt Permitted	0.98	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3202	1414	3447		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	211	464	85	299	777
RTOR Reduction (vph)	86	85	16	0	0	0
Lane Group Flow (vph)	118	20	533	0	299	777
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	3		2		1	6
Permitted Phases		3				
Actuated Green, G (s)	11.2	11.2	18.7		14.5	37.4
Effective Green, g (s)	11.2	11.2	18.7		14.5	37.4
Actuated g/C Ratio	0.19	0.19	0.32		0.25	0.64
Clearance Time (s)	4.4	4.4	4.9		4.5	5.2
Vehicle Extension (s)	4.4	4.4	5.2		2.0	4.5
Lane Grp Cap (vph)	616	272	1107		440	2274
v/s Ratio Prot	c0.04		c0.15		c0.17	0.22
v/s Ratio Perm		0.01				
v/c Ratio	0.19	0.07	0.48		0.68	0.34
Uniform Delay, d1	19.7	19.3	15.9		19.7	4.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.2	0.7		3.3	0.2
Delay (s)	20.0	19.4	16.6		23.0	4.9
Level of Service	B	B	B		C	A
Approach Delay (s)	19.8		16.6			9.9
Approach LOS	B		B			A

Intersection Summary					
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	58.2	Sum of lost time (s)		13.8	
Intersection Capacity Utilization	54.4%	ICU Level of Service		A	
Analysis Period (min)	15				

Description: 10/2013
c Critical Lane Group

Existing Conditions AM Pk Hr
15: Black Mountain Rd & Twin Trails Dr 9/8/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	102	729	358	124	16	329	458	97	43	715	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1826		3433	3432		1770	3509	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1826		3433	3432		1770	3509	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	107	767	377	131	17	346	482	102	45	753	35
RTOR Reduction (vph)	0	0	377	0	5	0	0	12	0	0	3	0
Lane Group Flow (vph)	57	107	390	377	143	0	346	572	0	45	785	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.3	14.8	27.8	13.7	22.3		27.8	53.1		4.5	29.5	
Effective Green, g (s)	6.3	14.8	27.8	13.7	22.3		27.8	53.1		4.5	29.5	
Actuated g/C Ratio	0.06	0.14	0.26	0.13	0.21		0.26	0.51		0.04	0.28	
Clearance Time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	2.1		2.0	5.2		2.0	4.5	
Lane Grp Cap (vph)	106	262	418	447	387		908	1733		75	984	
v/s Ratio Prot	0.03	0.06	c0.25	c0.11	c0.08		0.10	0.17		0.03	c0.22	
v/s Ratio Perm												
v/c Ratio	0.54	0.41	0.93	0.84	0.37		0.38	0.33		0.60	0.80	
Uniform Delay, d1	48.0	41.2	37.8	44.7	35.4		31.6	15.4		49.4	35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	1.0	27.6	13.0	0.3		0.1	0.3		8.3	5.1	
Delay (s)	50.6	42.2	65.4	57.7	35.7		31.7	15.7		57.7	40.1	
Level of Service	D	D	E	E	D		C	B		E	D	
Approach Delay (s)		61.8			51.5			21.7			41.1	
Approach LOS		E			D			C			D	

Intersection Summary					
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.79				
Actuated Cycle Length (s)	105.1	Sum of lost time (s)		19.3	
Intersection Capacity Utilization	89.2%	ICU Level of Service		E	
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group

Existing Conditions AM Pk Hr
16: Black Mountain Rd & SR-56 WB On-Ramp/SR-56 WB Off-Ramp 9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	458	24	270	652	667	0	0	988	814
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.91	
Frpb, ped/bikes				1.00	1.00	0.96	1.00	1.00			0.98	
Flpb, ped/bikes				0.98	0.98	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.93	
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1639	1655	1526	3433	3539			4663	
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1639	1655	1526	3433	3539			4663	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	482	25	284	686	702	0	0	1040	857
RTOR Reduction (vph)	0	0	0	0	0	229	0	0	0	0	103	0
Lane Group Flow (vph)	0	0	0	251	256	55	686	702	0	0	1794	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)				25.5	25.5	25.5	29.7	98.1			63.4	
Effective Green, g (s)				25.5	25.5	25.5	29.7	98.1			63.4	
Actuated g/C Ratio				0.19	0.19	0.19	0.22	0.74			0.48	
Clearance Time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				315	318	293	768	2618			2229	
v/s Ratio Prot							c0.20	0.20			c0.38	
v/s Ratio Perm				0.15	0.15	0.04						
v/c Ratio				0.80	0.81	0.19	0.89	0.27			1.00dr	
Uniform Delay, d1				51.1	51.2	44.9	49.9	5.6			29.3	
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2				13.1	13.7	0.3	12.8	0.3			3.2	
Delay (s)				64.1	64.9	45.2	62.7	5.9			32.6	
Level of Service				E	E	D	E	A			C	
Approach Delay (s)		0.0			57.6			33.9			32.6	
Approach LOS		A			E			C			C	

Intersection Summary					
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.83				
Actuated Cycle Length (s)	132.6	Sum of lost time (s)		14.0	
Intersection Capacity Utilization	81.4%	ICU Level of Service		D	
Analysis Period (min)	15				

Description: 05/2014
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Existing Conditions AM Pk Hr
17: Black Mountain Rd & SR-56 EB Off-Ramp/SR-56 EB On-Ramp 9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	0	383	0	0	0	0	1095	335	378	1156	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.96					1.00	0.96	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1642	1642	2689					3539	1528	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1642	1642	2689					3539	1528	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	195	0	403	0	0	0	0	1153	353	398	1217	0
RTOR Reduction (vph)	0	0	180	0	0	0	0	0	71	0	0	0
Lane Group Flow (vph)	97	98	223	0	0	0	0	1153	282	398	1217	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.4	16.4	16.4					75.6	75.6	19.6	100.2	
Effective Green, g (s)	16.4	16.4	16.4					75.6	75.6	19.6	100.2	
Actuated g/C Ratio	0.13	0.13	0.13					0.60	0.60	0.16	0.80	
Clearance Time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	214	214	351					2130	919	535	4056	
v/s Ratio Prot								c0.33		c0.12	0.24	
v/s Ratio Perm	0.06	0.06	c0.08						0.18			
v/c Ratio	0.45	0.46	0.64					0.54	0.31	0.74	0.30	
Uniform Delay, d1	50.5	50.5	51.8					14.8	12.2	50.6	3.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	1.6	3.7					1.0	0.9	5.6	0.2	
Delay (s)	52.0	52.0	55.5					15.8	13.1	56.2	3.6	
Level of Service	D	D	E					B	B	E	A	
Approach Delay (s)		54.4			0.0			15.1			16.5	
Approach LOS		D			A			B			B	

Intersection Summary				
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	125.6	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	81.4%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions AM Pk Hr
18: Black Mountain Rd & Park Village Rd/Adolphia St 9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	629	65	283	145	34	101	79	642	50	130	1428	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95		0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.97		1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	0.98	0.99	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1651	1675	1509	1663	1530		3433	3481		1770	3539	1509
Flt Permitted	0.65	0.66	1.00	0.53	0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1134	1147	1509	934	1493		3433	3481		1770	3539	1509
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	662	68	298	153	36	106	83	676	53	137	1503	257
RTOR Reduction (vph)	0	0	104	0	42	0	0	2	0	0	0	53
Lane Group Flow (vph)	364	366	194	138	115	0	83	727	0	137	1503	204
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	57.4	57.4	38.2	30.4	30.4		9.0	98.2		19.4	108.6	108.6
Effective Green, g (s)	57.4	57.4	38.2	30.4	30.4		9.0	98.2		19.4	108.6	108.6
Actuated g/C Ratio	0.30	0.30	0.20	0.16	0.16		0.05	0.52		0.10	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	446	452	303	207	241		162	1799		180	2022	862
v/s Ratio Prot	c0.16	0.16		0.05	0.04		0.02	c0.21		0.08	c0.42	
v/s Ratio Perm	c0.08	0.08	0.13	0.05	0.04							0.14
v/c Ratio	0.82	0.81	0.64	0.67	0.48		0.51	0.40		0.76	0.74	0.24
Uniform Delay, d1	59.4	61.3	69.6	73.1	72.6		88.4	28.0		83.0	30.3	20.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.82	0.72		1.00	1.00	1.00
Incremental Delay, d2	11.0	10.3	4.6	7.9	1.5		2.7	0.7		17.1	2.5	0.6
Delay (s)	70.4	71.5	74.2	81.0	74.1		75.1	20.9		100.2	32.8	20.8
Level of Service	E	E	E	F	E		E	C		F	C	C
Approach Delay (s)		71.9			77.3			26.4			36.1	
Approach LOS		E			E			C			D	

Intersection Summary				
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	88.4%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions AM Pk Hr
19: Black Mountain Rd & Canyonside Park Dwy 9/8/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	6	7	8	773	1925	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.95	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1509	1770	3539	3539	1460
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1509	1770	3539	3539	1460
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	7	8	814	2026	35
RTOR Reduction (vph)	0	7	0	0	0	2
Lane Group Flow (vph)	6	0	8	814	2026	33
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	5.8	5.8	2.0	175.2	168.2	168.2
Effective Green, g (s)	5.8	5.8	2.0	175.2	168.2	168.2
Actuated g/C Ratio	0.03	0.03	0.01	0.92	0.89	0.89
Clearance Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	54	46	18	3263	3132	1292
v/s Ratio Prot	c0.00		0.00	c0.23	c0.57	
v/s Ratio Perm		0.00				0.02
v/c Ratio	0.11	0.00	0.44	0.25	0.65	0.03
Uniform Delay, d1	89.6	89.3	93.4	0.7	2.9	1.3
Progression Factor	1.00	1.00	0.97	0.46	0.45	0.08
Incremental Delay, d2	0.9	0.0	16.2	0.2	0.8	0.0
Delay (s)	90.5	89.3	106.9	0.5	2.1	0.1
Level of Service	F	F	F	A	A	A
Approach Delay (s)	89.9			1.6	2.1	
Approach LOS	F			A	A	

Intersection Summary				
HCM 2000 Control Delay	2.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	67.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 10/2013
c Critical Lane Group

Existing Conditions AM Pk Hr
20: Black Mountain Rd & Mercy Rd 9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	386	0	268	23	527	314	426	1365	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Lane Util. Factor				0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes				1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes				0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3342	1434	1434	1770	3539	1509	3433	3539	
Flt Permitted				0.76	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)				2664	1434	1434	1770	3539	1509	3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	406	0	282	24	555	331	448	1437	1
RTOR Reduction (vph)	0	0	0	0	118	118	0	0	159	0	0	0
Lane Group Flow (vph)	0	0	0	406	23	23	24	555	172	448	1438	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)				31.5	31.5	31.5	5.6	98.8	98.8	44.2	137.4	
Effective Green, g (s)				31.5	31.5	31.5	5.6	98.8	98.8	44.2	137.4	
Actuated g/C Ratio				0.17	0.17	0.17	0.03	0.52	0.52	0.23	0.72	
Clearance Time (s)				5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)				528	237	237	52	1840	784	798	2559	
v/s Ratio Prot				c0.10	0.02		0.01	c0.16		0.13	c0.41	
v/s Ratio Perm				c0.03		0.02			0.11			
v/c Ratio				0.77	0.10	0.10	0.46	0.30	0.22	0.56	0.56	
Uniform Delay, d1				74.2	67.2	67.2	90.7	26.0	24.7	64.3	12.3	
Progression Factor				1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.25	
Incremental Delay, d2				6.7	0.2	0.2	6.4	0.4	0.6	0.7	0.7	
Delay (s)				80.9	67.4	67.4	97.1	26.4	25.4	47.3	3.8	
Level of Service				F	E	E	F	C	C	D	A	
Approach Delay (s)		0.0			75.4			27.9			14.1	
Approach LOS		A			E			C			B	

Intersection Summary				
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	72.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
21: Black Mountain Rd & Westview Pkwy

AM Pk Hr
9/8/2015

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	31	174	2	580	12	293	1682
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Lane Util. Factor	1.00	0.88	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	0.98	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	2737	1742	5067		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	2737	1742	5067		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	183	2	611	13	308	1771
RTOR Reduction (vph)	0	151	0	2	0	0	0
Lane Group Flow (vph)	33	32	2	622	0	308	1771
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	11.1	11.1	0.7	21.9		15.6	37.9
Effective Green, g (s)	11.1	11.1	0.7	21.9		15.6	37.9
Actuated g/C Ratio	0.17	0.17	0.01	0.34		0.24	0.59
Clearance Time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Vehicle Extension (s)	4.2	4.2	2.0	3.9		2.0	4.8
Lane Grp Cap (vph)	305	471	18	1723		428	2992
v/s Ratio Prot	c0.02		0.00	0.12		c0.17	c0.35
v/s Ratio Perm		0.01					
v/c Ratio	0.11	0.07	0.11	0.36		0.72	0.59
Uniform Delay, d1	22.5	22.3	31.5	16.0		22.4	8.4
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	1.0	0.2		4.8	0.5
Delay (s)	22.7	22.4	32.5	16.2		27.2	8.8
Level of Service	C	C	C	B		C	A
Approach Delay (s)	22.5			16.2			11.5
Approach LOS	C			B			B

Intersection Summary				
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	15.8	
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
22: Carmel Mountain Rd & Sundevil Way

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	223	808	20	13	701	155	36	42	45	50	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	0.89	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.91	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3526		1770	3388		1605	1718		1770	1404	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.70	1.00	
Satd. Flow (perm)	1770	3526		1770	3388		1196	1718		1300	1404	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	235	851	21	14	738	163	38	44	47	53	0	75
RTOR Reduction (vph)	0	1	0	0	13	0	0	0	0	0	63	0
Lane Group Flow (vph)	235	871	0	14	888	0	38	91	0	53	12	0
Confl. Peds. (#/hr)						36	104					104
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.9	70.4		2.7	55.8		17.6	17.6		17.5	17.5	
Effective Green, g (s)	17.9	70.4		2.7	55.8		17.6	17.6		17.5	17.5	
Actuated g/C Ratio	0.17	0.66		0.03	0.53		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	298	2341		45	1783		198	285		214	231	
v/s Ratio Prot	c0.13	0.25		0.01	c0.26			c0.05			0.01	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.79	0.37		0.31	0.50		0.19	0.32		0.25	0.05	
Uniform Delay, d1	42.2	7.9		50.7	16.1		38.1	38.9		38.5	37.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.0	0.5		1.4	1.0		0.2	0.2		0.2	0.0	
Delay (s)	54.2	8.4		52.2	17.1		38.2	39.2		38.7	37.3	
Level of Service	D	A		D	B		D	D		D	D	
Approach Delay (s)		18.1			17.6			38.9			37.9	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	75.7%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
23: Carmel Mountain Rd & Paseo Montalban

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	55	345	85	55	44	153	809	23	50	861	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89	0.85	1.00	0.93		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	1551	1484	1765	1723		3433	3521		1770	3534	
Flt Permitted	0.69	1.00	1.00	0.41	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1278	1551	1484	753	1723		3433	3521		1770	3534	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	58	363	89	58	46	161	852	24	53	906	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	1	0
Lane Group Flow (vph)	56	214	207	89	104	0	161	875	0	53	913	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8	1	7	4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	23.1	18.8	30.0	23.7	19.1		11.2	48.8		5.8	43.4	
Effective Green, g (s)	23.1	18.8	30.0	23.7	19.1		11.2	48.8		5.8	43.4	
Actuated g/C Ratio	0.24	0.19	0.31	0.24	0.20		0.12	0.50		0.06	0.45	
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)	326	300	459	232	339		396	1773		105	1582	
v/s Ratio Prot	0.01	c0.14	0.05	c0.02	0.06		0.05	c0.25		0.03	c0.26	
v/s Ratio Perm	0.03		0.09	0.08								
v/c Ratio	0.17	0.71	0.45	0.38	0.31		0.41	0.49		0.50	0.58	
Uniform Delay, d1	29.0	36.5	26.8	29.4	33.2		39.8	15.9		44.2	19.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	6.5	0.3	0.4	0.2		0.2	1.0		1.4	1.5	
Delay (s)	29.1	43.1	27.1	29.7	33.4		40.0	16.9		45.5	21.5	
Level of Service	C	D	C	C	C		D	B		D	C	
Approach Delay (s)		34.5			31.7			20.5			22.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	18.9	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
24: SR-56 WB On/Off Ramps/Carmel Mountain Rd & Rancho Penasquitos Blvd

AM Pk Hr
9/14/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	379	782	68	428	543	213	216	93	40	258	261	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1508	1770	3539	1538	3433	3351		3433	1863	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1508	1770	3539	1538	3433	3351		3433	1863	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	399	823	72	451	572	224	227	98	42	272	275	275
RTOR Reduction (vph)	0	0	59	0	0	166	0	32	0	0	0	228
Lane Group Flow (vph)	399	823	13	451	572	58	227	108	0	272	275	47
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.8	16.2	16.2	23.8	23.2	23.2	16.5	20.5		11.4	15.4	15.4
Effective Green, g (s)	16.8	16.2	16.2	23.8	23.2	23.2	16.5	20.5		11.4	15.4	15.4
Actuated g/C Ratio	0.19	0.18	0.18	0.27	0.26	0.26	0.18	0.23		0.13	0.17	0.17
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	645	921	273	471	918	399	633	768		437	320	264
v/s Ratio Prot	0.12	c0.16		c0.25	0.16		c0.07	0.03		c0.08	c0.15	
v/s Ratio Perm			0.01			0.04						0.03
v/c Ratio	0.62	0.89	0.05	0.96	0.62	0.15	0.36	0.14		0.62	0.86	0.18
Uniform Delay, d1	33.4	35.8	30.2	32.3	29.2	25.5	31.8	27.4		37.0	35.9	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.4	12.9	0.3	30.5	3.2	0.8	1.6	0.1		2.8	19.9	0.3
Delay (s)	37.8	48.7	30.6	62.8	32.4	26.2	33.4	27.5		39.7	55.8	31.9
Level of Service	D	D	C	E	C	C	C	C		D	E	C
Approach Delay (s)		44.3			42.3			31.2			42.5	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	74.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Existing Conditions
25: SR-56 EB On/Off Ramps/Azuaga St & Rancho Penasquitos Blvd

AM Pk Hr
9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	789	317	52	931	14	103	19	346	71	48	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1517	1770	3529		1770	1560		1770	1634	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1517	1770	3529		1770	1560		1770	1634	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	831	334	55	980	15	108	20	364	75	51	126
RTOR Reduction (vph)	0	0	179	0	1	0	0	195	0	0	110	0
Lane Group Flow (vph)	47	831	155	55	994	0	108	189	0	75	67	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	2.9	32.9	32.9	3.0	33.0		9.0	14.2		3.6	8.8	
Effective Green, g (s)	2.9	32.9	32.9	3.0	33.0		9.0	14.2		3.6	8.8	
Actuated g/C Ratio	0.04	0.47	0.47	0.04	0.47		0.13	0.20		0.05	0.12	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	72	1646	705	75	1647		225	313		90	203	
v/s Ratio Prot	0.03	c0.23		0.03	c0.28		0.06	c0.12		c0.04	0.04	
v/s Ratio Perm			0.10									
v/c Ratio	0.65	0.50	0.22	0.73	0.60		0.48	0.60		0.83	0.33	
Uniform Delay, d1	33.4	13.2	11.3	33.5	14.0		28.7	25.7		33.3	28.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.2	1.1	0.7	30.6	0.6		1.6	3.3		45.4	1.0	
Delay (s)	52.7	14.3	12.0	64.1	14.6		30.3	29.0		78.6	29.2	
Level of Service	D	B	B	E	B		C	C		E	C	
Approach Delay (s)		15.2			17.2			29.3			43.9	
Approach LOS		B			B			C			D	

Intersection Summary				
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	70.7	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	72.1%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
26: Calle De Las Rosas & Rancho Penasquitos Blvd

AM Pk Hr
9/8/2015



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1202	33	43	858	141	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3520		1770	3539	1770	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3520		1770	3539	1770	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1265	35	45	903	148	126
RTOR Reduction (vph)	2	0	0	0	0	108
Lane Group Flow (vph)	1298	0	45	903	148	18
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases						4
Actuated Green, G (s)	59.1		5.1	68.7	12.8	12.8
Effective Green, g (s)	59.1		5.1	68.7	12.8	12.8
Actuated g/C Ratio	0.66		0.06	0.76	0.14	0.14
Clearance Time (s)	4.5		4.5	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2311		100	2701	251	218
v/s Ratio Prot	c0.37		0.03	c0.26	c0.08	
v/s Ratio Perm						0.01
v/c Ratio	0.56		0.45	0.33	0.59	0.08
Uniform Delay, d1	8.4		41.1	3.4	36.1	33.5
Progression Factor	1.00		0.60	0.56	1.00	1.00
Incremental Delay, d2	1.0		3.1	0.3	3.5	0.2
Delay (s)	9.4		27.7	2.2	39.7	33.7
Level of Service	A		C	A	D	C
Approach Delay (s)	9.4			3.4	36.9	
Approach LOS	A			A	D	

Intersection Summary				
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
27: Rancho Penasquitos Blvd & Via Del Sud

AM Pk Hr
9/8/2015



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	47	56	13	821	20	48	1280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1538	1770	3523		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	1538	1770	3523		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	59	14	864	21	51	1347
RTOR Reduction (vph)	0	54	0	1	0	0	0
Lane Group Flow (vph)	49	5	14	884	0	51	1347
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	7.9	7.9	1.5	59.8		9.3	67.6
Effective Green, g (s)	7.9	7.9	1.5	59.8		9.3	67.6
Actuated g/C Ratio	0.09	0.09	0.02	0.66		0.10	0.75
Clearance Time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	155	135	29	2340		182	2658
v/s Ratio Prot	c0.03		0.01	0.25		c0.03	c0.38
v/s Ratio Perm		0.00					
v/c Ratio	0.32	0.04	0.48	0.38		0.28	0.51
Uniform Delay, d1	38.5	37.6	43.9	6.8		37.3	4.5
Progression Factor	1.00	1.00	1.01	0.32		0.80	0.20
Incremental Delay, d2	1.2	0.1	12.0	0.5		0.7	0.6
Delay (s)	39.7	37.7	56.1	2.6		30.4	1.5
Level of Service	D	D	E	A		C	A
Approach Delay (s)	38.6			3.5			2.6
Approach LOS	D			A			A

Intersection Summary				
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
28: Rancho Penasquitos Blvd & Paseo Montril

AM Pk Hr
9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	10	201	111	7	20	65	575	13	46	1088	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	1863	1538	1740	1618		1770	3523		1770	3512	
Flt Permitted	0.74	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1354	1863	1538	1375	1618		1770	3523		1770	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	11	212	117	7	21	68	605	14	48	1145	46
RTOR Reduction (vph)	0	0	182	0	18	0	0	2	0	0	3	0
Lane Group Flow (vph)	81	11	30	117	10	0	68	617	0	48	1188	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	12.9	12.9	12.9	12.9	12.9		7.7	49.4		14.7	56.4	
Effective Green, g (s)	12.9	12.9	12.9	12.9	12.9		7.7	49.4		14.7	56.4	
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.09	0.55		0.16	0.63	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	267	220	197	231		151	1933		289	2200	
v/s Ratio Prot		0.01			0.01		c0.04	0.18		0.03	c0.34	
v/s Ratio Perm	0.06		0.02	c0.09								
v/c Ratio	0.42	0.04	0.14	0.59	0.04		0.45	0.32		0.17	0.54	
Uniform Delay, d1	35.1	33.2	33.7	36.1	33.2		39.1	11.1		32.4	9.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.61	0.35	
Incremental Delay, d2	1.5	0.1	0.3	4.7	0.1		2.1	0.4		0.2	0.9	
Delay (s)	36.6	33.3	34.0	40.8	33.3		41.3	11.5		19.9	4.1	
Level of Service	D	C	C	D	C		D	B		B	A	
Approach Delay (s)		34.6			39.4			14.5			4.8	
Approach LOS		C			D			B			A	

Intersection Summary				
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	61.6%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	262	85	888	1470	0	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0		4.5
Lane Util. Factor	0.97	0.91	0.91	0.91		0.95
Frpb, ped/bikes	1.00	0.97	0.99	0.99		1.00
Flpb, ped/bikes	0.97	1.00	1.00	1.00		1.00
Frt	1.00	0.85	0.93	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3335	1401	3120	1419		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3335	1401	3120	1419		3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	276	89	935	1547	0	639
RTOR Reduction (vph)	3	68	141	0	0	0
Lane Group Flow (vph)	282	12	1568	773	0	639
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Perm	Perm	NA	Free		NA
Protected Phases			2			6
Permitted Phases	8	8		Free		
Actuated Green, G (s)	12.5	12.5	65.8	86.8		65.8
Effective Green, g (s)	12.5	12.5	65.8	86.8		65.8
Actuated g/C Ratio	0.14	0.14	0.76	1.00		0.76
Clearance Time (s)	4.0	4.0	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	480	201	2365	1419		2682
v/s Ratio Prot			c0.50			0.18
v/s Ratio Perm	0.08	0.01		c0.54		
v/c Ratio	0.59	0.06	0.66	0.54		0.24
Uniform Delay, d1	34.7	32.1	5.1	0.0		3.1
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.8	0.1	1.5	1.5		0.2
Delay (s)	36.6	32.2	6.6	1.5		3.3
Level of Service	D	C	A	A		A
Approach Delay (s)	35.6		5.0			3.3
Approach LOS	D		A			A

Intersection Summary				
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 10/2014
c Critical Lane Group



Movement	EBL2	EBL	EBR	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Volume (vph)	439	0	701	0	0	0	777	102	0	1906	433
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.0				4.5	4.5		5.5	4.0
Lane Util. Factor	0.97		1.00				0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.99				1.00	0.95		1.00	0.98
Flpb, ped/bikes	0.97		1.00				1.00	1.00		1.00	1.00
Frt	1.00		0.85				1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (prot)	3338		1560				3539	1509		3539	1544
Flt Permitted	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (perm)	3338		1560				3539	1509		3539	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	462	0	738	0	0	0	818	107	0	2006	456
RTOR Reduction (vph)	0	0	0	0	0	0	0	79	0	0	0
Lane Group Flow (vph)	462	0	738	0	0	0	818	28	0	2006	456
Confl. Peds. (#/hr)	10	10	10	10	10	10		10	10		10
Turn Type	Perm		Free				NA	custom		NA	Free
Protected Phases							6				
Permitted Phases	4		Free					4		2	Free
Actuated Green, G (s)	16.0		88.5				63.5	16.0		62.5	88.5
Effective Green, g (s)	16.0		88.5				63.5	16.0		62.5	88.5
Actuated g/C Ratio	0.18		1.00				0.72	0.18		0.71	1.00
Clearance Time (s)	4.5						4.5	4.5		5.5	
Vehicle Extension (s)	3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)	603		1560				2539	272		2499	1544
v/s Ratio Prot							0.23				
v/s Ratio Perm	c0.14		0.47					0.02		c0.57	0.30
v/c Ratio	0.77		0.47				0.32	0.10		0.80	0.30
Uniform Delay, d1	34.5		0.0				4.6	30.3		8.8	0.0
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00
Incremental Delay, d2	5.8		1.0				0.1	0.2		2.8	0.5
Delay (s)	40.3		1.0				4.7	30.4		11.7	0.5
Level of Service	D		A				A	C		B	A
Approach Delay (s)		16.1		0.0			7.6			9.6	
Approach LOS		B		A			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	82.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	18	1	2	6	12	0	52	18	3	10	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98			0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.92			0.96		1.00	0.94	
Flt Protected		0.99			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1819			1670			3366		1770	3278	
Flt Permitted		0.90			0.96			1.00		0.95	1.00	
Satd. Flow (perm)		1653			1614			3366		1770	3278	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	19	1	2	6	13	0	55	19	3	11	7
RTOR Reduction (vph)	0	1	0	0	12	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	27	0	0	9	0	0	69	0	3	17	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		4.4			4.4			55.3		1.2	61.0	
Effective Green, g (s)		4.4			4.4			55.3		1.2	61.0	
Actuated g/C Ratio		0.06			0.06			0.75		0.02	0.83	
Clearance Time (s)		4.0			4.0			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		98			96			2518		28	2705	
v/s Ratio Prot								c0.02		c0.00	0.01	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.28			0.09			0.03		0.11	0.01	
Uniform Delay, d1		33.2			32.9			2.4		35.8	1.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		1.5			0.4			0.0		1.7	0.0	
Delay (s)		34.8			33.3			2.4		37.5	1.1	
Level of Service		C			C			A		D	A	
Approach Delay (s)		34.8			33.3			2.4			6.3	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.05			
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	27.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group


```
2014 AM                          Tue Sep 9, 2014 08:01:15                    Page 2-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                        Level Of Service Computation Report
                2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #32 Carmel Mountain Road/Sedorus Street
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):          0.064
Loss Time (sec):     0                Average Delay (sec/veh):        7.5
Optimal Cycle:       0                Level Of Service:               A
******************************************************************************
Street Name:       Carmel Mountain Road              Sedorus Street
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  1  1  0     1  0  1  1  0     0  0  1! 0  0     0  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      3   64    0     9   20   16    49    2    1     0    1   20
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   3   64    0     9   20   16    49    2    1     0    1   20
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    3   64    0     9   20   16    49    2    1     0    1   20
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   3   64    0     9   20   16    49    2    1     0    1   20
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:   3   64    0     9   20   16    49    2    1     0    1   20
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 2.00 0.00  1.00 1.11 0.89  0.94 0.04 0.02  0.00 0.05 0.95
Final Sat.:  685 1513    0   683  850  771   762   31   16     0   46  915
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.04 xxxx  0.01 0.02 0.02  0.06 0.06 0.06  xxxx 0.02 0.02
Crit Moves:      ****              ****              ****              ****
Delay/Veh:    7.9  7.6  0.0   8.0  7.5  6.9   7.6  7.6  7.6   0.0  6.7  6.7
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   7.9  7.6  0.0   8.0  7.5  6.9   7.6  7.6  7.6   0.0  6.7  6.7
LOS by Move:    A    A    *     A    A    A     A    A    *     A    A    A
ApproachDel:       7.6              7.3              7.6              6.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        7.6              7.3              7.6              6.7
LOS by Appr:         A                A                A                A
AllWayAvgQ:  0.0  0.0  0.0   0.0  0.0  0.0   0.1  0.1  0.1   0.0  0.0  0.0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.
```



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	396	13	38	2	26	11	25	179	0	6	141	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.97	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			0.96		1.00	1.00		1.00	0.89	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1772		1770	3539		1742	3040	
Flt Permitted		0.72			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1311			1751		1770	3539		1742	3040	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	417	14	40	2	27	12	26	188	0	6	148	463
RTOR Reduction (vph)	0	5	0	0	7	0	0	0	0	0	293	0
Lane Group Flow (vph)	0	466	0	0	34	0	26	188	0	6	318	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		28.1			28.1		1.8	25.8		0.8	24.8	
Effective Green, g (s)		28.1			28.1		1.8	25.8		0.8	24.8	
Actuated g/C Ratio		0.42			0.42		0.03	0.38		0.01	0.37	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		544			726		47	1348		20	1113	
v/s Ratio Prot							c0.01	0.05		0.00	c0.10	
v/s Ratio Perm		c0.36			0.02							
v/c Ratio		0.86			0.05		0.55	0.14		0.30	0.29	
Uniform Delay, d1		18.0			11.8		32.6	13.7		33.2	15.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		12.6			0.0		13.3	0.2		8.3	0.6	
Delay (s)		30.6			11.8		45.9	13.9		41.4	15.8	
Level of Service		C			B		D	B		D	B	
Approach Delay (s)		30.6			11.8			17.8			16.1	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	59.5%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	558	12	16	539	95	12	27	57	511	26	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.98			0.92		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3524		1770	3440			1681		1758	1680	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.69	1.00	
Satd. Flow (perm)	1770	3524		1770	3440			1648		1280	1680	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	587	13	17	567	100	13	28	60	538	27	38
RTOR Reduction (vph)	0	2	0	0	19	0	0	32	0	0	20	0
Lane Group Flow (vph)	17	598	0	17	648	0	0	69	0	538	45	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.1	24.3		1.0	23.9			34.5		34.5	34.5	
Effective Green, g (s)	1.1	24.3		1.0	23.9			34.5		34.5	34.5	
Actuated g/C Ratio	0.01	0.33		0.01	0.32			0.47		0.47	0.47	
Clearance Time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	5.4		2.0	4.7			2.0		2.0	2.0	
Lane Grp Cap (vph)	26	1157		23	1111			768		596	783	
v/s Ratio Prot	0.01	c0.17		0.01	c0.19						0.03	
v/s Ratio Perm								0.04		c0.42		
v/c Ratio	0.65	0.52		0.74	0.58			0.09		0.90	0.06	
Uniform Delay, d1	36.3	20.1		36.4	20.9			11.0		18.2	10.8	
Progression Factor	1.00	1.00		0.75	0.63			1.00		1.00	1.00	
Incremental Delay, d2	37.0	1.7		66.9	2.1			0.2		19.4	0.1	
Delay (s)	73.2	21.8		94.3	15.4			11.2		37.6	11.0	
Level of Service	E	C		F	B			B		D	B	
Approach Delay (s)		23.2			17.3			11.2			34.7	
Approach LOS		C			B			B			C	

Intersection Summary				
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	762	350	88	402	20	244	26	104	24	46	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.88			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3335		1770	3507		1758	1614			1815	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.90	
Satd. Flow (perm)	1770	3335		1770	3507		1308	1614			1668	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	15	802	368	93	423	21	257	27	109	25	48	4
RTOR Reduction (vph)	0	71	0	0	4	0	0	65	0	0	2	0
Lane Group Flow (vph)	15	1099	0	93	440	0	257	71	0	0	75	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.9	25.4		4.1	26.9		30.0	30.0			30.0	
Effective Green, g (s)	1.9	25.4		4.1	26.9		30.0	30.0			30.0	
Actuated g/C Ratio	0.03	0.34		0.06	0.36		0.41	0.41			0.41	
Clearance Time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.4		2.0	3.4		2.0	2.0			2.0	
Lane Grp Cap (vph)	45	1144		98	1274		530	654			676	
v/s Ratio Prot	0.01	c0.33		c0.05	0.13			0.04				
v/s Ratio Perm							c0.20				0.04	
v/c Ratio	0.33	0.96		0.95	0.35		0.48	0.11			0.11	
Uniform Delay, d1	35.4	23.8		34.8	17.1		16.3	13.7			13.7	
Progression Factor	0.77	0.66		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.2	15.6		72.9	0.7		3.2	0.3			0.3	
Delay (s)	28.4	31.4		107.8	17.9		19.4	14.0			14.0	
Level of Service	C	C		F	B		B	B			B	
Approach Delay (s)		31.3			33.5			17.6			14.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	741	25	19	472	28	75
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	780	26	20	497	29	79
Pedestrians	10			10	10	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1242			1089		
pX, platoon unblocked						
vC, conflicting volume			816		1102	423
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			816		1102	423
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		85	86
cM capacity (veh/h)			800		198	570

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	520	286	20	248	248	108
Volume Left	0	0	20	0	0	29
Volume Right	0	26	0	0	0	79
cSH	1700	1700	800	1700	1700	377
Volume to Capacity	0.31	0.17	0.02	0.15	0.15	0.29
Queue Length 95th (ft)	0	0	2	0	0	29
Control Delay (s)	0.0	0.0	9.6	0.0	0.0	18.4
Lane LOS			A			C
Approach Delay (s)	0.0		0.4			18.4
Approach LOS						C

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				

```
2014 AM                       Tue Sep 9, 2014 08:01:15                  Page 3-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                        Level Of Service Computation Report
                2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #37 Sundance Avenue/Twin Trails Drive
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):          0.863
Loss Time (sec):        0              Average Delay (sec/veh):        22.7
Optimal Cycle:          0              Level Of Service:                C
********************************************************************************
Street Name:          Sundance Avenue                Twin Trails Drive
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|----------------||----------------||----------------||----------------|
Control:          Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:             Include          Include          Include          Include
Min. Green:     0    0    0      0    0    0      0    0    0      0    0    0
Lanes:        0  0  1! 0  0      0  0  1! 0  0    1  0  0  1  0    1  0  1  0  1
------------|----------------||----------------||----------------||---------------|
Volume Module:
Base Vol:      40   15  192     55    5   19     17  492    7     72  358   23
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   40   15  192     55    5   19     17  492    7     72  358   23
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:    40   15  192     55    5   19     17  492    7     72  358   23
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:   40   15  192     55    5   19     17  492    7     72  358   23
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
FinalVolume:   40   15  192     55    5   19     17  492    7     72  358   23
------------|----------------||----------------||----------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Lanes:       0.16 0.06 0.78  0.70 0.06 0.24   1.00 0.99 0.01   1.00 1.00 1.00
Final Sat.:    88   33  423    316   29  109    529  570    8    515  560  621
------------|----------------||----------------||----------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.45 0.45 0.45  0.17 0.17 0.17   0.03 0.86 0.86   0.14 0.64 0.04
Crit Moves:  ****               ****               ****               ****
Delay/Veh:  13.6 13.6 13.6  11.3 11.3 11.3    9.6 34.7 34.7   10.5 18.8  8.5
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
AdjDel/Veh: 13.6 13.6 13.6  11.3 11.3 11.3    9.6 34.7 34.7   10.5 18.8  8.5
LOS by Move:    B    B    B     B    B    B     A    D    D     B    C    A
ApproachDel:       13.6             11.3             33.9             16.9
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:        13.6             11.3             33.9             16.9
LOS by Appr:          B                B                D                C
AllWayAvgQ:   0.7  0.7  0.7   0.2  0.2  0.2    0.0  4.2  4.2   0.2  1.5  0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.

Existing Conditions
38: Penasquitos PO Dwy & Twin Trails Dr

AM Pk Hr
9/8/2015

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	103	24	25	161	11	110	23	26	5	8	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1520	1770	1839		1745	1678			1569	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.57	1.00			0.99	
Satd. Flow (perm)	1770	1863	1520	1770	1839		1042	1678			1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	108	25	26	169	12	116	24	27	5	8	139
RTOR Reduction (vph)	0	0	10	0	2	0	0	22	0	0	114	0
Lane Group Flow (vph)	56	108	15	26	179	0	116	29	0	0	38	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Actuated Green, G (s)	4.8	39.4	39.4	2.7	37.3		11.7	11.7			11.7	
Effective Green, g (s)	4.8	39.4	39.4	2.7	37.3		11.7	11.7			11.7	
Actuated g/C Ratio	0.07	0.60	0.60	0.04	0.57		0.18	0.18			0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	129	1115	910	72	1042		185	298			277	
v/s Ratio Prot	c0.03	0.06		0.01	c0.10			0.02				
v/s Ratio Perm			0.01				c0.11				0.02	
v/c Ratio	0.43	0.10	0.02	0.36	0.17		0.63	0.10			0.14	
Uniform Delay, d1	29.2	5.6	5.3	30.7	6.8		25.0	22.6			22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.3	0.0	0.0	3.1	0.4		6.5	0.1			0.2	
Delay (s)	31.5	5.7	5.4	33.8	7.2		31.5	22.8			23.0	
Level of Service	C	A	A	C	A		C	C			C	
Approach Delay (s)		13.3			10.5			28.8			23.0	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Existing Conditions
39: Twin Trails Dr & Fairgrove Ln

AM Pk Hr
9/8/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	96	67	67	71	37	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	101	71	71	75	39	55
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total (vph)	101	71	145	39	55	
Volume Left (vph)	101	0	0	39	0	
Volume Right (vph)	0	71	75	0	0	
Hadj (s)	0.53	-0.67	-0.27	0.53	0.03	
Departure Headway (s)	5.6	4.4	4.6	5.6	5.1	
Degree Utilization, x	0.16	0.09	0.19	0.06	0.08	
Capacity (veh/h)	610	774	755	612	674	
Control Delay (s)	8.5	6.6	8.6	7.8	7.3	
Approach Delay (s)	7.7		8.6	7.5		
Approach LOS	A		A	A		

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 07/2014			

Existing Conditions
40: Twin Trails Dr & Paseo Montalban

AM Pk Hr
9/8/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	90	34	99	135	32	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2		4.0	5.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3368		1770	3539	1770	1558
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3368		1770	3539	1770	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	36	104	142	34	91
RTOR Reduction (vph)	29	0	0	0	0	60
Lane Group Flow (vph)	102	0	104	142	34	31
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	7.9		4.3	15.9	13.0	13.0
Effective Green, g (s)	7.9		4.3	15.9	13.0	13.0
Actuated g/C Ratio	0.21		0.11	0.41	0.34	0.34
Clearance Time (s)	5.2		4.0	5.5	4.0	4.0
Vehicle Extension (s)	3.2		2.0	3.2	2.1	2.1
Lane Grp Cap (vph)	692		198	1465	599	527
v/s Ratio Prot	c0.03		c0.06	0.04	0.02	
v/s Ratio Perm						c0.02
v/c Ratio	0.15		0.53	0.10	0.06	0.06
Uniform Delay, d1	12.5		16.1	6.9	8.6	8.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1		1.2	0.0	0.0	0.0
Delay (s)	12.6		17.2	6.9	8.6	8.6
Level of Service	B		B	A	A	A
Approach Delay (s)	12.6			11.3	8.6	
Approach LOS	B			B	A	

Intersection Summary				
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.17			
Actuated Cycle Length (s)	38.4	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	33.9%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

c Critical Lane Group

Existing Conditions
41: Salmon River Rd & Paseo Montalban

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	149	26	66	179	14	37	4	89	25	5	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	3446		1770	3492		1763	1567		1759	1612	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.69	1.00	
Satd. Flow (perm)	1755	3446		1770	3492		1371	1567		1285	1612	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	157	27	69	188	15	39	4	94	26	5	23
RTOR Reduction (vph)	0	16	0	0	8	0	0	64	0	0	15	0
Lane Group Flow (vph)	16	168	0	69	195	0	39	34	0	26	13	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.6	10.4		2.2	11.9		12.4	12.4		13.5	13.5	
Effective Green, g (s)	0.6	10.4		2.2	11.9		12.4	12.4		13.5	13.5	
Actuated g/C Ratio	0.02	0.26		0.06	0.30		0.32	0.32		0.34	0.34	
Clearance Time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Vehicle Extension (s)	2.0	4.4		2.0	4.4		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	26	911		99	1057		432	494		441	553	
v/s Ratio Prot	0.01	0.05		c0.04	c0.06			0.02			0.01	
v/s Ratio Perm							c0.03			0.02		
v/c Ratio	0.62	0.18		0.70	0.18		0.09	0.07		0.06	0.02	
Uniform Delay, d1	19.2	11.2		18.2	10.1		9.5	9.4		8.6	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.7	0.2		15.8	0.1		0.0	0.0		0.0	0.0	
Delay (s)	45.9	11.3		34.0	10.3		9.5	9.4		8.7	8.5	
Level of Service	D	B		C	B		A	A		A	A	
Approach Delay (s)		14.1			16.3			9.5			8.6	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.19			
Actuated Cycle Length (s)	39.3	Sum of lost time (s)	14.4	
Intersection Capacity Utilization	38.0%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

Existing Conditions
42: Fairgrove Ln & Salmon River Rd

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	30	32	2	19	12	103	72	5	16	54	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	32	34	2	20	13	108	76	5	17	57	17

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	97	35	108	81	91
Volume Left (vph)	32	2	108	0	17
Volume Right (vph)	34	13	0	5	17
Hadj (s)	-0.11	-0.17	0.53	-0.01	-0.04
Departure Headway (s)	4.5	4.5	5.4	4.9	4.5
Degree Utilization, x	0.12	0.04	0.16	0.11	0.11
Capacity (veh/h)	746	737	644	713	762
Control Delay (s)	8.1	7.7	8.3	7.3	8.1
Approach Delay (s)	8.1	7.7	7.9		8.1
Approach LOS	A	A	A		A

Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	31.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

Existing Conditions
43: Salmon River Rd & Limar Way

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	53	13	26	50	0	13	7	23	1	21	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	56	14	27	53	0	14	7	24	1	22	36

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	82	80	45	59
Volume Left (vph)	13	27	14	1
Volume Right (vph)	14	0	24	36
Hadj (s)	-0.04	0.10	-0.23	-0.33
Departure Headway (s)	4.2	4.3	4.1	4.0
Degree Utilization, x	0.10	0.10	0.05	0.07
Capacity (veh/h)	836	811	835	863
Control Delay (s)	7.6	7.8	7.3	7.3
Approach Delay (s)	7.6	7.8	7.3	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	26.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

Existing Conditions
44: Carmel Mountain Rd & Paseo Cardiel

AM Pk Hr
9/8/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	270	36	10	370	37	99	19	14	55	16	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		0.99	1.00	
Frt	1.00	0.98		1.00	0.99			0.99		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3455		1770	3476			1754		1755	1604	
Flt Permitted	0.95	1.00		0.95	1.00			0.75		0.69	1.00	
Satd. Flow (perm)	1770	3455		1770	3476			1360		1267	1604	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	284	38	11	389	39	104	20	15	58	17	78
RTOR Reduction (vph)	0	13	0	0	9	0	0	4	0	0	38	0
Lane Group Flow (vph)	82	309	0	11	419	0	0	135	0	58	57	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.5	28.2		1.3	21.8			45.6		45.6	45.6	
Effective Green, g (s)	7.5	28.2		1.3	21.8			45.6		45.6	45.6	
Actuated g/C Ratio	0.08	0.31		0.01	0.24			0.51		0.51	0.51	
Clearance Time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.9		2.0	2.4			2.0		2.0	2.0	
Lane Grp Cap (vph)	147	1082		25	841			689		641	812	
v/s Ratio Prot	c0.05	0.09		0.01	c0.12						0.04	
v/s Ratio Perm								c0.10		0.05		
v/c Ratio	0.56	0.29		0.44	0.50			0.20		0.09	0.07	
Uniform Delay, d1	39.7	23.3		44.0	29.4			12.2		11.5	11.4	
Progression Factor	1.00	1.00		1.11	0.80			1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.7		4.4	2.1			0.6		0.0	0.0	
Delay (s)	42.2	24.0		53.2	25.5			12.8		11.5	11.4	
Level of Service	D	C		D	C			B		B	B	
Approach Delay (s)		27.7			26.2			12.8			11.4	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	52.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

Existing Conditions
45: Carmel Mountain Rd & Freeport Rd

AM Pk Hr
9/8/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	262	20	4	375	7	9	0	7	19	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3490		1770	3527		1754	1549			1635	
Flt Permitted	0.95	1.00		0.95	1.00		0.82	1.00			0.90	
Satd. Flow (perm)	1770	3490		1770	3527		1506	1549			1489	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	44	276	21	4	395	7	9	0	7	20	0	43
RTOR Reduction (vph)	0	3	0	0	1	0	0	6	0	0	56	0
Lane Group Flow (vph)	44	294	0	4	401	0	9	1	0	0	7	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.8	64.9		1.1	58.4		9.4	9.4			9.4	
Effective Green, g (s)	6.8	64.9		1.1	58.4		9.4	9.4			9.4	
Actuated g/C Ratio	0.08	0.72		0.01	0.65		0.10	0.10			0.10	
Clearance Time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.3		2.0	3.7		2.0	2.0			2.0	
Lane Grp Cap (vph)	133	2516		21	2288		157	161			155	
v/s Ratio Prot	c0.02	0.08		0.00	c0.11			0.00				
v/s Ratio Perm							c0.01				0.00	
v/c Ratio	0.33	0.12		0.19	0.18		0.06	0.00			0.04	
Uniform Delay, d1	39.4	3.8		44.0	6.3		36.3	36.1			36.3	
Progression Factor	0.75	0.24		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.1		1.6	0.2		0.1	0.0			0.0	
Delay (s)	30.1	1.0		45.6	6.4		36.4	36.1			36.3	
Level of Service	C	A		D	A		D	D			D	
Approach Delay (s)		4.8			6.8			36.3			36.3	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.17			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	44.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Existing Conditions
46: Carmel Mountain Rd & Stoney Creek Rd

AM Pk Hr
9/8/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	75	231	0	314	41	38	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		5.7		4.4	4.4
Lane Util. Factor	1.00	0.95		0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00		1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00		0.98		0.96	0.85
Flt Protected	0.95	1.00		1.00		0.96	1.00
Satd. Flow (prot)	1770	3539		3467		1717	1481
Flt Permitted	0.95	1.00		1.00		0.96	1.00
Satd. Flow (perm)	1770	3539		3467		1717	1481
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	243	0	331	43	40	67
RTOR Reduction (vph)	0	0	0	14	0	12	40
Lane Group Flow (vph)	79	243	0	360	0	43	12
Confl. Peds. (#/hr)	10		10		10	10	10
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	5	2	1	6		4	
Permitted Phases							4
Actuated Green, G (s)	2.4	18.5		11.3		8.5	8.5
Effective Green, g (s)	2.4	18.5		11.3		8.5	8.5
Actuated g/C Ratio	0.07	0.50		0.31		0.23	0.23
Clearance Time (s)	4.4	5.3		5.7		4.4	4.4
Vehicle Extension (s)	2.0	4.3		3.7		2.0	2.0
Lane Grp Cap (vph)	115	1783		1067		397	343
v/s Ratio Prot	c0.04	0.07		c0.10		c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.69	0.14		0.34		0.11	0.04
Uniform Delay, d1	16.8	4.8		9.8		11.1	10.9
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	12.7	0.1		0.2		0.0	0.0
Delay (s)	29.5	4.9		10.0		11.2	10.9
Level of Service	C	A		B		B	B
Approach Delay (s)		10.9		10.0		11.1	
Approach LOS		B		B		B	

Intersection Summary				
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	38.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Existing Conditions
47: Carmel Mountain Rd & Caminata Deluz/Cuca St

AM Pk Hr
9/8/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	46	1	59	3	0	7	27	277	0	9	284	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.92			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1668			1641		1758	3539		1750	3497	
Flt Permitted		0.87			0.92		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1480			1531		1758	3539		1750	3497	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	48	1	62	3	0	7	28	292	0	9	299	21
RTOR Reduction (vph)	0	45	0	0	7	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	66	0	0	3	0	28	292	0	9	314	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.2			10.2		0.7	12.5		0.6	12.3	
Effective Green, g (s)		10.2			10.2		0.7	12.5		0.6	12.3	
Actuated g/C Ratio		0.27			0.27		0.02	0.33		0.02	0.32	
Clearance Time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Vehicle Extension (s)		2.0			2.0		2.0	4.3		2.0	3.8	
Lane Grp Cap (vph)		398			412		32	1167		27	1134	
v/s Ratio Prot							c0.02	0.08		0.01	c0.09	
v/s Ratio Perm		c0.04			0.00							
v/c Ratio		0.17			0.01		0.88	0.25		0.33	0.28	
Uniform Delay, d1		10.6			10.1		18.6	9.3		18.5	9.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		105.1	0.2		2.6	0.2	
Delay (s)		10.7			10.1		123.7	9.5		21.1	9.7	
Level of Service		B			B		F	A		C	A	
Approach Delay (s)		10.7			10.1			19.5			10.0	
Approach LOS		B			B			B			A	

Intersection Summary				
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.25			
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	39.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Existing Conditions
48: Carmel Mountain Rd & Penasquitos Dr

AM Pk Hr
9/8/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	575	60	80	27	14	98	47	371	28	80	177	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1541	1681	1742	1541	1770	5017		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1541	1681	1742	1541	1770	5017		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	605	63	84	28	15	103	49	391	29	84	186	155
RTOR Reduction (vph)	0	0	52	0	0	95	0	9	0	0	0	95
Lane Group Flow (vph)	605	63	32	21	22	8	49	411	0	84	186	60
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	30.5	30.5	30.5	6.4	6.4	6.4	3.3	19.0		7.0	22.7	30.5
Effective Green, g (s)	30.5	30.5	30.5	6.4	6.4	6.4	3.3	19.0		7.0	22.7	30.5
Actuated g/C Ratio	0.39	0.39	0.39	0.08	0.08	0.08	0.04	0.24		0.09	0.29	0.39
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	684	720	595	136	141	124	74	1208		157	1018	611
v/s Ratio Prot	c0.34	0.03		0.01	c0.01		c0.03	c0.08		c0.05	0.05	0.04
v/s Ratio Perm			0.02			0.01						
v/c Ratio	0.88	0.09	0.05	0.15	0.16	0.07	0.66	0.34		0.54	0.18	0.10
Uniform Delay, d1	22.6	15.4	15.2	33.7	33.7	33.5	37.3	24.8		34.4	21.1	15.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.0	0.1	0.0	0.5	0.5	0.2	20.0	0.8		3.5	0.1	0.1
Delay (s)	35.6	15.4	15.2	34.3	34.3	33.7	57.3	25.5		37.9	21.2	15.5
Level of Service	D	B	B	C	C	C	E	C		D	C	B
Approach Delay (s)		31.6			33.9			28.9			22.4	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	534	421	438	286	0	0	0	0	218	0	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	0.99	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.99	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3539	1546	3433	3539					1661	1523	1468
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3539	1546	3433	3539					1661	1523	1468
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	562	443	461	301	0	0	0	0	229	0	185
RTOR Reduction (vph)	0	0	315	0	0	0	0	0	0	0	47	92
Lane Group Flow (vph)	0	562	128	461	301	0	0	0	0	144	92	39
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		18.5	18.5	13.9	36.9					19.3	19.3	19.3
Effective Green, g (s)		18.5	18.5	13.9	36.9					19.3	19.3	19.3
Actuated g/C Ratio		0.29	0.29	0.22	0.57					0.30	0.30	0.30
Clearance Time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1019	445	743	2034					499	457	441
v/s Ratio Prot		c0.16		c0.13	0.09							
v/s Ratio Perm			0.08							c0.09	0.06	0.03
v/c Ratio		0.55	0.29	0.62	0.15					0.29	0.20	0.09
Uniform Delay, d1		19.3	17.7	22.8	6.3					17.2	16.7	16.1
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		0.6	0.4	1.6	0.0					1.5	1.0	0.4
Delay (s)		20.0	18.1	24.4	6.4					18.6	17.7	16.5
Level of Service		B	B	C	A					B	B	B
Approach Delay (s)		19.2			17.3			0.0			17.7	
Approach LOS		B			B			A			B	

Intersection Summary				
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	12.5	
Intersection Capacity Utilization	63.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	493	0	0	591	256	151	0	931	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.91			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			3539	1540	1655	1655	2711			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			3539	1540	1655	1655	2711			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	266	519	0	0	622	269	159	0	980	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	199	0	0	246	0	0	0
Lane Group Flow (vph)	266	519	0	0	622	70	79	80	734	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	10.8	36.4			21.6	21.6	38.2	38.2	38.2			
Effective Green, g (s)	10.8	36.4			21.6	21.6	38.2	38.2	38.2			
Actuated g/C Ratio	0.13	0.44			0.26	0.26	0.46	0.46	0.46			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	448	2240			925	402	765	765	1253			
v/s Ratio Prot	c0.08	0.10			c0.18							
v/s Ratio Perm						0.05	0.05	0.05	c0.27			
v/c Ratio	0.59	0.23			0.67	0.17	0.10	0.10	0.59			
Uniform Delay, d1	33.8	14.4			27.3	23.6	12.5	12.5	16.4			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	2.1	0.1			1.9	0.2	0.3	0.3	2.0			
Delay (s)	35.9	14.4			29.3	23.8	12.8	12.8	18.4			
Level of Service	D	B			C	C	B	B	B			
Approach Delay (s)		21.7			27.6			17.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	63.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	377	11	33	90	92	5	7	8	267	8	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.92		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3519		1770	1863	1545	1770	3214		3433	1594	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3519		1770	1863	1545	1770	3214		3433	1594	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	397	12	35	95	97	5	7	8	281	8	28
RTOR Reduction (vph)	0	2	0	0	0	80	0	5	0	0	15	0
Lane Group Flow (vph)	61	407	0	35	95	17	5	10	0	281	21	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	4.7	14.2		2.7	11.7	11.7	1.0	21.7		10.6	30.8	
Effective Green, g (s)	4.7	14.2		2.7	11.7	11.7	1.0	21.7		10.6	30.8	
Actuated g/C Ratio	0.07	0.22		0.04	0.18	0.18	0.02	0.33		0.16	0.47	
Clearance Time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	126	760		72	331	275	26	1061		553	747	
v/s Ratio Prot	c0.03	c0.12		0.02	0.05		0.00	0.00		c0.08	c0.01	
v/s Ratio Perm						0.01						
v/c Ratio	0.48	0.54		0.49	0.29	0.06	0.19	0.01		0.51	0.03	
Uniform Delay, d1	29.3	22.8		30.8	23.4	22.4	32.0	14.8		25.2	9.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.7		5.1	0.5	0.1	3.6	0.0		0.7	0.1	
Delay (s)	32.2	23.6		35.9	23.9	22.5	35.5	14.8		25.9	9.5	
Level of Service	C	C		D	C	C	D	B		C	A	
Approach Delay (s)		24.7			25.2			20.0			24.0	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	1	4	3	0	97	2	414	7	22	174	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		1.00			0.87		1.00	1.00		1.00	0.98	
Flt Protected		0.95			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761			1589		1759	3529		1762	3453	
Flt Permitted		0.78			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1447			1570		1759	3529		1762	3453	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	118	1	4	3	0	102	2	436	7	23	183	29
RTOR Reduction (vph)	0	2	0	0	83	0	0	1	0	0	17	0
Lane Group Flow (vph)	0	121	0	0	22	0	2	442	0	23	195	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		5.0			5.0		0.6	8.8		0.7	8.9	
Effective Green, g (s)		5.0			5.0		0.6	8.8		0.7	8.9	
Actuated g/C Ratio		0.19			0.19		0.02	0.33		0.03	0.34	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		273			296		39	1171		46	1159	
v/s Ratio Prot							0.00	c0.13		c0.01	0.06	
v/s Ratio Perm		c0.08			0.01							
v/c Ratio		0.44			0.08		0.05	0.38		0.50	0.17	
Uniform Delay, d1		9.5			8.8		12.7	6.8		12.7	6.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2			0.1		0.5	0.2		8.3	0.1	
Delay (s)		10.7			9.0		13.2	7.0		21.0	6.3	
Level of Service		B			A		B	A		C	A	
Approach Delay (s)		10.7			9.0			7.0			7.7	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	26.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	38.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	723	3	30	242	8	4	0	97	68	2	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1749	3537		1770	3519			1582			1749	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.74	
Satd. Flow (perm)	1749	3537		1770	3519			1576			1356	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	761	3	32	255	8	4	0	102	72	2	5
RTOR Reduction (vph)	0	1	0	0	3	0	0	62	0	0	2	0
Lane Group Flow (vph)	1	763	0	32	260	0	0	44	0	0	77	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.9	19.2		2.5	20.8			22.8			22.8	
Effective Green, g (s)	0.9	19.2		2.5	20.8			22.8			22.8	
Actuated g/C Ratio	0.02	0.33		0.04	0.36			0.40			0.40	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	27	1181		76	1272			624			537	
v/s Ratio Prot	0.00	c0.22		c0.02	0.07							
v/s Ratio Perm								0.03			c0.06	
v/c Ratio	0.04	0.65		0.42	0.20			0.07			0.14	
Uniform Delay, d1	27.9	16.3		26.8	12.6			10.8			11.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	1.2		3.7	0.1			0.2			0.6	
Delay (s)	28.4	17.5		30.5	12.7			11.0			11.7	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		17.5			14.7			11.0			11.7	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	45.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	88	69	598	27	17	774
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	6.3		4.4	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1556	3512		1762	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1556	3512		1762	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	73	629	28	18	815
RTOR Reduction (vph)	0	60	3	0	0	0
Lane Group Flow (vph)	93	13	654	0	18	815
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.7	7.7	20.1		0.7	25.5
Effective Green, g (s)	7.7	7.7	20.1		0.7	25.5
Actuated g/C Ratio	0.17	0.17	0.46		0.02	0.58
Clearance Time (s)	4.9	4.9	6.3		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.8		2.0	2.6
Lane Grp Cap (vph)	309	271	1600		27	2046
v/s Ratio Prot	c0.05		0.19		0.01	c0.23
v/s Ratio Perm		0.01				
v/c Ratio	0.30	0.05	0.41		0.67	0.40
Uniform Delay, d1	15.9	15.1	8.0		21.6	5.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.2		39.0	0.1
Delay (s)	16.1	15.2	8.2		60.5	5.2
Level of Service	B	B	A		E	A
Approach Delay (s)	15.7		8.2			6.4
Approach LOS	B		A			A

Intersection Summary				
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	44.1	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	39.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 10/2013

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	876	0	0	751	72	0	0	0	111	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Lane Util. Factor	1.00	0.95			0.95	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97				1.00		0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00				0.99		1.00
Frt	1.00	1.00			1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1770	3539			3539	1535				1761		1557
Flt Permitted	0.95	1.00			1.00	1.00				0.76		1.00
Satd. Flow (perm)	1770	3539			3539	1535				1403		1557
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	922	0	0	791	76	0	0	0	117	0	17
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	0	0	0	13
Lane Group Flow (vph)	49	922	0	0	791	35	0	0	0	117	0	4
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm				Perm		Perm
Protected Phases	5	2		1	6			8				
Permitted Phases						6	8			4		4
Actuated Green, G (s)	1.9	27.6			22.2	22.2				11.4		11.4
Effective Green, g (s)	1.9	27.6			22.2	22.2				11.4		11.4
Actuated g/C Ratio	0.04	0.57			0.46	0.46				0.23		0.23
Clearance Time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Vehicle Extension (s)	2.0	5.0			2.8	2.8				2.0		2.0
Lane Grp Cap (vph)	69	2009			1616	701				329		365
v/s Ratio Prot	c0.03	c0.26			0.22							
v/s Ratio Perm						0.02				c0.08		0.00
v/c Ratio	0.71	0.46			0.49	0.05				0.36		0.01
Uniform Delay, d1	23.1	6.1			9.2	7.3				15.5		14.3
Progression Factor	1.00	1.00			1.00	1.00				1.00		1.00
Incremental Delay, d2	24.7	0.3			0.2	0.0				0.2		0.0
Delay (s)	47.8	6.5			9.4	7.4				15.8		14.3
Level of Service	D	A			A	A				B		B
Approach Delay (s)		8.6			9.3			0.0			15.6	
Approach LOS		A			A			A			B	

Intersection Summary				
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	13.6	
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	587	325	882	670	0	0	0	0	617	0	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Lane Util. Factor		0.86	0.86	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		0.99	0.97	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.98	1.00
Frt		0.97	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4659	1320	3433	3539					1649	1574	1458
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4659	1320	3433	3539					1649	1574	1458
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	618	342	928	705	0	0	0	0	649	0	180
RTOR Reduction (vph)	0	26	170	0	0	0	0	0	0	0	45	106
Lane Group Flow (vph)	0	719	45	928	705	0	0	0	0	337	285	56
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		21.0	21.0	32.3	57.3					35.1	35.1	35.1
Effective Green, g (s)		21.0	21.0	32.3	57.3					35.1	35.1	35.1
Actuated g/C Ratio		0.21	0.21	0.32	0.57					0.35	0.35	0.35
Clearance Time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		964	273	1093	1999					570	544	504
v/s Ratio Prot		c0.15		c0.27	0.20							
v/s Ratio Perm			0.03							c0.20	0.18	0.04
v/c Ratio		0.75	0.16	0.85	0.35					0.59	0.52	0.11
Uniform Delay, d1		37.7	33.0	32.3	12.0					27.3	26.5	22.5
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		3.2	0.3	6.3	0.1					4.5	3.6	0.4
Delay (s)		40.9	33.3	38.6	12.1					31.7	30.1	23.0
Level of Service		D	C	D	B					C	C	C
Approach Delay (s)		39.2			27.1			0.0			29.3	
Approach LOS		D			C			A			C	

Intersection Summary				
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 07/2014

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	774	0	0	1206	653	136	4	1306	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1533	1647	1657	2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	3539			5085	1533	1647	1657	2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	262	815	0	0	1269	687	143	4	1375	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	360	0	0	83	0	0	0
Lane Group Flow (vph)	262	815	0	0	1269	327	73	74	1292	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Prot			
Protected Phases	5	2			6			8	8			
Permitted Phases						6	8					
Actuated Green, G (s)	9.0	48.3			35.3	35.3	52.0	52.0	52.0			
Effective Green, g (s)	9.0	48.3			35.3	35.3	52.0	52.0	52.0			
Actuated g/C Ratio	0.08	0.44			0.32	0.32	0.48	0.48	0.48			
Clearance Time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	282	1563			1642	495	783	788	1325			
v/s Ratio Prot	c0.08	0.23			c0.25				c0.46			
v/s Ratio Perm						0.21	0.04	0.04				
v/c Ratio	0.93	0.52			0.77	0.66	0.09	0.09	0.97			
Uniform Delay, d1	49.8	22.1			33.4	31.8	15.7	15.7	28.0			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	34.9	0.3			2.3	3.3	0.2	0.2	19.4			
Delay (s)	84.7	22.4			35.7	35.1	16.0	16.0	47.4			
Level of Service	F	C			D	D	B	B	D			
Approach Delay (s)		37.6			35.5			44.4			0.0	
Approach LOS		D			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	109.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Existing Conditions
1: Camino Del Sur & Carmel Valley Rd

PM Pk Hr
9/14/2015

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	139	477	70	116	520	240	215	399	137	84	138	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1551	1770	3539	1529	1770	1863	1552	3433	1863	1552
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1551	1770	3539	1529	1770	1863	1552	3433	1863	1552
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	146	502	74	122	547	253	226	420	144	88	145	121
RTOR Reduction (vph)	0	0	53	0	0	182	0	0	95	0	0	94
Lane Group Flow (vph)	146	502	21	122	547	71	226	420	49	88	145	27
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	11.2	27.8	27.8	9.9	26.8	26.8	16.1	32.4	32.4	4.9	21.3	21.3
Effective Green, g (s)	11.2	27.8	27.8	9.9	26.8	26.8	16.1	32.4	32.4	4.9	21.3	21.3
Actuated g/C Ratio	0.12	0.29	0.29	0.10	0.28	0.28	0.17	0.34	0.34	0.05	0.22	0.22
Clearance Time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Vehicle Extension (s)	2.0	5.6	5.6	2.0	5.9	5.9	2.0	4.9	4.9	2.0	5.1	5.1
Lane Grp Cap (vph)	206	1023	448	182	986	426	296	628	523	175	412	343
v/s Ratio Prot	c0.08	0.14		0.07	c0.15		c0.13	c0.23		0.03	0.08	
v/s Ratio Perm			0.01			0.05			0.03			0.02
v/c Ratio	0.71	0.49	0.05	0.67	0.55	0.17	0.76	0.67	0.09	0.50	0.35	0.08
Uniform Delay, d1	40.9	28.3	24.6	41.5	29.6	26.2	38.2	27.3	21.8	44.4	31.6	29.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8	0.9	0.1	7.4	1.4	0.5	10.0	3.5	0.2	0.8	1.1	0.2
Delay (s)	49.6	29.2	24.7	48.9	31.0	26.7	48.2	30.8	22.0	45.2	32.7	29.8
Level of Service	D	C	C	D	C	C	D	C	C	D	C	C
Approach Delay (s)		32.9			32.2			34.2			34.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
2: Camino Del Sur & Watson Ranch Rd

PM Pk Hr
9/9/2015

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	16	11	60	632	20	20	673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		0.99	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1761	1557	1770	3519		1760	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1761	1557	1770	3519		1760	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	12	63	665	21	21	708
RTOR Reduction (vph)	0	11	0	2	0	0	0
Lane Group Flow (vph)	17	1	63	684	0	21	708
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Perm	Perm	Prot	NA		Prot	NA
Protected Phases			5	2		1	6
Permitted Phases	8	8					
Actuated Green, G (s)	4.8	4.8	2.6	28.8		0.7	26.9
Effective Green, g (s)	4.8	4.8	2.6	28.8		0.7	26.9
Actuated g/C Ratio	0.10	0.10	0.05	0.59		0.01	0.55
Clearance Time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.5	5.4		2.0	5.4
Lane Grp Cap (vph)	172	152	93	2064		25	1938
v/s Ratio Prot			c0.04	0.19		0.01	c0.20
v/s Ratio Perm	c0.01	0.00					
v/c Ratio	0.10	0.01	0.68	0.33		0.84	0.37
Uniform Delay, d1	20.2	20.0	22.8	5.2		24.1	6.3
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.0	16.3	0.2		106.1	0.3
Delay (s)	20.3	20.0	39.1	5.4		130.2	6.6
Level of Service	C	C	D	A		F	A
Approach Delay (s)	20.2			8.3			10.1
Approach LOS	C			A			B

Intersection Summary				
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	44.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
3: Camino Del Sur & Wolverine Way/Fallhaven Rd

PM Pk Hr
9/9/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	1	34	13	0	6	130	925	12	42	610	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.94	1.00	0.94		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1777	1488	1770	1491		3433	3528		1770	3539	1561
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1777	1488	1770	1491		3433	3528		1770	3539	1561
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	1	36	14	0	6	137	974	13	44	642	25
RTOR Reduction (vph)	0	0	33	0	6	0	0	1	0	0	0	17
Lane Group Flow (vph)	0	30	3	14	0	0	137	986	0	44	642	8
Confl. Peds. (#/hr)			82			83			31			2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		6.8	6.8	5.8	5.8		16.2	35.8		3.1	23.5	23.5
Effective Green, g (s)		6.8	6.8	5.8	5.8		16.2	35.8		3.1	23.5	23.5
Actuated g/C Ratio		0.09	0.09	0.08	0.08		0.22	0.50		0.04	0.33	0.33
Clearance Time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Vehicle Extension (s)		2.0	2.0	6.3	6.3		2.0	5.9		2.0	2.0	2.0
Lane Grp Cap (vph)		167	140	142	119		771	1751		76	1153	508
v/s Ratio Prot		c0.02		c0.01	0.00		0.04	c0.28		0.02	c0.18	
v/s Ratio Perm			0.00									0.01
v/c Ratio		0.18	0.02	0.10	0.00		0.18	0.56		0.58	0.56	0.02
Uniform Delay, d1		30.1	29.6	30.7	30.5		22.6	12.7		33.9	20.0	16.5
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.2	0.0	0.9	0.0		0.0	0.8		6.5	0.3	0.0
Delay (s)		30.3	29.7	31.7	30.5		22.6	13.5		40.3	20.3	16.5
Level of Service		C	C	C	C		C	B		D	C	B
Approach Delay (s)		29.9			31.3			14.6			21.4	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	88.0%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Existing Conditions
4: Camino Del Sur & Torrey Meadows Dr

PM Pk Hr
9/9/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1075	83	40	693	42	56	1	22	42	3	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3497		1770	3503		1770	1564		1770	2979	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3497		1770	3503		1770	1564		1770	2979	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1132	87	42	729	44	59	1	23	44	3	43
RTOR Reduction (vph)	0	6	0	0	4	0	0	19	0	0	37	0
Lane Group Flow (vph)	98	1213	0	42	769	0	59	5	0	44	9	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.1	31.3		2.8	27.6		3.9	13.6		3.4	13.1	
Effective Green, g (s)	6.1	31.3		2.8	27.6		3.9	13.6		3.4	13.1	
Actuated g/C Ratio	0.09	0.44		0.04	0.39		0.06	0.19		0.05	0.19	
Clearance Time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	4.4		2.0	5.4		2.0	5.4	
Lane Grp Cap (vph)	152	1545		70	1365		97	300		85	551	
v/s Ratio Prot	0.06	c0.35		0.02	c0.22		c0.03	c0.00		c0.02	0.00	
v/s Ratio Perm												
v/c Ratio	0.64	0.79		0.60	0.56		0.61	0.02		0.52	0.02	
Uniform Delay, d1	31.3	16.9		33.4	16.9		32.7	23.2		32.9	23.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.8	2.5		8.9	0.7		7.2	0.1		2.2	0.0	
Delay (s)	38.1	19.4		42.3	17.6		39.9	23.2		35.1	23.6	
Level of Service	D	B		D	B		D	C		D	C	
Approach Delay (s)		20.8			18.9			35.1			29.2	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	20.1	
Intersection Capacity Utilization	61.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	139	180	263	1112	699	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.4	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1555	3433	3539	3465	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1555	3433	3539	3465	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	146	189	277	1171	736	107
RTOR Reduction (vph)	0	148	0	0	15	0
Lane Group Flow (vph)	146	41	277	1171	828	0
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	11.5	11.5	6.0	31.1	20.7	
Effective Green, g (s)	11.5	11.5	6.0	31.1	20.7	
Actuated g/C Ratio	0.21	0.21	0.11	0.58	0.39	
Clearance Time (s)	4.9	4.9	4.4	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	380	334	385	2057	1340	
v/s Ratio Prot	c0.08		0.08	c0.33	0.24	
v/s Ratio Perm		0.03				
v/c Ratio	0.38	0.12	0.72	0.57	0.62	
Uniform Delay, d1	18.0	16.9	22.9	7.0	13.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.2	6.3	0.4	0.9	
Delay (s)	18.6	17.1	29.3	7.4	14.1	
Level of Service	B	B	C	A	B	
Approach Delay (s)	17.8			11.6	14.1	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	162	0	803	142	572	0	0	708	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.5	4.5			5.0	5.0
Lane Util. Factor				0.95	0.95	0.88	0.97	0.95			0.95	0.88
Frpb, ped/bikes				1.00	1.00	0.96	1.00	1.00			1.00	0.96
Flpb, ped/bikes				0.99	0.99	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1661	1661	2677	3433	3539			3539	2677
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1661	1661	2677	3433	3539			3539	2677
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	171	0	845	149	602	0	0	745	164
RTOR Reduction (vph)	0	0	0	0	0	248	0	0	0	0	0	108
Lane Group Flow (vph)	0	0	0	85	86	597	149	602	0	0	745	56
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				22.5	22.5	22.5	5.5	32.3			21.8	21.8
Effective Green, g (s)				22.5	22.5	22.5	5.5	32.3			21.8	21.8
Actuated g/C Ratio				0.36	0.36	0.36	0.09	0.51			0.34	0.34
Clearance Time (s)				4.0	4.0	4.0	4.5	4.5			5.0	5.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				590	590	951	298	1805			1218	921
v/s Ratio Prot							c0.04	0.17			c0.21	
v/s Ratio Perm				0.05	0.05	c0.22						0.02
v/c Ratio				0.14	0.15	0.63	0.50	0.33			0.61	0.06
Uniform Delay, d1				13.9	13.9	16.9	27.6	9.1			17.2	13.9
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.1	1.3	1.3	0.1			0.9	0.0
Delay (s)				14.0	14.0	18.2	28.9	9.3			18.2	13.9
Level of Service				B	B	B	C	A			B	B
Approach Delay (s)		0.0			17.5			13.2			17.4	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	409	1	136	0	0	0	0	309	447	571	299	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5	4.5	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.95					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1654	1659	2659					3539	1540	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1654	1659	2659					3539	1540	3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	431	1	143	0	0	0	0	325	471	601	315	0
RTOR Reduction (vph)	0	0	115	0	0	0	0	0	301	0	0	0
Lane Group Flow (vph)	215	217	28	0	0	0	0	325	170	601	315	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.5	16.5	16.5					30.6	30.6	24.6	59.2	
Effective Green, g (s)	16.5	16.5	16.5					30.6	30.6	24.6	59.2	
Actuated g/C Ratio	0.19	0.19	0.19					0.36	0.36	0.29	0.70	
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5	4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	322	323	517					1278	556	997	2473	
v/s Ratio Prot								0.09		c0.18	0.09	
v/s Ratio Perm	0.13	0.13	0.01						c0.11			
v/c Ratio	0.67	0.67	0.05					0.25	0.31	0.60	0.13	
Uniform Delay, d1	31.6	31.6	27.7					19.0	19.4	25.8	4.2	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.2	5.4	0.0					0.5	1.4	1.0	0.1	
Delay (s)	36.7	37.0	27.8					19.5	20.8	26.9	4.3	
Level of Service	D	D	C					B	C	C	A	
Approach Delay (s)		34.6			0.0			20.3			19.1	
Approach LOS		C			A			C			B	

Intersection Summary				
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	582	35	17	167	156	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.0		4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		0.99	1.00
Frt	1.00	1.00	0.88		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.95	1.00
Satd. Flow (prot)	1681	1695	1603		1754	1538
Flt Permitted	0.95	0.96	1.00		0.95	1.00
Satd. Flow (perm)	1681	1695	1603		1754	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	613	37	18	176	164	294
RTOR Reduction (vph)	0	0	148	0	0	222
Lane Group Flow (vph)	325	325	46	0	164	72
Confl. Peds. (#/hr)	10			10	10	10
Turn Type	Split	NA	NA		Perm	Perm
Protected Phases	4	4	8			
Permitted Phases					6	6
Actuated Green, G (s)	16.8	16.8	8.0		12.2	12.2
Effective Green, g (s)	16.8	16.8	8.0		12.2	12.2
Actuated g/C Ratio	0.34	0.34	0.16		0.24	0.24
Clearance Time (s)	4.5	4.5	4.0		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	564	569	256		427	375
v/s Ratio Prot	c0.19	0.19	c0.03			
v/s Ratio Perm					c0.09	0.05
v/c Ratio	0.58	0.57	0.18		0.38	0.19
Uniform Delay, d1	13.7	13.6	18.2		15.8	15.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	1.4	0.3		0.6	0.2
Delay (s)	15.1	15.0	18.5		16.3	15.2
Level of Service	B	B	B		B	B
Approach Delay (s)		15.1	18.5		15.6	
Approach LOS		B	B		B	

Intersection Summary				
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	NWL	NWR	NEU	NET	NER	SWL	SWT
Lane Configurations							
Volume (vph)	134	300	2	626	274	328	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1528	1770	1863	1566	1770	1863
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1528	1770	1863	1566	1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	316	2	659	288	345	227
RTOR Reduction (vph)	0	214	0	0	22	0	0
Lane Group Flow (vph)	141	102	2	659	266	345	227
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	8		5	2	8	1	6
Permitted Phases		8			2		
Actuated Green, G (s)	30.0	30.0	1.0	33.8	63.8	16.0	49.4
Effective Green, g (s)	30.0	30.0	1.0	33.8	63.8	16.0	49.4
Actuated g/C Ratio	0.32	0.32	0.01	0.36	0.68	0.17	0.53
Clearance Time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Vehicle Extension (s)	8.0	8.0	3.0	3.0	8.0	3.0	8.0
Lane Grp Cap (vph)	1105	491	18	675	1072	303	987
v/s Ratio Prot	0.04		0.00	c0.35	c0.08	c0.19	0.12
v/s Ratio Perm		0.07			0.09		
v/c Ratio	0.13	0.21	0.11	0.98	0.25	1.14	0.23
Uniform Delay, d1	22.3	23.0	45.7	29.3	5.6	38.6	11.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.0	2.7	28.5	0.1	94.6	0.5
Delay (s)	22.6	23.9	48.4	57.8	5.7	133.2	12.3
Level of Service	C	C	D	E	A	F	B
Approach Delay (s)	23.5			42.0			85.2
Approach LOS	C			D			F

Intersection Summary				
HCM 2000 Control Delay	50.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	13.4	
Intersection Capacity Utilization	87.3%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1	5	26	0	18	3	390	31	46	563	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1693		1760	3491		1770	3522	
Flt Permitted		0.77			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1392			1397		1760	3491		1770	3522	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1	5	27	0	19	3	411	33	48	593	16
RTOR Reduction (vph)	0	5	0	0	41	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	5	0	3	439	0	48	608	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		4.7			4.8		0.6	26.2		2.2	27.9	
Effective Green, g (s)		4.7			4.8		0.6	26.2		2.2	27.9	
Actuated g/C Ratio		0.10			0.10		0.01	0.54		0.05	0.58	
Clearance Time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Vehicle Extension (s)		2.0			2.0		2.0	4.6		2.0	4.8	
Lane Grp Cap (vph)		135			139		21	1897		80	2038	
v/s Ratio Prot							0.00	0.13		c0.03	c0.17	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.20			0.03		0.14	0.23		0.60	0.30	
Uniform Delay, d1		20.0			19.6		23.5	5.7		22.6	5.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.0		1.1	0.1		7.8	0.2	
Delay (s)		20.3			19.6		24.7	5.9		30.4	5.3	
Level of Service		C			B		C	A		C	A	
Approach Delay (s)		20.3			19.6			6.0			7.2	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	43.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	4	81	39	2	21	90	441	70	21	461	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	2983		1762	1582		1770	3457		1763	3457	
Flt Permitted	0.74	1.00		0.70	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1375	2983		1291	1582		1770	3457		1763	3457	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	4	85	41	2	22	95	464	74	22	485	71
RTOR Reduction (vph)	0	73	0	0	19	0	0	12	0	0	11	0
Lane Group Flow (vph)	41	16	0	41	5	0	95	526	0	22	545	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	9.3	9.3		7.8	7.8		4.6	25.4		0.6	21.3	
Effective Green, g (s)	9.3	9.3		7.8	7.8		4.6	25.4		0.6	21.3	
Actuated g/C Ratio	0.18	0.18		0.15	0.15		0.09	0.50		0.01	0.42	
Clearance Time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.1	
Lane Grp Cap (vph)	250	542		197	241		159	1718		20	1440	
v/s Ratio Prot		0.01			0.00		c0.05	c0.15		0.01	c0.16	
v/s Ratio Perm	0.03			c0.03								
v/c Ratio	0.16	0.03		0.21	0.02		0.60	0.31		1.10	0.38	
Uniform Delay, d1	17.6	17.2		18.9	18.4		22.4	7.6		25.2	10.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.2	0.0		4.0	0.1		234.8	0.2	
Delay (s)	17.7	17.2		19.1	18.4		26.3	7.7		260.0	10.5	
Level of Service	B	B		B	B		C	A		F	B	
Approach Delay (s)		17.4			18.9			10.5			20.0	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	51.1	Sum of lost time (s)	17.4	
Intersection Capacity Utilization	48.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	6	51	75	8	16	102	564	156	31	480	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.96	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1795	1546	1681	1639		1770	3539	1536	1770	3492	
Flt Permitted		0.96	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1795	1546	1681	1639		1770	3539	1536	1770	3492	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	6	54	79	8	17	107	594	164	33	505	38
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	24	54	53	36	0	107	594	164	33	537	0
Confl. Peds. (#/hr)	10		10	10			10		10	10		10
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		5.0	5.0	8.0	8.0		6.8	26.4	34.4	2.0	23.8	
Effective Green, g (s)		5.0	5.0	8.0	8.0		6.8	26.4	34.4	2.0	23.8	
Actuated g/C Ratio		0.08	0.08	0.13	0.13		0.11	0.42	0.55	0.03	0.38	
Clearance Time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Vehicle Extension (s)		2.0	2.0	3.0	3.0		2.0	4.1	3.0	2.0	3.5	
Lane Grp Cap (vph)		142	123	214	208		191	1487	841	56	1323	
v/s Ratio Prot		0.01		c0.03	0.02		c0.06	c0.17	0.02	0.02	0.15	
v/s Ratio Perm			c0.03						0.08			
v/c Ratio		0.17	0.44	0.25	0.17		0.56	0.40	0.20	0.59	0.41	
Uniform Delay, d1		27.0	27.6	24.7	24.5		26.6	12.7	7.2	30.0	14.3	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.9	0.6	0.4		2.2	0.3	0.1	9.8	0.2	
Delay (s)		27.2	28.5	25.3	24.9		28.8	12.9	7.3	39.8	14.6	
Level of Service		C	C	C	C		C	B	A	D	B	
Approach Delay (s)		28.1			25.1			13.8			16.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	21.4	
Intersection Capacity Utilization	42.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	176	47	102	258	325	95	617	54	282	454	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3409		1770	3197		1770	3489		3433	3474	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3409		1770	3197		1770	3489		3433	3474	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	185	49	107	272	342	100	649	57	297	478	56
RTOR Reduction (vph)	0	0	0	0	170	0	0	3	0	0	4	0
Lane Group Flow (vph)	46	234	0	107	444	0	100	703	0	297	530	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.6	18.5		18.4	29.0		12.8	75.5		17.8	80.0	
Effective Green, g (s)	7.6	18.5		18.4	29.0		12.8	75.5		17.8	80.0	
Actuated g/C Ratio	0.05	0.12		0.12	0.19		0.09	0.50		0.12	0.53	
Clearance Time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.1		2.0	4.5		2.0	3.9	
Lane Grp Cap (vph)	89	420		217	618		151	1756		407	1852	
v/s Ratio Prot	0.03	0.07		c0.06	c0.14		c0.06	c0.20		c0.09	0.15	
v/s Ratio Perm												
v/c Ratio	0.52	0.56		0.49	0.72		0.66	0.40		0.73	0.29	
Uniform Delay, d1	69.4	61.9		61.4	56.7		66.5	23.2		63.8	19.3	
Progression Factor	1.00	1.00		0.68	0.45		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.9		0.6	4.1		8.2	0.7		5.5	0.4	
Delay (s)	71.5	63.8		42.6	29.7		74.7	23.8		69.3	19.7	
Level of Service	E	E		D	C		E	C		E	B	
Approach Delay (s)		65.1			31.6			30.2			37.4	
Approach LOS		E			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.55				
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.6		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	99	99	711	125	201	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.9		4.5	5.2
Lane Util. Factor	0.97	0.91	0.95		1.00	0.95
Frpb, ped/bikes	0.98	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	0.96	0.85	0.98		1.00	1.00
Flt Protected	0.96	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3284	1381	3450		1770	3539
Flt Permitted	0.96	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3284	1381	3450		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	104	748	132	212	324
RTOR Reduction (vph)	34	59	15	0	0	0
Lane Group Flow (vph)	108	7	865	0	212	324
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	3		2		1	6
Permitted Phases		3				
Actuated Green, G (s)	6.0	6.0	28.3		12.4	44.9
Effective Green, g (s)	6.0	6.0	28.3		12.4	44.9
Actuated g/C Ratio	0.10	0.10	0.47		0.20	0.74
Clearance Time (s)	4.5	4.5	4.9		4.5	5.2
Vehicle Extension (s)	3.0	3.0	5.2		2.0	4.5
Lane Grp Cap (vph)	325	136	1611		362	2622
v/s Ratio Prot	c0.03		c0.25		c0.12	0.09
v/s Ratio Perm		0.00				
v/c Ratio	0.33	0.05	0.54		0.59	0.12
Uniform Delay, d1	25.4	24.7	11.5		21.8	2.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.1	0.7		1.6	0.0
Delay (s)	26.0	24.9	12.2		23.3	2.3
Level of Service	C	C	B		C	A
Approach Delay (s)	25.7		12.2			10.6
Approach LOS	C		B			B

Intersection Summary					
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.52				
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	13.9		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A		
Analysis Period (min)	15				
Description: 10/2013					
c Critical Lane Group					



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	115	350	358	154	40	616	843	192	47	389	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1798		3433	3427		1770	3482	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1798		3433	3427		1770	3482	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	121	368	377	162	42	648	887	202	49	409	39
RTOR Reduction (vph)	0	0	300	0	11	0	0	17	0	0	7	0
Lane Group Flow (vph)	82	121	68	377	193	0	648	1072	0	49	441	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.5	14.9	15.0	9.9	18.4		15.0	34.4		2.8	21.9	
Effective Green, g (s)	6.5	14.9	15.0	9.9	18.4		15.0	34.4		2.8	21.9	
Actuated g/C Ratio	0.08	0.18	0.19	0.12	0.23		0.19	0.42		0.03	0.27	
Clearance Time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	2.1		2.0	5.2		2.0	4.5	
Lane Grp Cap (vph)	142	342	293	419	408		635	1455		61	941	
v/s Ratio Prot	0.05	0.06	0.04	c0.11	c0.11		c0.19	c0.31		0.03	0.13	
v/s Ratio Perm												
v/c Ratio	0.58	0.35	0.23	0.90	0.47		1.02	0.74		0.80	0.47	
Uniform Delay, d1	35.9	28.8	28.1	35.1	27.1		33.0	19.5		38.8	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.6	0.1	21.1	0.4		41.0	2.5		49.5	0.6	
Delay (s)	39.4	29.5	28.2	56.1	27.5		74.0	22.0		88.3	25.3	
Level of Service	D	C	C	E	C		E	C		F	C	
Approach Delay (s)		30.1			46.1			41.4			31.5	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	19.3		
Intersection Capacity Utilization	70.9%	ICU Level of Service	C		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	594	1	457	376	1313	0	0	827	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.91	
Frpb, ped/bikes				1.00	1.00	0.97	1.00	1.00			0.99	
Flpb, ped/bikes				0.98	0.98	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.96	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1646	1651	1532	3433	3539			4848	
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1646	1651	1532	3433	3539			4848	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	625	1	481	396	1382	0	0	871	303
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	48	0
Lane Group Flow (vph)	0	0	0	312	314	439	396	1382	0	0	1126	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)				38.4	38.4	38.4	16.6	62.5			40.9	
Effective Green, g (s)				38.4	38.4	38.4	16.6	62.5			40.9	
Actuated g/C Ratio				0.35	0.35	0.35	0.15	0.57			0.37	
Clearance Time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				575	576	535	518	2012			1804	
v/s Ratio Prot							0.12	c0.39			0.23	
v/s Ratio Perm				0.19	0.19	c0.29						
v/c Ratio				0.54	0.55	0.82	0.76	0.69			0.62	
Uniform Delay, d1				28.7	28.7	32.6	44.8	16.8			28.2	
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2				1.0	1.1	9.8	6.6	1.9			1.6	
Delay (s)				29.7	29.8	42.4	51.4	18.7			29.9	
Level of Service				C	C	D	D	B			C	
Approach Delay (s)		0.0			35.3			26.0			29.9	
Approach LOS		A			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.78				
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	73.1%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

Existing Conditions PM Pk Hr
17: Black Mountain Rd & SR-56 EB Off-Ramp/SR-56 EB On-Ramp 9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	0	461	0	0	0	0	1384	367	356	1065	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.97					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1645	1645	2694					3539	1531	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1645	1645	2694					3539	1531	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	321	0	485	0	0	0	0	1457	386	375	1121	0
RTOR Reduction (vph)	0	0	204	0	0	0	0	0	78	0	0	0
Lane Group Flow (vph)	160	161	281	0	0	0	0	1457	308	375	1121	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	18.4	18.4	18.4					65.5	65.5	17.1	87.6	
Effective Green, g (s)	18.4	18.4	18.4					65.5	65.5	17.1	87.6	
Actuated g/C Ratio	0.16	0.16	0.16					0.57	0.57	0.15	0.76	
Clearance Time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	263	263	431					2015	872	510	3873	
v/s Ratio Prot								c0.41		c0.11	0.22	
v/s Ratio Perm	0.10	0.10	c0.10						0.20			
v/c Ratio	0.61	0.61	0.65					0.72	0.35	0.74	0.29	
Uniform Delay, d1	44.9	45.0	45.3					18.1	13.3	46.8	4.2	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	4.2	3.5					2.3	1.1	5.5	0.2	
Delay (s)	48.9	49.2	48.8					20.4	14.5	52.2	4.4	
Level of Service	D	D	D					C	B	D	A	
Approach Delay (s)		48.9			0.0			19.2			16.4	
Approach LOS		D			A			B			B	

Intersection Summary				
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Existing Conditions PM Pk Hr
18: Black Mountain Rd & Park Village Rd/Adolphia St 9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	9	123	59	22	44	446	1217	136	85	987	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95		0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	0.99	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	1668	1529	1663	1565		3433	3466		1770	3539	1529
Flt Permitted	0.71	0.68	1.00	0.64	0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1231	1187	1529	1114	1537		3433	3466		1770	3539	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	355	9	129	62	23	46	469	1281	143	89	1039	545
RTOR Reduction (vph)	0	0	112	0	42	0	0	6	0	0	0	218
Lane Group Flow (vph)	181	183	17	56	33	0	469	1418	0	89	1039	327
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	23.5	23.5	15.5	11.1	11.1		21.1	70.4		11.1	60.4	60.4
Effective Green, g (s)	23.5	23.5	15.5	11.1	11.1		21.1	70.4		11.1	60.4	60.4
Actuated g/C Ratio	0.20	0.20	0.13	0.09	0.09		0.18	0.59		0.09	0.50	0.50
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	285	282	197	121	143		603	2033		163	1781	769
v/s Ratio Prot	0.07	c0.07		0.02	0.01		0.14	c0.41		0.05	c0.29	
v/s Ratio Perm	0.06	c0.06	0.01	0.03	0.01							0.21
v/c Ratio	0.64	0.65	0.08	0.46	0.23		0.78	0.70		0.55	0.58	0.43
Uniform Delay, d1	43.6	44.4	46.0	51.1	50.5		47.2	17.3		52.0	21.0	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.92	0.56		1.00	1.00	1.00
Incremental Delay, d2	4.6	5.1	0.2	2.8	0.8		5.6	1.8		3.7	1.4	1.7
Delay (s)	48.1	49.5	46.2	53.9	51.3		49.2	11.6		55.7	22.4	20.6
Level of Service	D	D	D	D	D		D	B		E	C	C
Approach Delay (s)		48.1			52.4			20.9			23.5	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	71.5%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Existing Conditions PM Pk Hr
19: Black Mountain Rd & Canyonside Park Dwy 9/9/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	89	45	56	1539	999	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1529	1770	3539	3539	1493
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1529	1770	3539	3539	1493
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	94	47	59	1620	1052	166
RTOR Reduction (vph)	0	42	0	0	0	42
Lane Group Flow (vph)	94	5	59	1620	1052	124
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	11.7	11.7	10.4	99.3	83.9	83.9
Effective Green, g (s)	11.7	11.7	10.4	99.3	83.9	83.9
Actuated g/C Ratio	0.10	0.10	0.09	0.83	0.70	0.70
Clearance Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	149	153	2928	2474	1043
v/s Ratio Prot	c0.05		0.03	c0.46	0.30	
v/s Ratio Perm		0.00				0.08
v/c Ratio	0.55	0.03	0.39	0.55	0.43	0.12
Uniform Delay, d1	51.6	49.0	51.8	3.3	7.7	5.9
Progression Factor	1.00	1.00	0.82	0.29	0.16	0.02
Incremental Delay, d2	3.5	0.1	1.4	0.6	0.5	0.2
Delay (s)	55.1	49.1	43.8	1.6	1.7	0.3
Level of Service	E	D	D	A	A	A
Approach Delay (s)	53.1			3.1	1.5	
Approach LOS	D			A	A	

Intersection Summary				
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	57.4%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions PM Pk Hr
20: Black Mountain Rd & Mercy Rd 9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	0	358	1	448	19	1149	432	304	674	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Lane Util. Factor		1.00		0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00		1.00	0.97	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		0.99		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1803		3392	1454	1453	1770	3539	1529	3433	3539	
Flt Permitted		0.94		0.65	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1732		2331	1454	1453	1770	3539	1529	3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	377	1	472	20	1209	455	320	709	0
RTOR Reduction (vph)	0	0	0	0	200	200	0	0	199	0	0	0
Lane Group Flow (vph)	0	2	0	377	37	36	20	1209	256	320	709	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		3.2		18.2	18.2	18.2	2.7	66.0	66.0	20.3	83.6	
Effective Green, g (s)		3.2		18.2	18.2	18.2	2.7	66.0	66.0	20.3	83.6	
Actuated g/C Ratio		0.03		0.15	0.15	0.15	0.02	0.55	0.55	0.17	0.70	
Clearance Time (s)		4.0		5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		46		450	220	220	39	1946	840	580	2465	
v/s Ratio Prot				c0.08	0.03		0.01	c0.34		c0.09	0.20	
v/s Ratio Perm		0.00		c0.05		0.02			0.17			
v/c Ratio		0.04		0.84	0.17	0.16	0.51	0.62	0.30	0.55	0.29	
Uniform Delay, d1		56.9		49.0	44.3	44.3	58.0	18.5	14.6	45.7	6.9	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.10	
Incremental Delay, d2		0.4		12.8	0.4	0.3	10.9	1.5	0.9	1.1	0.3	
Delay (s)		57.3		61.8	44.7	44.6	68.9	20.0	15.5	38.6	1.0	
Level of Service		E		E	D	D	E	B	B	D	A	
Approach Delay (s)		57.3			52.3			19.3			12.7	
Approach LOS		E			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	70.2%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Existing Conditions
21: Black Mountain Rd & Westview Pkwy

PM Pk Hr
9/9/2015

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	24	261	2	1384	23	249	996
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Lane Util. Factor	1.00	0.88	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	0.95	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	2735	1684	5071		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	2735	1684	5071		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	275	2	1457	24	262	1048
RTOR Reduction (vph)	0	233	0	2	0	0	0
Lane Group Flow (vph)	25	42	2	1479	0	262	1048
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	11.2	11.2	0.8	31.7		14.2	46.2
Effective Green, g (s)	11.2	11.2	0.8	31.7		14.2	46.2
Actuated g/C Ratio	0.15	0.15	0.01	0.43		0.19	0.63
Clearance Time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Vehicle Extension (s)	4.2	4.2	2.0	3.9		2.0	4.8
Lane Grp Cap (vph)	271	420	18	2205		344	3222
v/s Ratio Prot	0.01		0.00	c0.29		c0.15	0.21
v/s Ratio Perm		c0.02					
v/c Ratio	0.09	0.10	0.11	0.67		0.76	0.33
Uniform Delay, d1	26.5	26.5	35.7	16.4		27.7	6.2
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.2	1.0	0.9		8.7	0.1
Delay (s)	26.7	26.7	36.7	17.3		36.4	6.3
Level of Service	C	C	D	B		D	A
Approach Delay (s)	26.7			17.3			12.3
Approach LOS	C			B			B

Intersection Summary				
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	15.8	
Intersection Capacity Utilization	64.2%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
22: Carmel Mountain Rd & Sundevil Way

PM Pk Hr
9/9/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	410	10	22	634	94	13	1	17	117	4	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	0.85	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.87	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3526		1770	3418		1535	1598		1770	1365	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3526		1770	3418		1145	1598		1388	1365	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	161	432	11	23	667	99	14	1	18	123	4	66
RTOR Reduction (vph)	0	1	0	0	5	0	0	0	0	0	55	0
Lane Group Flow (vph)	161	442	0	23	761	0	14	19	0	123	15	0
Confl. Peds. (#/hr)						36	104					104
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	19.8	105.9		4.5	91.2		24.3	24.3		24.2	24.2	
Effective Green, g (s)	19.8	105.9		4.5	91.2		24.3	24.3		24.2	24.2	
Actuated g/C Ratio	0.13	0.71		0.03	0.61		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	233	2489		53	2078		185	258		223	220	
v/s Ratio Prot	c0.09	0.13		0.01	c0.22			0.01			0.01	
v/s Ratio Perm							0.01			c0.09		
v/c Ratio	0.69	0.18		0.43	0.37		0.08	0.07		0.55	0.07	
Uniform Delay, d1	62.2	7.4		71.5	14.8		53.3	53.3		57.9	53.3	
Progression Factor	0.39	0.20		0.92	0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	0.1		2.0	0.5		0.1	0.0		1.7	0.0	
Delay (s)	30.7	1.6		67.8	9.3		53.4	53.3		59.6	53.4	
Level of Service	C	A		E	A		D	D		E	D	
Approach Delay (s)		9.4			11.0			53.4			57.3	
Approach LOS		A			B			D			E	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	69.6%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
23: Carmel Mountain Rd & Paseo Montalban

PM Pk Hr
9/9/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	73	321	59	71	25	348	713	74	40	521	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90	0.85	1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1754	1573	1482	1766	1778		3433	3473		1770	3512	
Flt Permitted	0.68	1.00	1.00	0.28	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1250	1573	1482	519	1778		3433	3473		1770	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	77	338	62	75	26	366	751	78	42	548	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	1	0
Lane Group Flow (vph)	35	212	203	62	101	0	366	825	0	42	572	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8	1	7	4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	30.7	24.9	46.0	34.5	26.8		21.1	91.4		7.1	77.4	
Effective Green, g (s)	30.7	24.9	46.0	34.5	26.8		21.1	91.4		7.1	77.4	
Actuated g/C Ratio	0.20	0.17	0.31	0.23	0.18		0.14	0.61		0.05	0.52	
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)	275	261	454	183	317		482	2116		83	1812	
v/s Ratio Prot	0.00	c0.13	0.06	c0.02	0.06		c0.11	c0.24		c0.02	0.16	
v/s Ratio Perm	0.02		0.07	0.06								
v/c Ratio	0.13	0.81	0.45	0.34	0.32		0.76	0.39		0.51	0.32	
Uniform Delay, d1	48.4	60.3	41.8	46.8	53.6		62.0	15.0		69.7	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.11	0.39	
Incremental Delay, d2	0.1	16.4	0.3	0.4	0.2		6.0	0.5		1.7	0.5	
Delay (s)	48.5	76.7	42.0	47.2	53.9		68.0	15.6		78.9	8.6	
Level of Service	D	E	D	D	D		E	B		E	A	
Approach Delay (s)		58.9			51.3			31.6			13.4	
Approach LOS		E			D			C			B	

Intersection Summary				
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.9	
Intersection Capacity Utilization	65.4%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
24: SR-56 WB On/Off Ramps/Carmel Mountain Rd & Rancho Penasquitos Blvd

PM Pk Hr
9/9/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	247	494	24	307	597	317	202	169	102	298	223	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1511	1770	3539	1540	3433	3306		3433	1863	1540
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1511	1770	3539	1540	3433	3306		3433	1863	1540
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	260	520	25	323	628	334	213	178	107	314	235	246
RTOR Reduction (vph)	0	0	20	0	0	258	0	83	0	0	0	204
Lane Group Flow (vph)	260	520	5	323	628	76	213	202	0	314	235	42
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.0	17.4	17.4	17.6	19.0	19.0	16.5	18.8		11.9	14.2	14.2
Effective Green, g (s)	16.0	17.4	17.4	17.6	19.0	19.0	16.5	18.8		11.9	14.2	14.2
Actuated g/C Ratio	0.19	0.21	0.21	0.21	0.23	0.23	0.20	0.23		0.14	0.17	0.17
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	660	1063	316	374	808	351	680	747		491	317	262
v/s Ratio Prot	0.08	c0.10		c0.18	0.18		c0.06	0.06		c0.09	c0.13	
v/s Ratio Perm			0.00			0.05						0.03
v/c Ratio	0.39	0.49	0.02	0.86	0.78	0.22	0.31	0.27		0.64	0.74	0.16
Uniform Delay, d1	29.4	29.0	26.1	31.6	30.1	26.1	28.5	26.5		33.6	32.8	29.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	1.6	0.1	18.2	7.2	1.4	1.2	0.2		2.7	9.0	0.3
Delay (s)	31.1	30.6	26.2	49.9	37.4	27.5	29.7	26.7		36.4	41.8	29.7
Level of Service	C	C	C	D	D	C	C	C		D	D	C
Approach Delay (s)		30.6			37.9			28.0			35.9	
Approach LOS		C			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	83.2	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Existing Conditions
25: SR-56 EB On/Off Ramps/Azuaga St & Rancho Penasquitos Blvd

PM Pk Hr
9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	653	147	24	1227	58	400	52	630	38	23	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1493	1770	3506		1770	1554		1770	1628	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1493	1770	3506		1770	1554		1770	1628	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	87	687	155	25	1292	61	421	55	663	40	24	55
RTOR Reduction (vph)	0	0	89	0	3	0	0	135	0	0	52	0
Lane Group Flow (vph)	87	687	66	25	1350	0	421	583	0	40	27	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	6.9	51.4	51.4	3.5	48.0		41.5	45.1		3.9	7.5	
Effective Green, g (s)	6.9	51.4	51.4	3.5	48.0		41.5	45.1		3.9	7.5	
Actuated g/C Ratio	0.06	0.43	0.43	0.03	0.40		0.34	0.37		0.03	0.06	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	1504	634	51	1391		607	579		57	100	
v/s Ratio Prot	c0.05	0.19		0.01	c0.39		0.24	c0.38		c0.02	0.02	
v/s Ratio Perm			0.04									
v/c Ratio	0.86	0.46	0.10	0.49	0.97		0.69	1.01		0.70	0.27	
Uniform Delay, d1	56.5	24.8	20.9	57.8	35.8		34.2	37.9		57.9	54.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	48.4	1.0	0.3	7.2	17.5		3.4	39.2		32.3	1.5	
Delay (s)	104.9	25.8	21.2	65.1	53.2		37.7	77.1		90.3	55.6	
Level of Service	F	C	C	E	D		D	E		F	E	
Approach Delay (s)		32.4			53.5			62.5			67.2	
Approach LOS		C			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.97			
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	93.9%	ICU Level of Service	F	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
26: Calle De Las Rosas & Rancho Penasquitos Blvd

PM Pk Hr
9/9/2015



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1207	148	118	1207	69	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3462		1770	3539	1770	1535
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3462		1770	3539	1770	1535
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1271	156	124	1271	73	100
RTOR Reduction (vph)	7	0	0	0	0	90
Lane Group Flow (vph)	1420	0	124	1271	73	10
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases						4
Actuated Green, G (s)	65.2		11.7	81.4	10.1	10.1
Effective Green, g (s)	65.2		11.7	81.4	10.1	10.1
Actuated g/C Ratio	0.65		0.12	0.81	0.10	0.10
Clearance Time (s)	4.5		4.5	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2257		207	2880	178	155
v/s Ratio Prot	c0.41		c0.07	0.36	c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.63		0.60	0.44	0.41	0.07
Uniform Delay, d1	10.3		41.9	2.7	42.2	40.7
Progression Factor	1.00		0.70	0.45	1.00	1.00
Incremental Delay, d2	1.3		4.0	0.4	1.5	0.2
Delay (s)	11.6		33.2	1.6	43.7	40.9
Level of Service	B		C	A	D	D
Approach Delay (s)	11.6			4.4	42.1	
Approach LOS	B			A	D	

Intersection Summary				
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	62.3%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
27: Rancho Penasquitos Blvd & Via Del Sud

PM Pk Hr
9/9/2015



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	49	27	7	1275	64	48	1271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	0.99		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1535	1770	3506		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	1535	1770	3506		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	28	7	1342	67	51	1338
RTOR Reduction (vph)	0	26	0	3	0	0	0
Lane Group Flow (vph)	52	2	7	1406	0	51	1338
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	8.2	8.2	2.0	68.9		9.9	76.8
Effective Green, g (s)	8.2	8.2	2.0	68.9		9.9	76.8
Actuated g/C Ratio	0.08	0.08	0.02	0.69		0.10	0.77
Clearance Time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	145	125	35	2415		175	2717
v/s Ratio Prot	c0.03		0.00	c0.40		c0.03	c0.38
v/s Ratio Perm		0.00					
v/c Ratio	0.36	0.02	0.20	0.58		0.29	0.49
Uniform Delay, d1	43.4	42.2	48.2	8.1		41.8	4.3
Progression Factor	1.00	1.00	0.90	0.28		0.77	0.28
Incremental Delay, d2	1.5	0.1	2.6	0.9		0.7	0.5
Delay (s)	44.9	42.3	45.7	3.2		32.7	1.7
Level of Service	D	D	D	A		C	A
Approach Delay (s)	44.0			3.4			2.9
Approach LOS	D			A			A

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Existing Conditions
28: Rancho Penasquitos Blvd & Paseo Montril

PM Pk Hr
9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	9	100	53	8	14	181	1077	31	65	1112	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1737	1863	1535	1737	1647		1770	3519		1770	3500	
Flt Permitted	0.74	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1358	1863	1535	1374	1647		1770	3519		1770	3500	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	9	105	56	8	15	191	1134	33	68	1171	69
RTOR Reduction (vph)	0	0	92	0	13	0	0	2	0	0	4	0
Lane Group Flow (vph)	95	9	13	56	10	0	191	1165	0	68	1236	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	12.1	12.1	12.1	12.1	12.1		15.6	62.0		12.9	59.3	
Effective Green, g (s)	12.1	12.1	12.1	12.1	12.1		15.6	62.0		12.9	59.3	
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.16	0.62		0.13	0.59	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	164	225	185	166	199		276	2181		228	2075	
v/s Ratio Prot		0.00			0.01		c0.11	0.33		0.04	c0.35	
v/s Ratio Perm	c0.07		0.01	0.04								
v/c Ratio	0.58	0.04	0.07	0.34	0.05		0.69	0.53		0.30	0.60	
Uniform Delay, d1	41.5	38.8	39.0	40.3	38.9		39.9	10.8		39.4	12.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.68	0.32	
Incremental Delay, d2	4.9	0.1	0.2	1.2	0.1		7.3	0.9		0.7	1.2	
Delay (s)	46.4	38.9	39.1	41.5	39.0		47.2	11.7		27.3	5.2	
Level of Service	D	D	D	D	D		D	B		C	A	
Approach Delay (s)		42.4			40.8			16.7			6.4	
Approach LOS		D			D			B			A	

Intersection Summary				
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	65.9%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

Existing Conditions
29: Rancho Penasquitos Blvd & I-15 SB Off-Ramp

PM Pk Hr
9/9/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	320	152	1414	849	0	700
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0		4.5
Lane Util. Factor	0.97	0.91	0.91	0.91		0.95
Frpb, ped/bikes	1.00	0.97	1.00	0.99		1.00
Flpb, ped/bikes	0.97	1.00	1.00	1.00		1.00
Frt	0.99	0.85	0.98	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3330	1401	3326	1419		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3330	1401	3326	1419		3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	337	160	1488	894	0	737
RTOR Reduction (vph)	4	53	9	0	0	0
Lane Group Flow (vph)	349	91	1658	715	0	737
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Perm	Perm	NA	Free		NA
Protected Phases			2			6
Permitted Phases	8	8		Free		
Actuated Green, G (s)	14.1	14.1	63.7	86.3		63.7
Effective Green, g (s)	14.1	14.1	63.7	86.3		63.7
Actuated g/C Ratio	0.16	0.16	0.74	1.00		0.74
Clearance Time (s)	4.0	4.0	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	544	228	2454	1419		2612
v/s Ratio Prot			c0.50			0.21
v/s Ratio Perm	0.10	0.07		c0.50		
v/c Ratio	0.64	0.40	0.68	0.50		0.28
Uniform Delay, d1	33.7	32.3	5.9	0.0		3.7
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.6	1.2	1.5	1.3		0.3
Delay (s)	36.3	33.5	7.4	1.3		4.0
Level of Service	D	C	A	A		A
Approach Delay (s)	35.5		5.6			4.0
Approach LOS	D		A			A

Intersection Summary				
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	66.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 10/2014
c Critical Lane Group

Existing Conditions
30: Poway Rd/Rancho Penasquitos Blvd & I-15 NB Ramps & I-15 NB On-Ramp

PM Pk Hr
9/9/2015



Movement	EBL2	EBL	EBR	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Volume (vph)	899	0	1283	0	0	0	886	130	0	1380	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.0				4.5	4.5		5.5	4.0
Lane Util. Factor	0.97		1.00				0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.99				1.00	0.95		1.00	0.98
Flpb, ped/bikes	0.97		1.00				1.00	1.00		1.00	1.00
Frt	1.00		0.85				1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (prot)	3341		1560				3539	1510		3539	1544
Flt Permitted	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (perm)	3341		1560				3539	1510		3539	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	946	0	1351	0	0	0	933	137	0	1453	453
RTOR Reduction (vph)	0	0	0	0	0	0	0	90	0	0	0
Lane Group Flow (vph)	946	0	1351	0	0	0	933	47	0	1453	453
Confl. Peds. (#/hr)	10	10	10	10	10	10		10	10		10
Turn Type	Perm		Free				NA	custom		NA	Free
Protected Phases							6				
Permitted Phases	4		Free					4		2	Free
Actuated Green, G (s)	29.1		85.7				47.6	29.1		46.6	85.7
Effective Green, g (s)	29.1		85.7				47.6	29.1		46.6	85.7
Actuated g/C Ratio	0.34		1.00				0.56	0.34		0.54	1.00
Clearance Time (s)	4.5						4.5	4.5		5.5	
Vehicle Extension (s)	3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)	1134		1560				1965	512		1924	1544
v/s Ratio Prot							0.26				
v/s Ratio Perm	0.28		c0.87					0.03		0.41	0.29
v/c Ratio	0.83		0.87				0.47	0.09		0.76	0.29
Uniform Delay, d1	26.1		0.0				11.5	19.3		15.1	0.0
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00
Incremental Delay, d2	5.4		6.7				0.2	0.1		2.8	0.5
Delay (s)	31.5		6.7				11.7	19.4		17.9	0.5
Level of Service	C		A				B	B		B	A
Approach Delay (s)		16.9		0.0			12.7			13.8	
Approach LOS		B		A			B			B	

Intersection Summary				
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	81.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Existing Conditions
31: Carmel Mountain Rd & (West) Sundance Ave

PM Pk Hr
9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	11	0	15	20	8	0	26	17	11	28	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00			0.98		1.00	0.99	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.98			0.94		1.00	0.95	
Flt Protected		0.98			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1825			1770			3272		1770	3311	
Flt Permitted		0.89			0.87			1.00		0.95	1.00	
Satd. Flow (perm)		1645			1576			3272		1770	3311	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	12	0	16	21	8	0	27	18	12	29	15
RTOR Reduction (vph)	0	0	0	0	7	0	0	5	0	0	3	0
Lane Group Flow (vph)	0	18	0	0	38	0	0	40	0	12	41	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		5.9			5.9			50.0		1.4	55.9	
Effective Green, g (s)		5.9			5.9			50.0		1.4	55.9	
Actuated g/C Ratio		0.08			0.08			0.71		0.02	0.80	
Clearance Time (s)		4.0			4.0			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		138			132			2327		35	2632	
v/s Ratio Prot								c0.01		c0.01	0.01	
v/s Ratio Perm		0.01			c0.02							
v/c Ratio		0.13			0.29			0.02		0.34	0.02	
Uniform Delay, d1		29.8			30.2			3.0		34.0	1.5	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.2			0.0		5.8	0.0	
Delay (s)		30.3			31.4			3.0		39.8	1.5	
Level of Service		C			C			A		D	A	
Approach Delay (s)		30.3			31.4			3.0			9.7	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.05			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	27.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group


```
2014 PM                      Tue Sep 9, 2014 08:01:15                    Page 2-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                        Level Of Service Computation Report
                2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #32 Carmel Mountain Road/Sedorus Street
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):          0.056
Loss Time (sec):     0                Average Delay (sec/veh):        7.4
Optimal Cycle:       0                Level Of Service:                 A
******************************************************************************
Street Name:       Carmel Mountain Road              Sedorus Street
Approach:       North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  1  1  0     1  0  1  1  0     0  0 1! 0  0     0  0 1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   35    1    29   54   34    25    2    4     1    1   11
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   0   35    1    29   54   34    25    2    4     1    1   11
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    0   35    1    29   54   34    25    2    4     1    1   11
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   0   35    1    29   54   34    25    2    4     1    1   11
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:   0   35    1    29   54   34    25    2    4     1    1   11
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 1.94 0.06  1.00 1.23 0.77  0.81 0.06 0.13  0.08 0.08 0.84
Final Sat.:  689 1486   43   698  971  676   649   52  104    71   71  778
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00 0.02 0.02  0.04 0.06 0.05  0.04 0.04 0.04  0.01 0.01 0.01
Crit Moves:      ****            ****            ****            ****
Delay/Veh:   0.0  7.5  7.4   8.0  7.5  7.0   7.5  7.5  7.5   6.8  6.8  6.8
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  0.0  7.5  7.4   8.0  7.5  7.0   7.5  7.5  7.5   6.8  6.8  6.8
LOS by Move:   *    A    A     A    A    A     A    A    A     A    A    A
ApproachDel:       7.5             7.5             7.5             6.8
Delay Adj:         1.00            1.00            1.00            1.00
ApprAdjDel:        7.5             7.5             7.5             6.8
LOS by Appr:         A               A               A               A
AllWayAvgQ:  0.0  0.0   0.0  0.0  0.1   0.1  0.0  0.0   0.0  0.0  0.0   0.0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	145	5	6	0	1	11	6	74	0	10	100	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	0.98	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		1.00			0.88		1.00	1.00		1.00	0.91	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1751			1595		1770	3539		1770	3125	
Flt Permitted		0.73			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1339			1595		1770	3539		1770	3125	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	153	5	6	0	1	12	6	78	0	11	105	180
RTOR Reduction (vph)	0	2	0	0	10	0	0	0	0	0	76	0
Lane Group Flow (vph)	0	162	0	0	3	0	6	78	0	11	209	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA			NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		12.2			12.2		1.1	35.8		1.2	35.9	
Effective Green, g (s)		12.2			12.2		1.1	35.8		1.2	35.9	
Actuated g/C Ratio		0.20			0.20		0.02	0.58		0.02	0.58	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		262			312		31	2036		34	1803	
v/s Ratio Prot					0.00		0.00	0.02		c0.01	c0.07	
v/s Ratio Perm		c0.12										
v/c Ratio		0.62			0.01		0.19	0.04		0.32	0.12	
Uniform Delay, d1		22.9			20.1		30.1	5.7		30.1	6.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.3			0.0		3.0	0.0		5.5	0.1	
Delay (s)		27.1			20.2		33.2	5.8		35.6	6.1	
Level of Service		C			C		C	A		D	A	
Approach Delay (s)		27.1			20.2			7.7			7.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.24			
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	204	0	58	272	216	2	7	25	163	14	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.93			0.90		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3250			1647		1757	1773	
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.73	1.00	
Satd. Flow (perm)	1770	3539		1770	3250			1643		1358	1773	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	215	0	61	286	227	2	7	26	172	15	6
RTOR Reduction (vph)	0	0	0	0	181	0	0	11	0	0	2	0
Lane Group Flow (vph)	2	215	0	61	332	0	0	24	0	172	19	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.0	9.4		6.8	14.9			43.6		43.6	43.6	
Effective Green, g (s)	1.0	9.4		6.8	14.9			43.6		43.6	43.6	
Actuated g/C Ratio	0.01	0.13		0.09	0.20			0.59		0.59	0.59	
Clearance Time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	5.4		2.0	4.7			2.0		2.0	2.0	
Lane Grp Cap (vph)	23	449		162	654			968		800	1044	
v/s Ratio Prot	0.00	0.06		c0.03	c0.10						0.01	
v/s Ratio Perm								0.01		c0.13		
v/c Ratio	0.09	0.48		0.38	0.51			0.03		0.21	0.02	
Uniform Delay, d1	36.0	30.0		31.6	26.3			6.3		7.2	6.3	
Progression Factor	1.00	1.00		0.79	0.93			1.00		1.00	1.00	
Incremental Delay, d2	0.6	3.6		0.5	2.7			0.0		0.6	0.0	
Delay (s)	36.6	33.7		25.6	27.1			6.4		7.8	6.3	
Level of Service	D	C		C	C			A		A	A	
Approach Delay (s)		33.7			27.0			6.4			7.6	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	57.9%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	145	246	22	219	38	305	49	20	14	33	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.91		1.00	0.98		1.00	0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3135		1770	3440		1758	1772			1752	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.96	
Satd. Flow (perm)	1770	3135		1770	3440		1313	1772			1697	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	153	259	23	231	40	321	52	21	15	35	23
RTOR Reduction (vph)	0	200	0	0	22	0	0	9	0	0	10	0
Lane Group Flow (vph)	1	212	0	23	249	0	321	64	0	0	63	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.1	16.8		2.0	16.0		40.7	40.7			40.7	
Effective Green, g (s)	2.1	16.8		2.0	16.0		40.7	40.7			40.7	
Actuated g/C Ratio	0.03	0.23		0.03	0.22		0.55	0.55			0.55	
Clearance Time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.4		2.0	3.4		2.0	2.0			2.0	
Lane Grp Cap (vph)	50	711		47	743		722	974			933	
v/s Ratio Prot	0.00	c0.07		0.01	c0.07			0.04				
v/s Ratio Perm							c0.24				0.04	
v/c Ratio	0.02	0.30		0.49	0.34		0.44	0.07			0.07	
Uniform Delay, d1	34.9	23.7		35.5	24.5		9.9	7.8			7.8	
Progression Factor	0.77	0.65		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.1		2.9	1.2		2.0	0.1			0.1	
Delay (s)	26.8	16.4		38.4	25.7		11.9	7.9			7.9	
Level of Service	C	B		D	C		B	A			A	
Approach Delay (s)		16.4			26.7			11.2			7.9	
Approach LOS		B			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	228	4	61	356	4	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	240	4	64	375	4	42
Pedestrians	10			10	10	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1242			1089		
pX, platoon unblocked						
vC, conflicting volume			254		578	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			254		578	142
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		99	95
cM capacity (veh/h)			1297		417	865

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	160	84	64	187	187	46
Volume Left	0	0	64	0	0	4
Volume Right	0	4	0	0	0	42
cSH	1700	1700	1297	1700	1700	788
Volume to Capacity	0.09	0.05	0.05	0.11	0.11	0.06
Queue Length 95th (ft)	0	0	4	0	0	5
Control Delay (s)	0.0	0.0	7.9	0.0	0.0	9.9
Lane LOS			A			A
Approach Delay (s)	0.0		1.2			9.9
Approach LOS						A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	28.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				

```
2014 PM                    Tue Sep 9, 2014 08:01:15                    Page 3-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
                2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #37 Sundance Avenue/Twin Trails Drive
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.731
Loss Time (sec):       0              Average Delay (sec/veh):        14.9
Optimal Cycle:         0              Level Of Service:                  B
******************************************************************************
Street Name:          Sundance Avenue                Twin Trails Drive
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0      0    0    0      0    0    0      0    0    0
Lanes:        0  0  1! 0  0      0  0  1! 0  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15    6   11    54   13    5     4  273    2   229  515   95
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   15    6   11    54   13    5     4  273    2   229  515   95
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    15    6   11    54   13    5     4  273    2   229  515   95
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   15    6   11    54   13    5     4  273    2   229  515   95
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:   15    6   11    54   13    5     4  273    2   229  515   95
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.47 0.19 0.34  0.75 0.18 0.07  1.00 0.99 0.01  1.00 1.00 1.00
Final Sat.:   256  102  187   406   98   38   566  619    5   639  705  810
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.06 0.06  0.13 0.13 0.13  0.01 0.44 0.44  0.36 0.73 0.12
Crit Moves:       ****       ****             ****             ****
Delay/Veh:    9.4  9.4  9.4  10.1 10.1 10.1   8.9 12.6 12.6  11.3 20.1  7.7
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   9.4  9.4  9.4  10.1 10.1 10.1   8.9 12.6 12.6  11.3 20.1  7.7
LOS by Move:    A    A    A     B    B    B     A    B    B     B    C    A
ApproachDel:       9.4             10.1             12.6             16.3
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.4             10.1             12.6             16.3
LOS by Appr:         A                B                B                C
AllWayAvgQ:    0.1  0.1  0.1   0.1  0.1  0.1   0.1  0.0  0.7   0.7  0.5  2.4   0.1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	98	174	31	33	155	32	165	73	84	16	27	321
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1520	1770	1802		1756	1677			1578	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.34	1.00			0.98	
Satd. Flow (perm)	1770	1863	1520	1770	1802		620	1677			1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	103	183	33	35	163	34	174	77	88	17	28	338
RTOR Reduction (vph)	0	0	17	0	6	0	0	60	0	0	241	0
Lane Group Flow (vph)	103	183	16	35	191	0	174	105	0	0	142	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm		NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Actuated Green, G (s)	7.3	32.0	32.0	2.3	27.0		18.6	18.6			18.6	
Effective Green, g (s)	7.3	32.0	32.0	2.3	27.0		18.6	18.6			18.6	
Actuated g/C Ratio	0.11	0.49	0.49	0.04	0.42		0.29	0.29			0.29	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	199	918	749	62	749		177	480			446	
v/s Ratio Prot	c0.06	0.10		0.02	c0.11			0.06				
v/s Ratio Perm			0.01				c0.28				0.09	
v/c Ratio	0.52	0.20	0.02	0.56	0.25		0.98	0.22			0.32	
Uniform Delay, d1	27.1	9.2	8.4	30.8	12.4		23.0	17.6			18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.3	0.1	0.0	11.2	0.8		62.3	0.2			0.4	
Delay (s)	29.4	9.4	8.4	42.1	13.2		85.3	17.9			18.6	
Level of Service	C	A	A	D	B		F	B			B	
Approach Delay (s)		15.7			17.5			52.5			18.6	
Approach LOS		B			B			D			B	

Intersection Summary				
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	65.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	116	69	85	145	87	82
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	122	73	89	153	92	86
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total (vph)	122	73	242	92	86	
Volume Left (vph)	122	0	0	92	0	
Volume Right (vph)	0	73	153	0	0	
Hadj (s)	0.53	-0.67	-0.34	0.53	0.03	
Departure Headway (s)	6.1	4.9	4.7	5.8	5.3	
Degree Utilization, x	0.21	0.10	0.32	0.15	0.13	
Capacity (veh/h)	558	690	733	590	646	
Control Delay (s)	9.4	7.2	9.9	8.6	7.9	
Approach Delay (s)	8.6		9.9	8.3		
Approach LOS	A		A	A		

Intersection Summary			
Delay	9.0		
Level of Service	A		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 07/2014			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	245	45	202	106	60	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2		4.0	5.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3442		1770	3539	1770	1557
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3442		1770	3539	1770	1557
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	47	213	112	63	174
RTOR Reduction (vph)	18	0	0	0	0	140
Lane Group Flow (vph)	287	0	213	112	63	34
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	11.9		10.6	26.2	8.7	8.7
Effective Green, g (s)	11.9		10.6	26.2	8.7	8.7
Actuated g/C Ratio	0.27		0.24	0.59	0.20	0.20
Clearance Time (s)	5.2		4.0	5.5	4.0	4.0
Vehicle Extension (s)	3.2		2.0	3.2	2.1	2.1
Lane Grp Cap (vph)	922		422	2088	346	305
v/s Ratio Prot	c0.08		c0.12	0.03	c0.04	
v/s Ratio Perm						0.02
v/c Ratio	0.31		0.50	0.05	0.18	0.11
Uniform Delay, d1	13.0		14.6	3.9	14.9	14.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.3	0.0	0.1	0.1
Delay (s)	13.2		15.0	3.9	15.0	14.7
Level of Service	B		B	A	B	B
Approach Delay (s)	13.2			11.1	14.8	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	42.9%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	345	64	108	253	27	24	8	103	18	4	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	3440		1770	3478		1762	1574		1758	1610	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.68	1.00	
Satd. Flow (perm)	1755	3440		1770	3478		1376	1574		1263	1610	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	363	67	114	266	28	25	8	108	19	4	19
RTOR Reduction (vph)	0	16	0	0	8	0	0	88	0	0	15	0
Lane Group Flow (vph)	31	414	0	114	286	0	25	28	0	19	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.9	16.6		6.3	21.9		8.4	8.4		9.5	9.5	
Effective Green, g (s)	0.9	16.6		6.3	21.9		8.4	8.4		9.5	9.5	
Actuated g/C Ratio	0.02	0.36		0.14	0.48		0.18	0.18		0.21	0.21	
Clearance Time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Vehicle Extension (s)	2.0	4.4		2.0	4.4		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	34	1252		244	1670		253	289		263	335	
v/s Ratio Prot	0.02	c0.12		c0.06	0.08			0.02			0.00	
v/s Ratio Perm							c0.02			0.02		
v/c Ratio	0.91	0.33		0.47	0.17		0.10	0.10		0.07	0.02	
Uniform Delay, d1	22.3	10.5		18.1	6.7		15.5	15.4		14.5	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	116.5	0.3		0.5	0.1		0.1	0.1		0.0	0.0	
Delay (s)	138.8	10.7		18.6	6.8		15.5	15.5		14.6	14.4	
Level of Service	F	B		B	A		B	B		B	B	
Approach Delay (s)		19.4			10.1			15.5			14.5	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	14.4	
Intersection Capacity Utilization	42.5%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	54	34	113	2	19	12	100	72	9	18	80	49
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	57	36	119	2	20	13	105	76	9	19	84	52

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	212	35	105	85	155
Volume Left (vph)	57	2	105	0	19
Volume Right (vph)	119	13	0	9	52
Hadj (s)	-0.25	-0.17	0.53	-0.04	-0.14
Departure Headway (s)	4.6	4.9	5.8	5.2	4.7
Degree Utilization, x	0.27	0.05	0.17	0.12	0.20
Capacity (veh/h)	739	668	593	655	716
Control Delay (s)	9.2	8.1	8.8	7.7	8.9
Approach Delay (s)	9.2	8.1	8.3		8.9
Approach LOS	A	A	A		A

Intersection Summary					
Delay		8.8			
Level of Service		A			
Intersection Capacity Utilization		46.6%	ICU Level of Service		A
Analysis Period (min)		15			
Description: 07/2014					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	40	89	25	11	78	0	23	12	27	1	2	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	94	26	12	82	0	24	13	28	1	2	27

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	162	94	65	31
Volume Left (vph)	42	12	24	1
Volume Right (vph)	26	0	28	27
Hadj (s)	-0.01	0.06	-0.15	-0.50
Departure Headway (s)	4.2	4.3	4.3	4.0
Degree Utilization, x	0.19	0.11	0.08	0.03
Capacity (veh/h)	833	794	775	819
Control Delay (s)	8.2	7.9	7.7	7.2
Approach Delay (s)	8.2	7.9	7.7	7.2
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	604	71	35	357	79	232	30	36	82	21	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		0.99	1.00	
Frt	1.00	0.98		1.00	0.97			0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3463		1770	3412			1745		1759	1648	
Flt Permitted	0.95	1.00		0.95	1.00			0.73		0.61	1.00	
Satd. Flow (perm)	1770	3463		1770	3412			1321		1121	1648	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	636	75	37	376	83	244	32	38	86	22	46
RTOR Reduction (vph)	0	10	0	0	19	0	0	4	0	0	24	0
Lane Group Flow (vph)	196	701	0	37	440	0	0	310	0	86	44	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	15.2	33.7		4.0	22.3			47.4		47.4	47.4	
Effective Green, g (s)	15.2	33.7		4.0	22.3			47.4		47.4	47.4	
Actuated g/C Ratio	0.15	0.34		0.04	0.22			0.47		0.47	0.47	
Clearance Time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.9		2.0	2.4			2.0		2.0	2.0	
Lane Grp Cap (vph)	269	1167		70	760			626		531	781	
v/s Ratio Prot	c0.11	c0.20		0.02	0.13						0.03	
v/s Ratio Perm								c0.23		0.08		
v/c Ratio	0.73	0.60		0.53	0.58			0.49		0.16	0.06	
Uniform Delay, d1	40.4	27.6		47.1	34.7			18.1		15.0	14.2	
Progression Factor	1.00	1.00		1.06	0.72			1.00		1.00	1.00	
Incremental Delay, d2	8.1	2.3		3.3	3.2			2.8		0.1	0.0	
Delay (s)	48.5	29.8		53.2	28.2			20.9		15.0	14.2	
Level of Service	D	C		D	C			C		B	B	
Approach Delay (s)		33.9			30.1			20.9			14.7	
Approach LOS		C			C			C			B	

Intersection Summary					
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.1		
Intersection Capacity Utilization	59.6%	ICU Level of Service	B		
Analysis Period (min)	15				
Description: 07/2014					
c Critical Lane Group					

Existing Conditions PM Pk Hr
45: Carmel Mountain Rd & Freeport Rd 9/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	108	621	38	8	424	15	28	0	5	17	0	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85			0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3499		1770	3515		1751	1547			1648	
Flt Permitted	0.95	1.00		0.95	1.00		0.86	1.00			0.88	
Satd. Flow (perm)	1770	3499		1770	3515		1593	1547			1479	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	114	654	40	8	446	16	29	0	5	18	0	27
RTOR Reduction (vph)	0	2	0	0	2	0	0	4	0	0	40	0
Lane Group Flow (vph)	114	692	0	8	460	0	29	1	0	0	5	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	14.3	73.7		1.5	60.1		10.2	10.2			10.2	
Effective Green, g (s)	14.3	73.7		1.5	60.1		10.2	10.2			10.2	
Actuated g/C Ratio	0.14	0.74		0.02	0.60		0.10	0.10			0.10	
Clearance Time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.3		2.0	3.7		2.0	2.0			2.0	
Lane Grp Cap (vph)	253	2578		26	2112		162	157			150	
v/s Ratio Prot	c0.06	c0.20		0.00	0.13			0.00				
v/s Ratio Perm							c0.02				0.00	
v/c Ratio	0.45	0.27		0.31	0.22		0.18	0.00			0.03	
Uniform Delay, d1	39.3	4.3		48.7	9.2		41.1	40.3			40.4	
Progression Factor	0.72	0.41		1.21	0.50		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.2		2.4	0.2		0.2	0.0			0.0	
Delay (s)	28.5	2.0		61.2	4.8		41.3	40.3			40.5	
Level of Service	C	A		E	A		D	D			D	
Approach Delay (s)		5.7			5.8			41.1			40.5	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	47.4%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

Existing Conditions PM Pk Hr
46: Carmel Mountain Rd & Stoney Creek Rd 9/9/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	25	630	0	429	13	12	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		5.7		4.4	4.4
Lane Util. Factor	1.00	0.95		0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00		1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00		1.00		0.99	0.85
Flt Protected	0.95	1.00		1.00		0.96	1.00
Satd. Flow (prot)	1770	3539		3519		1758	1471
Flt Permitted	0.95	1.00		1.00		0.96	1.00
Satd. Flow (perm)	1770	3539		3519		1758	1471
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	663	0	452	14	13	8
RTOR Reduction (vph)	0	0	0	1	0	1	6
Lane Group Flow (vph)	26	663	0	465	0	13	1
Confl. Peds. (#/hr)	10		10		10	10	10
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	5	2	1	6		4	
Permitted Phases							4
Actuated Green, G (s)	2.9	80.3		72.6		10.0	10.0
Effective Green, g (s)	2.9	80.3		72.6		10.0	10.0
Actuated g/C Ratio	0.03	0.80		0.73		0.10	0.10
Clearance Time (s)	4.4	5.3		5.7		4.4	4.4
Vehicle Extension (s)	2.0	4.3		3.7		2.0	2.0
Lane Grp Cap (vph)	51	2841		2554		175	147
v/s Ratio Prot	c0.01	c0.19		0.13		c0.01	
v/s Ratio Perm							0.00
v/c Ratio	0.51	0.23		0.18		0.07	0.00
Uniform Delay, d1	47.8	2.4		4.3		40.8	40.5
Progression Factor	0.78	0.09		1.00		1.00	1.00
Incremental Delay, d2	2.8	0.2		0.2		0.1	0.0
Delay (s)	40.2	0.4		4.5		40.9	40.5
Level of Service	D	A		A		D	D
Approach Delay (s)		1.9		4.5		40.8	
Approach LOS		A		A		D	

Intersection Summary				
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.23			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	38.3%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

Existing Conditions PM Pk Hr
47: Carmel Mountain Rd & Caminata Deluz/Cuca St 9/9/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	31	0	56	4	1	7	49	570	3	11	443	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.91			0.92		1.00	1.00		1.00	0.98	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1651			1669		1770	3536		1755	3468	
Flt Permitted		0.89			0.91		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1503			1549		1770	3536		1755	3468	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	0	59	4	1	7	52	600	3	12	466	58
RTOR Reduction (vph)	0	62	0	0	5	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	30	0	0	7	0	52	602	0	12	513	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.3			10.3		2.2	17.2		0.7	15.6	
Effective Green, g (s)		10.3			10.3		2.2	17.2		0.7	15.6	
Actuated g/C Ratio		0.24			0.24		0.05	0.40		0.02	0.36	
Clearance Time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Vehicle Extension (s)		2.0			2.0		2.0	4.3		2.0	3.8	
Lane Grp Cap (vph)		361			372		90	1421		28	1264	
v/s Ratio Prot							c0.03	c0.17		0.01	0.15	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.08			0.02		0.58	0.42		0.43	0.41	
Uniform Delay, d1		12.6			12.4		19.8	9.2		20.9	10.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		5.5	0.3		3.8	0.3	
Delay (s)		12.6			12.4		25.3	9.6		24.7	10.4	
Level of Service		B			B		C	A		C	B	
Approach Delay (s)		12.6			12.4			10.8			10.7	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.33			
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	43.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

Existing Conditions PM Pk Hr
48: Carmel Mountain Rd & Penasquitos Dr 9/9/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	301	71	36	67	84	149	163	463	61	201	503	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1542	1681	1763	1542	1770	4971		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1542	1681	1763	1542	1770	4971		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	75	38	71	88	157	172	487	64	212	529	581
RTOR Reduction (vph)	0	0	28	0	0	137	0	18	0	0	0	432
Lane Group Flow (vph)	317	75	10	64	95	20	172	533	0	212	529	149
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	19.8	19.8	19.8	10.0	10.0	10.0	11.8	17.9		13.5	19.6	19.8
Effective Green, g (s)	19.8	19.8	19.8	10.0	10.0	10.0	11.8	17.9		13.5	19.6	19.8
Actuated g/C Ratio	0.26	0.26	0.26	0.13	0.13	0.13	0.15	0.23		0.17	0.25	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	453	477	395	217	228	199	270	1152		309	898	406
v/s Ratio Prot	c0.18	0.04		0.04	c0.05		c0.10	c0.11		0.12	c0.15	0.09
v/s Ratio Perm			0.01			0.01						
v/c Ratio	0.70	0.16	0.02	0.29	0.42	0.10	0.64	0.46		0.69	0.59	0.37
Uniform Delay, d1	26.0	22.2	21.5	30.4	30.9	29.6	30.7	25.5		29.9	25.3	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.7	0.2	0.0	0.8	1.2	0.2	4.9	1.3		6.2	1.0	0.6
Delay (s)	30.7	22.4	21.5	31.2	32.2	29.9	35.6	26.9		36.1	26.3	24.1
Level of Service	C	C	C	C	C	C	D	C		D	C	C
Approach Delay (s)		28.4			30.8			28.9			26.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	679	241	908	946	0	0	0	0	449	0	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	0.99	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3539	1540	3433	3539					1655	1536	1463
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3539	1540	3433	3539					1655	1536	1463
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	715	254	956	996	0	0	0	0	473	0	335
RTOR Reduction (vph)	0	0	188	0	0	0	0	0	0	0	49	108
Lane Group Flow (vph)	0	715	66	956	996	0	0	0	0	279	225	147
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		22.0	22.0	27.5	54.0					22.2	22.2	22.2
Effective Green, g (s)		22.0	22.0	27.5	54.0					22.2	22.2	22.2
Actuated g/C Ratio		0.26	0.26	0.33	0.64					0.26	0.26	0.26
Clearance Time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		924	402	1121	2269					436	404	385
v/s Ratio Prot		c0.20		c0.28	0.28							
v/s Ratio Perm			0.04							c0.17	0.15	0.10
v/c Ratio		0.77	0.17	0.85	0.44					0.64	0.56	0.38
Uniform Delay, d1		28.8	24.0	26.5	7.5					27.5	26.7	25.4
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		4.1	0.2	6.4	0.1					7.0	5.4	2.9
Delay (s)		32.9	24.2	32.9	7.7					34.5	32.2	28.2
Level of Service		C	C	C	A					C	C	C
Approach Delay (s)		30.6			20.0			0.0			31.7	
Approach LOS		C			C			A			C	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	12.5	
Intersection Capacity Utilization	71.0%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	906	0	0	1426	583	420	0	872	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.91			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			3539	1538	1653	1653	2707			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			3539	1538	1653	1653	2707			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	954	0	0	1501	614	442	0	918	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	316	0	0	164	0	0	0
Lane Group Flow (vph)	232	954	0	0	1501	298	221	221	754	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	7.0	54.5			43.5	43.5	27.0	27.0	27.0			
Effective Green, g (s)	7.0	54.5			43.5	43.5	27.0	27.0	27.0			
Actuated g/C Ratio	0.08	0.61			0.49	0.49	0.30	0.30	0.30			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	268	3096			1720	747	498	498	816			
v/s Ratio Prot	c0.07	0.19			c0.42							
v/s Ratio Perm						0.19	0.13	0.13	c0.28			
v/c Ratio	0.87	0.31			0.87	0.40	0.44	0.44	0.92			
Uniform Delay, d1	40.8	8.4			20.5	14.7	25.2	25.2	30.3			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	24.0	0.1			5.2	0.4	2.9	2.9	17.7			
Delay (s)	64.8	8.5			25.7	15.0	28.0	28.0	47.9			
Level of Service	E	A			C	B	C	C	D			
Approach Delay (s)		19.5			22.6			41.5			0.0	
Approach LOS		B			C			D			A	

Intersection Summary				
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	71.0%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	161	2	69	342	80	8	3	27	45	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1759	3531		1770	1863	1548	1741	2998		3433	1691	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1759	3531		1770	1863	1548	1741	2998		3433	1691	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	169	2	73	360	84	8	3	28	47	1	1
RTOR Reduction (vph)	0	2	0	0	0	59	0	20	0	0	1	0
Lane Group Flow (vph)	1	169	0	73	360	25	8	11	0	47	1	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	0.8	13.4		4.6	16.7	16.7	0.9	18.9		2.1	19.6	
Effective Green, g (s)	0.8	13.4		4.6	16.7	16.7	0.9	18.9		2.1	19.6	
Actuated g/C Ratio	0.01	0.24		0.08	0.30	0.30	0.02	0.34		0.04	0.35	
Clearance Time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	25	852		146	560	465	28	1020		129	597	
v/s Ratio Prot	0.00	0.05		c0.04	c0.19		0.00	c0.00		c0.01	0.00	
v/s Ratio Perm						0.02						
v/c Ratio	0.04	0.20		0.50	0.64	0.05	0.29	0.01		0.36	0.00	
Uniform Delay, d1	27.0	16.8		24.3	16.8	13.8	27.0	12.1		26.0	11.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.1		2.7	2.5	0.0	5.6	0.0		1.7	0.0	
Delay (s)	27.6	16.9		27.0	19.3	13.8	32.5	12.1		27.8	11.6	
Level of Service	C	B		C	B	B	C	B		C	B	
Approach Delay (s)		17.0			19.5			16.3			27.1	
Approach LOS		B			B			B			C	

Intersection Summary				
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	2	0	6	1	50	3	222	9	100	415	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		1.00			0.88		1.00	0.99		1.00	0.97	
Flt Protected		0.95			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1768			1607		1763	3516		1770	3421	
Flt Permitted		1.00			0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1854			1542		1763	3516		1770	3421	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	2	0	6	1	53	3	234	9	105	437	101
RTOR Reduction (vph)	0	0	0	0	48	0	0	3	0	0	23	0
Lane Group Flow (vph)	0	64	0	0	12	0	3	240	0	105	515	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		2.8			2.8		0.6	9.6		4.1	13.1	
Effective Green, g (s)		2.8			2.8		0.6	9.6		4.1	13.1	
Actuated g/C Ratio		0.10			0.10		0.02	0.34		0.14	0.46	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		182			151		37	1184		254	1572	
v/s Ratio Prot							0.00	0.07		c0.06	c0.15	
v/s Ratio Perm		c0.03			0.01							
v/c Ratio		0.35			0.08		0.08	0.20		0.41	0.33	
Uniform Delay, d1		12.0			11.7		13.7	6.7		11.1	4.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2			0.2		0.9	0.1		1.1	0.1	
Delay (s)		13.2			11.9		14.6	6.8		12.2	5.0	
Level of Service		B			B		B	A		B	A	
Approach Delay (s)		13.2			11.9			6.9			6.2	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	28.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	39.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	385	8	104	711	26	1	1	59	41	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	0.99			0.87			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1770	3526		1770	3516			1582			1740	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.81	
Satd. Flow (perm)	1770	3526		1770	3516			1581			1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	405	8	109	748	27	1	1	62	43	2	6
RTOR Reduction (vph)	0	2	0	0	4	0	0	39	0	0	4	0
Lane Group Flow (vph)	2	411	0	109	771	0	0	25	0	0	47	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.0	15.4		7.2	21.6			21.5			21.5	
Effective Green, g (s)	1.0	15.4		7.2	21.6			21.5			21.5	
Actuated g/C Ratio	0.02	0.27		0.13	0.38			0.38			0.38	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	30	950		223	1330			595			550	
v/s Ratio Prot	0.00	0.12		c0.06	c0.22							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.07	0.43		0.49	0.58			0.04			0.09	
Uniform Delay, d1	27.6	17.2		23.2	14.1			11.3			11.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.3		1.7	0.6			0.1			0.3	
Delay (s)	28.5	17.6		24.9	14.8			11.4			11.8	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		17.6			16.0			11.4			11.8	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	57.1	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	48.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	54	22	849	108	58	738
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	6.3		4.4	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1554	3466		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1554	3466		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	23	894	114	61	777
RTOR Reduction (vph)	0	21	9	0	0	0
Lane Group Flow (vph)	57	2	999	0	61	777
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	5.7	5.7	30.1		3.8	38.6
Effective Green, g (s)	5.7	5.7	30.1		3.8	38.6
Actuated g/C Ratio	0.10	0.10	0.55		0.07	0.70
Clearance Time (s)	4.9	4.9	6.3		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.8		2.0	2.6
Lane Grp Cap (vph)	182	160	1889		121	2474
v/s Ratio Prot	c0.03		c0.29		c0.03	0.22
v/s Ratio Perm		0.00				
v/c Ratio	0.31	0.01	0.53		0.50	0.31
Uniform Delay, d1	22.9	22.2	8.0		24.8	3.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.0	0.2		1.2	0.1
Delay (s)	23.3	22.2	8.3		26.0	3.3
Level of Service	C	C	A		C	A
Approach Delay (s)	23.0		8.3			4.9
Approach LOS	C		A			A

Intersection Summary				
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	51.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 10/2013

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	766	0	0	997	99	0	0	5	115	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6			5.1	5.1		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00		1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97		0.98		1.00		0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		0.99		1.00
Frt	1.00	1.00			1.00	0.85		0.86		1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95		1.00
Satd. Flow (prot)	1770	3539			3539	1534		1572		1760		1556
Flt Permitted	0.95	1.00			1.00	1.00		1.00		0.75		1.00
Satd. Flow (perm)	1770	3539			3539	1534		1572		1398		1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	806	0	0	1049	104	0	0	5	121	0	39
RTOR Reduction (vph)	0	0	0	0	0	52	0	4	0	0	0	30
Lane Group Flow (vph)	43	806	0	0	1049	52	0	1	0	121	0	9
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm		NA		Perm		Perm
Protected Phases	5	2		1	6			8				
Permitted Phases						6	8			4		4
Actuated Green, G (s)	1.7	29.7			24.5	24.5		12.1		12.1		12.1
Effective Green, g (s)	1.7	29.7			24.5	24.5		12.1		12.1		12.1
Actuated g/C Ratio	0.03	0.58			0.48	0.48		0.24		0.24		0.24
Clearance Time (s)	4.0	5.6			5.1	5.1		4.0		4.0		4.0
Vehicle Extension (s)	2.0	5.0			2.8	2.8		2.0		2.0		2.0
Lane Grp Cap (vph)	58	2044			1686	731		370		329		366
v/s Ratio Prot	c0.02	0.23			c0.30			0.00				
v/s Ratio Perm						0.03				c0.09		0.01
v/c Ratio	0.74	0.39			0.62	0.07		0.00		0.37		0.03
Uniform Delay, d1	24.6	5.9			10.0	7.3		15.0		16.4		15.1
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00		1.00
Incremental Delay, d2	35.5	0.3			0.7	0.0		0.0		0.3		0.0
Delay (s)	60.1	6.2			10.7	7.3		15.0		16.7		15.1
Level of Service	E	A			B	A		B		B		B
Approach Delay (s)		8.9			10.4			15.0			16.3	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	13.6	
Intersection Capacity Utilization	54.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	735	198	1110	834	0	0	0	0	610	0	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Lane Util. Factor		0.86	0.86	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.98	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		4783	1319	3433	3539					1648	1568	1457
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		4783	1319	3433	3539					1648	1568	1457
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	774	208	1168	878	0	0	0	0	642	0	273
RTOR Reduction (vph)	0	2	124	0	0	0	0	0	0	0	49	125
Lane Group Flow (vph)	0	793	63	1168	878	0	0	0	0	334	286	121
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		21.6	21.6	39.9	65.5					30.2	30.2	30.2
Effective Green, g (s)		21.6	21.6	39.9	65.5					30.2	30.2	30.2
Actuated g/C Ratio		0.21	0.21	0.38	0.63					0.29	0.29	0.29
Clearance Time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		986	272	1308	2213					475	452	420
v/s Ratio Prot		c0.17		c0.34	0.25							
v/s Ratio Perm			0.05							c0.20	0.18	0.08
v/c Ratio		0.80	0.23	0.89	0.40					0.70	0.63	0.29
Uniform Delay, d1		39.5	34.6	30.4	9.8					33.2	32.4	28.9
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		4.8	0.4	8.1	0.1					8.4	6.6	1.7
Delay (s)		44.4	35.1	38.5	9.9					41.7	39.0	30.6
Level of Service		D	D	D	A					D	D	C
Approach Delay (s)		42.6			26.2			0.0			37.7	
Approach LOS		D			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	104.7	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	80.7%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 07/2014

c Critical Lane Group



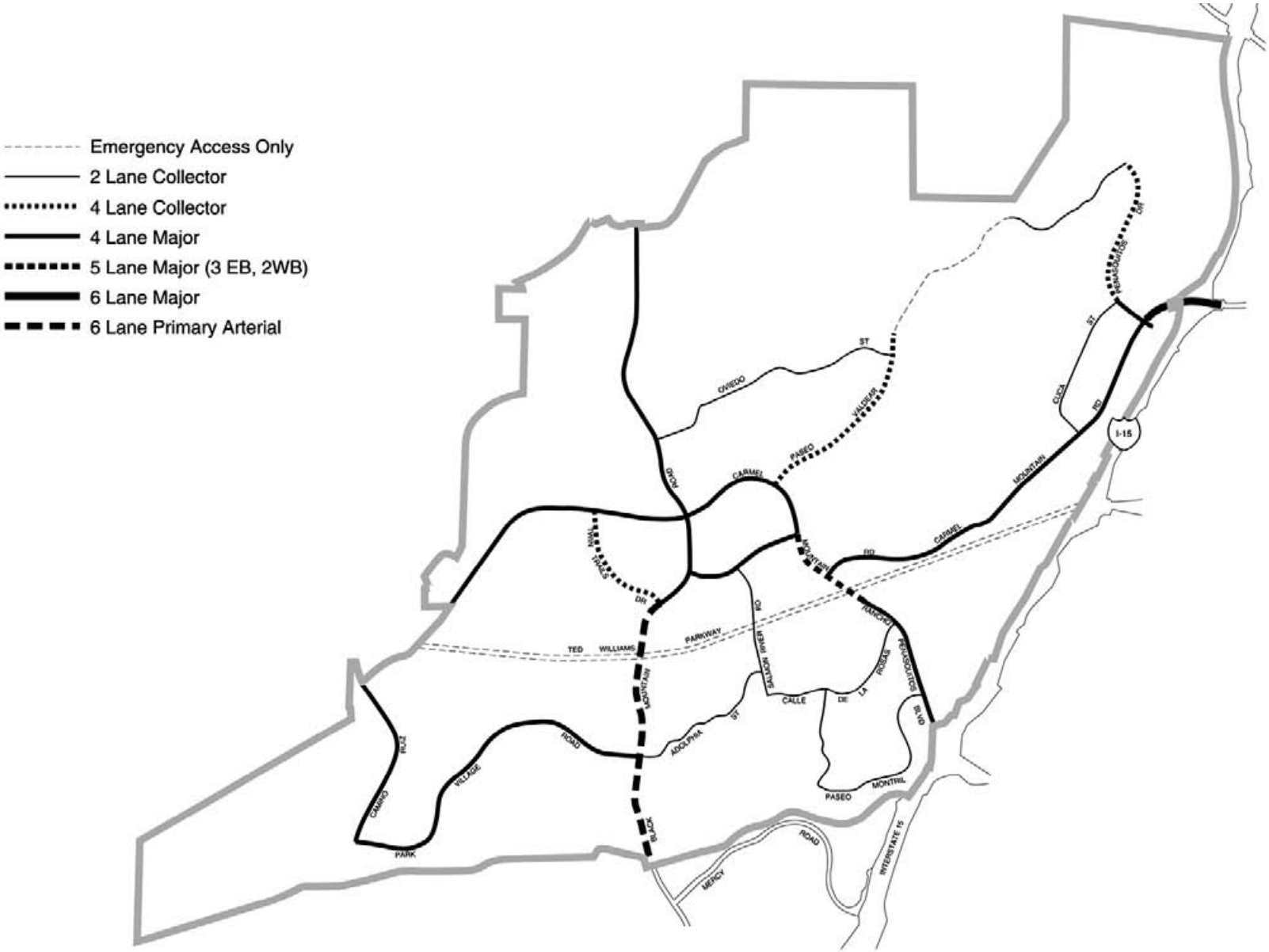
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	289	1105	0	0	1577	763	368	4	996	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1532	1647	1653	2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	3539			5085	1532	1647	1653	2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	304	1163	0	0	1660	803	387	4	1048	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	321	0	0	66	0	0	0
Lane Group Flow (vph)	304	1163	0	0	1660	482	193	198	982	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Prot			
Protected Phases	5	2			6			8	8			
Permitted Phases						6	8					
Actuated Green, G (s)	10.0	59.8			45.8	45.8	41.0	41.0	41.0			
Effective Green, g (s)	10.0	59.8			45.8	45.8	41.0	41.0	41.0			
Actuated g/C Ratio	0.09	0.54			0.42	0.42	0.37	0.37	0.37			
Clearance Time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	312	1927			2121	639	615	617	1040			
v/s Ratio Prot	c0.09	0.33			c0.33				c0.35			
v/s Ratio Perm						0.31	0.12	0.12				
v/c Ratio	0.97	0.60			0.78	0.75	0.31	0.32	0.94			
Uniform Delay, d1	49.8	17.0			27.7	27.2	24.4	24.5	33.3			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	43.6	0.5			2.0	5.1	1.3	1.4	17.3			
Delay (s)	93.4	17.5			29.6	32.3	25.7	25.9	50.6			
Level of Service	F	B			C	C	C	C	D			
Approach Delay (s)		33.2			30.5			43.8			0.0	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	109.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX D

FUTURE STREET CLASSIFICATIONS – RANCHO PEÑASQUITOS COMMUNITY PLAN



Recommended Street Classifications

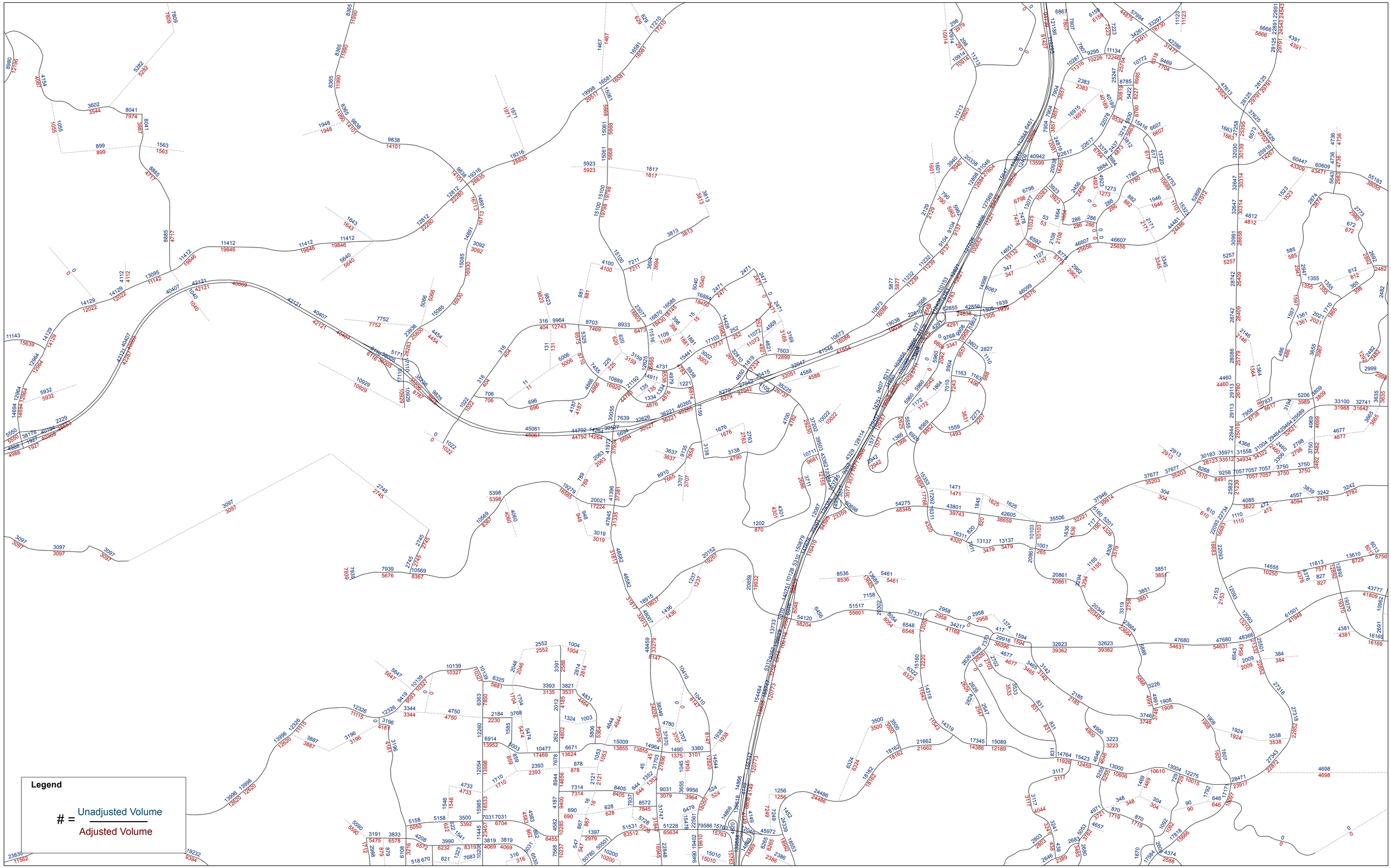
Rancho Peñasquitos Community Plan

28
FIGURE

APPENDIX E

SANDAG MODELS, SEGMENT GROWTH RATES AND SEGMENT ADJUSTMENTS

Series 12: Year 2008

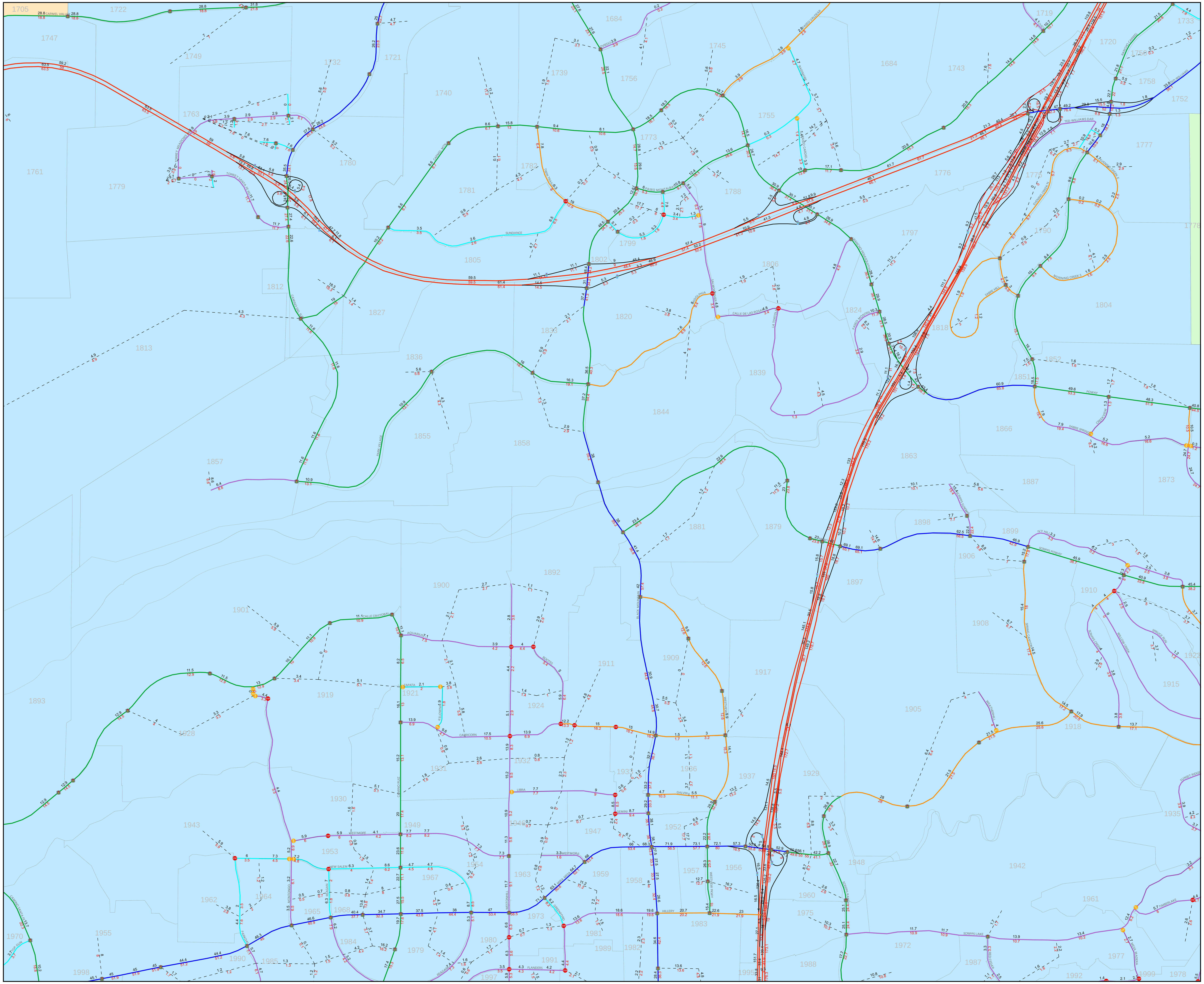


SANDAG
SR12
2050rc11

alt1

Black Mountain
No Improvements

ADT Volume



Functional Classifications

- Freeway
- Prime
- Major
- Collector
- Light Collector
- Rural Collector
- Local
- Freeway Ramp
- Local Ramp
- Zone Connector

Traffic Analysis Zones

\#   Unadjusted ADT(x1000)

\#   Adjusted ADT(x1000)

Portions of this map contain information from the San Diego Association of Governments (SANDAG) Regional Information System. This product cannot be reproduced without the written permission of SANDAG.

SAN DIEGO ASSOCIATION OF GOVERNMENTS
401 B STREET, SUITE 800
SAN DIEGO, CALIFORNIA 92101 USA
(619) 699-1900
E-mail: sandag@sandag.org
Web site: www.sandag.org

N

0 0.085 0.17 0.255
Miles

SANDAG

servicebureau

Date: August 8, 2014

SANDAG
Series 12

2050rc11
Scenario A

Black Mountain
No Improvements

Select Link Plot

Functional Classifications

- Freeway
- Prime
- Major
- Collector
- Light Collector
- Rural Collector
- Local
- Freeway Ramp
- Local Ramp
- Zone Connector

Traffic Analysis Zones

\# Select Link Volume Percentage

Portions of this map contain information from the San Diego Association of Governments (SANDAG) Regional Information System. This product cannot be reproduced without the written permission of SANDAG.

SAN DIEGO ASSOCIATION OF GOVERNMENTS
401 B STREET, SUITE 800
SAN DIEGO, CALIFORNIA 92101 USA
(619) 699-1900
E-mail: sandag@sandag.org
Web site: www.sandag.org

N

0 0.25 0.5 1 Miles

SANDAG

servicebureau

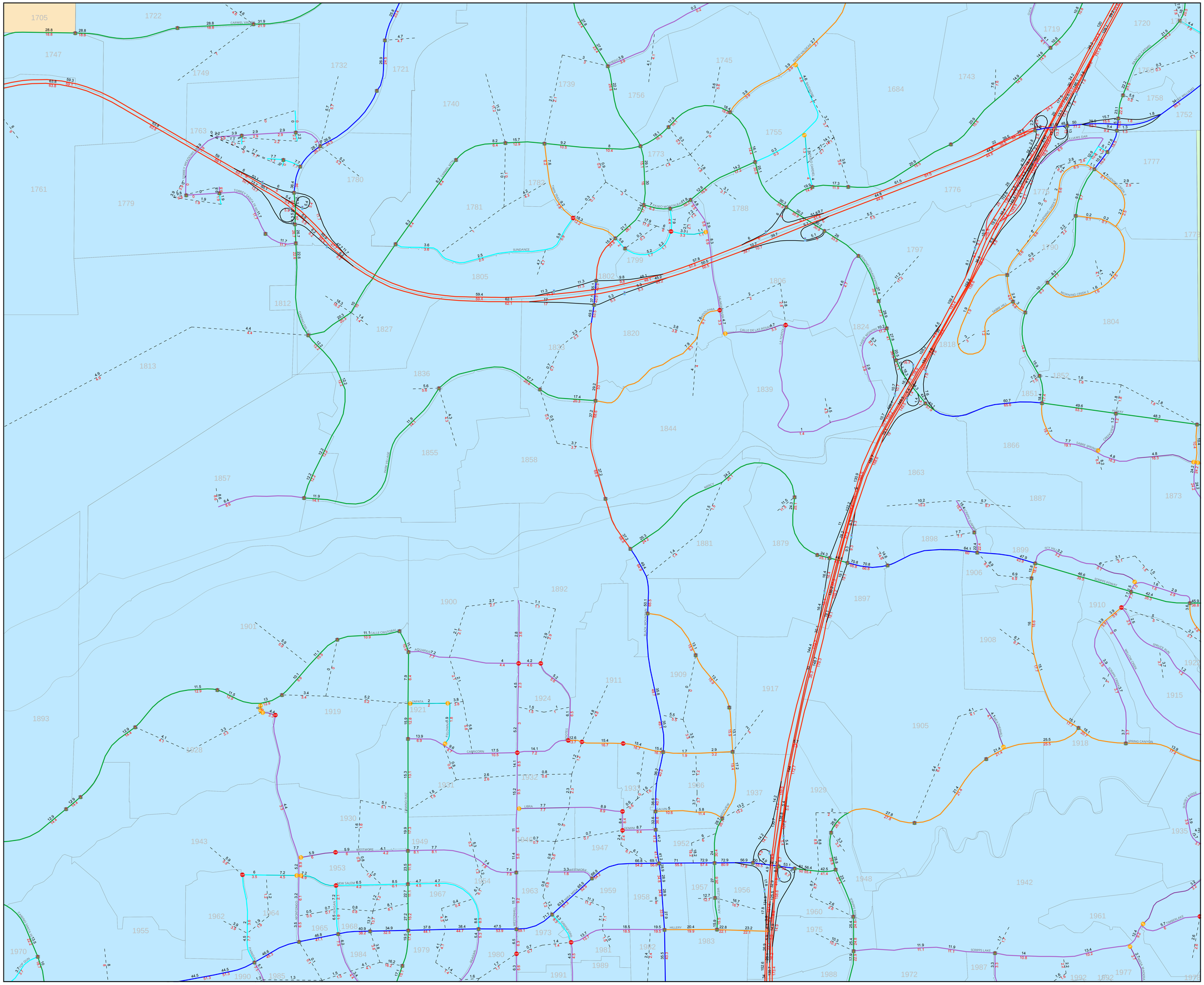
Date: July 31, 2014

SANDAG
SR12
2050rc11

alt2

Black Mountain
Widen 4 to 6 lanes

ADT Volume



Functional Classifications

- Freeway
- Prime
- Major
- Collector
- Light Collector
- Rural Collector
- Local
- Freeway Ramp
- Local Ramp
- Zone Connector

Traffic Analysis Zones

\# Unadjusted ADT(x1000)

\# Adjusted ADT(x1000)

Portions of this map contain information from the San Diego Association of Governments (SANDAG) Regional Information System. This product cannot be reproduced without the written permission of SANDAG.

SAN DIEGO ASSOCIATION OF GOVERNMENTS
401 B STREET, SUITE 800
SAN DIEGO, CALIFORNIA 92101 USA
(619) 699-1900
E-mail: sandag@sandag.org
Web site: www.sandag.org

N

0 0.085 0.17 0.255
Miles

SANDAG
servicebureau

Date: August 8, 2014

SANDAG
Series 12

2050rc11
Scenario B

Black Mountain
Widen 4 to 6 lanes

Select Link Plot

Functional Classifications

- Freeway
- Prime
- Major
- Collector
- Light Collector
- Rural Collector
- Local
- Freeway Ramp
- Local Ramp
- Zone Connector

Traffic Analysis Zones

\# Select Link Volume Percentage

Portions of this map contain information from the San Diego Association of Governments (SANDAG) Regional Information System. This product cannot be reproduced without the written permission of SANDAG.

SAN DIEGO ASSOCIATION OF GOVERNMENTS
401 B STREET, SUITE 800
SAN DIEGO, CALIFORNIA 92101 USA
(619) 699-1900
E-mail: sandag@sandag.org
Web site: www.sandag.org

N

0 0.25 0.5 1 Miles

SANDAG

servicebureau

Date: August 8, 2014

2050 W/O Project (BMR as 6 Lanes) Growth Factors

Segment Number and Name		2050 W/O Project Growth*
1	Camino Del Sur s/o Carmel valley Road	53.8%
2	Camino Del Sur s/o Wolverine Way - Fallhaven Road	53.8%
3	Camino Del Sur n/o SR-56 Westbound Ramps	53.8%
4	Camino Del Sur s/o SR-56 Eastbound Ramps	Final ADT: 26,700
5	Carmel Valley Road w/o Black Mountain Road	74.9%
6	Carmel Valley Road e/o Black Mountain Road	74.9%
7	Black Mountain Road n/o Maler Road	Final ADT: 18,262
8	Black Mountain Road s/o Oviedo Street	28.4%
9	Black Mountain Road s/o Carmel Mountain Road	28.6%
10	Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	28.6%
11	Black Mountain Road s/o Twin Trails Drive	15.8%
12	Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	15.8%
13	Black Mountain Road n/o Park Village Road - Adolphia Street	28.0%
14	Black Mountain Road n/o Canyonside Park Drive	38.6%
15	Black Mountain Road bet. Mercy Road & Babuta Road	38.6%
16	Black Mountain Road s/o Westview Parkway	38.6%
17	Westview Parkway e/o Black Mountain Road	52.7%
18	Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	4.2%
19	Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	4.2%
20	Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	-5.2%
21	Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	-5.2%
22	Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	-5.2%
23	Poway Road e/o I-15 Northbound Ramps	21.2%
24	Carmel Mountain Road s/o Sundance Avenue	Final ADT: 9,784
25	Carmel Mountain Road w/o Sparren Avenue	Final ADT: 8,895
26	Carmel Mountain Road w/o Black Mountain Road	Final ADT: 10,400
27	Sundance Avenue w/o War Bonnet Street	Final ADT: 2,500
28	Carmel Mountain Road e/o Freeport Road	31.9%
29	Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	31.9%
30	Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	20.4%
31	Carmel Mountain Road e/o I-15 Northbound Ramps	20.4%
32	Camino Del Sur n/o Park Village Road	Final ADT: 10,700
33	Park Village Road e/o Camino Del Sur	Final ADT: 12,600
34	Park Village Road w/o Black Mountain Road	1.4%
35	Mercy Road bet. Chabola Road & Branicole Ln	Final ADT: Seg 36 [1]
36	Mercy Road n/o Alemania Road	22.4%
37	Scripps Poway Parkway e/o I-15 Northbound Ramps	23.4%

* Segment growth factors were smoothed along corridors.

[1] We are setting this segment equal to segment 36. To account for differences, we are maintaining the 5000 difference between locations per model.

Note: For the analysis, an adjustment factor of 0.857 was applied to the growth percentages shown, based on a ratio of 36 years divided by 42 years (i.e., 2050 minus 2014 / 2050 minus 2008).

2050 W/ Project (BMR as 4 Lanes) Growth Factors

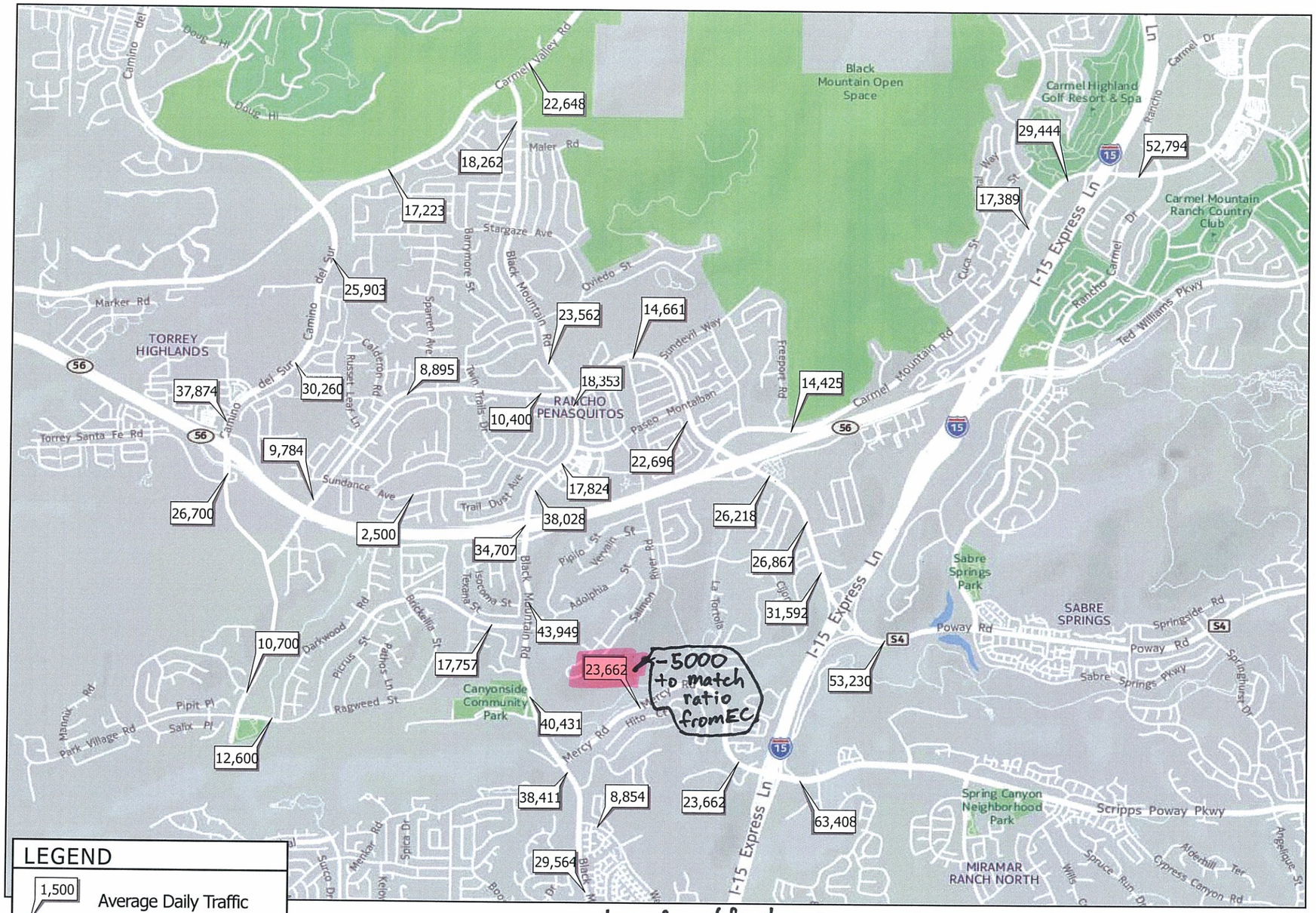
Segment Number	Segment Name	2050 W/ Project Growth*
1	Camino Del Sur s/o Carmel valley Road	49.5%
2	Camino Del Sur s/o Wolverine Way - Fallhaven Road	49.5%
3	Camino Del Sur n/o SR-56 Westbound Ramps	49.5%
4	Camino Del Sur s/o SR-56 Eastbound Ramps	Final ADT: 27,400
5	Carmel Valley Road w/o Black Mountain Road	76.3%
6	Carmel Valley Road e/o Black Mountain Road	76.3%
7	Black Mountain Road n/o Maler Road	Final ADT: 19,204
8	Black Mountain Road s/o Oviedo Street	27.8%
9	Black Mountain Road s/o Carmel Mountain Road	23.5%
10	Black Mountain Road bet. Paseo Montalban & Twin Trails Drive	23.5%
11	Black Mountain Road s/o Twin Trails Drive	14.1%
12	Black Mountain Road bet. SR-56 Westbound & Eastbound Ramps	14.1%
13	Black Mountain Road n/o Park Village Road - Adolphia Street	0.0% [1]
14	Black Mountain Road n/o Canyonside Park Drive	16.5%
15	Black Mountain Road bet. Mercy Road & Babuta Road	16.5%
16	Black Mountain Road s/o Westview Parkway	16.5%
17	Westview Parkway e/o Black Mountain Road	21.0%
18	Carmel Mountain Road bet. Paseo Aldabra & Sundevil Way	5.5%
19	Carmel Mountain Road bet. Paseo Montalban & SR-56 Westbound Ramps	5.5%
20	Rancho Penasquitos Blvd bet. SR-56 EB Ramps - Azuaga St & Calle De Las Rosas	0.0% [1]
21	Rancho Penasquitos Boulevard bet. Calle De Las Rosas & Via Del Sud	0.0% [1]
22	Rancho Penasquitos Boulevard bet. Paseo Montril & I-15 Southbound Ramps	0.0% [1]
23	Poway Road e/o I-15 Northbound Ramps	21.2%
24	Carmel Mountain Road s/o Sundance Avenue	Final ADT: 9,980
25	Carmel Mountain Road w/o Sparren Avenue	Final ADT: 9,312
26	Carmel Mountain Road w/o Black Mountain Road	Final ADT: 10,600
27	Sundance Avenue w/o War Bonnet Street	Final ADT: 2,600
28	Carmel Mountain Road e/o Freeport Road	31.6%
29	Carmel Mountain Road bet. Penasquitos Drive & Gerana Street	31.6%
30	Carmel Mountain Road bet. I-15 Southbound Ramps & Penasquitos Drive	19.9%
31	Carmel Mountain Road e/o I-15 Northbound Ramps	19.9%
32	Camino Del Sur n/o Park Village Road	Final ADT: 10,200
33	Park Village Road e/o Camino Del Sur	Final ADT: 11,700
34	Park Village Road w/o Black Mountain Road	0.0% [1]
35	Mercy Road bet. Chabola Road & Branicole Ln	Final ADT: Seg 36 [2]
36	Mercy Road n/o Alemania Road	15.1%
37	Scripps Poway Parkway e/o I-15 Northbound Ramps	20.3%

* Segment growth factors were smoothed along corridors.

1 Because growth is approximately zero or negative per the model at these locations, we will round all of these figures up to the nearest hundred

2 We are setting this segment equal to segment 36. To account for differences, we are maintaining the 5000 difference between locations per model

Note: For the analysis, an adjustment factor of 0.857 was applied to the growth percentages shown, based on a ratio of 36 years divided by 42 years (i.e., 2050 minus 2014 / 2050 minus 2008).



LEGEND

Appendix Adjustments

Figure 4-3

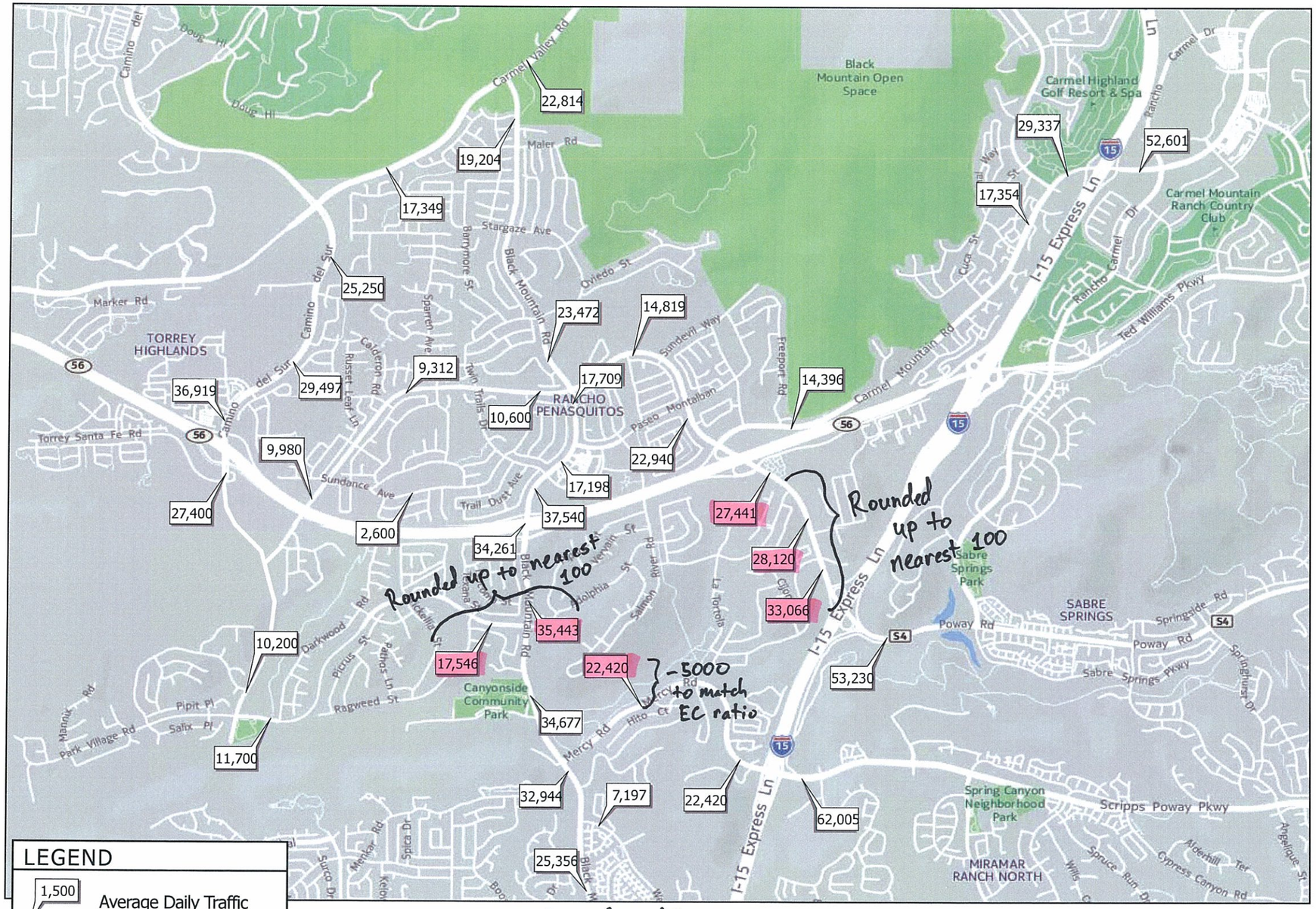
Horizon Year Daily Roadway Segment Volumes, Without Project

Before Adjustments

N

Not To Scale

- indicates adjustment location



- indicates adjustment location

Appendix Adjustments

~~Figure 4-4~~

Horizon Year Daily Roadway Segment Volumes, With Project Before Adjustments

APPENDIX F

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS
HORIZON YEAR CONDITIONS: WITHOUT PROJECT
(SUBJECT BLACK MOUNTAIN ROAD SEGMENT AS 6 LANES)

2050 6 Ln (W/O Project) AM Pk Hr
1: Camino Del Sur & Carmel Valley Rd 9/14/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	257	681	272	139	716	111	182	291	133	609	841	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1544	1770	3539	1544	1770	3539	1546	3433	3539	1545
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1544	1770	3539	1544	1770	3539	1546	3433	3539	1545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	271	717	286	146	754	117	192	306	140	641	885	309
RTOR Reduction (vph)	0	0	194	0	0	87	0	0	108	0	0	149
Lane Group Flow (vph)	271	717	92	146	754	30	192	306	32	641	885	160
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	24.2	45.1	45.1	15.6	36.8	36.8	18.4	33.0	33.0	28.6	43.3	43.3
Effective Green, g (s)	24.2	45.1	45.1	15.6	36.8	36.8	18.4	33.0	33.0	28.6	43.3	43.3
Actuated g/C Ratio	0.17	0.31	0.31	0.11	0.26	0.26	0.13	0.23	0.23	0.20	0.30	0.30
Clearance Time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Vehicle Extension (s)	2.0	5.6	5.6	2.0	5.9	5.9	2.0	4.9	4.9	2.0	5.1	5.1
Lane Grp Cap (vph)	298	1113	485	192	908	396	227	814	355	684	1068	466
v/s Ratio Prot	c0.15	0.20		0.08	c0.21		0.11	0.09		c0.19	c0.25	
v/s Ratio Perm			0.06			0.02			0.02			0.10
v/c Ratio	0.91	0.64	0.19	0.76	0.83	0.08	0.85	0.38	0.09	0.94	0.83	0.34
Uniform Delay, d1	58.5	42.3	35.8	62.1	50.4	40.4	61.1	46.5	43.4	56.5	46.6	39.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.0	2.0	0.5	14.7	7.5	0.2	23.2	0.6	0.2	20.1	6.1	1.0
Delay (s)	87.6	44.2	36.3	76.8	57.9	40.6	84.3	47.1	43.6	76.6	52.7	39.9
Level of Service	F	D	D	E	E	D	F	D	D	E	D	D
Approach Delay (s)		51.7			58.6			57.5			58.9	
Approach LOS		D			E			E			E	

Intersection Summary				
HCM 2000 Control Delay	56.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	143.4	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	88.5%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
2: Camino Del Sur & Watson Ranch Rd 9/10/2015



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	27	26	102	989	8	27	1276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Lane Util. Factor	1.00	1.00	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1744	1542	1770	5077		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1744	1542	1770	5077		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	27	107	1041	8	28	1343
RTOR Reduction (vph)	0	25	0	0	0	0	0
Lane Group Flow (vph)	28	2	107	1049	0	28	1343
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Perm	Perm	Prot	NA		Prot	NA
Protected Phases			5	2		1	6
Permitted Phases	8	8					
Actuated Green, G (s)	10.3	10.3	15.7	120.0		4.9	109.2
Effective Green, g (s)	10.3	10.3	15.7	120.0		4.9	109.2
Actuated g/C Ratio	0.07	0.07	0.10	0.80		0.03	0.73
Clearance Time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.5	5.4		2.0	5.4
Lane Grp Cap (vph)	119	105	185	4061		57	3701
v/s Ratio Prot			c0.06	0.21		0.02	c0.26
v/s Ratio Perm	c0.02	0.00					
v/c Ratio	0.24	0.02	0.58	0.26		0.49	0.36
Uniform Delay, d1	66.1	65.1	64.0	3.8		71.3	7.5
Progression Factor	1.00	1.00	0.66	0.16		1.00	1.00
Incremental Delay, d2	0.4	0.0	3.3	0.1		2.4	0.3
Delay (s)	66.5	65.2	45.3	0.7		73.7	7.8
Level of Service	E	E	D	A		E	A
Approach Delay (s)	65.8			4.9			9.2
Approach LOS	E			A			A

Intersection Summary				
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
3: Camino Del Sur & Wolverine Way/Fallhaven Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	0	53	86	2	17	300	1075	18	48	1055	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes		1.00	0.89	1.00	0.90		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1770	1405	1770	1454		3433	5059		1770	5085	1558
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1770	1405	1770	1454		3433	5059		1770	5085	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	15	0	56	91	2	18	316	1132	19	51	1111	22
RTOR Reduction (vph)	0	0	52	0	15	0	0	1	0	0	0	12
Lane Group Flow (vph)	0	15	4	91	5	0	316	1150	0	51	1111	10
Confl. Peds. (#/hr)			82			83			31			2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.4	11.4	27.9	27.9		21.7	83.0		7.1	69.2	69.2
Effective Green, g (s)		11.4	11.4	27.9	27.9		21.7	83.0		7.1	69.2	69.2
Actuated g/C Ratio		0.08	0.08	0.19	0.19		0.14	0.55		0.05	0.46	0.46
Clearance Time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Vehicle Extension (s)		2.0	2.0	6.3	6.3		2.0	5.9		2.0	2.0	2.0
Lane Grp Cap (vph)		134	106	329	270		496	2799		83	2345	718
v/s Ratio Prot		c0.01		c0.05	0.00		c0.09	0.23		c0.03	c0.22	
v/s Ratio Perm			0.00									0.01
v/c Ratio		0.11	0.04	0.28	0.02		0.64	0.41		0.61	0.47	0.01
Uniform Delay, d1		64.6	64.2	52.4	49.9		60.4	19.4		70.1	27.8	21.9
Progression Factor		1.00	1.00	1.00	1.00		0.71	0.35		1.20	0.78	1.00
Incremental Delay, d2		0.1	0.1	1.4	0.1		1.8	0.4		8.7	0.7	0.0
Delay (s)		64.7	64.3	53.8	50.0		44.4	7.2		92.8	22.4	21.9
Level of Service		E	E	D	D		D	A		F	C	C
Approach Delay (s)		64.4			53.1			15.2			25.4	
Approach LOS		E			D			B			C	

Intersection Summary				
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	91.5%	ICU Level of Service	F	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
4: Camino Del Sur & Torrey Meadows Dr 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1310	68	35	1190	18	89	2	29	83	7	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5041		1770	5071		1770	1557		1770	2946	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5041		1770	5071		1770	1557		1770	2946	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1379	72	37	1253	19	94	2	31	87	7	100
RTOR Reduction (vph)	0	3	0	0	1	0	0	28	0	0	92	0
Lane Group Flow (vph)	68	1448	0	37	1271	0	94	5	0	87	15	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.0	90.7		14.2	95.5		13.4	13.2		12.2	12.0	
Effective Green, g (s)	9.0	90.7		14.2	95.5		13.4	13.2		12.2	12.0	
Actuated g/C Ratio	0.06	0.60		0.09	0.64		0.09	0.09		0.08	0.08	
Clearance Time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	4.4		2.0	5.4		2.0	5.4	
Lane Grp Cap (vph)	106	3048		167	3228		158	137		143	235	
v/s Ratio Prot	c0.04	c0.29		0.02	c0.25		c0.05	0.00		0.05	c0.01	
v/s Ratio Perm												
v/c Ratio	0.64	0.48		0.22	0.39		0.59	0.03		0.61	0.06	
Uniform Delay, d1	68.9	16.4		62.8	13.2		65.7	62.6		66.6	63.8	
Progression Factor	1.17	0.84		0.52	0.10		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.1	0.5		0.2	0.3		4.0	0.2		4.9	0.3	
Delay (s)	90.0	14.3		33.1	1.7		69.7	62.8		71.5	64.1	
Level of Service	F	B		C	A		E	E		E	E	
Approach Delay (s)		17.7			2.6			67.9			67.4	
Approach LOS		B			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.1	
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	117	258	276	1396	1295	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.4	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.91	0.91	
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1537	3433	5085	5012	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1537	3433	5085	5012	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	123	272	291	1469	1363	123
RTOR Reduction (vph)	0	242	0	0	4	0
Lane Group Flow (vph)	123	30	291	1469	1482	0
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	16.6	16.6	18.0	122.5	100.1	
Effective Green, g (s)	16.6	16.6	18.0	122.5	100.1	
Actuated g/C Ratio	0.11	0.11	0.12	0.82	0.67	
Clearance Time (s)	4.9	4.9	4.4	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	195	170	411	4152	3344	
v/s Ratio Prot	c0.07		c0.08	0.29	c0.30	
v/s Ratio Perm		0.02				
v/c Ratio	0.63	0.18	0.71	0.35	0.44	
Uniform Delay, d1	63.8	60.5	63.5	3.5	11.8	
Progression Factor	1.00	1.00	1.00	1.00	0.26	
Incremental Delay, d2	6.5	0.5	5.5	0.2	0.4	
Delay (s)	70.3	61.0	69.0	3.8	3.4	
Level of Service	E	E	E	A	A	
Approach Delay (s)	63.9			14.6	3.4	
Approach LOS	E			B	A	

Intersection Summary				
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	427	0	965	0	730	219	0	1087	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Lane Util. Factor				0.95	0.95	0.88		0.95	1.00		0.95	0.88
Frpb, ped/bikes				1.00	1.00	0.97		1.00	0.96		1.00	0.96
Flpb, ped/bikes				0.99	0.99	1.00		1.00	1.00		1.00	1.00
Frt				1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1656	1656	2713		3539	1514		3539	2664
Flt Permitted				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1656	1656	2713		3539	1514		3539	2664
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	449	0	1016	0	768	231	0	1144	609
RTOR Reduction (vph)	0	0	0	0	0	105	0	0	127	0	0	340
Lane Group Flow (vph)	0	0	0	224	225	911	0	768	104	0	1144	269
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				34.9	34.9	34.9		35.3	35.3		34.8	34.8
Effective Green, g (s)				34.9	34.9	34.9		35.3	35.3		34.8	34.8
Actuated g/C Ratio				0.44	0.44	0.44		0.45	0.45		0.44	0.44
Clearance Time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)				734	734	1203		1587	679		1564	1177
v/s Ratio Prot								0.22			c0.32	
v/s Ratio Perm				0.14	0.14	c0.34			0.07			0.10
v/c Ratio				0.31	0.31	0.76		0.48	0.15		0.73	0.23
Uniform Delay, d1				14.1	14.1	18.3		15.3	12.8		18.1	13.6
Progression Factor				1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.2	0.2	2.8		0.2	0.1		1.8	0.1
Delay (s)				14.3	14.3	21.1		15.5	13.0		19.9	13.7
Level of Service				B	B	C		B	B		B	B
Approach Delay (s)		0.0			19.0			14.9			17.8	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	62.1%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	0	382	0	0	0	0	699	245	0	719	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95					1.00	0.97		1.00	0.95
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1654	1654	2659					3539	1540		3539	1511
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1654	1654	2659					3539	1540		3539	1511
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	0	402	0	0	0	0	736	258	0	757	758
RTOR Reduction (vph)	0	0	338	0	0	0	0	0	67	0	0	201
Lane Group Flow (vph)	131	132	64	0	0	0	0	736	191	0	757	557
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	13.4	13.4	13.4					62.7	62.7		62.2	62.2
Effective Green, g (s)	13.4	13.4	13.4					62.7	62.7		62.2	62.2
Actuated g/C Ratio	0.16	0.16	0.16					0.74	0.74		0.74	0.74
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	261	261	421					2622	1141		2601	1110
v/s Ratio Prot								0.21			0.21	
v/s Ratio Perm	0.08	0.08	0.02						0.12			c0.37
v/c Ratio	0.50	0.51	0.15					0.28	0.17		0.29	0.50
Uniform Delay, d1	32.5	32.6	30.7					3.6	3.2		3.8	4.7
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	1.5	0.2					0.3	0.3		0.3	1.6
Delay (s)	34.1	34.1	30.9					3.8	3.6		4.1	6.3
Level of Service	C	C	C					A	A		A	A
Approach Delay (s)		32.1			0.0			3.8			5.2	
Approach LOS		C			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	15	75	20	13	79	138	567	21	108	468	675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00		0.98		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1693	1583		1645		1770	3520		1762	3539	1536
Flt Permitted	0.95	0.96	1.00		0.90		0.45	1.00		0.36	1.00	1.00
Satd. Flow (perm)	1681	1693	1583		1491		842	3520		671	3539	1536
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	314	16	79	21	14	83	145	597	22	114	493	711
RTOR Reduction (vph)	0	0	60	0	74	0	0	2	0	0	0	413
Lane Group Flow (vph)	163	167	19	0	44	0	145	617	0	114	493	298
Confl. Peds. (#/hr)	10					10				10		10
Turn Type	Split	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	13.4	13.4	13.4		6.4		24.1	24.1		23.6	23.6	23.6
Effective Green, g (s)	13.4	13.4	13.4		6.4		24.1	24.1		23.6	23.6	23.6
Actuated g/C Ratio	0.24	0.24	0.24		0.11		0.43	0.43		0.42	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	399	402	376		169		359	1504		280	1480	642
v/s Ratio Prot	0.10	c0.10						0.18			0.14	
v/s Ratio Perm			0.01		c0.03		0.17			0.17		c0.19
v/c Ratio	0.41	0.42	0.05		0.26		0.40	0.41		0.41	0.33	0.46
Uniform Delay, d1	18.2	18.2	16.6		22.8		11.2	11.2		11.5	11.1	11.8
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.7	0.1		0.8		0.7	0.2		1.0	0.1	0.5
Delay (s)	18.8	18.9	16.6		23.7		11.9	11.4		12.5	11.2	12.4
Level of Service	B	B	B		C		B	B		B	B	B
Approach Delay (s)		18.4			23.7			11.5			11.9	
Approach LOS		B			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	NWL	NWR	NEU	NET	NER	SWL	SWT
Lane Configurations							
Volume (vph)	347	386	3	345	126	315	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1551	1766	3539	1570	1770	3539
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1551	1766	3539	1570	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	365	406	3	363	133	332	964
RTOR Reduction (vph)	0	262	0	0	52	0	0
Lane Group Flow (vph)	365	144	3	363	81	332	964
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	8		5	2	8	1	6
Permitted Phases		8			2		
Actuated Green, G (s)	30.7	30.7	0.9	22.1	52.8	20.1	41.9
Effective Green, g (s)	30.7	30.7	0.9	22.1	52.8	20.1	41.9
Actuated g/C Ratio	0.36	0.36	0.01	0.26	0.61	0.23	0.49
Clearance Time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Vehicle Extension (s)	8.0	8.0	3.0	3.0	8.0	3.0	8.0
Lane Grp Cap (vph)	1221	551	18	906	960	412	1718
v/s Ratio Prot	c0.11		0.00	0.10	0.03	c0.19	c0.27
v/s Ratio Perm		0.09			0.02		
v/c Ratio	0.30	0.26	0.17	0.40	0.08	0.81	0.56
Uniform Delay, d1	20.0	19.8	42.3	26.6	6.9	31.3	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.2	4.3	0.3	0.0	11.0	1.3
Delay (s)	20.7	20.9	46.7	26.9	6.9	42.2	17.0
Level of Service	C	C	D	C	A	D	B
Approach Delay (s)	20.8			21.7			23.5
Approach LOS	C			C			C

Intersection Summary				
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	13.4	
Intersection Capacity Utilization	65.2%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1	6	21	1	40	4	681	12	12	423	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	1.00	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1746			1652		1757	3528		1761	3532	
Flt Permitted		0.71			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1296			1458		1757	3528		1761	3532	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	1	6	22	1	42	4	717	13	13	445	5
RTOR Reduction (vph)	0	5	0	0	36	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	43	0	0	29	0	4	729	0	13	450	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		6.6			6.7		0.6	26.4		0.7	26.6	
Effective Green, g (s)		6.6			6.7		0.6	26.4		0.7	26.6	
Actuated g/C Ratio		0.14			0.14		0.01	0.54		0.01	0.55	
Clearance Time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Vehicle Extension (s)		2.0			2.0		2.0	4.6		2.0	4.8	
Lane Grp Cap (vph)		175			200		21	1908		25	1925	
v/s Ratio Prot							0.00	c0.21		c0.01	0.13	
v/s Ratio Perm		c0.03			0.02							
v/c Ratio		0.24			0.14		0.19	0.38		0.52	0.23	
Uniform Delay, d1		18.9			18.5		23.9	6.5		23.9	5.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.1		1.6	0.2		8.7	0.1	
Delay (s)		19.1			18.6		25.5	6.7		32.6	5.9	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		19.1			18.6			6.8			6.7	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	48.8	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	39.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	1	109	43	7	32	31	527	17	7	436	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.88		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1763	2965		1763	1609		1760	3520		1764	3516	
Flt Permitted	0.73	1.00		0.68	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1355	2965		1260	1609		1760	3520		1764	3516	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	1	115	45	7	34	33	555	18	7	459	17
RTOR Reduction (vph)	0	91	0	0	28	0	0	2	0	0	2	0
Lane Group Flow (vph)	85	25	0	45	13	0	33	571	0	7	474	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	9.4	9.4		7.9	7.9		0.8	17.7		0.6	17.4	
Effective Green, g (s)	9.4	9.4		7.9	7.9		0.8	17.7		0.6	17.4	
Actuated g/C Ratio	0.22	0.22		0.18	0.18		0.02	0.41		0.01	0.40	
Clearance Time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.1	
Lane Grp Cap (vph)	292	640		228	292		32	1432		24	1406	
v/s Ratio Prot		0.01			0.01		c0.02	c0.16		0.00	0.13	
v/s Ratio Perm	c0.06			0.04								
v/c Ratio	0.29	0.04		0.20	0.05		1.03	0.40		0.29	0.34	
Uniform Delay, d1	14.3	13.5		15.1	14.7		21.4	9.1		21.2	9.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.2	0.0		168.8	0.2		2.5	0.1	
Delay (s)	14.5	13.5		15.3	14.7		190.1	9.3		23.7	9.2	
Level of Service	B	B		B	B		F	A		C	A	
Approach Delay (s)		13.9			15.0			19.2			9.4	
Approach LOS		B			B			B			A	

Intersection Summary				
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	17.4	
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	12	102	82	4	22	42	537	46	13	692	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797	1546	1681	1617		1770	3539	1532	1754	3533	
Flt Permitted		0.96	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797	1546	1681	1617		1770	3539	1532	1754	3533	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	13	107	86	4	23	44	565	48	14	728	7
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	48	107	58	34	0	44	565	48	14	734	0
Confl. Peds. (#/hr)	10		10	10			10		10	10		10
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		7.6	7.6	6.2	6.2		3.1	28.7	34.9	0.6	28.4	
Effective Green, g (s)		7.6	7.6	6.2	6.2		3.1	28.7	34.9	0.6	28.4	
Actuated g/C Ratio		0.12	0.12	0.10	0.10		0.05	0.44	0.54	0.01	0.44	
Clearance Time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Vehicle Extension (s)		2.0	2.0	3.0	3.0		2.0	4.1	3.0	2.0	3.5	
Lane Grp Cap (vph)		211	182	161	155		85	1574	828	16	1555	
v/s Ratio Prot		0.03		c0.03	0.02		c0.02	0.16	0.01	0.01	c0.21	
v/s Ratio Perm			c0.07						0.03			
v/c Ratio		0.23	0.59	0.36	0.22		0.52	0.36	0.06	0.88	0.47	
Uniform Delay, d1		25.8	27.0	27.3	26.9		30.0	11.8	7.0	31.9	12.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	3.1	1.4	0.7		2.2	0.2	0.0	158.2	0.3	
Delay (s)		26.0	30.1	28.7	27.6		32.2	12.0	7.0	190.1	13.0	
Level of Service		C	C	C	C		C	B	A	F	B	
Approach Delay (s)		28.8			28.2			13.0			16.3	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	21.4	
Intersection Capacity Utilization	45.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	171	387	317	144	265	417	250	661	38	497	820	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3265		1770	3169		1770	3506		3433	3492	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3265		1770	3169		1770	3506		3433	3492	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	180	407	334	152	279	439	263	696	40	523	863	73
RTOR Reduction (vph)	0	0	0	0	260	0	0	4	0	0	5	0
Lane Group Flow (vph)	180	741	0	152	458	0	263	732	0	523	931	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	19.0	31.0		12.9	24.6		19.4	33.3		23.0	36.4	
Effective Green, g (s)	19.0	31.0		12.9	24.6		19.4	33.3		23.0	36.4	
Actuated g/C Ratio	0.16	0.26		0.11	0.21		0.16	0.28		0.19	0.30	
Clearance Time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.1		2.0	4.5		2.0	3.9	
Lane Grp Cap (vph)	280	843		190	649		286	972		657	1059	
v/s Ratio Prot	0.10	c0.23		c0.09	0.14		c0.15	0.21		0.15	c0.27	
v/s Ratio Perm												
v/c Ratio	0.64	0.88		0.80	0.71		0.92	0.75		0.80	0.88	
Uniform Delay, d1	47.3	42.7		52.3	44.3		49.5	39.6		46.3	39.7	
Progression Factor	0.81	0.57		0.87	0.48		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	7.6		18.4	3.5		32.0	5.4		6.2	10.4	
Delay (s)	40.9	31.7		63.6	24.6		81.5	45.0		52.5	50.1	
Level of Service	D	C		E	C		F	D		D	D	
Approach Delay (s)		33.5			31.4			54.6			51.0	
Approach LOS		C			C			D			D	

Intersection Summary					
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6		
Intersection Capacity Utilization	90.0%	ICU Level of Service	E		
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	97	209	549	84	296	919
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.9		4.5	5.2
Lane Util. Factor	0.97	0.91	0.95		1.00	0.95
Frpb, ped/bikes	0.97	0.97	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	0.92	0.85	0.98		1.00	1.00
Flt Protected	0.98	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3159	1392	3461		1770	3539
Flt Permitted	0.98	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3159	1392	3461		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	220	578	88	312	967
RTOR Reduction (vph)	95	95	13	0	0	0
Lane Group Flow (vph)	117	15	653	0	312	967
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	3		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.9	7.9	21.4		15.4	41.0
Effective Green, g (s)	7.9	7.9	21.4		15.4	41.0
Actuated g/C Ratio	0.13	0.13	0.37		0.26	0.70
Clearance Time (s)	4.5	4.5	4.9		4.5	5.2
Vehicle Extension (s)	3.0	3.0	5.2		2.0	4.5
Lane Grp Cap (vph)	425	187	1263		465	2476
v/s Ratio Prot	c0.04		c0.19		c0.18	0.27
v/s Ratio Perm		0.01				
v/c Ratio	0.27	0.08	0.52		0.67	0.39
Uniform Delay, d1	22.8	22.2	14.6		19.3	3.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.2	0.8		3.0	0.2
Delay (s)	23.1	22.4	15.3		22.3	3.8
Level of Service	C	C	B		C	A
Approach Delay (s)	22.9		15.3			8.3
Approach LOS	C		B			A

Intersection Summary					
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	13.9		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A		
Analysis Period (min)	15				

Description: 10/2013
c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	102	729	358	124	16	329	520	97	43	890	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1826		3433	3443		1770	3515	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1826		3433	3443		1770	3515	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	107	767	377	131	17	346	547	102	45	937	35
RTOR Reduction (vph)	0	0	370	0	5	0	0	10	0	0	2	0
Lane Group Flow (vph)	57	107	397	377	143	0	346	639	0	45	970	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.3	14.8	24.8	12.9	21.5		24.8	53.9		4.5	33.3	
Effective Green, g (s)	6.3	14.8	24.8	12.9	21.5		24.8	53.9		4.5	33.3	
Actuated g/C Ratio	0.06	0.14	0.24	0.12	0.20		0.24	0.51		0.04	0.32	
Clearance Time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	2.1		2.0	5.2		2.0	4.5	
Lane Grp Cap (vph)	106	262	373	421	373		810	1765		75	1113	
v/s Ratio Prot	0.03	0.06	c0.25	c0.11	c0.08		0.10	0.19		0.03	c0.28	
v/s Ratio Perm												
v/c Ratio	0.54	0.41	1.06	0.90	0.38		0.43	0.36		0.60	0.87	
Uniform Delay, d1	48.0	41.2	40.1	45.4	36.1		34.1	15.3		49.4	33.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	1.0	64.9	20.5	0.3		0.1	0.3		8.3	8.1	
Delay (s)	50.6	42.2	105.0	65.9	36.4		34.2	15.6		57.7	42.0	
Level of Service	D	D	F	E	D		C	B		E	D	
Approach Delay (s)		94.5			57.6			22.1			42.7	
Approach LOS		F			E			C			D	

Intersection Summary					
HCM 2000 Control Delay	52.9	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	105.1	Sum of lost time (s)	19.3		
Intersection Capacity Utilization	94.0%	ICU Level of Service	F		
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	556	29	328	740	757	0	0	1122	924
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	0.91			0.91	
Frpb, ped/bikes				1.00	1.00	0.97	1.00	1.00			0.98	
Flpb, ped/bikes				0.98	0.98	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.93	
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1643	1659	1529	3433	5085			4668	
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1643	1659	1529	3433	5085			4668	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	585	31	345	779	797	0	0	1181	973
RTOR Reduction (vph)	0	0	0	0	0	200	0	0	0	0	124	0
Lane Group Flow (vph)	0	0	0	310	306	145	779	797	0	0	2030	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)				24.1	24.1	24.1	28.0	86.7			53.7	
Effective Green, g (s)				24.1	24.1	24.1	28.0	86.7			53.7	
Actuated g/C Ratio				0.20	0.20	0.20	0.23	0.72			0.45	
Clearance Time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				330	333	307	802	3680			2092	
v/s Ratio Prot							c0.23	0.16			c0.43	
v/s Ratio Perm				c0.19	0.18	0.09						
v/c Ratio				0.94	0.92	0.47	0.97	0.22			1.17dr	
Uniform Delay, d1				47.1	46.9	42.2	45.5	5.4			32.3	
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2				33.6	29.2	1.2	24.8	0.1			13.9	
Delay (s)				80.8	76.0	43.4	70.3	5.6			46.1	
Level of Service				F	E	D	E	A			D	
Approach Delay (s)		0.0			65.8			37.6			46.1	
Approach LOS		A			E			D			D	

Intersection Summary					
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.96				
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	91.8%	ICU Level of Service	F		
Analysis Period (min)	15				

Description: 05/2014
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
17: Black Mountain Rd & SR-56 EB Off-Ramp/SR-56 EB On-Ramp 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	0	449	0	0	0	0	1358	415	429	1313	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.97					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1646	1646	2696					5085	1532	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1646	1646	2696					5085	1532	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	228	0	473	0	0	0	0	1429	437	452	1382	0
RTOR Reduction (vph)	0	0	97	0	0	0	0	0	123	0	0	0
Lane Group Flow (vph)	114	114	376	0	0	0	0	1429	314	452	1382	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	21.7	21.7	21.7					56.4	56.4	19.8	81.2	
Effective Green, g (s)	21.7	21.7	21.7					56.4	56.4	19.8	81.2	
Actuated g/C Ratio	0.19	0.19	0.19					0.50	0.50	0.18	0.73	
Clearance Time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	319	319	522					2562	772	607	3689	
v/s Ratio Prot								c0.28		c0.13	0.27	
v/s Ratio Perm	0.07	0.07	c0.14						0.20			
v/c Ratio	0.36	0.36	0.72					0.56	0.41	0.74	0.37	
Uniform Delay, d1	39.1	39.1	42.3					19.1	17.3	43.7	5.8	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.7	4.9					0.9	1.6	4.9	0.3	
Delay (s)	39.7	39.7	47.1					20.0	18.9	48.6	6.1	
Level of Service	D	D	D					C	B	D	A	
Approach Delay (s)		44.7			0.0			19.8			16.6	
Approach LOS		D			A			B			B	

Intersection Summary					
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	91.8%	ICU Level of Service	F		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 6 Ln (W/O Project) AM Pk Hr
18: Black Mountain Rd & Park Village Rd/Adolphia St 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	640	65	288	145	34	101	80	854	50	130	1771	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95		0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.97		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	0.99	0.99	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1659	1681	1524	1668	1540		3433	5025		1770	5085	1524
Flt Permitted	0.65	0.66	1.00	0.53	0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1139	1151	1524	932	1514		3433	5025		1770	5085	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	674	68	303	153	36	106	84	899	53	137	1864	261
RTOR Reduction (vph)	0	0	116	0	59	0	0	4	0	0	0	85
Lane Group Flow (vph)	371	371	187	138	98	0	84	948	0	137	1864	176
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	44.7	44.7	28.5	24.0	24.0		8.0	61.3		19.0	72.3	72.3
Effective Green, g (s)	44.7	44.7	28.5	24.0	24.0		8.0	61.3		19.0	72.3	72.3
Actuated g/C Ratio	0.32	0.32	0.20	0.17	0.17		0.06	0.44		0.14	0.52	0.52
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	471	476	310	223	261		196	2200		240	2626	787
v/s Ratio Prot	c0.16	0.16		0.05	0.03		0.02	c0.19		0.08	c0.37	
v/s Ratio Perm	c0.09	0.09	0.12	0.05	0.03							0.12
v/c Ratio	0.79	0.78	0.60	0.62	0.38		0.43	0.43		0.57	0.71	0.22
Uniform Delay, d1	41.8	43.2	50.6	52.4	51.4		63.8	27.3		56.7	25.8	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.73	0.70		1.00	1.00	1.00
Incremental Delay, d2	8.5	7.9	3.3	5.0	0.9		1.5	0.6		3.3	1.7	0.7
Delay (s)	50.3	51.1	53.9	57.4	52.3		48.1	19.8		59.9	27.5	19.2
Level of Service	D	D	D	E	D		D	B		E	C	B
Approach Delay (s)		51.6			54.7			22.1			28.5	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.75				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0		
Intersection Capacity Utilization	83.4%	ICU Level of Service	E		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 6 Ln (W/O Project) AM Pk Hr
19: Black Mountain Rd & Canyonside Park Dwy 9/10/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	6	7	8	1031	2573	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1524	1770	5085	5085	1484
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1524	1770	5085	5085	1484
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	7	8	1085	2708	35
RTOR Reduction (vph)	0	7	0	0	0	3
Lane Group Flow (vph)	6	0	8	1085	2708	32
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	4.5	4.5	1.0	126.5	120.5	120.5
Effective Green, g (s)	4.5	4.5	1.0	126.5	120.5	120.5
Actuated g/C Ratio	0.03	0.03	0.01	0.90	0.86	0.86
Clearance Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	56	48	12	4594	4376	1277
v/s Ratio Prot	c0.00		0.00	c0.21	c0.53	
v/s Ratio Perm		0.00				0.02
v/c Ratio	0.11	0.00	0.67	0.24	0.62	0.03
Uniform Delay, d1	65.8	65.6	69.3	0.8	2.9	1.4
Progression Factor	1.00	1.00	0.82	0.27	0.74	0.33
Incremental Delay, d2	0.8	0.0	86.2	0.1	0.5	0.0
Delay (s)	66.6	65.6	143.1	0.3	2.7	0.5
Level of Service	E	E	F	A	A	A
Approach Delay (s)	66.1			1.4	2.7	
Approach LOS	E			A	A	

Intersection Summary					
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A		
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	64.0%	ICU Level of Service	B		
Analysis Period (min)	15				
Description: 10/2013					
c Critical Lane Group					

2050 6 Ln (W/O Project) AM Pk Hr
20: Black Mountain Rd & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	460	0	319	23	701	374	508	1817	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Lane Util. Factor				0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.91	
Frpb, ped/bikes				1.00	0.96	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes				0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3366	1447	1447	1770	3539	1524	3433	5085	
Flt Permitted				0.76	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)				2683	1447	1447	1770	3539	1524	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	484	0	336	24	738	394	535	1913	1
RTOR Reduction (vph)	0	0	0	0	134	134	0	0	213	0	0	0
Lane Group Flow (vph)	0	0	0	484	34	34	24	738	181	535	1914	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)				28.4	28.4	28.4	4.5	64.3	64.3	31.8	91.6	
Effective Green, g (s)				28.4	28.4	28.4	4.5	64.3	64.3	31.8	91.6	
Actuated g/C Ratio				0.20	0.20	0.20	0.03	0.46	0.46	0.23	0.65	
Clearance Time (s)				5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)				647	293	293	56	1625	699	779	3327	
v/s Ratio Prot				c0.11	0.02		0.01	0.21		c0.16	c0.38	
v/s Ratio Perm				c0.04		0.02			0.12			
v/c Ratio				0.75	0.12	0.12	0.43	0.45	0.26	0.69	0.58	
Uniform Delay, d1				51.1	45.6	45.6	66.5	25.9	23.2	49.5	13.4	
Progression Factor				1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.30	
Incremental Delay, d2				4.7	0.2	0.2	5.2	0.9	0.9	2.1	0.6	
Delay (s)				55.8	45.7	45.7	71.7	26.8	24.1	48.2	4.7	
Level of Service				E	D	D	E	C	C	D	A	
Approach Delay (s)		0.0			51.7			26.8			14.2	
Approach LOS		A			D			C			B	

Intersection Summary					
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	45	253	3	772	17	425	2238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Lane Util. Factor	1.00	0.88	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	2733	1755	5066		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	2733	1755	5066		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	266	3	813	18	447	2356
RTOR Reduction (vph)	0	226	0	2	0	0	0
Lane Group Flow (vph)	47	40	3	829	0	447	2356
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	11.8	11.8	0.8	26.0		24.6	50.9
Effective Green, g (s)	11.8	11.8	0.8	26.0		24.6	50.9
Actuated g/C Ratio	0.15	0.15	0.01	0.33		0.31	0.65
Clearance Time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Vehicle Extension (s)	4.2	4.2	2.0	3.9		2.0	4.8
Lane Grp Cap (vph)	267	412	17	1684		556	3309
v/s Ratio Prot	c0.03		0.00	0.16		c0.25	c0.46
v/s Ratio Perm		0.01					
v/c Ratio	0.18	0.10	0.18	0.49		0.80	0.71
Uniform Delay, d1	29.0	28.6	38.4	20.8		24.6	8.9
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.2	1.8	0.3		7.8	0.9
Delay (s)	29.4	28.8	40.2	21.1		32.4	9.8
Level of Service	C	C	D	C		C	A
Approach Delay (s)	28.9			21.2			13.4
Approach LOS	C			C			B

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	15.8	
Intersection Capacity Utilization	68.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	846	20	13	732	159	36	42	45	51	0	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	0.87	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.89	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3527		1770	3384		1584	1718		1770	1383	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.68	1.00	
Satd. Flow (perm)	1770	3527		1770	3384		1178	1718		1262	1383	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	241	891	21	14	771	167	38	44	47	54	0	77
RTOR Reduction (vph)	0	1	0	0	11	0	0	0	0	0	66	0
Lane Group Flow (vph)	241	911	0	14	927	0	38	91	0	54	11	0
Confl. Peds. (#/hr)						36	104					104
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	20.5	82.6		4.1	66.8		18.0	18.0		17.9	17.9	
Effective Green, g (s)	20.5	82.6		4.1	66.8		18.0	18.0		17.9	17.9	
Actuated g/C Ratio	0.17	0.69		0.03	0.56		0.15	0.15		0.15	0.15	
Clearance Time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	302	2427		60	1883		176	257		188	206	
v/s Ratio Prot	c0.14	0.26		0.01	c0.27			c0.05			0.01	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.80	0.38		0.23	0.49		0.22	0.35		0.29	0.06	
Uniform Delay, d1	47.8	7.9		56.4	16.2		44.8	45.8		45.4	43.8	
Progression Factor	0.97	0.98		0.61	0.26		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.4	0.3		0.7	0.8		0.2	0.3		0.3	0.0	
Delay (s)	55.5	8.0		35.2	5.1		45.0	46.1		45.7	43.8	
Level of Service	E	A		D	A		D	D		D	D	
Approach Delay (s)		17.9			5.6			45.8			44.6	
Approach LOS		B			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	56	354	85	55	44	157	844	23	50	894	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89	0.85	1.00	0.93		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1757	1548	1483	1766	1721		3433	3521		1770	3534	
Flt Permitted	0.69	1.00	1.00	0.31	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1276	1548	1483	582	1721		3433	3521		1770	3534	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	59	373	89	58	46	165	888	24	53	941	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	1	0
Lane Group Flow (vph)	57	219	213	89	104	0	165	910	0	53	948	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8	1	7	4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	27.5	22.2	37.7	33.1	25.0		15.5	58.2		12.6	55.3	
Effective Green, g (s)	27.5	22.2	37.7	33.1	25.0		15.5	58.2		12.6	55.3	
Actuated g/C Ratio	0.23	0.18	0.31	0.28	0.21		0.13	0.49		0.10	0.46	
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)	313	286	465	240	358		443	1707		185	1628	
v/s Ratio Prot	0.01	c0.14	c0.06	c0.02	0.06		0.05	0.26		0.03	c0.27	
v/s Ratio Perm	0.03		0.08	0.08								
v/c Ratio	0.18	0.77	0.46	0.37	0.29		0.37	0.53		0.29	0.58	
Uniform Delay, d1	36.8	46.4	33.0	33.8	40.0		47.8	21.5		49.6	23.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.79	0.23	
Incremental Delay, d2	0.1	10.5	0.3	0.4	0.2		0.2	1.2		0.3	1.5	
Delay (s)	36.9	56.9	33.2	34.2	40.2		48.0	22.7		39.5	7.0	
Level of Service	D	E	C	C	D		D	C		D	A	
Approach Delay (s)		44.3			37.4			26.5			8.7	
Approach LOS		D			D			C			A	

Intersection Summary				
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.9	
Intersection Capacity Utilization	64.6%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	393	810	70	409	519	204	262	113	49	329	332	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1508	1770	3539	1538	3433	3348		3433	1863	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1508	1770	3539	1538	3433	3348		3433	1863	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	414	853	74	431	546	215	276	119	52	346	349	349
RTOR Reduction (vph)	0	0	60	0	0	161	0	40	0	0	0	281
Lane Group Flow (vph)	414	853	14	431	546	54	276	131	0	346	349	68
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.0	16.7	16.7	21.8	22.5	22.5	16.5	20.5		13.5	17.5	17.5
Effective Green, g (s)	16.0	16.7	16.7	21.8	22.5	22.5	16.5	20.5		13.5	17.5	17.5
Actuated g/C Ratio	0.18	0.19	0.19	0.24	0.25	0.25	0.18	0.23		0.15	0.19	0.19
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	610	943	279	428	884	384	629	762		514	362	299
v/s Ratio Prot	0.12	c0.17		c0.24	0.15		0.08	0.04		c0.10	c0.19	
v/s Ratio Perm			0.01			0.03						0.04
v/c Ratio	0.68	0.90	0.05	1.01	0.62	0.14	0.44	0.17		0.67	0.96	0.23
Uniform Delay, d1	34.6	35.9	30.1	34.1	29.9	26.2	32.6	27.9		36.2	35.9	30.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.0	13.7	0.3	45.3	3.2	0.8	2.2	0.1		3.5	37.6	0.4
Delay (s)	40.6	49.6	30.5	79.4	33.2	27.0	34.9	28.0		39.6	73.5	30.9
Level of Service	D	D	C	E	C	C	C	C		D	E	C
Approach Delay (s)		45.7			48.8			32.2			48.1	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	77.8%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	817	328	50	890	13	125	23	420	71	48	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1514	1770	3529		1770	1558		1770	1633	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1514	1770	3529		1770	1558		1770	1633	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	860	345	53	937	14	132	24	442	75	51	126
RTOR Reduction (vph)	0	0	195	0	1	0	0	162	0	0	110	0
Lane Group Flow (vph)	49	860	150	53	950	0	132	304	0	75	67	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	2.9	34.2	34.2	2.9	34.2		14.5	19.2		5.2	9.9	
Effective Green, g (s)	2.9	34.2	34.2	2.9	34.2		14.5	19.2		5.2	9.9	
Actuated g/C Ratio	0.04	0.44	0.44	0.04	0.44		0.18	0.24		0.07	0.13	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	65	1541	659	65	1537		326	381		117	205	
v/s Ratio Prot	0.03	c0.24		0.03	c0.27		0.07	c0.20		c0.04	0.04	
v/s Ratio Perm			0.10									
v/c Ratio	0.75	0.56	0.23	0.82	0.62		0.40	0.80		0.64	0.33	
Uniform Delay, d1	37.4	16.5	13.9	37.5	17.1		28.2	27.8		35.7	31.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.4	1.5	0.8	52.3	0.7		0.8	11.1		11.4	0.9	
Delay (s)	75.9	18.0	14.7	89.8	17.9		29.0	39.0		47.1	32.2	
Level of Service	E	B	B	F	B		C	D		D	C	
Approach Delay (s)		19.3			21.7			36.8			36.6	
Approach LOS		B			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	75.7%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1147	33	43	818	141	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3520		1770	3539	1770	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3520		1770	3539	1770	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1207	35	45	861	148	126
RTOR Reduction (vph)	2	0	0	0	0	108
Lane Group Flow (vph)	1240	0	45	861	148	18
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases						4
Actuated Green, G (s)	58.9		5.3	68.7	12.8	12.8
Effective Green, g (s)	58.9		5.3	68.7	12.8	12.8
Actuated g/C Ratio	0.65		0.06	0.76	0.14	0.14
Clearance Time (s)	4.5		4.5	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2303		104	2701	251	218
v/s Ratio Prot	c0.35		0.03	c0.24	c0.08	
v/s Ratio Perm						0.01
v/c Ratio	0.54		0.43	0.32	0.59	0.08
Uniform Delay, d1	8.3		40.9	3.3	36.1	33.5
Progression Factor	1.00		0.60	0.64	1.00	1.00
Incremental Delay, d2	0.9		2.8	0.3	3.5	0.2
Delay (s)	9.2		27.5	2.4	39.7	33.7
Level of Service	A		C	A	D	C
Approach Delay (s)	9.2			3.7	36.9	
Approach LOS	A			A	D	

Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	47	56	13	783	20	48	1221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1538	1770	3522		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	1538	1770	3522		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	59	14	824	21	51	1285
RTOR Reduction (vph)	0	54	0	2	0	0	0
Lane Group Flow (vph)	49	5	14	843	0	51	1285
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	7.9	7.9	1.5	60.0		9.1	67.6
Effective Green, g (s)	7.9	7.9	1.5	60.0		9.1	67.6
Actuated g/C Ratio	0.09	0.09	0.02	0.67		0.10	0.75
Clearance Time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	155	135	29	2348		178	2658
v/s Ratio Prot	c0.03		0.01	0.24		c0.03	c0.36
v/s Ratio Perm		0.00					
v/c Ratio	0.32	0.04	0.48	0.36		0.29	0.48
Uniform Delay, d1	38.5	37.6	43.9	6.6		37.4	4.4
Progression Factor	1.00	1.00	1.02	0.33		0.83	0.09
Incremental Delay, d2	1.2	0.1	12.0	0.4		0.8	0.6
Delay (s)	39.7	37.7	56.8	2.6		31.9	0.9
Level of Service	D	D	E	A		C	A
Approach Delay (s)	38.6			3.5			2.1
Approach LOS	D			A			A

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	10	201	111	7	20	65	546	13	46	1036	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	1863	1538	1740	1618		1770	3523		1770	3511	
Flt Permitted	0.74	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1354	1863	1538	1375	1618		1770	3523		1770	3511	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	11	212	117	7	21	68	575	14	48	1091	46
RTOR Reduction (vph)	0	0	182	0	18	0	0	2	0	0	3	0
Lane Group Flow (vph)	81	11	30	117	10	0	68	587	0	48	1134	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	12.9	12.9	12.9	12.9	12.9		7.7	49.9		14.2	56.4	
Effective Green, g (s)	12.9	12.9	12.9	12.9	12.9		7.7	49.9		14.2	56.4	
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.09	0.55		0.16	0.63	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	267	220	197	231		151	1953		279	2200	
v/s Ratio Prot		0.01			0.01		c0.04	0.17		0.03	c0.32	
v/s Ratio Perm	0.06		0.02	c0.09								
v/c Ratio	0.42	0.04	0.14	0.59	0.04		0.45	0.30		0.17	0.52	
Uniform Delay, d1	35.1	33.2	33.7	36.1	33.2		39.1	10.7		32.8	9.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.64	0.35	
Incremental Delay, d2	1.5	0.1	0.3	4.7	0.1		2.1	0.4		0.3	0.8	
Delay (s)	36.6	33.3	34.0	40.8	33.3		41.3	11.1		21.3	4.1	
Level of Service	D	C	C	D	C		D	B		C	A	
Approach Delay (s)		34.6			39.4			14.2			4.8	
Approach LOS		C			D			B			A	

Intersection Summary				
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	60.1%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	269	87	848	1733	0	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0		4.5
Lane Util. Factor	0.97	0.91	0.91	0.91		0.95
Frpb, ped/bikes	1.00	0.97	0.99	0.99		1.00
Flpb, ped/bikes	0.97	1.00	1.00	1.00		1.00
Frt	1.00	0.85	0.92	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3336	1401	3089	1419		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3336	1401	3089	1419		3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	283	92	893	1824	0	611
RTOR Reduction (vph)	3	71	176	0	0	0
Lane Group Flow (vph)	289	12	1629	912	0	611
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Perm	Perm	NA	Free		NA
Protected Phases			2			6
Permitted Phases	8	8		Free		
Actuated Green, G (s)	12.7	12.7	65.7	86.9		65.7
Effective Green, g (s)	12.7	12.7	65.7	86.9		65.7
Actuated g/C Ratio	0.15	0.15	0.76	1.00		0.76
Clearance Time (s)	4.0	4.0	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	487	204	2335	1419		2675
v/s Ratio Prot			c0.53			0.17
v/s Ratio Perm	0.09	0.01		c0.64		
v/c Ratio	0.59	0.06	0.70	0.64		0.23
Uniform Delay, d1	34.7	32.0	5.5	0.0		3.1
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.0	0.1	1.8	2.3		0.2
Delay (s)	36.6	32.1	7.2	2.3		3.3
Level of Service	D	C	A	A		A
Approach Delay (s)	35.6		5.6			3.3
Approach LOS	D		A			A

Intersection Summary				
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	59.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 10/2014
c Critical Lane Group



Movement	EBL2	EBL	EBR	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Volume (vph)	477	0	761	0	0	0	916	120	0	2247	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.0				4.5	4.5		5.5	4.0
Lane Util. Factor	0.97		1.00				0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.99				1.00	0.95		1.00	0.98
Flpb, ped/bikes	0.97		1.00				1.00	1.00		1.00	1.00
Frt	1.00		0.85				1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (prot)	3337		1560				3539	1508		3539	1544
Flt Permitted	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (perm)	3337		1560				3539	1508		3539	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	502	0	801	0	0	0	964	126	0	2365	538
RTOR Reduction (vph)	0	0	0	0	0	0	0	78	0	0	0
Lane Group Flow (vph)	502	0	801	0	0	0	964	48	0	2365	538
Confl. Peds. (#/hr)	10	10	10	10	10	10		10	10		10
Turn Type	Perm		Free				NA	custom		NA	Free
Protected Phases							6				
Permitted Phases	4		Free					4		2	Free
Actuated Green, G (s)	15.7		89.7				65.0	15.7		64.0	89.7
Effective Green, g (s)	15.7		89.7				65.0	15.7		64.0	89.7
Actuated g/C Ratio	0.18		1.00				0.72	0.18		0.71	1.00
Clearance Time (s)	4.5						4.5	4.5		5.5	
Vehicle Extension (s)	3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)	584		1560				2564	263		2525	1544
v/s Ratio Prot							0.27				
v/s Ratio Perm	c0.15		0.51					0.03		c0.67	0.35
v/c Ratio	0.86		0.51				0.38	0.18		0.94	0.35
Uniform Delay, d1	35.9		0.0				4.7	31.5		11.1	0.0
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00
Incremental Delay, d2	12.0		1.2				0.1	0.3		8.2	0.6
Delay (s)	48.0		1.2				4.8	31.9		19.3	0.6
Level of Service	D		A				A	C		B	A
Approach Delay (s)		19.2		0.0			7.9			15.8	
Approach LOS		B		A			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	93.1%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	18	1	27	6	37	0	116	36	6	22	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99			0.99		1.00	0.99	
Flpb, ped/bikes		1.00			0.99			1.00		1.00	1.00	
Frt		1.00			0.93			0.96		1.00	0.96	
Flt Protected		0.99			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1819			1660			3380		1770	3382	
Flt Permitted		0.92			0.86			1.00		0.95	1.00	
Satd. Flow (perm)		1695			1458			3380		1770	3382	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	19	1	28	6	39	0	122	38	6	23	7
RTOR Reduction (vph)	0	1	0	0	35	0	0	12	0	0	2	0
Lane Group Flow (vph)	0	27	0	0	38	0	0	148	0	6	28	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		7.2			7.2			48.7		1.2	54.4	
Effective Green, g (s)		7.2			7.2			48.7		1.2	54.4	
Actuated g/C Ratio		0.10			0.10			0.69		0.02	0.78	
Clearance Time (s)		4.0			4.0			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		174			149			2348		30	2624	
v/s Ratio Prot								c0.04		c0.00	0.01	
v/s Ratio Perm		0.02			c0.03							
v/c Ratio		0.16			0.26			0.06		0.20	0.01	
Uniform Delay, d1		28.7			29.0			3.4		34.0	1.8	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.9			0.1		3.3	0.0	
Delay (s)		29.1			29.9			3.5		37.2	1.8	
Level of Service		C			C			A		D	A	
Approach Delay (s)		29.1			29.9			3.5			7.7	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.09			
Actuated Cycle Length (s)	70.1	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	28.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	3	146	0	9	73	16	49	2	1	0	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			0.98	
Flpb, ped/bikes	0.98	1.00		0.98	1.00			0.99			1.00	
Frt	1.00	1.00		1.00	0.97			1.00			0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.95			1.00	
Satd. Flow (prot)	1737	3539		1739	3418			1753			1585	
Flt Permitted	0.69	1.00		0.65	1.00			0.72			1.00	
Satd. Flow (perm)	1267	3539		1198	3418			1325			1585	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	154	0	9	77	17	52	2	1	0	1	21
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	19	0
Lane Group Flow (vph)	3	154	0	9	90	0	0	54	0	0	3	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	53.7	53.7		53.7	53.7			6.3			6.3	
Effective Green, g (s)	53.7	53.7		53.7	53.7			6.3			6.3	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.09			0.09	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	1000	2794		946	2699			122			146	
v/s Ratio Prot		c0.04			0.03						0.00	
v/s Ratio Perm	0.00			0.01				c0.04				
v/c Ratio	0.00	0.06		0.01	0.03			0.44			0.02	
Uniform Delay, d1	1.5	1.6		1.5	1.5			29.2			28.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0		0.0	0.0			2.6			0.1	
Delay (s)	1.5	1.6		1.5	1.6			31.8			28.1	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		1.6			1.6			31.8			28.1	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	30.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	396	13	38	2	26	11	25	239	0	6	275	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.97	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		0.99	1.00	
Frt		0.99			0.96		1.00	1.00		1.00	0.91	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1771		1770	3539		1743	3130	
Flt Permitted		0.72			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1310			1751		1770	3539		1743	3130	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	417	14	40	2	27	12	26	252	0	6	289	463
RTOR Reduction (vph)	0	5	0	0	7	0	0	0	0	0	276	0
Lane Group Flow (vph)	0	466	0	0	34	0	26	252	0	6	476	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		28.8			28.8		1.7	28.7		0.8	27.8	
Effective Green, g (s)		28.8			28.8		1.7	28.7		0.8	27.8	
Actuated g/C Ratio		0.40			0.40		0.02	0.40		0.01	0.39	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		529			707		42	1424		19	1220	
v/s Ratio Prot							c0.01	0.07		0.00	c0.15	
v/s Ratio Perm		c0.36			0.02							
v/c Ratio		0.88			0.05		0.62	0.18		0.32	0.39	
Uniform Delay, d1		19.7			12.9		34.5	13.7		35.0	15.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.8			0.0		24.2	0.3		9.3	0.9	
Delay (s)		35.4			12.9		58.6	14.0		44.3	16.6	
Level of Service		D			B		E	B		D	B	
Approach Delay (s)		35.4			12.9			18.2			16.8	
Approach LOS		D			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	734	12	16	702	95	12	27	57	511	26	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.98			0.92		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3527		1770	3456			1676		1751	1675	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.72	1.00	
Satd. Flow (perm)	1770	3527		1770	3456			1641		1319	1675	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	773	13	17	739	100	13	28	60	538	27	38
RTOR Reduction (vph)	0	1	0	0	9	0	0	27	0	0	17	0
Lane Group Flow (vph)	17	785	0	17	830	0	0	74	0	538	48	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.2	37.9		2.2	37.6			65.7		65.7	65.7	
Effective Green, g (s)	2.2	37.9		2.2	37.6			65.7		65.7	65.7	
Actuated g/C Ratio	0.02	0.32		0.02	0.31			0.55		0.55	0.55	
Clearance Time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	5.4		2.0	4.7			2.0		2.0	2.0	
Lane Grp Cap (vph)	32	1113		32	1082			898		722	917	
v/s Ratio Prot	c0.01	0.22		0.01	c0.24						0.03	
v/s Ratio Perm								0.05		c0.41		
v/c Ratio	0.53	0.71		0.53	0.77			0.08		0.75	0.05	
Uniform Delay, d1	58.4	36.1		58.4	37.2			12.9		20.8	12.6	
Progression Factor	1.00	1.00		0.97	0.68			1.00		1.00	1.00	
Incremental Delay, d2	8.2	3.8		7.8	4.9			0.2		6.9	0.1	
Delay (s)	66.6	39.9		64.3	30.2			13.0		27.6	12.8	
Level of Service	E	D		E	C			B		C	B	
Approach Delay (s)		40.5			30.8			13.0			26.0	
Approach LOS		D			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	65.9%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1054	350	88	520	20	244	26	104	24	46	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.88			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3369		1770	3513		1751	1608			1812	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00			0.89	
Satd. Flow (perm)	1770	3369		1770	3513		1331	1608			1642	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	15	1109	368	93	547	21	257	27	109	25	48	4
RTOR Reduction (vph)	0	28	0	0	2	0	0	77	0	0	1	0
Lane Group Flow (vph)	15	1449	0	93	566	0	257	59	0	0	76	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.2	61.0		9.4	67.5		35.1	35.1			35.1	
Effective Green, g (s)	2.2	61.0		9.4	67.5		35.1	35.1			35.1	
Actuated g/C Ratio	0.02	0.51		0.08	0.56		0.29	0.29			0.29	
Clearance Time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.4		2.0	3.4		2.0	2.0			2.0	
Lane Grp Cap (vph)	32	1712		138	1976		389	470			480	
v/s Ratio Prot	0.01	c0.43		c0.05	0.16			0.04				
v/s Ratio Perm							c0.19				0.05	
v/c Ratio	0.47	0.85		0.67	0.29		0.66	0.13			0.16	
Uniform Delay, d1	58.3	25.5		53.8	13.7		37.2	31.2			31.5	
Progression Factor	1.24	0.84		1.03	0.57		1.00	1.00			1.00	
Incremental Delay, d2	3.1	4.3		6.9	0.3		8.5	0.5			0.7	
Delay (s)	75.6	25.7		62.1	8.1		45.8	31.7			32.2	
Level of Service	E	C		E	A		D	C			C	
Approach Delay (s)		26.2			15.7			40.9			32.2	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	82.5%	ICU Level of Service	E	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	958	25	19	593	28	75
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1008	26	20	624	29	79
Pedestrians	10			10	10	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1242			1089		
pX, platoon unblocked			0.76		0.76	0.76
vC, conflicting volume			1045		1394	537
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			432		890	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		86	90
cM capacity (veh/h)			849		206	812

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	672	362	20	312	312	108
Volume Left	0	0	20	0	0	29
Volume Right	0	26	0	0	0	79
cSH	1700	1700	849	1700	1700	452
Volume to Capacity	0.40	0.21	0.02	0.18	0.18	0.24
Queue Length 95th (ft)	0	0	2	0	0	23
Control Delay (s)	0.0	0.0	9.3	0.0	0.0	15.5
Lane LOS			A			C
Approach Delay (s)	0.0		0.3			15.5
Approach LOS						C

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				

```
2050 BMR 6Ln AM              Tue Sep 9, 2014 08:01:21                    Page 3-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #37 Sundance Avenue/Twin Trails Drive
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         1.022
Loss Time (sec):        0              Average Delay (sec/veh):        38.8
Optimal Cycle:          0              Level Of Service:                E
********************************************************************************
Street Name:          Sundance Avenue                Twin Trails Drive
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|----------------||----------------||----------------||----------------|
Control:          Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:             Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  1! 0  0     0  0  1! 0  0     1  0  0  1  0     1  0  1  0  1
-------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:       45    17   217    62     6    21    19   555     8    81   404    26
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    45    17   217    62     6    21    19   555     8    81   404    26
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     45    17   217    62     6    21    19   555     8    81   404    26
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:    45    17   217    62     6    21    19   555     8    81   404    26
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    45    17   217    62     6    21    19   555     8    81   404    26
-------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.16 0.06  0.78  0.70 0.07  0.23  1.00 0.99  0.01  1.00 1.00  1.00
Final Sat.:    86   32   413   301   29   102   505  543     8   497  534   595
-------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.53 0.53  0.53  0.21 0.21  0.21  0.04 1.02  1.02  0.16 0.76  0.04
Crit Moves:  ****                ****                ****                ****
Delay/Veh:   16.2 16.2  16.2  12.4 12.4  12.4  10.0 69.3  69.3  11.2 26.6  8.9
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  16.2 16.2  16.2  12.4 12.4  12.4  10.0 69.3  69.3  11.2 26.6  8.9
LOS by Move:    C    C     C     B    B     B     B    F     F     B    D     A
ApproachDel:       16.2              12.4              67.4              23.3
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:        16.2              12.4              67.4              23.3
LOS by Appr:          C                 B                 F                 C
AllWayAvgQ:  1.0  1.0   1.0   0.2  0.2   0.2   0.0  9.2   9.2   0.2  2.6   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	105	24	25	164	11	112	23	26	5	8	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1520	1770	1840		1745	1678			1569	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.56	1.00			0.99	
Satd. Flow (perm)	1770	1863	1520	1770	1840		1034	1678			1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	111	25	26	173	12	118	24	27	5	8	141
RTOR Reduction (vph)	0	0	10	0	2	0	0	22	0	0	116	0
Lane Group Flow (vph)	57	111	15	26	183	0	118	29	0	0	38	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm		NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Actuated Green, G (s)	4.8	39.5	39.5	2.7	37.4		11.9	11.9			11.9	
Effective Green, g (s)	4.8	39.5	39.5	2.7	37.4		11.9	11.9			11.9	
Actuated g/C Ratio	0.07	0.60	0.60	0.04	0.57		0.18	0.18			0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	128	1113	908	72	1041		186	302			280	
v/s Ratio Prot	c0.03	0.06		0.01	c0.10			0.02				
v/s Ratio Perm			0.01				c0.11				0.02	
v/c Ratio	0.45	0.10	0.02	0.36	0.18		0.63	0.10			0.14	
Uniform Delay, d1	29.4	5.7	5.4	30.9	6.9		25.1	22.6			22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.5	0.0	0.0	3.1	0.4		6.9	0.1			0.2	
Delay (s)	31.8	5.7	5.4	33.9	7.3		32.0	22.7			23.0	
Level of Service	C	A	A	C	A		C	C			C	
Approach Delay (s)		13.4			10.6			29.2			23.0	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	98	68	68	72	38	53
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	103	72	72	76	40	56

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	103	72	147	40	56
Volume Left (vph)	103	0	0	40	0
Volume Right (vph)	0	72	76	0	0
Hadj (s)	0.53	-0.67	-0.27	0.53	0.03
Departure Headway (s)	5.6	4.4	4.6	5.6	5.1
Degree Utilization, x	0.16	0.09	0.19	0.06	0.08
Capacity (veh/h)	608	771	752	611	672
Control Delay (s)	8.5	6.7	8.7	7.8	7.4
Approach Delay (s)	7.7		8.7	7.5	
Approach LOS	A		A	A	

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 07/2014			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	92	35	101	137	33	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2		4.0	5.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3367		1770	3539	1770	1558
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3367		1770	3539	1770	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	97	37	106	144	35	92
RTOR Reduction (vph)	29	0	0	0	0	61
Lane Group Flow (vph)	105	0	106	144	35	31
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	7.9		4.3	15.9	13.0	13.0
Effective Green, g (s)	7.9		4.3	15.9	13.0	13.0
Actuated g/C Ratio	0.21		0.11	0.41	0.34	0.34
Clearance Time (s)	5.2		4.0	5.5	4.0	4.0
Vehicle Extension (s)	3.2		2.0	3.2	2.1	2.1
Lane Grp Cap (vph)	692		198	1465	599	527
v/s Ratio Prot	c0.03		c0.06	0.04	0.02	
v/s Ratio Perm						c0.02
v/c Ratio	0.15		0.54	0.10	0.06	0.06
Uniform Delay, d1	12.5		16.1	6.9	8.6	8.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1		1.4	0.0	0.0	0.0
Delay (s)	12.6		17.5	6.9	8.6	8.6
Level of Service	B		B	A	A	A
Approach Delay (s)	12.6			11.4	8.6	
Approach LOS	B			B	A	

Intersection Summary				
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.17			
Actuated Cycle Length (s)	38.4	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	34.1%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	152	26	67	182	14	38	4	91	25	5	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	3448		1770	3493		1763	1566		1760	1612	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.69	1.00	
Satd. Flow (perm)	1755	3448		1770	3493		1371	1566		1282	1612	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	160	27	71	192	15	40	4	96	26	5	23
RTOR Reduction (vph)	0	16	0	0	8	0	0	66	0	0	15	0
Lane Group Flow (vph)	16	171	0	71	199	0	40	34	0	26	13	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.6	10.4		2.2	11.9		12.3	12.3		13.4	13.4	
Effective Green, g (s)	0.6	10.4		2.2	11.9		12.3	12.3		13.4	13.4	
Actuated g/C Ratio	0.02	0.27		0.06	0.30		0.31	0.31		0.34	0.34	
Clearance Time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Vehicle Extension (s)	2.0	4.4		2.0	4.4		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	26	914		99	1060		430	491		438	551	
v/s Ratio Prot	0.01	0.05		c0.04	c0.06			0.02			0.01	
v/s Ratio Perm							c0.03			0.02		
v/c Ratio	0.62	0.19		0.72	0.19		0.09	0.07		0.06	0.02	
Uniform Delay, d1	19.2	11.1		18.2	10.1		9.5	9.4		8.7	8.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.7	0.2		18.5	0.1		0.0	0.0		0.0	0.0	
Delay (s)	45.9	11.3		36.7	10.2		9.5	9.5		8.7	8.6	
Level of Service	D	B		D	B		A	A		A	A	
Approach Delay (s)		14.0			17.0			9.5			8.6	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.20			
Actuated Cycle Length (s)	39.2	Sum of lost time (s)	14.4	
Intersection Capacity Utilization	38.0%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	31	31	33	2	19	12	105	73	5	16	55	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	33	33	35	2	20	13	111	77	5	17	58	17

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	100	35	111	82	92
Volume Left (vph)	33	2	111	0	17
Volume Right (vph)	35	13	0	5	17
Hadj (s)	-0.11	-0.17	0.53	-0.01	-0.04
Departure Headway (s)	4.5	4.5	5.4	4.9	4.5
Degree Utilization, x	0.13	0.04	0.17	0.11	0.11
Capacity (veh/h)	744	734	642	711	759
Control Delay (s)	8.2	7.7	8.3	7.3	8.1
Approach Delay (s)	8.2	7.7	7.9		8.1
Approach LOS	A	A	A		A

Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	32.0%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	53	13	26	50	0	13	7	23	1	21	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	56	14	27	53	0	14	7	24	1	22	36

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	82	80	45	59
Volume Left (vph)	13	27	14	1
Volume Right (vph)	14	0	24	36
Hadj (s)	-0.04	0.10	-0.23	-0.33
Departure Headway (s)	4.2	4.3	4.1	4.0
Degree Utilization, x	0.10	0.10	0.05	0.07
Capacity (veh/h)	836	811	835	863
Control Delay (s)	7.6	7.8	7.3	7.3
Approach Delay (s)	7.6	7.8	7.3	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	26.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	375	38	10	484	37	103	20	15	55	16	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		0.99	1.00	
Frt	1.00	0.99		1.00	0.99			0.99		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3475		1770	3490			1755		1757	1606	
Flt Permitted	0.95	1.00		0.95	1.00			0.75		0.69	1.00	
Satd. Flow (perm)	1770	3475		1770	3490			1359		1268	1606	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	395	40	11	509	39	108	21	16	58	17	78
RTOR Reduction (vph)	0	10	0	0	7	0	0	5	0	0	41	0
Lane Group Flow (vph)	82	425	0	11	541	0	0	140	0	58	54	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.0	26.5		1.1	20.4			37.5		37.5	37.5	
Effective Green, g (s)	7.0	26.5		1.1	20.4			37.5		37.5	37.5	
Actuated g/C Ratio	0.09	0.33		0.01	0.25			0.47		0.47	0.47	
Clearance Time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.9		2.0	2.4			2.0		2.0	2.0	
Lane Grp Cap (vph)	154	1151		24	889			637		594	752	
v/s Ratio Prot	c0.05	0.12		0.01	c0.15						0.03	
v/s Ratio Perm								c0.10		0.05		
v/c Ratio	0.53	0.37		0.46	0.61			0.22		0.10	0.07	
Uniform Delay, d1	34.9	20.4		39.2	26.3			12.6		11.8	11.7	
Progression Factor	1.00	1.00		1.18	0.66			1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.9		4.9	3.1			0.8		0.0	0.0	
Delay (s)	36.7	21.3		51.2	20.3			13.4		11.9	11.7	
Level of Service	D	C		D	C			B		B	B	
Approach Delay (s)		23.7			20.9			13.4			11.8	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	54.0%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 6 Ln (W/O Project) AM Pk Hr
45: Carmel Mountain Rd & Freeport Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	351	21	4	481	7	9	0	7	19	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3501		1770	3530		1755	1551			1637	
Flt Permitted	0.95	1.00		0.95	1.00		0.85	1.00			0.90	
Satd. Flow (perm)	1770	3501		1770	3530		1576	1551			1494	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	44	369	22	4	506	7	9	0	7	20	0	43
RTOR Reduction (vph)	0	3	0	0	1	0	0	6	0	0	56	0
Lane Group Flow (vph)	44	388	0	4	512	0	9	1	0	0	7	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.3	55.0		1.1	49.0		9.3	9.3			9.3	
Effective Green, g (s)	6.3	55.0		1.1	49.0		9.3	9.3			9.3	
Actuated g/C Ratio	0.08	0.69		0.01	0.61		0.12	0.12			0.12	
Clearance Time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.3		2.0	3.7		2.0	2.0			2.0	
Lane Grp Cap (vph)	139	2406		24	2162		183	180			173	
v/s Ratio Prot	c0.02	0.11		0.00	c0.15			0.00				
v/s Ratio Perm							c0.01				0.00	
v/c Ratio	0.32	0.16		0.17	0.24		0.05	0.00			0.04	
Uniform Delay, d1	34.8	4.4		39.0	7.0		31.4	31.3			31.4	
Progression Factor	0.63	0.60		1.62	0.29		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.1		1.2	0.3		0.0	0.0			0.0	
Delay (s)	22.4	2.8		64.6	2.3		31.5	31.3			31.4	
Level of Service	C	A		E	A		C	C			C	
Approach Delay (s)		4.8			2.7			31.4			31.4	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.22				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		15.4	
Intersection Capacity Utilization	44.6%	ICU Level of Service		A	
Analysis Period (min)	15				
Description: 07/2014					
c Critical Lane Group					

2050 6 Ln (W/O Project) AM Pk Hr
46: Carmel Mountain Rd & Stoney Creek Rd 9/10/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	75	315	0	411	41	38	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		5.7		4.4	4.4
Lane Util. Factor	1.00	0.95		0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00		1.00		0.99	0.98
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00		0.99		0.96	0.85
Flt Protected	0.95	1.00		1.00		0.96	1.00
Satd. Flow (prot)	1770	3539		3479		1715	1474
Flt Permitted	0.95	1.00		1.00		0.96	1.00
Satd. Flow (perm)	1770	3539		3479		1715	1474
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	332	0	433	43	40	67
RTOR Reduction (vph)	0	0	0	5	0	13	45
Lane Group Flow (vph)	79	332	0	471	0	42	7
Confl. Peds. (#/hr)	10		10		10	10	10
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	5	2	1	6		4	
Permitted Phases							4
Actuated Green, G (s)	7.0	59.6		47.8		10.7	10.7
Effective Green, g (s)	7.0	59.6		47.8		10.7	10.7
Actuated g/C Ratio	0.09	0.75		0.60		0.13	0.13
Clearance Time (s)	4.4	5.3		5.7		4.4	4.4
Vehicle Extension (s)	2.0	4.3		3.7		2.0	2.0
Lane Grp Cap (vph)	154	2636		2078		229	197
v/s Ratio Prot	c0.04	0.09		c0.14		c0.02	
v/s Ratio Perm							0.00
v/c Ratio	0.51	0.13		0.23		0.18	0.04
Uniform Delay, d1	34.9	2.9		7.5		30.8	30.2
Progression Factor	0.53	0.46		1.00		1.00	1.00
Incremental Delay, d2	1.2	0.1		0.3		0.1	0.0
Delay (s)	19.7	1.4		7.7		30.9	30.2
Level of Service	B	A		A		C	C
Approach Delay (s)		4.9		7.7		30.6	
Approach LOS		A		A		C	

Intersection Summary					
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.25				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		14.5	
Intersection Capacity Utilization	42.7%	ICU Level of Service		A	
Analysis Period (min)	15				
Description: 07/2014					
c Critical Lane Group					

2050 6 Ln (W/O Project) AM Pk Hr
47: Carmel Mountain Rd & Caminata Deluz/Cuca St 9/10/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	46	1	59	3	0	7	27	360	0	9	370	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.92			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1668			1641		1759	3539		1752	3507	
Flt Permitted		0.87			0.92		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1480			1531		1759	3539		1752	3507	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	48	1	62	3	0	7	28	379	0	9	389	21
RTOR Reduction (vph)	0	46	0	0	7	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	65	0	0	3	0	28	379	0	9	405	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.2			10.2		0.8	13.0		0.6	12.7	
Effective Green, g (s)		10.2			10.2		0.8	13.0		0.6	12.7	
Actuated g/C Ratio		0.27			0.27		0.02	0.34		0.02	0.33	
Clearance Time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Vehicle Extension (s)		2.0			2.0		2.0	4.3		2.0	3.8	
Lane Grp Cap (vph)		393			406		36	1198		27	1159	
v/s Ratio Prot							c0.02	0.11		0.01	c0.12	
v/s Ratio Perm		c0.04			0.00							
v/c Ratio		0.17			0.01		0.78	0.32		0.33	0.35	
Uniform Delay, d1		10.8			10.4		18.7	9.4		18.7	9.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		62.5	0.2		2.6	0.2	
Delay (s)		10.9			10.4		81.2	9.6		21.3	10.0	
Level of Service		B			B		F	A		C	A	
Approach Delay (s)		10.9			10.4			14.6			10.2	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.28				
Actuated Cycle Length (s)	38.4	Sum of lost time (s)		14.7	
Intersection Capacity Utilization	41.4%	ICU Level of Service		A	
Analysis Period (min)	15				
Description: 07/2014					
c Critical Lane Group					

2050 6 Ln (W/O Project) AM Pk Hr
48: Carmel Mountain Rd & Penasquitos Dr 9/10/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	575	60	80	28	15	102	47	493	29	83	248	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1541	1681	1743	1541	1770	5030		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1541	1681	1743	1541	1770	5030		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	605	63	84	29	16	107	49	519	31	87	261	155
RTOR Reduction (vph)	0	0	52	0	0	98	0	7	0	0	0	95
Lane Group Flow (vph)	605	63	32	22	23	9	49	543	0	87	261	60
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	30.5	30.5	30.5	6.5	6.5	6.5	3.3	19.0		7.0	22.7	30.5
Effective Green, g (s)	30.5	30.5	30.5	6.5	6.5	6.5	3.3	19.0		7.0	22.7	30.5
Actuated g/C Ratio	0.39	0.39	0.39	0.08	0.08	0.08	0.04	0.24		0.09	0.29	0.39
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	683	719	594	138	143	126	73	1209		156	1016	611
v/s Ratio Prot	c0.34	0.03		0.01	c0.01		c0.03	c0.11		c0.05	0.07	0.04
v/s Ratio Perm			0.02			0.01						
v/c Ratio	0.89	0.09	0.05	0.16	0.16	0.07	0.67	0.45		0.56	0.26	0.10
Uniform Delay, d1	22.6	15.4	15.2	33.7	33.7	33.5	37.3	25.5		34.5	21.7	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.2	0.1	0.0	0.5	0.5	0.2	21.6	1.2		4.3	0.1	0.1
Delay (s)	35.8	15.5	15.2	34.3	34.2	33.7	58.9	26.8		38.8	21.8	15.5
Level of Service	D	B	B	C	C	C	E	C		D	C	B
Approach Delay (s)		31.8			33.9			29.4			22.8	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	79.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	66.5%	ICU Level of Service		C	
Analysis Period (min)	15				
Description: 07/2014					
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	627	495	515	336	0	0	0	0	263	0	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	0.99	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.99	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3539	1544	3433	3539					1659	1520	1467
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3539	1544	3433	3539					1659	1520	1467
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	660	521	542	354	0	0	0	0	277	0	223
RTOR Reduction (vph)	0	0	314	0	0	0	0	0	0	0	49	115
Lane Group Flow (vph)	0	660	207	542	354	0	0	0	0	175	120	41
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		22.7	22.7	15.9	43.1					18.4	18.4	18.4
Effective Green, g (s)		22.7	22.7	15.9	43.1					18.4	18.4	18.4
Actuated g/C Ratio		0.33	0.33	0.23	0.62					0.26	0.26	0.26
Clearance Time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1155	504	785	2194					439	402	388
v/s Ratio Prot		c0.19		c0.16	0.10							
v/s Ratio Perm			0.13							c0.11	0.08	0.03
v/c Ratio		0.57	0.41	0.69	0.16					0.40	0.30	0.11
Uniform Delay, d1		19.4	18.2	24.5	5.6					21.0	20.4	19.3
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		0.7	0.5	2.6	0.0					2.7	1.9	0.6
Delay (s)		20.1	18.7	27.2	5.6					23.7	22.3	19.9
Level of Service		C	B	C	A					C	C	B
Approach Delay (s)		19.5			18.7			0.0			22.0	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	12.5	
Intersection Capacity Utilization	70.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	579	0	0	694	301	175	0	1079	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.91			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			3539	1539	1654	1654	2709			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			3539	1539	1654	1654	2709			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	313	609	0	0	731	317	184	0	1136	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	229	0	0	187	0	0	0
Lane Group Flow (vph)	313	609	0	0	731	88	92	92	949	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	11.3	39.3			24.0	24.0	39.1	39.1	39.1			
Effective Green, g (s)	11.3	39.3			24.0	24.0	39.1	39.1	39.1			
Actuated g/C Ratio	0.13	0.45			0.28	0.28	0.45	0.45	0.45			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	448	2312			983	427	748	748	1225			
v/s Ratio Prot	c0.09	0.12			c0.21							
v/s Ratio Perm						0.06	0.06	0.06	c0.35			
v/c Ratio	0.70	0.26			0.74	0.21	0.12	0.12	0.77			
Uniform Delay, d1	35.9	14.6			28.4	23.9	13.7	13.7	19.9			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	4.7	0.1			3.1	0.2	0.3	0.3	4.8			
Delay (s)	40.6	14.6			31.5	24.1	14.0	14.0	24.8			
Level of Service	D	B			C	C	B	B	C			
Approach Delay (s)		23.5			29.3			23.3			0.0	
Approach LOS		C			C			C			A	

Intersection Summary				
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	70.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	303	11	27	72	189	6	10	7	1154	18	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3514		1770	1863	1539	1728	3296		3433	1596	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3514		1770	1863	1539	1728	3296		3433	1596	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	171	319	12	28	76	199	6	11	7	1215	19	56
RTOR Reduction (vph)	0	3	0	0	0	172	0	5	0	0	25	0
Lane Group Flow (vph)	171	328	0	28	76	27	6	13	0	1215	50	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	9.0	19.5		1.9	11.9	11.9	0.9	19.7		31.1	49.4	
Effective Green, g (s)	9.0	19.5		1.9	11.9	11.9	0.9	19.7		31.1	49.4	
Actuated g/C Ratio	0.10	0.22		0.02	0.13	0.13	0.01	0.22		0.35	0.56	
Clearance Time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	179	772		37	249	206	17	732		1203	888	
v/s Ratio Prot	c0.10	c0.09		0.02	0.04		0.00	0.00		c0.35	c0.03	
v/s Ratio Perm						0.02						
v/c Ratio	0.96	0.42		0.76	0.31	0.13	0.35	0.02		1.01	0.06	
Uniform Delay, d1	39.6	29.8		43.2	34.7	33.8	43.6	26.9		28.8	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.8	0.4		59.7	0.7	0.3	12.2	0.0		28.4	0.1	
Delay (s)	93.5	30.2		102.9	35.4	34.1	55.8	27.0		57.2	9.1	
Level of Service	F	C		F	D	C	E	C		E	A	
Approach Delay (s)		51.7			40.8			34.2			54.4	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	1	4	3	0	97	2	535	7	22	240	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		1.00			0.87		1.00	1.00		1.00	0.98	
Flt Protected		0.95			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761			1589		1760	3531		1763	3474	
Flt Permitted		0.77			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1418			1569		1760	3531		1763	3474	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	118	1	4	3	0	102	2	563	7	23	253	29
RTOR Reduction (vph)	0	2	0	0	84	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	121	0	0	21	0	2	569	0	23	271	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		5.1			5.1		0.6	10.3		0.8	10.5	
Effective Green, g (s)		5.1			5.1		0.6	10.3		0.8	10.5	
Actuated g/C Ratio		0.18			0.18		0.02	0.37		0.03	0.37	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		256			283		37	1289		50	1293	
v/s Ratio Prot							0.00	c0.16		c0.01	0.08	
v/s Ratio Perm		c0.09			0.01							
v/c Ratio		0.47			0.08		0.05	0.44		0.46	0.21	
Uniform Delay, d1		10.3			9.6		13.5	6.8		13.5	6.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4			0.1		0.6	0.2		6.6	0.1	
Delay (s)		11.7			9.7		14.1	7.0		20.1	6.1	
Level of Service		B			A		B	A		C	A	
Approach Delay (s)		11.7			9.7			7.0			7.2	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	28.2	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	38.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
53: Park Village Rd & Ragweed St 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	735	3	30	247	8	4	0	97	68	2	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1749	3537		1770	3519			1582			1749	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.74	
Satd. Flow (perm)	1749	3537		1770	3519			1576			1355	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	774	3	32	260	8	4	0	102	72	2	5
RTOR Reduction (vph)	0	1	0	0	3	0	0	62	0	0	2	0
Lane Group Flow (vph)	1	776	0	32	265	0	0	44	0	0	77	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.9	19.5		2.5	21.1			22.9			22.9	
Effective Green, g (s)	0.9	19.5		2.5	21.1			22.9			22.9	
Actuated g/C Ratio	0.02	0.34		0.04	0.36			0.40			0.40	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	27	1191		76	1282			623			535	
v/s Ratio Prot	0.00	c0.22		c0.02	0.08							
v/s Ratio Perm								0.03			c0.06	
v/c Ratio	0.04	0.65		0.42	0.21			0.07			0.14	
Uniform Delay, d1	28.1	16.3		27.0	12.6			10.9			11.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	1.3		3.7	0.1			0.2			0.6	
Delay (s)	28.6	17.6		30.7	12.7			11.1			11.8	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		17.6			14.6			11.1			11.8	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.38				
Actuated Cycle Length (s)	57.9	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	45.8%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
54: Mercy Rd & Kika Ct 9/10/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	88	69	718	27	17	926
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	6.3		4.4	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1556	3516		1763	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1556	3516		1763	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	73	756	28	18	975
RTOR Reduction (vph)	0	61	3	0	0	0
Lane Group Flow (vph)	93	12	781	0	18	975
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.8	7.8	22.8		0.8	28.3
Effective Green, g (s)	7.8	7.8	22.8		0.8	28.3
Actuated g/C Ratio	0.17	0.17	0.49		0.02	0.60
Clearance Time (s)	4.9	4.9	6.3		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.8		2.0	2.6
Lane Grp Cap (vph)	293	258	1705		30	2130
v/s Ratio Prot	c0.05		0.22		0.01	c0.28
v/s Ratio Perm		0.01				
v/c Ratio	0.32	0.05	0.46		0.60	0.46
Uniform Delay, d1	17.3	16.5	8.0		22.9	5.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.2		19.6	0.1
Delay (s)	17.5	16.5	8.2		42.6	5.3
Level of Service	B	B	A		D	A
Approach Delay (s)	17.1		8.2			5.9
Approach LOS	B		A			A

Intersection Summary					
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.49				
Actuated Cycle Length (s)	47.0	Sum of lost time (s)		15.6	
Intersection Capacity Utilization	44.1%	ICU Level of Service		A	
Analysis Period (min)	15				

Description: 10/2013

c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
55: Alemania Rd & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1044	0	0	895	72	0	0	0	111	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Lane Util. Factor	1.00	0.95			0.95	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97				1.00		0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00				0.99		1.00
Frt	1.00	1.00			1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1770	3539			3539	1533				1760		1556
Flt Permitted	0.95	1.00			1.00	1.00				0.76		1.00
Satd. Flow (perm)	1770	3539			3539	1533				1403		1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	1099	0	0	942	76	0	0	0	117	0	17
RTOR Reduction (vph)	0	0	0	0	0	38	0	0	0	0	0	13
Lane Group Flow (vph)	49	1099	0	0	942	38	0	0	0	117	0	4
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm				Perm		Perm
Protected Phases	5	2		1	6			8				
Permitted Phases						6	8			4		4
Actuated Green, G (s)	1.9	32.2			26.8	26.8				11.7		11.7
Effective Green, g (s)	1.9	32.2			26.8	26.8				11.7		11.7
Actuated g/C Ratio	0.04	0.60			0.50	0.50				0.22		0.22
Clearance Time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Vehicle Extension (s)	2.0	5.0			2.8	2.8				2.0		2.0
Lane Grp Cap (vph)	62	2130			1772	767				306		340
v/s Ratio Prot	c0.03	c0.31			0.27							
v/s Ratio Perm						0.02				c0.08		0.00
v/c Ratio	0.79	0.52			0.53	0.05				0.38		0.01
Uniform Delay, d1	25.6	6.1			9.1	6.8				17.8		16.4
Progression Factor	1.00	1.00			1.00	1.00				1.00		1.00
Incremental Delay, d2	45.7	0.4			0.3	0.0				0.3		0.0
Delay (s)	71.3	6.6			9.4	6.9				18.1		16.4
Level of Service	E	A			A	A				B		B
Approach Delay (s)		9.3			9.2			0.0			17.9	
Approach LOS		A			A			A			B	

Intersection Summary					
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	53.5	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	55.1%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group

2050 6 Ln (W/O Project) AM Pk Hr
56: I-15 SB On-Ramp/I-15 SB Off-Ramp & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	700	387	1051	799	0	0	0	0	696	0	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Lane Util. Factor		0.86	0.86	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		0.99	0.97	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.98	1.00
Frt		0.97	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4658	1319	3433	3539					1647	1572	1457
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4658	1319	3433	3539					1647	1572	1457
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	737	407	1106	841	0	0	0	0	733	0	203
RTOR Reduction (vph)	0	26	198	0	0	0	0	0	0	0	48	126
Lane Group Flow (vph)	0	862	58	1106	841	0	0	0	0	381	324	57
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		24.0	24.0	37.6	65.6					32.1	32.1	32.1
Effective Green, g (s)		24.0	24.0	37.6	65.6					32.1	32.1	32.1
Actuated g/C Ratio		0.22	0.22	0.35	0.61					0.30	0.30	0.30
Clearance Time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1047	296	1209	2175					495	472	438
v/s Ratio Prot		c0.19		c0.32	0.24							
v/s Ratio Perm			0.04							c0.23	0.21	0.04
v/c Ratio		0.82	0.19	0.91	0.39					0.77	0.69	0.13
Uniform Delay, d1		39.3	33.5	33.0	10.4					33.9	32.9	27.1
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		5.4	0.3	10.7	0.1					11.0	7.9	0.6
Delay (s)		44.7	33.8	43.7	10.5					44.9	40.7	27.8
Level of Service		D	C	D	B					D	D	C
Approach Delay (s)		42.3			29.4			0.0			39.9	
Approach LOS		D			C			A			D	

Intersection Summary					
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	106.7	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	148.9%	ICU Level of Service		H	
Analysis Period (min)	15				

Description: 07/2014

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	299	929	0	0	1448	784	165	5	1586	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1532	1646	1657	2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	3539			5085	1532	1646	1657	2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	315	978	0	0	1524	825	174	5	1669	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	358	0	0	39	0	0	0
Lane Group Flow (vph)	315	978	0	0	1524	467	89	90	1631	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Prot			
Protected Phases	5	2			6			8	8			
Permitted Phases						6	8					
Actuated Green, G (s)	8.0	46.0			34.0	34.0	55.0	55.0	55.0			
Effective Green, g (s)	8.0	46.0			34.0	34.0	55.0	55.0	55.0			
Actuated g/C Ratio	0.07	0.42			0.31	0.31	0.50	0.50	0.50			
Clearance Time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	249	1479			1571	473	823	828	1393			
v/s Ratio Prot	c0.09	0.28			0.30				c0.59			
v/s Ratio Perm						c0.30	0.05	0.05				
v/c Ratio	1.27	0.66			0.97	0.99	0.11	0.11	1.17			
Uniform Delay, d1	51.0	25.7			37.5	37.8	14.5	14.5	27.5			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	147.2	1.1			16.1	37.8	0.3	0.3	84.8			
Delay (s)	198.2	26.9			53.6	75.5	14.8	14.8	112.3			
Level of Service	F	C			D	E	B	B	F			
Approach Delay (s)		68.6			61.3			102.8			0.0	
Approach LOS		E			E			F			A	

Intersection Summary			
HCM 2000 Control Delay	77.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	148.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

2050 6 Ln (W/O Project) PM Pk Hr
1: Camino Del Sur & Carmel Valley Rd 9/14/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	203	697	102	169	760	351	353	655	225	138	227	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1546	1770	3539	1546	1770	3539	1548	3433	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1546	1770	3539	1546	1770	3539	1548	3433	3539	1547
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	214	734	107	178	800	369	372	689	237	145	239	199
RTOR Reduction (vph)	0	0	74	0	0	162	0	0	161	0	0	169
Lane Group Flow (vph)	214	734	33	178	800	207	372	689	76	145	239	30
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	18.9	39.7	39.7	16.4	37.5	37.5	30.8	40.5	40.5	9.2	19.0	19.0
Effective Green, g (s)	18.9	39.7	39.7	16.4	37.5	37.5	30.8	40.5	40.5	9.2	19.0	19.0
Actuated g/C Ratio	0.15	0.31	0.31	0.13	0.30	0.30	0.24	0.32	0.32	0.07	0.15	0.15
Clearance Time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Vehicle Extension (s)	2.0	5.6	5.6	2.0	5.9	5.9	2.0	4.9	4.9	2.0	5.1	5.1
Lane Grp Cap (vph)	263	1107	483	228	1045	456	429	1129	494	248	529	231
v/s Ratio Prot	c0.12	0.21		0.10	c0.23		c0.21	c0.19		0.04	0.07	
v/s Ratio Perm			0.02			0.13			0.05			0.02
v/c Ratio	0.81	0.66	0.07	0.78	0.77	0.45	0.87	0.61	0.15	0.58	0.45	0.13
Uniform Delay, d1	52.3	37.8	30.6	53.5	40.7	36.4	46.1	36.5	30.9	57.0	49.2	46.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.4	2.2	0.2	14.7	4.3	2.0	16.1	1.4	0.3	2.3	1.3	0.5
Delay (s)	68.7	40.0	30.8	68.2	45.0	38.3	62.2	37.9	31.2	59.3	50.5	47.3
Level of Service	E	D	C	E	D	D	E	D	C	E	D	D
Approach Delay (s)		44.9			46.3			43.7			51.6	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	126.9	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	83.7%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 6 Ln (W/O Project) PM Pk Hr
2: Camino Del Sur & Watson Ranch Rd 9/10/2015



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	16	11	60	960	20	20	993
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Lane Util. Factor	1.00	1.00	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1744	1542	1770	5063		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1744	1542	1770	5063		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	12	63	1011	21	21	1045
RTOR Reduction (vph)	0	11	0	1	0	0	0
Lane Group Flow (vph)	17	1	63	1031	0	21	1045
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Perm	Perm	Prot	NA		Prot	NA
Protected Phases			5	2		1	6
Permitted Phases	8	8					
Actuated Green, G (s)	8.7	8.7	9.9	122.1		4.4	116.6
Effective Green, g (s)	8.7	8.7	9.9	122.1		4.4	116.6
Actuated g/C Ratio	0.06	0.06	0.07	0.81		0.03	0.78
Clearance Time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.5	5.4		2.0	5.4
Lane Grp Cap (vph)	101	89	116	4121		51	3952
v/s Ratio Prot			c0.04	0.20		c0.01	c0.21
v/s Ratio Perm	c0.01	0.00					
v/c Ratio	0.17	0.01	0.54	0.25		0.41	0.26
Uniform Delay, d1	67.2	66.6	67.9	3.3		71.5	4.7
Progression Factor	1.00	1.00	0.61	0.92		1.00	1.00
Incremental Delay, d2	0.3	0.0	3.7	0.1		2.0	0.2
Delay (s)	67.5	66.6	45.1	3.1		73.5	4.8
Level of Service	E	E	D	A		E	A
Approach Delay (s)	67.1			5.5			6.2
Approach LOS	E			A			A

Intersection Summary				
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	44.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 6 Ln (W/O Project) PM Pk Hr
3: Camino Del Sur & Wolverine Way/Fallhaven Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1	40	13	0	6	152	1417	12	42	922	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes		1.00	0.89	1.00	0.89		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1776	1405	1770	1412		3433	5072		1770	5085	1558
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1776	1405	1770	1412		3433	5072		1770	5085	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	1	42	14	0	6	160	1492	13	44	971	29
RTOR Reduction (vph)	0	0	39	0	5	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	36	3	14	1	0	160	1505	0	44	971	12
Confl. Peds. (#/hr)			82			83			31			2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.8	11.8	22.8	22.8		31.1	88.0		6.8	64.5	64.5
Effective Green, g (s)		11.8	11.8	22.8	22.8		31.1	88.0		6.8	64.5	64.5
Actuated g/C Ratio		0.08	0.08	0.15	0.15		0.21	0.59		0.05	0.43	0.43
Clearance Time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Vehicle Extension (s)		2.0	2.0	6.3	6.3		2.0	5.9		2.0	2.0	2.0
Lane Grp Cap (vph)		139	110	269	214		711	2975		80	2186	669
v/s Ratio Prot		c0.02		c0.01	0.00		0.05	c0.30		0.02	c0.19	
v/s Ratio Perm			0.00									0.01
v/c Ratio		0.26	0.03	0.05	0.00		0.23	0.51		0.55	0.44	0.02
Uniform Delay, d1		65.0	63.8	54.4	54.0		49.4	18.2		70.1	30.1	24.6
Progression Factor		1.00	1.00	1.00	1.00		0.71	0.51		0.88	0.88	1.00
Incremental Delay, d2		0.4	0.0	0.2	0.0		0.1	0.5		4.5	0.6	0.1
Delay (s)		65.3	63.9	54.6	54.0		35.2	9.8		66.1	27.3	24.6
Level of Service		E	E	D	D		D	A		E	C	C
Approach Delay (s)		64.5			54.4			12.2			28.9	
Approach LOS		E			D			B			C	

Intersection Summary				
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	89.4%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 6 Ln (W/O Project) PM Pk Hr
4: Camino Del Sur & Torrey Meadows Dr 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1652	97	47	1050	42	56	1	22	49	4	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5036		1770	5048		1770	1551		1770	2951	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5036		1770	5048		1770	1551		1770	2951	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1739	102	49	1105	44	59	1	23	52	4	51
RTOR Reduction (vph)	0	3	0	0	2	0	0	21	0	0	51	0
Lane Group Flow (vph)	98	1838	0	49	1147	0	59	3	0	52	4	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.7	100.8		8.1	95.8		9.4	13.2		8.2	12.0	
Effective Green, g (s)	12.7	100.8		8.1	95.8		9.4	13.2		8.2	12.0	
Actuated g/C Ratio	0.08	0.67		0.05	0.64		0.06	0.09		0.05	0.08	
Clearance Time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	4.4		2.0	5.4		2.0	5.4	
Lane Grp Cap (vph)	149	3384		95	3223		110	136		96	236	
v/s Ratio Prot	c0.06	c0.37		c0.03	0.23		c0.03	c0.00		0.03	0.00	
v/s Ratio Perm												
v/c Ratio	0.66	0.54		0.52	0.36		0.54	0.02		0.54	0.02	
Uniform Delay, d1	66.5	12.7		69.0	12.7		68.2	62.5		69.1	63.6	
Progression Factor	1.14	0.80		0.60	0.15		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	0.6		1.9	0.3		2.5	0.2		3.3	0.1	
Delay (s)	83.1	10.8		43.2	2.2		70.7	62.7		72.4	63.7	
Level of Service	F	B		D	A		E	E		E	E	
Approach Delay (s)		14.4			3.9			68.4			67.9	
Approach LOS		B			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.1	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	163	211	308	1746	1068	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.4	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.91	0.91	
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1537	3433	5085	4997	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1537	3433	5085	4997	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	222	324	1838	1124	125
RTOR Reduction (vph)	0	193	0	0	6	0
Lane Group Flow (vph)	172	29	324	1838	1243	0
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.9	19.9	19.4	119.2	95.4	
Effective Green, g (s)	19.9	19.9	19.4	119.2	95.4	
Actuated g/C Ratio	0.13	0.13	0.13	0.79	0.64	
Clearance Time (s)	4.9	4.9	4.4	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	234	203	444	4040	3178	
v/s Ratio Prot	c0.10		c0.09	c0.36	0.25	
v/s Ratio Perm		0.02				
v/c Ratio	0.74	0.15	0.73	0.45	0.39	
Uniform Delay, d1	62.5	57.5	62.8	5.0	13.2	
Progression Factor	1.00	1.00	1.00	1.00	0.32	
Incremental Delay, d2	11.3	0.3	5.9	0.4	0.3	
Delay (s)	73.9	57.9	68.7	5.3	4.5	
Level of Service	E	E	E	A	A	
Approach Delay (s)	64.8			14.8	4.5	
Approach LOS	E			B	A	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	188	0	934	0	1221	297	0	1034	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Lane Util. Factor				0.95	0.95	0.88		0.95	1.00		0.95	0.88
Frpb, ped/bikes				1.00	1.00	0.97		1.00	0.96		1.00	0.96
Flpb, ped/bikes				0.98	0.98	1.00		1.00	1.00		1.00	1.00
Frt				1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1656	1656	2712		3539	1513		3539	2662
Flt Permitted				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1656	1656	2712		3539	1513		3539	2662
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	198	0	983	0	1285	313	0	1088	240
RTOR Reduction (vph)	0	0	0	0	0	23	0	0	169	0	0	131
Lane Group Flow (vph)	0	0	0	99	99	960	0	1285	144	0	1088	109
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				34.8	34.8	34.8		37.0	37.0		36.5	36.5
Effective Green, g (s)				34.8	34.8	34.8		37.0	37.0		36.5	36.5
Actuated g/C Ratio				0.43	0.43	0.43		0.46	0.46		0.45	0.45
Clearance Time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)				717	717	1175		1630	697		1608	1210
v/s Ratio Prot								c0.36			0.31	
v/s Ratio Perm				0.06	0.06	c0.35			0.10			0.04
v/c Ratio				0.14	0.14	0.82		0.79	0.21		0.68	0.09
Uniform Delay, d1				13.7	13.7	20.0		18.3	12.9		17.3	12.5
Progression Factor				1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.1	0.1	4.5		2.6	0.1		1.1	0.0
Delay (s)				13.8	13.8	24.5		20.9	13.1		18.4	12.5
Level of Service				B	B	C		C	B		B	B
Approach Delay (s)		0.0			22.7			19.4			17.3	
Approach LOS		A			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	844	0	283	0	0	0	0	674	591	0	818	756
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95					1.00	0.97		1.00	0.95
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1655	1655	2660					3539	1540		3539	1511
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1655	1655	2660					3539	1540		3539	1511
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	888	0	298	0	0	0	0	709	622	0	861	796
RTOR Reduction (vph)	0	0	114	0	0	0	0	0	286	0	0	370
Lane Group Flow (vph)	444	444	184	0	0	0	0	709	336	0	861	426
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	29.7	29.7	29.7					45.0	45.0		44.5	44.5
Effective Green, g (s)	29.7	29.7	29.7					45.0	45.0		44.5	44.5
Actuated g/C Ratio	0.36	0.36	0.36					0.54	0.54		0.53	0.53
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	590	590	949					1914	832		1892	808
v/s Ratio Prot								0.20			0.24	
v/s Ratio Perm	c0.27	0.27	0.07						0.22			c0.28
v/c Ratio	0.75	0.75	0.19					0.37	0.40		0.46	0.53
Uniform Delay, d1	23.5	23.5	18.5					11.0	11.2		11.9	12.5
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	5.4	5.4	0.1					0.6	1.5		0.8	2.5
Delay (s)	28.9	28.9	18.6					11.5	12.7		12.7	15.0
Level of Service	C	C	B					B	B		B	B
Approach Delay (s)		26.3			0.0			12.1			13.8	
Approach LOS		C			A			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	83.2	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	495	35	124	33	17	134	59	636	31	163	739	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00		0.98		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1696	1583		1635		1770	3514		1762	3539	1532
Flt Permitted	0.95	0.96	1.00		0.88		0.27	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1681	1696	1583		1446		496	3514		557	3539	1532
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	521	37	131	35	18	141	62	669	33	172	778	306
RTOR Reduction (vph)	0	0	97	0	96	0	0	3	0	0	0	178
Lane Group Flow (vph)	276	282	34	0	98	0	62	699	0	172	778	128
Confl. Peds. (#/hr)	10					10					10	
Turn Type	Split	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	18.5	18.5	18.5		9.8		30.2	30.2		29.7	29.7	29.7
Effective Green, g (s)	18.5	18.5	18.5		9.8		30.2	30.2		29.7	29.7	29.7
Actuated g/C Ratio	0.26	0.26	0.26		0.14		0.43	0.43		0.42	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	438	441	412		199		210	1494		232	1480	640
v/s Ratio Prot	0.16	c0.17						0.20			0.22	
v/s Ratio Perm			0.02		c0.07		0.12			c0.31		0.08
v/c Ratio	0.63	0.64	0.08		0.49		0.30	0.47		0.74	0.53	0.20
Uniform Delay, d1	23.2	23.3	19.8		28.3		13.4	14.6		17.4	15.4	13.1
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	3.0	0.1		1.9		0.8	0.2		12.0	0.3	0.2
Delay (s)	26.2	26.3	19.9		30.2		14.2	14.9		29.4	15.7	13.3
Level of Service	C	C	B		C		B	B		C	B	B
Approach Delay (s)		25.0			30.2			14.8			17.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	71.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	68.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	NWL	NWR	NEU	NET	NER	SWL	SWT
Lane Configurations							
Volume (vph)	182	406	3	1028	450	539	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1547	1770	3539	1563	1770	3539
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1547	1770	3539	1563	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	192	427	3	1082	474	567	374
RTOR Reduction (vph)	0	314	0	0	36	0	0
Lane Group Flow (vph)	192	113	3	1082	438	567	374
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	8		5	2	8	1	6
Permitted Phases		8			2		
Actuated Green, G (s)	30.0	30.0	1.0	35.8	65.8	34.0	69.4
Effective Green, g (s)	30.0	30.0	1.0	35.8	65.8	34.0	69.4
Actuated g/C Ratio	0.27	0.27	0.01	0.32	0.58	0.30	0.61
Clearance Time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Vehicle Extension (s)	8.0	8.0	3.0	3.0	8.0	3.0	8.0
Lane Grp Cap (vph)	909	409	15	1119	908	531	2169
v/s Ratio Prot	0.06		0.00	c0.31	c0.13	c0.32	0.11
v/s Ratio Perm		0.07			0.15		
v/c Ratio	0.21	0.28	0.20	0.97	0.48	1.07	0.17
Uniform Delay, d1	32.4	33.0	55.7	38.1	13.8	39.6	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	1.7	6.5	19.2	0.4	58.4	0.2
Delay (s)	32.9	34.7	62.2	57.3	14.2	98.0	9.6
Level of Service	C	C	E	E	B	F	A
Approach Delay (s)	34.1			44.2			62.9
Approach LOS	C			D			E

Intersection Summary				
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	13.4	
Intersection Capacity Utilization	94.4%	ICU Level of Service	F	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1	5	26	0	18	3	592	31	46	859	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1692		1763	3506		1770	3528	
Flt Permitted		0.77			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1391			1396		1763	3506		1770	3528	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1	5	27	0	19	3	623	33	48	904	16
RTOR Reduction (vph)	0	5	0	0	42	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	4	0	3	653	0	48	919	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		4.7			4.8		0.6	32.2		2.1	33.8	
Effective Green, g (s)		4.7			4.8		0.6	32.2		2.1	33.8	
Actuated g/C Ratio		0.09			0.09		0.01	0.60		0.04	0.62	
Clearance Time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Vehicle Extension (s)		2.0			2.0		2.0	4.6		2.0	4.8	
Lane Grp Cap (vph)		120			123		19	2086		68	2204	
v/s Ratio Prot							0.00	0.19		c0.03	c0.26	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.22			0.03		0.16	0.31		0.71	0.42	
Uniform Delay, d1		23.0			22.5		26.5	5.4		25.7	5.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.0		1.4	0.2		23.7	0.2	
Delay (s)		23.3			22.6		27.9	5.6		49.4	5.4	
Level of Service		C			C		C	A		D	A	
Approach Delay (s)		23.3			22.6			5.7			7.6	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	51.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	4	81	39	2	21	90	719	70	21	719	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	2981		1761	1581		1770	3485		1765	3483	
Flt Permitted	0.74	1.00		0.70	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1374	2981		1291	1581		1770	3485		1765	3483	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	4	85	41	2	22	95	757	74	22	757	71
RTOR Reduction (vph)	0	75	0	0	19	0	0	6	0	0	6	0
Lane Group Flow (vph)	41	14	0	41	5	0	95	825	0	22	822	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	9.3	9.3		7.8	7.8		6.2	32.9		0.7	27.3	
Effective Green, g (s)	9.3	9.3		7.8	7.8		6.2	32.9		0.7	27.3	
Actuated g/C Ratio	0.16	0.16		0.13	0.13		0.11	0.56		0.01	0.47	
Clearance Time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.1	
Lane Grp Cap (vph)	217	472		171	210		186	1953		21	1619	
v/s Ratio Prot		0.00			0.00		c0.05	0.24		0.01	c0.24	
v/s Ratio Perm	0.03			c0.03								
v/c Ratio	0.19	0.03		0.24	0.02		0.51	0.42		1.05	0.51	
Uniform Delay, d1	21.4	20.9		22.8	22.1		24.8	7.4		29.0	11.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.3	0.0		1.0	0.1		212.0	0.3	
Delay (s)	21.6	20.9		23.1	22.2		25.8	7.6		241.0	11.3	
Level of Service	C	C		C	C		C	A		F	B	
Approach Delay (s)		21.1			22.7			9.4			17.2	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	17.4	
Intersection Capacity Utilization	55.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	6	52	77	8	16	105	840	160	32	714	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.96	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1795	1544	1681	1641		1770	3539	1531	1770	3506	
Flt Permitted		0.96	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1795	1544	1681	1641		1770	3539	1531	1770	3506	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	6	55	81	8	17	111	884	168	34	752	39
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	24	55	53	38	0	111	884	168	34	788	0
Confl. Peds. (#/hr)	10		10	10			10		10	10		10
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		5.1	5.1	8.1	8.1		6.7	32.5	40.6	1.5	29.5	
Effective Green, g (s)		5.1	5.1	8.1	8.1		6.7	32.5	40.6	1.5	29.5	
Actuated g/C Ratio		0.07	0.07	0.12	0.12		0.10	0.47	0.59	0.02	0.43	
Clearance Time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Vehicle Extension (s)		2.0	2.0	3.0	3.0		2.0	4.1	3.0	2.0	3.5	
Lane Grp Cap (vph)		133	114	198	193		172	1676	906	38	1507	
v/s Ratio Prot		0.01		c0.03	0.02		c0.06	c0.25	0.02	0.02	0.22	
v/s Ratio Perm			c0.04						0.09			
v/c Ratio		0.18	0.48	0.27	0.20		0.65	0.53	0.19	0.89	0.52	
Uniform Delay, d1		29.8	30.5	27.5	27.3		29.8	12.7	6.4	33.5	14.4	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	1.2	0.7	0.5		6.1	0.4	0.1	102.2	0.4	
Delay (s)		30.0	31.7	28.3	27.8		35.9	13.1	6.5	135.7	14.7	
Level of Service		C	C	C	C		D	B	A	F	B	
Approach Delay (s)		31.2			28.0			14.3			19.7	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	21.4	
Intersection Capacity Utilization	50.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	179	74	104	262	331	120	779	55	287	549	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3362		1770	3205		1770	3499		3433	3478	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3362		1770	3205		1770	3499		3433	3478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	188	78	109	276	348	126	820	58	302	578	65
RTOR Reduction (vph)	0	0	0	0	200	0	0	5	0	0	8	0
Lane Group Flow (vph)	74	266	0	109	424	0	126	873	0	302	635	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.8	16.7		11.0	21.6		10.9	41.7		10.8	41.1	
Effective Green, g (s)	5.8	16.7		11.0	21.6		10.9	41.7		10.8	41.1	
Actuated g/C Ratio	0.06	0.17		0.11	0.22		0.11	0.42		0.11	0.41	
Clearance Time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.1		2.0	4.5		2.0	3.9	
Lane Grp Cap (vph)	102	561		194	692		192	1459		370	1429	
v/s Ratio Prot	c0.04	0.08		0.06	c0.13		0.07	c0.25		c0.09	0.18	
v/s Ratio Perm												
v/c Ratio	0.73	0.47		0.56	0.61		0.66	0.60		0.82	0.44	
Uniform Delay, d1	46.3	37.7		42.2	35.4		42.8	22.6		43.6	21.2	
Progression Factor	1.00	1.00		0.54	0.38		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.4	0.8		2.1	1.8		6.0	1.8		12.4	1.0	
Delay (s)	65.7	38.5		24.9	15.3		48.8	24.5		56.0	22.2	
Level of Service	E	D		C	B		D	C		E	C	
Approach Delay (s)		44.4			16.7			27.5			33.0	
Approach LOS		D			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		20.6	
Intersection Capacity Utilization	75.4%	ICU Level of Service		D	
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	103	103	885	130	210	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.9		4.5	5.2
Lane Util. Factor	0.97	0.91	0.95		1.00	0.95
Frpb, ped/bikes	0.98	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	0.96	0.85	0.98		1.00	1.00
Flt Protected	0.96	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3289	1387	3463		1770	3539
Flt Permitted	0.96	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3289	1387	3463		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	108	932	137	221	403
RTOR Reduction (vph)	35	60	12	0	0	0
Lane Group Flow (vph)	113	8	1057	0	221	403
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	3		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.9	7.9	33.2		13.2	50.6
Effective Green, g (s)	7.9	7.9	33.2		13.2	50.6
Actuated g/C Ratio	0.12	0.12	0.49		0.19	0.74
Clearance Time (s)	4.5	4.5	4.9		4.5	5.2
Vehicle Extension (s)	3.0	3.0	5.2		2.0	4.5
Lane Grp Cap (vph)	380	160	1685		342	2625
v/s Ratio Prot	c0.03		c0.31		c0.12	0.11
v/s Ratio Perm		0.01				
v/c Ratio	0.30	0.05	0.63		0.65	0.15
Uniform Delay, d1	27.6	26.8	12.9		25.3	2.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.1	1.1		3.1	0.0
Delay (s)	28.0	26.9	14.0		28.5	2.6
Level of Service	C	C	B		C	A
Approach Delay (s)	27.7		14.0			11.8
Approach LOS	C		B			B

Intersection Summary					
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	68.2	Sum of lost time (s)		13.9	
Intersection Capacity Utilization	56.2%	ICU Level of Service		B	
Analysis Period (min)	15				

Description: 10/2013
c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	115	350	358	154	40	616	957	192	47	484	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1798		3433	3438		1770	3492	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1798		3433	3438		1770	3492	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	121	368	377	162	42	648	1007	202	49	509	39
RTOR Reduction (vph)	0	0	301	0	11	0	0	15	0	0	5	0
Lane Group Flow (vph)	82	121	67	377	193	0	648	1194	0	49	543	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	15.0	14.9	9.8	18.3		14.9	35.4		2.8	23.0	
Effective Green, g (s)	6.6	15.0	14.9	9.8	18.3		14.9	35.4		2.8	23.0	
Actuated g/C Ratio	0.08	0.18	0.18	0.12	0.22		0.18	0.43		0.03	0.28	
Clearance Time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	2.1		2.0	5.2		2.0	4.5	
Lane Grp Cap (vph)	142	340	287	410	401		623	1484		60	979	
v/s Ratio Prot	0.05	0.06	0.04	c0.11	c0.11		c0.19	c0.35		0.03	0.16	
v/s Ratio Perm												
v/c Ratio	0.58	0.36	0.23	0.92	0.48		1.04	0.80		0.82	0.55	
Uniform Delay, d1	36.4	29.3	28.7	35.7	27.7		33.5	20.3		39.3	25.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.6	0.2	24.9	0.4		46.9	3.8		53.4	1.0	
Delay (s)	39.9	29.9	28.8	60.6	28.1		80.4	24.1		92.7	26.1	
Level of Service	D	C	C	E	C		F	C		F	C	
Approach Delay (s)		30.6			49.2			43.7			31.6	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	82.0	Sum of lost time (s)		19.3	
Intersection Capacity Utilization	74.0%	ICU Level of Service		D	
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	721	1	555	427	1491	0	0	939	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	0.91			0.91	
Frpb, ped/bikes				1.00	1.00	0.97	1.00	1.00			0.99	
Flpb, ped/bikes				0.98	0.98	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.96	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1645	1649	1531	3433	5085			4846	
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1645	1649	1531	3433	5085			4846	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	759	1	584	449	1569	0	0	988	344
RTOR Reduction (vph)	0	0	0	0	0	38	0	0	0	0	51	0
Lane Group Flow (vph)	0	0	0	379	381	546	449	1569	0	0	1281	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)				46.1	46.1	46.1	18.0	60.2			37.2	
Effective Green, g (s)				46.1	46.1	46.1	18.0	60.2			37.2	
Actuated g/C Ratio				0.40	0.40	0.40	0.16	0.52			0.32	
Clearance Time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				657	659	612	535	2654			1563	
v/s Ratio Prot							c0.13	0.31			c0.26	
v/s Ratio Perm				0.23	0.23	c0.36						
v/c Ratio				0.58	0.58	0.89	0.84	0.59			0.82	
Uniform Delay, d1				27.0	27.0	32.3	47.2	19.0			36.0	
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2				1.2	1.2	15.2	11.1	1.0			4.9	
Delay (s)				28.2	28.2	47.5	58.3	20.0			40.9	
Level of Service				C	C	D	E	C			D	
Approach Delay (s)		0.0			36.6			28.5			40.9	
Approach LOS		A			D			C			D	

Intersection Summary					
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	115.3	Sum of lost time (s)		14.0	
Intersection Capacity Utilization	71.7%	ICU Level of Service		C	
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	357	0	540	0	0	0	0	1716	455	404	1209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.97					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1645	1645	2694					5085	1531	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1645	1645	2694					5085	1531	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	376	0	568	0	0	0	0	1806	479	425	1273	0
RTOR Reduction (vph)	0	0	114	0	0	0	0	0	115	0	0	0
Lane Group Flow (vph)	188	188	454	0	0	0	0	1806	364	425	1273	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	25.5	25.5	25.5					56.8	56.8	18.8	80.6	
Effective Green, g (s)	25.5	25.5	25.5					56.8	56.8	18.8	80.6	
Actuated g/C Ratio	0.22	0.22	0.22					0.49	0.49	0.16	0.70	
Clearance Time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	364	364	596					2509	755	560	3560	
v/s Ratio Prot								c0.36		c0.12	0.25	
v/s Ratio Perm	0.11	0.11	c0.17						0.24			
v/c Ratio	0.52	0.52	0.76					0.72	0.48	0.76	0.36	
Uniform Delay, d1	39.4	39.4	41.9					22.9	19.4	46.0	6.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.2	5.7					1.8	2.2	5.9	0.3	
Delay (s)	40.6	40.6	47.6					24.7	21.6	51.8	7.2	
Level of Service	D	D	D					C	C	D	A	
Approach Delay (s)		44.8			0.0			24.1			18.4	
Approach LOS		D			A			C			B	

Intersection Summary				
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	115.1	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	71.7%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	343	9	125	59	22	44	454	1620	136	85	1224	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95		0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.98		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	0.98	0.99	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1654	1664	1524	1660	1561		3433	5002		1770	5085	1524
Flt Permitted	0.71	0.68	1.00	0.63	0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1228	1184	1524	1109	1559		3433	5002		1770	5085	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	361	9	132	62	23	46	478	1705	143	89	1288	555
RTOR Reduction (vph)	0	0	113	0	41	0	0	5	0	0	0	300
Lane Group Flow (vph)	184	186	19	56	34	0	478	1843	0	89	1288	255
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	32.5	32.5	20.5	16.6	16.6		30.3	73.5		19.0	62.2	62.2
Effective Green, g (s)	32.5	32.5	20.5	16.6	16.6		30.3	73.5		19.0	62.2	62.2
Actuated g/C Ratio	0.23	0.23	0.15	0.12	0.12		0.22	0.52		0.14	0.44	0.44
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	345	343	223	162	184		742	2626		240	2259	677
v/s Ratio Prot	0.08	c0.08		0.02	0.01		0.14	c0.37		0.05	c0.25	
v/s Ratio Perm	0.05	c0.05	0.01	0.02	0.01							0.17
v/c Ratio	0.53	0.54	0.09	0.35	0.19		0.64	0.70		0.37	0.57	0.38
Uniform Delay, d1	46.4	47.2	51.7	56.3	55.6		49.9	25.0		55.1	29.0	26.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.89	0.64		1.00	1.00	1.00
Incremental Delay, d2	1.6	1.8	0.2	1.3	0.5		1.7	1.4		1.0	1.1	1.6
Delay (s)	48.0	49.0	51.8	57.6	56.1		46.0	17.5		56.0	30.0	27.6
Level of Service	D	D	D	E	E		D	B		E	C	C
Approach Delay (s)		49.4			56.7			23.3			30.5	
Approach LOS		D			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	89	45	56	2067	1382	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1524	1770	5085	5085	1484
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1524	1770	5085	5085	1484
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	94	47	59	2176	1455	166
RTOR Reduction (vph)	0	43	0	0	0	37
Lane Group Flow (vph)	94	4	59	2176	1455	129
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	12.5	12.5	5.0	118.5	108.5	108.5
Effective Green, g (s)	12.5	12.5	5.0	118.5	108.5	108.5
Actuated g/C Ratio	0.09	0.09	0.04	0.85	0.78	0.78
Clearance Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	158	136	63	4304	3940	1150
v/s Ratio Prot	c0.05		c0.03	c0.43	0.29	
v/s Ratio Perm		0.00				0.09
v/c Ratio	0.59	0.03	0.94	0.51	0.37	0.11
Uniform Delay, d1	61.3	58.2	67.3	2.9	5.0	3.9
Progression Factor	1.00	1.00	0.77	0.16	0.15	0.00
Incremental Delay, d2	5.9	0.1	68.4	0.3	0.2	0.2
Delay (s)	67.2	58.3	120.0	0.7	1.0	0.2
Level of Service	E	E	F	A	A	A
Approach Delay (s)	64.2			3.9	0.9	
Approach LOS	E			A	A	

Intersection Summary				
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	54.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	0	427	1	534	19	1529	515	362	897	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Lane Util. Factor		1.00		0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.91	
Frpb, ped/bikes		1.00		1.00	0.96	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99		0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1803		3366	1449	1447	1770	3539	1524	3433	5085	
Flt Permitted		0.94		0.76	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1732		2681	1449	1447	1770	3539	1524	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	449	1	562	20	1609	542	381	944	0
RTOR Reduction (vph)	0	0	0	0	226	226	0	0	145	0	0	0
Lane Group Flow (vph)	0	2	0	449	56	55	20	1609	397	381	944	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		3.2		27.3	27.3	27.3	4.4	66.3	66.3	30.9	92.8	
Effective Green, g (s)		3.2		27.3	27.3	27.3	4.4	66.3	66.3	30.9	92.8	
Actuated g/C Ratio		0.02		0.20	0.20	0.20	0.03	0.47	0.47	0.22	0.66	
Clearance Time (s)		4.0		5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		39		621	282	282	55	1675	721	757	3370	
v/s Ratio Prot				c0.10	0.04		0.01	c0.45		c0.11	0.19	
v/s Ratio Perm		0.00		c0.04		0.04			0.26			
v/c Ratio		0.05		0.72	0.20	0.19	0.36	0.96	0.55	0.50	0.28	
Uniform Delay, d1		66.9		51.5	47.2	47.1	66.4	35.6	26.2	47.8	9.8	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.16	
Incremental Delay, d2		0.5		4.2	0.3	0.3	4.1	14.4	3.0	0.5	0.2	
Delay (s)		67.5		55.7	47.5	47.5	70.5	50.0	29.3	43.6	1.8	
Level of Service		E		E	D	D	E	D	C	D	A	
Approach Delay (s)		67.5			51.1			45.0			13.8	
Approach LOS		E			D			D			B	

Intersection Summary				
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	84.4%	ICU Level of Service	E	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	35	379	3	1842	33	361	1325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Lane Util. Factor	1.00	0.88	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	0.96	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	2727	1697	5070		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	2727	1697	5070		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	399	3	1939	35	380	1395
RTOR Reduction (vph)	0	352	0	1	0	0	0
Lane Group Flow (vph)	37	47	3	1973	0	380	1395
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	12.2	12.2	0.9	49.7		26.0	75.9
Effective Green, g (s)	12.2	12.2	0.9	49.7		26.0	75.9
Actuated g/C Ratio	0.12	0.12	0.01	0.48		0.25	0.73
Clearance Time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Vehicle Extension (s)	4.2	4.2	2.0	3.9		2.0	4.8
Lane Grp Cap (vph)	208	320	14	2429		443	3721
v/s Ratio Prot	c0.02		0.00	c0.39		c0.21	0.27
v/s Ratio Perm		0.02					
v/c Ratio	0.18	0.15	0.21	0.81		0.86	0.37
Uniform Delay, d1	41.2	41.1	51.0	23.0		37.1	5.1
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.3	2.8	2.3		14.6	0.1
Delay (s)	41.9	41.4	53.8	25.3		51.7	5.3
Level of Service	D	D	D	C		D	A
Approach Delay (s)	41.4			25.3			15.2
Approach LOS	D			C			B

Intersection Summary				
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	15.8	
Intersection Capacity Utilization	79.5%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	431	10	22	661	96	13	1	17	120	0	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.89	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.91	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3527		1770	3434		1613	1598		1770	1413	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3527		1770	3434		1210	1598		1388	1413	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	165	454	11	23	696	101	14	1	18	126	0	68
RTOR Reduction (vph)	0	1	0	0	9	0	0	0	0	0	55	0
Lane Group Flow (vph)	165	464	0	23	788	0	14	19	0	126	13	0
Confl. Peds. (#/hr)						36	104					104
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.3	54.5		10.9	52.7		19.3	19.3		19.2	19.2	
Effective Green, g (s)	13.3	54.5		10.9	52.7		19.3	19.3		19.2	19.2	
Actuated g/C Ratio	0.13	0.54		0.11	0.53		0.19	0.19		0.19	0.19	
Clearance Time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	235	1922		192	1809		233	308		266	271	
v/s Ratio Prot	c0.09	0.13		0.01	c0.23			0.01			0.01	
v/s Ratio Perm							0.01			c0.09		
v/c Ratio	0.70	0.24		0.12	0.44		0.06	0.06		0.47	0.05	
Uniform Delay, d1	41.5	11.9		40.2	14.5		32.9	33.0		35.9	32.9	
Progression Factor	0.86	0.73		0.48	0.38		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	0.3		0.1	0.7		0.0	0.0		0.5	0.0	
Delay (s)	42.1	9.0		19.5	6.2		33.0	33.0		36.4	33.0	
Level of Service	D	A		B	A		C	C		D	C	
Approach Delay (s)		17.7			6.6			33.0			35.2	
Approach LOS		B			A			C			D	

Intersection Summary				
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	69.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	75	329	59	71	25	357	754	74	40	542	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90	0.85	1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1759	1578	1486	1766	1781		3433	3480		1770	3513	
Flt Permitted	0.69	1.00	1.00	0.37	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1280	1578	1486	689	1781		3433	3480		1770	3513	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	79	346	62	75	26	376	794	78	42	571	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	6	0	0	3	0
Lane Group Flow (vph)	36	217	208	62	101	0	376	866	0	42	594	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8	1	7	4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	25.4	18.9	33.9	22.2	17.3		15.0	52.0		5.3	42.3	
Effective Green, g (s)	25.4	18.9	33.9	22.2	17.3		15.0	52.0		5.3	42.3	
Actuated g/C Ratio	0.25	0.19	0.34	0.22	0.17		0.15	0.52		0.05	0.42	
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)	356	298	503	205	308		514	1809		93	1485	
v/s Ratio Prot	0.01	c0.14	0.06	c0.01	0.06		c0.11	c0.25		0.02	c0.17	
v/s Ratio Perm	0.02		0.08	0.05								
v/c Ratio	0.10	0.73	0.41	0.30	0.33		0.73	0.48		0.45	0.40	
Uniform Delay, d1	28.6	38.1	25.4	37.9	36.3		40.6	15.3		45.9	20.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.52	0.30	
Incremental Delay, d2	0.0	7.3	0.2	0.3	0.2		4.6	0.9		1.3	0.8	
Delay (s)	28.7	45.5	25.6	38.2	36.5		45.2	16.3		25.4	6.8	
Level of Service	C	D	C	D	D		D	B		C	A	
Approach Delay (s)		35.2			37.1			25.0			8.0	
Approach LOS		D			D			C			A	

Intersection Summary				
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.9	
Intersection Capacity Utilization	65.9%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	256	512	25	293	570	303	245	205	124	379	284	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1509	1770	3539	1539	3433	3303		3433	1863	1539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1509	1770	3539	1539	3433	3303		3433	1863	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	539	26	308	600	319	258	216	131	399	299	314
RTOR Reduction (vph)	0	0	20	0	0	242	0	99	0	0	0	253
Lane Group Flow (vph)	269	539	6	308	600	77	258	248	0	399	299	61
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.0	18.9	18.9	18.6	21.5	21.5	16.5	18.9		14.8	17.2	17.2
Effective Green, g (s)	16.0	18.9	18.9	18.6	21.5	21.5	16.5	18.9		14.8	17.2	17.2
Actuated g/C Ratio	0.18	0.21	0.21	0.21	0.24	0.24	0.19	0.21		0.17	0.19	0.19
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	619	1083	321	371	857	373	638	703		572	361	298
v/s Ratio Prot	0.08	c0.11		c0.17	0.17		0.08	0.08		c0.12	c0.16	
v/s Ratio Perm			0.00			0.05						0.04
v/c Ratio	0.43	0.50	0.02	0.83	0.70	0.21	0.40	0.35		0.70	0.83	0.20
Uniform Delay, d1	32.3	30.7	27.6	33.5	30.7	26.8	31.8	29.7		34.8	34.3	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.2	1.6	0.1	14.5	4.7	1.3	1.9	0.3		3.7	14.4	0.3
Delay (s)	34.5	32.4	27.7	48.1	35.4	28.1	33.7	30.0		38.5	48.8	30.3
Level of Service	C	C	C	D	D	C	C	C		D	D	C
Approach Delay (s)		32.9			36.7			31.6			39.0	
Approach LOS		C			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	68.3%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	677	152	23	1172	55	486	63	765	38	23	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1493	1770	3506		1770	1554		1770	1628	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1493	1770	3506		1770	1554		1770	1628	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	713	160	24	1234	58	512	66	805	40	24	55
RTOR Reduction (vph)	0	0	100	0	3	0	0	116	0	0	52	0
Lane Group Flow (vph)	91	713	60	24	1289	0	512	755	0	40	27	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	5.5	45.4	45.4	3.5	43.4		47.5	51.1		3.9	7.5	
Effective Green, g (s)	5.5	45.4	45.4	3.5	43.4		47.5	51.1		3.9	7.5	
Actuated g/C Ratio	0.05	0.38	0.38	0.03	0.36		0.39	0.42		0.03	0.06	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	80	1328	560	51	1258		695	656		57	100	
v/s Ratio Prot	c0.05	0.20		0.01	c0.37		0.29	c0.49		c0.02	0.02	
v/s Ratio Perm			0.04									
v/c Ratio	1.14	0.54	0.11	0.47	1.02		0.74	1.15		0.70	0.27	
Uniform Delay, d1	57.7	29.5	24.6	57.8	38.8		31.4	34.9		57.9	54.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	142.6	1.6	0.4	6.7	31.9		4.1	84.7		32.3	1.5	
Delay (s)	200.3	31.1	24.9	64.5	70.7		35.4	119.6		90.3	55.6	
Level of Service	F	C	C	E	E		D	F		F	E	
Approach Delay (s)		46.0			70.6			88.4			67.2	
Approach LOS		D			E			F			E	

Intersection Summary				
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	101.3%	ICU Level of Service	G	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1147	148	118	1148	69	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3460		1770	3539	1770	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3460		1770	3539	1770	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1207	156	124	1208	73	100
RTOR Reduction (vph)	8	0	0	0	0	90
Lane Group Flow (vph)	1355	0	124	1208	73	10
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases						4
Actuated Green, G (s)	57.4		11.0	72.9	8.6	8.6
Effective Green, g (s)	57.4		11.0	72.9	8.6	8.6
Actuated g/C Ratio	0.64		0.12	0.81	0.10	0.10
Clearance Time (s)	4.5		4.5	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2206		216	2866	169	146
v/s Ratio Prot	c0.39		c0.07	0.34	c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.61		0.57	0.42	0.43	0.07
Uniform Delay, d1	9.7		37.3	2.5	38.4	37.0
Progression Factor	1.00		0.65	0.56	1.00	1.00
Incremental Delay, d2	1.3		3.2	0.4	1.8	0.2
Delay (s)	11.0		27.4	1.8	40.2	37.2
Level of Service	B		C	A	D	D
Approach Delay (s)	11.0			4.2	38.5	
Approach LOS	B			A	D	

Intersection Summary				
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	60.7%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	49	27	7	1215	64	48	1212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	0.99		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1538	1770	3504		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	1538	1770	3504		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	28	7	1279	67	51	1276
RTOR Reduction (vph)	0	26	0	3	0	0	0
Lane Group Flow (vph)	52	2	7	1343	0	51	1276
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	8.0	8.0	1.6	62.1		6.9	67.4
Effective Green, g (s)	8.0	8.0	1.6	62.1		6.9	67.4
Actuated g/C Ratio	0.09	0.09	0.02	0.69		0.08	0.75
Clearance Time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	157	136	31	2417		135	2650
v/s Ratio Prot	c0.03		0.00	c0.38		c0.03	c0.36
v/s Ratio Perm		0.00					
v/c Ratio	0.33	0.02	0.23	0.56		0.38	0.48
Uniform Delay, d1	38.5	37.4	43.6	7.0		39.5	4.4
Progression Factor	1.00	1.00	0.86	0.27		0.76	0.23
Incremental Delay, d2	1.2	0.1	3.4	0.9		1.5	0.5
Delay (s)	39.7	37.5	40.9	2.8		31.5	1.6
Level of Service	D	D	D	A		C	A
Approach Delay (s)	38.9			3.0			2.7
Approach LOS	D			A			A

Intersection Summary				
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	9	100	53	8	14	181	1020	31	65	1057	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	1863	1538	1740	1649		1770	3518		1770	3498	
Flt Permitted	0.74	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1360	1863	1538	1377	1649		1770	3518		1770	3498	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	9	105	56	8	15	191	1074	33	68	1113	69
RTOR Reduction (vph)	0	0	91	0	13	0	0	2	0	0	4	0
Lane Group Flow (vph)	95	9	14	56	10	0	191	1105	0	68	1178	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	11.6	11.6	11.6	11.6	11.6		14.6	53.0		12.4	50.8	
Effective Green, g (s)	11.6	11.6	11.6	11.6	11.6		14.6	53.0		12.4	50.8	
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.16	0.59		0.14	0.56	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	240	198	177	212		287	2071		243	1974	
v/s Ratio Prot		0.00			0.01		c0.11	0.31		0.04	c0.34	
v/s Ratio Perm	c0.07		0.01	0.04								
v/c Ratio	0.54	0.04	0.07	0.32	0.05		0.67	0.53		0.28	0.60	
Uniform Delay, d1	36.7	34.3	34.5	35.6	34.4		35.4	11.1		34.8	12.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.66	0.40	
Incremental Delay, d2	3.4	0.1	0.1	1.0	0.1		5.7	1.0		0.6	1.2	
Delay (s)	40.1	34.4	34.6	36.6	34.4		41.1	12.1		23.6	6.4	
Level of Service	D	C	C	D	C		D	B		C	A	
Approach Delay (s)		37.1			36.0			16.4			7.3	
Approach LOS		D			D			B			A	

Intersection Summary				
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	64.4%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	328	156	1351	1001	0	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0		4.5
Lane Util. Factor	0.97	0.91	0.91	0.91		0.95
Frpb, ped/bikes	1.00	0.97	1.00	0.99		1.00
Flpb, ped/bikes	0.97	1.00	1.00	1.00		1.00
Frt	0.99	0.85	0.97	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3330	1401	3287	1419		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3330	1401	3287	1419		3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	345	164	1422	1054	0	704
RTOR Reduction (vph)	4	62	17	0	0	0
Lane Group Flow (vph)	357	86	1700	759	0	704
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Perm	Perm	NA	Free		NA
Protected Phases			2			6
Permitted Phases	8	8		Free		
Actuated Green, G (s)	14.1	14.1	64.4	87.0		64.4
Effective Green, g (s)	14.1	14.1	64.4	87.0		64.4
Actuated g/C Ratio	0.16	0.16	0.74	1.00		0.74
Clearance Time (s)	4.0	4.0	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	539	227	2433	1419		2619
v/s Ratio Prot			c0.52			0.20
v/s Ratio Perm	0.11	0.06		c0.53		
v/c Ratio	0.66	0.38	0.70	0.53		0.27
Uniform Delay, d1	34.2	32.5	6.1	0.0		3.7
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	3.1	1.1	1.7	1.4		0.3
Delay (s)	37.3	33.6	7.8	1.4		3.9
Level of Service	D	C	A	A		A
Approach Delay (s)	36.2		5.8			3.9
Approach LOS	D		A			A

Intersection Summary				
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	67.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 10/2014
c Critical Lane Group



Movement	EBL2	EBL	EBR	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Volume (vph)	976	0	1393	0	0	0	1045	153	0	1627	507
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.0				4.5	4.5		5.5	4.0
Lane Util. Factor	0.97		1.00				0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.99				1.00	0.95		1.00	0.98
Flpb, ped/bikes	0.97		1.00				1.00	1.00		1.00	1.00
Frt	1.00		0.85				1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (prot)	3338		1560				3539	1509		3539	1544
Flt Permitted	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (perm)	3338		1560				3539	1509		3539	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1027	0	1466	0	0	0	1100	161	0	1713	534
RTOR Reduction (vph)	0	0	0	0	0	0	0	88	0	0	0
Lane Group Flow (vph)	1027	0	1466	0	0	0	1100	73	0	1713	534
Confl. Peds. (#/hr)	10	10	10	10	10	10		10	10		10
Turn Type	Perm		Free				NA	custom		NA	Free
Protected Phases							6				
Permitted Phases	4		Free					4		2	Free
Actuated Green, G (s)	30.3		88.8				49.5	30.3		48.5	88.8
Effective Green, g (s)	30.3		88.8				49.5	30.3		48.5	88.8
Actuated g/C Ratio	0.34		1.00				0.56	0.34		0.55	1.00
Clearance Time (s)	4.5						4.5	4.5		5.5	
Vehicle Extension (s)	3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)	1138		1560				1972	514		1932	1544
v/s Ratio Prot							0.31				
v/s Ratio Perm	0.31		c0.94					0.05		0.48	0.35
v/c Ratio	0.90		0.94				0.56	0.14		0.89	0.35
Uniform Delay, d1	27.8		0.0				12.6	20.3		17.7	0.0
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00
Incremental Delay, d2	10.0		12.4				0.3	0.1		6.5	0.6
Delay (s)	37.9		12.4				13.0	20.4		24.2	0.6
Level of Service	D		B				B	C		C	A
Approach Delay (s)		22.9		0.0			13.9			18.6	
Approach LOS		C		A			B			B	

Intersection Summary				
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	90.2%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	11	0	40	20	33	0	57	34	22	62	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99			0.98		1.00	0.99	
Flpb, ped/bikes		1.00			0.99			1.00		1.00	1.00	
Frt		1.00			0.95			0.94		1.00	0.97	
Flt Protected		0.98			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1826			1706			3289		1770	3414	
Flt Permitted		0.93			0.85			1.00		0.95	1.00	
Satd. Flow (perm)		1718			1486			3289		1770	3414	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	12	0	42	21	35	0	60	36	23	65	15
RTOR Reduction (vph)	0	0	0	0	31	0	0	12	0	0	4	0
Lane Group Flow (vph)	0	18	0	0	67	0	0	84	0	23	76	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		7.8			7.8			44.5		1.5	50.5	
Effective Green, g (s)		7.8			7.8			44.5		1.5	50.5	
Actuated g/C Ratio		0.12			0.12			0.67		0.02	0.76	
Clearance Time (s)		4.0			4.0			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		200			173			2191		39	2580	
v/s Ratio Prot								c0.03		c0.01	0.02	
v/s Ratio Perm		0.01			c0.05							
v/c Ratio		0.09			0.39			0.04		0.59	0.03	
Uniform Delay, d1		26.3			27.3			3.8		32.3	2.0	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.4			0.0		20.8	0.0	
Delay (s)		26.5			28.7			3.9		53.1	2.1	
Level of Service		C			C			A		D	A	
Approach Delay (s)		26.5			28.7			3.9			13.5	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	29.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	0	78	1	29	191	34	25	2	4	1	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	0.99			1.00			0.98	
Flpb, ped/bikes		1.00		0.98	1.00			0.99			1.00	
Frt		1.00		1.00	0.98			0.98			0.88	
Flt Protected		1.00		0.95	1.00			0.96			1.00	
Satd. Flow (prot)		3531		1732	3436			1734			1603	
Flt Permitted		1.00		0.70	1.00			0.84			0.97	
Satd. Flow (perm)		3531		1277	3436			1521			1562	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	82	1	31	201	36	26	2	4	1	1	12
RTOR Reduction (vph)	0	0	0	0	6	0	0	4	0	0	11	0
Lane Group Flow (vph)	0	83	0	31	231	0	0	28	0	0	3	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		64.3		64.3	64.3			4.3			4.3	
Effective Green, g (s)		64.3		64.3	64.3			4.3			4.3	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2964		1071	2884			85			87	
v/s Ratio Prot		0.02			c0.07							
v/s Ratio Perm				0.02				c0.02			0.00	
v/c Ratio		0.03		0.03	0.08			0.33			0.03	
Uniform Delay, d1		1.0		1.0	1.1			34.8			34.2	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.0		0.1	0.1			2.3			0.1	
Delay (s)		1.0		1.1	1.1			37.1			34.3	
Level of Service		A		A	A			D			C	
Approach Delay (s)		1.0			1.1			37.1			34.3	
Approach LOS		A			A			D			C	

Intersection Summary				
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	145	5	6	0	1	11	6	98	0	10	168	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	0.98	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		1.00			0.88		1.00	1.00		1.00	0.92	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1750			1595		1770	3539		1770	3207	
Flt Permitted		0.73			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1339			1595		1770	3539		1770	3207	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	153	5	6	0	1	12	6	103	0	11	177	180
RTOR Reduction (vph)	0	2	0	0	10	0	0	0	0	0	75	0
Lane Group Flow (vph)	0	162	0	0	3	0	6	103	0	11	282	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA			NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		12.3			12.3		1.1	36.8		1.2	36.9	
Effective Green, g (s)		12.3			12.3		1.1	36.8		1.2	36.9	
Actuated g/C Ratio		0.19			0.19		0.02	0.58		0.02	0.58	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		260			309		30	2057		33	1869	
v/s Ratio Prot					0.00		0.00	0.03		c0.01	c0.09	
v/s Ratio Perm		c0.12										
v/c Ratio		0.62			0.01		0.20	0.05		0.33	0.15	
Uniform Delay, d1		23.4			20.6		30.7	5.7		30.7	6.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.6			0.0		3.3	0.0		5.9	0.2	
Delay (s)		27.9			20.6		33.9	5.8		36.5	6.2	
Level of Service		C			C		C	A		D	A	
Approach Delay (s)		27.9			20.6			7.3			7.1	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	267	0	58	391	216	2	7	25	163	14	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.95			0.90		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3305			1646		1756	1773	
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.73	1.00	
Satd. Flow (perm)	1770	3539		1770	3305			1642		1357	1773	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	281	0	61	412	227	2	7	26	172	15	6
RTOR Reduction (vph)	0	0	0	0	100	0	0	13	0	0	3	0
Lane Group Flow (vph)	2	281	0	61	539	0	0	22	0	172	18	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.0	16.2		9.7	24.6			39.9		39.9	39.9	
Effective Green, g (s)	1.0	16.2		9.7	24.6			39.9		39.9	39.9	
Actuated g/C Ratio	0.01	0.20		0.12	0.31			0.50		0.50	0.50	
Clearance Time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	5.4		2.0	4.7			2.0		2.0	2.0	
Lane Grp Cap (vph)	22	716		214	1016			818		676	884	
v/s Ratio Prot	0.00	c0.08		0.03	c0.16						0.01	
v/s Ratio Perm								0.01		c0.13		
v/c Ratio	0.09	0.39		0.29	0.53			0.03		0.25	0.02	
Uniform Delay, d1	39.1	27.6		32.0	22.9			10.2		11.5	10.2	
Progression Factor	1.00	1.00		0.80	0.72			1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.6		0.3	1.9			0.1		0.9	0.0	
Delay (s)	39.7	29.3		25.8	18.4			10.2		12.4	10.2	
Level of Service	D	C		C	B			B		B	B	
Approach Delay (s)		29.3			19.0			10.2			12.2	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	58.5%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	236	246	22	284	38	305	49	20	14	33	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.92		1.00	0.98		1.00	0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3207		1770	3459		1757	1772			1752	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.96	
Satd. Flow (perm)	1770	3207		1770	3459		1312	1772			1698	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	248	259	23	299	40	321	52	21	15	35	23
RTOR Reduction (vph)	0	220	0	0	16	0	0	8	0	0	9	0
Lane Group Flow (vph)	1	287	0	23	323	0	321	65	0	0	64	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.5	12.2		3.5	12.5		49.8	49.8			49.8	
Effective Green, g (s)	2.5	12.2		3.5	12.5		49.8	49.8			49.8	
Actuated g/C Ratio	0.03	0.15		0.04	0.16		0.62	0.62			0.62	
Clearance Time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.4		2.0	3.4		2.0	2.0			2.0	
Lane Grp Cap (vph)	55	489		77	540		816	1103			1057	
v/s Ratio Prot	0.00	0.09		c0.01	c0.09			0.04				
v/s Ratio Perm							c0.24				0.04	
v/c Ratio	0.02	0.59		0.30	0.60		0.39	0.06			0.06	
Uniform Delay, d1	37.6	31.6		37.1	31.4		7.5	5.9			5.9	
Progression Factor	0.84	0.46		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	5.0		0.8	4.8		1.4	0.1			0.1	
Delay (s)	31.7	19.5		37.9	36.2		9.0	6.0			6.0	
Level of Service	C	B		D	D		A	A			A	
Approach Delay (s)		19.5			36.3			8.4			6.0	
Approach LOS		B			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	294	4	61	455	4	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	309	4	64	479	4	42
Pedestrians	10			10	10	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1242			1089		
pX, platoon unblocked						
vC, conflicting volume			324		699	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			324		699	177
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		99	95
cM capacity (veh/h)			1223		348	822

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	206	107	64	239	239	46
Volume Left	0	0	64	0	0	4
Volume Right	0	4	0	0	0	42
cSH	1700	1700	1223	1700	1700	731
Volume to Capacity	0.12	0.06	0.05	0.14	0.14	0.06
Queue Length 95th (ft)	0	0	4	0	0	5
Control Delay (s)	0.0	0.0	8.1	0.0	0.0	10.3
Lane LOS			A			B
Approach Delay (s)	0.0		1.0			10.3
Approach LOS						B

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	29.5%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 05/2014				

```
                        Level Of Service Computation Report
                    2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #37 Sundance Avenue/Twin Trails Drive
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):          0.912
Loss Time (sec):      0                Average Delay (sec/veh):        23.8
Optimal Cycle:        0                Level Of Service:                C
********************************************************************************
Street Name:          Sundance Avenue                Twin Trails Drive
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0      0    0    0      0    0    0      0    0    0
Lanes:        0  0  1! 0  0      0  0  1! 0  0    1  0  0  1  0    1  0  1  0  1
-------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17    7   125     61   15    6      5  308    2    258  581  107
Growth Adj:  1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   17    7   125     61   15    6      5  308    2    258  581  107
User Adj:    1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:    17    7   125     61   15    6      5  308    2    258  581  107
Reduct Vol:     0    0     0      0    0    0      0    0    0      0    0    0
Reduced Vol:   17    7   125     61   15    6      5  308    2    258  581  107
PCE Adj:     1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
FinalVolume:   17    7   125     61   15    6      5  308    2    258  581  107
-------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Lanes:       0.11 0.05  0.84   0.75 0.18 0.07   1.00 0.99 0.01   1.00 1.00 1.00
Final Sat.:    64   26   471    368   90   36    509  549    4    583  637  721
-------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.27  0.27   0.17 0.17 0.17   0.01 0.56  0.56   0.44 0.91  0.15
Crit Moves:  ****                ****             ****             ****
Delay/Veh:   11.1 11.1  11.1   11.1 11.1 11.1   9.6 16.4  16.4   13.6 40.2  8.5
Delay Adj:   1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00  1.00
AdjDel/Veh:  11.1 11.1  11.1   11.1 11.1 11.1   9.6 16.4  16.4   13.6 40.2  8.5
LOS by Move:    B    B     B      B    B    B     A    C    C      B    E     A
ApproachDel:       11.1              11.1              16.3              29.3
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:        11.1              11.1              16.3              29.3
LOS by Appr:          B                 B                 C                 D
AllWayAvgQ:   0.3  0.3   0.3    0.2  0.2  0.2    0.0  1.1   1.1    0.8  5.6   0.2
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	100	177	32	34	158	33	168	74	85	16	27	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1520	1770	1802		1756	1678			1578	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.34	1.00			0.99	
Satd. Flow (perm)	1770	1863	1520	1770	1802		623	1678			1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	186	34	36	166	35	177	78	89	17	28	344
RTOR Reduction (vph)	0	0	17	0	7	0	0	59	0	0	244	0
Lane Group Flow (vph)	105	186	17	36	194	0	177	108	0	0	145	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm		NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Actuated Green, G (s)	7.5	31.6	31.6	2.0	26.1		18.8	18.8			18.8	
Effective Green, g (s)	7.5	31.6	31.6	2.0	26.1		18.8	18.8			18.8	
Actuated g/C Ratio	0.12	0.49	0.49	0.03	0.41		0.29	0.29			0.29	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	206	914	745	54	730		181	489			454	
v/s Ratio Prot	c0.06	0.10		0.02	c0.11			0.06				
v/s Ratio Perm			0.01				c0.28				0.09	
v/c Ratio	0.51	0.20	0.02	0.67	0.27		0.98	0.22			0.32	
Uniform Delay, d1	26.7	9.3	8.4	30.9	12.8		22.6	17.3			17.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.0	0.1	0.0	26.9	0.9		59.8	0.2			0.4	
Delay (s)	28.7	9.4	8.5	57.8	13.7		82.4	17.5			18.2	
Level of Service	C	A	A	E	B		F	B			B	
Approach Delay (s)		15.5			20.4			50.9			18.2	
Approach LOS		B			C			D			B	

Intersection Summary				
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	118	70	86	147	88	83
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	124	74	91	155	93	87
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total (vph)	124	74	245	93	87	
Volume Left (vph)	124	0	0	93	0	
Volume Right (vph)	0	74	155	0	0	
Hadj (s)	0.53	-0.67	-0.34	0.53	0.03	
Departure Headway (s)	6.1	4.9	4.7	5.8	5.3	
Degree Utilization, x	0.21	0.10	0.32	0.15	0.13	
Capacity (veh/h)	556	688	731	589	644	
Control Delay (s)	9.5	7.2	10.0	8.7	7.9	
Approach Delay (s)	8.6		10.0	8.3		
Approach LOS	A		B	A		

Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 07/2014			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	249	46	205	108	61	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2		4.0	5.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3442		1770	3539	1770	1557
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3442		1770	3539	1770	1557
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	262	48	216	114	64	177
RTOR Reduction (vph)	18	0	0	0	0	142
Lane Group Flow (vph)	292	0	216	114	64	35
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	11.8		10.8	26.3	8.8	8.8
Effective Green, g (s)	11.8		10.8	26.3	8.8	8.8
Actuated g/C Ratio	0.26		0.24	0.59	0.20	0.20
Clearance Time (s)	5.2		4.0	5.5	4.0	4.0
Vehicle Extension (s)	3.2		2.0	3.2	2.1	2.1
Lane Grp Cap (vph)	910		428	2086	349	307
v/s Ratio Prot	c0.08		c0.12	0.03	c0.04	
v/s Ratio Perm						0.02
v/c Ratio	0.32		0.50	0.05	0.18	0.11
Uniform Delay, d1	13.2		14.6	3.9	14.9	14.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.3	0.0	0.1	0.1
Delay (s)	13.4		14.9	3.9	15.0	14.8
Level of Service	B		B	A	B	B
Approach Delay (s)	13.4			11.1	14.8	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	43.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	351	65	110	257	27	24	8	105	18	4	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	3440		1770	3479		1761	1573		1758	1609	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.68	1.00	
Satd. Flow (perm)	1755	3440		1770	3479		1376	1573		1259	1609	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	369	68	116	271	28	25	8	111	19	4	19
RTOR Reduction (vph)	0	16	0	0	8	0	0	90	0	0	15	0
Lane Group Flow (vph)	31	421	0	116	291	0	25	29	0	19	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.9	16.7		6.3	22.0		8.5	8.5		9.6	9.6	
Effective Green, g (s)	0.9	16.7		6.3	22.0		8.5	8.5		9.6	9.6	
Actuated g/C Ratio	0.02	0.36		0.14	0.48		0.19	0.19		0.21	0.21	
Clearance Time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Vehicle Extension (s)	2.0	4.4		2.0	4.4		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	34	1254		243	1671		255	291		263	337	
v/s Ratio Prot	0.02	c0.12		c0.07	0.08			c0.02			0.00	
v/s Ratio Perm							0.02			0.02		
v/c Ratio	0.91	0.34		0.48	0.17		0.10	0.10		0.07	0.02	
Uniform Delay, d1	22.4	10.5		18.2	6.7		15.5	15.5		14.5	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	116.5	0.3		0.5	0.1		0.1	0.1		0.0	0.0	
Delay (s)	138.9	10.8		18.8	6.8		15.5	15.5		14.6	14.4	
Level of Service	F	B		B	A		B	B		B	B	
Approach Delay (s)		19.3			10.2			15.5			14.5	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	14.4	
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	55	35	115	2	19	12	102	73	9	18	81	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	58	37	121	2	20	13	107	77	9	19	85	53

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	216	35	107	86	157
Volume Left (vph)	58	2	107	0	19
Volume Right (vph)	121	13	0	9	53
Hadj (s)	-0.25	-0.17	0.53	-0.04	-0.14
Departure Headway (s)	4.6	4.9	5.8	5.2	4.7
Degree Utilization, x	0.27	0.05	0.17	0.13	0.21
Capacity (veh/h)	737	665	591	653	714
Control Delay (s)	9.3	8.1	8.8	7.8	9.0
Approach Delay (s)	9.3	8.1	8.4		9.0
Approach LOS	A	A	A		A

Intersection Summary				
Delay	8.8			
Level of Service	A			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	40	89	25	11	78	0	23	12	27	1	2	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	94	26	12	82	0	24	13	28	1	2	27

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	162	94	65	31
Volume Left (vph)	42	12	24	1
Volume Right (vph)	26	0	28	27
Hadj (s)	-0.01	0.06	-0.15	-0.50
Departure Headway (s)	4.2	4.3	4.3	4.0
Degree Utilization, x	0.19	0.11	0.08	0.03
Capacity (veh/h)	833	794	775	819
Control Delay (s)	8.2	7.9	7.7	7.2
Approach Delay (s)	8.2	7.9	7.7	7.2
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	839	74	36	486	79	242	31	38	82	21	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	3444			1748		1761	1650	
Flt Permitted	0.95	1.00		0.95	1.00			0.73		0.62	1.00	
Satd. Flow (perm)	1770	3483		1770	3444			1323		1146	1650	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	883	78	38	512	83	255	33	40	86	22	46
RTOR Reduction (vph)	0	8	0	0	16	0	0	6	0	0	28	0
Lane Group Flow (vph)	196	953	0	38	579	0	0	322	0	86	40	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.2	29.8		3.5	20.9			31.8		31.8	31.8	
Effective Green, g (s)	12.2	29.8		3.5	20.9			31.8		31.8	31.8	
Actuated g/C Ratio	0.15	0.37		0.04	0.26			0.40		0.40	0.40	
Clearance Time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.9		2.0	2.4			2.0		2.0	2.0	
Lane Grp Cap (vph)	269	1297		77	899			525		455	655	
v/s Ratio Prot	0.11	c0.27		0.02	c0.17						0.02	
v/s Ratio Perm								c0.24		0.08		
v/c Ratio	0.73	0.73		0.49	0.64			0.61		0.19	0.06	
Uniform Delay, d1	32.3	21.7		37.4	26.2			19.2		15.7	14.9	
Progression Factor	1.00	1.00		0.68	0.71			1.00		1.00	1.00	
Incremental Delay, d2	8.1	3.7		1.8	3.5			5.3		0.1	0.0	
Delay (s)	40.4	25.4		27.1	22.2			24.5		15.8	14.9	
Level of Service	D	C		C	C			C		B	B	
Approach Delay (s)		28.0			22.5			24.5			15.4	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	65.5%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	108	831	40	8	546	15	29	0	5	17	0	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3508		1770	3521		1755	1551			1652	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.88	
Satd. Flow (perm)	1770	3508		1770	3521		1344	1551			1491	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	114	875	42	8	575	16	31	0	5	18	0	27
RTOR Reduction (vph)	0	2	0	0	2	0	0	4	0	0	39	0
Lane Group Flow (vph)	114	915	0	8	589	0	31	1	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	10.8	54.2		1.1	43.7		10.1	10.1			10.1	
Effective Green, g (s)	10.8	54.2		1.1	43.7		10.1	10.1			10.1	
Actuated g/C Ratio	0.14	0.68		0.01	0.55		0.13	0.13			0.13	
Clearance Time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.3		2.0	3.7		2.0	2.0			2.0	
Lane Grp Cap (vph)	238	2376		24	1923		169	195			188	
v/s Ratio Prot	c0.06	c0.26		0.00	0.17			0.00				
v/s Ratio Perm							c0.02				0.00	
v/c Ratio	0.48	0.38		0.33	0.31		0.18	0.00			0.03	
Uniform Delay, d1	32.0	5.6		39.1	9.9		31.3	30.6			30.7	
Progression Factor	0.62	0.23		0.98	0.31		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.4		2.9	0.4		0.2	0.0			0.0	
Delay (s)	20.4	1.7		41.1	3.5		31.5	30.6			30.7	
Level of Service	C	A		D	A		C	C			C	
Approach Delay (s)		3.7			4.0			31.3			30.7	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.39				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		15.4	
Intersection Capacity Utilization	53.2%	ICU Level of Service		A	
Analysis Period (min)	15				

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	25	809	0	550	13	12	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		5.7		4.4	4.4
Lane Util. Factor	1.00	0.95		0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00		1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00		1.00		0.99	0.85
Flt Protected	0.95	1.00		1.00		0.96	1.00
Satd. Flow (prot)	1770	3539		3523		1759	1474
Flt Permitted	0.95	1.00		1.00		0.96	1.00
Satd. Flow (perm)	1770	3539		3523		1759	1474
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	852	0	579	14	13	8
RTOR Reduction (vph)	0	0	0	1	0	1	6
Lane Group Flow (vph)	26	852	0	592	0	13	1
Confl. Peds. (#/hr)	10		10		10	10	10
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	5	2	1	6		4	
Permitted Phases							4
Actuated Green, G (s)	3.1	60.4		52.5		9.9	9.9
Effective Green, g (s)	3.1	60.4		52.5		9.9	9.9
Actuated g/C Ratio	0.04	0.75		0.66		0.12	0.12
Clearance Time (s)	4.4	5.3		5.7		4.4	4.4
Vehicle Extension (s)	2.0	4.3		3.7		2.0	2.0
Lane Grp Cap (vph)	68	2671		2311		217	182
v/s Ratio Prot	0.01	c0.24		0.17		c0.01	
v/s Ratio Perm							0.00
v/c Ratio	0.38	0.32		0.26		0.06	0.00
Uniform Delay, d1	37.5	3.2		5.7		30.9	30.7
Progression Factor	0.61	0.45		1.00		1.00	1.00
Incremental Delay, d2	1.2	0.3		0.3		0.0	0.0
Delay (s)	24.0	1.7		5.9		31.0	30.7
Level of Service	C	A		A		C	C
Approach Delay (s)		2.4		5.9		30.9	
Approach LOS		A		A		C	

Intersection Summary					
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.30				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		14.5	
Intersection Capacity Utilization	39.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Description: 07/2014
c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	31	0	56	4	1	7	49	740	3	11	582	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.91			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1650			1669		1770	3537		1758	3483	
Flt Permitted		0.89			0.91		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1500			1548		1770	3537		1758	3483	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	0	59	4	1	7	52	779	3	12	613	58
RTOR Reduction (vph)	0	64	0	0	5	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	28	0	0	7	0	52	781	0	12	663	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.4			10.4		2.3	21.0		0.7	19.3	
Effective Green, g (s)		10.4			10.4		2.3	21.0		0.7	19.3	
Actuated g/C Ratio		0.22			0.22		0.05	0.45		0.01	0.41	
Clearance Time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Vehicle Extension (s)		2.0			2.0		2.0	4.3		2.0	3.8	
Lane Grp Cap (vph)		334			344		87	1590		26	1439	
v/s Ratio Prot							c0.03	c0.22		0.01	0.19	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.08			0.02		0.60	0.49		0.46	0.46	
Uniform Delay, d1		14.4			14.2		21.7	9.1		22.8	9.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		7.2	0.4		4.7	0.3	
Delay (s)		14.4			14.2		28.9	9.5		27.5	10.2	
Level of Service		B			B		C	A		C	B	
Approach Delay (s)		14.4			14.2			10.7			10.5	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.39				
Actuated Cycle Length (s)	46.7	Sum of lost time (s)		14.7	
Intersection Capacity Utilization	47.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Description: 07/2014
c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	301	71	36	70	88	155	163	651	64	210	723	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1541	1681	1763	1541	1770	4997		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1541	1681	1763	1541	1770	4997		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	75	38	74	93	163	172	685	67	221	761	581
RTOR Reduction (vph)	0	0	29	0	0	142	0	13	0	0	0	338
Lane Group Flow (vph)	317	75	9	67	100	21	172	739	0	221	761	243
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	19.5	19.5	19.5	10.2	10.2	10.2	11.2	20.4		13.5	22.7	19.5
Effective Green, g (s)	19.5	19.5	19.5	10.2	10.2	10.2	11.2	20.4		13.5	22.7	19.5
Actuated g/C Ratio	0.24	0.24	0.24	0.13	0.13	0.13	0.14	0.26		0.17	0.29	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	433	456	377	215	225	197	249	1280		300	1009	387
v/s Ratio Prot	c0.18	0.04		0.04	c0.06		c0.10	0.15		0.12	c0.22	0.15
v/s Ratio Perm			0.01			0.01						
v/c Ratio	0.73	0.16	0.02	0.31	0.44	0.11	0.69	0.58		0.74	0.75	0.63
Uniform Delay, d1	27.6	23.6	22.8	31.5	32.1	30.7	32.6	25.8		31.4	25.9	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.3	0.2	0.0	0.8	1.4	0.2	8.0	1.9		9.1	3.2	3.2
Delay (s)	33.9	23.8	22.9	32.3	33.5	30.9	40.6	27.7		40.4	29.2	30.0
Level of Service	C	C	C	C	C	C	D	C		D	C	C
Approach Delay (s)		31.2			32.0			30.1			31.1	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	79.6	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	62.4%	ICU Level of Service		B	
Analysis Period (min)	15				

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	798	283	1067	1111	0	0	0	0	541	0	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	0.99	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3539	1533	3433	3539					1647	1528	1456
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3539	1533	3433	3539					1647	1528	1456
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	840	298	1123	1169	0	0	0	0	569	0	403
RTOR Reduction (vph)	0	0	216	0	0	0	0	0	0	0	41	79
Lane Group Flow (vph)	0	840	82	1123	1169	0	0	0	0	336	289	227
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		29.6	29.6	37.6	71.7					27.7	27.7	27.7
Effective Green, g (s)		29.6	29.6	37.6	71.7					27.7	27.7	27.7
Actuated g/C Ratio		0.28	0.28	0.35	0.67					0.26	0.26	0.26
Clearance Time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		975	422	1201	2362					424	394	375
v/s Ratio Prot		c0.24		c0.33	0.33							
v/s Ratio Perm			0.05							c0.20	0.19	0.16
v/c Ratio		0.86	0.19	0.94	0.49					0.79	0.73	0.61
Uniform Delay, d1		37.0	29.8	33.7	8.9					37.2	36.5	35.1
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		7.9	0.2	13.2	0.2					14.1	11.5	7.1
Delay (s)		44.9	30.0	46.9	9.0					51.3	48.0	42.2
Level of Service		D	C	D	A					D	D	D
Approach Delay (s)		41.0			27.6			0.0			47.3	
Approach LOS		D			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	107.4	Sum of lost time (s)	12.5	
Intersection Capacity Utilization	82.0%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	1064	0	0	1675	685	487	0	1010	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.91			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			3539	1532	1646	1646	2697			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			3539	1532	1646	1646	2697			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	272	1120	0	0	1763	721	513	0	1063	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	280	0	0	109	0	0	0
Lane Group Flow (vph)	272	1120	0	0	1763	442	256	257	954	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	8.0	67.0			55.0	55.0	35.0	35.0	35.0			
Effective Green, g (s)	8.0	67.0			55.0	55.0	35.0	35.0	35.0			
Actuated g/C Ratio	0.07	0.61			0.50	0.50	0.32	0.32	0.32			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	249	3097			1769	766	523	523	858			
v/s Ratio Prot	c0.08	0.22			c0.50							
v/s Ratio Perm						0.29	0.16	0.16	c0.35			
v/c Ratio	1.09	0.36			1.00	0.58	0.49	0.49	1.11			
Uniform Delay, d1	51.0	10.8			27.4	19.3	30.3	30.3	37.5			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	83.9	0.1			20.4	1.1	3.3	3.3	66.2			
Delay (s)	134.9	10.9			47.8	20.4	33.5	33.6	103.7			
Level of Service	F	B			D	C	C	C	F			
Approach Delay (s)		35.1			39.9			80.8			0.0	
Approach LOS		D			D			F			A	

Intersection Summary				
HCM 2000 Control Delay	50.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.05			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	82.0%	ICU Level of Service	D	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	130	2	57	274	288	9	11	22	185	20	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3530		1770	1863	1545	1740	3139		3433	1578	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3530		1770	1863	1545	1740	3139		3433	1578	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	137	2	60	288	303	9	12	23	195	21	98
RTOR Reduction (vph)	0	2	0	0	0	232	0	16	0	0	55	0
Lane Group Flow (vph)	46	137	0	60	288	71	9	19	0	195	64	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	4.0	15.6		4.6	15.7	15.7	0.9	21.4		9.2	29.2	
Effective Green, g (s)	4.0	15.6		4.6	15.7	15.7	0.9	21.4		9.2	29.2	
Actuated g/C Ratio	0.06	0.23		0.07	0.23	0.23	0.01	0.32		0.14	0.43	
Clearance Time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	818		120	434	360	23	998		469	684	
v/s Ratio Prot	0.03	0.04		c0.03	c0.15		0.01	0.01		c0.06	c0.04	
v/s Ratio Perm						0.05						
v/c Ratio	0.44	0.17		0.50	0.66	0.20	0.39	0.02		0.42	0.09	
Uniform Delay, d1	30.6	20.7		30.2	23.4	20.7	32.9	15.7		26.6	11.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.1		3.3	3.8	0.3	10.7	0.0		0.6	0.3	
Delay (s)	33.5	20.8		33.5	27.2	21.0	43.6	15.8		27.2	11.5	
Level of Service	C	C		C	C	C	D	B		C	B	
Approach Delay (s)		23.9			24.9			21.5			21.2	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	2	0	6	1	50	3	289	9	100	592	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		1.00			0.88		1.00	1.00		1.00	0.98	
Flt Protected		0.95			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1767			1605		1763	3521		1770	3451	
Flt Permitted		1.00			0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1852			1541		1763	3521		1770	3451	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	2	0	6	1	53	3	304	9	105	623	101
RTOR Reduction (vph)	0	0	0	0	48	0	0	2	0	0	14	0
Lane Group Flow (vph)	0	64	0	0	12	0	3	311	0	105	710	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		2.9			2.9		0.6	14.5		4.2	18.1	
Effective Green, g (s)		2.9			2.9		0.6	14.5		4.2	18.1	
Actuated g/C Ratio		0.09			0.09		0.02	0.43		0.12	0.54	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		159			133		31	1519		221	1859	
v/s Ratio Prot							0.00	0.09		c0.06	c0.21	
v/s Ratio Perm		c0.03			0.01							
v/c Ratio		0.40			0.09		0.10	0.20		0.48	0.38	
Uniform Delay, d1		14.5			14.1		16.2	6.0		13.7	4.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7			0.3		1.4	0.1		1.6	0.1	
Delay (s)		16.2			14.4		17.6	6.0		15.3	4.6	
Level of Service		B			B		B	A		B	A	
Approach Delay (s)		16.2			14.4			6.1			6.0	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	33.6	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	44.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	392	8	104	725	26	1	0	59	41	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	0.99			0.87			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1770	3527		1770	3517			1578			1740	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.81	
Satd. Flow (perm)	1770	3527		1770	3517			1576			1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	413	8	109	763	27	1	0	62	43	2	6
RTOR Reduction (vph)	0	1	0	0	4	0	0	40	0	0	4	0
Lane Group Flow (vph)	2	420	0	109	786	0	0	23	0	0	47	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.0	15.9		7.2	22.1			21.4			21.4	
Effective Green, g (s)	1.0	15.9		7.2	22.1			21.4			21.4	
Actuated g/C Ratio	0.02	0.28		0.13	0.38			0.37			0.37	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	30	975		221	1351			586			544	
v/s Ratio Prot	0.00	0.12		c0.06	c0.22							
v/s Ratio Perm								0.01			c0.03	
v/c Ratio	0.07	0.43		0.49	0.58			0.04			0.09	
Uniform Delay, d1	27.8	17.1		23.4	14.0			11.5			11.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.3		1.7	0.6			0.1			0.3	
Delay (s)	28.7	17.4		25.2	14.7			11.6			12.0	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		17.4			16.0			11.6			12.0	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.36				
Actuated Cycle Length (s)	57.5	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	49.2%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	54	22	1033	108	58	891
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	6.3		4.4	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1553	3477		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1553	3477		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	23	1087	114	61	938
RTOR Reduction (vph)	0	20	7	0	0	0
Lane Group Flow (vph)	57	3	1194	0	61	938
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.3	7.3	34.0		4.0	42.7
Effective Green, g (s)	7.3	7.3	34.0		4.0	42.7
Actuated g/C Ratio	0.12	0.12	0.56		0.07	0.70
Clearance Time (s)	4.9	4.9	6.3		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.8		2.0	2.6
Lane Grp Cap (vph)	212	186	1941		116	2481
v/s Ratio Prot	c0.03		c0.34		0.03	c0.27
v/s Ratio Perm		0.00				
v/c Ratio	0.27	0.01	0.62		0.53	0.38
Uniform Delay, d1	24.4	23.6	9.0		27.5	3.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.6		2.0	0.1
Delay (s)	24.6	23.6	9.6		29.5	3.8
Level of Service	C	C	A		C	A
Approach Delay (s)	24.3		9.6			5.3
Approach LOS	C		A			A

Intersection Summary					
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.55				
Actuated Cycle Length (s)	60.9	Sum of lost time (s)		15.6	
Intersection Capacity Utilization	56.7%	ICU Level of Service		B	
Analysis Period (min)	15				

Description: 10/2013
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	913	0	0	1188	99	0	0	0	115	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Lane Util. Factor	1.00	0.95			0.95	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97				1.00		0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00				0.99		1.00
Frt	1.00	1.00			1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1770	3539			3539	1532				1759		1555
Flt Permitted	0.95	1.00			1.00	1.00				0.76		1.00
Satd. Flow (perm)	1770	3539			3539	1532				1402		1555
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	961	0	0	1251	104	0	0	0	121	0	39
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	30
Lane Group Flow (vph)	43	961	0	0	1251	62	0	0	0	121	0	9
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm				Perm		Perm
Protected Phases	5	2		1	6			8				
Permitted Phases						6	8			4		4
Actuated Green, G (s)	3.0	34.6			28.1	28.1				12.5		12.5
Effective Green, g (s)	3.0	34.6			28.1	28.1				12.5		12.5
Actuated g/C Ratio	0.05	0.61			0.50	0.50				0.22		0.22
Clearance Time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Vehicle Extension (s)	2.0	5.0			2.8	2.8				2.0		2.0
Lane Grp Cap (vph)	93	2159			1753	759				309		342
v/s Ratio Prot	0.02	c0.27			c0.35							
v/s Ratio Perm						0.04				c0.09		0.01
v/c Ratio	0.46	0.45			0.71	0.08				0.39		0.03
Uniform Delay, d1	26.1	5.9			11.2	7.5				18.9		17.3
Progression Factor	1.00	1.00			1.00	1.00				1.00		1.00
Incremental Delay, d2	1.3	0.3			1.4	0.0				0.3		0.0
Delay (s)	27.4	6.2			12.5	7.6				19.2		17.3
Level of Service	C	A			B	A				B		B
Approach Delay (s)		7.1			12.1			0.0			18.7	
Approach LOS		A			B			A			B	

Intersection Summary					
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	56.7	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	53.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	876	236	1323	994	0	0	0	0	688	0	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Lane Util. Factor		0.86	0.86	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.98	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		4783	1323	3433	3539					1653	1572	1461
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		4783	1323	3433	3539					1653	1572	1461
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	922	248	1393	1046	0	0	0	0	724	0	307
RTOR Reduction (vph)	0	3	151	0	0	0	0	0	0	0	65	99
Lane Group Flow (vph)	0	944	72	1393	1046	0	0	0	0	376	314	177
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		18.4	18.4	37.0	59.4					21.6	21.6	21.6
Effective Green, g (s)		18.4	18.4	37.0	59.4					21.6	21.6	21.6
Actuated g/C Ratio		0.20	0.20	0.41	0.66					0.24	0.24	0.24
Clearance Time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		977	270	1411	2335					396	377	350
v/s Ratio Prot		c0.20		c0.41	0.30							
v/s Ratio Perm			0.05							c0.23	0.20	0.12
v/c Ratio		0.97	0.27	0.99	0.45					0.95	0.83	0.51
Uniform Delay, d1		35.5	30.1	26.3	7.4					33.7	32.5	29.6
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		20.8	0.5	20.7	0.1					34.1	19.1	5.2
Delay (s)		56.3	30.7	47.0	7.5					67.8	51.6	34.7
Level of Service		E	C	D	A					E	D	C
Approach Delay (s)		51.4			30.1				0.0		53.0	
Approach LOS		D			C				A		D	

Intersection Summary					
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.97				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	146.5%	ICU Level of Service		H	
Analysis Period (min)	15				

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	347	1327	0	0	1893	916	447	5	1209	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1538	1653	1659	2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	3539			5085	1538	1653	1659	2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	365	1397	0	0	1993	964	471	5	1273	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	391	0	0	45	0	0	0
Lane Group Flow (vph)	365	1397	0	0	1993	573	240	236	1228	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Prot			
Protected Phases	5	2			6			8	8			
Permitted Phases						6	8					
Actuated Green, G (s)	8.0	46.0			34.0	34.0	35.0	35.0	35.0			
Effective Green, g (s)	8.0	46.0			34.0	34.0	35.0	35.0	35.0			
Actuated g/C Ratio	0.09	0.51			0.38	0.38	0.39	0.39	0.39			
Clearance Time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	305	1808			1921	581	642	645	1083			
v/s Ratio Prot	c0.11	0.39			c0.39				c0.44			
v/s Ratio Perm						0.37	0.15	0.14				
v/c Ratio	1.20	0.77			1.04	0.99	0.37	0.37	1.13			
Uniform Delay, d1	41.0	17.8			28.0	27.8	19.7	19.6	27.5			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	115.9	2.1			31.0	33.6	1.7	1.6	72.2			
Delay (s)	156.9	19.9			59.0	61.4	21.3	21.2	99.7			
Level of Service	F	B			E	E	C	C	F			
Approach Delay (s)		48.3			59.8			78.3			0.0	
Approach LOS		D			E			E			A	

Intersection Summary			
HCM 2000 Control Delay	61.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	146.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	SEU	SEL	SET	SER
Traffic Vol, veh/h	0	3	146	0	0	9	73	16	0	49	2	1
Future Vol, veh/h	0	3	146	0	0	9	73	16	0	49	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	154	0	0	9	77	17	0	52	2	1
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	NB	SB	SE
Opposing Approach	SB	NB	NW
Opposing Lanes	3	3	1
Conflicting Approach Left	SE	NW	SB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NW	SE	NB
Conflicting Lanes Right	1	1	3
HCM Control Delay	7.1	7.8	8.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	NWLn1	SELn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	0%	94%	100%	0%	0%
Vol Thru, %	0%	100%	100%	5%	4%	0%	100%	60%
Vol Right, %	0%	0%	0%	95%	2%	0%	0%	40%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	73	73	21	52	9	49	40
LT Vol	3	0	0	0	49	9	0	0
Through Vol	0	73	73	1	2	0	49	24
RT Vol	0	0	0	20	1	0	0	16
Lane Flow Rate	3	77	77	22	55	9	51	42
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.005	0.103	0.066	0.027	0.084	0.014	0.069	0.054
Departure Headway (Hd)	5.332	4.831	3.092	4.453	5.534	5.354	4.852	4.574
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	674	745	1163	807	650	671	741	786
Service Time	3.04	2.538	0.799	2.165	3.244	3.063	2.561	2.282
HCM Lane V/C Ratio	0.004	0.103	0.066	0.027	0.085	0.013	0.069	0.053
HCM Control Delay	8.1	8.1	6	7.3	8.8	8.1	7.9	7.5
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.3	0.2	0.1	0.3	0	0.2	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	NWU	NWL	NWT	NWR
Traffic Vol, veh/h	0	0	1	20
Future Vol, veh/h	0	0	1	20
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	1	21
Number of Lanes	0	0	1	0

Approach	NW
Opposing Approach	SE
Opposing Lanes	1
Conflicting Approach Left	NB
Conflicting Lanes Left	3
Conflicting Approach Right	SB
Conflicting Lanes Right	3
HCM Control Delay	7.3
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	SEU	SEL	SET	SER
Traffic Vol, veh/h	0	0	78	1	0	29	191	34	0	25	2	4
Future Vol, veh/h	0	0	78	1	0	29	191	34	0	25	2	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	82	1	0	31	201	36	0	26	2	4
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	NB	SB	SE
Opposing Approach	SB	NB	NW
Opposing Lanes	3	3	1
Conflicting Approach Left	SE	NW	SB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NW	SE	NB
Conflicting Lanes Right	1	1	3
HCM Control Delay	7.9	8.1	8.6
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	NWLn1	SELn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	0%	8%	81%	100%	0%	0%
Vol Thru, %	100%	100%	96%	8%	6%	0%	100%	65%
Vol Right, %	0%	0%	4%	85%	13%	0%	0%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	52	27	13	31	29	127	98
LT Vol	0	0	0	1	25	29	0	0
Through Vol	0	52	26	1	2	0	127	64
RT Vol	0	0	1	11	4	0	0	34
Lane Flow Rate	0	55	28	14	33	31	134	103
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0	0.074	0.038	0.018	0.051	0.044	0.173	0.126
Departure Headway (Hd)	4.872	4.872	4.846	4.8	5.64	5.158	4.657	4.413
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	739	742	749	638	688	763	803
Service Time	2.578	2.578	2.552	2.507	3.346	2.937	2.436	2.192
HCM Lane V/C Ratio	0	0.074	0.038	0.019	0.052	0.045	0.176	0.128
HCM Control Delay	7.6	8	7.7	7.6	8.6	8.2	8.4	7.8
HCM Lane LOS	N	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.2	0.1	0.1	0.2	0.1	0.6	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	NWU	NWL	NWT	NWR
Traffic Vol, veh/h	0	1	1	11
Future Vol, veh/h	0	1	1	11
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	1	1	12
Number of Lanes	0	0	1	0

Approach	NW
Opposing Approach	SE
Opposing Lanes	1
Conflicting Approach Left	NB
Conflicting Lanes Left	3
Conflicting Approach Right	SB
Conflicting Lanes Right	3
HCM Control Delay	7.6
HCM LOS	A

Lane

APPENDIX G

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS
HORIZON YEAR CONDITIONS: WITH PROJECT
(SUBJECT BLACK MOUNTAIN ROAD SEGMENT AS 4 LANES)

2050 4 lane (with project) AM Pk Hr
1: Camino Del Sur & Carmel Valley Rd 9/14/2015

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	251	664	265	135	698	108	184	293	134	614	847	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1544	1770	3539	1544	1770	3539	1546	3433	3539	1545
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1544	1770	3539	1544	1770	3539	1546	3433	3539	1545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	264	699	279	142	735	114	194	308	141	646	892	312
RTOR Reduction (vph)	0	0	193	0	0	85	0	0	108	0	0	150
Lane Group Flow (vph)	264	699	86	142	735	29	194	308	33	646	892	162
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	23.4	44.2	44.2	15.3	36.4	36.4	18.6	33.2	33.2	29.2	43.9	43.9
Effective Green, g (s)	23.4	44.2	44.2	15.3	36.4	36.4	18.6	33.2	33.2	29.2	43.9	43.9
Actuated g/C Ratio	0.16	0.31	0.31	0.11	0.25	0.25	0.13	0.23	0.23	0.20	0.31	0.31
Clearance Time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Vehicle Extension (s)	2.0	5.6	5.6	2.0	5.9	5.9	2.0	4.9	4.9	2.0	5.1	5.1
Lane Grp Cap (vph)	289	1093	477	189	900	393	230	821	358	701	1086	474
v/s Ratio Prot	c0.15	0.20		0.08	c0.21		c0.11	0.09		c0.19	c0.25	
v/s Ratio Perm			0.06			0.02			0.02			0.11
v/c Ratio	0.91	0.64	0.18	0.75	0.82	0.07	0.84	0.38	0.09	0.92	0.82	0.34
Uniform Delay, d1	58.8	42.5	36.2	62.0	50.2	40.5	60.8	46.2	43.1	55.8	45.9	38.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.8	1.9	0.5	13.8	6.8	0.2	22.7	0.6	0.2	17.3	5.7	0.9
Delay (s)	89.6	44.5	36.6	75.8	57.0	40.7	83.5	46.8	43.3	73.1	51.7	39.3
Level of Service	F	D	D	E	E	D	F	D	D	E	D	D
Approach Delay (s)		52.3			57.8			57.1			57.1	
Approach LOS		D			E			E			E	

Intersection Summary				
HCM 2000 Control Delay	56.0	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	143.0	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	88.0%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
2: Camino Del Sur & Watson Ranch Rd 9/10/2015

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	27	26	102	961	8	27	1243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Lane Util. Factor	1.00	1.00	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1746	1543	1770	5077		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1746	1543	1770	5077		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	27	107	1012	8	28	1308
RTOR Reduction (vph)	0	25	0	0	0	0	0
Lane Group Flow (vph)	28	2	107	1020	0	28	1308
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Perm	Perm	Prot	NA		Prot	NA
Protected Phases			5	2		1	6
Permitted Phases	8	8					
Actuated Green, G (s)	10.2	10.2	15.0	110.3		4.7	100.0
Effective Green, g (s)	10.2	10.2	15.0	110.3		4.7	100.0
Actuated g/C Ratio	0.07	0.07	0.11	0.79		0.03	0.71
Clearance Time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.5	5.4		2.0	5.4
Lane Grp Cap (vph)	127	112	189	3999		59	3632
v/s Ratio Prot			c0.06	0.20		0.02	c0.26
v/s Ratio Perm	c0.02	0.00					
v/c Ratio	0.22	0.02	0.57	0.26		0.47	0.36
Uniform Delay, d1	61.2	60.2	59.4	3.9		66.4	7.7
Progression Factor	1.00	1.00	0.58	0.24		1.00	1.00
Incremental Delay, d2	0.3	0.0	3.0	0.1		2.2	0.3
Delay (s)	61.5	60.3	37.3	1.1		68.6	8.0
Level of Service	E	E	D	A		E	A
Approach Delay (s)	60.9			4.5			9.2
Approach LOS	E			A			A

Intersection Summary				
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	51.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
3: Camino Del Sur & Wolverine Way/Fallhaven Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	0	53	86	2	17	300	1041	18	48	1026	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes		1.00	0.89	1.00	0.91		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1770	1416	1770	1464		3433	5059		1770	5085	1558
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1770	1416	1770	1464		3433	5059		1770	5085	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	15	0	56	91	2	18	316	1096	19	51	1080	22
RTOR Reduction (vph)	0	0	51	0	15	0	0	1	0	0	0	11
Lane Group Flow (vph)	0	15	5	91	5	0	316	1114	0	51	1080	11
Confl. Peds. (#/hr)			82			83			31			2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.4	11.4	23.3	23.3		17.1	78.2		6.5	68.4	68.4
Effective Green, g (s)		11.4	11.4	23.3	23.3		17.1	78.2		6.5	68.4	68.4
Actuated g/C Ratio		0.08	0.08	0.17	0.17		0.12	0.56		0.05	0.49	0.49
Clearance Time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Vehicle Extension (s)		2.0	2.0	6.3	6.3		2.0	5.9		2.0	2.0	2.0
Lane Grp Cap (vph)		144	115	294	243		419	2825		82	2484	761
v/s Ratio Prot		c0.01		c0.05	0.00		c0.09	0.22		c0.03	c0.21	
v/s Ratio Perm			0.00									0.01
v/c Ratio		0.10	0.04	0.31	0.02		0.75	0.39		0.62	0.43	0.01
Uniform Delay, d1		59.6	59.3	51.3	48.8		59.4	17.5		65.5	23.2	18.4
Progression Factor		1.00	1.00	1.00	1.00		0.71	0.32		1.05	0.77	1.00
Incremental Delay, d2		0.1	0.1	1.8	0.1		6.1	0.4		9.7	0.5	0.0
Delay (s)		59.7	59.3	53.1	48.9		48.3	6.0		78.3	18.4	18.5
Level of Service		E	E	D	D		D	A		E	B	B
Approach Delay (s)		59.4			52.3			15.4			21.1	
Approach LOS		E			D			B			C	

Intersection Summary				
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	90.9%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
4: Camino Del Sur & Torrey Meadows Dr 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1274	68	35	1158	18	89	2	29	83	7	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5040		1770	5071		1770	1558		1770	2950	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5040		1770	5071		1770	1558		1770	2950	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1341	72	37	1219	19	94	2	31	87	7	100
RTOR Reduction (vph)	0	3	0	0	1	0	0	28	0	0	91	0
Lane Group Flow (vph)	68	1410	0	37	1237	0	94	5	0	87	16	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	8.7	82.1		13.3	86.3		11.8	13.2		11.7	13.1	
Effective Green, g (s)	8.7	82.1		13.3	86.3		11.8	13.2		11.7	13.1	
Actuated g/C Ratio	0.06	0.59		0.10	0.62		0.08	0.09		0.08	0.09	
Clearance Time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	4.4		2.0	5.4		2.0	5.4	
Lane Grp Cap (vph)	109	2955		168	3125		149	146		147	276	
v/s Ratio Prot	c0.04	c0.28		0.02	c0.24		c0.05	0.00		c0.05	c0.01	
v/s Ratio Perm												
v/c Ratio	0.62	0.48		0.22	0.40		0.63	0.03		0.59	0.06	
Uniform Delay, d1	64.1	16.6		58.6	13.6		62.0	57.6		61.8	57.8	
Progression Factor	1.19	0.83		0.52	0.22		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	0.5		0.2	0.4		6.2	0.2		4.2	0.2	
Delay (s)	83.7	14.4		30.5	3.3		68.2	57.8		66.0	58.0	
Level of Service	F	B		C	A		E	E		E	E	
Approach Delay (s)		17.5			4.1			65.5			61.6	
Approach LOS		B			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.1	
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
5: Camino Del Sur & Highlands Village Pl 9/10/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	117	258	276	1355	1260	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.4	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.91	0.91	
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1539	3433	5085	5011	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1539	3433	5085	5011	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	123	272	291	1426	1326	123
RTOR Reduction (vph)	0	241	0	0	5	0
Lane Group Flow (vph)	123	31	291	1426	1444	0
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	16.1	16.1	17.1	113.0	91.5	
Effective Green, g (s)	16.1	16.1	17.1	113.0	91.5	
Actuated g/C Ratio	0.12	0.12	0.12	0.81	0.65	
Clearance Time (s)	4.9	4.9	4.4	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	203	176	419	4104	3275	
v/s Ratio Prot	c0.07		c0.08	0.28	c0.29	
v/s Ratio Perm		0.02				
v/c Ratio	0.61	0.18	0.69	0.35	0.44	
Uniform Delay, d1	58.9	56.0	58.9	3.6	11.8	
Progression Factor	1.00	1.00	1.00	1.00	0.29	
Incremental Delay, d2	5.0	0.5	4.9	0.2	0.4	
Delay (s)	64.0	56.5	63.9	3.9	3.9	
Level of Service	E	E	E	A	A	
Approach Delay (s)	58.8			14.0	3.9	
Approach LOS	E			B	A	

Intersection Summary					
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.3		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) AM Pk Hr
6: SR-56 WB On-Ramp/SR-56 WB Off-Ramp & Camino Del Sur 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	430	0	972	0	769	216	0	1060	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Lane Util. Factor				0.95	0.95	0.88		0.95	1.00		0.95	0.88
Frpb, ped/bikes				1.00	1.00	0.97		1.00	0.96		1.00	0.96
Flpb, ped/bikes				0.99	0.99	1.00		1.00	1.00		1.00	1.00
Frt				1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1656	1656	2713		3539	1513		3539	2664
Flt Permitted				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1656	1656	2713		3539	1513		3539	2664
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	453	0	1023	0	809	227	0	1116	594
RTOR Reduction (vph)	0	0	0	0	0	85	0	0	127	0	0	337
Lane Group Flow (vph)	0	0	0	226	227	938	0	809	100	0	1116	257
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				35.8	35.8	35.8		34.6	34.6		34.1	34.1
Effective Green, g (s)				35.8	35.8	35.8		34.6	34.6		34.1	34.1
Actuated g/C Ratio				0.45	0.45	0.45		0.44	0.44		0.43	0.43
Clearance Time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)				751	751	1230		1551	663		1529	1151
v/s Ratio Prot								0.23			c0.32	
v/s Ratio Perm				0.14	0.14	c0.35			0.07			0.10
v/c Ratio				0.30	0.30	0.76		0.52	0.15		0.73	0.22
Uniform Delay, d1				13.6	13.6	18.0		16.1	13.3		18.6	14.1
Progression Factor				1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.2	0.2	2.9		0.3	0.1		1.8	0.1
Delay (s)				13.9	13.9	20.9		16.4	13.4		20.4	14.2
Level of Service				B	B	C		B	B		C	B
Approach Delay (s)		0.0			18.7			15.8			18.2	
Approach LOS		A			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.75				
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	9.0		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) AM Pk Hr
7: Camino Del Sur & SR-56 EB Off-ramp/SR-56 EB On-ramp 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	0	382	0	0	0	0	735	238	0	748	699
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95					1.00	0.97		1.00	0.95
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1655	1655	2660					3539	1540		3539	1511
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1655	1655	2660					3539	1540		3539	1511
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	0	402	0	0	0	0	774	251	0	787	736
RTOR Reduction (vph)	0	0	337	0	0	0	0	0	66	0	0	198
Lane Group Flow (vph)	131	132	65	0	0	0	0	774	185	0	787	538
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	13.5	13.5	13.5					61.7	61.7		61.2	61.2
Effective Green, g (s)	13.5	13.5	13.5					61.7	61.7		61.2	61.2
Actuated g/C Ratio	0.16	0.16	0.16					0.74	0.74		0.73	0.73
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	266	266	429					2608	1135		2587	1104
v/s Ratio Prot								0.22			0.22	
v/s Ratio Perm	0.08	0.08	0.02						0.12			c0.36
v/c Ratio	0.49	0.50	0.15					0.30	0.16		0.30	0.49
Uniform Delay, d1	32.0	32.0	30.2					3.7	3.3		3.9	4.7
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	1.5	0.2					0.3	0.3		0.3	1.5
Delay (s)	33.4	33.5	30.3					4.0	3.6		4.2	6.2
Level of Service	C	C	C					A	A		A	A
Approach Delay (s)		31.6			0.0			3.9			5.2	
Approach LOS		C			A			A			A	

Intersection Summary					
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.49				
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	9.0		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) AM Pk Hr
8: Torrey Santa Fe Rd/Dwy & Camino Del Sur 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	15	75	20	13	79	138	596	21	108	497	675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00		0.98		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1693	1583		1644		1770	3521		1763	3539	1536
Flt Permitted	0.95	0.96	1.00		0.90		0.43	1.00		0.35	1.00	1.00
Satd. Flow (perm)	1681	1693	1583		1489		806	3521		645	3539	1536
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	314	16	79	21	14	83	145	627	22	114	523	711
RTOR Reduction (vph)	0	0	61	0	74	0	0	2	0	0	0	403
Lane Group Flow (vph)	163	167	18	0	44	0	145	647	0	114	523	308
Confl. Peds. (#/hr)	10					10					10	10
Turn Type	Split	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	13.4	13.4	13.4		6.4		25.6	25.6		25.1	25.1	25.1
Effective Green, g (s)	13.4	13.4	13.4		6.4		25.6	25.6		25.1	25.1	25.1
Actuated g/C Ratio	0.23	0.23	0.23		0.11		0.44	0.44		0.43	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	389	391	366		164		356	1556		279	1534	665
v/s Ratio Prot	0.10	c0.10						0.18			0.15	
v/s Ratio Perm			0.01		c0.03		0.18			0.18		c0.20
v/c Ratio	0.42	0.43	0.05		0.27		0.41	0.42		0.41	0.34	0.46
Uniform Delay, d1	18.9	19.0	17.3		23.6		11.0	11.0		11.3	10.9	11.6
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.8	0.1		0.9		0.8	0.2		1.0	0.1	0.5
Delay (s)	19.7	19.7	17.4		24.5		11.8	11.2		12.3	11.0	12.1
Level of Service	B	B	B		C		B	B		B	B	B
Approach Delay (s)		19.2			24.5			11.3			11.7	
Approach LOS		B			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	13.0		
Intersection Capacity Utilization	70.0%	ICU Level of Service	C		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) AM Pk Hr
9: Black Mountain Rd & Carmel Valley Rd 9/10/2015

Movement	NWL	NWR	NEU	NET	NER	SWL	SWT
Lane Configurations							
Volume (vph)	363	404	3	347	127	318	923
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1551	1766	3539	1570	1770	3539
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1551	1766	3539	1570	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	382	425	3	365	134	335	972
RTOR Reduction (vph)	0	274	0	0	52	0	0
Lane Group Flow (vph)	382	151	3	365	82	335	972
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	8		5	2	8	1	6
Permitted Phases		8			2		
Actuated Green, G (s)	30.7	30.7	0.9	22.1	52.8	20.2	42.0
Effective Green, g (s)	30.7	30.7	0.9	22.1	52.8	20.2	42.0
Actuated g/C Ratio	0.36	0.36	0.01	0.26	0.61	0.23	0.49
Clearance Time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Vehicle Extension (s)	8.0	8.0	3.0	3.0	8.0	3.0	8.0
Lane Grp Cap (vph)	1219	551	18	905	959	413	1720
v/s Ratio Prot	c0.11		0.00	0.10	0.03	c0.19	c0.27
v/s Ratio Perm		0.10			0.02		
v/c Ratio	0.31	0.27	0.17	0.40	0.09	0.81	0.57
Uniform Delay, d1	20.2	19.9	42.4	26.7	6.9	31.3	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.2	4.3	0.3	0.0	11.5	1.4
Delay (s)	20.9	21.1	46.7	27.0	6.9	42.8	17.1
Level of Service	C	C	D	C	A	D	B
Approach Delay (s)	21.0			21.7			23.7
Approach LOS	C			C			C

Intersection Summary				
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	13.4	
Intersection Capacity Utilization	65.3%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
10: Black Mountain Rd & Maler Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1	6	21	1	40	4	716	12	12	445	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	1.00	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1746			1651		1770	3528		1762	3532	
Flt Permitted		0.71			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1296			1458		1770	3528		1762	3532	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	1	6	22	1	42	4	754	13	13	468	5
RTOR Reduction (vph)	0	5	0	0	36	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	43	0	0	29	0	4	766	0	13	473	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		6.6			6.7		1.6	27.1		0.7	26.3	
Effective Green, g (s)		6.6			6.7		1.6	27.1		0.7	26.3	
Actuated g/C Ratio		0.13			0.14		0.03	0.55		0.01	0.53	
Clearance Time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Vehicle Extension (s)		2.0			2.0		2.0	4.6		2.0	4.8	
Lane Grp Cap (vph)		172			197		57	1931		24	1876	
v/s Ratio Prot							0.00	c0.22		0.01	c0.13	
v/s Ratio Perm		c0.03			0.02							
v/c Ratio		0.25			0.15		0.07	0.40		0.54	0.25	
Uniform Delay, d1		19.2			18.9		23.2	6.5		24.2	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.1		0.2	0.2		12.7	0.1	
Delay (s)		19.5			19.0		23.4	6.7		36.9	6.4	
Level of Service		B			B		C	A		D	A	
Approach Delay (s)		19.5			19.0			6.8			7.2	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	40.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
11: Black Mountain Rd & Stargaze Ave 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	1	109	43	7	32	31	525	17	7	434	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt		1.00		1.00	0.88		1.00	1.00		1.00	0.99	
Flt Protected		0.95		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1763		1763	1609		1760	3520		1764	3516	
Flt Permitted		0.73		0.68	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1355		1260	1609		1760	3520		1764	3516	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	1	115	45	7	34	33	553	18	7	457	17
RTOR Reduction (vph)	0	91	0	0	28	0	0	2	0	0	2	0
Lane Group Flow (vph)	85	25	0	45	13	0	33	569	0	7	472	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	9.4	9.4		7.9	7.9		0.9	17.6		0.6	17.2	
Effective Green, g (s)	9.4	9.4		7.9	7.9		0.9	17.6		0.6	17.2	
Actuated g/C Ratio	0.22	0.22		0.18	0.18		0.02	0.41		0.01	0.40	
Clearance Time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.1	
Lane Grp Cap (vph)	293	642		229	292		36	1427		24	1393	
v/s Ratio Prot		0.01			0.01		c0.02	c0.16		0.00	c0.13	
v/s Ratio Perm	c0.06			0.04								
v/c Ratio	0.29	0.04		0.20	0.05		0.92	0.40		0.29	0.34	
Uniform Delay, d1	14.2	13.4		15.1	14.6		21.2	9.1		21.2	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.2	0.0		114.0	0.2		2.5	0.2	
Delay (s)	14.4	13.4		15.2	14.7		135.3	9.3		23.6	9.3	
Level of Service	B	B		B	B		F	A		C	A	
Approach Delay (s)		13.9			14.9			16.2			9.5	
Approach LOS		B			B			B			A	

Intersection Summary				
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	43.4	Sum of lost time (s)	17.4	
Intersection Capacity Utilization	47.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
12: Black Mountain Rd & Oviedo St 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	12	102	82	4	22	42	535	46	13	689	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	1.00	0.99	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00	0.95	0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797	1542	1681	1608		1770	3539	1527	1751	3533	
Flt Permitted		0.96	1.00	0.95	0.90		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797	1542	1681	1484		1770	3539	1527	1751	3533	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	13	107	86	4	23	44	563	48	14	725	7
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	48	107	58	36	0	44	563	48	14	731	0
Confl. Peds. (#/hr)	10		10	10			10		10	10		10
Turn Type	Split	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	8		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		7.9	7.9	6.3	14.3		2.2	28.0	34.3	0.6	28.6	
Effective Green, g (s)		7.9	7.9	6.3	14.3		2.2	28.0	34.3	0.6	28.6	
Actuated g/C Ratio		0.10	0.10	0.08	0.19		0.03	0.37	0.45	0.01	0.38	
Clearance Time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Vehicle Extension (s)		2.0	2.0	3.0	3.0		2.0	4.1	3.0	2.0	3.5	
Lane Grp Cap (vph)		186	159	138	288		51	1300	687	13	1326	
v/s Ratio Prot		0.03		c0.03	0.01		c0.02	0.16	0.01	0.01	c0.21	
v/s Ratio Perm			c0.07		c0.01				0.03			
v/c Ratio		0.26	0.67	0.42	0.13		0.86	0.43	0.07	1.08	0.55	
Uniform Delay, d1		31.5	32.9	33.2	25.8		36.8	18.1	11.9	37.8	18.7	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3	8.5	2.1	0.2		75.0	0.3	0.0	276.9	0.5	
Delay (s)		31.7	41.4	35.3	25.9		111.8	18.5	11.9	314.7	19.3	
Level of Service		C	D	D	C		F	B	B	F	B	
Approach Delay (s)		38.4			30.7			24.3			24.8	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	25.4	
Intersection Capacity Utilization	45.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	387	323	144	265	417	241	636	38	497	815	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3262		1770	3169		1770	3505		3433	3491	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3262		1770	3169		1770	3505		3433	3491	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	183	407	340	152	279	439	254	669	40	523	858	73
RTOR Reduction (vph)	0	0	0	0	260	0	0	4	0	0	5	0
Lane Group Flow (vph)	183	747	0	152	458	0	254	705	0	523	926	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	19.1	31.4		12.6	24.6		18.5	34.1		22.1	37.2	
Effective Green, g (s)	19.1	31.4		12.6	24.6		18.5	34.1		22.1	37.2	
Actuated g/C Ratio	0.16	0.26		0.10	0.21		0.15	0.28		0.18	0.31	
Clearance Time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.1		2.0	4.5		2.0	3.9	
Lane Grp Cap (vph)	281	853		185	649		272	996		632	1082	
v/s Ratio Prot	0.10	c0.23		c0.09	0.14		c0.14	0.20		0.15	c0.27	
v/s Ratio Perm												
v/c Ratio	0.65	0.88		0.82	0.71		0.93	0.71		0.83	0.86	
Uniform Delay, d1	47.3	42.4		52.6	44.3		50.1	38.5		47.1	38.9	
Progression Factor	1.00	1.00		0.84	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	10.2		21.7	3.5		36.6	4.2		8.3	8.7	
Delay (s)	51.4	52.7		65.7	24.4		86.8	42.7		55.5	47.6	
Level of Service	D	D		E	C		F	D		E	D	
Approach Delay (s)		52.4			31.6			54.4			50.4	
Approach LOS		D			C			D			D	

Intersection Summary					
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6		
Intersection Capacity Utilization	89.7%	ICU Level of Service	E		
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	101	217	530	88	308	887
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.9		4.5	5.2
Lane Util. Factor	0.97	0.91	0.95		1.00	0.95
Frpb, ped/bikes	0.97	0.97	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	0.92	0.85	0.98		1.00	1.00
Flt Protected	0.98	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3160	1392	3454		1770	3539
Flt Permitted	0.98	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3160	1392	3454		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	228	558	93	324	934
RTOR Reduction (vph)	99	99	15	0	0	0
Lane Group Flow (vph)	121	15	636	0	324	934
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	3		2		1	6
Permitted Phases		3				
Actuated Green, G (s)	8.0	8.0	21.2		15.8	41.2
Effective Green, g (s)	8.0	8.0	21.2		15.8	41.2
Actuated g/C Ratio	0.14	0.14	0.36		0.27	0.70
Clearance Time (s)	4.5	4.5	4.9		4.5	5.2
Vehicle Extension (s)	3.0	3.0	5.2		2.0	4.5
Lane Grp Cap (vph)	429	189	1243		474	2475
v/s Ratio Prot	c0.04		c0.18		c0.18	0.26
v/s Ratio Perm		0.01				
v/c Ratio	0.28	0.08	0.51		0.68	0.38
Uniform Delay, d1	22.9	22.2	14.8		19.3	3.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.2	0.8		3.2	0.2
Delay (s)	23.2	22.4	15.5		22.5	3.8
Level of Service	C	C	B		C	A
Approach Delay (s)	23.0		15.5			8.6
Approach LOS	C		B			A

Intersection Summary					
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	13.9		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A		
Analysis Period (min)	15				

Description: 10/2013
c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	56	106	760	373	129	17	343	513	101	45	859	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1825		3433	3439		1770	3513	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1825		3433	3439		1770	3513	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	59	112	800	393	136	18	361	540	106	47	904	36
RTOR Reduction (vph)	0	0	363	0	5	0	0	13	0	0	2	0
Lane Group Flow (vph)	59	112	437	393	149	0	361	633	0	47	938	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.2	14.0	27.6	14.2	18.1		27.6	44.1		13.9	30.1	
Effective Green, g (s)	10.2	14.0	27.6	14.2	18.1		27.6	44.1		13.9	30.1	
Actuated g/C Ratio	0.10	0.13	0.26	0.13	0.17		0.26	0.42		0.13	0.29	
Clearance Time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	2.1		2.0	5.2		2.0	4.5	
Lane Grp Cap (vph)	171	247	415	463	313		900	1441		233	1005	
v/s Ratio Prot	0.03	0.06	c0.28	c0.11	c0.08		0.11	0.18		0.03	c0.27	
v/s Ratio Perm												
v/c Ratio	0.35	0.45	1.05	0.85	0.48		0.40	0.44		0.20	0.93	
Uniform Delay, d1	44.4	42.1	38.8	44.5	39.3		32.0	21.7		40.7	36.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.3	58.9	13.0	0.5		0.1	0.5		0.2	15.2	
Delay (s)	44.8	43.4	97.7	57.5	39.8		32.1	22.2		40.9	51.8	
Level of Service	D	D	F	E	D		C	C		D	D	
Approach Delay (s)		88.2			52.5			25.8			51.3	
Approach LOS		F			D			C			D	

Intersection Summary					
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	105.2	Sum of lost time (s)	19.3		
Intersection Capacity Utilization	95.5%	ICU Level of Service	F		
Analysis Period (min)	15				

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	517	27	305	731	748	0	0	1107	912
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.91	
Frpb, ped/bikes				1.00	1.00	0.96	1.00	1.00			0.98	
Flpb, ped/bikes				0.98	0.98	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.93	
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1640	1656	1527	3433	3539			4664	
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1640	1656	1527	3433	3539			4664	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	544	28	321	769	787	0	0	1165	960
RTOR Reduction (vph)	0	0	0	0	0	209	0	0	0	0	113	0
Lane Group Flow (vph)	0	0	0	283	289	112	769	787	0	0	2012	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)				25.0	25.0	25.0	30.5	95.1			59.6	
Effective Green, g (s)				25.0	25.0	25.0	30.5	95.1			59.6	
Actuated g/C Ratio				0.19	0.19	0.19	0.24	0.74			0.46	
Clearance Time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				317	320	295	811	2606			2153	
v/s Ratio Prot							c0.22	0.22			c0.43	
v/s Ratio Perm				0.17	0.17	0.07						
v/c Ratio				0.89	0.90	0.38	0.95	0.30			1.14dr	
Uniform Delay, d1				50.7	50.9	45.3	48.5	5.8			32.9	
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2				25.5	27.1	0.8	19.8	0.3			9.1	
Delay (s)				76.2	78.0	46.1	68.4	6.1			42.0	
Level of Service				E	E	D	E	A			D	
Approach Delay (s)		0.0			66.0			36.9			42.0	
Approach LOS		A			E			D			D	

Intersection Summary					
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.93				
Actuated Cycle Length (s)	129.1	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	89.9%	ICU Level of Service	E		
Analysis Period (min)	15				

Description: 05/2014
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
17: Black Mountain Rd & SR-56 EB Off-Ramp/SR-56 EB On-Ramp 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	193	0	399	0	0	0	0	1189	364	424	1296	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.97					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1642	1642	2690					3539	1529	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1642	1642	2690					3539	1529	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	203	0	420	0	0	0	0	1252	383	446	1364	0
RTOR Reduction (vph)	0	0	131	0	0	0	0	0	80	0	0	0
Lane Group Flow (vph)	101	102	289	0	0	0	0	1252	303	446	1364	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	18.8	18.8	18.8					69.4	69.4	20.8	95.2	
Effective Green, g (s)	18.8	18.8	18.8					69.4	69.4	20.8	95.2	
Actuated g/C Ratio	0.15	0.15	0.15					0.56	0.56	0.17	0.77	
Clearance Time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	250	250	411					1996	862	580	3935	
v/s Ratio Prot								c0.35		c0.13	0.27	
v/s Ratio Perm	0.06	0.06	c0.11						0.20			
v/c Ratio	0.40	0.41	0.70					0.63	0.35	0.77	0.35	
Uniform Delay, d1	47.0	47.1	49.4					18.1	14.6	48.8	4.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	1.1	5.4					1.5	1.1	6.1	0.2	
Delay (s)	48.1	48.2	54.8					19.6	15.7	54.9	4.5	
Level of Service	D	D	D					B	B	D	A	
Approach Delay (s)		52.6			0.0			18.7			16.9	
Approach LOS		D			A			B			B	

Intersection Summary				
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	123.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	89.9%	ICU Level of Service	E	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
18: Black Mountain Rd & Park Village Rd/Adolphia St 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	656	67	295	145	34	101	82	733	50	130	1428	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95		0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.97		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	0.99	0.99	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1659	1682	1524	1668	1540		3433	3491		1770	3539	1524
Flt Permitted	0.65	0.66	1.00	0.53	0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1139	1152	1524	923	1497		3433	3491		1770	3539	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	691	71	311	153	36	106	86	772	53	137	1503	267
RTOR Reduction (vph)	0	0	99	0	55	0	0	3	0	0	0	81
Lane Group Flow (vph)	380	382	212	138	102	0	86	822	0	137	1503	186
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	43.5	43.5	29.6	22.7	22.7		6.4	62.5		19.0	75.1	75.1
Effective Green, g (s)	43.5	43.5	29.6	22.7	22.7		6.4	62.5		19.0	75.1	75.1
Actuated g/C Ratio	0.31	0.31	0.21	0.16	0.16		0.05	0.45		0.14	0.54	0.54
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	453	459	322	202	245		156	1558		240	1898	817
v/s Ratio Prot	c0.16	0.16		0.05	0.03		0.03	c0.24		0.08	c0.42	
v/s Ratio Perm	c0.10	0.10	0.14	0.06	0.04							0.12
v/c Ratio	0.84	0.83	0.66	0.68	0.42		0.55	0.53		0.57	0.79	0.23
Uniform Delay, d1	43.2	44.9	50.6	53.6	52.7		65.4	28.1		56.7	26.2	17.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.96	0.62		1.00	1.00	1.00
Incremental Delay, d2	12.8	12.2	4.8	9.2	1.1		4.1	1.2		3.3	3.5	0.6
Delay (s)	56.0	57.1	55.4	62.8	53.8		67.1	18.5		59.9	29.6	17.8
Level of Service	E	E	E	E	D		E	B		E	C	B
Approach Delay (s)		56.2			58.0			23.1			30.1	
Approach LOS		E			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	89.2%	ICU Level of Service	E	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
19: Black Mountain Rd & Canyonside Park Dwy 9/10/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	6	7	8	883	2202	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1524	1770	3539	3539	1484
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1524	1770	3539	3539	1484
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	7	8	929	2318	35
RTOR Reduction (vph)	0	7	0	0	0	3
Lane Group Flow (vph)	6	0	8	929	2318	32
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	4.5	4.5	1.0	126.5	120.5	120.5
Effective Green, g (s)	4.5	4.5	1.0	126.5	120.5	120.5
Actuated g/C Ratio	0.03	0.03	0.01	0.90	0.86	0.86
Clearance Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	56	48	12	3197	3046	1277
v/s Ratio Prot	c0.00		0.00	c0.26	c0.65	
v/s Ratio Perm		0.00				0.02
v/c Ratio	0.11	0.00	0.67	0.29	0.76	0.03
Uniform Delay, d1	65.8	65.6	69.3	0.9	3.9	1.4
Progression Factor	1.00	1.00	0.79	0.60	1.22	0.51
Incremental Delay, d2	0.8	0.0	87.4	0.2	1.4	0.0
Delay (s)	66.6	65.6	142.0	0.8	6.2	0.7
Level of Service	E	E	F	A	A	A
Approach Delay (s)	66.1			2.0	6.2	
Approach LOS	E			A	A	

Intersection Summary				
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
20: Black Mountain Rd & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	436	0	303	23	602	355	481	1558	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Lane Util. Factor				0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes				1.00	0.96	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes				0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3393	1447	1447	1770	3539	1524	3433	3539	
Flt Permitted				0.56	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)				1984	1447	1447	1770	3539	1524	3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	459	0	319	24	634	374	506	1640	1
RTOR Reduction (vph)	0	0	0	0	133	132	0	0	181	0	0	0
Lane Group Flow (vph)	0	0	0	459	27	27	24	634	193	506	1641	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)				23.8	23.8	23.8	3.9	72.4	72.4	28.3	96.8	
Effective Green, g (s)				23.8	23.8	23.8	3.9	72.4	72.4	28.3	96.8	
Actuated g/C Ratio				0.17	0.17	0.17	0.03	0.52	0.52	0.20	0.69	
Clearance Time (s)				5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)				504	245	245	49	1830	788	693	2446	
v/s Ratio Prot				c0.11	0.02		0.01	0.18		c0.15	c0.46	
v/s Ratio Perm				c0.05		0.02			0.13			
v/c Ratio				0.91	0.11	0.11	0.49	0.35	0.25	0.73	0.67	
Uniform Delay, d1				56.1	49.2	49.1	67.1	19.9	18.7	52.3	12.4	
Progression Factor				1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.36	
Incremental Delay, d2				20.6	0.2	0.2	7.5	0.5	0.7	2.8	1.0	
Delay (s)				76.7	49.4	49.3	74.6	20.4	19.4	52.5	5.5	
Level of Service				E	D	D	E	C	B	D	A	
Approach Delay (s)		0.0			65.5			21.3			16.6	
Approach LOS		A			E			C			B	

Intersection Summary				
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	79.3%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	37	205	2	662	14	346	1920
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Lane Util. Factor	1.00	0.88	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	2736	1749	5067		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	2736	1749	5067		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	216	2	697	15	364	2021
RTOR Reduction (vph)	0	179	0	2	0	0	0
Lane Group Flow (vph)	39	37	2	710	0	364	2021
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	11.3	11.3	0.9	16.5		23.2	39.9
Effective Green, g (s)	11.3	11.3	0.9	16.5		23.2	39.9
Actuated g/C Ratio	0.17	0.17	0.01	0.25		0.35	0.60
Clearance Time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Vehicle Extension (s)	4.2	4.2	2.0	3.9		2.0	4.8
Lane Grp Cap (vph)	299	462	23	1251		614	3037
v/s Ratio Prot	c0.02		0.00	0.14		c0.21	c0.40
v/s Ratio Perm		0.01					
v/c Ratio	0.13	0.08	0.09	0.57		0.59	0.67
Uniform Delay, d1	23.6	23.4	32.5	22.0		17.9	9.0
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1	0.6	0.7		1.0	0.7
Delay (s)	23.9	23.5	33.1	22.7		18.9	9.7
Level of Service	C	C	C	C		B	A
Approach Delay (s)	23.5			22.8			11.1
Approach LOS	C			C			B

Intersection Summary					
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	15.8		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B		
Analysis Period (min)	15				
Description: 10/2013					
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	858	20	13	742	159	36	42	45	51	0	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	0.87	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.89	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3527		1770	3386		1584	1718		1770	1383	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.68	1.00	
Satd. Flow (perm)	1770	3527		1770	3386		1178	1718		1262	1383	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	241	903	21	14	781	167	38	44	47	54	0	77
RTOR Reduction (vph)	0	1	0	0	11	0	0	0	0	0	66	0
Lane Group Flow (vph)	241	923	0	14	937	0	38	91	0	54	11	0
Confl. Peds. (#/hr)						36	104					104
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	20.5	82.7		4.0	66.8		18.0	18.0		17.9	17.9	
Effective Green, g (s)	20.5	82.7		4.0	66.8		18.0	18.0		17.9	17.9	
Actuated g/C Ratio	0.17	0.69		0.03	0.56		0.15	0.15		0.15	0.15	
Clearance Time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	302	2430		59	1884		176	257		188	206	
v/s Ratio Prot	c0.14	0.26		0.01	c0.28			c0.05			0.01	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.80	0.38		0.24	0.50		0.22	0.35		0.29	0.06	
Uniform Delay, d1	47.8	7.9		56.5	16.3		44.8	45.8		45.4	43.8	
Progression Factor	0.89	1.04		0.58	0.25		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.4	0.3		0.7	0.8		0.2	0.3		0.3	0.0	
Delay (s)	51.9	8.5		33.6	4.9		45.0	46.1		45.7	43.8	
Level of Service	D	A		C	A		D	D		D	D	
Approach Delay (s)		17.5			5.3			45.8			44.6	
Approach LOS		B			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.4		
Intersection Capacity Utilization	77.3%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 10/2013					
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	56	354	85	55	44	157	855	23	50	904	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89	0.85	1.00	0.93		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1757	1548	1483	1766	1721		3433	3521		1770	3534	
Flt Permitted	0.69	1.00	1.00	0.32	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1276	1548	1483	590	1721		3433	3521		1770	3534	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	59	373	89	58	46	165	900	24	53	952	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	1	0
Lane Group Flow (vph)	57	219	213	89	104	0	165	922	0	53	959	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8	1	7	4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	27.7	22.4	37.5	33.1	25.1		15.1	58.3		12.4	55.6	
Effective Green, g (s)	27.7	22.4	37.5	33.1	25.1		15.1	58.3		12.4	55.6	
Actuated g/C Ratio	0.23	0.19	0.31	0.28	0.21		0.13	0.49		0.10	0.46	
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)	315	288	463	241	359		431	1710		182	1637	
v/s Ratio Prot	0.01	c0.14	c0.06	c0.02	0.06		0.05	0.26		0.03	c0.27	
v/s Ratio Perm	0.03		0.09	0.08								
v/c Ratio	0.18	0.76	0.46	0.37	0.29		0.38	0.54		0.29	0.59	
Uniform Delay, d1	36.7	46.3	33.1	33.8	39.9		48.2	21.5		49.7	23.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.76	0.23	
Incremental Delay, d2	0.1	10.2	0.3	0.3	0.2		0.2	1.2		0.3	1.5	
Delay (s)	36.8	56.4	33.4	34.1	40.1		48.4	22.7		38.1	6.9	
Level of Service	D	E	C	C	D		D	C		D	A	
Approach Delay (s)		44.1			37.4			26.6			8.5	
Approach LOS		D			D			C			A	

Intersection Summary					
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.9		
Intersection Capacity Utilization	65.1%	ICU Level of Service	C		
Analysis Period (min)	15				
Description: 10/2013					
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	397	819	71	432	548	215	244	105	45	328	332	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1506	1770	3539	1537	3433	3352		3433	1863	1537
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1506	1770	3539	1537	3433	3352		3433	1863	1537
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	418	862	75	455	577	226	257	111	47	345	349	349
RTOR Reduction (vph)	0	0	61	0	0	163	0	42	0	0	0	281
Lane Group Flow (vph)	418	862	14	455	577	63	257	116	0	345	349	68
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.1	18.0	18.0	24.5	26.4	26.4	16.5	9.5		25.5	18.5	18.5
Effective Green, g (s)	16.1	18.0	18.0	24.5	26.4	26.4	16.5	9.5		25.5	18.5	18.5
Actuated g/C Ratio	0.17	0.19	0.19	0.26	0.28	0.28	0.17	0.10		0.27	0.19	0.19
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	581	963	285	456	983	427	596	335		921	362	299
v/s Ratio Prot	0.12	c0.17		c0.26	0.16		c0.07	0.03		0.10	c0.19	
v/s Ratio Perm			0.01			0.04						0.04
v/c Ratio	0.72	0.90	0.05	1.00	0.59	0.15	0.43	0.35		0.37	0.96	0.23
Uniform Delay, d1	37.3	37.6	31.5	35.2	29.6	25.8	35.1	39.9		28.3	37.9	32.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.5	12.6	0.3	41.3	2.6	0.7	2.3	0.6		0.3	37.6	0.4
Delay (s)	44.8	50.2	31.8	76.5	32.2	26.5	37.3	40.5		28.5	75.5	32.6
Level of Service	D	D	C	E	C	C	D	D		C	E	C
Approach Delay (s)		47.5			47.2			38.5			45.6	
Approach LOS		D			D			D			D	

Intersection Summary					
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.5		
Intersection Capacity Utilization	78.8%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) AM Pk Hr
25: SR-56 EB On/Off Ramps/Azuaga St & Rancho Penasquitos Blvd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	826	332	52	939	14	116	21	390	71	48	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1513	1770	3529		1770	1557		1770	1632	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1513	1770	3529		1770	1557		1770	1632	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	869	349	55	988	15	122	22	411	75	51	126
RTOR Reduction (vph)	0	0	191	0	1	0	0	151	0	0	110	0
Lane Group Flow (vph)	49	869	158	55	1002	0	122	282	0	75	67	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	3.7	36.1	36.1	3.0	35.4		13.7	18.3		5.2	9.8	
Effective Green, g (s)	3.7	36.1	36.1	3.0	35.4		13.7	18.3		5.2	9.8	
Actuated g/C Ratio	0.05	0.45	0.45	0.04	0.44		0.17	0.23		0.07	0.12	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	82	1604	686	66	1569		304	357		115	200	
v/s Ratio Prot	0.03	0.25		c0.03	c0.28		0.07	c0.18		c0.04	0.04	
v/s Ratio Perm			0.10									
v/c Ratio	0.60	0.54	0.23	0.83	0.64		0.40	0.79		0.65	0.33	
Uniform Delay, d1	37.2	15.8	13.3	38.1	17.1		29.3	28.8		36.3	31.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	1.3	0.8	56.6	0.9		0.9	11.3		12.5	1.0	
Delay (s)	48.4	17.1	14.1	94.6	18.0		30.2	40.1		48.8	32.9	
Level of Service	D	B	B	F	B		C	D		D	C	
Approach Delay (s)		17.5			22.0			37.9			37.6	
Approach LOS		B			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
26: Calle De Las Rosas & Rancho Penasquitos Blvd 9/10/2015



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1213	33	43	866	141	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3521		1770	3539	1770	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3521		1770	3539	1770	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1277	35	45	912	148	126
RTOR Reduction (vph)	2	0	0	0	0	108
Lane Group Flow (vph)	1310	0	45	912	148	18
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases						4
Actuated Green, G (s)	59.3		4.9	68.7	12.8	12.8
Effective Green, g (s)	59.3		4.9	68.7	12.8	12.8
Actuated g/C Ratio	0.66		0.05	0.76	0.14	0.14
Clearance Time (s)	4.5		4.5	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2319		96	2701	251	218
v/s Ratio Prot	c0.37		0.03	c0.26	c0.08	
v/s Ratio Perm						0.01
v/c Ratio	0.57		0.47	0.34	0.59	0.08
Uniform Delay, d1	8.3		41.3	3.4	36.1	33.5
Progression Factor	1.00		0.60	0.40	1.00	1.00
Incremental Delay, d2	1.0		3.5	0.3	3.5	0.2
Delay (s)	9.3		28.3	1.7	39.7	33.7
Level of Service	A		C	A	D	C
Approach Delay (s)	9.3			2.9	36.9	
Approach LOS	A			A	D	

Intersection Summary				
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
27: Rancho Penasquitos Blvd & Via Del Sud 9/10/2015



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	47	56	13	828	20	48	1291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1538	1770	3523		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	1538	1770	3523		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	59	14	872	21	51	1359
RTOR Reduction (vph)	0	54	0	1	0	0	0
Lane Group Flow (vph)	49	5	14	892	0	51	1359
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	7.9	7.9	1.5	60.1		9.0	67.6
Effective Green, g (s)	7.9	7.9	1.5	60.1		9.0	67.6
Actuated g/C Ratio	0.09	0.09	0.02	0.67		0.10	0.75
Clearance Time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	155	135	29	2352		177	2658
v/s Ratio Prot	c0.03		0.01	c0.25		0.03	c0.38
v/s Ratio Perm		0.00					
v/c Ratio	0.32	0.04	0.48	0.38		0.29	0.51
Uniform Delay, d1	38.5	37.6	43.9	6.7		37.5	4.5
Progression Factor	1.00	1.00	1.35	0.36		0.70	0.20
Incremental Delay, d2	1.2	0.1	12.0	0.5		0.8	0.6
Delay (s)	39.7	37.7	71.2	2.9		27.0	1.5
Level of Service	D	D	E	A		C	A
Approach Delay (s)	38.6			3.9			2.4
Approach LOS	D			A			A

Intersection Summary				
HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
28: Rancho Penasquitos Blvd & Paseo Montril 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	10	201	111	7	20	65	581	13	46	1098	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	1863	1538	1740	1618		1770	3524		1770	3512	
Flt Permitted	0.74	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1354	1863	1538	1375	1618		1770	3524		1770	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	11	212	117	7	21	68	612	14	48	1156	46
RTOR Reduction (vph)	0	0	182	0	18	0	0	2	0	0	3	0
Lane Group Flow (vph)	81	11	30	117	10	0	68	624	0	48	1199	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	12.9	12.9	12.9	12.9	12.9		7.6	49.4		14.7	56.5	
Effective Green, g (s)	12.9	12.9	12.9	12.9	12.9		7.6	49.4		14.7	56.5	
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.08	0.55		0.16	0.63	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	267	220	197	231		149	1934		289	2204	
v/s Ratio Prot		0.01			0.01		c0.04	0.18		0.03	c0.34	
v/s Ratio Perm	0.06		0.02	c0.09								
v/c Ratio	0.42	0.04	0.14	0.59	0.04		0.46	0.32		0.17	0.54	
Uniform Delay, d1	35.1	33.2	33.7	36.1	33.2		39.2	11.1		32.4	9.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.63	0.38	
Incremental Delay, d2	1.5	0.1	0.3	4.7	0.1		2.2	0.4		0.2	0.9	
Delay (s)	36.6	33.3	34.0	40.8	33.3		41.4	11.6		20.5	4.4	
Level of Service	D	C	C	D	C		D	B		C	A	
Approach Delay (s)		34.6			39.4			14.5			5.1	
Approach LOS		C			D			B			A	

Intersection Summary				
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	61.8%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	266	86	896	1737	0	612
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0		4.5
Lane Util. Factor	0.97	0.91	0.91	0.91		0.95
Frpb, ped/bikes	1.00	0.97	0.99	0.99		1.00
Flpb, ped/bikes	0.97	1.00	1.00	1.00		1.00
Frt	1.00	0.85	0.93	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3336	1401	3097	1419		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3336	1401	3097	1419		3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	280	91	943	1828	0	644
RTOR Reduction (vph)	3	70	167	0	0	0
Lane Group Flow (vph)	286	12	1690	914	0	644
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Perm	Perm	NA	Free		NA
Protected Phases			2			6
Permitted Phases	8	8		Free		
Actuated Green, G (s)	12.7	12.7	65.7	86.9		65.7
Effective Green, g (s)	12.7	12.7	65.7	86.9		65.7
Actuated g/C Ratio	0.15	0.15	0.76	1.00		0.76
Clearance Time (s)	4.0	4.0	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	487	204	2341	1419		2675
v/s Ratio Prot			c0.55			0.18
v/s Ratio Perm	0.09	0.01		c0.64		
v/c Ratio	0.59	0.06	0.72	0.64		0.24
Uniform Delay, d1	34.7	32.0	5.7	0.0		3.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.8	0.1	2.0	2.3		0.2
Delay (s)	36.5	32.1	7.7	2.3		3.4
Level of Service	D	C	A	A		A
Approach Delay (s)	35.5		5.9			3.4
Approach LOS	D		A			A

Intersection Summary				
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	60.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 10/2014
c Critical Lane Group



Movement	EBL2	EBL	EBR	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Volume (vph)	488	0	779	0	0	0	918	121	0	2252	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.0				4.5	4.5		5.5	4.0
Lane Util. Factor	0.97		1.00				0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.99				1.00	0.95		1.00	0.98
Flpb, ped/bikes	0.97		1.00				1.00	1.00		1.00	1.00
Frt	1.00		0.85				1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (prot)	3337		1560				3539	1508		3539	1544
Flt Permitted	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (perm)	3337		1560				3539	1508		3539	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	514	0	820	0	0	0	966	127	0	2371	539
RTOR Reduction (vph)	0	0	0	0	0	0	0	79	0	0	0
Lane Group Flow (vph)	514	0	820	0	0	0	966	48	0	2371	539
Confl. Peds. (#/hr)	10	10	10	10	10	10		10	10		10
Turn Type	Perm		Free				NA	custom		NA	Free
Protected Phases							6				
Permitted Phases	4		Free					4		2	Free
Actuated Green, G (s)	16.1		89.6				64.5	16.1		63.5	89.6
Effective Green, g (s)	16.1		89.6				64.5	16.1		63.5	89.6
Actuated g/C Ratio	0.18		1.00				0.72	0.18		0.71	1.00
Clearance Time (s)	4.5						4.5	4.5		5.5	
Vehicle Extension (s)	3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)	599		1560				2547	270		2508	1544
v/s Ratio Prot							0.27				
v/s Ratio Perm	c0.15		0.53					0.03		c0.67	0.35
v/c Ratio	0.86		0.53				0.38	0.18		0.95	0.35
Uniform Delay, d1	35.6		0.0				4.8	31.1		11.5	0.0
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00
Incremental Delay, d2	11.7		1.3				0.1	0.3		9.1	0.6
Delay (s)	47.3		1.3				4.9	31.5		20.6	0.6
Level of Service	D		A				A	C		C	A
Approach Delay (s)		19.0		0.0			8.0			16.9	
Approach LOS		B		A			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	93.6%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	18	1	31	6	41	0	121	39	6	23	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99			0.99		1.00	0.99	
Flpb, ped/bikes		1.00			0.99			1.00		1.00	1.00	
Frt		1.00			0.93			0.96		1.00	0.97	
Flt Protected		0.99			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1819			1661			3376		1770	3388	
Flt Permitted		0.93			0.86			1.00		0.95	1.00	
Satd. Flow (perm)		1716			1451			3376		1770	3388	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	19	1	33	6	43	0	127	41	6	24	7
RTOR Reduction (vph)	0	1	0	0	38	0	0	13	0	0	2	0
Lane Group Flow (vph)	0	27	0	0	44	0	0	155	0	6	29	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		7.3			7.3			47.2		1.2	52.9	
Effective Green, g (s)		7.3			7.3			47.2		1.2	52.9	
Actuated g/C Ratio		0.11			0.11			0.69		0.02	0.77	
Clearance Time (s)		4.0			4.0			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		182			154			2319		30	2608	
v/s Ratio Prot								c0.05		c0.00	0.01	
v/s Ratio Perm		0.02			c0.03							
v/c Ratio		0.15			0.28			0.07		0.20	0.01	
Uniform Delay, d1		27.9			28.3			3.5		33.3	1.8	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.0			0.1		3.3	0.0	
Delay (s)		28.3			29.3			3.6		36.5	1.8	
Level of Service		C			C			A		D	A	
Approach Delay (s)		28.3			29.3			3.6			7.5	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	29.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	3	153	0	9	76	16	49	2	1	0	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			0.98	
Flpb, ped/bikes	0.98	1.00		0.98	1.00			0.99			1.00	
Frt	1.00	1.00		1.00	0.97			1.00			0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.95			1.00	
Satd. Flow (prot)	1737	3539		1740	3422			1753			1585	
Flt Permitted	0.69	1.00		0.65	1.00			0.72			1.00	
Satd. Flow (perm)	1263	3539		1190	3422			1325			1585	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	161	0	9	80	17	52	2	1	0	1	21
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	19	0
Lane Group Flow (vph)	3	161	0	9	93	0	0	54	0	0	3	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	53.7	53.7		53.7	53.7			6.3			6.3	
Effective Green, g (s)	53.7	53.7		53.7	53.7			6.3			6.3	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.09			0.09	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	997	2794		939	2702			122			146	
v/s Ratio Prot		c0.05			0.03						0.00	
v/s Ratio Perm	0.00			0.01				c0.04				
v/c Ratio	0.00	0.06		0.01	0.03			0.44			0.02	
Uniform Delay, d1	1.5	1.6		1.5	1.5			29.2			28.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0		0.0	0.0			2.6			0.1	
Delay (s)	1.5	1.6		1.5	1.6			31.8			28.1	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		1.6			1.6			31.8			28.1	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	30.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	396	13	38	2	26	11	25	250	0	6	288	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.97	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		0.99	1.00	
Frt		0.99			0.96		1.00	1.00		1.00	0.91	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1771		1770	3539		1744	3137	
Flt Permitted		0.72			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1310			1751		1770	3539		1744	3137	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	417	14	40	2	27	12	26	263	0	6	303	463
RTOR Reduction (vph)	0	5	0	0	7	0	0	0	0	0	268	0
Lane Group Flow (vph)	0	466	0	0	34	0	26	263	0	6	498	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		28.8			28.8		2.5	28.7		0.8	27.0	
Effective Green, g (s)		28.8			28.8		2.5	28.7		0.8	27.0	
Actuated g/C Ratio		0.40			0.40		0.04	0.40		0.01	0.38	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		529			707		62	1424		19	1187	
v/s Ratio Prot							c0.01	0.07		0.00	c0.16	
v/s Ratio Perm		c0.36			0.02							
v/c Ratio		0.88			0.05		0.42	0.18		0.32	0.42	
Uniform Delay, d1		19.7			12.9		33.7	13.7		35.0	16.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.8			0.0		4.5	0.3		9.3	1.1	
Delay (s)		35.4			12.9		38.2	14.0		44.3	17.5	
Level of Service		D			B		D	B		D	B	
Approach Delay (s)		35.4			12.9			16.2			17.7	
Approach LOS		D			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 05/2014

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	768	12	16	735	95	12	27	57	511	26	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.98			0.92		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3528		1770	3461			1678		1754	1677	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.73	1.00	
Satd. Flow (perm)	1770	3528		1770	3461			1644		1340	1677	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	808	13	17	774	100	13	28	60	538	27	38
RTOR Reduction (vph)	0	1	0	0	9	0	0	30	0	0	19	0
Lane Group Flow (vph)	17	820	0	17	865	0	0	71	0	538	46	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.2	33.1		2.1	32.7			50.6		50.6	50.6	
Effective Green, g (s)	2.2	33.1		2.1	32.7			50.6		50.6	50.6	
Actuated g/C Ratio	0.02	0.33		0.02	0.33			0.51		0.51	0.51	
Clearance Time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	5.4		2.0	4.7			2.0		2.0	2.0	
Lane Grp Cap (vph)	38	1167		37	1131			831		678	848	
v/s Ratio Prot	0.01	c0.23		0.01	c0.25						0.03	
v/s Ratio Perm								0.04		c0.40		
v/c Ratio	0.45	0.70		0.46	0.76			0.09		0.79	0.05	
Uniform Delay, d1	48.3	29.2		48.4	30.2			12.8		20.4	12.5	
Progression Factor	1.00	1.00		0.77	0.69			1.00		1.00	1.00	
Incremental Delay, d2	3.0	3.5		3.1	4.7			0.2		9.3	0.1	
Delay (s)	51.3	32.7		40.2	25.4			13.0		29.7	12.7	
Level of Service	D	C		D	C			B		C	B	
Approach Delay (s)		33.1			25.7			13.0			27.8	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	66.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1074	350	88	530	20	244	26	104	24	46	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.88			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3375		1770	3514		1754	1610			1813	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.89	
Satd. Flow (perm)	1770	3375		1770	3514		1370	1610			1649	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	15	1131	368	93	558	21	257	27	109	25	48	4
RTOR Reduction (vph)	0	34	0	0	3	0	0	76	0	0	2	0
Lane Group Flow (vph)	15	1465	0	93	576	0	257	60	0	0	75	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.9	44.1		10.8	49.3		30.6	30.6			30.6	
Effective Green, g (s)	4.9	44.1		10.8	49.3		30.6	30.6			30.6	
Actuated g/C Ratio	0.05	0.44		0.11	0.49		0.31	0.31			0.31	
Clearance Time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.4		2.0	3.4		2.0	2.0			2.0	
Lane Grp Cap (vph)	86	1488		191	1732		419	492			504	
v/s Ratio Prot	0.01	c0.43		c0.05	0.16			0.04				
v/s Ratio Perm							c0.19				0.05	
v/c Ratio	0.17	0.98		0.49	0.33		0.61	0.12			0.15	
Uniform Delay, d1	45.6	27.6		42.0	15.4		29.6	25.0			25.2	
Progression Factor	0.90	0.58		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	17.2		0.7	0.5		6.6	0.5			0.6	
Delay (s)	41.4	33.1		42.7	15.9		36.2	25.5			25.9	
Level of Service	D	C		D	B		D	C			C	
Approach Delay (s)		33.2			19.6			32.5			25.9	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	83.1%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014

c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	976	25	19	604	28	75
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1027	26	20	636	29	79
Pedestrians	10			10	10	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1242			1089		
pX, platoon unblocked			0.72		0.72	0.72
vC, conflicting volume			1064		1418	547
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			312		804	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		87	90
cM capacity (veh/h)			890		222	768

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	685	369	20	318	318	108
Volume Left	0	0	20	0	0	29
Volume Right	0	26	0	0	0	79
cSH	1700	1700	890	1700	1700	460
Volume to Capacity	0.40	0.22	0.02	0.19	0.19	0.24
Queue Length 95th (ft)	0	0	2	0	0	23
Control Delay (s)	0.0	0.0	9.1	0.0	0.0	15.2
Lane LOS			A			C
Approach Delay (s)	0.0		0.3			15.2
Approach LOS						C

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	43.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014

```
                        Level Of Service Computation Report
                    2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #37 Sundance Avenue/Twin Trails Drive
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         1.079
Loss Time (sec):      0                Average Delay (sec/veh):       46.4
Optimal Cycle:        0                Level Of Service:                 E
********************************************************************************
Street Name:          Sundance Avenue                Twin Trails Drive
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:          Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:             Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  1! 0  0     0  0  1! 0  0     1  0  0  1  0     1  0  1  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:       47    18   225    64     6    22    20   576     8    84   419    27
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    47    18   225    64     6    22    20   576     8    84   419    27
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     47    18   225    64     6    22    20   576     8    84   419    27
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:    47    18   225    64     6    22    20   576     8    84   419    27
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    47    18   225    64     6    22    20   576     8    84   419    27
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.16 0.06  0.78  0.70 0.06  0.24  1.00 0.99  0.01  1.00 1.00  1.00
Final Sat.:    85   33   408   297   28   102   498  534     7   492  528   589
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.55 0.55  0.55  0.22 0.22  0.22  0.04 1.08  1.08  0.17 0.79  0.05
Crit Moves:  ****            ****                 ****            ****
Delay/Veh:   17.0 17.0  17.0  12.7 12.7  12.7  10.1 86.3  86.3  11.4 29.8   9.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  17.0 17.0  17.0  12.7 12.7  12.7  10.1 86.3  86.3  11.4 29.8   9.0
LOS by Move:    C    C     C     B    B     B     B    F     F     B    D     A
ApproachDel:       17.0              12.7              83.7              25.8
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:        17.0              12.7              83.7              25.8
LOS by Appr:          C                 B                 F                 D
AllWayAvgQ:  1.1  1.1   1.1   0.2  0.2   0.2   0.0 11.6  11.6   0.2  3.0   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	55	107	25	26	168	11	115	24	27	5	8	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1520	1770	1840		1745	1679			1568	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.56	1.00			0.99	
Satd. Flow (perm)	1770	1863	1520	1770	1840		1024	1679			1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	113	26	27	177	12	121	25	28	5	8	145
RTOR Reduction (vph)	0	0	11	0	2	0	0	23	0	0	118	0
Lane Group Flow (vph)	58	113	15	27	187	0	121	30	0	0	40	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Actuated Green, G (s)	4.8	37.4	37.4	4.5	37.1		12.2	12.2			12.2	
Effective Green, g (s)	4.8	37.4	37.4	4.5	37.1		12.2	12.2			12.2	
Actuated g/C Ratio	0.07	0.57	0.57	0.07	0.56		0.18	0.18			0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	128	1054	860	120	1032		188	309			287	
v/s Ratio Prot	c0.03	0.06		0.02	c0.10			0.02				
v/s Ratio Perm			0.01				c0.12				0.03	
v/c Ratio	0.45	0.11	0.02	0.23	0.18		0.64	0.10			0.14	
Uniform Delay, d1	29.4	6.6	6.3	29.1	7.1		24.9	22.4			22.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.5	0.0	0.0	1.0	0.4		7.3	0.1			0.2	
Delay (s)	31.9	6.7	6.3	30.1	7.5		32.3	22.5			22.8	
Level of Service	C	A	A	C	A		C	C			C	
Approach Delay (s)		14.1			10.3			29.3			22.8	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	100	70	70	74	39	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	105	74	74	78	41	57
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total (vph)	105	74	152	41	57	
Volume Left (vph)	105	0	0	41	0	
Volume Right (vph)	0	74	78	0	0	
Hadj (s)	0.53	-0.67	-0.27	0.53	0.03	
Departure Headway (s)	5.6	4.4	4.6	5.6	5.1	
Degree Utilization, x	0.17	0.09	0.19	0.06	0.08	
Capacity (veh/h)	606	768	750	609	669	
Control Delay (s)	8.6	6.7	8.7	7.8	7.4	
Approach Delay (s)	7.8		8.7	7.6		
Approach LOS	A		A	A		

Intersection Summary			
Delay	8.1		
Level of Service	A		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 07/2014			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	94	35	103	141	33	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2		4.0	5.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3369		1770	3539	1770	1558
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3369		1770	3539	1770	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	99	37	108	148	35	95
RTOR Reduction (vph)	29	0	0	0	0	63
Lane Group Flow (vph)	107	0	108	148	35	32
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	7.9		4.3	15.9	13.0	13.0
Effective Green, g (s)	7.9		4.3	15.9	13.0	13.0
Actuated g/C Ratio	0.21		0.11	0.41	0.34	0.34
Clearance Time (s)	5.2		4.0	5.5	4.0	4.0
Vehicle Extension (s)	3.2		2.0	3.2	2.1	2.1
Lane Grp Cap (vph)	693		198	1465	599	527
v/s Ratio Prot	c0.03		c0.06	0.04	0.02	
v/s Ratio Perm						c0.02
v/c Ratio	0.15		0.55	0.10	0.06	0.06
Uniform Delay, d1	12.5		16.1	6.9	8.6	8.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1		1.6	0.0	0.0	0.0
Delay (s)	12.6		17.8	6.9	8.6	8.6
Level of Service	B		B	A	A	A
Approach Delay (s)	12.6			11.5	8.6	
Approach LOS	B			B	A	

Intersection Summary				
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.17			
Actuated Cycle Length (s)	38.4	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	34.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
41: Salmon River Rd & Paseo Montalban 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	155	27	69	187	15	39	4	93	26	5	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3446		1770	3491		1763	1566		1760	1610	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.69	1.00	
Satd. Flow (perm)	1770	3446		1770	3491		1370	1566		1280	1610	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	163	28	73	197	16	41	4	98	27	5	24
RTOR Reduction (vph)	0	16	0	0	8	0	0	67	0	0	16	0
Lane Group Flow (vph)	17	175	0	73	205	0	41	35	0	27	13	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.3	10.3		2.3	11.2		12.2	12.2		13.3	13.3	
Effective Green, g (s)	1.3	10.3		2.3	11.2		12.2	12.2		13.3	13.3	
Actuated g/C Ratio	0.03	0.26		0.06	0.29		0.31	0.31		0.34	0.34	
Clearance Time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Vehicle Extension (s)	2.0	4.4		2.0	4.4		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	58	907		104	999		427	488		435	547	
v/s Ratio Prot	0.01	c0.05		c0.04	c0.06			0.02			0.01	
v/s Ratio Perm							c0.03			0.02		
v/c Ratio	0.29	0.19		0.70	0.21		0.10	0.07		0.06	0.02	
Uniform Delay, d1	18.5	11.2		18.1	10.6		9.5	9.5		8.7	8.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.2		16.0	0.2		0.0	0.0		0.0	0.0	
Delay (s)	19.5	11.3		34.1	10.7		9.6	9.5		8.7	8.6	
Level of Service	B	B		C	B		A	A		A	A	
Approach Delay (s)		12.0			16.7			9.5			8.7	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.19			
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	14.4	
Intersection Capacity Utilization	38.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
42: Fairgrove Ln & Salmon River Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	31	31	33	2	20	13	107	75	5	17	56	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	33	33	35	2	21	14	113	79	5	18	59	18

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	100	37	113	84	95
Volume Left (vph)	33	2	113	0	18
Volume Right (vph)	35	14	0	5	18
Hadj (s)	-0.11	-0.18	0.53	-0.01	-0.04
Departure Headway (s)	4.5	4.6	5.4	4.9	4.5
Degree Utilization, x	0.13	0.05	0.17	0.11	0.12
Capacity (veh/h)	740	731	641	710	757
Control Delay (s)	8.2	7.8	8.4	7.3	8.1
Approach Delay (s)	8.2	7.8	7.9		8.1
Approach LOS	A	A	A		A

Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	32.1%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

2050 4 lane (with project) AM Pk Hr
43: Salmon River Rd & Limar Way 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	53	13	26	50	0	13	7	23	1	21	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	56	14	27	53	0	14	7	24	1	22	36

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	82	80	45	59
Volume Left (vph)	13	27	14	1
Volume Right (vph)	14	0	24	36
Hadj (s)	-0.04	0.10	-0.23	-0.33
Departure Headway (s)	4.2	4.3	4.1	4.0
Degree Utilization, x	0.10	0.10	0.05	0.07
Capacity (veh/h)	836	811	835	863
Control Delay (s)	7.6	7.8	7.3	7.3
Approach Delay (s)	7.6	7.8	7.3	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	26.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

2050 4 lane (with project) AM Pk Hr
44: Carmel Mountain Rd & Paseo Cardiel 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	374	38	10	483	37	103	20	15	55	16	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		0.99	1.00	
Frt	1.00	0.99		1.00	0.99			0.99		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3475		1770	3490			1755		1757	1606	
Flt Permitted	0.95	1.00		0.95	1.00			0.75		0.69	1.00	
Satd. Flow (perm)	1770	3475		1770	3490			1359		1268	1606	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	394	40	11	508	39	108	21	16	58	17	78
RTOR Reduction (vph)	0	10	0	0	7	0	0	5	0	0	41	0
Lane Group Flow (vph)	82	424	0	11	540	0	0	140	0	58	54	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.0	26.5		1.1	20.4			37.5		37.5	37.5	
Effective Green, g (s)	7.0	26.5		1.1	20.4			37.5		37.5	37.5	
Actuated g/C Ratio	0.09	0.33		0.01	0.25			0.47		0.47	0.47	
Clearance Time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.9		2.0	2.4			2.0		2.0	2.0	
Lane Grp Cap (vph)	154	1151		24	889			637		594	752	
v/s Ratio Prot	c0.05	0.12		0.01	c0.15						0.03	
v/s Ratio Perm								c0.10		0.05		
v/c Ratio	0.53	0.37		0.46	0.61			0.22		0.10	0.07	
Uniform Delay, d1	34.9	20.4		39.2	26.3			12.6		11.8	11.7	
Progression Factor	1.00	1.00		1.11	0.67			1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.9		4.9	3.0			0.8		0.0	0.0	
Delay (s)	36.7	21.3		48.4	20.7			13.4		11.9	11.7	
Level of Service	D	C		D	C			B		B	B	
Approach Delay (s)		23.7			21.3			13.4			11.8	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	54.0%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 4 lane (with project) AM Pk Hr
45: Carmel Mountain Rd & Freeport Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	350	21	4	480	7	9	0	7	19	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3501		1770	3530		1755	1551			1637	
Flt Permitted	0.95	1.00		0.95	1.00		0.85	1.00			0.90	
Satd. Flow (perm)	1770	3501		1770	3530		1576	1551			1494	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	44	368	22	4	505	7	9	0	7	20	0	43
RTOR Reduction (vph)	0	3	0	0	1	0	0	6	0	0	56	0
Lane Group Flow (vph)	44	387	0	4	511	0	9	1	0	0	7	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.5	55.0		1.1	50.8		9.3	9.3			9.3	
Effective Green, g (s)	4.5	55.0		1.1	50.8		9.3	9.3			9.3	
Actuated g/C Ratio	0.06	0.69		0.01	0.63		0.12	0.12			0.12	
Clearance Time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.3		2.0	3.7		2.0	2.0			2.0	
Lane Grp Cap (vph)	99	2406		24	2241		183	180			173	
v/s Ratio Prot	c0.02	c0.11		0.00	c0.14			0.00				
v/s Ratio Perm							c0.01				0.00	
v/c Ratio	0.44	0.16		0.17	0.23		0.05	0.00			0.04	
Uniform Delay, d1	36.5	4.4		39.0	6.2		31.4	31.3			31.4	
Progression Factor	1.00	0.64		1.51	0.28		1.00	1.00			1.00	
Incremental Delay, d2	1.1	0.1		1.2	0.2		0.0	0.0			0.0	
Delay (s)	37.5	2.9		60.2	2.0		31.5	31.3			31.4	
Level of Service	D	A		E	A		C	C			C	
Approach Delay (s)		6.4			2.5			31.4			31.4	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.21			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	44.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
46: Carmel Mountain Rd & Stoney Creek Rd 9/10/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	75	314	0	410	41	38	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		5.7		4.4	4.4
Lane Util. Factor	1.00	0.95		0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00		1.00		0.99	0.98
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00		0.99		0.96	0.85
Flt Protected	0.95	1.00		1.00		0.96	1.00
Satd. Flow (prot)	1770	3539		3479		1715	1474
Flt Permitted	0.95	1.00		1.00		0.96	1.00
Satd. Flow (perm)	1770	3539		3479		1715	1474
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	331	0	432	43	40	67
RTOR Reduction (vph)	0	0	0	5	0	13	45
Lane Group Flow (vph)	79	331	0	470	0	42	7
Confl. Peds. (#/hr)	10		10		10	10	10
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	5	2	1	6		4	
Permitted Phases							4
Actuated Green, G (s)	7.0	59.6		47.8		10.7	10.7
Effective Green, g (s)	7.0	59.6		47.8		10.7	10.7
Actuated g/C Ratio	0.09	0.75		0.60		0.13	0.13
Clearance Time (s)	4.4	5.3		5.7		4.4	4.4
Vehicle Extension (s)	2.0	4.3		3.7		2.0	2.0
Lane Grp Cap (vph)	154	2636		2078		229	197
v/s Ratio Prot	c0.04	0.09		c0.14		c0.02	
v/s Ratio Perm							0.00
v/c Ratio	0.51	0.13		0.23		0.18	0.04
Uniform Delay, d1	34.9	2.9		7.5		30.8	30.2
Progression Factor	0.54	0.24		1.00		1.00	1.00
Incremental Delay, d2	1.2	0.1		0.3		0.1	0.0
Delay (s)	20.0	0.8		7.7		30.9	30.2
Level of Service	B	A		A		C	C
Approach Delay (s)		4.5		7.7		30.6	
Approach LOS		A		A		C	

Intersection Summary				
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.25			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
47: Carmel Mountain Rd & Caminata Deluz/Cuca St 9/10/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	46	1	59	3	0	7	27	359	0	9	369	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.92			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1668			1641		1759	3539		1752	3506	
Flt Permitted		0.87			0.92		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1480			1531		1759	3539		1752	3506	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	48	1	62	3	0	7	28	378	0	9	388	21
RTOR Reduction (vph)	0	46	0	0	7	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	65	0	0	3	0	28	378	0	9	404	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.2			10.2		0.8	13.0		0.6	12.7	
Effective Green, g (s)		10.2			10.2		0.8	13.0		0.6	12.7	
Actuated g/C Ratio		0.27			0.27		0.02	0.34		0.02	0.33	
Clearance Time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Vehicle Extension (s)		2.0			2.0		2.0	4.3		2.0	3.8	
Lane Grp Cap (vph)		393			406		36	1198		27	1159	
v/s Ratio Prot							c0.02	0.11		0.01	c0.12	
v/s Ratio Perm		c0.04			0.00							
v/c Ratio		0.17			0.01		0.78	0.32		0.33	0.35	
Uniform Delay, d1		10.8			10.4		18.7	9.4		18.7	9.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		62.5	0.2		2.6	0.2	
Delay (s)		10.9			10.4		81.2	9.6		21.3	10.0	
Level of Service		B			B		F	A		C	A	
Approach Delay (s)		10.9			10.4			14.6			10.2	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	38.4	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	41.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
48: Carmel Mountain Rd & Penasquitos Dr 9/10/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	575	60	80	28	15	102	47	492	29	83	246	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1541	1681	1743	1541	1770	5030		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1541	1681	1743	1541	1770	5030		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	605	63	84	29	16	107	49	518	31	87	259	155
RTOR Reduction (vph)	0	0	52	0	0	98	0	7	0	0	0	95
Lane Group Flow (vph)	605	63	32	22	23	9	49	542	0	87	259	60
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	30.5	30.5	30.5	6.5	6.5	6.5	3.3	19.0		7.0	22.7	30.5
Effective Green, g (s)	30.5	30.5	30.5	6.5	6.5	6.5	3.3	19.0		7.0	22.7	30.5
Actuated g/C Ratio	0.39	0.39	0.39	0.08	0.08	0.08	0.04	0.24		0.09	0.29	0.39
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	683	719	594	138	143	126	73	1209		156	1016	611
v/s Ratio Prot	c0.34	0.03		0.01	c0.01		c0.03	c0.11		c0.05	0.07	0.04
v/s Ratio Perm			0.02			0.01						
v/c Ratio	0.89	0.09	0.05	0.16	0.16	0.07	0.67	0.45		0.56	0.25	0.10
Uniform Delay, d1	22.6	15.4	15.2	33.7	33.7	33.5	37.3	25.5		34.5	21.6	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.2	0.1	0.0	0.5	0.5	0.2	21.6	1.2		4.3	0.1	0.1
Delay (s)	35.8	15.5	15.2	34.3	34.2	33.7	58.9	26.7		38.8	21.8	15.5
Level of Service	D	B	B	C	C	C	E	C		D	C	B
Approach Delay (s)		31.8			33.9			29.4			22.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	66.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
49: I-15 SB On-Ramp/I-15 SB Off-Ramp & Carmel Mountain Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	625	493	513	335	0	0	0	0	266	0	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	0.99	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.99	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3539	1544	3433	3539					1659	1522	1467
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3539	1544	3433	3539					1659	1522	1467
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	658	519	540	353	0	0	0	0	280	0	226
RTOR Reduction (vph)	0	0	323	0	0	0	0	0	0	0	49	116
Lane Group Flow (vph)	0	658	196	540	353	0	0	0	0	176	121	44
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		22.7	22.7	16.2	43.4					19.4	19.4	19.4
Effective Green, g (s)		22.7	22.7	16.2	43.4					19.4	19.4	19.4
Actuated g/C Ratio		0.32	0.32	0.23	0.61					0.27	0.27	0.27
Clearance Time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1134	495	785	2169					454	417	401
v/s Ratio Prot		c0.19		c0.16	0.10							
v/s Ratio Perm			0.13							c0.11	0.08	0.03
v/c Ratio		0.58	0.40	0.69	0.16					0.39	0.29	0.11
Uniform Delay, d1		20.1	18.7	25.0	5.9					20.9	20.3	19.2
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		0.8	0.5	2.5	0.0					2.5	1.8	0.6
Delay (s)		20.8	19.2	27.5	5.9					23.4	22.0	19.8
Level of Service		C	B	C	A					C	C	B
Approach Delay (s)		20.1			19.0			0.0			21.8	
Approach LOS		C			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	12.5	
Intersection Capacity Utilization	69.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
50: I-15 NB Off-Ramp/I-15 NB On-Ramp & Carmel Mountain Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	296	577	0	0	692	300	177	0	1091	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.91			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			3539	1539	1654	1654	2709			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			3539	1539	1654	1654	2709			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	312	607	0	0	728	316	186	0	1148	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	228	0	0	188	0	0	0
Lane Group Flow (vph)	312	607	0	0	728	88	93	93	960	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	11.3	39.2			23.9	23.9	39.1	39.1	39.1			
Effective Green, g (s)	11.3	39.2			23.9	23.9	39.1	39.1	39.1			
Actuated g/C Ratio	0.13	0.45			0.28	0.28	0.45	0.45	0.45			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	449	2309			980	426	749	749	1227			
v/s Ratio Prot	c0.09	0.12			c0.21							
v/s Ratio Perm						0.06	0.06	0.06	c0.35			
v/c Ratio	0.69	0.26			0.74	0.21	0.12	0.12	0.78			
Uniform Delay, d1	35.9	14.6			28.4	23.9	13.7	13.7	20.0			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	4.6	0.1			3.1	0.2	0.3	0.3	5.0			
Delay (s)	40.5	14.7			31.5	24.2	14.0	14.0	25.0			
Level of Service	D	B			C	C	B	B	C			
Approach Delay (s)		23.4			29.3			23.5			0.0	
Approach LOS		C			C			C			A	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	69.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
51: Camino Del Sur & Park Village Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	303	11	27	72	167	6	10	7	1099	18	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3514		1770	1863	1539	1728	3296		3433	1596	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3514		1770	1863	1539	1728	3296		3433	1596	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	171	319	12	28	76	176	6	11	7	1157	19	56
RTOR Reduction (vph)	0	3	0	0	0	152	0	5	0	0	25	0
Lane Group Flow (vph)	171	328	0	28	76	24	6	13	0	1157	50	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	9.0	19.5		1.9	11.9	11.9	0.9	19.8		30.9	49.3	
Effective Green, g (s)	9.0	19.5		1.9	11.9	11.9	0.9	19.8		30.9	49.3	
Actuated g/C Ratio	0.10	0.22		0.02	0.13	0.13	0.01	0.22		0.35	0.56	
Clearance Time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	179	773		37	250	206	17	736		1197	888	
v/s Ratio Prot	c0.10	c0.09		0.02	0.04		0.00	0.00		c0.34	c0.03	
v/s Ratio Perm						0.02						
v/c Ratio	0.96	0.42		0.76	0.30	0.11	0.35	0.02		0.97	0.06	
Uniform Delay, d1	39.6	29.7		43.1	34.6	33.7	43.6	26.8		28.3	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.8	0.4		59.7	0.7	0.2	12.2	0.0		18.3	0.1	
Delay (s)	93.4	30.1		102.9	35.3	34.0	55.8	26.9		46.7	9.1	
Level of Service	F	C		F	D	C	E	C		D	A	
Approach Delay (s)		51.7			41.2			34.1			44.4	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	65.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
52: Park Village Rd & Rumex Ln 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	1	4	3	0	97	2	501	7	22	210	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		1.00			0.87		1.00	1.00		1.00	0.98	
Flt Protected		0.95			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761			1589		1759	3531		1763	3466	
Flt Permitted		0.77			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1418			1570		1759	3531		1763	3466	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	118	1	4	3	0	102	2	527	7	23	221	29
RTOR Reduction (vph)	0	2	0	0	83	0	0	1	0	0	14	0
Lane Group Flow (vph)	0	121	0	0	22	0	2	533	0	23	236	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		5.1			5.1		0.6	9.6		0.8	9.8	
Effective Green, g (s)		5.1			5.1		0.6	9.6		0.8	9.8	
Actuated g/C Ratio		0.19			0.19		0.02	0.35		0.03	0.36	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		262			291		38	1232		51	1235	
v/s Ratio Prot							0.00	c0.15		c0.01	0.07	
v/s Ratio Perm		c0.09			0.01							
v/c Ratio		0.46			0.08		0.05	0.43		0.45	0.19	
Uniform Delay, d1		10.0			9.3		13.2	6.9		13.1	6.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3			0.1		0.6	0.2		6.2	0.1	
Delay (s)		11.3			9.4		13.7	7.1		19.4	6.2	
Level of Service		B			A		B	A		B	A	
Approach Delay (s)		11.3			9.4			7.1			7.3	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	27.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	38.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
53: Park Village Rd & Ragweed St 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	729	3	30	244	8	4	0	97	68	2	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1749	3537		1770	3519			1582			1749	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.74	
Satd. Flow (perm)	1749	3537		1770	3519			1576			1356	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	767	3	32	257	8	4	0	102	72	2	5
RTOR Reduction (vph)	0	1	0	0	3	0	0	64	0	0	2	0
Lane Group Flow (vph)	1	769	0	32	262	0	0	42	0	0	77	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.9	18.6		3.2	20.9			22.8			22.8	
Effective Green, g (s)	0.9	18.6		3.2	20.9			22.8			22.8	
Actuated g/C Ratio	0.02	0.32		0.06	0.36			0.40			0.40	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	27	1142		98	1276			623			536	
v/s Ratio Prot	0.00	c0.22		c0.02	0.07							
v/s Ratio Perm								0.03			c0.06	
v/c Ratio	0.04	0.67		0.33	0.21			0.07			0.14	
Uniform Delay, d1	27.9	16.9		26.2	12.6			10.8			11.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	1.6		1.9	0.1			0.2			0.6	
Delay (s)	28.5	18.5		28.1	12.7			11.0			11.7	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		18.5			14.4			11.0			11.7	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	45.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
54: Mercy Rd & Kika Ct 9/10/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	88	69	679	27	17	876
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	6.3		4.4	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1556	3515		1762	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1556	3515		1762	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	73	715	28	18	922
RTOR Reduction (vph)	0	61	3	0	0	0
Lane Group Flow (vph)	93	12	740	0	18	922
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.7	7.7	21.8		0.8	27.3
Effective Green, g (s)	7.7	7.7	21.8		0.8	27.3
Actuated g/C Ratio	0.17	0.17	0.47		0.02	0.59
Clearance Time (s)	4.9	4.9	6.3		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.8		2.0	2.6
Lane Grp Cap (vph)	296	261	1669		30	2104
v/s Ratio Prot	c0.05		0.21		c0.01	c0.26
v/s Ratio Perm		0.01				
v/c Ratio	0.31	0.05	0.44		0.60	0.44
Uniform Delay, d1	16.8	16.0	8.0		22.4	5.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.2		19.6	0.1
Delay (s)	17.0	16.0	8.2		42.0	5.2
Level of Service	B	B	A		D	A
Approach Delay (s)	16.6		8.2			5.9
Approach LOS	B		A			A

Intersection Summary				
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	45.9	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 10/2013

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
55: Alemania Rd & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	989	0	0	848	72	0	0	0	111	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Lane Util. Factor	1.00	0.95			0.95	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97				1.00		0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00				0.99		1.00
Frt	1.00	1.00			1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1770	3539			3539	1533				1760		1556
Flt Permitted	0.95	1.00			1.00	1.00				0.76		1.00
Satd. Flow (perm)	1770	3539			3539	1533				1403		1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	1041	0	0	893	76	0	0	0	117	0	17
RTOR Reduction (vph)	0	0	0	0	0	39	0	0	0	0	0	13
Lane Group Flow (vph)	49	1041	0	0	893	37	0	0	0	117	0	4
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm				Perm		Perm
Protected Phases	5	2		1	6			8				
Permitted Phases						6	8			4		4
Actuated Green, G (s)	1.8	30.5			25.2	25.2				11.7		11.7
Effective Green, g (s)	1.8	30.5			25.2	25.2				11.7		11.7
Actuated g/C Ratio	0.03	0.59			0.49	0.49				0.23		0.23
Clearance Time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Vehicle Extension (s)	2.0	5.0			2.8	2.8				2.0		2.0
Lane Grp Cap (vph)	61	2083			1721	745				316		351
v/s Ratio Prot	c0.03	c0.29			0.25							
v/s Ratio Perm						0.02				c0.08		0.00
v/c Ratio	0.80	0.50			0.52	0.05				0.37		0.01
Uniform Delay, d1	24.8	6.2			9.1	7.0				16.9		15.6
Progression Factor	1.00	1.00			1.00	1.00				1.00		1.00
Incremental Delay, d2	49.5	0.4			0.2	0.0				0.3		0.0
Delay (s)	74.3	6.6			9.4	7.0				17.2		15.6
Level of Service	E	A			A	A				B		B
Approach Delay (s)		9.6			9.2			0.0			17.0	
Approach LOS		A			A			A			B	

Intersection Summary				
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	13.6	
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) AM Pk Hr
56: I-15 SB On-Ramp/I-15 SB Off-Ramp & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	663	367	996	757	0	0	0	0	723	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Lane Util. Factor		0.86	0.86	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		0.99	0.97	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.98	1.00
Frt		0.97	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4658	1319	3433	3539					1648	1572	1457
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4658	1319	3433	3539					1648	1572	1457
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	698	386	1048	797	0	0	0	0	761	0	211
RTOR Reduction (vph)	0	26	190	0	0	0	0	0	0	0	47	128
Lane Group Flow (vph)	0	815	53	1048	797	0	0	0	0	396	339	62
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		23.0	23.0	36.2	63.2					34.1	34.1	34.1
Effective Green, g (s)		23.0	23.0	36.2	63.2					34.1	34.1	34.1
Actuated g/C Ratio		0.22	0.22	0.34	0.59					0.32	0.32	0.32
Clearance Time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1007	285	1169	2104					528	504	467
v/s Ratio Prot		c0.17		c0.31	0.23							
v/s Ratio Perm			0.04							c0.24	0.22	0.04
v/c Ratio		0.81	0.18	0.90	0.38					0.75	0.67	0.13
Uniform Delay, d1		39.6	34.0	33.3	11.3					32.3	31.3	25.6
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		4.9	0.3	9.2	0.1					9.4	7.0	0.6
Delay (s)		44.5	34.3	42.5	11.4					41.7	38.3	26.2
Level of Service		D	C	D	B					D	D	C
Approach Delay (s)		42.2			29.0			0.0			37.3	
Approach LOS		D			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	145.9%	ICU Level of Service	H	
Analysis Period (min)	15			

Description: 07/2014

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	909	0	0	1416	767	159	5	1530	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1532	1646	1657	2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	3539			5085	1532	1646	1657	2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	307	957	0	0	1491	807	167	5	1611	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	358	0	0	41	0	0	0
Lane Group Flow (vph)	307	957	0	0	1491	449	85	87	1570	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Prot			
Protected Phases	5	2			6			8	8			
Permitted Phases						6	8					
Actuated Green, G (s)	10.0	45.8			31.8	31.8	55.2	55.2	55.2			
Effective Green, g (s)	10.0	45.8			31.8	31.8	55.2	55.2	55.2			
Actuated g/C Ratio	0.09	0.42			0.29	0.29	0.50	0.50	0.50			
Clearance Time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	312	1473			1470	442	825	831	1398			
v/s Ratio Prot	c0.09	0.27			c0.29				c0.56			
v/s Ratio Perm						0.29	0.05	0.05				
v/c Ratio	0.98	0.65			1.01	1.02	0.10	0.10	1.12			
Uniform Delay, d1	49.9	25.7			39.1	39.1	14.4	14.4	27.4			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	46.3	1.0			27.1	46.7	0.3	0.3	65.4			
Delay (s)	96.2	26.7			66.2	85.8	14.6	14.7	92.8			
Level of Service	F	C			E	F	B	B	F			
Approach Delay (s)		43.6			73.1			85.2			0.0	
Approach LOS		D			E			F			A	

Intersection Summary			
HCM 2000 Control Delay	70.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	145.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	198	679	100	165	741	342	356	660	227	139	228	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1547	1770	3539	1547	1770	3539	1548	3433	3539	1548
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1547	1770	3539	1547	1770	3539	1548	3433	3539	1548
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	208	715	105	174	780	360	375	695	239	146	240	200
RTOR Reduction (vph)	0	0	72	0	0	163	0	0	162	0	0	170
Lane Group Flow (vph)	208	715	33	174	780	197	375	695	77	146	240	30
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	18.4	39.3	39.3	16.1	37.3	37.3	30.9	40.5	40.5	9.3	19.0	19.0
Effective Green, g (s)	18.4	39.3	39.3	16.1	37.3	37.3	30.9	40.5	40.5	9.3	19.0	19.0
Actuated g/C Ratio	0.15	0.31	0.31	0.13	0.30	0.30	0.24	0.32	0.32	0.07	0.15	0.15
Clearance Time (s)	4.4	6.0	6.0	4.4	5.7	5.7	4.4	6.3	6.3	4.4	6.2	6.2
Vehicle Extension (s)	2.0	5.6	5.6	2.0	5.9	5.9	2.0	4.9	4.9	2.0	5.1	5.1
Lane Grp Cap (vph)	257	1101	481	225	1045	456	433	1134	496	252	532	232
v/s Ratio Prot	c0.12	0.20		0.10	c0.22		c0.21	c0.20		c0.04	0.07	
v/s Ratio Perm			0.02			0.13			0.05			0.02
v/c Ratio	0.81	0.65	0.07	0.77	0.75	0.43	0.87	0.61	0.15	0.58	0.45	0.13
Uniform Delay, d1	52.3	37.6	30.6	53.3	40.2	35.9	45.7	36.3	30.7	56.6	48.9	46.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.0	2.0	0.2	13.9	3.9	1.8	15.9	1.4	0.3	2.0	1.3	0.5
Delay (s)	68.3	39.6	30.8	67.3	44.1	37.8	61.6	37.7	31.0	58.6	50.2	47.0
Level of Service	E	D	C	E	D	D	E	D	C	E	D	D
Approach Delay (s)		44.5			45.5			43.3			51.2	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	126.3	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	83.2%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	16	11	60	934	20	20	967
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Lane Util. Factor	1.00	1.00	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1744	1542	1770	5063		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1744	1542	1770	5063		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	12	63	983	21	21	1018
RTOR Reduction (vph)	0	11	0	1	0	0	0
Lane Group Flow (vph)	17	1	63	1003	0	21	1018
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Perm	Perm	Prot	NA		Prot	NA
Protected Phases			5	2		1	6
Permitted Phases	8	8					
Actuated Green, G (s)	8.7	8.7	10.8	122.1		4.4	115.7
Effective Green, g (s)	8.7	8.7	10.8	122.1		4.4	115.7
Actuated g/C Ratio	0.06	0.06	0.07	0.81		0.03	0.77
Clearance Time (s)	4.4	4.4	4.4	6.0		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.5	5.4		2.0	5.4
Lane Grp Cap (vph)	101	89	127	4121		51	3922
v/s Ratio Prot			c0.04	0.20		c0.01	c0.20
v/s Ratio Perm	c0.01	0.00					
v/c Ratio	0.17	0.01	0.50	0.24		0.41	0.26
Uniform Delay, d1	67.2	66.6	67.0	3.2		71.5	4.9
Progression Factor	1.00	1.00	0.73	0.03		1.00	1.00
Incremental Delay, d2	0.3	0.0	2.0	0.1		2.0	0.2
Delay (s)	67.5	66.6	50.7	0.2		73.5	5.1
Level of Service	E	E	D	A		E	A
Approach Delay (s)	67.1			3.2			6.4
Approach LOS	E			A			A

Intersection Summary				
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	44.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1	40	13	0	6	152	1378	12	42	897	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes		1.00	0.89	1.00	0.89		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1776	1405	1770	1412		3433	5071		1770	5085	1558
Flt Permitted		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1776	1405	1770	1412		3433	5071		1770	5085	1558
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	1	42	14	0	6	160	1451	13	44	944	29
RTOR Reduction (vph)	0	0	39	0	5	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	36	3	14	1	0	160	1464	0	44	944	13
Confl. Peds. (#/hr)			82			83			31			2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.8	11.8	22.8	22.8		28.1	88.5		6.3	67.5	67.5
Effective Green, g (s)		11.8	11.8	22.8	22.8		28.1	88.5		6.3	67.5	67.5
Actuated g/C Ratio		0.08	0.08	0.15	0.15		0.19	0.59		0.04	0.45	0.45
Clearance Time (s)		4.9	4.9	5.6	5.6		4.9	5.7		4.4	4.4	4.4
Vehicle Extension (s)		2.0	2.0	6.3	6.3		2.0	5.9		2.0	2.0	2.0
Lane Grp Cap (vph)		139	110	269	214		643	2991		74	2288	701
v/s Ratio Prot		c0.02		c0.01	0.00		0.05	c0.29		c0.02	0.19	
v/s Ratio Perm			0.00									0.01
v/c Ratio		0.26	0.03	0.05	0.00		0.25	0.49		0.59	0.41	0.02
Uniform Delay, d1		65.0	63.8	54.4	54.0		52.0	17.7		70.6	27.9	22.9
Progression Factor		1.00	1.00	1.00	1.00		0.66	0.43		1.13	0.82	1.00
Incremental Delay, d2		0.4	0.0	0.2	0.0		0.1	0.5		8.1	0.5	0.0
Delay (s)		65.3	63.9	54.6	54.0		34.5	8.1		88.1	23.4	22.9
Level of Service		E	E	D	D		C	A		F	C	C
Approach Delay (s)		64.5			54.4			10.7			26.2	
Approach LOS		E			D			B			C	

Intersection Summary				
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	89.4%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1606	97	47	1022	42	56	1	22	49	4	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5035		1770	5047		1770	1551		1770	2951	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5035		1770	5047		1770	1551		1770	2951	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1691	102	49	1076	44	59	1	23	52	4	51
RTOR Reduction (vph)	0	3	0	0	2	0	0	21	0	0	51	0
Lane Group Flow (vph)	98	1790	0	49	1118	0	59	3	0	52	4	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.7	99.4		9.5	95.8		9.4	13.2		8.2	12.0	
Effective Green, g (s)	12.7	99.4		9.5	95.8		9.4	13.2		8.2	12.0	
Actuated g/C Ratio	0.08	0.66		0.06	0.64		0.06	0.09		0.05	0.08	
Clearance Time (s)	4.4	4.9		4.4	5.3		4.4	6.0		4.4	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	4.4		2.0	5.4		2.0	5.4	
Lane Grp Cap (vph)	149	3336		112	3223		110	136		96	236	
v/s Ratio Prot	c0.06	c0.36		c0.03	0.22		c0.03	c0.00		0.03	0.00	
v/s Ratio Perm												
v/c Ratio	0.66	0.54		0.44	0.35		0.54	0.02		0.54	0.02	
Uniform Delay, d1	66.5	13.2		67.7	12.6		68.2	62.5		69.1	63.6	
Progression Factor	1.08	0.81		0.57	0.17		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	0.6		1.0	0.3		2.5	0.2		3.3	0.1	
Delay (s)	79.2	11.3		39.3	2.4		70.7	62.7		72.4	63.7	
Level of Service	E	B		D	A		E	E		E	E	
Approach Delay (s)		14.8			4.0			68.4			67.9	
Approach LOS		B			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.1	
Intersection Capacity Utilization	62.5%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	163	211	308	1695	1039	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	4.4	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.91	0.91	
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1537	3433	5085	4995	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1537	3433	5085	4995	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	222	324	1784	1094	125
RTOR Reduction (vph)	0	193	0	0	6	0
Lane Group Flow (vph)	172	29	324	1784	1213	0
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.9	19.9	19.4	119.2	95.4	
Effective Green, g (s)	19.9	19.9	19.4	119.2	95.4	
Actuated g/C Ratio	0.13	0.13	0.13	0.79	0.64	
Clearance Time (s)	4.9	4.9	4.4	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	234	203	444	4040	3176	
v/s Ratio Prot	c0.10		c0.09	c0.35	0.24	
v/s Ratio Perm		0.02				
v/c Ratio	0.74	0.15	0.73	0.44	0.38	
Uniform Delay, d1	62.5	57.5	62.8	4.9	13.1	
Progression Factor	1.00	1.00	1.00	1.00	0.31	
Incremental Delay, d2	11.3	0.3	5.9	0.4	0.3	
Delay (s)	73.9	57.9	68.7	5.2	4.5	
Level of Service	E	E	E	A	A	
Approach Delay (s)	64.8			15.0	4.5	
Approach LOS	E			B	A	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	190	0	941	0	1272	292	0	1008	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Lane Util. Factor				0.95	0.95	0.88		0.95	1.00		0.95	0.88
Frpb, ped/bikes				1.00	1.00	0.97		1.00	0.95		1.00	0.95
Flpb, ped/bikes				0.98	0.98	1.00		1.00	1.00		1.00	1.00
Frt				1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1655	1655	2711		3539	1512		3539	2661
Flt Permitted				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1655	1655	2711		3539	1512		3539	2661
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	200	0	991	0	1339	307	0	1061	234
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	163	0	0	126
Lane Group Flow (vph)	0	0	0	100	100	969	0	1339	144	0	1061	108
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8		8			2			6
Actuated Green, G (s)				35.0	35.0	35.0		38.4	38.4		37.9	37.9
Effective Green, g (s)				35.0	35.0	35.0		38.4	38.4		37.9	37.9
Actuated g/C Ratio				0.43	0.43	0.43		0.47	0.47		0.46	0.46
Clearance Time (s)				4.0	4.0	4.0		4.5	4.5		5.0	5.0
Vehicle Extension (s)				3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)				707	707	1158		1659	708		1637	1231
v/s Ratio Prot								c0.38			0.30	
v/s Ratio Perm				0.06	0.06	c0.36			0.10			0.04
v/c Ratio				0.14	0.14	0.84		0.81	0.20		0.65	0.09
Uniform Delay, d1				14.3	14.3	20.9		18.6	12.8		16.9	12.3
Progression Factor				1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.1	0.1	5.4		3.0	0.1		0.9	0.0
Delay (s)				14.4	14.4	26.3		21.6	12.9		17.8	12.4
Level of Service				B	B	C		C	B		B	B
Approach Delay (s)		0.0			24.3			20.0			16.8	
Approach LOS		A			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	76.2%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	844	0	283	0	0	0	0	720	574	0	847	733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95					1.00	0.97		1.00	0.95
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1655	1655	2660					3539	1540		3539	1511
Flt Permitted	0.95	0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1655	1655	2660					3539	1540		3539	1511
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	888	0	298	0	0	0	0	758	604	0	892	772
RTOR Reduction (vph)	0	0	103	0	0	0	0	0	278	0	0	360
Lane Group Flow (vph)	444	444	195	0	0	0	0	758	326	0	892	412
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm		NA	Perm
Protected Phases		4						2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	29.8	29.8	29.8					44.9	44.9		44.4	44.4
Effective Green, g (s)	29.8	29.8	29.8					44.9	44.9		44.4	44.4
Actuated g/C Ratio	0.36	0.36	0.36					0.54	0.54		0.53	0.53
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	592	592	952					1909	831		1888	806
v/s Ratio Prot								0.21			0.25	
v/s Ratio Perm	c0.27	0.27	0.07						0.21			c0.27
v/c Ratio	0.75	0.75	0.20					0.40	0.39		0.47	0.51
Uniform Delay, d1	23.4	23.4	18.5					11.2	11.2		12.1	12.4
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	5.3	5.3	0.1					0.6	1.4		0.9	2.3
Delay (s)	28.7	28.7	18.6					11.8	12.6		12.9	14.8
Level of Service	C	C	B					B	B		B	B
Approach Delay (s)		26.2			0.0			12.2			13.8	
Approach LOS		C			A			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	83.2	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	67.0%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	495	35	124	33	17	134	59	665	31	163	768	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00		0.98		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1696	1583		1635		1770	3515		1763	3539	1532
Flt Permitted	0.95	0.96	1.00		0.88		0.25	1.00		0.28	1.00	1.00
Satd. Flow (perm)	1681	1696	1583		1447		467	3515		525	3539	1532
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	521	37	131	35	18	141	62	700	33	172	808	306
RTOR Reduction (vph)	0	0	97	0	92	0	0	3	0	0	0	178
Lane Group Flow (vph)	276	282	34	0	102	0	62	730	0	172	808	128
Confl. Peds. (#/hr)	10					10				10		10
Turn Type	Split	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	18.6	18.6	18.6		9.9		30.2	30.2		29.7	29.7	29.7
Effective Green, g (s)	18.6	18.6	18.6		9.9		30.2	30.2		29.7	29.7	29.7
Actuated g/C Ratio	0.26	0.26	0.26		0.14		0.42	0.42		0.42	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5		4.0		4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	439	443	413		201		198	1490		218	1476	639
v/s Ratio Prot	0.16	c0.17						0.21			0.23	
v/s Ratio Perm			0.02		c0.07		0.13			c0.33		0.08
v/c Ratio	0.63	0.64	0.08		0.51		0.31	0.49		0.79	0.55	0.20
Uniform Delay, d1	23.2	23.3	19.9		28.4		13.6	14.9		18.0	15.7	13.2
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.8	3.0	0.1		2.0		0.9	0.3		17.1	0.4	0.2
Delay (s)	26.1	26.3	19.9		30.4		14.5	15.2		35.1	16.1	13.3
Level of Service	C	C	B		C		B	B		D	B	B
Approach Delay (s)		25.0			30.4			15.1			18.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	71.2	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	69.4%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	NWL	NWR	NEU	NET	NER	SWL	SWT
Lane Configurations							
Volume (vph)	190	425	3	1035	453	542	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1547	1770	3539	1563	1770	3539
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1547	1770	3539	1563	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	447	3	1089	477	571	376
RTOR Reduction (vph)	0	329	0	0	32	0	0
Lane Group Flow (vph)	200	118	3	1089	445	571	376
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	8		5	2	8	1	6
Permitted Phases		8			2		
Actuated Green, G (s)	30.0	30.0	1.0	36.8	66.8	33.0	69.4
Effective Green, g (s)	30.0	30.0	1.0	36.8	66.8	33.0	69.4
Actuated g/C Ratio	0.27	0.27	0.01	0.33	0.59	0.29	0.61
Clearance Time (s)	4.4	4.4	4.0	5.0	4.4	4.0	4.4
Vehicle Extension (s)	8.0	8.0	3.0	3.0	8.0	3.0	8.0
Lane Grp Cap (vph)	909	409	15	1150	922	515	2169
v/s Ratio Prot	0.06		0.00	c0.31	c0.13	c0.32	0.11
v/s Ratio Perm		0.08			0.16		
v/c Ratio	0.22	0.29	0.20	0.95	0.48	1.11	0.17
Uniform Delay, d1	32.5	33.1	55.7	37.2	13.3	40.1	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.8	6.5	15.4	0.4	72.9	0.2
Delay (s)	33.0	34.9	62.2	52.6	13.7	113.0	9.7
Level of Service	C	C	E	D	B	F	A
Approach Delay (s)	34.3			40.8			71.9
Approach LOS	C			D			E

Intersection Summary				
HCM 2000 Control Delay	48.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	13.4	
Intersection Capacity Utilization	94.8%	ICU Level of Service	F	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1	5	26	0	18	3	623	31	46	903	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1692		1763	3508		1770	3528	
Flt Permitted		0.77			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1391			1396		1763	3508		1770	3528	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1	5	27	0	19	3	656	33	48	951	16
RTOR Reduction (vph)	0	5	0	0	42	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	4	0	3	686	0	48	966	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		4.7			4.8		0.6	32.9		2.1	34.5	
Effective Green, g (s)		4.7			4.8		0.6	32.9		2.1	34.5	
Actuated g/C Ratio		0.09			0.09		0.01	0.60		0.04	0.63	
Clearance Time (s)		4.9			4.8		4.4	5.8		4.4	5.7	
Vehicle Extension (s)		2.0			2.0		2.0	4.6		2.0	4.8	
Lane Grp Cap (vph)		119			122		19	2106		67	2221	
v/s Ratio Prot							c0.00	0.20		0.03	c0.27	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.22			0.03		0.16	0.33		0.72	0.44	
Uniform Delay, d1		23.3			22.9		26.8	5.4		26.1	5.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.0		1.4	0.2		25.9	0.3	
Delay (s)		23.7			22.9		28.3	5.6		52.0	5.4	
Level of Service		C			C		C	A		D	A	
Approach Delay (s)		23.7			22.9			5.7			7.6	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	52.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07-2014
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	4	81	39	2	21	90	716	70	21	718	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	2981		1761	1581		1770	3485		1765	3483	
Flt Permitted	0.74	1.00		0.70	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1374	2981		1291	1581		1770	3485		1765	3483	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	4	85	41	2	22	95	754	74	22	756	71
RTOR Reduction (vph)	0	75	0	0	19	0	0	6	0	0	7	0
Lane Group Flow (vph)	41	14	0	41	5	0	95	822	0	22	820	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	9.3	9.3		7.8	7.8		9.1	32.9		0.7	24.4	
Effective Green, g (s)	9.3	9.3		7.8	7.8		9.1	32.9		0.7	24.4	
Actuated g/C Ratio	0.16	0.16		0.13	0.13		0.16	0.56		0.01	0.42	
Clearance Time (s)	4.9	4.9		6.4	6.4		4.4	6.5		4.4	6.6	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.1	
Lane Grp Cap (vph)	217	472		171	210		274	1953		21	1447	
v/s Ratio Prot		0.00			0.00		0.05	c0.24		0.01	c0.24	
v/s Ratio Perm	0.03			c0.03								
v/c Ratio	0.19	0.03		0.24	0.02		0.35	0.42		1.05	0.57	
Uniform Delay, d1	21.4	20.9		22.8	22.1		22.1	7.4		29.0	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.3	0.0		0.3	0.1		212.0	0.5	
Delay (s)	21.6	20.9		23.1	22.2		22.4	7.6		241.0	13.6	
Level of Service	C	C		C	C		C	A		F	B	
Approach Delay (s)		21.1			22.7			9.1			19.5	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	17.4	
Intersection Capacity Utilization	55.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	6	52	77	8	16	105	837	160	32	711	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.96	1.00	0.95	0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1795	1540	1681	1629		1770	3539	1527	1770	3505	
Flt Permitted		0.96	1.00	0.95	0.93		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1795	1540	1681	1549		1770	3539	1527	1770	3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	6	55	81	8	17	111	881	168	34	748	39
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	24	55	53	39	0	111	881	168	34	784	0
Confl. Peds. (#/hr)	10		10	10			10		10	10		10
Turn Type	Split	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	8		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		6.9	6.9	8.7	16.9		7.3	31.2	39.9	2.0	28.1	
Effective Green, g (s)		6.9	6.9	8.7	16.9		7.3	31.2	39.9	2.0	28.1	
Actuated g/C Ratio		0.08	0.08	0.11	0.21		0.09	0.38	0.48	0.02	0.34	
Clearance Time (s)		4.9	4.9	4.0	4.0		4.4	6.1	4.0	6.4	5.9	
Vehicle Extension (s)		2.0	2.0	3.0	3.0		2.0	4.1	3.0	2.0	3.5	
Lane Grp Cap (vph)		150	128	177	326		156	1340	739	42	1195	
v/s Ratio Prot		0.01		c0.03	0.01		0.06	c0.25	0.02	0.02	c0.22	
v/s Ratio Perm			c0.04		c0.01				0.09			
v/c Ratio		0.16	0.43	0.30	0.12		0.71	0.66	0.23	0.81	0.66	
Uniform Delay, d1		35.1	35.9	34.0	26.7		36.5	21.2	12.3	40.0	23.0	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.8	1.0	0.2		12.0	1.3	0.2	65.9	1.4	
Delay (s)		35.2	36.7	35.0	26.9		48.5	22.5	12.5	105.9	24.4	
Level of Service		D	D	C	C		D	C	B	F	C	
Approach Delay (s)		36.3			30.9			23.5			27.8	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	25.4	
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group

2050 4 lane (with project) PM Pk Hr
13: Black Mountain Rd & Carmel Mountain Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	179	75	104	262	331	115	751	55	287	544	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3361		1770	3205		1770	3498		3433	3476	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3361		1770	3205		1770	3498		3433	3476	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	188	79	109	276	348	121	791	58	302	573	67
RTOR Reduction (vph)	0	0	0	0	201	0	0	5	0	0	8	0
Lane Group Flow (vph)	75	267	0	109	423	0	121	844	0	302	632	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.9	16.7		11.1	21.6		10.8	41.4		11.0	41.1	
Effective Green, g (s)	5.9	16.7		11.1	21.6		10.8	41.4		11.0	41.1	
Actuated g/C Ratio	0.06	0.17		0.11	0.22		0.11	0.41		0.11	0.41	
Clearance Time (s)	4.4	5.6		4.4	5.9		4.4	5.4		4.4	5.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.1		2.0	4.5		2.0	3.9	
Lane Grp Cap (vph)	104	561		196	692		191	1448		377	1428	
v/s Ratio Prot	c0.04	0.08		0.06	c0.13		0.07	c0.24		c0.09	0.18	
v/s Ratio Perm												
v/c Ratio	0.72	0.48		0.56	0.61		0.63	0.58		0.80	0.44	
Uniform Delay, d1	46.2	37.7		42.1	35.4		42.7	22.6		43.4	21.2	
Progression Factor	1.00	1.00		0.53	0.38		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.7	0.8		1.8	1.8		5.0	1.7		11.0	1.0	
Delay (s)	64.9	38.5		24.0	15.4		47.7	24.4		54.4	22.2	
Level of Service	E	D		C	B		D	C		D	C	
Approach Delay (s)		44.3			16.7			27.3			32.5	
Approach LOS		D			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.6		
Intersection Capacity Utilization	75.5%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) PM Pk Hr
14: Black Mountain Rd & Paseo Montalban 9/10/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	107	107	854	136	218	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.9		4.5	5.2
Lane Util. Factor	0.97	0.91	0.95		1.00	0.95
Frpb, ped/bikes	0.98	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	0.96	0.85	0.98		1.00	1.00
Flt Protected	0.96	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3289	1388	3457		1770	3539
Flt Permitted	0.96	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3289	1388	3457		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	113	113	899	143	229	389
RTOR Reduction (vph)	37	63	13	0	0	0
Lane Group Flow (vph)	118	8	1029	0	229	389
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	3		2		1	6
Permitted Phases		3				
Actuated Green, G (s)	8.0	8.0	32.4		13.5	50.1
Effective Green, g (s)	8.0	8.0	32.4		13.5	50.1
Actuated g/C Ratio	0.12	0.12	0.48		0.20	0.74
Clearance Time (s)	4.5	4.5	4.9		4.5	5.2
Vehicle Extension (s)	3.0	3.0	5.2		2.0	4.5
Lane Grp Cap (vph)	388	163	1652		352	2615
v/s Ratio Prot	c0.04		c0.30		c0.13	0.11
v/s Ratio Perm		0.01				
v/c Ratio	0.30	0.05	0.62		0.65	0.15
Uniform Delay, d1	27.4	26.5	13.2		25.0	2.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.1	1.1		3.3	0.0
Delay (s)	27.8	26.7	14.2		28.2	2.6
Level of Service	C	C	B		C	A
Approach Delay (s)	27.4		14.2		12.1	
Approach LOS	C		B		B	

Intersection Summary					
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	13.9		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B		
Analysis Period (min)	15				
Description: 10/2013					
c Critical Lane Group					

2050 4 lane (with project) PM Pk Hr
15: Black Mountain Rd & Twin Trails Dr 9/10/2015



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	81	120	365	373	161	42	642	945	200	49	467	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1797		3433	3433		1770	3488	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1797		3433	3433		1770	3488	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	126	384	393	169	44	676	995	211	52	492	41
RTOR Reduction (vph)	0	0	295	0	11	0	0	15	0	0	6	0
Lane Group Flow (vph)	85	126	89	393	202	0	676	1191	0	52	527	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.3	13.4	19.2	11.7	17.9		19.2	35.4		2.9	18.8	
Effective Green, g (s)	7.3	13.4	19.2	11.7	17.9		19.2	35.4		2.9	18.8	
Actuated g/C Ratio	0.09	0.16	0.23	0.14	0.22		0.23	0.43		0.04	0.23	
Clearance Time (s)	4.4	5.0	4.4	4.4	4.9		4.4	5.2		4.4	5.5	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	2.1		2.0	5.2		2.0	4.5	
Lane Grp Cap (vph)	156	302	368	487	390		799	1474		62	795	
v/s Ratio Prot	0.05	0.07	0.06	c0.11	c0.11		c0.20	c0.35		0.03	0.15	
v/s Ratio Perm												
v/c Ratio	0.54	0.42	0.24	0.81	0.52		0.85	0.81		0.84	0.66	
Uniform Delay, d1	36.0	31.0	25.7	34.3	28.4		30.2	20.5		39.5	28.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.9	0.1	9.0	0.6		7.9	3.9		58.2	2.5	
Delay (s)	38.0	31.9	25.8	43.2	29.0		38.1	24.4		97.7	31.4	
Level of Service	D	C	C	D	C		D	C		F	C	
Approach Delay (s)		28.9			38.2			29.3			37.3	
Approach LOS		C			D			C			D	

Intersection Summary					
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.82				
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	19.3		
Intersection Capacity Utilization	74.6%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) PM Pk Hr
16: Black Mountain Rd & SR-56 WB On-Ramp/SR-56 WB Off-Ramp 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	670	1	516	421	1472	0	0	927	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.91	
Frpb, ped/bikes				1.00	1.00	0.97	1.00	1.00			0.99	
Flpb, ped/bikes				0.98	0.98	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.96	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1645	1649	1531	3433	3539			4846	
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1645	1649	1531	3433	3539			4846	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	705	1	543	443	1549	0	0	976	340
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	50	0
Lane Group Flow (vph)	0	0	0	352	354	503	443	1549	0	0	1266	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)				42.8	42.8	42.8	17.8	63.2			40.4	
Effective Green, g (s)				42.8	42.8	42.8	17.8	63.2			40.4	
Actuated g/C Ratio				0.37	0.37	0.37	0.15	0.55			0.35	
Clearance Time (s)				4.0	4.0	4.0	5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				612	613	569	531	1944			1702	
v/s Ratio Prot							0.13	c0.44			0.26	
v/s Ratio Perm				0.21	0.21	c0.33						
v/c Ratio				0.58	0.58	0.88	0.83	0.80			0.74	
Uniform Delay, d1				28.8	28.9	33.8	47.2	20.8			32.8	
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2				1.3	1.3	15.1	10.8	3.5			3.0	
Delay (s)				30.2	30.2	48.8	58.0	24.3			35.7	
Level of Service				C	C	D	E	C			D	
Approach Delay (s)		0.0			38.3			31.8			35.7	
Approach LOS		A			D			C			D	

Intersection Summary					
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	81.2%	ICU Level of Service	D		
Analysis Period (min)	15				
Description: 05/2014					
c Critical Lane Group					

2050 4 lane (with project) PM Pk Hr
17: Black Mountain Rd & SR-56 EB Off-Ramp/SR-56 EB On-Ramp 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	318	0	481	0	0	0	0	1503	398	399	1194	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	0.95	0.88					0.95	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.97					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.98	0.98	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1644	1644	2693					3539	1530	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1644	1644	2693					3539	1530	3433	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	335	0	506	0	0	0	0	1582	419	420	1257	0
RTOR Reduction (vph)	0	0	164	0	0	0	0	0	83	0	0	0
Lane Group Flow (vph)	167	168	342	0	0	0	0	1582	336	420	1257	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	19.4	19.4	19.4					65.9	65.9	18.2	89.1	
Effective Green, g (s)	19.4	19.4	19.4					65.9	65.9	18.2	89.1	
Actuated g/C Ratio	0.17	0.17	0.17					0.56	0.56	0.15	0.76	
Clearance Time (s)	4.0	4.0	4.0					5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	271	271	444					1984	858	531	3855	
v/s Ratio Prot								c0.45		c0.12	0.25	
v/s Ratio Perm	0.10	0.10	c0.13						0.22			
v/c Ratio	0.62	0.62	0.77					0.80	0.39	0.79	0.33	
Uniform Delay, d1	45.6	45.6	46.9					20.5	14.5	47.8	4.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	4.2	7.8					3.4	1.3	7.9	0.2	
Delay (s)	49.7	49.8	54.7					23.9	15.9	55.7	4.8	
Level of Service	D	D	D					C	B	E	A	
Approach Delay (s)		52.8			0.0			22.2			17.5	
Approach LOS		D			A			C			B	

Intersection Summary				
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	81.2%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
18: Black Mountain Rd & Park Village Rd/Adolphia St 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	351	9	128	59	22	44	465	1389	136	85	987	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95		0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.98		1.00	0.99		1.00	1.00	0.96
Flpb, ped/bikes	0.98	0.98	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1662	1521	1659	1559		3433	3471		1770	3539	1521
Flt Permitted	0.71	0.68	1.00	0.63	0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1227	1182	1521	1104	1534		3433	3471		1770	3539	1521
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	369	9	135	62	23	46	489	1462	143	89	1039	568
RTOR Reduction (vph)	0	0	117	0	41	0	0	4	0	0	0	206
Lane Group Flow (vph)	188	190	18	56	34	0	489	1601	0	89	1039	362
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	28.9	28.9	20.1	14.1	14.1		30.0	93.7		12.4	76.1	76.1
Effective Green, g (s)	28.9	28.9	20.1	14.1	14.1		30.0	93.7		12.4	76.1	76.1
Actuated g/C Ratio	0.19	0.19	0.13	0.09	0.09		0.20	0.62		0.08	0.51	0.51
Clearance Time (s)	5.0	5.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	280	277	203	121	144		686	2168		146	1795	771
v/s Ratio Prot	0.07	c0.07		0.01	0.01		0.14	c0.46		0.05	c0.29	
v/s Ratio Perm	0.06	c0.06	0.01	0.03	0.01							0.24
v/c Ratio	0.67	0.69	0.09	0.46	0.24		0.71	0.74		0.61	0.58	0.47
Uniform Delay, d1	55.2	56.3	56.9	63.7	63.0		56.0	19.6		66.5	25.8	23.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.78	0.48		1.00	1.00	1.00
Incremental Delay, d2	6.2	6.9	0.2	2.8	0.9		2.9	1.9		7.0	1.4	2.0
Delay (s)	61.4	63.2	57.1	66.5	63.8		46.8	11.3		73.5	27.1	25.9
Level of Service	E	E	E	E	E		D	B		E	C	C
Approach Delay (s)		60.9			65.0			19.6			29.2	
Approach LOS		E			E			B			C	

Intersection Summary				
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
19: Black Mountain Rd & Canyonside Park Dwy 9/10/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	89	45	56	1765	1163	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1521	1770	3539	3539	1479
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1521	1770	3539	3539	1479
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	94	47	59	1858	1224	166
RTOR Reduction (vph)	0	43	0	0	0	30
Lane Group Flow (vph)	94	4	59	1858	1224	136
Confl. Peds. (#/hr)	10	10	10			10
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	13.3	13.3	10.4	127.7	112.3	112.3
Effective Green, g (s)	13.3	13.3	10.4	127.7	112.3	112.3
Actuated g/C Ratio	0.09	0.09	0.07	0.85	0.75	0.75
Clearance Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	134	122	3012	2649	1107
v/s Ratio Prot	c0.05		0.03	c0.52	0.35	
v/s Ratio Perm		0.00				0.09
v/c Ratio	0.60	0.03	0.48	0.62	0.46	0.12
Uniform Delay, d1	65.8	62.5	67.2	3.5	7.2	5.2
Progression Factor	1.00	1.00	1.07	0.57	0.39	0.12
Incremental Delay, d2	6.4	0.1	2.4	0.8	0.5	0.2
Delay (s)	72.2	62.6	74.4	2.7	3.3	0.8
Level of Service	E	E	E	A	A	A
Approach Delay (s)	69.0			5.0	3.0	
Approach LOS	E			A	A	

Intersection Summary				
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
20: Black Mountain Rd & Mercy Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	0	404	1	506	19	1311	488	343	769	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Lane Util. Factor		1.00		0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00		1.00	0.96	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99		0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1800		3380	1446	1445	1770	3539	1521	3433	3539	
Flt Permitted		0.70		0.67	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1296		2376	1446	1445	1770	3539	1521	3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	425	1	533	20	1380	514	361	809	0
RTOR Reduction (vph)	0	0	0	0	225	225	0	0	162	0	0	0
Lane Group Flow (vph)	0	2	0	425	43	41	20	1380	352	361	809	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		4.4		23.4	23.4	23.4	4.3	85.9	85.9	25.2	106.8	
Effective Green, g (s)		4.4		23.4	23.4	23.4	4.3	85.9	85.9	25.2	106.8	
Actuated g/C Ratio		0.03		0.16	0.16	0.16	0.03	0.57	0.57	0.17	0.71	
Clearance Time (s)		4.0		5.0	5.0	5.0	5.5	5.5	5.5	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		38		471	225	225	50	2026	871	576	2519	
v/s Ratio Prot				c0.09	0.03		0.01	c0.39		c0.11	0.23	
v/s Ratio Perm		0.00		c0.05		0.03			0.23			
v/c Ratio		0.05		0.90	0.19	0.18	0.40	0.68	0.40	0.63	0.32	
Uniform Delay, d1		70.8		61.8	55.1	55.0	71.6	22.5	17.8	58.0	8.1	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.61	
Incremental Delay, d2		0.6		20.3	0.4	0.4	5.2	1.9	1.4	1.9	0.3	
Delay (s)		71.4		82.1	55.5	55.4	76.8	24.3	19.2	40.7	5.3	
Level of Service		E		F	E	E	E	C	B	D	A	
Approach Delay (s)		71.4			67.3			23.5			16.2	
Approach LOS		E			E			C			B	

Intersection Summary				
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	28	308	2	1580	27	294	1137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Lane Util. Factor	1.00	0.88	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	2734	1770	5071		1770	5085
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	2734	1770	5071		1770	5085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	324	2	1663	28	309	1197
RTOR Reduction (vph)	0	274	0	2	0	0	0
Lane Group Flow (vph)	29	50	2	1689	0	309	1197
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	11.4	11.4	1.0	27.6		19.1	46.8
Effective Green, g (s)	11.4	11.4	1.0	27.6		19.1	46.8
Actuated g/C Ratio	0.15	0.15	0.01	0.37		0.26	0.63
Clearance Time (s)	4.4	4.4	4.4	7.0		4.4	5.9
Vehicle Extension (s)	4.2	4.2	2.0	3.9		2.0	4.8
Lane Grp Cap (vph)	273	421	23	1893		457	3220
v/s Ratio Prot	0.02		0.00	c0.33		c0.17	0.24
v/s Ratio Perm		c0.02					
v/c Ratio	0.11	0.12	0.09	0.89		0.68	0.37
Uniform Delay, d1	26.9	26.9	36.0	21.8		24.6	6.5
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.2	0.6	5.9		3.1	0.1
Delay (s)	27.1	27.1	36.6	27.7		27.7	6.6
Level of Service	C	C	D	C		C	A
Approach Delay (s)	27.1			27.7			11.0
Approach LOS	C			C			B

Intersection Summary				
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	15.8	
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	437	10	22	669	96	13	1	17	120	0	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.89	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.91	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3527		1770	3435		1613	1598		1770	1413	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.75	1.00	
Satd. Flow (perm)	1770	3527		1770	3435		1210	1598		1388	1413	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	165	460	11	23	704	101	14	1	18	126	0	68
RTOR Reduction (vph)	0	1	0	0	8	0	0	0	0	0	55	0
Lane Group Flow (vph)	165	470	0	23	797	0	14	19	0	126	13	0
Confl. Peds. (#/hr)						36	104					104
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.3	54.5		10.9	52.7		19.3	19.3		19.2	19.2	
Effective Green, g (s)	13.3	54.5		10.9	52.7		19.3	19.3		19.2	19.2	
Actuated g/C Ratio	0.13	0.54		0.11	0.53		0.19	0.19		0.19	0.19	
Clearance Time (s)	4.4	6.0		4.4	5.4		4.9	4.9		5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	235	1922		192	1810		233	308		266	271	
v/s Ratio Prot	c0.09	0.13		0.01	c0.23			0.01			0.01	
v/s Ratio Perm							0.01			c0.09		
v/c Ratio	0.70	0.24		0.12	0.44		0.06	0.06		0.47	0.05	
Uniform Delay, d1	41.5	11.9		40.2	14.6		32.9	33.0		35.9	32.9	
Progression Factor	0.83	0.74		0.50	0.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.6	0.3		0.1	0.7		0.0	0.0		0.5	0.0	
Delay (s)	41.2	9.1		20.3	6.4		33.0	33.0		36.4	33.0	
Level of Service	D	A		C	A		C	C		D	C	
Approach Delay (s)		17.4			6.8			33.0			35.2	
Approach LOS		B			A			C			D	

Intersection Summary				
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	69.8%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	75	329	59	71	25	357	766	74	40	549	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90	0.85	1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1759	1579	1486	1766	1781		3433	3480		1770	3513	
Flt Permitted	0.69	1.00	1.00	0.38	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1281	1579	1486	697	1781		3433	3480		1770	3513	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	79	346	62	75	26	376	806	78	42	578	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	6	0	0	2	0
Lane Group Flow (vph)	36	217	208	62	101	0	376	878	0	42	602	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8	1	7	4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	25.7	19.2	34.2	22.3	17.5		15.0	52.0		5.1	42.1	
Effective Green, g (s)	25.7	19.2	34.2	22.3	17.5		15.0	52.0		5.1	42.1	
Actuated g/C Ratio	0.26	0.19	0.34	0.22	0.18		0.15	0.52		0.05	0.42	
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9		4.4	5.2		4.4	5.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)	360	303	508	206	311		514	1809		90	1478	
v/s Ratio Prot	0.01	c0.14	0.06	c0.01	0.06		c0.11	c0.25		0.02	c0.17	
v/s Ratio Perm	0.02		0.08	0.05								
v/c Ratio	0.10	0.72	0.41	0.30	0.32		0.73	0.49		0.47	0.41	
Uniform Delay, d1	28.4	37.8	25.2	37.8	36.1		40.6	15.4		46.1	20.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.50	0.29	
Incremental Delay, d2	0.0	6.6	0.2	0.3	0.2		4.6	0.9		1.4	0.8	
Delay (s)	28.4	44.4	25.4	38.1	36.3		45.2	16.3		24.4	6.7	
Level of Service	C	D	C	D	D		D	B		C	A	
Approach Delay (s)		34.6			37.0			24.9			7.9	
Approach LOS		C			D			C			A	

Intersection Summary				
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.9	
Intersection Capacity Utilization	64.4%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	517	25	310	602	320	228	191	115	379	283	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1509	1770	3539	1539	3433	3304		3433	1863	1539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1509	1770	3539	1539	3433	3304		3433	1863	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	273	544	26	326	634	337	240	201	121	399	298	313
RTOR Reduction (vph)	0	0	21	0	0	255	0	106	0	0	0	253
Lane Group Flow (vph)	273	544	5	326	634	82	240	216	0	399	298	60
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.0	16.5	16.5	21.0	21.5	21.5	16.5	11.1		22.5	17.1	17.1
Effective Green, g (s)	16.0	16.5	16.5	21.0	21.5	21.5	16.5	11.1		22.5	17.1	17.1
Actuated g/C Ratio	0.18	0.19	0.19	0.24	0.24	0.24	0.19	0.13		0.25	0.19	0.19
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	619	946	281	419	858	373	639	413		871	359	297
v/s Ratio Prot	0.08	c0.11		c0.18	0.18		c0.07	c0.07		0.12	c0.16	
v/s Ratio Perm			0.00			0.05						0.04
v/c Ratio	0.44	0.58	0.02	0.78	0.74	0.22	0.38	0.52		0.46	0.83	0.20
Uniform Delay, d1	32.3	32.9	29.4	31.6	31.0	26.8	31.5	36.3		27.9	34.4	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	2.5	0.1	8.8	5.7	1.3	1.7	1.2		0.4	14.9	0.3
Delay (s)	34.6	35.4	29.5	40.4	36.6	28.2	33.2	37.5		28.3	49.3	30.4
Level of Service	C	D	C	D	D	C	C	D		C	D	C
Approach Delay (s)		35.0			35.4			35.7			35.1	
Approach LOS		C			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	69.2%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 05/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
25: SR-56 EB On/Off Ramps/Azuaga St & Rancho Penasquitos Blvd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	684	154	24	1238	58	451	59	711	38	23	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1493	1770	3507		1770	1554		1770	1628	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1493	1770	3507		1770	1554		1770	1628	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	720	162	25	1303	61	475	62	748	40	24	55
RTOR Reduction (vph)	0	0	97	0	3	0	0	111	0	0	52	0
Lane Group Flow (vph)	92	720	65	25	1361	0	475	699	0	40	27	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	7.4	48.4	48.4	3.5	44.5		44.5	48.1		3.9	7.5	
Effective Green, g (s)	7.4	48.4	48.4	3.5	44.5		44.5	48.1		3.9	7.5	
Actuated g/C Ratio	0.06	0.40	0.40	0.03	0.37		0.37	0.40		0.03	0.06	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	108	1416	597	51	1290		651	618		57	100	
v/s Ratio Prot	c0.05	0.20		0.01	c0.39		0.27	c0.45		c0.02	0.02	
v/s Ratio Perm			0.04									
v/c Ratio	0.85	0.51	0.11	0.49	1.06		0.73	1.13		0.70	0.27	
Uniform Delay, d1	56.2	27.3	22.7	57.8	38.2		33.0	36.4		57.9	54.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	43.9	1.3	0.4	7.2	41.1		4.1	77.7		32.3	1.5	
Delay (s)	100.1	28.6	23.1	65.1	79.3		37.1	114.1		90.3	55.6	
Level of Service	F	C	C	E	E		D	F		F	E	
Approach Delay (s)		34.4			79.0			85.7			67.2	
Approach LOS		C			E			F			E	

Intersection Summary				
HCM 2000 Control Delay	69.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	99.8%	ICU Level of Service	F	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
26: Calle De Las Rosas & Rancho Penasquitos Blvd 9/10/2015



Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1219	148	118	1218	69	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3463		1770	3539	1770	1535
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3463		1770	3539	1770	1535
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1283	156	124	1282	73	100
RTOR Reduction (vph)	7	0	0	0	0	90
Lane Group Flow (vph)	1432	0	124	1282	73	10
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases						4
Actuated Green, G (s)	65.2		11.7	81.4	10.1	10.1
Effective Green, g (s)	65.2		11.7	81.4	10.1	10.1
Actuated g/C Ratio	0.65		0.12	0.81	0.10	0.10
Clearance Time (s)	4.5		4.5	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2257		207	2880	178	155
v/s Ratio Prot	c0.41		c0.07	0.36	c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.63		0.60	0.45	0.41	0.07
Uniform Delay, d1	10.3		41.9	2.7	42.2	40.7
Progression Factor	1.00		0.69	0.38	1.00	1.00
Incremental Delay, d2	1.4		4.0	0.4	1.5	0.2
Delay (s)	11.7		32.9	1.5	43.7	40.9
Level of Service	B		C	A	D	D
Approach Delay (s)	11.7			4.2	42.1	
Approach LOS	B			A	D	

Intersection Summary				
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	62.7%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
27: Rancho Penasquitos Blvd & Via Del Sud 9/10/2015



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	49	27	7	1287	64	48	1282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00	0.99		1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1535	1770	3506		1770	3539
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	1535	1770	3506		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	28	7	1355	67	51	1349
RTOR Reduction (vph)	0	26	0	3	0	0	0
Lane Group Flow (vph)	52	2	7	1419	0	51	1349
Confl. Peds. (#/hr)	10	10	10		10	10	
Turn Type	Prot	Perm	Prot	NA		Prot	NA
Protected Phases	8		5	2		1	6
Permitted Phases		8					
Actuated Green, G (s)	8.2	8.2	2.0	68.9		9.9	76.8
Effective Green, g (s)	8.2	8.2	2.0	68.9		9.9	76.8
Actuated g/C Ratio	0.08	0.08	0.02	0.69		0.10	0.77
Clearance Time (s)	4.0	4.0	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	145	125	35	2415		175	2717
v/s Ratio Prot	c0.03		0.00	c0.40		c0.03	c0.38
v/s Ratio Perm		0.00					
v/c Ratio	0.36	0.02	0.20	0.59		0.29	0.50
Uniform Delay, d1	43.4	42.2	48.2	8.1		41.8	4.3
Progression Factor	1.00	1.00	0.88	0.31		0.75	0.33
Incremental Delay, d2	1.5	0.1	2.6	1.0		0.7	0.5
Delay (s)	44.9	42.3	45.2	3.5		32.0	2.0
Level of Service	D	D	D	A		C	A
Approach Delay (s)	44.0			3.7			3.1
Approach LOS	D			A			A

Intersection Summary				
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 10/2013				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
28: Rancho Penasquitos Blvd & Paseo Montril 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	9	100	53	8	14	181	1088	31	65	1123	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1737	1863	1535	1737	1647		1770	3519		1770	3500	
Flt Permitted	0.74	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1358	1863	1535	1374	1647		1770	3519		1770	3500	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	9	105	56	8	15	191	1145	33	68	1182	69
RTOR Reduction (vph)	0	0	92	0	13	0	0	2	0	0	3	0
Lane Group Flow (vph)	95	9	13	56	10	0	191	1176	0	68	1248	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	12.1	12.1	12.1	12.1	12.1		15.6	62.0		12.9	59.3	
Effective Green, g (s)	12.1	12.1	12.1	12.1	12.1		15.6	62.0		12.9	59.3	
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.16	0.62		0.13	0.59	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	164	225	185	166	199		276	2181		228	2075	
v/s Ratio Prot		0.00			0.01		c0.11	0.33		0.04	c0.36	
v/s Ratio Perm	c0.07		0.01	0.04								
v/c Ratio	0.58	0.04	0.07	0.34	0.05		0.69	0.54		0.30	0.60	
Uniform Delay, d1	41.5	38.8	39.0	40.3	38.9		39.9	10.8		39.4	12.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.67	0.31	
Incremental Delay, d2	4.9	0.1	0.2	1.2	0.1		7.3	1.0		0.7	1.2	
Delay (s)	46.4	38.9	39.1	41.5	39.0		47.2	11.8		27.0	5.1	
Level of Service	D	D	D	D	D		D	B		C	A	
Approach Delay (s)		42.4			40.8			16.7			6.3	
Approach LOS		D			D			B			A	

Intersection Summary				
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	66.2%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	325	155	1426	1003	0	706
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0		4.5
Lane Util. Factor	0.97	0.91	0.91	0.91		0.95
Frpb, ped/bikes	1.00	0.97	1.00	0.99		1.00
Flpb, ped/bikes	0.97	1.00	1.00	1.00		1.00
Frt	0.99	0.85	0.98	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3330	1400	3297	1419		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3330	1400	3297	1419		3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	342	163	1501	1056	0	743
RTOR Reduction (vph)	4	54	14	0	0	0
Lane Group Flow (vph)	354	93	1762	781	0	743
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Perm	Perm	NA	Free		NA
Protected Phases			2			6
Permitted Phases	8	8		Free		
Actuated Green, G (s)	14.1	14.1	64.6	87.2		64.6
Effective Green, g (s)	14.1	14.1	64.6	87.2		64.6
Actuated g/C Ratio	0.16	0.16	0.74	1.00		0.74
Clearance Time (s)	4.0	4.0	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	538	226	2442	1419		2621
v/s Ratio Prot			c0.53			0.21
v/s Ratio Perm	0.11	0.07		c0.55		
v/c Ratio	0.66	0.41	0.72	0.55		0.28
Uniform Delay, d1	34.3	32.8	6.3	0.0		3.7
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.9	1.2	1.9	1.5		0.3
Delay (s)	37.2	34.1	8.2	1.5		4.0
Level of Service	D	C	A	A		A
Approach Delay (s)	36.3		6.1			4.0
Approach LOS	D		A			A

Intersection Summary				
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	87.2	Sum of lost time (s)	8.5	
Intersection Capacity Utilization	69.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Description: 10/2014
c Critical Lane Group



Movement	EBL2	EBL	EBR	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Volume (vph)	999	0	1426	0	0	0	1047	154	0	1631	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.0				4.5	4.5		5.5	4.0
Lane Util. Factor	0.97		1.00				0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.99				1.00	0.95		1.00	0.98
Flpb, ped/bikes	0.97		1.00				1.00	1.00		1.00	1.00
Frt	1.00		0.85				1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (prot)	3337		1560				3539	1508		3539	1544
Flt Permitted	0.95		1.00				1.00	1.00		1.00	1.00
Satd. Flow (perm)	3337		1560				3539	1508		3539	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1052	0	1501	0	0	0	1102	162	0	1717	535
RTOR Reduction (vph)	0	0	0	0	0	0	0	88	0	0	0
Lane Group Flow (vph)	1052	0	1501	0	0	0	1102	74	0	1717	535
Confl. Peds. (#/hr)	10	10	10	10	10	10		10	10		10
Turn Type	Perm		Free				NA	custom		NA	Free
Protected Phases							6				
Permitted Phases	4		Free					4		2	Free
Actuated Green, G (s)	30.6		89.1				49.5	30.6		48.5	89.1
Effective Green, g (s)	30.6		89.1				49.5	30.6		48.5	89.1
Actuated g/C Ratio	0.34		1.00				0.56	0.34		0.54	1.00
Clearance Time (s)	4.5						4.5	4.5		5.5	
Vehicle Extension (s)	3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)	1146		1560				1966	517		1926	1544
v/s Ratio Prot							0.31				
v/s Ratio Perm	0.32		c0.96					0.05		0.49	0.35
v/c Ratio	0.92		0.96				0.56	0.14		0.89	0.35
Uniform Delay, d1	28.0		0.0				12.8	20.2		18.0	0.0
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00
Incremental Delay, d2	11.5		15.4				0.4	0.1		6.7	0.6
Delay (s)	39.5		15.4				13.1	20.3		24.7	0.6
Level of Service	D		B				B	C		C	A
Approach Delay (s)		25.3		0.0			14.1			19.0	
Approach LOS		C		A			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	91.0%	ICU Level of Service	F	
Analysis Period (min)	15			

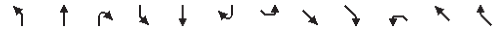
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	11	0	44	20	37	0	60	37	24	65	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99			0.98		1.00	0.99	
Flpb, ped/bikes		1.00			0.99			1.00		1.00	1.00	
Frt		1.00			0.95			0.94		1.00	0.97	
Flt Protected		0.98			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1826			1702			3285		1770	3418	
Flt Permitted		0.93			0.85			1.00		0.95	1.00	
Satd. Flow (perm)		1723			1481			3285		1770	3418	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	12	0	46	21	39	0	63	39	25	68	15
RTOR Reduction (vph)	0	0	0	0	33	0	0	13	0	0	4	0
Lane Group Flow (vph)	0	18	0	0	73	0	0	89	0	25	79	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		8.0			8.0			43.3		1.5	49.3	
Effective Green, g (s)		8.0			8.0			43.3		1.5	49.3	
Actuated g/C Ratio		0.12			0.12			0.66		0.02	0.75	
Clearance Time (s)		4.0			4.0			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		209			180			2161		40	2560	
v/s Ratio Prot								c0.03		c0.01	0.02	
v/s Ratio Perm		0.01			c0.05							
v/c Ratio		0.09			0.41			0.04		0.62	0.03	
Uniform Delay, d1		25.7			26.7			4.0		31.9	2.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.5			0.0		26.7	0.0	
Delay (s)		25.8			28.2			4.0		58.6	2.1	
Level of Service		C			C			A		E	A	
Approach Delay (s)		25.8			28.2			4.0			15.2	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.11			
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	30.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	0	82	1	29	200	34	25	2	4	1	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	0.99			1.00			0.98	
Flpb, ped/bikes		1.00		0.98	1.00			0.99			1.00	
Frt		1.00		1.00	0.98			0.98			0.88	
Flt Protected		1.00		0.95	1.00			0.96			1.00	
Satd. Flow (prot)		3531		1732	3440			1734			1603	
Flt Permitted		1.00		0.70	1.00			0.84			0.97	
Satd. Flow (perm)		3531		1272	3440			1521			1561	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	86	1	31	211	36	26	2	4	1	1	12
RTOR Reduction (vph)	0	0	0	0	6	0	0	4	0	0	11	0
Lane Group Flow (vph)	0	87	0	31	241	0	0	28	0	0	3	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		65.3		65.3	65.3			4.3			4.3	
Effective Green, g (s)		65.3		65.3	65.3			4.3			4.3	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2971		1070	2894			84			86	
v/s Ratio Prot		0.02			c0.07							
v/s Ratio Perm				0.02				c0.02			0.00	
v/c Ratio		0.03		0.03	0.08			0.34			0.03	
Uniform Delay, d1		1.0		1.0	1.0			35.3			34.7	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.0		0.1	0.1			2.4			0.1	
Delay (s)		1.0		1.0	1.1			37.6			34.8	
Level of Service		A		A	A			D			C	
Approach Delay (s)		1.0			1.1			37.6			34.8	
Approach LOS		A			A			D			C	

Intersection Summary				
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	145	5	6	0	1	11	6	103	0	10	176	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	0.98	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		1.00			0.88		1.00	1.00		1.00	0.93	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1750			1595		1770	3539		1770	3214	
Flt Permitted		0.73			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1339			1595		1770	3539		1770	3214	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	153	5	6	0	1	12	6	108	0	11	185	180
RTOR Reduction (vph)	0	2	0	0	10	0	0	0	0	0	76	0
Lane Group Flow (vph)	0	162	0	0	3	0	6	108	0	11	289	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA			NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		12.3			12.3		1.2	36.5		1.2	36.5	
Effective Green, g (s)		12.3			12.3		1.2	36.5		1.2	36.5	
Actuated g/C Ratio		0.20			0.20		0.02	0.58		0.02	0.58	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		261			311		33	2050		33	1862	
v/s Ratio Prot					0.00		0.00	0.03		c0.01	c0.09	
v/s Ratio Perm		c0.12										
v/c Ratio		0.62			0.01		0.18	0.05		0.33	0.16	
Uniform Delay, d1		23.2			20.4		30.4	5.7		30.5	6.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.3			0.0		2.6	0.0		5.9	0.2	
Delay (s)		27.5			20.5		33.1	5.8		36.4	6.3	
Level of Service		C			C		C	A		D	A	
Approach Delay (s)		27.5			20.5			7.2			7.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	280	0	58	409	216	2	7	25	163	14	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.95			0.90		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3311			1646		1756	1773	
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.73	1.00	
Satd. Flow (perm)	1770	3539		1770	3311			1642		1357	1773	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	295	0	61	431	227	2	7	26	172	15	6
RTOR Reduction (vph)	0	0	0	0	91	0	0	13	0	0	3	0
Lane Group Flow (vph)	2	295	0	61	567	0	0	22	0	172	18	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.0	16.8		9.9	25.4			39.1		39.1	39.1	
Effective Green, g (s)	1.0	16.8		9.9	25.4			39.1		39.1	39.1	
Actuated g/C Ratio	0.01	0.21		0.12	0.32			0.49		0.49	0.49	
Clearance Time (s)	4.4	4.9		4.4	5.2			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	5.4		2.0	4.7			2.0		2.0	2.0	
Lane Grp Cap (vph)	22	743		219	1051			802		663	866	
v/s Ratio Prot	0.00	c0.08		0.03	c0.17						0.01	
v/s Ratio Perm								0.01		c0.13		
v/c Ratio	0.09	0.40		0.28	0.54			0.03		0.26	0.02	
Uniform Delay, d1	39.1	27.2		31.8	22.5			10.6		12.0	10.6	
Progression Factor	1.00	1.00		0.80	0.74			1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.6		0.2	1.9			0.1		0.9	0.0	
Delay (s)	39.7	28.8		25.8	18.5			10.7		12.9	10.6	
Level of Service	D	C		C	B			B		B	B	
Approach Delay (s)		28.9			19.1			10.7			12.7	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	241	246	22	289	38	305	49	20	14	33	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.92		1.00	0.98		1.00	0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3211		1770	3461		1757	1772			1752	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.96	
Satd. Flow (perm)	1770	3211		1770	3461		1312	1772			1698	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	254	259	23	304	40	321	52	21	15	35	23
RTOR Reduction (vph)	0	219	0	0	16	0	0	8	0	0	9	0
Lane Group Flow (vph)	1	294	0	23	328	0	321	65	0	0	64	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.5	12.3		3.5	12.6		49.7	49.7			49.7	
Effective Green, g (s)	2.5	12.3		3.5	12.6		49.7	49.7			49.7	
Actuated g/C Ratio	0.03	0.15		0.04	0.16		0.62	0.62			0.62	
Clearance Time (s)	4.4	5.2		4.4	5.9		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.4		2.0	3.4		2.0	2.0			2.0	
Lane Grp Cap (vph)	55	493		77	545		815	1100			1054	
v/s Ratio Prot	0.00	0.09		c0.01	c0.09			0.04				
v/s Ratio Perm							c0.24				0.04	
v/c Ratio	0.02	0.60		0.30	0.60		0.39	0.06			0.06	
Uniform Delay, d1	37.6	31.5		37.1	31.4		7.6	6.0			6.0	
Progression Factor	0.85	0.41		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	5.2		0.8	4.9		1.4	0.1			0.1	
Delay (s)	31.8	18.1		37.9	36.2		9.0	6.1			6.1	
Level of Service	C	B		D	D		A	A			A	
Approach Delay (s)		18.1			36.3			8.5			6.1	
Approach LOS		B			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	4	61	464	4	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	316	4	64	488	4	42
Pedestrians	10			10	10	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1242			1089		
pX, platoon unblocked						
vC, conflicting volume			330		711	180
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			330		711	180
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		99	95
cM capacity (veh/h)			1216		343	818

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	211	109	64	244	244	46
Volume Left	0	0	64	0	0	4
Volume Right	0	4	0	0	0	42
cSH	1700	1700	1216	1700	1700	726
Volume to Capacity	0.12	0.06	0.05	0.14	0.14	0.06
Queue Length 95th (ft)	0	0	4	0	0	5
Control Delay (s)	0.0	0.0	8.1	0.0	0.0	10.3
Lane LOS			A			B
Approach Delay (s)	0.0		0.9			10.3
Approach LOS						B

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	29.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014

```
2050 BMR 4Ln PM            Tue Sep 9, 2014 08:01:19                  Page 3-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #37 Sundance Avenue/Twin Trails Drive
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.956
Loss Time (sec):      0                Average Delay (sec/veh):       27.5
Optimal Cycle:        0                Level Of Service:                D
********************************************************************************
Street Name:          Sundance Avenue              Twin Trails Drive
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0      0    0    0      0    0    0      0    0    0
Lanes:       0  0  1! 0  0      0  0  1! 0  0    1  0  0  1  0    1  0  1  0  1
-------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      18    7   130     63   15    6      5  320    2    268  603  111
Growth Adj:  1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   18    7   130     63   15    6      5  320    2    268  603  111
User Adj:    1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:    18    7   130     63   15    6      5  320    2    268  603  111
Reduct Vol:     0    0     0      0    0    0      0    0    0      0    0    0
Reduced Vol:   18    7   130     63   15    6      5  320    2    268  603  111
PCE Adj:     1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
FinalVolume:   18    7   130     63   15    6      5  320    2    268  603  111
-------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Lanes:       0.12 0.04  0.84   0.75 0.18 0.07   1.00 0.99 0.01   1.00 1.00 1.00
Final Sat.:    65   25   467    367   87   35    505  544    3    577  631  713
-------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.28  0.28   0.17 0.17 0.17   0.01 0.59  0.59   0.46 0.96  0.16
Crit Moves:  ****           ****                ****                ****
Delay/Veh:   11.4 11.4  11.4   11.3 11.3 11.3    9.7 17.5  17.5   14.1 48.7   8.6
Delay Adj:   1.00 1.00  1.00   1.00 1.00 1.00   1.00 1.00  1.00   1.00 1.00  1.00
AdjDel/Veh:  11.4 11.4  11.4   11.3 11.3 11.3    9.7 17.5  17.5   14.1 48.7   8.6
LOS by Move:    B    B     B      B    B    B      A    C     C      B    E     A
ApproachDel:       11.4              11.3              17.4              34.8
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:        11.4              11.3              17.4              34.8
LOS by Appr:          B                 B                 C                 D
AllWayAvgQ:   0.3  0.3   0.3    0.2  0.2  0.2    0.0  1.3   1.3    0.8  7.1   0.2
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************


Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to CRAIN & ASSOC., L.A.
```




Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	102	181	32	34	162	33	172	76	88	17	28	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1520	1770	1803		1756	1676			1578	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.34	1.00			0.98	
Satd. Flow (perm)	1770	1863	1520	1770	1803		621	1676			1557	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	107	191	34	36	171	35	181	80	93	18	29	353
RTOR Reduction (vph)	0	0	20	0	7	0	0	59	0	0	247	0
Lane Group Flow (vph)	107	191	14	36	199	0	181	114	0	0	153	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Actuated Green, G (s)	7.6	27.6	27.6	6.2	26.2		19.7	19.7			19.7	
Effective Green, g (s)	7.6	27.6	27.6	6.2	26.2		19.7	19.7			19.7	
Actuated g/C Ratio	0.12	0.42	0.42	0.09	0.40		0.30	0.30			0.30	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	205	785	640	167	721		186	504			468	
v/s Ratio Prot	c0.06	0.10		0.02	c0.11			0.07				
v/s Ratio Perm			0.01				c0.29				0.10	
v/c Ratio	0.52	0.24	0.02	0.22	0.28		0.97	0.23			0.33	
Uniform Delay, d1	27.2	12.2	11.1	27.4	13.3		22.6	17.2			17.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.4	0.2	0.0	0.7	1.0		57.8	0.2			0.4	
Delay (s)	29.6	12.4	11.1	28.1	14.2		80.4	17.4			18.2	
Level of Service	C	B	B	C	B		F	B			B	
Approach Delay (s)		17.8			16.3			49.6			18.2	
Approach LOS		B			B			D			B	

Intersection Summary				
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	67.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	121	72	89	151	91	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	127	76	94	159	96	91

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	127	76	253	96	91
Volume Left (vph)	127	0	0	96	0
Volume Right (vph)	0	76	159	0	0
Hadj (s)	0.53	-0.67	-0.34	0.53	0.03
Departure Headway (s)	6.1	4.9	4.8	5.9	5.4
Degree Utilization, x	0.22	0.10	0.34	0.16	0.13
Capacity (veh/h)	553	682	726	586	640
Control Delay (s)	9.6	7.3	10.2	8.8	8.0
Approach Delay (s)	8.7		10.2	8.4	
Approach LOS	A		B	A	

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 07/2014			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	255	47	211	111	63	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2		4.0	5.5	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3442		1770	3539	1770	1557
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3442		1770	3539	1770	1557
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	268	49	222	117	66	181
RTOR Reduction (vph)	18	0	0	0	0	146
Lane Group Flow (vph)	299	0	222	117	66	35
Confl. Peds. (#/hr)		10	10		10	10
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	12.0		10.9	26.6	8.8	8.8
Effective Green, g (s)	12.0		10.9	26.6	8.8	8.8
Actuated g/C Ratio	0.27		0.24	0.59	0.20	0.20
Clearance Time (s)	5.2		4.0	5.5	4.0	4.0
Vehicle Extension (s)	3.2		2.0	3.2	2.1	2.1
Lane Grp Cap (vph)	919		429	2096	346	305
v/s Ratio Prot	c0.09		c0.13	0.03	c0.04	
v/s Ratio Perm						0.02
v/c Ratio	0.33		0.52	0.06	0.19	0.12
Uniform Delay, d1	13.2		14.7	3.9	15.1	14.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.4	0.0	0.1	0.1
Delay (s)	13.4		15.2	3.9	15.2	14.9
Level of Service	B		B	A	B	B
Approach Delay (s)	13.4			11.3	15.0	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	43.7%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	360	67	113	264	28	25	8	107	19	4	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3438		1770	3478		1761	1573		1758	1607	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.68	1.00	
Satd. Flow (perm)	1770	3438		1770	3478		1375	1573		1257	1607	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	379	71	119	278	29	26	8	113	20	4	20
RTOR Reduction (vph)	0	16	0	0	8	0	0	92	0	0	16	0
Lane Group Flow (vph)	32	434	0	119	299	0	26	29	0	20	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.0	16.9		6.4	21.2		8.5	8.5		9.6	9.6	
Effective Green, g (s)	2.0	16.9		6.4	21.2		8.5	8.5		9.6	9.6	
Actuated g/C Ratio	0.04	0.37		0.14	0.46		0.18	0.18		0.21	0.21	
Clearance Time (s)	4.0	5.2		4.0	5.3		5.1	5.1		4.0	4.0	
Vehicle Extension (s)	2.0	4.4		2.0	4.4		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	76	1260		245	1599		253	290		261	334	
v/s Ratio Prot	0.02	c0.13		c0.07	0.09			0.02			0.01	
v/s Ratio Perm							c0.02			0.02		
v/c Ratio	0.42	0.34		0.49	0.19		0.10	0.10		0.08	0.02	
Uniform Delay, d1	21.5	10.6		18.3	7.4		15.6	15.6		14.7	14.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.3		0.6	0.1		0.1	0.1		0.0	0.0	
Delay (s)	22.9	10.9		18.9	7.5		15.7	15.7		14.7	14.5	
Level of Service	C	B		B	A		B	B		B	B	
Approach Delay (s)		11.7			10.6			15.7			14.6	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	14.4	
Intersection Capacity Utilization	43.1%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	56	35	118	2	20	13	104	75	9	19	83	51
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	59	37	124	2	21	14	109	79	9	20	87	54

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	220	37	109	88	161
Volume Left (vph)	59	2	109	0	20
Volume Right (vph)	124	14	0	9	54
Hadj (s)	-0.25	-0.18	0.53	-0.04	-0.14
Departure Headway (s)	4.6	4.9	5.8	5.3	4.8
Degree Utilization, x	0.28	0.05	0.18	0.13	0.21
Capacity (veh/h)	733	660	588	649	709
Control Delay (s)	9.4	8.2	8.9	7.8	9.0
Approach Delay (s)	9.4	8.2	8.4		9.0
Approach LOS	A	A	A		A

Intersection Summary				
Delay	8.9			
Level of Service	A			
Intersection Capacity Utilization	47.5%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	40	89	25	11	78	0	23	12	27	1	2	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	94	26	12	82	0	24	13	28	1	2	27

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	162	94	65	31
Volume Left (vph)	42	12	24	1
Volume Right (vph)	26	0	28	27
Hadj (s)	-0.01	0.06	-0.15	-0.50
Departure Headway (s)	4.2	4.3	4.3	4.0
Degree Utilization, x	0.19	0.11	0.08	0.03
Capacity (veh/h)	833	794	775	819
Control Delay (s)	8.2	7.9	7.7	7.2
Approach Delay (s)	8.2	7.9	7.7	7.2
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	837	74	36	485	79	242	31	38	82	21	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3481		1770	3442			1746		1760	1649	
Flt Permitted	0.95	1.00		0.95	1.00			0.73		0.61	1.00	
Satd. Flow (perm)	1770	3481		1770	3442			1322		1138	1649	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	881	78	38	511	83	255	33	40	86	22	46
RTOR Reduction (vph)	0	8	0	0	15	0	0	5	0	0	27	0
Lane Group Flow (vph)	196	951	0	38	579	0	0	323	0	86	41	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.8	33.7		3.9	23.6			37.5		37.5	37.5	
Effective Green, g (s)	13.8	33.7		3.9	23.6			37.5		37.5	37.5	
Actuated g/C Ratio	0.15	0.37		0.04	0.26			0.42		0.42	0.42	
Clearance Time (s)	4.4	5.6		4.4	5.8			4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.9		2.0	2.4			2.0		2.0	2.0	
Lane Grp Cap (vph)	271	1303		76	902			550		474	687	
v/s Ratio Prot	0.11	c0.27		0.02	c0.17						0.02	
v/s Ratio Perm								c0.24		0.08		
v/c Ratio	0.72	0.73		0.50	0.64			0.59		0.18	0.06	
Uniform Delay, d1	36.3	24.2		42.1	29.5			20.3		16.6	15.7	
Progression Factor	1.00	1.00		0.72	0.73			1.00		1.00	1.00	
Incremental Delay, d2	7.8	3.6		1.8	3.4			4.5		0.1	0.0	
Delay (s)	44.1	27.9		32.1	24.9			24.8		16.6	15.7	
Level of Service	D	C		C	C			C		B	B	
Approach Delay (s)		30.6			25.4			24.8			16.2	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.1	
Intersection Capacity Utilization	65.5%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
45: Carmel Mountain Rd & Freeport Rd 9/10/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	108	829	40	8	545	15	29	0	5	17	0	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3507		1770	3520		1753	1549			1650	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.88	
Satd. Flow (perm)	1770	3507		1770	3520		1343	1549			1485	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	114	873	42	8	574	16	31	0	5	18	0	27
RTOR Reduction (vph)	0	2	0	0	1	0	0	4	0	0	40	0
Lane Group Flow (vph)	114	913	0	8	589	0	31	1	0	0	5	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	9.0	64.0		1.2	55.4		10.2	10.2			10.2	
Effective Green, g (s)	9.0	64.0		1.2	55.4		10.2	10.2			10.2	
Actuated g/C Ratio	0.10	0.71		0.01	0.62		0.11	0.11			0.11	
Clearance Time (s)	4.4	5.3		4.4	6.1		4.9	4.9			4.9	
Vehicle Extension (s)	2.0	4.3		2.0	3.7		2.0	2.0			2.0	
Lane Grp Cap (vph)	177	2493		23	2166		152	175			168	
v/s Ratio Prot	c0.06	c0.26		0.00	0.17			0.00				
v/s Ratio Perm							c0.02				0.00	
v/c Ratio	0.64	0.37		0.35	0.27		0.20	0.00			0.03	
Uniform Delay, d1	39.0	5.1		44.0	8.0		36.2	35.4			35.5	
Progression Factor	1.09	0.37		1.43	0.37		1.00	1.00			1.00	
Incremental Delay, d2	4.7	0.3		3.3	0.3		0.2	0.0			0.0	
Delay (s)	47.3	2.2		66.0	3.3		36.5	35.4			35.5	
Level of Service	D	A		E	A		D	D			D	
Approach Delay (s)		7.2			4.1			36.3			35.5	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.4	
Intersection Capacity Utilization	53.2%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
46: Carmel Mountain Rd & Stoney Creek Rd 9/10/2015

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	25	807	0	549	13	12	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		5.7		4.4	4.4
Lane Util. Factor	1.00	0.95		0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00		1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00		1.00		0.99	0.85
Flt Protected	0.95	1.00		1.00		0.96	1.00
Satd. Flow (prot)	1770	3539		3523		1758	1473
Flt Permitted	0.95	1.00		1.00		0.96	1.00
Satd. Flow (perm)	1770	3539		3523		1758	1473
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	849	0	578	14	13	8
RTOR Reduction (vph)	0	0	0	1	0	1	6
Lane Group Flow (vph)	26	849	0	591	0	13	1
Confl. Peds. (#/hr)	10		10		10	10	10
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	5	2	1	6		4	
Permitted Phases							4
Actuated Green, G (s)	2.9	70.3		62.6		10.0	10.0
Effective Green, g (s)	2.9	70.3		62.6		10.0	10.0
Actuated g/C Ratio	0.03	0.78		0.70		0.11	0.11
Clearance Time (s)	4.4	5.3		5.7		4.4	4.4
Vehicle Extension (s)	2.0	4.3		3.7		2.0	2.0
Lane Grp Cap (vph)	57	2764		2450		195	163
v/s Ratio Prot	0.01	c0.24		0.17		c0.01	
v/s Ratio Perm							0.00
v/c Ratio	0.46	0.31		0.24		0.07	0.00
Uniform Delay, d1	42.8	2.8		5.0		35.8	35.6
Progression Factor	1.10	0.04		1.00		1.00	1.00
Incremental Delay, d2	2.0	0.3		0.2		0.1	0.0
Delay (s)	49.1	0.4		5.2		35.9	35.6
Level of Service	D	A		A		D	D
Approach Delay (s)		1.8		5.2		35.8	
Approach LOS		A		A		D	

Intersection Summary				
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.5	
Intersection Capacity Utilization	39.9%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
47: Carmel Mountain Rd & Caminata Deluz/Cuca St 9/10/2015

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	31	0	56	4	1	7	49	738	3	11	581	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.91			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1650			1669		1770	3537		1758	3483	
Flt Permitted		0.89			0.91		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1500			1548		1770	3537		1758	3483	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	0	59	4	1	7	52	777	3	12	612	58
RTOR Reduction (vph)	0	64	0	0	5	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	28	0	0	7	0	52	779	0	12	662	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.4			10.4		2.3	21.0		0.7	19.3	
Effective Green, g (s)		10.4			10.4		2.3	21.0		0.7	19.3	
Actuated g/C Ratio		0.22			0.22		0.05	0.45		0.01	0.41	
Clearance Time (s)		4.9			4.9		4.4	5.3		4.4	5.4	
Vehicle Extension (s)		2.0			2.0		2.0	4.3		2.0	3.8	
Lane Grp Cap (vph)		334			344		87	1590		26	1439	
v/s Ratio Prot							c0.03	c0.22		0.01	0.19	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.08			0.02		0.60	0.49		0.46	0.46	
Uniform Delay, d1		14.4			14.2		21.7	9.1		22.8	9.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		7.2	0.4		4.7	0.3	
Delay (s)		14.4			14.2		28.9	9.4		27.5	10.2	
Level of Service		B			B		C	A		C	B	
Approach Delay (s)		14.4			14.2			10.7			10.5	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	47.8%	ICU Level of Service	A	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				

2050 4 lane (with project) PM Pk Hr
48: Carmel Mountain Rd & Penasquitos Dr 9/10/2015

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	301	71	36	70	88	155	163	649	64	210	717	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1541	1681	1763	1541	1770	4997		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1541	1681	1763	1541	1770	4997		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	75	38	74	93	163	172	683	67	221	755	581
RTOR Reduction (vph)	0	0	29	0	0	142	0	13	0	0	0	341
Lane Group Flow (vph)	317	75	9	67	100	21	172	737	0	221	755	240
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	19.4	19.4	19.4	10.2	10.2	10.2	11.2	20.5		13.5	22.8	19.4
Effective Green, g (s)	19.4	19.4	19.4	10.2	10.2	10.2	11.2	20.5		13.5	22.8	19.4
Actuated g/C Ratio	0.24	0.24	0.24	0.13	0.13	0.13	0.14	0.26		0.17	0.29	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	431	454	375	215	225	197	249	1286		300	1013	385
v/s Ratio Prot	c0.18	0.04		0.04	c0.06		c0.10	0.15		0.12	c0.21	0.15
v/s Ratio Perm			0.01			0.01						
v/c Ratio	0.74	0.17	0.02	0.31	0.44	0.11	0.69	0.57		0.74	0.75	0.62
Uniform Delay, d1	27.7	23.7	22.9	31.5	32.1	30.7	32.6	25.7		31.4	25.8	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.4	0.2	0.0	0.8	1.4	0.2	8.0	1.9		9.1	3.0	3.1
Delay (s)	34.1	23.9	22.9	32.3	33.5	30.9	40.6	27.6		40.4	28.8	30.0
Level of Service	C	C	C	C	C	C	D	C		D	C	C
Approach Delay (s)		31.4			32.0			30.0			30.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			
Description: 07/2014				
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	795	282	1063	1107	0	0	0	0	548	0	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	0.99	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3539	1533	3433	3539					1647	1529	1456
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3539	1533	3433	3539					1647	1529	1456
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	837	297	1119	1165	0	0	0	0	577	0	408
RTOR Reduction (vph)	0	0	216	0	0	0	0	0	0	0	41	79
Lane Group Flow (vph)	0	837	81	1119	1165	0	0	0	0	340	294	231
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		29.4	29.4	37.5	71.4					27.9	27.9	27.9
Effective Green, g (s)		29.4	29.4	37.5	71.4					27.9	27.9	27.9
Actuated g/C Ratio		0.27	0.27	0.35	0.67					0.26	0.26	0.26
Clearance Time (s)		4.5	4.5	4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		969	420	1199	2354					428	397	378
v/s Ratio Prot		c0.24		c0.33	0.33							
v/s Ratio Perm			0.05							c0.21	0.19	0.16
v/c Ratio		0.86	0.19	0.93	0.49					0.79	0.74	0.61
Uniform Delay, d1		37.0	29.9	33.7	9.0					37.0	36.4	34.9
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		8.1	0.2	13.0	0.2					14.1	11.8	7.2
Delay (s)		45.1	30.1	46.7	9.1					51.1	48.2	42.1
Level of Service		D	C	D	A					D	D	D
Approach Delay (s)		41.2			27.5			0.0			47.3	
Approach LOS		D			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	12.5	
Intersection Capacity Utilization	82.0%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	1061	0	0	1669	682	492	0	1021	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.91			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.98	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			3539	1532	1646	1646	2697			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			3539	1532	1646	1646	2697			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	272	1117	0	0	1757	718	518	0	1075	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	280	0	0	110	0	0	0
Lane Group Flow (vph)	272	1117	0	0	1757	439	259	259	965	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	8.0	67.0			55.0	55.0	35.0	35.0	35.0			
Effective Green, g (s)	8.0	67.0			55.0	55.0	35.0	35.0	35.0			
Actuated g/C Ratio	0.07	0.61			0.50	0.50	0.32	0.32	0.32			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	249	3097			1769	766	523	523	858			
v/s Ratio Prot	c0.08	0.22			c0.50							
v/s Ratio Perm						0.29	0.16	0.16	c0.36			
v/c Ratio	1.09	0.36			0.99	0.57	0.50	0.50	1.12			
Uniform Delay, d1	51.0	10.8			27.3	19.3	30.4	30.4	37.5			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	83.9	0.1			19.7	1.0	3.3	3.3	71.2			
Delay (s)	134.9	10.8			47.0	20.3	33.7	33.7	108.7			
Level of Service	F	B			D	C	C	C	F			
Approach Delay (s)		35.1			39.3			84.3			0.0	
Approach LOS		D			D			F			A	

Intersection Summary				
HCM 2000 Control Delay	51.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.05			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	82.0%	ICU Level of Service	E	
Analysis Period (min)	15			

Description: 07/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	130	2	57	274	236	9	11	22	176	20	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3530		1770	1863	1545	1740	3139		3433	1578	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3530		1770	1863	1545	1740	3139		3433	1578	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	137	2	60	288	248	9	12	23	185	21	98
RTOR Reduction (vph)	0	2	0	0	0	191	0	16	0	0	55	0
Lane Group Flow (vph)	46	137	0	60	288	57	9	19	0	185	64	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	4.0	15.4		4.5	15.4	15.4	0.9	21.5		9.0	29.1	
Effective Green, g (s)	4.0	15.4		4.5	15.4	15.4	0.9	21.5		9.0	29.1	
Actuated g/C Ratio	0.06	0.23		0.07	0.23	0.23	0.01	0.32		0.13	0.43	
Clearance Time (s)	4.0	4.5		4.0	5.0	5.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	812		119	428	355	23	1008		461	686	
v/s Ratio Prot	0.03	0.04		c0.03	c0.15		0.01	0.01		c0.05	c0.04	
v/s Ratio Perm						0.04						
v/c Ratio	0.44	0.17		0.50	0.67	0.16	0.39	0.02		0.40	0.09	
Uniform Delay, d1	30.4	20.6		30.1	23.5	20.6	32.7	15.5		26.5	11.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.1		3.3	4.1	0.2	10.7	0.0		0.6	0.3	
Delay (s)	33.3	20.7		33.5	27.6	20.8	43.4	15.5		27.1	11.4	
Level of Service	C	C		C	C	C	D	B		C	B	
Approach Delay (s)		23.8			25.4			21.2			20.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	44.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Description: 05/2014
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	2	0	6	1	50	3	270	9	100	500	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		1.00			0.88		1.00	1.00		1.00	0.98	
Flt Protected		0.95			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1767			1606		1762	3520		1770	3437	
Flt Permitted		1.00			0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1853			1541		1762	3520		1770	3437	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	2	0	6	1	53	3	284	9	105	526	101
RTOR Reduction (vph)	0	0	0	0	48	0	0	2	0	0	16	0
Lane Group Flow (vph)	0	64	0	0	12	0	3	291	0	105	611	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		2.8			2.8		0.6	13.7		4.2	17.3	
Effective Green, g (s)		2.8			2.8		0.6	13.7		4.2	17.3	
Actuated g/C Ratio		0.09			0.09		0.02	0.42		0.13	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		158			131		32	1474		227	1818	
v/s Ratio Prot							0.00	0.08		c0.06	c0.18	
v/s Ratio Perm		c0.03			0.01							
v/c Ratio		0.41			0.09		0.09	0.20		0.46	0.34	
Uniform Delay, d1		14.2			13.8		15.8	6.0		13.2	4.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7			0.3		1.3	0.1		1.5	0.1	
Delay (s)		15.9			14.1		17.1	6.1		14.7	4.5	
Level of Service		B			B		B	A		B	A	
Approach Delay (s)		15.9			14.1			6.2			6.0	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	32.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) PM Pk Hr
53: Park Village Rd & Ragweed St 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	388	8	104	718	26	1	0	59	41	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	0.99			0.87			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1770	3526		1770	3516			1578			1740	
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.81	
Satd. Flow (perm)	1770	3526		1770	3516			1576			1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	408	8	109	756	27	1	0	62	43	2	6
RTOR Reduction (vph)	0	2	0	0	4	0	0	40	0	0	4	0
Lane Group Flow (vph)	2	414	0	109	779	0	0	23	0	0	47	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.0	12.9		10.1	22.0			21.4			21.4	
Effective Green, g (s)	1.0	12.9		10.1	22.0			21.4			21.4	
Actuated g/C Ratio	0.02	0.22		0.18	0.38			0.37			0.37	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	30	792		311	1347			587			545	
v/s Ratio Prot	0.00	c0.12		0.06	c0.22							
v/s Ratio Perm								0.01			c0.03	
v/c Ratio	0.07	0.52		0.35	0.58			0.04			0.09	
Uniform Delay, d1	27.7	19.5		20.8	14.0			11.5			11.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.6		0.7	0.6			0.1			0.3	
Delay (s)	28.7	20.2		21.5	14.6			11.6			12.0	
Level of Service	C	C		C	B			B			B	
Approach Delay (s)		20.2			15.5			11.6			12.0	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	49.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) PM Pk Hr
54: Mercy Rd & Kika Ct 9/10/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	54	22	973	108	58	841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9	6.3		4.4	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1554	3474		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1554	3474		1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	23	1024	114	61	885
RTOR Reduction (vph)	0	21	7	0	0	0
Lane Group Flow (vph)	57	2	1131	0	61	885
Confl. Peds. (#/hr)	10	10		10	10	
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	5.8	5.8	32.6		3.8	41.1
Effective Green, g (s)	5.8	5.8	32.6		3.8	41.1
Actuated g/C Ratio	0.10	0.10	0.56		0.07	0.71
Clearance Time (s)	4.9	4.9	6.3		4.4	6.0
Vehicle Extension (s)	2.0	2.0	2.8		2.0	2.6
Lane Grp Cap (vph)	177	155	1959		116	2516
v/s Ratio Prot	c0.03		c0.33		c0.03	0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.32	0.01	0.58		0.53	0.35
Uniform Delay, d1	24.2	23.4	8.1		26.1	3.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.0	0.4		2.0	0.1
Delay (s)	24.6	23.4	8.5		28.1	3.3
Level of Service	C	C	A		C	A
Approach Delay (s)	24.2		8.5			4.9
Approach LOS	C		A			A

Intersection Summary				
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	55.1%	ICU Level of Service	B	
Analysis Period (min)	15			

Description: 10/2013

c Critical Lane Group

2050 4 lane (with project) PM Pk Hr
55: Alemania Rd & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	865	0	0	1126	99	0	0	0	115	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Lane Util. Factor	1.00	0.95			0.95	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.97				1.00		0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00				0.99		1.00
Frt	1.00	1.00			1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1770	3539			3539	1532				1759		1555
Flt Permitted	0.95	1.00			1.00	1.00				0.76		1.00
Satd. Flow (perm)	1770	3539			3539	1532				1402		1555
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	911	0	0	1185	104	0	0	0	121	0	39
RTOR Reduction (vph)	0	0	0	0	0	45	0	0	0	0	0	30
Lane Group Flow (vph)	43	911	0	0	1185	59	0	0	0	121	0	9
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA		Prot	NA	Perm				Perm		Perm
Protected Phases	5	2		1	6			8				
Permitted Phases						6	8			4		4
Actuated Green, G (s)	3.0	33.6			27.1	27.1				12.4		12.4
Effective Green, g (s)	3.0	33.6			27.1	27.1				12.4		12.4
Actuated g/C Ratio	0.05	0.60			0.49	0.49				0.22		0.22
Clearance Time (s)	4.0	5.6			5.1	5.1				4.0		4.0
Vehicle Extension (s)	2.0	5.0			2.8	2.8				2.0		2.0
Lane Grp Cap (vph)	95	2138			1724	746				312		346
v/s Ratio Prot	0.02	c0.26			c0.33							
v/s Ratio Perm						0.04				c0.09		0.01
v/c Ratio	0.45	0.43			0.69	0.08				0.39		0.03
Uniform Delay, d1	25.5	5.9			11.0	7.6				18.4		16.9
Progression Factor	1.00	1.00			1.00	1.00				1.00		1.00
Incremental Delay, d2	1.2	0.3			1.1	0.0				0.3		0.0
Delay (s)	26.8	6.1			12.1	7.6				18.7		16.9
Level of Service	C	A			B	A				B		B
Approach Delay (s)		7.1			11.7			0.0			18.2	
Approach LOS		A			B			A			B	

Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	13.6	
Intersection Capacity Utilization	53.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

2050 4 lane (with project) PM Pk Hr
56: I-15 SB On-Ramp/I-15 SB Off-Ramp & Mercy Rd 9/10/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	830	224	1254	942	0	0	0	0	715	0	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Lane Util. Factor		0.86	0.86	0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					0.98	0.99	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		4783	1325	3433	3539					1656	1575	1464
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		4783	1325	3433	3539					1656	1575	1464
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	874	236	1320	992	0	0	0	0	753	0	319
RTOR Reduction (vph)	0	3	169	0	0	0	0	0	0	0	71	101
Lane Group Flow (vph)	0	895	43	1320	992	0	0	0	0	392	322	186
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		16.1	16.1	31.0	51.1					19.9	19.9	19.9
Effective Green, g (s)		16.1	16.1	31.0	51.1					19.9	19.9	19.9
Actuated g/C Ratio		0.20	0.20	0.39	0.64					0.25	0.25	0.25
Clearance Time (s)		5.0	5.0	4.0	5.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		962	266	1330	2260					411	391	364
v/s Ratio Prot		c0.19		c0.38	0.28							
v/s Ratio Perm			0.03							c0.24	0.20	0.13
v/c Ratio		0.93	0.16	0.99	0.44					0.95	0.82	0.51
Uniform Delay, d1		31.4	26.4	24.4	7.3					29.6	28.4	25.9
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		15.0	0.3	22.8	0.1					34.2	17.5	5.0
Delay (s)		46.4	26.7	47.1	7.4					63.8	45.9	30.9
Level of Service		D	C	D	A					E	D	C
Approach Delay (s)		42.6			30.1			0.0			48.4	
Approach LOS		D			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.97			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	143.7%	ICU Level of Service	H	
Analysis Period (min)	15			

Description: 07/2014

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	339	1297	0	0	1851	896	431	5	1167	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	0.99	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1541	1656	1662	2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3433	3539			5085	1541	1656	1662	2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	357	1365	0	0	1948	943	454	5	1228	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	440	0	0	59	0	0	0
Lane Group Flow (vph)	357	1365	0	0	1948	503	232	227	1169	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Prot			
Protected Phases	5	2			6			8	8			
Permitted Phases						6	8					
Actuated Green, G (s)	7.0	41.0			30.0	30.0	30.0	30.0	30.0			
Effective Green, g (s)	7.0	41.0			30.0	30.0	30.0	30.0	30.0			
Actuated g/C Ratio	0.09	0.51			0.38	0.38	0.38	0.38	0.38			
Clearance Time (s)	4.0	5.0			5.0	5.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	300	1813			1906	577	621	623	1045			
v/s Ratio Prot	c0.10	0.39			c0.38				c0.42			
v/s Ratio Perm						0.33	0.14	0.14				
v/c Ratio	1.19	0.75			1.02	0.87	0.37	0.36	1.12			
Uniform Delay, d1	36.5	15.5			25.0	23.2	18.2	18.1	25.0			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	113.7	1.8			26.4	13.6	1.7	1.6	66.3			
Delay (s)	150.2	17.3			51.4	36.8	19.9	19.7	91.3			
Level of Service	F	B			D	D	B	B	F			
Approach Delay (s)		44.9			46.6			71.9			0.0	
Approach LOS		D			D			E			A	

Intersection Summary			
HCM 2000 Control Delay	52.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	143.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	SEU	SEL	SET	SER
Traffic Vol, veh/h	0	3	153	0	0	9	76	16	0	49	2	1
Future Vol, veh/h	0	3	153	0	0	9	76	16	0	49	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	161	0	0	9	80	17	0	52	2	1
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	NB	SB	SE
Opposing Approach	SB	NB	NW
Opposing Lanes	3	3	1
Conflicting Approach Left	SE	NW	SB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NW	SE	NB
Conflicting Lanes Right	1	1	3
HCM Control Delay	7.1	7.8	8.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	NWLn1	SELn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	0%	94%	100%	0%	0%
Vol Thru, %	0%	100%	100%	5%	4%	0%	100%	61%
Vol Right, %	0%	0%	0%	95%	2%	0%	0%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	77	77	21	52	9	51	41
LT Vol	3	0	0	0	49	9	0	0
Through Vol	0	77	77	1	2	0	51	25
RT Vol	0	0	0	20	1	0	0	16
Lane Flow Rate	3	81	81	22	55	9	53	44
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.005	0.108	0.069	0.027	0.084	0.014	0.072	0.055
Departure Headway (Hd)	5.336	4.835	3.096	4.472	5.553	5.361	4.859	4.587
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	674	745	1162	803	648	671	741	784
Service Time	3.042	2.541	0.801	2.185	3.264	3.068	2.566	2.294
HCM Lane V/C Ratio	0.004	0.109	0.07	0.027	0.085	0.013	0.072	0.056
HCM Control Delay	8.1	8.1	6	7.3	8.8	8.1	7.9	7.6
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.2	0.1	0.3	0	0.2	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	NWU	NWL	NWT	NWR
Traffic Vol, veh/h	0	0	1	20
Future Vol, veh/h	0	0	1	20
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	1	21
Number of Lanes	0	0	1	0

Approach	NW
Opposing Approach	SE
Opposing Lanes	1
Conflicting Approach Left	NB
Conflicting Lanes Left	3
Conflicting Approach Right	SB
Conflicting Lanes Right	3
HCM Control Delay	7.3
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	SEU	SEL	SET	SER
Traffic Vol, veh/h	0	0	82	1	0	29	200	34	0	25	2	4
Future Vol, veh/h	0	0	82	1	0	29	200	34	0	25	2	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	86	1	0	31	211	36	0	26	2	4
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	NB	SB	SE
Opposing Approach	SB	NB	NW
Opposing Lanes	3	3	1
Conflicting Approach Left	SE	NW	SB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NW	SE	NB
Conflicting Lanes Right	1	1	3
HCM Control Delay	7.9	8.2	8.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	NWLn1	SELn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	0%	8%	81%	100%	0%	0%
Vol Thru, %	100%	100%	96%	8%	6%	0%	100%	66%
Vol Right, %	0%	0%	4%	85%	13%	0%	0%	34%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	55	28	13	31	29	133	101
LT Vol	0	0	0	1	25	29	0	0
Through Vol	0	55	27	1	2	0	133	67
RT Vol	0	0	1	11	4	0	0	34
Lane Flow Rate	0	58	30	14	33	31	140	106
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0	0.078	0.04	0.018	0.051	0.044	0.182	0.13
Departure Headway (Hd)	4.88	4.88	4.855	4.831	5.671	5.16	4.659	4.422
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	738	741	744	635	687	762	801
Service Time	2.587	2.587	2.562	2.538	3.377	2.941	2.44	2.203
HCM Lane V/C Ratio	0	0.079	0.04	0.019	0.052	0.045	0.184	0.132
HCM Control Delay	7.6	8	7.8	7.6	8.7	8.2	8.5	7.9
HCM Lane LOS	N	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.3	0.1	0.1	0.2	0.1	0.7	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

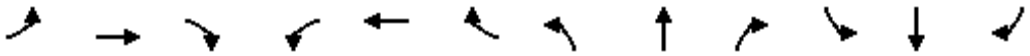
Movement	NWU	NWL	NWT	NWR
Traffic Vol, veh/h	0	1	1	11
Future Vol, veh/h	0	1	1	11
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	1	1	12
Number of Lanes	0	0	1	0

Approach	NW
Opposing Approach	SE
Opposing Lanes	1
Conflicting Approach Left	NB
Conflicting Lanes Left	3
Conflicting Approach Right	SB
Conflicting Lanes Right	3
HCM Control Delay	7.6
HCM LOS	A

Lane

APPENDIX H

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS
HORIZON YEAR CONDITIONS: WITH PROJECT, WITH MITIGATION



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	576	8	84	419	27	47	18	225	64	6	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.97	
Satd. Flow (prot)	1762	1858		1770	1863	1535		1612			1722	
Flt Permitted	0.44	1.00		0.95	1.00	1.00		0.93			0.68	
Satd. Flow (perm)	824	1858		1770	1863	1535		1517			1211	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	606	8	88	441	28	49	19	237	67	6	23
RTOR Reduction (vph)	0	1	0	0	0	14	0	165	0	0	17	0
Lane Group Flow (vph)	21	613	0	88	441	14	0	140	0	0	79	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	custom	NA		Prot	NA	custom	Perm	NA		Perm	NA	
Protected Phases		4!		8!				2!			6!	
Permitted Phases	6!				8	8	2!			6!		
Actuated Green, G (s)	9.0	17.4		17.4	17.4	17.4		9.0			9.0	
Effective Green, g (s)	9.0	17.4		17.4	17.4	17.4		9.0			9.0	
Actuated g/C Ratio	0.26	0.51		0.51	0.51	0.51		0.26			0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	215	939		895	942	776		396			316	
v/s Ratio Prot		c0.33		0.05								
v/s Ratio Perm	0.03				0.24	0.01		c0.09			0.07	
v/c Ratio	0.10	0.65		0.10	0.47	0.02		0.35			0.25	
Uniform Delay, d1	9.6	6.3		4.4	5.5	4.2		10.3			10.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	0.2	1.6		0.0	0.4	0.0		0.5			0.4	
Delay (s)	9.8	7.9		4.5	5.9	4.2		10.9			10.5	
Level of Service	A	A		A	A	A		B			B	
Approach Delay (s)		8.0			5.6			10.9			10.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	34.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

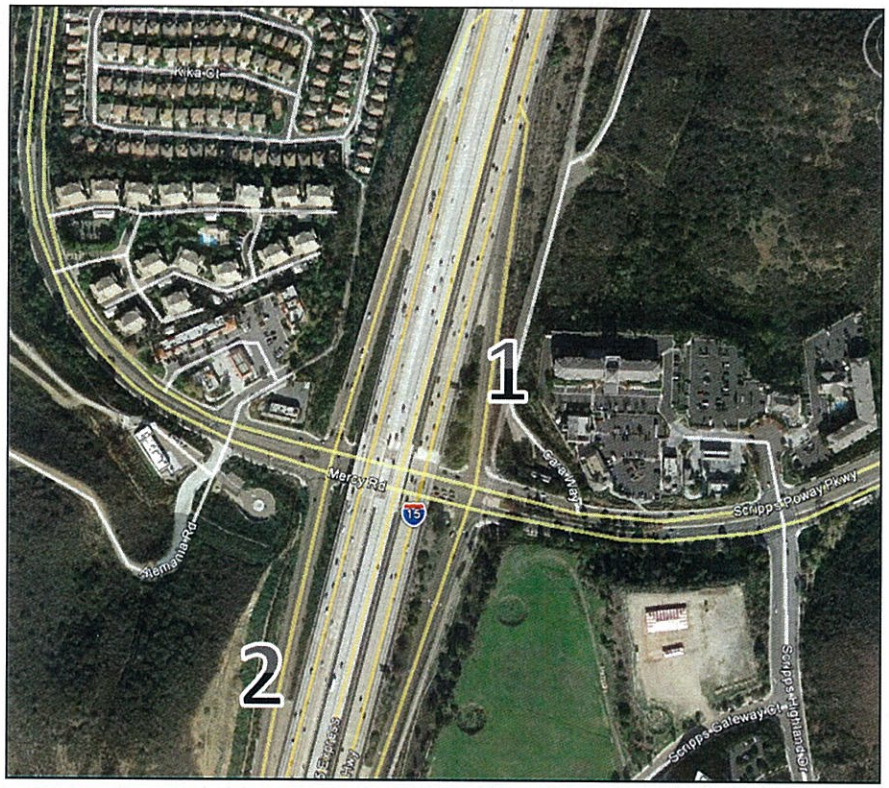
c Critical Lane Group

APPENDIX I

FREEWAY RAMP METERING RATE & CALTRANS VOLUME, PEAK HOUR, DIRECTIONAL AND TRUCK PERCENTAGE DATA

Location (I.D.)	Route	Dir	Period	Cars per green	Sec./ Cycle	(per lane) Veh./hr	Total # lanes	HOV
Camino del Sur (14701)	56	WB	0530 - 0930	2	N/A	800 - 435	3	Lt
Camino del Sur (14703)	56	EB	1500 - 1900	2	N/A	720 - 480	3	Lt
Black Mtn Rd (14707)	56	WB	0530 - 0930	2	N/A	900 - 520	3	Lt
Black Mtn Rd (14709)	56	EB	1500 - 1830	2	N/A	960 - 600	3	Lt
Rho Penasquitos (14804)	56	EB	1500 - 1830	1	N/A	520 - 300	2	No
Rho Penasquitos (14803)	56	WB	0530 - 0930	2	N/A	960 - 600	1	No
Ted Williams Pkwy (12010)	15	SB	0530 - 0930	2	7.9 - 17.6	912 - 408	2	Lt
			1500 - 1900		7.6 - 12.1	948 - 595		
Ted Williams Pkwy (12012)	15	NB	1400 - 1900	2	6.3 - 10.8	1140 - 670	2	No
Rho Penasquitos (12007)	15	SB	0530 - 0930	2	7.2 - 14.6	996 -492	2	No
			1500 - 1900		7.2 - 12.5	996 - 576		
Poway/Penasquitos (12005)	15	NB	1400 - 1900	1	6.3 - 10.8	570 - 335	2	No
Mercy Rd (12003)	15	SB	0530 - 0930	2	8.6 - 17.1	840 - 420	3	Lt
			1500 - 1900		9.1 - 17.8	792 - 406		
Mercy Rd (12004)	15	NB	1400 - 1900	1	7.5 - 13.3	480 - 270	3	Lt

The meters operate in a traffic responsive mode or a fixed mode.
There are 15 separate rates or steps between the slowest and the fastest discharge rate that depend on the mainlane volumes when in a traffic responsive mode.



#	Direction	Ramp Location	Date	Time	# of Lanes	Vehicles per Lane	Seconds / vehicle	Flow Rate (veh/hr)
1	NB	Scripps Poway Pkwy	6/17/15	7:15 am	2-SOV, 1-HOV	— Ramp	off	—
2	SB	Mercy Road	6/17/15	8:10 am	2-SOV, 1-HOV	12-SOV, 2-HOV	12.2s / 6veh = 2.0s/veh	1800 veh/hr
1	NB	Scripps Poway Pkwy	6/17/15	4:45pm	2-SOV, 1-HOV	18-SOV, 1-HOV	6.25s / 2veh = 3.1s/veh	1161 veh/hr
2	SB	Mercy Road	6/17/15	5:44 pm	2-SOV, 1-HOV	13-SOV, 3-HOV	10.9s / 2veh = 5.5s/veh	654 veh/hr

AM
Queue Length ~ 724' ~ 25 vehicles/lane



#	Direction	Ramp Location	Date	Time	# of Lanes	Vehicles per Lane	Seconds / vehicle	Flow Rate (veh/hr)
5	Southbound	Rancho Penasquitos	6/17	7:30 am	2-SOV	25	121 s / 26 veh ≅ 4.6 s/veh	782 veh/hr
6	SB	Rancho Penasquitos Blvd	6/17	7:40 am	2-SOV	12	3.5 s/veh	1028 veh/hr
3/4	NB	Poway Road	6/17	7:25-8:10	1-SOV		Ramp Off	
5	SB	Rancho Penasquitos Blvd	6/17	4:55 pm	2-SOV	9	7.5 s/4 veh ~ 1.9 s/veh	1895 veh/hr
4	NB	Poway Road	6/17	5:08 pm	1-SOV	13	8.6 s/veh	419 veh/hr
6	SB	Rancho Penasquitos Blvd	6/17	5:20 pm	2-SOV	4	4.3 s/2 veh — 2.2 s/veh	1636 veh/hr
3	NB	Poway Road	6/17	5:33 pm	1-SOV	3	8.2 s/veh	439 veh/hr

Carmel Mtn Road @ I-15



Ramp #11

AM – 7:45 AM

PM – 5:00 PM

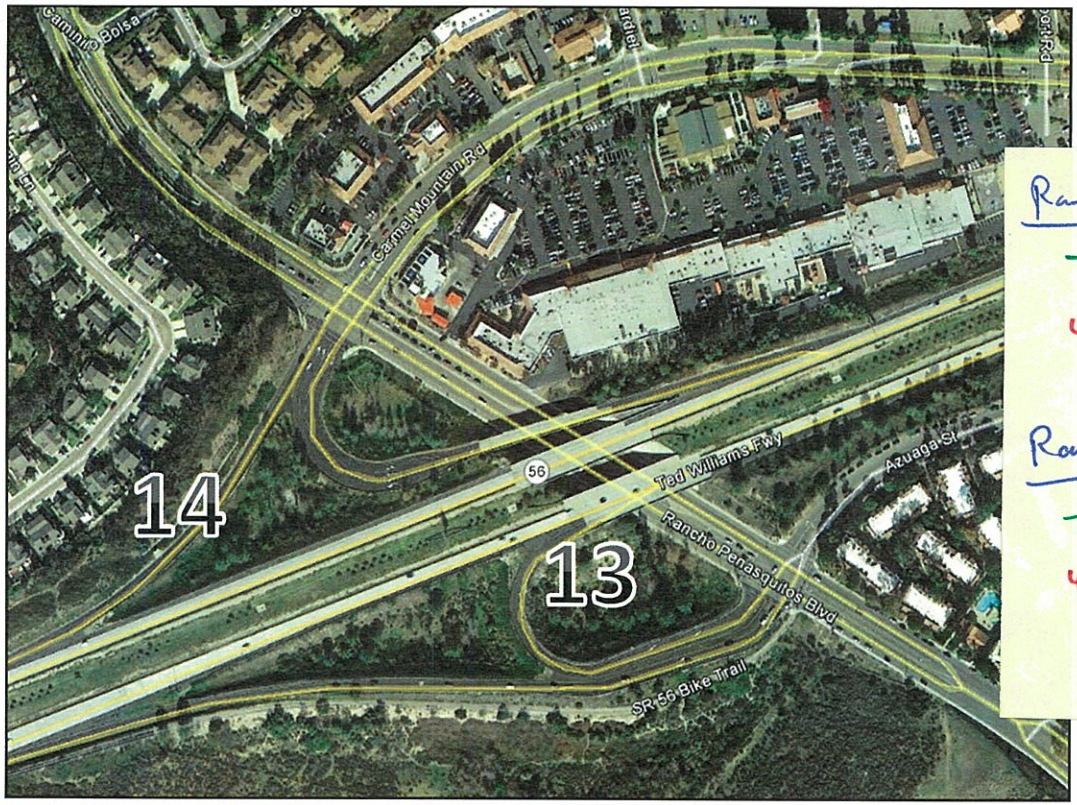
Ramp #12

AM - 8:00 AM

PM - 5:00 PM

	#	Direction	Ramp Location	Date	Time	# of Lanes	Vehicles per Lane (Back-up)	Seconds / vehicle	Flow Rate (veh/hr)
AM	12	SB	Carmel Mtn. Rd. @ I-15	6/17		2 + 1-HOV	SOV: 10 ≥	G+R: 5.5 / —	
							HOV: 2 ≥	R+G: 5.5 / 2per	1309
AM	11	NB	Carmel Mtn Rd. @ I-15	6/17	0745	2 + 1-HOV	N/A	G+R: N/A	Meter Off
					0748		N/A	R+G: N/A	Meter off
PM	12	SB	11	11		2 + 1-HOV	SOV: 8 ≥	G+R: 5.5 / 2per	1309 veh/hr
							HOV: ∅	R+G: 5.5 / 2per	1309 veh/hr
PM	11	NB	11	11		2 + 1-HOV	SOV: 8 ≥	G+R: 5.5 / 2per	1309 veh/hr
							HOV: 3 ≥	R+G: 5.5 / 2per	1309 veh/hr

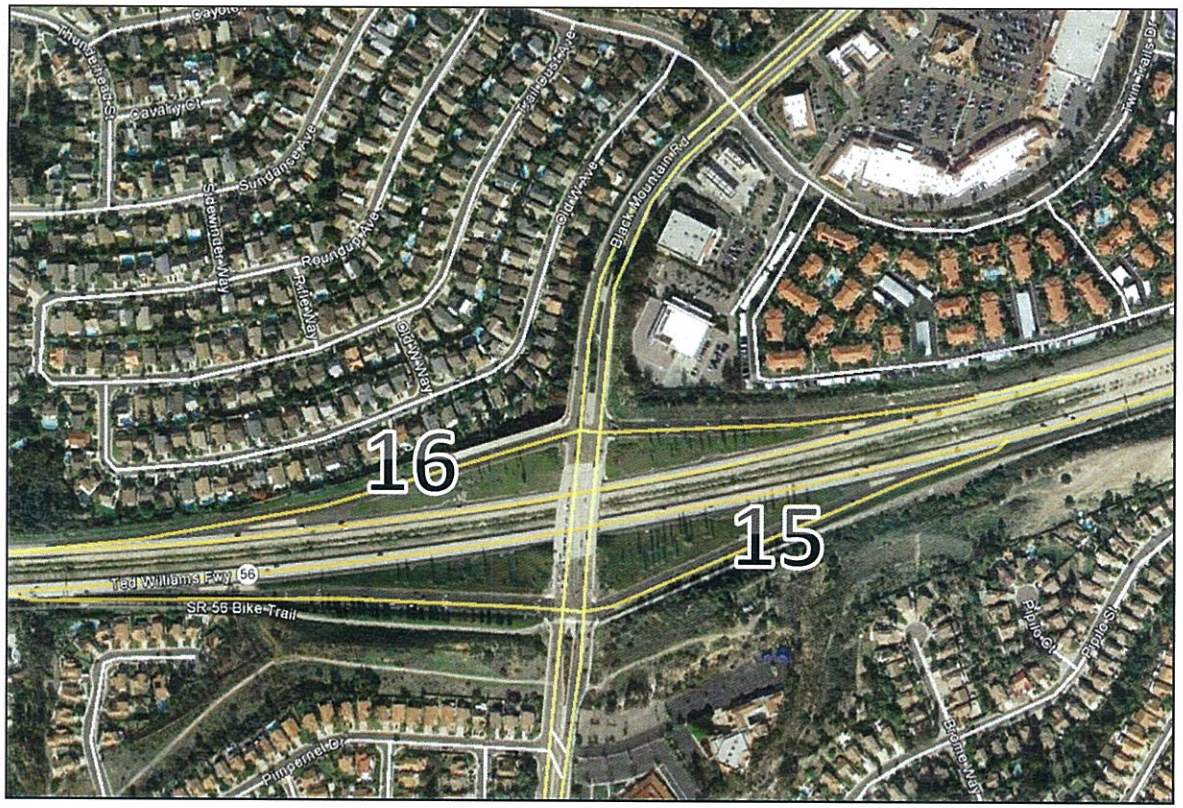
Rancho Penasquitos @ SR-56



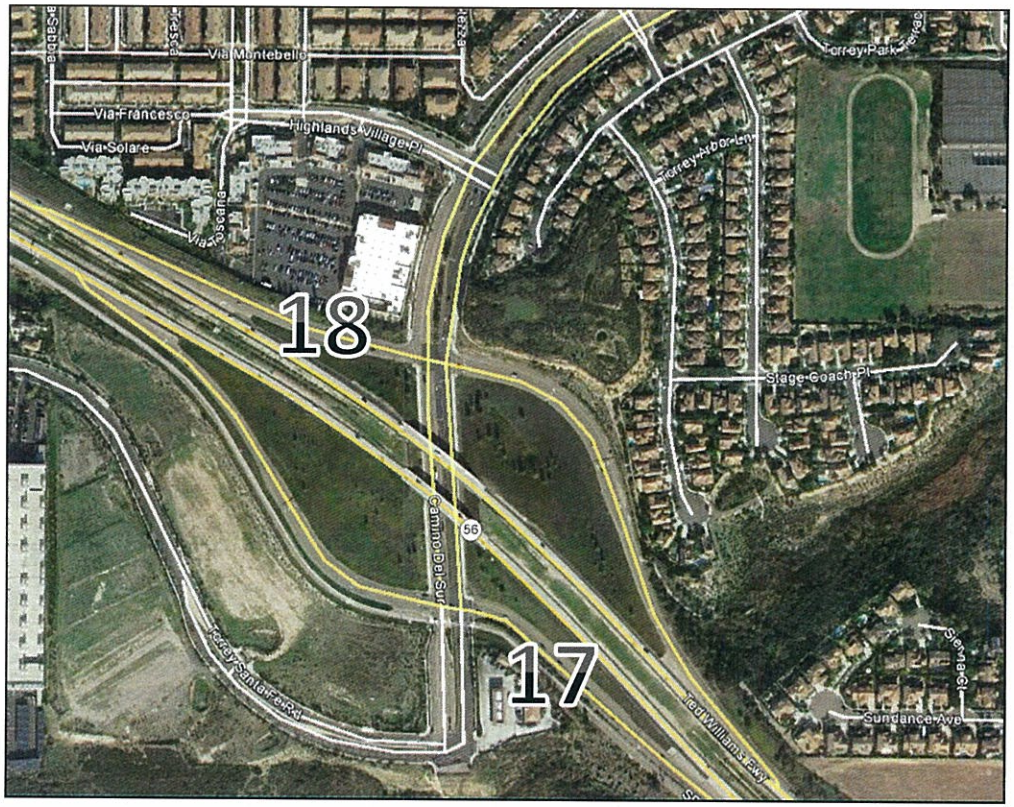
Ramp #13
7:00 AM
4:45 PM

Ramp #14
7:00 AM
4:45 PM

	#	Direction	Ramp Location	Date	Time	# of Lanes	Vehicles per Lane Back-up	Seconds / vehicle	Flow Rate (veh/hr)
AM	14	WB	Rancho Pen. Blvd. @ SR-56	6/17	0700-	1	8 ≥	R: 3.5 / —	
					0703			G: 4.5 / 2 per	1600 veh/hr
AM	13	EB	Rancho Pen. Blvd. @ SR-56	6/17	0705-	1	N/A	R: N/A	Meter off
					0708			G: N/A	Meter off
PM	14	WB	"	"	1645-	1	N/A	R: N/A	Meter off
								G: N/A	Meter off
PM	13	EB	"	"	1650-	1	4 ≥	R: Until Vehicle Arrives	
					1653		𝍸 𝍸 II	G: 3.0 / 1 per	1200 veh/hr



#	Direction	Ramp Location	Date	Time	# of Lanes	Vehicles per Lane	Seconds / vehicle	Flow Rate (veh/hr)
16	WB	BMR	6/17	7:28am	2-SOV, 1-HOV	15	50s/22veh ~ 2.27s/veh	1586 veh/hr
15	EB	BMR	6/17	7:30am	2-SOV, 1-HOV	———	Meter Off	———
15	EB	BMR	6/17	4:48pm	2-SOV, 1-HOV	4	13s/8veh ~ 1.63s/veh	2208 veh/hr
16	WB	BMR	6/17	4:49pm	2-SOV, 1-HOV	———	Meter Off	———



#	Direction	Ramp Location	Date	Time	# of Lanes	Vehicles per Lane	Seconds / vehicle	Flow Rate (veh/hr)
17	EB	CDS	6/17	7:40am	2-SOV, 1-HOV		Meter off	
18	WB	CDS	6/17	7:50am	2-SOV, 1-HOV	4	2.85 s/veh	1263 veh/hr
18	WB	CDS	6/17	5:00pm	2-SOV, 1-HOV		Meter off	
17	EB	CDS	6/17	5:00pm	2-SOV, 1-HOV	8	1.63 s/veh	2208 veh/hr

2013

Ramp Volumes

on the

California State Freeway System

District 11

(Includes Counties: Imperial, San Diego)

Compiled by the
Division of Traffic Operations

of the

State of California
The Transportation Agency
Department of Transportation

Prepared in cooperation with the
U.S. Department of Transportation
Federal Highway Administration

Freeway ramp volumes are shown for all the ramps on the freeway system. The ramps are listed by District and in Legislative Route Number order. The volumes shown are those obtained after ramp balancing and rounding. No seasonal or daily adjustment is made. Ramps are not counted every year, but generally every three years.

The description for some ramps includes the abbreviations 'DUM' and 'SEG', which mean 'dummy' and 'segment'.

The 'dummy' entry is actually a duplicate entry. The ramp (or in some instances highway segment) record exists on another intersecting route. The 'dummy' or duplicate record is for a point of volumes change only on the associated route.

The term 'segment' (SEG) is applied to a ramp segment that does not physically and directly touch the freeway route it is assigned to; i.e., there is another ramp which intervenes between the particular ramp 'segment' and the freeway.

Each ramp location is identified by a post mile value approximating a corresponding point on the highway. The post mile values increase from the beginning of a route within a county to the next county line. The post mile values start over again at each county line. Post mile values increase from south to north or west to east depending upon the general direction the route follows within the State.

The post mile at a given location will remain the same year after year. When a section of road is relocated, new post miles (usually noted by an alphabetical prefix such as "R" or "M") are established for it. If relocation results in a change in length, "post mile equations" are introduced at the end of each relocated portion so that post miles on the remainder of the route within the county will remain unchanged. Post mile equations are not shown on the report.

Ramps without an ADT in the last ten years will not be published.

11-SD-015

PP	POST MILE	PS	DESCRIPTION	2004 ADT	2005 ADT	2006 ADT	2007 ADT	2008 ADT	2009 ADT	2010 ADT	2011 ADT	2012 ADT	2013 ADT
M	017.953		NB OFF TO POWAY RD			17900	19200			18400			18300
M	018.044		SB ON FR RANCHO PENSOTOS	9900		9500	10200			9700			9900
M	018.127		NB ON FR EB POWAY RD	1700		1750	1500			1950			1550
M	018.245		SB ON FRM WB RANCHO PENSOTO	11900		11400	12100			12300			11700
M	018.312		NB ON FR WB POWAY RD	4000		4150	3900			4600			4550
M	018.400		SB OFF TO RANCHO PENSOTOS	5800		6000	5700						5500
M	018.787		SB ON FR SR 56/TED WM PK	9600		9300	11800			13200			10900
M	018.892		SB HOV ON FROM SB 15 / 56				4300						
M	018.893		NB 15 HOV OFF TO E/W RTE 56				4050						
M	018.970		NB OFF TO SR 56/TED WM PKWY	10300		9900	13300			13400			15000
M	019.160		NB ON FROM HOV LANE				7900						7700
M	019.220		NB 15 & NB HOV TO E/W RTE 5	3650									
M	019.230		SEG SB ON FR EB RTE 56	4450			6400			5200			
M	019.260		SB OFF TO SB 15 S	5900		6100				930			910
M	019.310		SEG SB ON FR WB RTE 56	7300			7400			7300			
M	019.361		SEG SB OFF TO WB RTE 56							2050			
M	019.640		SB RTE 15 OFF TO RTE 56			9600	18200			18800			18500
M	019.670		NB ON FRM WB TED WILLIAMS	12600		1300	18200			2600			2650
M	020.428		CARMEL MTN RD- NB OFF	14900		14700	15100			16300			14600
M	020.434		CARMEL MTN RD- SB ON	14600		14400	15100			14100			15100
M	020.726		NB ON FR CARMEL MTN RD	11400		11500	9600			9500			9300
M	020.772		SB OFF TO CARMEL MTN RD	10700		10800	9900			8900			8300

2013

Annual Average Daily Truck Traffic on the California State Highway System

Compiled by
Traffic Data Branch

State of California
The Transportation Agency
Department of Transportation

Prepared in cooperation with the
U.S. Department of Transportation
Federal Highway Administration

PREFACE

The annual average daily truck traffic is shown for selected locations on the State Highway System. Truck traffic is classified by number of axles. The two-axle class includes 11/2-ton trucks with dual rear tires and excludes pickups and vans with only four tires. Total vehicle AADT for the same year is taken from the Traffic Volumes on California State Highways booklet also published by the California Department of Transportation.

Annual average daily truck traffic is the total truck traffic volume divided by 365 days. Truck counting is done throughout the state in a program of continuous truck count sampling. The sampling includes a partial day, 24-hour, 7-day and continuous vehicle classification counts. The partial day and 24-hour counts are usually made on high volume, urban highways. The 7-day counts are made on low volume, rural highways. The counts are usually taken only once in the year. About one-sixth of the locations are counted annually. The resulting counts are adjusted to an estimate of annual average daily truck traffic by compensating for seasonal influence, weekly variation, and other variables that may be present. Annual average daily truck traffic is necessary for presenting a statewide picture of truck flow, evaluating truck trends, planning and designing highways and for other purposes.

The column entitled "Year Ver/Est" indicates the year the truck percents were either verified (V) or estimated (E). It represents the year the truck percentages were verified (counted continuously or quarterly) or estimated. Selected points on a route will be counted and the ones in between will be estimated. At some locations, truck volumes are static and no new counts are made until there is a change in traffic on the route. All truck AADT's listed are for 2013.

California State Highways are listed in legislative route number order. The legislative route number is the same as the signed route number in most cases.

Each count location is identified by the post mile value corresponding to that point on the highway. The post mile values increase from the beginning of a route within a county to the next county line. The post mile values start over again at each county line. Post mile values increase usually from south to north or west to east depending on the general direction the route follows within the state.

The post mile at a given location will remain the same year after year except in a few cases when the route was relocated/re-designated. When a section of road is relocated, new post miles (usually noted by an alphabetical prefix such as "R" or "M") are established for it. If relocation results in a change in length, "post mile equations" are introduced so that post miles on the remainder of the route within the county will remain unchanged. Post mile equations are not shown on this listing.

A leg is given for each count location and is denoted by an A, B or O. For traffic volumes purposes, a highway intersection or interchange has two legs. According to ascending post miles (route direction) and a post mile reference at the center of the intersection or interchange, B = back leg, A = ahead leg, and O = traffic volume is equal for the back and ahead legs.

Truck AADT's are shown as two-way traffic. Equivalent axle loading (EAL) are calculated to represent two-way travel.

RTE	DIST	CNTY	POST MILE	L E G	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK By Axle 2	TRUCK By Axle 3	TRUCK By Axle 4	TRUCK By Axle 5+	% TRUCK By Axle 2	% TRUCK By Axle 3	AADT By Axle 4	AADT By Axle 5+	EAL 2-WAY (1000)	YEAR VER/ EST
015	11	SD	R 3.367	B	JCT. RTE. 805	113000	5763	5.10	2951	980	288	1544	51.20	17.00	5.00	26.80	768	85E
015	11	SD	R 3.367	A	JCT. RTE. 805	160000	3519	2.20	2541	359	109	510	72.20	10.20	3.10	14.50	314	85V
015	11	SD	R 6.132	B	JCT. RTE. 8	165000	3631	2.20	2621	374	113	523	72.20	10.30	3.10	14.40	323	85E
015	11	SD	R 6.132	A	JCT. RTE. 8	200000	9959	4.98	6219	712	234	2794	62.44	7.15	2.35	28.05	1281	07V
015	11	SD	R 9.995	X	CLAIREMONT MESA BLVD	148000	7273	4.91	3755	602	246	2670	51.63	8.28	3.38	36.71	1143	13E
015	11	SD	M 12.124	A	JCT. RTE. 163	292000	10892	3.73	6692	784	301	3115	61.44	7.20	2.76	28.60	1425	07E
015	11	SD	M 14.285	B	SAN DIEGO, MIRAMAR/ POMERADO RD	289000	10866	3.76	6676	782	300	3108	61.44	7.20	2.76	28.60	1422	07E
015	11	SD	M 14.285	A	SAN DIEGO, MIRAMAR/ POMERADO RD	272000	10608	3.90	6216	1114	414	2864	58.60	10.50	3.90	27.00	1369	85V
015	11	SD	M 18.176	B	SAN DIEGO, POWAY RD	236000	16755	7.10	8177	1893	938	5747	48.80	11.30	5.60	34.30	2581	96E
015	11	SD	M 18.176	A	SAN DIEGO, POWAY RD	207000	14697	7.10	7172	1661	823	5041	48.80	11.30	5.60	34.30	2264	96E
015	11	SD	M 27.65	A	ESCONDIDO, SOUTH JUNCTION OF CENTRE CITY PARKWAY	206000	14626	7.10	7137	1653	819	5017	48.80	11.30	5.60	34.30	2253	96E
015	11	SD	R 30.627	B	VALLEY PARKWAY	202000	14342	7.10	6999	1621	803	4919	48.80	11.30	5.60	34.30	2209	96E
015	11	SD	R 31.517	X	JCT. RTE. 78	122000	8676	7.11	4660	517	262	3237	53.71	5.96	3.02	37.31	1366	13E
015	11	SD	R 31.517	B	JCT. RTE. 78	217000	15408	7.10	7519	1741	863	5285	48.80	11.30	5.60	34.30	2374	96E
015	11	SD	R 31.517	A	JCT. RTE. 78	131000	13231	10.10	5848	1138	688	5557	44.20	8.60	5.20	42.00	2328	80V
015	11	SD	R 36.636	A	DEER SPRINGS RD	122000	16103	13.20	5685	1304	676	8438	35.30	8.10	4.20	52.40	3329	86V
015	11	SD	R 46.491	B	JCT. RTE. 76	117000	11970	10.23	3809	952	408	6801	31.82	7.95	3.41	56.82	2627	00E

PEAK HOUR VOLUME DATA

Peak hour volume data consists of hourly volume relationships and data location. The hourly volumes are expressed as a percentage of the Annual Average Daily Traffic (AADT). The percentages are shown for both the AM and the PM peak periods.

The principle data described here are the K factor, the D factor and their product (KD). The K factor is the percentage of AADT during the peak hour for both directions of travel. The D factor is the percentage of the peak hour travel in the peak direction. KD multiplied with the AADT gives the one way peak period directional flow rate or the design hourly volume (DHV). The design hourly volume is used for either Operational Analysis or Design Analysis. Refer to the 2010 Highway Capacity Manual for more details.

Following is a glossary of terms used in this listing of peak hour volume data:

Dir	Indicates direction of travel for peak volume
AADT	Annual Average Daily Traffic in vehicles per day (vpd).
AM Peak	Represents the morning peak period for traffic analysis
CS	Control Station Number, Caltrans identification number for monitoring site.
CO	County abbreviation used by Caltrans
D	D factor. The percentage of traffic in the peak direction during the peak hour. Values in this book are derived by dividing the measured PHV by the sum of both directions of travel during the peak hour.
DAY	Day of week for the peak volume.
DDHV	The directional design hour volume, in vehicles per hour (vph) DDHV=AADTxKxD. See equation (3-1) on page 3-11 of the 2010 Highway Capacity Manual.
DI	Caltrans has twelve transportation districts statewide. This abbreviation identifies the district in which the count station is located.
HR	The ending time for the peak hour volume listed. The volume observed from 1 to 2 would be recorded as 2.

K	The percentage of the AADT in both directions during the peak hour. Values in this table are derived by dividing the measured 2-way PHV by the AADT.
KD	The product of K and D. The percentage of AADT in the peak direction during the peak hour. Values in this table are derived by dividing the measured 1-way PHV by the AADT.
LEG	For traffic counting purposes, a highway intersection or interchange is assigned two legs according to increasing postmiles (route direction) and with a postmile reference at the center of the intersection or interchange. The volume of traffic on each leg is denoted by an A, B or O. A = ahead leg, B = back leg, and O – traffic volume being same for both back and ahead legs.
MNTH	The month that the peak volume occurred.
PHV	Peak Hour Volume in the peak direction. A one way volume in vehicles per hour (vph) as used here. The PHV is analogous to the DDHV as used for design purposes.
PM	The Post Mile is the mileage measured from the county line, or from the beginning of a route. Each postmile along a route in a county is a unique location on the state highway system.
PM Peak	Represents the afternoon peak period for traffic analysis.
PRE	The postmile may have a prefix like R, T, L, M, etc. When a length of highway is changed due to construction or realigment, new postmile values are assigned. To distinguish the new values from the old, an alpha code is prefixed to the new postmile.
RTE	The state highway route number
YR	The year when the count was made. Traffic counting is on a 3-year cycle.

								AM PEAK							PM PEAK						
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH
10	012	CAL		9.927	91	B	13	E	305	8.03	66.45	5.34	7	WED	APR	E	299	8.66	60.4	5.23	17	FRI	JAN
10	012	CAL		9.927	157	A	13	E	481	7.76	69.91	5.42	7	WED	APR	W	499	9.11	61.76	5.63	17	THU	JAN
04	013	ALA		4.262	27	A	12	N	2800	10.39	54.03	5.62	8	FRI	DEC	N	2572	7.68	67.19	5.16	17	THU	SEP
04	013	ALA		13.18	125	B	12	S	1890	12.75	64	8.16	8	THU	MAR	N	1538	11.06	60.06	6.64	16	TUE	MAR
04	013	ALA		13.91	240	B	12	S	1981	9.52	66.66	6.34	8	MON	DEC	N	1490	8.88	53.77	4.77	17	TUE	DEC
07	014	LA	R	26	779	A	12	S	8418	6.9	77.56	5.35	6	MON	APR	N	8178	7.77	66.86	5.2	17	WED	MAR
07	014	LA	R	32.24	403	B	13	S	6394	6.75	86.75	5.85	5	TUE	NOV	S	6241	9.61	59.47	5.71	16	FRI	JAN
07	014	LA	R	59.80	338	A	12	S	3092	6.92	52.39	3.62	7	WED	NOV	S	3931	8.21	56.11	4.61	17	WED	FEB
07	014	LA	R	73	63	O	13	N	1748	7.34	67.28	4.94	6	THU	SEP	S	2486	10.59	66.29	7.02	15	FRI	JUN
06	014	KER	R	0	927	A	13	N	1400	7.07	67.44	4.76	6	TUE	OCT	S	1664	9.5	59.64	5.66	16	MON	FEB
06	014	KER	L	16.87	912	O	13	S	782	8.38	59.51	4.99	12	FRI	MAY	N	1038	10.28	64.43	6.62	17	SUN	JUL
06	014	KER		22.15	298	A	13	S	466	11.55	68.53	7.91	11	THU	DEC	N	603	14.26	71.79	10.24	15	SUN	AUG
06	014	KER		57.77	301	B	13	N	354	10.72	65.31	7	11	THU	DEC	S	541	13.83	77.4	10.7	14	MON	JAN
06	014	KER		57.77	302	A	13	S	391	12.13	69.08	8.38	12	SUN	JUN	S	580	15.2	81.81	12.43	17	MON	MAY
06	014	KER		64.56	971	B	13	S	297	14.7	68.59	10.08	11	SUN	NOV	S	482	21.01	77.87	16.36	16	TUE	JAN
11	015	SD		.405	909	A	13	S	4482	7.91	57.7	4.56	6	TUE	APR	N	5071	9.46	54.54	5.16	15	MON	AUG
11	015	SD		2.226	836	B	13	S	5096	7.85	54.54	4.28	6	THU	MAY	N	6163	9.74	53.15	5.18	15	THU	AUG
11	015	SD	R	6.132	813	B	13	N	8314	8.06	62.33	5.03	7	THU	FEB	S	8012	8.58	56.47	4.84	16	THU	FEB
11	015	SD	R	6.132	911	A	13	N	9910	7.75	64.01	4.96	7	MON	JUN	S	9308	7.98	58.37	4.66	16	FRI	AUG
11	015	SD	M	12.12	912	A	13	S	13083	8.47	52.91	4.48	7	THU	JAN	N	13619	8.45	55.21	4.66	16	MON	DEC
11	015	SD	M	15	999	X	13	S	12323	8.38	59.56	4.99	7	TUE	JAN	N	11330	8.28	55.42	4.59	16	THU	JAN
11	015	SD	M	20.57	980	B	13	S	10477	7.93	57.67	4.57	7	MON	MAY	N	10357	7.89	57.28	4.52	16	TUE	MAY
11	015	SD	M	26.03	934	B	13	S	9758	7.16	69.6	4.98	6	WED	JUN	N	9751	8.02	62.05	4.98	16	TUE	JAN
11	015	SD	M	26.03	935	A	13	S	9934	7.76	63.3	4.91	7	TUE	JUL	N	10500	8.44	61.44	5.19	17	WED	JUL
11	015	SD	R	28.77	914	B	13	S	10308	7.81	64.14	5.01	7	TUE	DEC	N	9559	8.08	57.53	4.65	17	FRI	JUN
11	015	SD	R	30.63	918	B	13	S	9624	7.45	63.96	4.76	7	THU	JUL	N	10488	8.54	60.77	5.19	16	THU	SEP
11	015	SD	R	31.52	915	A	13	S	6968	6.74	79.06	5.33	6	WED	JUL	N	7143	8.89	61.44	5.46	15	FRI	AUG
11	015	SD	R	36.64	916	A	13	S	7361	7.98	75.83	6.05	7	WED	SEP	N	6811	8.65	64.77	5.6	16	FRI	FEB
11	015	SD	R	54.07	917	B	13	S	7982	7.49	79.56	5.96	6	THU	NOV	N	7055	7.69	68.43	5.26	16	WED	JAN
11	015	SD	R	54.07	919	A	13	S	7537	7.21	78.32	5.65	6	WED	MAY	N	6926	7.54	68.8	5.19	16	WED	JAN
08	015	RIV		38.69	849	A	12	S	6140	6.33	59.55	3.77	7	TUE	NOV	N	6363	6.87	56.82	3.9	15	TUE	NOV
08	015	RIV		44.66	156	A	13	S	5304	7.02	51.92	3.65	7	TUE	DEC	S	5591	7.19	53.47	3.84	15	WED	MAR
08	015	SBD		40.51	801	A	12	N	3961	8.67	58.54	5.08	11	TUE	DEC	S	4191	8.31	64.61	5.37	14	MON	AUG

									AM PEAK							PM PEAK						
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH
08	015	SBD		70.10	515	B	13	N	3444	10.42	56.25	5.86	12	FRI	AUG	S	3581	10.93	55.73	6.09	13	SUN	JUL
08	015	SBD	R	138.5	907	A	13	S	2854	10.78	68.84	7.42	10	SUN	APR	S	2782	10.73	67.43	7.23	14	SUN	MAR
03	016	COL		0	100	A	12	E	48	13.94	60	8.36	10	SUN	MAY	W	54	17.42	54	9.41	15	SUN	JUL
03	016	YOL		18.13	104	O	13	W	127	10.04	69.02	6.93	9	SAT	JUL	E	122	10.21	65.24	6.66	16	SAT	JUL
03	016	YOL		25.15	332	O	13	W	412	6.33	69.6	4.41	10	SAT	APR	W	590	10.12	62.37	6.31	17	SAT	JUL
03	016	SAC	R	11.47	117	B	13	W	607	10.11	67.44	6.82	7	WED	MAY	E	553	9.2	67.52	6.21	16	WED	JUN
03	016	SAC	R	22.85	910	A	11	W	326	7.52	69.36	5.22	7	THU	OCT	E	363	9.39	61.84	5.81	17	FRI	OCT
03	016	SAC	R	23.96	232	O	13	W	312	6.86	79.19	5.43	6	MON	APR	W	343	8.65	69.01	5.97	17	TUE	JUL
10	016	AMA	R	0	232	O	13	W	312	6.86	79.19	5.43	6	MON	APR	W	343	8.65	69.01	5.97	17	TUE	JUL
05	017	SCR		5.453	173	A	11	N	2960	8.64	67.08	5.8	7	WED	FEB	S	2634	8.27	62.37	5.16	17	TUE	FEB
05	017	SCR		5.453	550	B	11	S	2803	8.47	60.88	5.16	11	SAT	SEP	N	2839	9.55	54.74	5.23	15	SUN	JUN
04	017	SCL		7.073	432	A	13	N	4173	7.09	64.04	4.54	7	THU	OCT	S	3787	7.03	58.58	4.12	15	WED	MAR
08	018	SBD	T	6.179	978	A	12	S	1243	7.03	71.36	5.01	7	TUE	FEB	N	1142	7.35	62.68	4.61	17	FRI	JAN
08	018	SBD		20.61	813	A	12	S	573	11.15	55.58	6.2	12	SUN	JUL	S	553	9.83	60.84	5.98	14	SUN	AUG
08	018	SBD		31.65	856	B	12	N	350	11.84	54.26	6.43	12	SAT	OCT	S	339	11.4	54.59	6.22	14	SAT	OCT
08	018	SBD		49.11	893	A	12	N	1756	10.86	53.95	5.86	12	SAT	JAN	S	1777	11.2	52.93	5.93	16	SAT	JAN
08	018	SBD		58.44	913	A	12	S	180	8.72	84.51	7.36	11	WED	OCT	N	186	13.26	57.41	7.61	13	SUN	JUL
08	018	SBD		73.78	899	A	12	N	341	8.32	51.43	4.28	11	FRI	DEC	N	429	9.16	58.77	5.38	15	WED	SEP
08	018	SBD		84.33	914	B	11	N	446	7.14	66.07	4.72	11	MON	SEP	N	523	10.19	54.31	5.53	18	FRI	FEB
08	018	SBD		95.22	816	B	12	N	1836	7.59	58.45	4.43	7	MON	SEP	S	2178	9.14	57.57	5.26	16	MON	DEC
08	018	SBD		101.0	915	B	12	S	869	7.06	64.42	4.55	7	THU	MAR	S	900	9.05	52.05	4.71	17	FRI	MAR
08	018	SBD		115.9	180	B	12	S	293	8.49	64.4	5.47	11	WED	DEC	S	358	9.98	66.92	6.68	17	FRI	JUN
07	018	LA		4.5	64	B	11	S	255	7.98	58.76	4.69	12	FRI	OCT	S	361	10.6	62.57	6.63	16	FRI	OCT
01	020	MEN		17.29	117	O	11	E	180	12.26	69.77	8.55	10	SUN	AUG	E	170	13.83	58.42	8.08	15	SUN	AUG
01	020	MEN		31.1	765	B	11	E	204	13.66	60.36	8.24	12	SUN	AUG	E	192	13.9	55.81	7.76	14	SUN	AUG
01	020	MEN		33.32	721	A	11	E	766	7.83	86.85	6.8	7	THU	NOV	E	1000	9.82	90.42	8.88	17	THU	NOV
03	020	COL		3.451	124	B	12	E	352	10.76	65.19	7.01	12	SUN	OCT	E	419	15.8	52.84	8.35	13	WED	NOV
03	020	COL		3.451	125	A	12	E	317	10.9	63.27	6.9	12	SUN	AUG	W	384	16.42	50.86	8.35	16	SUN	NOV
03	020	COL	R	22.12	127	B	13	W	316	9.43	56.94	5.37	11	SAT	JUL	E	401	10.19	66.83	6.81	17	FRI	JUL
03	020	COL	R	22.12	128	A	13	W	166	7.89	57.05	4.5	12	SUN	OCT	E	219	10.28	57.78	5.94	15	FRI	OCT
03	020	COL		28.69	129	A	13	E	309	7.23	53.65	3.88	11	FRI	OCT	E	437	9.48	57.8	5.48	16	FRI	OCT
03	020	COL		36.79	353	B	13	W	304	7.18	59.14	4.25	7	THU	OCT	E	395	9.53	57.92	5.52	16	FRI	APR
03	020	COL	R	39.34	355	O	13	W	312	6.89	61.91	4.27	7	WED	OCT	E	411	9.26	60.71	5.62	16	FRI	JUL

									AM PEAK							PM PEAK						
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH
11	052	SD		.324	720	A	13	W	3778	7.8	60.21	4.69	7	TUE	MAY	E	4495	9.09	61.44	5.59	16	THU	FEB
11	052	SD		3.761	703	B	13	W	3891	8.67	52.7	4.57	7	WED	SEP	E	4712	9.31	59.44	5.53	16	TUE	MAY
11	052	SD		5.494	725	B	13	W	5681	9.17	61.18	5.61	7	TUE	JAN	E	5826	9.34	61.6	5.75	16	WED	OCT
11	052	SD		5.494	726	A	13	W	6508	9.73	65.15	6.34	7	FRI	MAY	E	5139	8.8	56.89	5.01	16	FRI	MAY
11	052	SD		8.713	727	B	13	W	6838	9.34	76.64	7.16	7	MON	APR	E	5773	8.71	69.34	6.04	15	WED	JAN
11	052	SD		8.713	728	A	13	W	6067	9.09	74.74	6.79	7	WED	APR	E	5873	9.18	71.69	6.58	16	MON	MAR
11	052	SD		13.27	729	B	13	W	6115	9.18	74.47	6.83	7	TUE	MAY	E	5677	9.32	68.08	6.34	16	WED	OCT
11	052	SD		13.27	730	A	13	W	4298	7.21	75.79	5.47	6	WED	MAY	E	4743	9.09	66.39	6.03	16	TUE	JAN
11	052	SD		14.96	732	B	13	W	4481	7.96	75.07	5.97	5	TUE	JUN	E	4722	9.44	66.71	6.3	16	THU	APR
11	052	SD		15.83	733	O	13	W	3340	6.58	70.08	4.61	6	TUE	APR	E	4137	9.19	62.2	5.71	16	WED	OCT
11	052	SD		16.74	734	O	13	W	3308	6.59	72.91	4.81	6	THU	MAY	E	3904	9.08	62.48	5.67	15	MON	SEP
11	054	SD		1.88	814	A	13	W	6806	7.77	68.85	5.35	7	TUE	AUG	E	6048	8.23	57.73	4.75	16	WED	DEC
11	054	SD		4.207	815	B	13	W	6098	7.88	65.29	5.15	7	WED	OCT	E	5431	8.32	55.12	4.58	16	THU	APR
11	054	SD		4.207	816	A	13	W	5471	8.35	62.02	5.18	7	THU	DEC	E	4820	8.27	55.16	4.56	16	THU	NOV
11	054	SD		4.994	743	A	13	W	4900	8.91	57.24	5.1	7	WED	DEC	W	4197	8.45	51.72	4.37	17	FRI	MAY
11	056	SD		.309	751	A	13	W	5896	10.17	65.5	6.66	7	FRI	OCT	E	5351	8.57	70.6	6.05	16	THU	APR
11	056	SD		.82	752	A	13	W	5348	8.55	78.77	6.73	7	MON	OCT	E	5044	8.6	73.81	6.35	16	MON	AUG
11	056	SD		3.103	750	B	13	W	4796	9.68	66.26	6.41	7	THU	DEC	E	4358	8.33	69.96	5.83	16	TUE	JUN
11	056	SD		3.103	755	A	13	W	4210	9.02	72.29	6.52	7	FRI	OCT	E	4135	8.8	72.74	6.4	16	THU	NOV
07	057	LA	R	3.167	77	B	13	S	7999	6.58	63.03	4.15	6	MON	APR	S	7113	7.04	52.44	3.69	13	SAT	APR
07	057	LA	R	6.85	97	B	13	S	5838	7.14	52.66	3.76	7	THU	MAY	S	6356	7.58	53.96	4.09	17	TUE	JUL
05	058	SLO		1.87	235	A	13	W	171	7.48	77.03	5.76	7	FRI	SEP	W	183	10.37	59.42	6.16	16	TUE	JUN
06	058	KER		15.41	71	B	12	W	49	17.66	79.03	13.96	9	WED	AUG	E	37	15.67	67.27	10.54	15	WED	AUG
06	058	KER		15.42	72	A	12	W	497	20.75	93.25	19.35	6	WED	MAY	E	386	16.5	91.04	15.02	16	WED	MAY
06	058	KER		28.12	73	A	12	W	809	14.31	89.99	12.88	5	TUE	AUG	E	729	14	82.94	11.61	16	TUE	MAY
06	058	KER		39.96	9	B	12	W	653	9.83	91.2	8.96	5	MON	MAY	E	610	11.25	74.39	8.37	16	MON	AUG
06	058	KER		39.97	10	A	12	W	744	10.5	92.54	9.72	5	WED	MAY	E	547	9.6	74.42	7.15	16	WED	AUG
06	058	KER		51.63	163	B	12	W	1544	7.8	56.95	4.44	12	FRI	AUG	W	1675	8.26	58.34	4.82	16	THU	MAY
06	058	KER	R	53.39	814	A	13	E	4052	8.36	63.1	5.27	7	THU	AUG	E	4120	9.04	59.33	5.36	16	FRI	MAY
06	058	KER	R	57.41	332	A	12	W	2190	7.48	56.18	4.2	7	WED	FEB	E	2373	7.98	57.11	4.56	17	FRI	FEB
06	058	KER	R	94.19	902	A	13	E	1017	7.84	63.29	4.96	10	FRI	FEB	E	1108	9.67	55.85	5.4	13	THU	DEC
06	058	KER	R	107.5	969	B	13	E	961	7.78	63.1	4.91	10	FRI	FEB	W	1074	8.63	63.55	5.49	16	MON	AUG
06	058	KER	R	142.9	953	A	12	E	714	9.72	56.94	5.53	10	MON	DEC	W	777	9.1	66.18	6.02	17	MON	MAY

Traffic Data Branch

2013 All Traffic Volumes on CSHS

Dist	Rte	CO	Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
11	56	SD	0	JCT. RTE . 5				4450	58000	56000
11	56	SD	0.309	EL CAMINO RL	4450	58000	56000	6100	75000	72000
11	56	SD	0.82	CARMEL CREEK RD	6100	75000	72000	7700	84000	79000
11	56	SD	1.808	CARMEL COUNTRY RD	7700	84000	79000	7200	79000	75000
11	56	SD	3.103	CARMEL VALLEY RD	7200	79000	75000	6000	68000	65000
11	56	SD	6.338	CAMINO DEL SUR	6000	68000	65000	7600	74000	72000
11	56	SD	7.202	BLACK MOUNTAIN RD	7600	74000	72000	7400	82000	76000
11	56	SD	8.54	RANCHO PENASQUITOS BLVD	7400	82000	76000	7300	79000	71000
11	56	SD	9.712	JCT. RTE. 15	7300	79000	71000	3100	35000	34500
11	56	SD	9.837	END ROUTE	3100	35000	34500			

Traffic Data Branch

2013 All Traffic Volumes on CSHS

Dist	Rte	CO		Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
11	15	SD	R	0	JCT. RTE. 5				9600	102000	98000
11	15	SD	R	0.588	SAN DIEGO, OCEANVIEW BOULEVARD	9700	102000	98000	8300	111000	109000
11	15	SD		1.846	SAN DIEGO, MARKET STREET	8300	111000	109000	11900	123000	119000
11	15	SD		2.226	JCT. RTE. 94	11900	123000	119000	10500	116000	113000
11	15	SD	R	3.367	JCT. RTE. 805	10500	116000	113000	13300	164000	160000
11	15	SD	M	4.663	SAN DIEGO, UNIVERSITY AVENUE	13300	164000	160000	12800	159000	158000
11	15	SD	M	5.042	SAN DIEGO, EL CAJON BOULEVARD	12800	159000	158000	12700	157000	156000
11	15	SD	M	5.6	SAN DIEGO, ADAMS AVENUE	12700	157000	156000	14200	169000	165000

11	15	SD	R	6.132	JCT. RTE. 8	14200	169000	165000	16800	202000	200000
11	15	SD	R	6.817	SAN DIEGO, FRIARS ROAD	16800	202000	200000	16600	217000	207000
11	15	SD	R	8.366	SAN DIEGO, AERO DRIVE	16600	217000	207000	14100	183000	182000
11	15	SD	R	9.238	SAN DIEGO, BALBOA AVENUE	14100	183000	182000	13100	171000	169000
11	15	SD	R	9.995	CLAIREMONT MESA BOULEVARD	13100	171000	169000	13200	154000	151000
11	15	SD	R	10.58	JCT. RTE. 52	13200	154000	151000	13800	180000	178000
11	15	SD	M	12.002	ROUTE 15S HOV LANES	13800	180000	178000	13300	173000	172000
11	15	SD	M	12.124	JCT. RTE. 163	13300	173000	172000	25500	302000	292000
11	15	SD	M	13.334	SAN DIEGO, MIRAMAR WAY	25500	302000	292000	23700	297000	289000
11	15	SD	M	14.285	SAN DIEGO, MIRAMAR/ POMERADO ROADS	23700	297000	289000	22200	278000	272000
11	15	SD	M	15	CARROLL CANYON ROAD	22200	278000	272000	21900	266000	258000
11	15	SD	M	15.924	MIRA MESA BOULEVARD	21900	266000	258000	19600	258000	249000
11	15	SD	M	17.311	SAN DIEGO, MERCY ROAD	19600	258000	249000	18800	247000	236000
11	15	SD	M	18.176	SAN DIEGO, POWAY ROAD	18800	247000	236000	16900	222000	207000
11	15	SD	M	19.468	JCT. RTE. 56	16900	222000	207000	18800	237000	229000
11	15	SD	M	20.574	CARMEL MOUNTAIN ROAD	19000	240000	229000	16100	227000	218000
11	15	SD	M	21.915	SAN DIEGO, CAMINO DEL NORTE	16100	227000	218000	16000	227000	213000
11	15	SD	M	22.935	SAN DIEGO, BERNARDO CENTER DRIVE	16000	227000	213000	15600	219000	204000
11	15	SD	M	23.687	SAN DIEGO, RANCHO BERNARDO ROAD	15600	219000	204000	16400	207000	196000
11	15	SD	M	26.026	POMERADO ROAD	16400	207000	196000	17600	218000	202000
11	15	SD	M	26.97	ESCONDIDO, FELICITA RD, VIA RANCHO PARKWAY	17600	218000	202000	15400	203000	194000
11	15	SD	M	27.65	ESCONDIDO, S JCT. OF CENTRE CITY PARKWAY	15400	203000	194000	17300	213000	206000
11	15	SD	R	28.765	CITRACADO PARKWAY	17300	213000	206000	17300	228000	216000
11	15	SD	R	30.09	ESCONDIDO, 9TH AVENUE	17300	228000	216000	17400	211000	202000
11	15	SD	R	30.627	VALLEY PARKWAY	17400	211000	202000	17100	218000	217000
11	15	SD	R	31.517	JCT. RTE. 78	17100	218000	217000	11300	139000	131000
11	15	SD	R	32.861	ESCONDIDO, EL NORTE PARKWAY	11300	139000	131000	8900	119000	115000
11	15	SD	R	33.922	CENTRE CITY PARKWAY	8900	119000	115000	9400	126000	121000
11	15	SD	R	36.636	DEER SPRINGS ROAD	9400	126000	121000	10700	127000	122000
11	15	SD	R	40.842	GOPHER CANYON ROAD	10900	127000	122000	9100	124000	115000
11	15	SD	R	43.279	ESCONDIDO HIGHWAY	9100	124000	115000	10300	117000	117000
11	15	SD	R	46.491	JCT. RTE. 76	10300	117000	117000	10800	130000	126000
11	15	SD	R	50.585	MISSION ROAD	10800	130000	126000	10700	142000	134000
11	15	SD	R	54.07	RAINBOW VALLEY BOULEVARD	10700	142000	134000	10800	142000	133000
11	15	SD	R	54.258	SAN DIEGO/RIVERSIDE COUNTY LINE	10800	142000	133000			

APPENDIX J

SIGNAL WARRANT ANALYSIS FOR INTERSECTION OF SUNDANCE AVENUE AND TWIN TRAILS DRIVE

WARRANT 3 - PEAK HOUR

(Part A or Part B must be satisfied)

SATISFIED ☐ YES ☑ NO

For Existing Conditions - 2014

Part A

SATISFIED ☑ YES ☐ NO

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for one-lane approach, or five vehicle-hours for a two-lane approach; AND	D = 17.8s, App Vol = 247 ☑ YES ☐ NO D*V = 12.2 veh. Hrs > 4
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane or traffic or 150 vph for two moving lanes; AND	☑ YES ☐ NO App Vol = 247
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches 969+247+79 = 1295 vph	☑ YES ☐ NO

Part B

SATISFIED ☐ YES ☑ NO

APPROACH LANES	One	Two or More	
Both Approaches - Major Street	☐	☑	969
Higher Approach - Minor Street	☑	☐	247

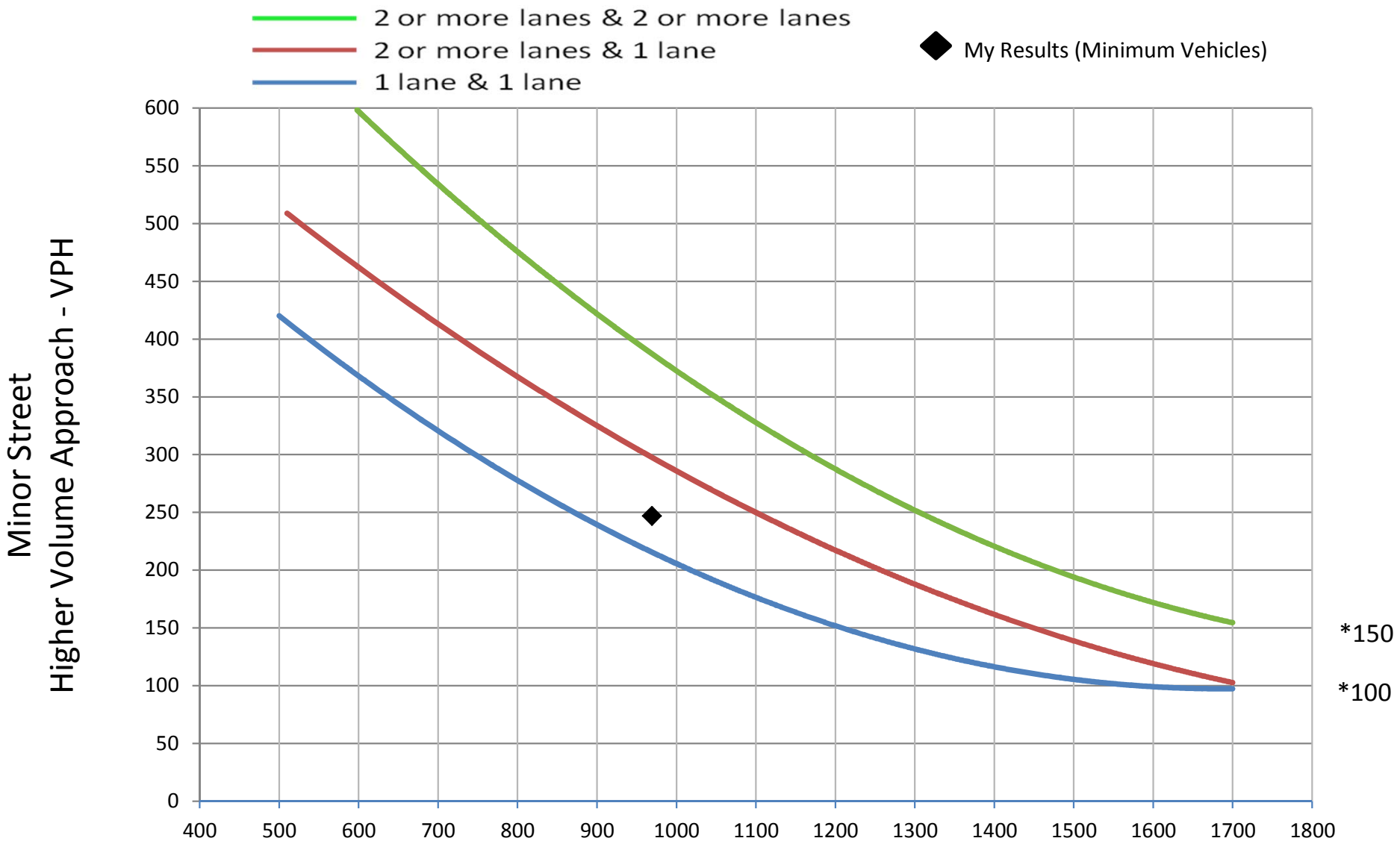
← ENTER CORRECT HOURS

ENTER PEAK HOUR VOL.

The plotted point falls above the applicable curve in Figure 4C-3 (Urban Areas)	☐ YES ☑ NO
OR The plotted point falls above the applicable curve in Figure 4C-4 (Rural Areas)	☐ YES ☐ NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane

Intersection	
Intersection Delay, s/veh	38.3
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	17	492	7	0	72	358	23	0	40	15	192
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	18	518	7	0	76	377	24	0	42	16	202
Number of Lanes	0	1	1	0	0	1	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	66	22.4	17.8
HCM LOS	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	16%	100%	0%	100%	0%	0%	70%
Vol Thru, %	6%	0%	99%	0%	100%	0%	6%
Vol Right, %	78%	0%	1%	0%	0%	100%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	247	17	499	72	358	23	79
LT Vol	40	17	0	72	0	0	55
Through Vol	15	0	492	0	358	0	5
RT Vol	192	0	7	0	0	23	19
Lane Flow Rate	260	18	525	76	377	24	83
Geometry Grp	7	8	8	7	7	7	7
Degree of Util (X)	0.527	0.039	1	0.156	0.721	0.041	0.198
Departure Headway (Hd)	7.295	7.941	7.417	7.398	6.886	6.168	8.568
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	499	454	494	488	528	581	422
Service Time	4.984	5.641	5.117	5.098	4.597	3.896	6.24
HCM Lane V/C Ratio	0.521	0.04	1.063	0.156	0.714	0.041	0.197
HCM Control Delay	17.8	11	67.9	11.5	25.4	9.2	13.3
HCM Lane LOS	C	B	F	B	D	A	B
HCM 95th-tile Q	3	0.1	13.5	0.5	5.9	0.1	0.7

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	55	5	19
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	58	5	20
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	13.3
HCM LOS	B

Lane

WARRANT 3 - PEAK HOUR

(Part A or Part B must be satisfied)

SATISFIED ☑ YES ☐ NO

For Horizon Year (2050) w/Project

Part A

SATISFIED ☑ YES ☐ NO

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for one-lane approach, or five vehicle-hours for a two-lane approach; AND	D = 22.5s, App Vol = 290 ☑ YES ☐ NO D*V/360 = 18.1 veh. Hrs > 4
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane or traffic or 150 vph for two moving lanes; AND	☑ YES ☐ NO App Vol = 290
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches 1134+290+92 = 1516 vph	☑ YES ☐ NO

Part B

SATISFIED ☑ YES ☐ NO

APPROACH LANES	One	Two or More	
Both Approaches - Major Street	☐	☑	1134
Higher Approach - Minor Street	☑	☐	290

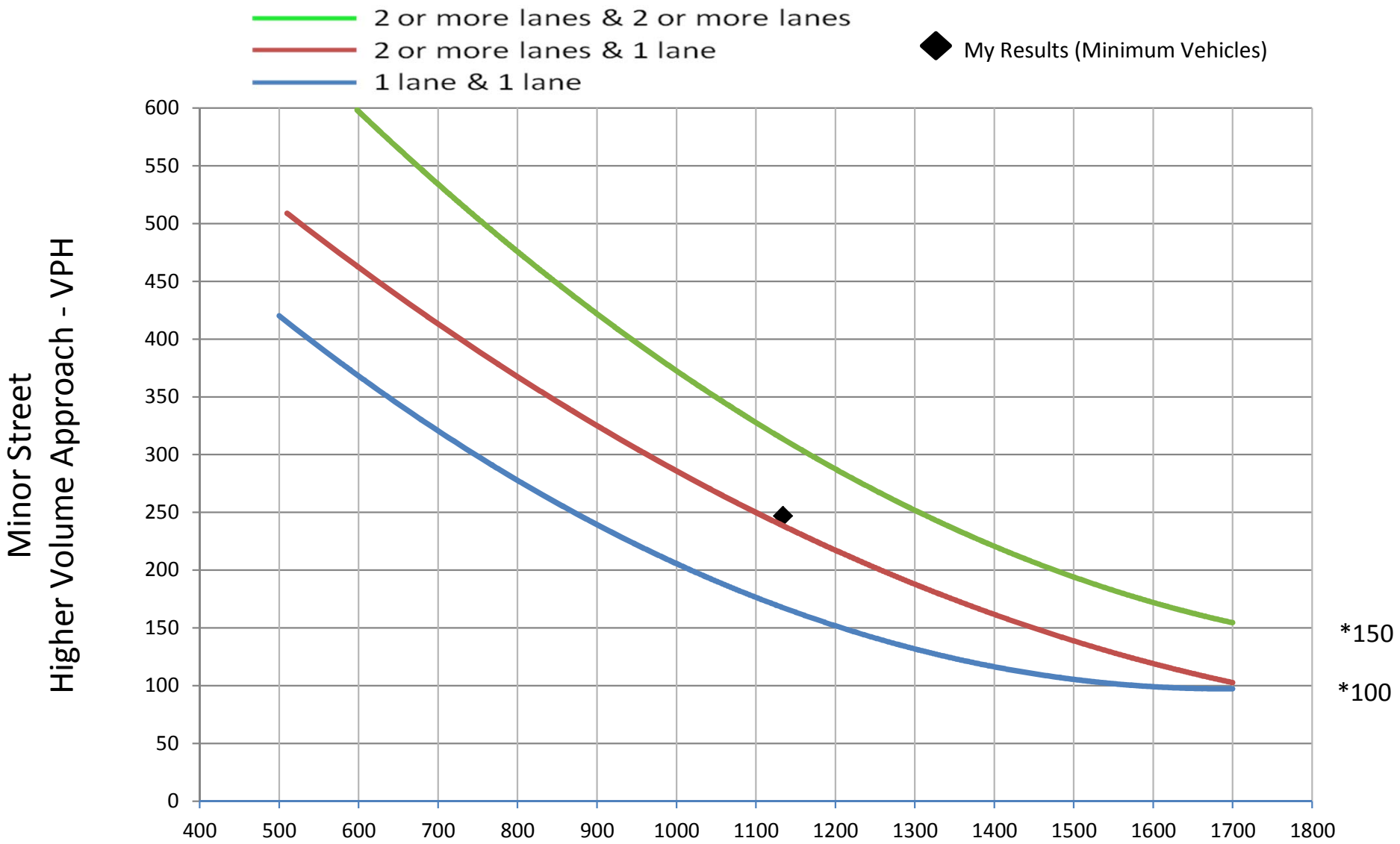
← ENTER CORRECT HOURS

ENTER PEAK HOUR VOL.

The plotted point falls above the applicable curve in Figure 4C-3 (Urban Areas)	☑ YES ☐ NO
OR The plotted point falls above the applicable curve in Figure 4C-4 (Rural Areas)	☐ YES ☐ NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane

Intersection	
Intersection Delay, s/veh	45.3
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	20	576	8	0	84	419	27	0	47	18	225
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	606	8	0	88	441	28	0	49	19	237
Number of Lanes	0	1	1	0	0	1	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	68.8	36.4	22.5
HCM LOS	F	E	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	16%	100%	0%	100%	0%	0%	70%
Vol Thru, %	6%	0%	99%	0%	100%	0%	7%
Vol Right, %	78%	0%	1%	0%	0%	100%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	20	584	84	419	27	92
LT Vol	47	20	0	84	0	0	64
Through Vol	18	0	576	0	419	0	6
RT Vol	225	0	8	0	0	27	22
Lane Flow Rate	305	21	615	88	441	28	97
Geometry Grp	7	8	8	7	7	7	7
Degree of Util (X)	0.635	0.05	1	0.189	0.88	0.051	0.242
Departure Headway (Hd)	7.487	8.542	8.014	7.686	7.185	6.483	8.99
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	479	421	461	464	503	548	402
Service Time	5.273	6.248	5.721	5.475	4.973	4.271	6.69
HCM Lane V/C Ratio	0.637	0.05	1.334	0.19	0.877	0.051	0.241
HCM Control Delay	22.5	11.7	70.8	12.3	43	9.6	14.5
HCM Lane LOS	C	B	F	B	E	A	B
HCM 95th-tile Q	4.3	0.2	13	0.7	9.6	0.2	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	64	6	22
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	67	6	23
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	14.5
HCM LOS	B

Lane

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Twin Trails Drive @ Sundance Avenue

Date of Count: *Thursday, May 29, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0210*



LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Twin Trails Drive @ Sundance Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	2	2	18	4	30	13	54	4	0	0	106	1	234
7:15 AM	3	1	23	3	63	12	63	3	2	0	98	2	273
7:30 AM	2	1	18	4	76	7	37	7	7	1	114	2	276
7:45 AM	10	0	9	6	120	20	40	3	18	1	110	3	340
8:00 AM	6	1	15	6	104	28	60	3	14	3	132	7	379
8:15 AM	1	3	13	7	58	17	55	2	1	2	136	5	300
8:30 AM	0	0	14	8	26	16	39	1	0	1	90	1	196
8:45 AM	1	1	23	6	30	9	48	0	1	1	84	0	204
Total	25	9	133	44	507	122	396	23	43	9	870	21	2,202

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.85**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	19	5	55	23	358	72	192	15	40	7	492	17	1,295
PHF	0.48	0.42	0.76	0.82	0.75	0.64	0.80	0.54	0.56	0.58	0.90	0.61	0.85
Movement PHF		0.90			0.78			0.80			0.90		0.85

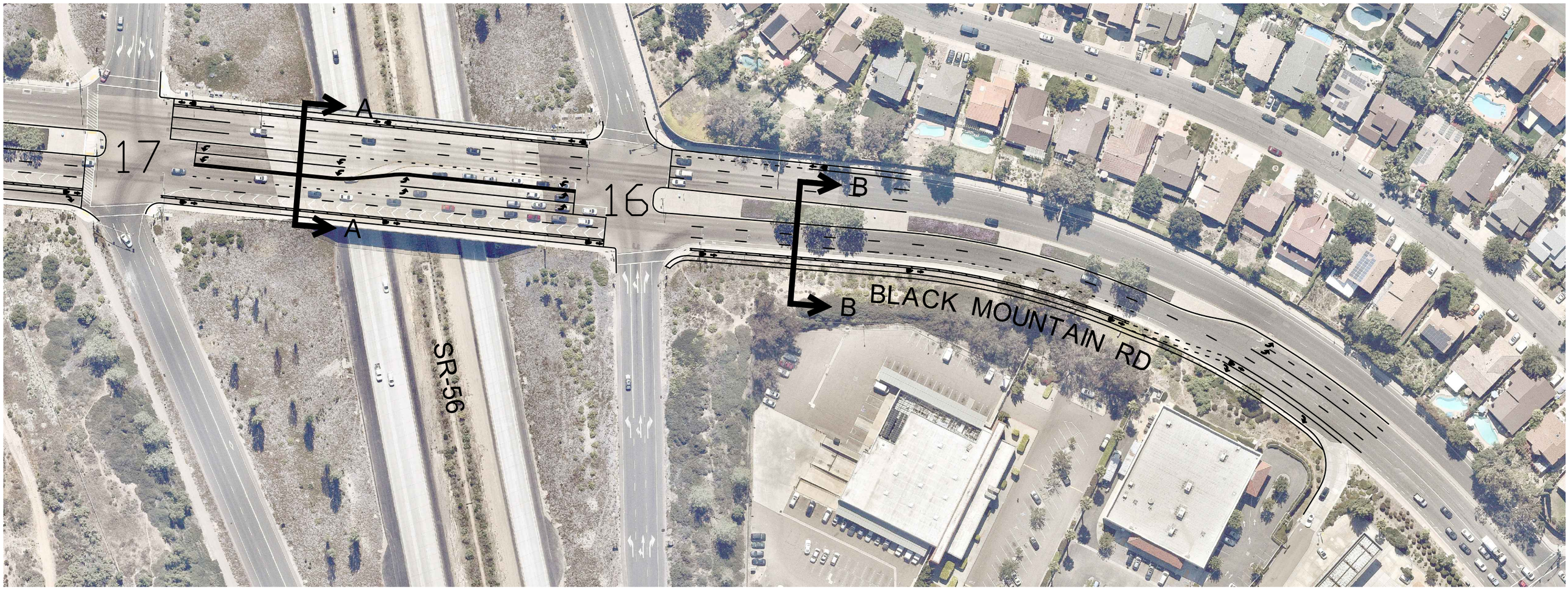
PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	1	3	13	17	82	40	26	3	3	2	51	0	241
4:15 PM	5	1	14	16	99	46	25	1	1	2	65	2	277
4:30 PM	2	1	15	16	83	41	36	3	0	0	67	1	265
4:45 PM	0	1	11	18	119	51	30	2	1	2	65	1	301
5:00 PM	1	1	21	32	123	54	23	3	0	0	82	1	341
5:15 PM	1	6	5	21	111	70	27	1	5	0	61	1	309
5:30 PM	3	2	11	24	155	50	37	1	8	2	62	1	356
5:45 PM	0	4	17	18	126	55	24	1	2	0	68	1	316
Total	13	19	107	162	898	407	228	15	20	8	521	8	2,406

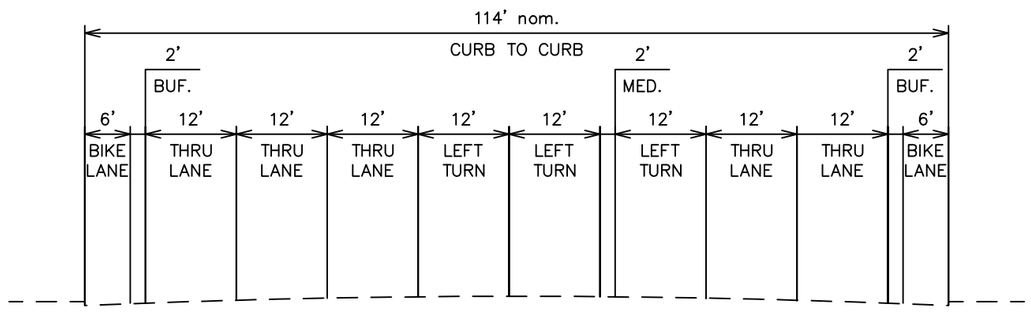
PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	5	13	54	95	515	229	111	6	15	2	273	4	1322
PHF	0.42	0.542	0.643	0.742	0.831	0.818	0.75	0.5	0.469	0.25	0.832	1	0.93
Movement PHF		0.78			0.92			0.72			0.84		0.93

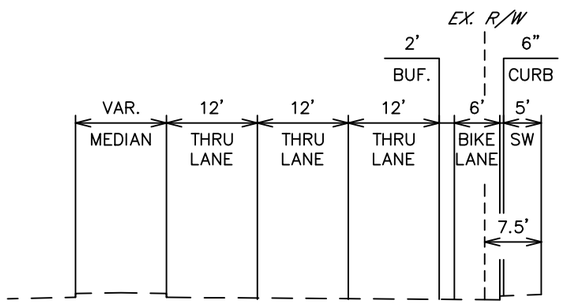
APPENDIX K

CONCEPTUAL DRAWINGS OF MITIGATION AND RECOMMENDED MEASURES

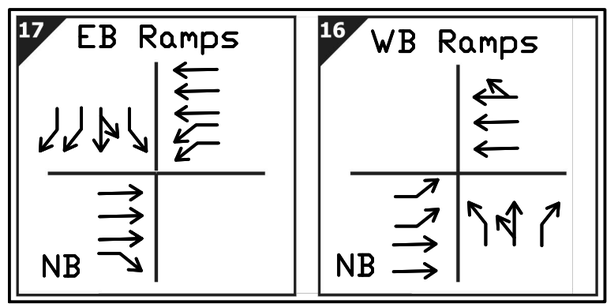




SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

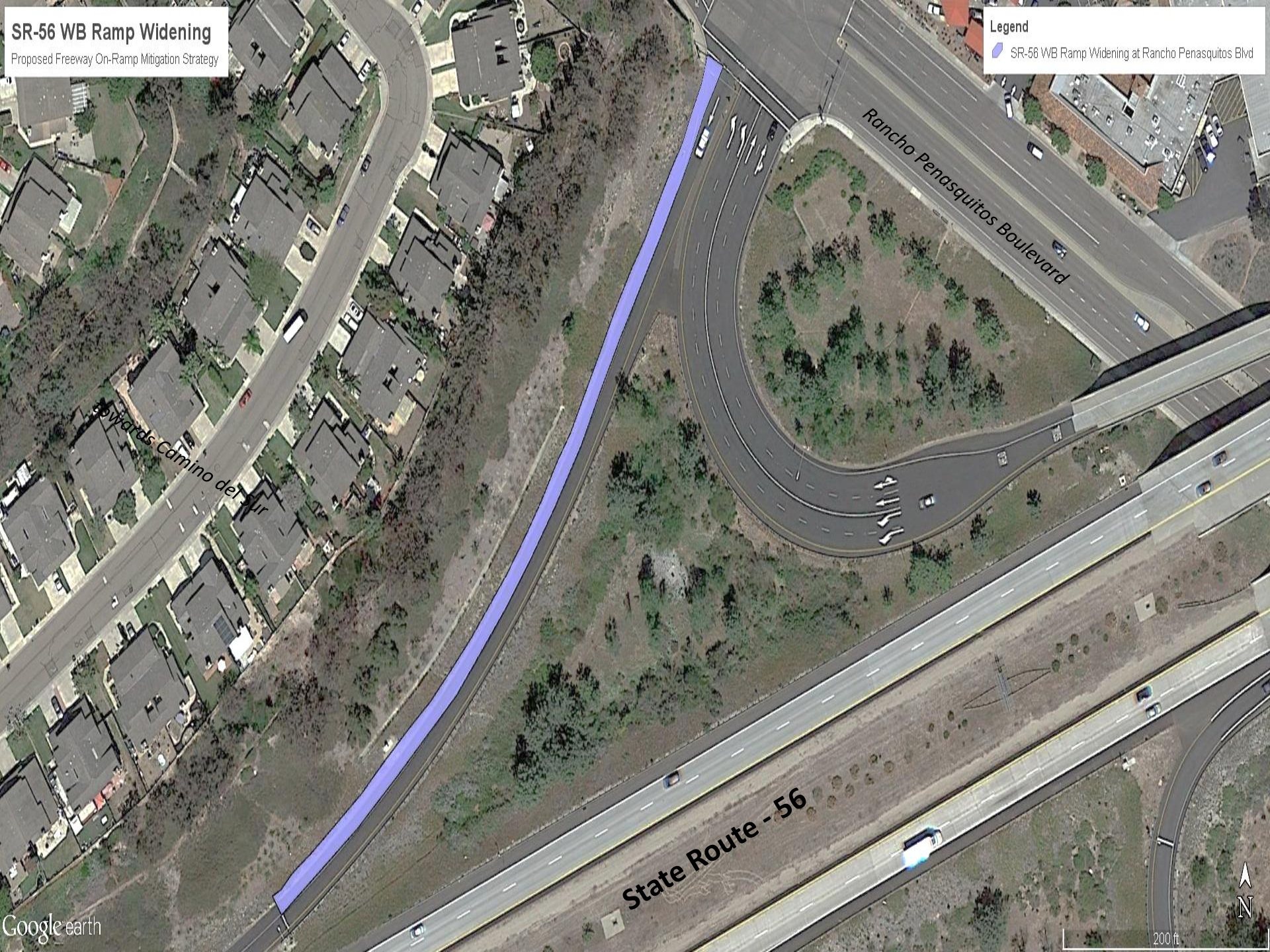


KOA CORPORATION
PLANNING & ENGINEERING
5095 Murphy Canyon Rd. Suite 330
San Diego CA, 92123
Tel: (619) 638-2933 Fax: (619) 683-7982

BLACK MOUNTAIN ROAD/SR-56 BRIDGE
With Restriping

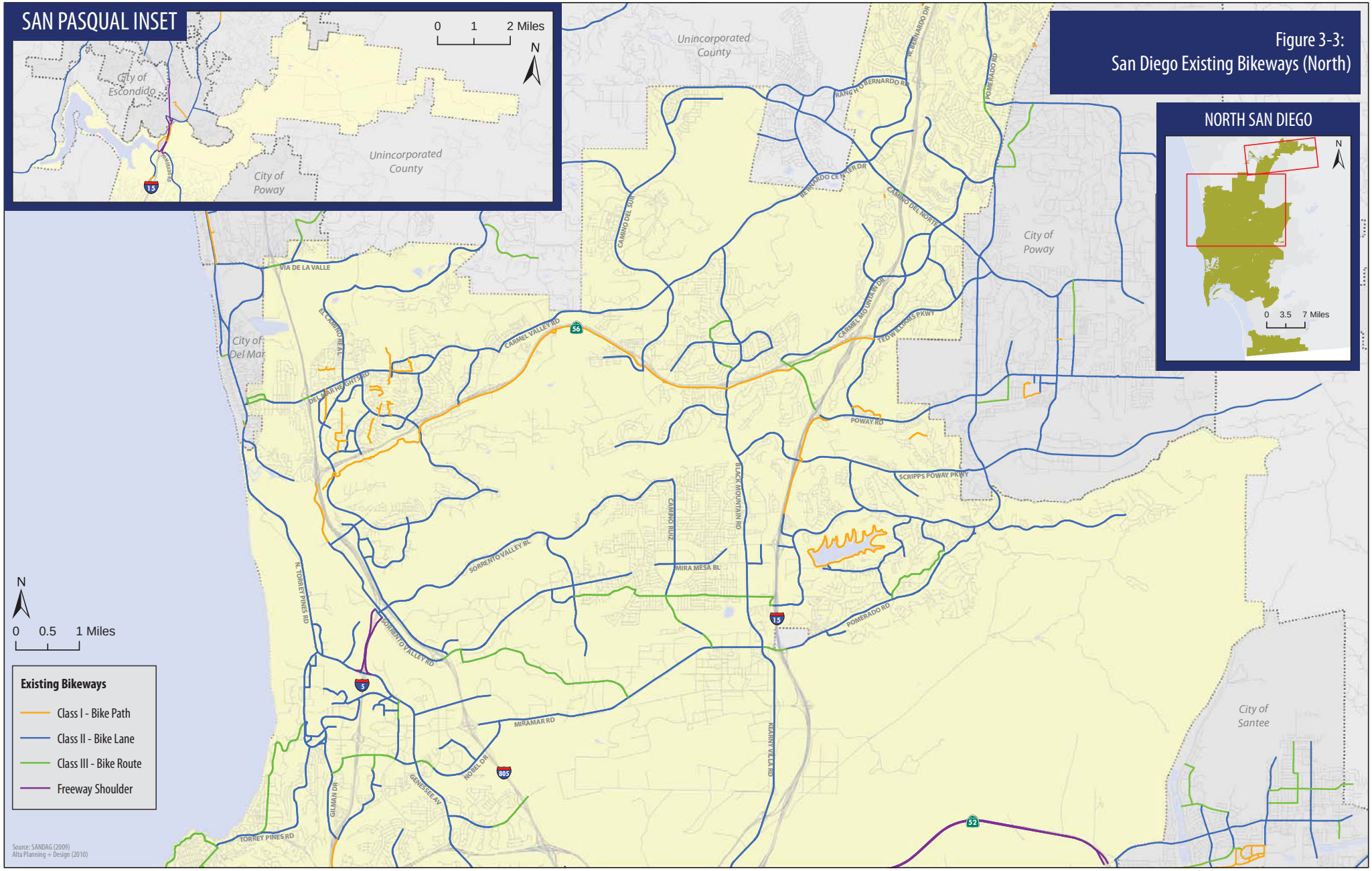
100 50 0 100 200 300
GRAPHIC SCALE 1" = 100'

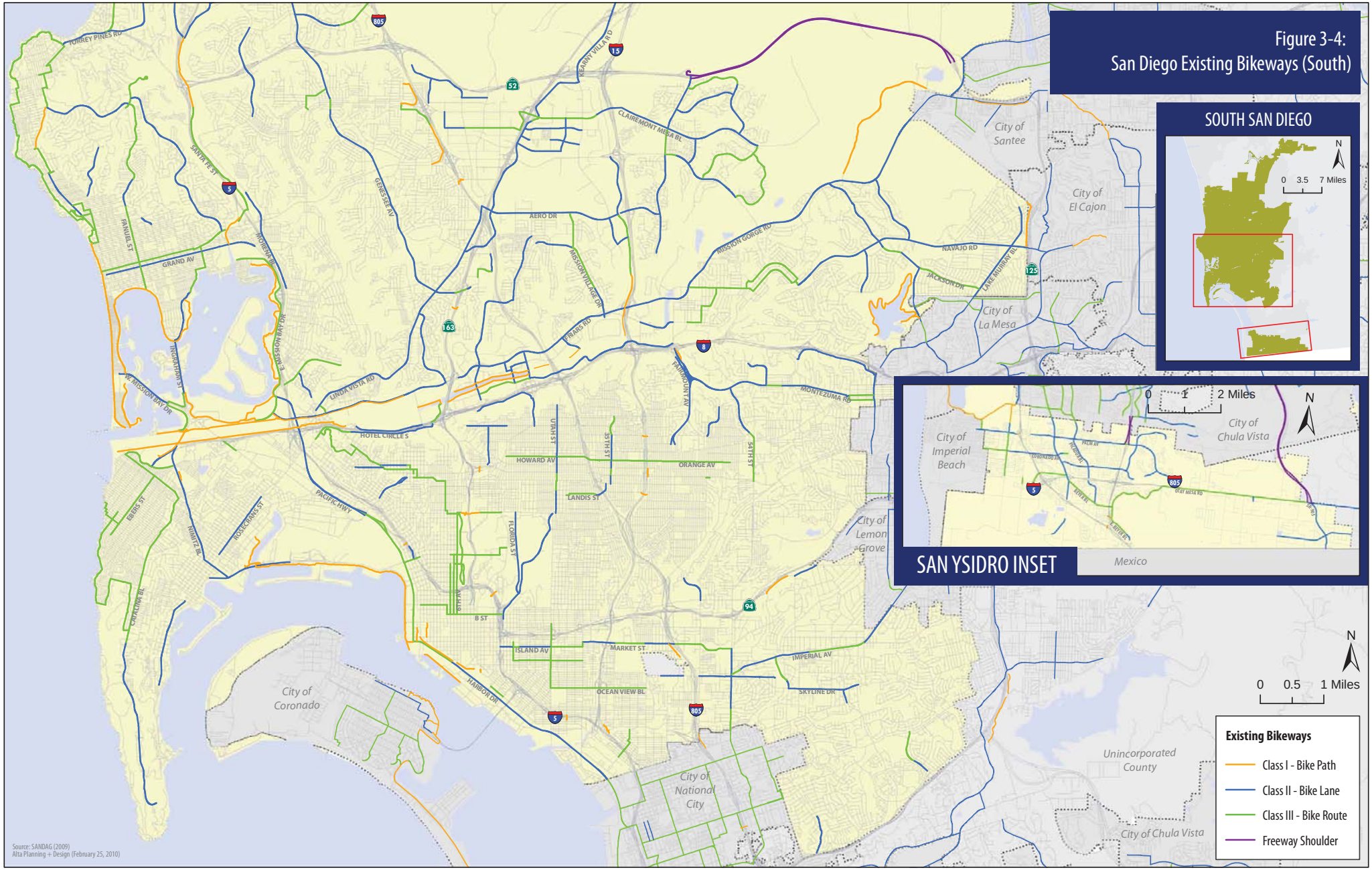

SR-56 Auxiliary Lane Construction
Proposed Freeway Mainline Mitigation Strategy
Legend
Future 6 lane Caltrans Expansion
Proposed Auxiliary Lane Extension
towards Camino del Sur
State Route - 56
towards Black Mountain Road
N
Google earth

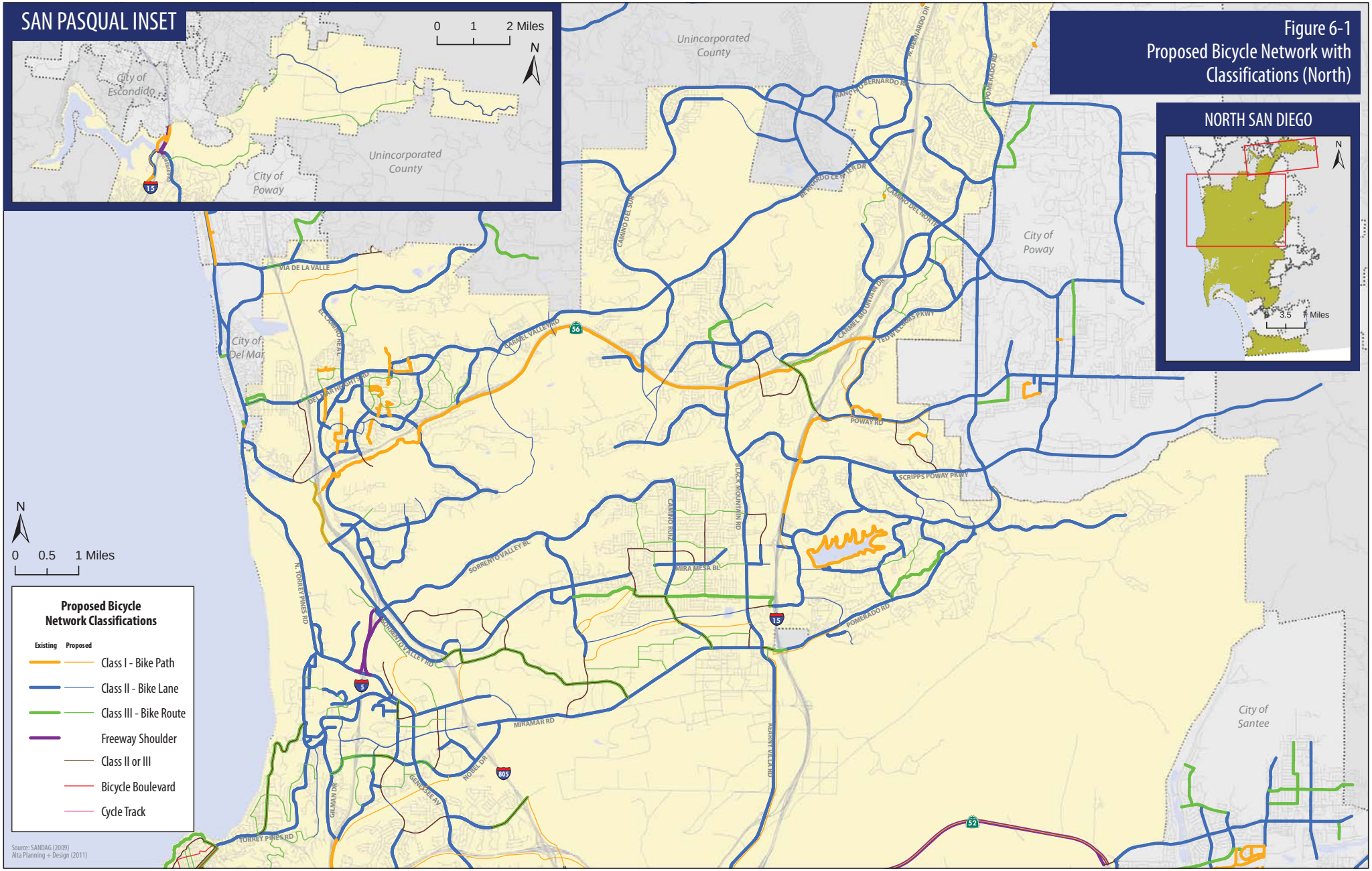

SR-56 WB Ramp Widening
Proposed Freeway On-Ramp Mitigation Strategy
Legend
SR-56 WB Ramp Widening at Rancho Penasquitos Blvd
Rancho Penasquitos Boulevard
Towards Camino del Sur
State Route - 56
N
200 ft
Google earth

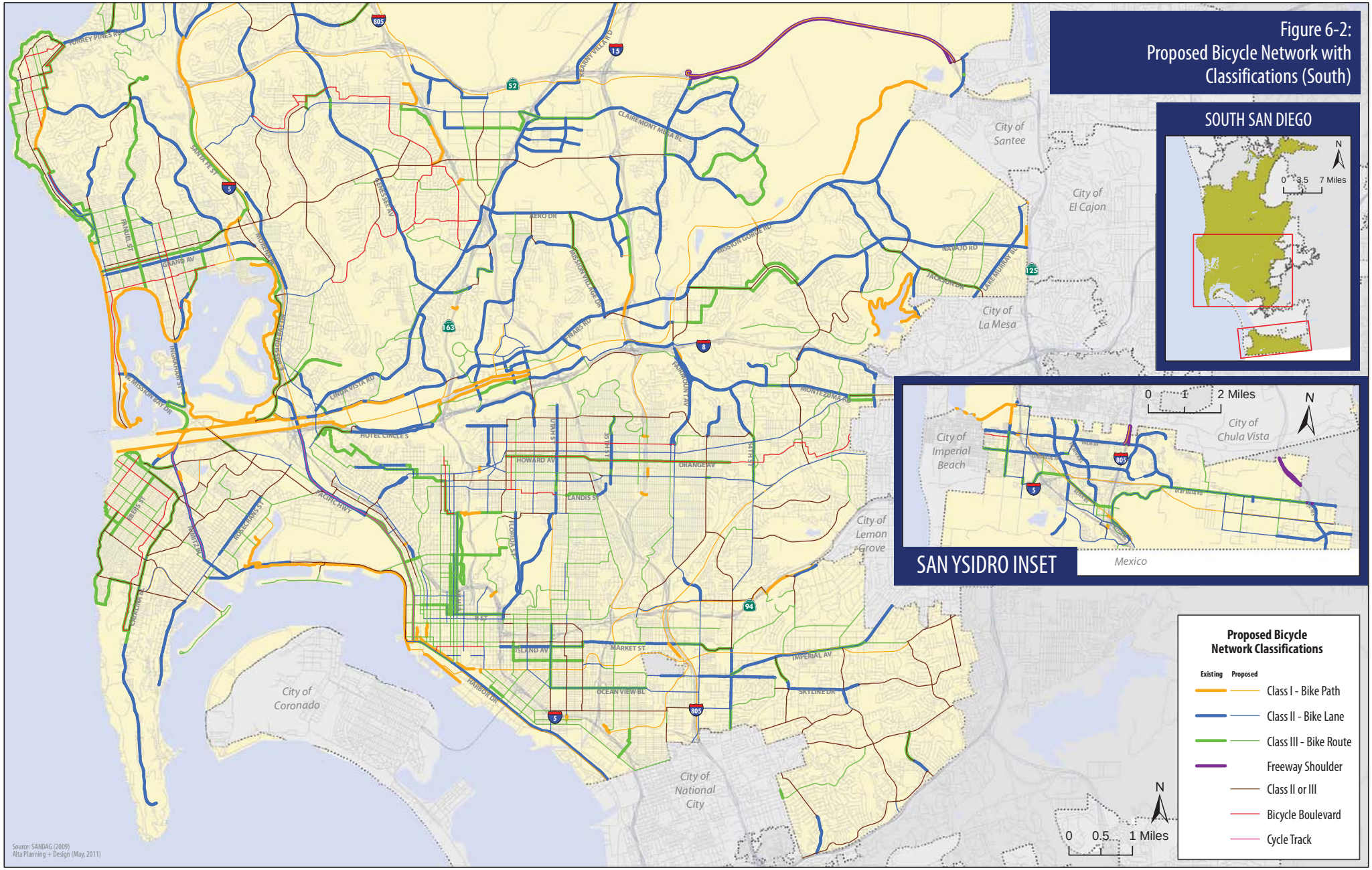
APPENDIX L

CITY OF SAN DIEGO EXISTING AND PROPOSED BICYCLE NETWORK MAPS


SAN PASQUAL INSET
0 1 2 Miles
N
City of Escondido
Unincorporated County
City of Poway
Figure 3-3:
San Diego Existing Bikeways (North)
NORTH SAN DIEGO
0 3.5 7 Miles
Unincorporated County
City of Poway
City of Del Mar
City of Santee
VIA DE LA VALLE
EL CAMINO REAL
DEL MAR HEIGHTS RD
CARMEL VALLEY RD
CAMINO DEL SUR
CAMINO DEL NORTE
BERNARDO CENTER DR
RANCHO BERNARDO RD
W. BERNARDO DR
POMERADO RD
CARMEL MOUNTAIN DR
TED WILLIAMS PKWY
POWAY RD
SCRIPPS POWAY PKWY
BLACK MOUNTAIN RD
CAMINO RUIZ
MIRA MESA BL
SORRENTO VALLEY BL
SORRENTO VALLEY RD
N. TORREY PINES RD
MIRAMAR RD
KEARNY VILLA RD
ROBEL DR
GENESSEE AV
GILMAN DR
TORREY PINES RD
N
0 0.5 1 Miles
Existing Bikeways
Class I - Bike Path
Class II - Bike Lane
Class III - Bike Route
Freeway Shoulder
Source: SANDAG (2009)
Alta Planning + Design (2010)


Figure 3-4:
San Diego Existing Bikeways (South)
SOUTH SAN DIEGO
0 3.5 7 Miles
N
SAN YSIDRO INSET
0 1 2 Miles
N
Mexico
0 0.5 1 Miles
N
Existing Bikeways
Class I - Bike Path
Class II - Bike Lane
Class III - Bike Route
Freeway Shoulder
City of Santee
City of El Cajon
City of La Mesa
City of Lemon Grove
City of Imperial Beach
City of Chula Vista
City of Coronado
City of National City
Unincorporated County
TORREY PINES RD
SANTA FE ST
GENESEE AV
KEARNY VILLA RD
CLAIREMONT MESA BL
AERO DR
MISSION GORGE RD
NAVAJO RD
JACKSON DR
LAKE MURRAY BL
FANUEL ST
GRAND AV
MOREHOUSE DR
E MISSION BAY DR
W MISSION BAY DR
TECOLOTE RD
LINDA VISTA RD
MISSION VILLAGE DR
FRIARS RD
FASHION VALLEY RD
MONTEZUMA RD
HOTEL CIRCLE S
HOWARD AV
ORANGE AV
UTAH ST
35TH ST
54TH ST
LANDIS ST
PACIFIC HWY
IBERIS ST
ROSECRANS ST
RUNNEL BL
CHATCOM BL
FLORIDA ST
A ST
8 ST
ISLAND AV
MARKET ST
OCEAN VIEW BL
HARBOR DR
IMPERIAL AV
SKYLINE DR
PALM AV
CORONADO AV
OTAY MESA RD
Source: SANDAG (2009)
Alta Planning + Design (February 25, 2010)


SAN PASQUAL INSET
0 1 2 Miles
N
City of Escondido
Unincorporated County
City of Poway
Figure 6-1
Proposed Bicycle Network with Classifications (North)
NORTH SAN DIEGO
N
0 3.5 7 Miles
Unincorporated County
City of Poway
City of Del Mar
City of Santee
VIA DE LA VALLE
EL CAMINO REAL
DEL MAR HEIGHTS RD
CARMEL VALLEY RD
CAMINO DEL SUR
CAMINO DEL NORTE
BERNARDO CENTER DR
RANCHO BERNARDO RD
W BERNARDO DR
POMERADO RD
CARMEL MOUNTAIN DR
TELEGRAPH CANYON RD
POWAY RD
SCRIPPS POWAY PKWY
BEECH MOUNTAIN RD
CAMINO RUIZ
MIRA MESA BL
SORRENTO VALLEY BL
SORRENTO VALLEY RD
N TORREY PINES RD
MIRAMAR RD
NOBEL DR
GENESEE AV
GILMAN DR
TORREY PINES RD
KENNY VALLEY RD
N
0 0.5 1 Miles
Proposed Bicycle Network Classifications
Existing
Proposed
Class I - Bike Path
Class II - Bike Lane
Class III - Bike Route
Freeway Shoulder
Class II or III
Bicycle Boulevard
Cycle Track
Source: SANDAG (2009)
Alta Planning + Design (2011)


Figure 6-2:
Proposed Bicycle Network with Classifications (South)
SOUTH SAN DIEGO
0 3.5 7 Miles
N
SAN YSIDRO INSET
0 1 2 Miles
City of Imperial Beach
City of Chula Vista
Mexico
City of Santee
City of El Cajon
City of La Mesa
City of Lemon Grove
City of Coronado
City of National City
Proposed Bicycle Network Classifications
Existing
Proposed
Class I - Bike Path
Class II - Bike Lane
Class III - Bike Route
Freeway Shoulder
Class II or III
Bicycle Boulevard
Cycle Track
0 0.5 1 Miles
Source: SANDAG (2009)
Alta Planning + Design (May, 2011)

APPENDIX M

MTS ROUTE INFORMATION

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)* Compass Card required ($2) / *Se requiere un Compass Card ($2)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.50
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.25*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for $2 at select outlets. A $5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional $2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por $2 en selectas sucursales. Un pase de un día por $5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de $2.

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
SafeWatch	**(619) 557-4500**
The Transit Store / Lost & Found *The Transit Store / Objetos extraviados* Articles found on the bus are turned in at The Transit Store *Artículos encontrados en los autobuses son entregados a The Transit Store*	**(619) 234-1060** 1st & Broadway Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**www.sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.
*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a **www.sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective JANUARY 25, 2015

20

Downtown – Rancho Bernardo Station
via Fashion Valley

110

Downtown – Mira Mesa Express
via I-15 / Hwy 163

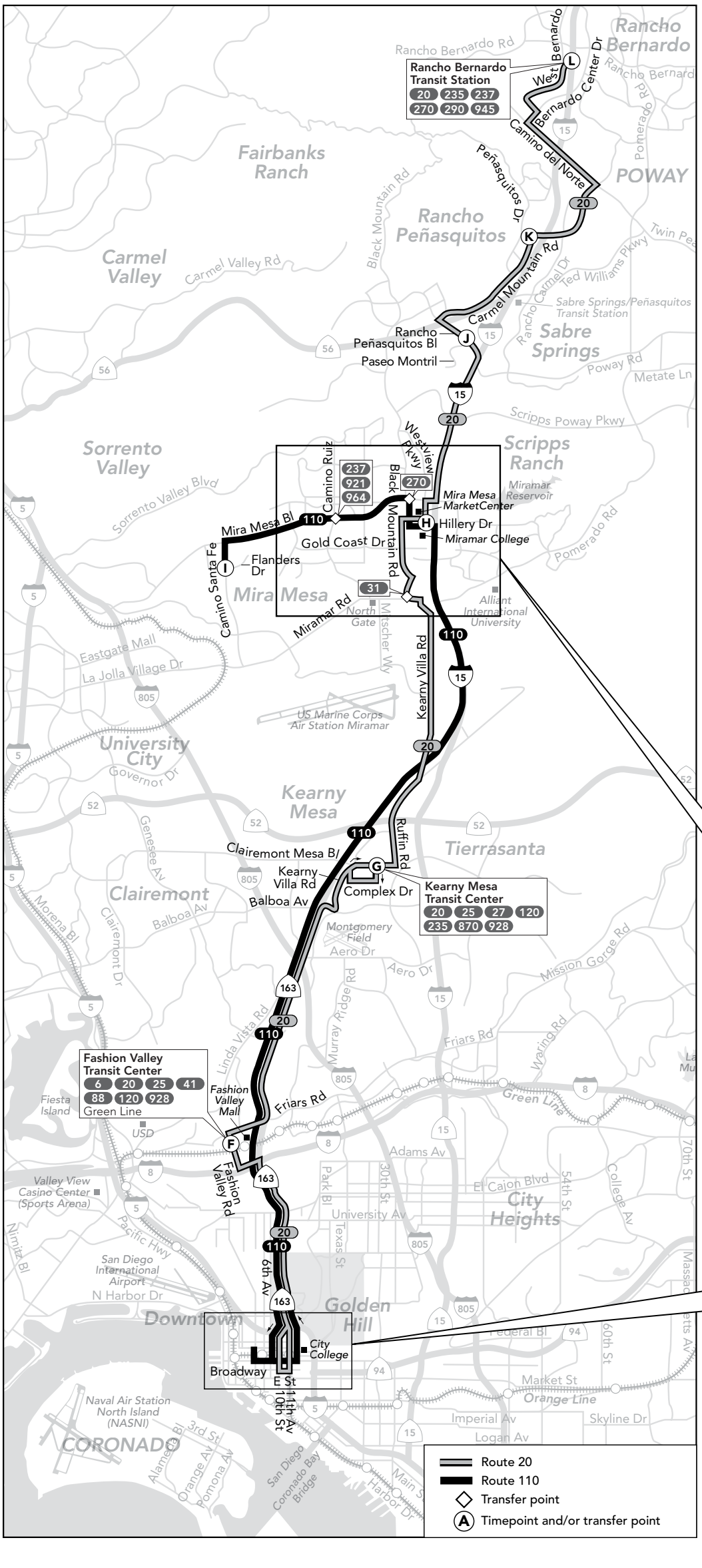
DESTINATIONS

- City College
- Downtown Courthouses (110)
- Fashion Valley Mall (20)
- Miramar College
- Mira Mesa MarketCenter

TROLLEY CONNECTIONS
City College
Fashion Valley (20)

MTS Metropolitan Transit System

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*



Route 110 – Monday through Friday / *lunes a viernes*

Morning only

Mira Mesa ➡ Downtown

Ⓘ Camino Santa Fe & Flanders Dr. **DEPART**	Ⓗ Miramar College Transit Station	Ⓓ 10th Av. & B St.	Ⓒ Broadway & 4th Av.	Ⓑ Broadway & 1st Av. **ARRIVE**
6:02a	6:15a	6:35a	6:39a	6:44a
6:22	6:35	6:55	6:59	7:04
6:40	6:55	7:17	7:21	7:27
7:05	7:20	7:42	7:46	7:52

Route 110 – Monday through Friday / *lunes a viernes*

Afternoon only

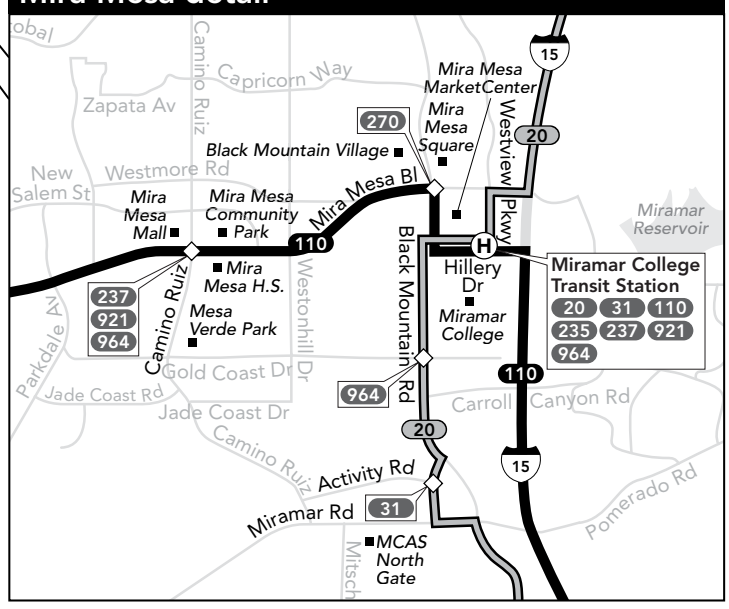
Downtown ➡ Mira Mesa

Ⓐ Front St. & B St. **DEPART**	Ⓒ Broadway & 3rd Av.	Ⓔ City College Transit Center (11th & B)	Ⓗ Miramar College Transit Station	Ⓘ Camino Santa Fe & Flanders Dr. **ARRIVE**
4:02p	**4:05p**	**4:12p**	**4:31p**	**4:47p**
4:27	**4:30**	**4:37**	**4:58**	**5:15**
4:52	**4:55**	**5:02**	**5:23**	**5:40**
5:22	**5:25**	**5:32**	**5:53**	**6:10**

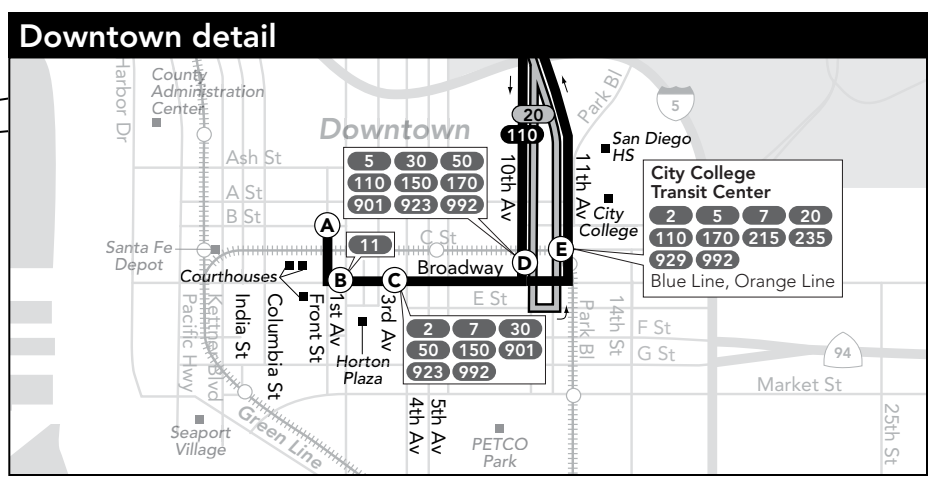
The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.

Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Mira Mesa detail



Downtown detail



A Saturday or Sunday schedule will be operated on the following holidays and observed holidays
Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

>>>

New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Route 20 – Monday through Friday / *lunes a viernes*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo

(D) 10th Av. & Broadway **DEPART**	(E) City College Transit Center (11th & C)	(F) Fashion Valley Transit Center **ARRIVE**	(F) Fashion Valley Transit Center **DEPART**	(G) Kearny Mesa Transit Center	(H) Miramar College Transit Station	(J) Rancho Peñasquitos & Paseo Montril	(K) Carmel Mtn. & Peñasquitos Dr.	(L) R. Bernardo Transit Station **ARRIVE**
—	4:55a	5:06a	5:08a	5:20a	5:37a	5:44a	5:52a	6:07a
—	5:25	5:36	5:38	5:51	6:10	6:17	6:25	6:41
—	5:40	5:51	5:53	6:07	6:29	6:37	6:45	7:02
—	5:55	6:06	6:08	6:22	—	—	—	—
—	6:10	6:21	6:23	6:37	7:02	7:10	7:19	7:37
6:22a	6:25	6:36	6:38	6:52	—	—	—	—
6:37	6:40	6:51	6:53	7:07	7:32	7:40	7:49	8:07
6:52	6:55	7:06	7:08	7:22	—	—	—	—
7:07	7:10	7:21	7:23	7:37	8:02	8:10	8:19	8:37
7:22	7:25	7:36	7:38	7:52	—	—	—	—
7:37	7:40	7:51	7:53	8:07	8:32	8:40	8:49	9:07
7:52	7:55	8:06	8:08	8:22	—	—	—	—
8:07	8:10	8:21	8:23	8:37	9:02	9:10	9:19	9:37
8:22	8:25	8:36	8:38	8:52	—	—	—	—
8:37	8:40	8:51	8:53	9:08	9:31	9:39	9:48	10:06
8:52	8:55	9:06	9:08	9:23	—	—	—	—
9:07	9:10	9:21	9:23	9:38	10:01	10:09	10:18	10:36
9:37	9:40	9:51	9:53	10:08	10:31	10:39	10:48	11:06
10:07	10:10	10:21	10:23	10:38	11:01	11:09	11:18	11:36
10:37	10:40	10:51	10:53	11:08	11:31	11:39	11:48	**12:06p**
11:07	11:10	11:21	11:23	11:38	**12:01p**	**12:09p**	**12:18p**	**12:36**
11:37	11:40	11:51	11:53	**12:08p**	**12:31**	**12:39**	**12:48**	**1:06**
12:07p	**12:10p**	**12:21p**	**12:23p**	**12:38**	**1:01**	**1:09**	**1:18**	**1:36**
12:37	**12:40**	**12:52**	**12:54**	**1:10**	**1:33**	**1:42**	**1:52**	**2:10**
1:07	**1:10**	**1:22**	**1:24**	**1:40**	**2:04**	**2:13**	**2:23**	**2:41**
1:37	**1:40**	**1:52**	**1:54**	**2:10**	**2:34**	**2:43**	**2:53**	**3:11**
2:07	**2:10**	**2:23**	**2:25**	**2:41**	**3:07**	**3:16**	**3:27**	**3:45**
2:37	**2:40**	**2:53**	**2:55**	**3:11**	**3:37**	**3:46**	**3:57**	**4:15**
2:52	**2:55**	**3:08**	**3:10**	**3:26**	—	—	—	—
3:07	**3:10**	**3:23**	**3:25**	**3:41**	**4:07**	**4:16**	**4:27**	**4:45**
3:22	**3:25**	**3:38**	**3:40**	**3:56**	—	—	—	—
3:37	**3:40**	**3:53**	**3:55**	**4:11**	**4:37**	**4:46**	**4:57**	**5:15**
3:52	**3:55**	**4:08**	**4:10**	**4:26**	—	—	—	—
4:07	**4:10**	**4:23**	**4:25**	**4:41**	**5:07**	**5:16**	**5:27**	**5:45**
4:22	**4:25**	**4:38**	**4:40**	**4:56**	—	—	—	—
4:37	**4:40**	**4:53**	**4:55**	**5:11**	**5:37**	**5:46**	**5:57**	**6:15**
4:52	**4:55**	**5:08**	**5:10**	**5:26**	—	—	—	—
5:07	**5:10**	**5:23**	**5:25**	**5:41**	**6:05**	**6:14**	**6:25**	**6:42**
5:22	**5:25**	**5:38**	**5:40**	**5:56**	—	—	—	—
5:37	**5:40**	**5:52**	**5:54**	**6:09**	**6:32**	**6:41**	**6:51**	**7:07**
5:52	**5:55**	**6:07**	**6:09**	**6:24**	—	—	—	—
6:07	**6:10**	**6:21**	**6:23**	**6:37**	**6:58**	**7:07**	**7:16**	**7:31**
6:37	**6:40**	**6:51**	**6:53**	**7:07**	**7:28**	**7:37**	**7:46**	**8:01**
7:06	**7:09**	**7:20**	**7:22**	**7:35**	**7:54**	**8:02**	**8:10**	**8:24**
7:36	**7:39**	**7:50**	**7:52**	**8:05**	**8:24**	**8:32**	**8:40**	**8:54**
8:36	**8:39**	**8:50**	**8:52**	**9:05**	**9:23**	**9:30**	**9:38**	**9:52**

Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(L) Rancho Bernardo Transit Station **DEPART**	(K) Carmel Mtn. & Peñasquitos Dr.	(J) Rancho Peñasquitos & Paseo Montril	(H) Miramar College Transit Station	(G) Kearny Mesa Transit Center ▲	(F) Fashion Valley Transit Center **ARRIVE**	(F) Fashion Valley Transit Center **DEPART**	(D) 10th Av. & Broadway **ARRIVE**
4:58a	5:13a	5:21a	5:30a	5:49a	6:01a	6:03a	6:12a
—	—	—	—	6:05	6:17	6:19	6:28
5:26	5:42	5:51	6:00	6:20	6:33	6:35	6:45
—	—	—	—	6:35	6:48	6:50	7:00
5:52	6:09	6:19	6:30	6:52	7:05	7:07	7:18
—	—	—	—	7:06	7:19	7:21	7:33
6:19	6:37	6:49	7:00	7:23	7:36	7:38	7:50
—	—	—	—	7:38	7:51	7:53	8:05
6:49	7:07	7:19	7:30	7:53	8:06	8:08	8:20
—	—	—	—	8:08	8:21	8:23	8:35
7:19	7:37	7:49	8:00	8:23	8:36	8:38	8:50
—	—	—	—	8:38	8:51	8:53	9:05
7:49	8:07	8:19	8:30	8:53	9:06	9:08	9:20
—	—	—	—	9:08	9:21	9:23	9:35
8:21	8:39	8:51	9:00	9:22	9:35	9:37	9:48
8:51	9:09	9:21	9:30	9:52	10:05	10:07	10:18
9:25	9:42	9:52	10:00	10:22	10:36	10:38	10:49
9:55	10:12	10:22	10:30	10:52	11:06	11:08	11:19
10:25	10:42	10:52	11:00	11:22	11:36	11:38	11:49
10:55	11:12	11:22	11:30	11:52	**12:06p**	**12:08p**	**12:19p**
11:24	11:42	11:52	**12:00p**	**12:23p**	**12:37**	**12:39**	**12:50**
11:54	**12:12p**	**12:22p**	**12:30**	**12:53**	**1:07**	**1:09**	**1:20**
12:24p	**12:42**	**12:52**	**1:00**	**1:23**	**1:37**	**1:39**	**1:50**
12:54	**1:12**	**1:22**	**1:30**	**1:53**	**2:07**	**2:09**	**2:20**
1:24	**1:42**	**1:52**	**2:00**	**2:23**	**2:37**	**2:39**	**2:50**
—	—	—	—	**2:38**	**2:52**	**2:54**	**3:05**
1:54	**2:12**	**2:22**	**2:30**	**2:53**	**3:07**	**3:09**	**3:20**
—	—	—	—	**3:08**	**3:22**	**3:24**	**3:35**
2:24	**2:42**	**2:52**	**3:00**	**3:23**	**3:37**	**3:39**	**3:50**
—	—	—	—	**3:38**	**3:52**	**3:54**	**4:05**
2:51	**3:10**	**3:20**	**3:29**	**3:53**	**4:08**	**4:10**	**4:22**
—	—	—	—	**4:08**	**4:23**	**4:25**	**4:37**
3:19	**3:38**	**3:48**	**3:57**	**4:21**	**4:37**	**4:39**	**4:51**
—	—	—	—	**4:36**	**4:52**	**4:54**	**5:06**
3:49	**4:08**	**4:18**	**4:27**	**4:52**	**5:08**	**5:10**	**5:22**
—	—	—	—	**5:07**	**5:23**	**5:25**	**5:37**
4:18	**4:38**	**4:48**	**4:57**	**5:22**	**5:38**	**5:40**	**5:53**
—	—	—	—	**5:37**	**5:53**	**5:55**	**6:08**
4:48	**5:08**	**5:18**	**5:27**	**5:52**	**6:08**	**6:10**	**6:23**
—	—	—	—	**6:07**	**6:23**	**6:25**	**6:37**
5:19	**5:39**	**5:49**	**5:58**	**6:21**	**6:36**	**6:38**	**6:50**
5:49	**6:09**	**6:19**	**6:28**	**6:50**	**7:04**	**7:06**	**7:17**
6:24	**6:42**	**6:52**	**7:01**	**7:21**	**7:34**	**7:36**	**7:47**
7:10	**7:27**	**7:36**	**7:45**	**8:05**	**8:17**	**8:19**	**8:29**
8:15	**8:30**	**8:39**	**8:47**	**9:05**	**9:17**	**9:19**	**9:29**
9:18	**9:32**	**9:40**	**9:48**	**10:05**	**10:17**	**10:19**	**10:28**
10:16	**10:30**	**10:38**	**10:46**	**11:03**	**11:15**	**11:17**	**11:26**

Route 20 – Saturday / *sábado*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo

(D) 10th Av. & Broadway **DEPART**	(E) City College Transit Center (11th & C)	(F) Fashion Valley Transit Center **ARRIVE**	(F) Fashion Valley Transit Center **DEPART**	(G) Kearny Mesa Transit Center	(H) Miramar College Transit Station	(J) Rancho Peñasquitos & Paseo Montril	(K) Carmel Mtn. & Peñasquitos Dr.	(L) R. Bernardo Transit Station **ARRIVE**
—	5:40a	5:50a	5:52a	6:05a	6:23a	6:29a	6:37a	6:52a
—	6:10	6:20	6:22	6:35	6:53	6:59	7:07	7:22
6:37a	6:40	6:51	6:53	7:07	7:26	—	—	—
7:07	7:10	7:21	7:23	7:37	7:56	8:03	8:11	8:27
7:37	7:40	7:51	7:53	8:07	8:26	—	—	—
8:07	8:10	8:21	8:23	8:37	8:57	9:04	9:13	9:30
8:37	8:40	8:51	8:53	9:07	9:27	—	—	—
9:07	9:10	9:21	9:23	9:37	9:57	10:04	10:13	10:30
9:37	9:40	9:51	9:53	10:07	10:27	—	—	—
10:07	10:10	10:21	10:23	10:37	10:57	11:04	11:13	11:30
10:37	10:40	10:52	10:54	11:09	11:29	—	—	—
11:07	11:10	11:22	11:24	11:39	11:59	**12:07p**	**12:17p**	**12:35p**
11:37	11:40	11:52	11:54	**12:09p**	**12:29p**	—	—	—
12:07p	**12:10p**	**12:22p**	**12:24p**	**12:39**	**12:59**	**1:07**	**1:17**	**1:35**
12:37	**12:40**	**12:52**	**12:54**	**1:09**	**1:29**	—	—	—
1:07	**1:10**	**1:22**	**1:24**	**1:39**	**1:59**	**2:07**	**2:17**	**2:35**
1:37	**1:40**	**1:52**	**1:54**	**2:09**	**2:29**	—	—	—
2:07	**2:10**	**2:22**	**2:24**	**2:39**	**2:59**	**3:07**	**3:17**	**3:35**
2:37	**2:40**	**2:52**	**2:54**	**3:09**	**3:29**	—	—	—
3:07	**3:10**	**3:22**	**3:24**	**3:39**	**3:59**	**4:07**	**4:17**	**4:35**
3:37	**3:40**	**3:52**	**3:54**	**4:09**	**4:29**	—	—	—
4:07	**4:10**	**4:22**	**4:24**	**4:39**	**4:59**	**5:07**	**5:17**	**5:35**
4:37	**4:40**	**4:52**	**4:54**	**5:09**	**5:29**	—	—	—
5:07	**5:10**	**5:22**	**5:24**	**5:39**	**5:59**	**6:07**	**6:17**	**6:35**
5:37	**5:40**	**5:52**	**5:54**	**6:09**	**6:29**	—	—	—
6:07	**6:10**	**6:21**	**6:23**	**6:37**	**6:56**	**7:04**	**7:13**	**7:30**
7:07	**7:10**	**7:21**	**7:23**	**7:36**	**7:55**	**8:03**	**8:11**	**8:26**
8:07	**8:10**	**8:21**	**8:23**	**8:36**	—	—	—	—

Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(L) Rancho Bernardo Transit Station **DEPART**	(K) Carmel Mtn. & Peñasquitos Dr.	(J) Rancho Peñasquitos & Paseo Montril	(H) Miramar College Transit Station	(G) Kearny Mesa Transit Center ▲	(F) Fashion Valley Transit Center **ARRIVE**	(F) Fashion Valley Transit Center **DEPART**	(D) 10th Av. & Broadway **ARRIVE**
5:07a	5:20a	5:28a	5:36a	5:52a	6:05a	6:07a	6:16a
6:07	6:20	6:28	6:36	6:52	7:05	7:07	7:16
—	—	—	7:06	7:23	7:36	7:38	7:48
7:05	7:19	7:28	7:36	7:53	8:06	8:08	8:18
—	—	—	8:05	8:23	8:36	8:38	8:48
8:02	8:17	8:27	8:35	8:53	9:06	9:08	9:18
—	—	—	9:05	9:23	9:36	9:38	9:48
9:02	9:17	9:27	9:35	9:53	10:06	10:08	10:18
—	—	—	10:04	10:22	10:36	10:38	10:48
9:58	10:15	10:25	10:34	10:52	11:06	11:08	11:18
—	—	—	11:04	11:22	11:36	11:38	11:48
10:58	11:15	11:25	11:34	11:52	**12:06p**	**12:08p**	**12:18p**
—	—	—	**12:05p**	**12:23p**	**12:37**	**12:39**	**12:49**
11:59	**12:16p**	**12:26p**	**12:35**	**12:53**	**1:07**	**1:09**	**1:19**
—	—	—	**1:04**	**1:22**	**1:37**	**1:39**	**1:50**
12:57p	**1:15**	**1:25**	**1:34**	**1:52**	**2:07**	**2:09**	**2:20**
—	—	—	**2:04**	**2:22**	**2:37**	**2:39**	**2:50**
1:57	**2:15**	**2:25**	**2:34**	**2:52**	**3:07**	**3:09**	**3:20**
—	—	—	**3:04**	**3:22**	**3:37**	**3:39**	**3:50**
2:57	**3:15**	**3:25**	**3:34**	**3:52**	**4:07**	**4:09**	**4:20**
—	—	—	**4:04**	**4:22**	**4:37**	**4:39**	**4:50**
3:57	**4:15**	**4:25**	**4:34**	**4:52**	**5:07**	**5:09**	**5:20**
—	—	—	**5:04**	**5:22**	**5:37**	**5:39**	**5:50**
4:57	**5:15**	**5:25**	**5:34**	**5:52**	**6:07**	**6:09**	**6:20**
—	—	—	**6:05**	**6:22**	**6:36**	**6:38**	**6:49**
6:00	**6:17**	**6:26**	**6:35**	**6:52**	**7:06**	**7:08**	**7:19**
—	—	—	**7:05**	**7:22**	**7:35**	**7:37**	**7:47**
7:02	**7:18**	**7:27**	**7:35**	**7:52**	**8:05**	**8:07**	**8:17**
8:04	**8:19**	**8:27**	**8:35**	**8:52**	**9:05**	**9:07**	**9:17**

Route 20 – Sunday / *domingo*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo

(D) 10th Av. & Broadway **DEPART**	(E) City College Transit Center (11th & C)	(F) Fashion Valley Transit Center **ARRIVE**	(F) Fashion Valley Transit Center **DEPART**	(G) Kearny Mesa Transit Center	(H) Miramar College Transit Station	(J) Rancho Peñasquitos & Paseo Montril	(K) Carmel Mtn. & Peñasquitos Dr.	(L) R. Bernardo Transit Station **ARRIVE**
—	6:10a	6:20a	6:22a	6:35a	6:53a	6:59a	7:07a	7:22a
7:07a	7:10	7:21	7:23	7:37	7:56	8:03	8:11	8:27
8:07	8:10	8:21	8:23	8:37	8:57	9:04	9:13	9:30
9:07	9:10	9:21	9:23	9:37	9:57	10:04	10:13	10:30
10:07	10:10	10:21	10:23	10:37	10:57	11:04	11:13	11:30
11:07	11:10	11:22	11:24	11:39	11:59	**12:07p**	**12:17p**	**12:35p**
12:07p	**12:10p**	**12:22p**	**12:24p**	**12:39p**	**12:59p**	**1:07**	**1:17**	**1:35**
1:07	**1:10**	**1:22**	**1:24**	**1:39**	**1:59**	**2:07**	**2:17**	**2:35**
2:07	**2:10**	**2:22**	**2:24**	**2:39**	**2:59**	**3:07**	**3:17**	**3:35**
3:07	**3:10**	**3:22**	**3:24**	**3:39**	**3:59**	**4:07**	**4:17**	**4:35**
4:07	**4:10**	**4:22**	**4:24**	**4:39**	**4:59**	**5:07**	**5:17**	**5:35**
5:07	**5:10**	**5:22**	**5:24**	**5:39**	**5:59**	**6:07**	**6:17**	**6:35**
6:07	**6:10**	**6:21**	**6:23**	**6:37**	**6:56**	**7:04**	**7:13**	**7:30**
7:07	**7:10**	**7:21**	**7:23**	**7:36**	**7:55**	**8:03**	**8:11**	**8:26**
8:07	**8:10**	**8:21**	**8:23**	**8:36**	—	—	—	—

Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(L) Rancho Bernardo Transit Station **DEPART**	(K) Carmel Mtn. & Peñasquitos Dr.	(J) Rancho Peñasquitos & Paseo Montril	(H) Miramar College Transit Station	(G) Kearny Mesa Transit Center ▲	(F) Fashion Valley Transit Center **ARRIVE**	(F) Fashion Valley Transit Center **DEPART**	(D) 10th Av. & Broadway **ARRIVE**
6:07a	6:20a	6:28a	6:36a	6:52a	7:05a	7:07a	7:16a
7:05	7:19	7:28	7:36	7:53	8:06	8:08	8:18
8:02	8:17	8:27	8:35	8:53	9:06	9:08	9:18
9:02	9:17	9:27	9:35	9:53	10:06	10:08	10:18
9:58	10:15	10:25	10:34	10:52	11:06	11:08	11:18
10:58	11:15	11:25	11:34	11:52	**12:06p**	**12:08p**	**12:18p**
11:59	**12:16p**	**12:26p**	**12:35p**	**12:53p**	**1:07**	**1:09**	**1:19**
12:57p	**1:15**	**1:25**	**1:34**	**1:52**	**2:07**	**2:09**	**2:20**
1:57	**2:15**	**2:25**	**2:34**	**2:52**	**3:07**	**3:09**	**3:20**
2:57	**3:15**	**3:25**	**3:34**	**3:52**	**4:07**	**4:09**	**4:20**
3:57	**4:15**	**4:25**	**4:34**	**4:52**	**5:07**	**5:09**	**5:20**
4:57	**5:15**	**5:25**	**5:34**	**5:52**	**6:07**	**6:09**	**6:20**
6:00	**6:17**	**6:26**	**6:35**	**6:52**	**7:06**	**7:08**	**7:19**
7:02	**7:18**	**7:27**	**7:35**	**7:52**	**8:05**	**8:07**	**8:17**

▲ = Board bus on Complex Drive next to Bank of America. / *Encuentra el autobús en Complex Drive al lado de Bank of America.*

Effective JANUARY 25, 2015

Rapid 235

Escondido – Downtown San Diego
via I-15

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)* Compass Card required ($2) / *Se requiere un Compass Card ($2)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.50
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.25*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for $2 at select outlets. A $5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional $2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por $2 en selectas sucursales. Un pase de un día por $5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de $2.

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
SafeWatch	**(619) 557-4500**
The Transit Store / Lost & Found *The Transit Store / Objetos extraviados*	**(619) 234-1060**
Articles found on the bus are turned in at The Transit Store *Artículos encontrados en los autobuses son entregados a The Transit Store*	1st & Broadway Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**www.sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.
*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a **www.sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

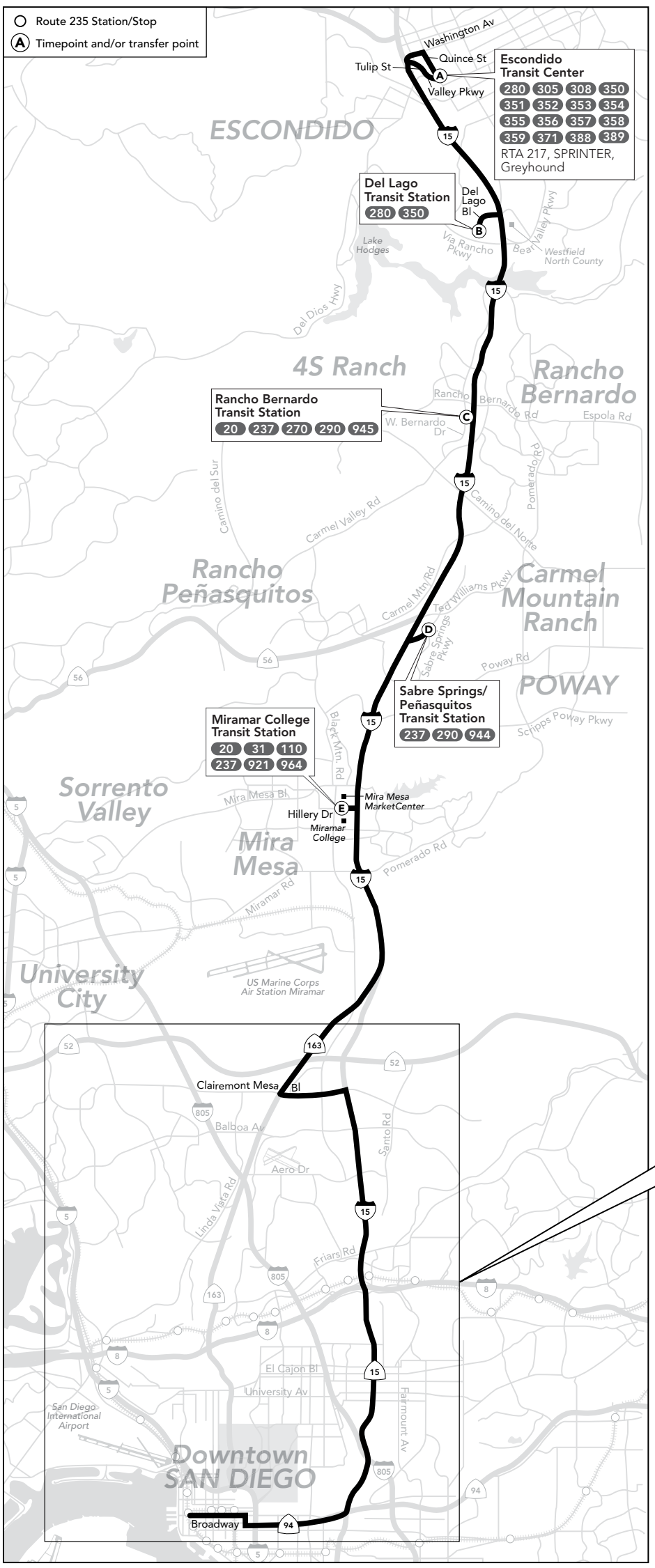
DESTINATIONS

- Del Lago Transit Station
- Rancho Bernardo Transit Station
- Sabre Springs/Peñasquitos Transit Station
- Miramar College Transit Station
- Kearny Mesa Transit Center
- Boulevard Transit Plaza
- City Heights Transit Plaza

TROLLEY CONNECTIONS
City College
America Plaza
Santa Fe Depot

MTS Metropolitan Transit System

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*

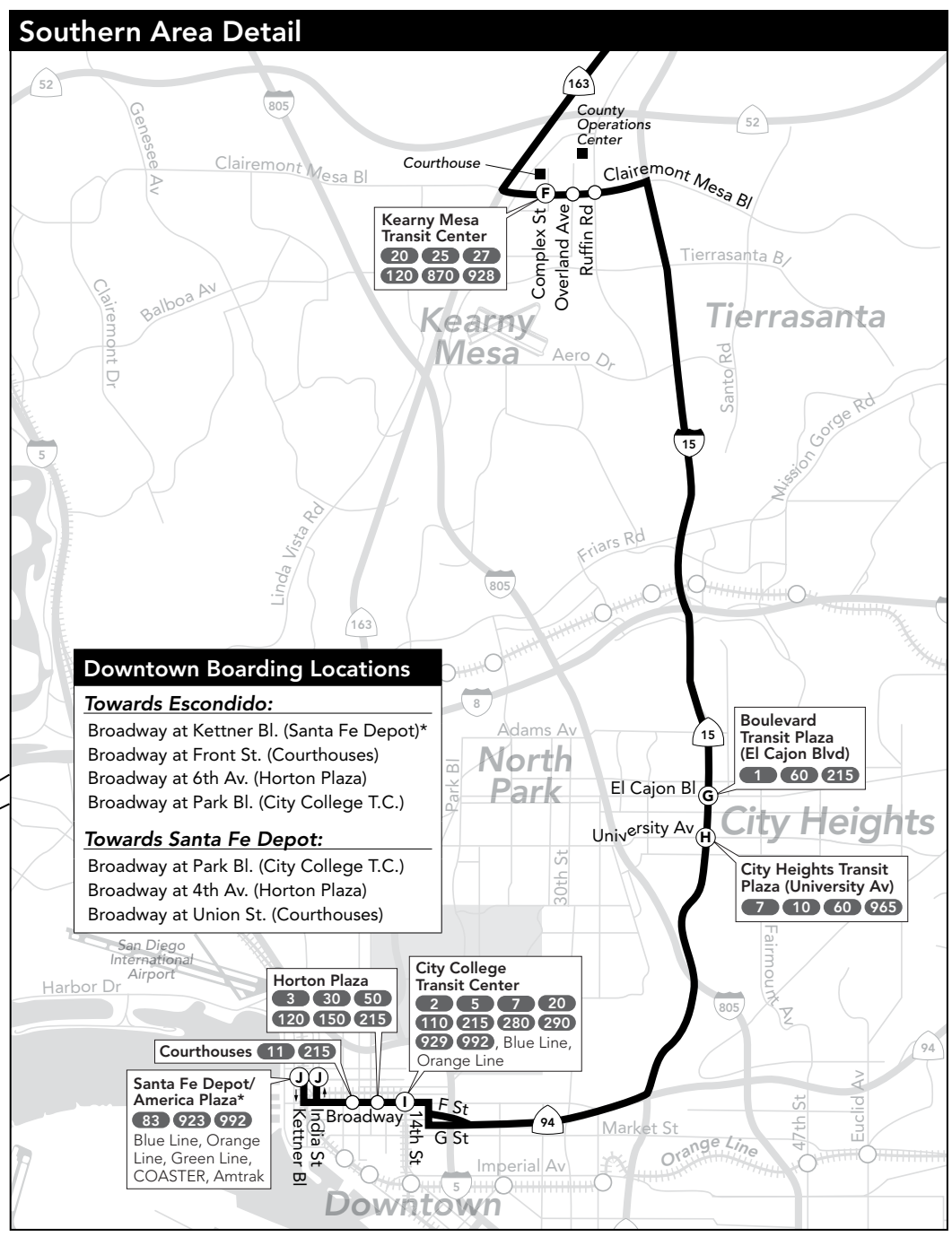


Plan your trip!

On the web
Visit **www.sdmts.com** and click on ***Travel Planner***

On the phone
Dial 511 and say "public transportation"

On the go
Use the Google Maps app on your smartphone



* Note: A new boarding location will open at Santa Fe Depot on Kettner Blvd. in early 2015. Please watch for notices posted at the Santa Fe Depot station.

** Nota: Una nueva estación para abordar en Santa Fe Depot abrirá en Kettner Blvd. a principios del año 2015. Favor de anticipar avisos publicados en la estación Santa Fe Depot.*

The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.
Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Route 235 – Monday through Friday / *lunes a viernes*

Escondido ➡ Downtown San Diego

Ⓐ Escondido Transit Center **DEPART**	Ⓑ Del Lago Transit Station	Ⓒ Rancho Bernardo Transit Station	Ⓓ Sabre Springs/ Peñasquitos T.S.	Ⓔ Miramar College Transit Station	Ⓕ Kearny Mesa Transit Center	Ⓖ Boulevard Transit Plaza (El Cajon Bl.)	Ⓗ City Heights Transit Plaza (Univ. Av.)	Ⓘ City College Transit Station (Broadway)	Ⓙ America Plaza Trolley Station **ARRIVE**
—	—	—	—	—	5:00a	5:10a	5:12a	5:21a	5:28a
—	—	—	—	—	5:15	5:25	5:27	5:36	5:43
—	—	—	—	5:20a	5:30	5:40	5:42	5:51	5:58
5:03a	5:12a	5:20a	5:27a	5:35	5:45	5:55	5:57	6:06	6:13
.....	.....	.....	.....	5:50	6:01	6:11	6:13	6:23	6:30
5:33	5:42	5:50	5:57	6:05	6:16	6:26	6:28	6:38	6:45
.....	.....	.....	.....	6:20	6:31	6:41	6:43	6:54	7:02
6:02	6:12	6:20	6:27	6:35	6:47	6:57	6:59	7:11	7:19
6:17	6:27	6:35	6:42	6:50	7:02	7:12	7:14	7:26	7:34
6:32	6:42	6:50	6:57	7:05	7:17	7:27	7:29	7:41	7:49
6:47	6:57	7:05	7:12	7:20	7:32	7:42	7:44	7:56	8:04
7:02	7:12	7:20	7:27	7:35	7:47	7:57	7:59	8:11	8:19
7:17	7:27	7:35	7:42	7:50	8:02	8:12	8:14	8:26	8:34
7:32	7:42	7:50	7:57	8:05	8:17	8:27	8:29	8:41	8:49
7:47	7:57	8:05	8:12	8:20	8:32	8:42	8:44	8:56	9:04
8:02	8:12	8:20	8:27	8:35	8:47	8:57	8:59	9:11	9:19
8:17	8:27	8:35	8:42	8:50	9:02	9:12	9:14	9:26	9:34
8:32	8:42	8:50	8:57	9:05	9:17	9:28	9:30	9:40	9:48
8:47	8:57	9:05	9:12	9:20	9:32	9:43	9:45	9:55	10:03
9:02	9:12	9:20	9:27	9:35	9:47	9:58	10:00	10:10	10:18
9:32	9:42	9:50	9:57	10:05	10:17	10:28	10:30	10:40	10:48
10:02	10:12	10:20	10:27	10:35	10:47	10:58	11:00	11:10	11:18
10:32	10:42	10:50	10:57	11:05	11:17	11:28	11:30	11:40	11:48
11:02	11:12	11:20	11:27	11:35	11:47	11:58	**12:00p**	**12:10p**	**12:18p**
11:32	11:42	11:50	11:57	**12:05p**	**12:17p**	**12:28p**	**12:30**	**12:40**	**12:48**
12:02p	**12:12p**	**12:20p**	**12:27p**	**12:35**	**12:47**	**12:58**	**1:00**	**1:10**	**1:18**
12:32	**12:42**	**12:50**	**12:57**	**1:05**	**1:17**	**1:28**	**1:30**	**1:40**	**1:48**
1:02	**1:12**	**1:20**	**1:27**	**1:35**	**1:47**	**1:58**	**2:00**	**2:10**	**2:18**
1:32	**1:42**	**1:50**	**1:57**	**2:05**	**2:17**	**2:28**	**2:30**	**2:40**	**2:48**
—	—	—	—	**2:20**	**2:32**	**2:44**	**2:46**	**2:56**	**3:04**
2:02	**2:12**	**2:20**	**2:27**	**2:35**	**2:47**	**2:59**	**3:01**	**3:20**	**3:28**
—	—	—	—	**2:50**	**3:02**	**3:14**	**3:16**	**3:35**	**3:43**
2:32	**2:42**	**2:50**	**2:57**	**3:05**	**3:17**	**3:29**	**3:31**	**3:50**	**3:58**
2:47	**2:57**	**3:05**	**3:12**	**3:20**	**3:32**	**3:44**	**3:46**	**4:05**	**4:13**
3:02	**3:12**	**3:20**	**3:27**	**3:35**	**3:47**	**4:00**	**4:02**	**4:22**	**4:30**
3:17	**3:27**	**3:35**	**3:42**	**3:50**	**4:02**	**4:15**	**4:17**	**4:37**	**4:45**
3:32	**3:42**	**3:50**	**3:57**	**4:05**	**4:17**	**4:30**	**4:32**	**4:52**	**5:00**
3:47	**3:57**	**4:05**	**4:12**	**4:20**	**4:32**	**4:45**	**4:47**	**5:07**	**5:15**
4:02	**4:12**	**4:20**	**4:27**	**4:35**	**4:48**	**5:02**	**5:04**	**5:26**	**5:34**
4:17	**4:27**	**4:35**	**4:42**	**4:50**	**5:03**	**5:17**	**5:19**	**5:41**	**5:49**
4:32	**4:42**	**4:50**	**4:57**	**5:05**	**5:18**	**5:32**	**5:34**	**5:56**	**6:04**
4:47	**4:57**	**5:05**	**5:12**	**5:20**	**5:33**	**5:47**	**5:49**	**6:11**	**6:19**
5:02	**5:12**	**5:20**	**5:27**	**5:35**	**5:48**	**6:02**	**6:04**	**6:18**	**6:26**
5:17	**5:27**	**5:35**	**5:42**	**5:50**	**6:03**	**6:17**	**6:19**	**6:33**	**6:41**
5:32	**5:42**	**5:50**	**5:57**	**6:05**	**6:17**	**6:30**	**6:32**	**6:45**	**6:53**
5:47	**5:57**	**6:05**	**6:12**	**6:20**	**6:32**	**6:45**	**6:47**	**6:58**	**7:06**
6:02	**6:12**	**6:20**	**6:27**	**6:35**	**6:47**	**7:00**	**7:02**	**7:13**	**7:21**
6:17	**6:27**	**6:35**	**6:42**	**6:50**	**7:02**	**7:15**	**7:17**	**7:28**	**7:36**
6:32	**6:42**	**6:50**	**6:57**	**7:05**	**7:16**	**7:28**	**7:30**	**7:40**	**7:47**
6:47	**6:57**	**7:05**	**7:12**	**7:20**	**7:31**	**7:43**	**7:45**	**7:55**	**8:02**
7:17	**7:27**	**7:35**	**7:42**	**7:50**	**8:01**	**8:13**	**8:15**	**8:25**	**8:32**
7:47	**7:57**	**8:05**	**8:12**	**8:20**	**8:31**	**8:41**	**8:43**	**8:52**	**8:59**
8:17	**8:27**	**8:35**	**8:42**	**8:50**	**9:01**	**9:11**	**9:13**	**9:22**	**9:29**
8:47	**8:56**	**9:04**	**9:11**	**9:19**	**9:29**	**9:39**	**9:41**	**9:50**	**9:57**
9:17	**9:26**	**9:34**	**9:41**	**9:49**	**9:59**	**10:09**	**10:11**	**10:20**	**10:27**
9:47	**9:56**	**10:04**	**10:11**	**10:19**	**10:29**	**10:39**	**10:41**	**10:50**	**10:57**
10:17	**10:26**	**10:34**	**10:41**	**10:49**	**10:59**	**11:09**	**11:11**	**11:20**	**11:27**
10:47	**10:56**	**11:04**	**11:11**	**11:19**	**11:29**	**11:39**	**11:41**	**11:50**	**11:57**

Downtown San Diego ➡ Escondido

Ⓙ Santa Fe Depot Transit Ctr.* **DEPART**	Ⓘ City College Transit Station (Broadway)	Ⓗ City Heights Transit Plaza (Univ. Av.)	Ⓖ Boulevard Transit Plaza (El Cajon Bl.)	Ⓕ Kearny Mesa Transit Center	Ⓔ Miramar College Transit Station	Ⓓ Sabre Springs/ Peñasquitos T.S.	Ⓒ Rancho Bernardo Transit Station	Ⓑ Del Lago Transit Station	Ⓐ Escondido Transit Center **ARRIVE**
4:38a	4:46a	4:56a	4:58a	5:10a	5:20a	5:28a	5:35a	5:43a	5:53a
4:53	5:01	5:11	5:13	5:25	5:35	5:43	5:50	5:58	6:08
5:08	5:16	5:26	5:28	5:40	5:50	5:58	6:05	6:13	6:23
5:23	5:31	5:41	5:43	5:55	6:05	6:13	6:20	6:28	6:38
5:39	5:47	5:57	5:59	6:11	6:21	6:29	6:36	6:44	6:54
5:54	6:02	6:12	6:14	6:26	6:36	6:44	6:51	6:59	7:09
6:07	6:16	6:26	6:28	6:41	6:52	7:00	7:07	7:15	7:26
6:22	6:31	6:41	6:43	6:56	7:07	7:15	7:22	7:30	7:41
6:34	6:43	6:54	6:56	7:11	7:23	7:31	7:38	7:46	7:58
6:49	6:58	7:09	7:11	7:26	7:38	7:46	7:53	8:01	8:13
7:04	7:13	7:24	7:26	7:41	7:53	8:01	8:08	8:16	8:28
7:19	7:28	7:39	7:41	7:56	8:08	8:16	8:23	8:31	8:43
7:34	7:43	7:54	7:56	8:11	8:23	8:31	8:38	8:46	8:58
7:49	7:58	8:09	8:11	8:26	8:38	8:46	8:53	9:01	9:13
8:04	8:13	8:24	8:26	8:41	8:53	9:01	9:08	9:16	9:28
8:19	8:28	8:39	8:41	8:56	9:08	9:16	9:23	9:31	9:43
8:37	8:46	8:57	8:59	9:12	9:23	9:31	9:38	9:46	9:58
8:52	9:01	9:12	9:14	9:27	9:38	9:46	9:53	10:01	10:13
9:07	9:16	9:27	9:29	9:42	9:53	10:01	10:08	10:16	10:28
9:37	9:46	9:57	9:59	10:12	10:23	10:31	10:38	10:46	10:58
10:07	10:16	10:27	10:29	10:42	10:53	11:01	11:08	11:16	11:28
10:37	10:46	10:57	10:59	11:12	11:23	11:31	11:38	11:46	11:58
11:07	11:16	11:27	11:29	11:42	11:53	**12:01p**	**12:08p**	**12:16p**	**12:28p**
11:37	11:46	11:57	11:59	**12:12p**	**12:23p**	**12:31**	**12:38**	**12:46**	**12:58**
12:07p	**12:16p**	**12:27p**	**12:29p**	**12:42**	**12:53**	**1:01**	**1:08**	**1:16**	**1:28**
12:39	**12:48**	**12:59**	**1:01**	**1:14**	**1:25**	**1:33**	**1:40**	**1:48**	**2:00**
1:09	**1:18**	**1:29**	**1:31**	**1:44**	**1:55**	**2:03**	**2:10**	**2:18**	**2:30**
1:39	**1:48**	**1:59**	**2:01**	**2:14**	**2:25**	**2:33**	**2:40**	**2:48**	**3:00**
2:10	**2:19**	**2:30**	**2:32**	**2:45**	**2:56**	**3:04**	**3:11**	**3:19**	**3:31**
2:25	**2:34**	**2:45**	**2:47**	**3:00**	**3:11**	**3:19**	**3:26**	**3:34**	**3:46**
2:38	**2:48**	**2:59**	**3:01**	**3:15**	**3:27**	**3:35**	**3:42**	**3:50**	**4:02**
2:53	**3:03**	**3:14**	**3:16**	**3:30**	**3:42**	**3:50**	**3:57**	**4:05**	**4:17**
3:08	**3:18**	**3:29**	**3:31**	**3:45**	**3:57**	**4:05**	**4:12**	**4:20**	**4:32**
3:23	**3:33**	**3:44**	**3:46**	**4:00**	**4:12**	**4:20**	**4:27**	**4:35**	**4:47**
3:38	**3:48**	**3:59**	**4:01**	**4:15**	**4:27**	**4:35**	**4:42**	**4:50**	**5:02**
3:53	**4:03**	**4:14**	**4:16**	**4:30**	**4:42**	**4:50**	**4:57**	**5:05**	**5:17**
4:06	**4:17**	**4:29**	**4:31**	**4:45**	**4:57**	**5:05**	**5:12**	**5:20**	**5:32**
4:21	**4:32**	**4:44**	**4:46**	**5:00**	**5:12**	**5:20**	**5:27**	**5:35**	**5:47**
4:36	**4:47**	**4:59**	**5:01**	**5:15**	**5:27**	**5:35**	**5:42**	**5:50**	**6:02**
4:51	**5:02**	**5:14**	**5:16**	**5:30**	**5:42**	**5:50**	**5:57**	**6:05**	**6:17**
5:06	**5:17**	**5:29**	**5:31**	**5:45**	**5:57**	**6:05**	**6:12**	**6:20**	**6:32**
5:21	**5:32**	**5:44**	**5:46**	**6:00**	**6:12**	**6:20**	**6:27**	**6:35**	**6:47**
5:36	**5:47**	**5:59**	**6:01**	**6:15**	**6:27**	**6:35**	**6:42**	**6:50**	**7:02**
5:51	**6:02**	**6:14**	**6:16**	**6:30**	**6:42**	**6:50**	**6:57**	**7:05**	**7:17**
6:06	**6:16**	**6:27**	**6:29**	**6:42**	**6:54**	**7:02**	**7:09**	**7:17**	**7:28**
6:21	**6:31**	**6:42**	**6:44**	**6:57**	**7:09**	**7:17**	**7:24**	**7:32**	**7:43**
6:37	**6:47**	**6:58**	**7:00**	**7:13**	**7:25**	**7:33**	**7:40**	**7:48**	**7:59**
7:04	**7:13**	**7:23**	**7:25**	**7:37**	**7:48**	**7:56**	**8:03**	**8:11**	**8:22**
7:34	**7:43**	**7:53**	**7:55**	**8:07**	**8:18**	**8:26**	**8:33**	**8:41**	**8:52**
8:04	**8:13**	**8:23**	**8:25**	**8:37**	**8:48**	**8:56**	**9:03**	**9:11**	**9:22**
8:34	**8:43**	**8:53**	**8:55**	**9:07**	**9:18**	**9:26**	**9:33**	**9:41**	**9:52**
9:03	**9:11**	**9:21**	**9:23**	**9:35**	**9:45**	**9:53**	**10:00**	**10:08**	**10:18**
9:33	**9:41**	**9:51**	**9:53**	**10:05**	**10:15**	**10:23**	**10:30**	**10:38**	**10:48**
10:03	**10:11**	**10:21**	**10:23**	**10:35**	**10:45**	**10:53**	**11:00**	**11:08**	**11:18**
10:33	**10:41**	**10:51**	**10:53**	**11:05**	**11:15**	**11:23**	**11:30**	**11:38**	**11:48**

Route 235 – Saturday and Sunday / *sábado y domingo*

Escondido ➡ Downtown San Diego

Ⓐ Escondido Transit Center **DEPART**	Ⓑ Del Lago Transit Station	Ⓒ Rancho Bernardo Transit Station	Ⓓ Sabre Springs/ Peñasquitos T.S.	Ⓔ Miramar College Transit Station	Ⓕ Kearny Mesa Transit Center	Ⓖ Boulevard Transit Plaza (El Cajon Bl.)	Ⓗ City Heights Transit Plaza (Univ. Av.)	Ⓘ City College Transit Station (Broadway)	Ⓙ America Plaza Trolley Station **ARRIVE**
—	—	—	—	—	5:13a	5:23a	5:25a	5:34a	5:41a
5:01a	5:10a	5:18a	5:25a	5:33a	5:43	5:53	5:55	6:04	6:11
5:31	5:40	5:48	5:55	6:03	6:13	6:23	6:25	6:34	6:41
6:00	6:09	6:17	6:24	6:32	6:42	6:52	6:54	7:03	7:10
6:30	6:40	6:48	6:55	7:03	7:14	7:24	7:26	7:36	7:44
7:00	7:10	7:18	7:25	7:33	7:44	7:54	7:56	8:06	8:14
7:30	7:40	7:48	7:55	8:03	8:14	8:24	8:26	8:36	8:44
8:00	8:10	8:18	8:25	8:33	8:44	8:54	8:56	9:06	9:14
8:30	8:40	8:48	8:55	9:03	9:15	9:26	9:28	9:38	9:46
AND THEN EVERY 30 MINUTES AT: / *Y LUEGO CADA 30 MINUTOS A LA:*									
:00	:10	:18	:25	:33	:45	:56	:58	:08	:16
:30	:40	:48	:55	:03	:15	:26	:28	:38	:46
UNTIL: / *HASTA:*									
5:00p	**5:10p**	**5:18p**	**5:25p**	**5:33p**	**5:45p**	**5:56p**	**5:58p**	**6:08p**	**6:16p**
5:30	**5:40**	**5:48**	**5:55**	**6:03**	**6:14**	**6:25**	**6:27**	**6:37**	**6:45**
6:00	**6:10**	**6:18**	**6:25**	**6:33**	**6:44**	**6:55**	**6:57**	**7:07**	**7:15**
6:30	**6:40**	**6:48**	**6:55**	**7:03**	**7:14**	**7:24**	**7:26**	**7:36**	**7:43**
7:00	**7:10**	**7:18**	**7:25**	**7:33**	**7:44**	**7:54**	**7:56**	**8:06**	**8:13**
7:30	**7:40**	**7:48**	**7:55**	**8:03**	**8:14**	**8:24**	**8:26**	**8:36**	**8:43**
8:00	**8:10**	**8:18**	**8:25**	**8:33**	**8:44**	**8:54**	**8:56**	**9:06**	**9:13**
8:30	**8:39**	**8:47**	**8:54**	**9:02**	**9:12**	**9:22**	**9:24**	**9:33**	**9:40**
9:00	**9:09**	**9:17**	**9:24**	**9:32**	**9:42**	**9:52**	**9:54**	**10:03**	**10:10**
9:30	**9:39**	**9:47**	**9:54**	**10:02**	**10:12**	**10:22**	**10:24**	**10:33**	**10:40**
10:00	**10:09**	**10:17**	**10:24**	**10:32**	**10:42**	**10:52**	**10:54**	**11:03**	**11:10**

Downtown San Diego ➡ Escondido

Ⓙ Santa Fe Depot Transit Ctr.* **DEPART**	Ⓘ City College Transit Station (Broadway)	Ⓗ City Heights Transit Plaza (Univ. Av.)	Ⓖ Boulevard Transit Plaza (El Cajon Bl.)	Ⓕ Kearny Mesa Transit Center	Ⓔ Miramar College Transit Station	Ⓓ Sabre Springs/ Peñasquitos T.S.	Ⓒ Rancho Bernardo Transit Station	Ⓑ Del Lago Transit Station	Ⓐ Escondido Transit Center **ARRIVE**
4:39a	4:46a	4:56a	4:58a	5:10a	5:21a	5:29a	5:36a	5:44a	5:54a
5:09	5:16	5:26	5:28	5:40	5:51	5:59	6:06	6:14	6:24
5:38	5:45	5:55	5:57	6:09	6:20	6:28	6:35	6:43	6:53
6:08	6:15	6:25	6:27	6:39	6:50	6:58	7:05	7:13	7:23
6:38	6:46	6:56	6:58	7:11	7:23	7:31	7:38	7:46	7:57
7:08	7:16	7:26	7:28	7:41	7:53	8:01	8:08	8:16	8:27
7:38	7:46	7:56	7:58	8:11	8:23	8:31	8:38	8:46	8:57
8:08	8:16	8:26	8:28	8:41	8:53	9:01	9:08	9:16	9:27
8:38	8:46	8:56	8:58	9:11	9:23	9:31	9:38	9:46	9:57
9:06	9:15	9:26	9:28	9:41	9:53	10:01	10:08	10:16	10:28
9:36	9:45	9:56	9:58	10:11	10:23	10:31	10:38	10:46	10:58
10:07	10:16	10:27	10:29	10:42	10:54	11:02	11:09	11:17	11:29
10:38	10:47	10:58	11:00	11:13	11:25	11:33	11:40	11:48	**12:00p**
AND THEN EVERY 30 MINUTES AT: / *Y LUEGO CADA 30 MINUTOS A LA:*									
:08	:17	:28	:30	:43	:55	:03	:10	:18	**:30**
:38	:47	:58	:00	:13	:25	:33	:40	:48	**:00**
UNTIL: / *HASTA:*									
5:08p	**5:17p**	**5:28p**	**5:30p**	**5:43p**	**5:55p**	**6:03p**	**6:10p**	**6:18p**	**6:30**
5:38	**5:47**	**5:58**	**6:00**	**6:13**	**6:25**	**6:33**	**6:40**	**6:48**	**7:00**
6:08	**6:17**	**6:28**	**6:30**	**6:42**	**6:54**	**7:02**	**7:09**	**7:17**	**7:28**
6:38	**6:47**	**6:58**	**7:00**	**7:12**	**7:24**	**7:32**	**7:39**	**7:47**	**7:58**
7:07	**7:15**	**7:25**	**7:27**	**7:39**	**7:50**	**7:58**	**8:05**	**8:13**	**8:24**
7:37	**7:45**	**7:55**	**7:57**	**8:09**	**8:20**	**8:28**	**8:35**	**8:43**	**8:54**
8:07	**8:15**	**8:25**	**8:27**	**8:39**	**8:50**	**8:58**	**9:05**	**9:13**	**9:24**
8:33	**8:41**	**8:51**	**8:53**	**9:05**	**9:16**	**9:24**	**9:31**	**9:39**	**9:50**
9:04	**9:11**	**9:21**	**9:23**	**9:35**	**9:45**	**9:53**	**10:00**	**10:08**	**10:18**
9:34	**9:41**	**9:51**	**9:53**	**10:05**	**10:15**	**10:23**	**10:30**	**10:38**	**10:48**
10:04	**10:11**	**10:21**	**10:23**	**10:35**	**10:45**	**10:53**	**11:00**	**11:08**	**11:18**

* Note: A new boarding station at Santa Fe Depot will open on Kettner Blvd. in early 2015. Please watch for notices posted at the Santa Fe Depot station.

** Nota: Una nueva estación para abordar en Santa Fe Depot abrirá en Kettner Blvd. a principios del año 2015. Favor de anticipar avisos publicados en la estación Santa Fe Depot.*

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

RegionPlus Day Pass *Pase diario RegionPlus*	$12.00
***Rapid Express* Fare** *Tarifa de Rapid Express*	$5.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$2.50*
Children 5 & under / *Niños de 5 años o menos*	FREE / *GRATIS*

Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*

MONTHLY PASSES / *Pases mensual*

Premium Monthly Pass *Pase mensual premium*	$100.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$25.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$50.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

REGIONPLUS DAY PASS / *Pase diario RegionPlus*

To purchase a $12 RegionPlus Day Pass, please notify the bus operator **before inserting your money** in the fare box. RegionPlus Day Passes are valid on all routes (except Rural) including *Rapid Express* and COASTER.

*Para adquirir un pase diario RegionPlus de 12 dólares, favor de notificar al operador de autobús **antes de insertar su dinero** en la caja de cobro. Los pases diarios RegionPlus son válidos en todas las rutas (menos las rutas Rural), incluyendo las rutas Rapid Express y el COASTER.*

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
SafeWatch	**(619) 557-4500**
Lost & Found *Objetos extraviados*	**(619) 448-2720**
The Transit Store	**(619) 234-1060** 1st & Broadway, Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**www.sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.

*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a **www.sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective JANUARY 25, 2015

Rapid Express

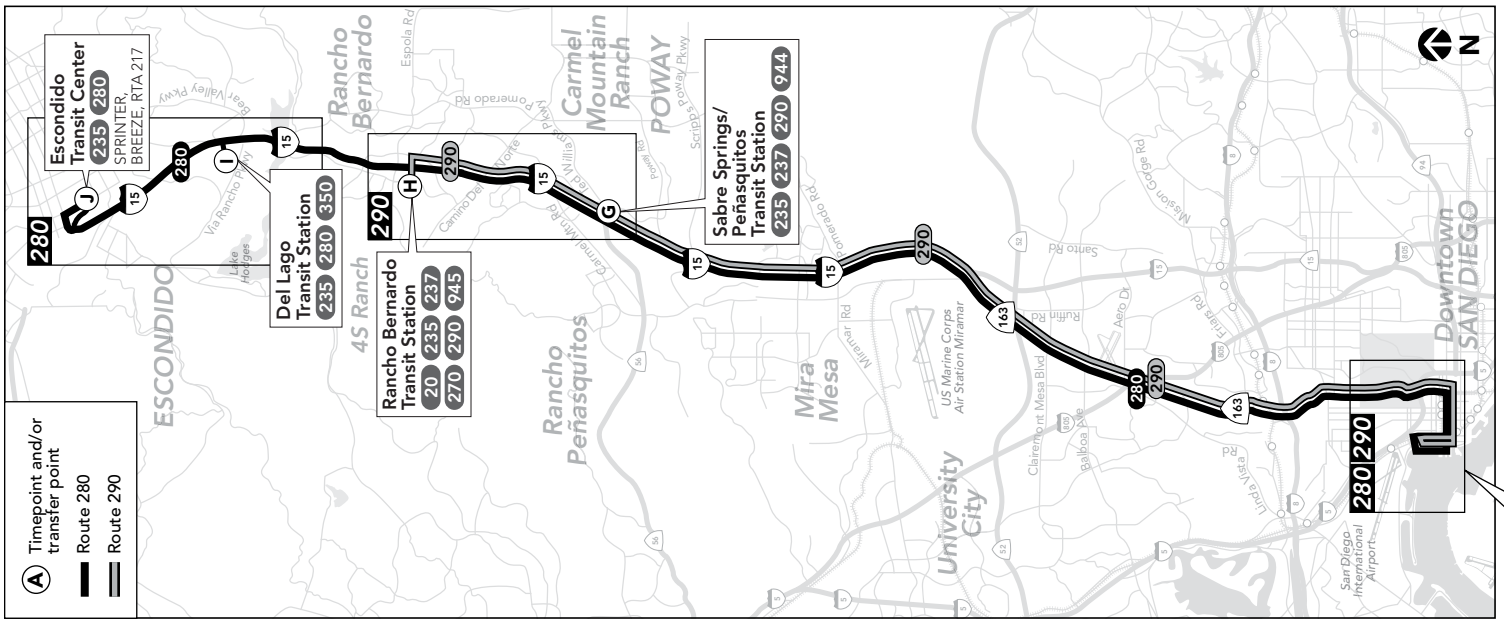
I-15 Service

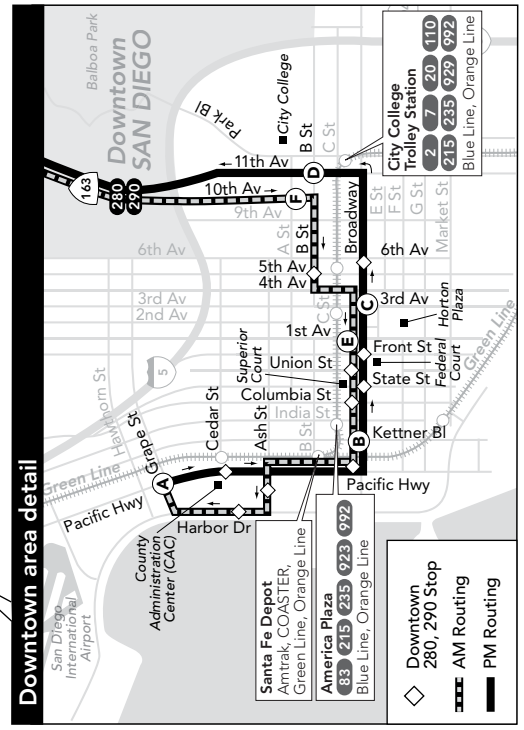
280 Escondido/Del Lago – Downtown

290 Rancho Bernardo/Sabre Springs – Downtown

MTS Metropolitan Transit System

Alternative formats available upon request. Please call: (619) 557-4555 /
Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555

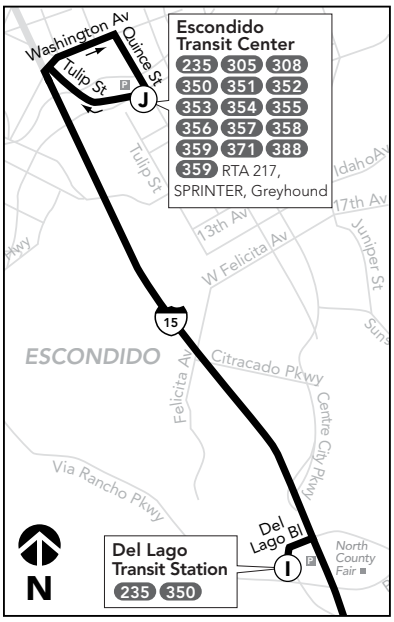




Routes 280 and 290 do not operate on weekends or on the observation of the following holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. A limited schedule will run the day after Thanksgiving and in the week between Christmas and New Year's Day. Information will be provided on buses and www.sdmts.com.

Las rutas 280 y 290 no ofrecen servicio durante el fin de semana ó durante los siguientes días festivos: Año Nuevo, Presidents' Day, Memorial Day, Día de la Independencia (E.E.U.U.), Labor Day, Día de Acción de Gracias y Navidad. Se operará un horario limitado el día después del Día de Acción de Gracias y en la semana entre Navidad y Año Nuevo. Se proporcionará información en los autobuses y www.sdmts.com.

Route 280 – Monday through Friday / *lunes a viernes*



Escondido ➡ Downtown San Diego

(J) Escondido Transit Center **DEPART**	(I) Del Lago Transit Station	(F) 10th Ave. & B St.	(E) Broadway & 1st Ave.	(B) Broadway & Kettner Blvd.	(A) Grape St. & Pacific Hwy. **ARRIVE**
5:00a	5:09a	5:40a	5:45a	5:49a	5:55a
5:30	5:39	6:10	6:15	6:19	6:25
6:00	6:09	6:40	6:45	6:49	6:55
6:15	6:24	6:57	7:02	7:06	7:12
6:30	6:39	7:12	7:17	7:21	7:27
6:45	6:54	7:27	7:32	7:36	7:42
7:00	7:10	7:45	7:50	7:54	8:00
7:15	7:25	8:00	8:05	8:09	8:15
7:30	7:40	8:15	8:20	8:24	8:30
8:00	8:10	8:45	8:50	8:54	9:00

Downtown San Diego ➡ Escondido

(A) Pacific Hwy. & Grape St. **DEPART**	(B) Broadway & Kettner Blvd.	(C) Broadway & 3rd Ave.	(D) 11th Ave. & B St.	(I) Del Lago Transit Station	(J) Escondido Transit Center **ARRIVE**
2:57p	**3:02p**	**3:07p**	**3:13p**	**3:45p**	**3:56p**
3:27	**3:32**	**3:37**	**3:43**	**4:15**	**4:26**
3:42	**3:47**	**3:52**	**3:58**	**4:30**	**4:41**
3:57	**4:02**	**4:07**	**4:13**	**4:45**	**4:56**
4:12	**4:17**	**4:22**	**4:28**	**5:00**	**5:11**
4:27	**4:32**	**4:37**	**4:43**	**5:15**	**5:26**
4:42	**4:47**	**4:52**	**4:58**	**5:30**	**5:41**
4:57	**5:02**	**5:07**	**5:13**	**5:45**	**5:56**
5:12	**5:17**	**5:22**	**5:28**	**6:00**	**6:11**
5:27	**5:32**	**5:37**	**5:43**	**6:15**	**6:26**
5:57	**6:02**	**6:07**	**6:13**	**6:45**	**6:56**

Shaded times are approximate; trip may run earlier than scheduled.
Los tiempos sombreados son aproximados; los viajes pueden operar más temprano que indica.

Route 290 – Monday through Friday / *lunes a viernes*



Rancho Bernardo ➡ Sabre Springs ➡ Downtown San Diego

(H) Rancho Bernardo Transit Station **DEPART**	(G) Sabre Springs/ Peñas. Transit Sta.	(F) 10th Ave. & B St.	(E) Broadway & 1st Ave.	(B) Broadway & Kettner Blvd.	(A) Grape St. & Pacific Hwy. **ARRIVE**
5:15a	5:22a	5:46a	5:51a	5:55a	6:01a
5:45	5:52	6:16	6:21	6:25	6:31
6:05	6:12	6:36	6:41	6:45	6:51
6:20	6:27	6:51	6:56	7:00	7:06
6:35	6:42	7:08	7:13	7:17	7:23
6:45	6:52	7:18	7:23	7:27	7:33
6:55	7:02	7:28	7:33	7:37	7:43
7:05	7:12	7:38	7:43	7:47	7:53
7:15	7:22	7:48	7:53	7:57	8:03
7:25	7:32	7:58	8:03	8:07	8:13
7:40	7:47	8:13	8:18	8:22	8:28
7:55	8:02	8:28	8:33	8:37	8:43
8:10	8:17	8:43	8:48	8:52	8:58

Downtown San Diego ➡ Sabre Springs ➡ Rancho Bernardo

(A) Pacific Hwy. & Grape St. **DEPART**	(B) Broadway & Kettner Blvd.	(C) Broadway & 3rd Ave.	(D) 11th Ave. & B St.	(G) Sabre Springs/ Peñas. Transit Sta.	(H) Rancho Bernardo Transit Station **ARRIVE**
2:54p	**2:59p**	**3:04p**	**3:10p**	**3:32p**	**3:40p**
3:24	**3:29**	**3:34**	**3:40**	**4:02**	**4:10**
3:39	**3:44**	**3:49**	**3:55**	**4:17**	**4:25**
3:54	**3:59**	**4:04**	**4:10**	**4:32**	**4:40**
4:09	**4:14**	**4:19**	**4:25**	**4:47**	**4:55**
4:19	**4:24**	**4:29**	**4:35**	**4:57**	**5:05**
4:29	**4:34**	**4:39**	**4:45**	**5:07**	**5:15**
4:39	**4:44**	**4:49**	**4:55**	**5:17**	**5:25**
4:49	**4:54**	**4:59**	**5:05**	**5:27**	**5:35**
4:59	**5:04**	**5:09**	**5:15**	**5:37**	**5:45**
5:09	**5:14**	**5:19**	**5:25**	**5:47**	**5:55**
5:24	**5:29**	**5:34**	**5:40**	**6:02**	**6:10**
5:54	**5:59**	**6:04**	**6:10**	**6:32**	**6:40**

Shaded times are approximate; trip may run earlier than scheduled.
Los tiempos sombreados son aproximados; los viajes pueden operar más temprano que indica.

Guaranteed Ride Home

Commuters who ride *Rapid Express* three or more times per week have a safety net with the SANDAG iCommute program's Guaranteed Ride Home (GRH). Pre-registered participants can use this program up to three times per year in the event of personal or family illness or emergency or unscheduled overtime. GRH gives you the freedom to get where you need to go in an emergency. To take advantage of the GRH program, you must register with iCommute. Visit 511sd.com/iCommute or call 511 and say "Guaranteed Ride Home."

Pasajeros que toman Rapid Express tres veces o más por semana tienen una garantía con Guaranteed Ride Home (GRH) del programa iCommute de SANDAG, usted tiene un aventón a casa garantizado. Participantes pre-registrados pueden usar este programa hasta tres veces por año en caso de enfermedad o emergencia personal o familiar u horas extraordinarias repentinas. GRH te da la libertad de llegar a donde necesitas ir en una emergencia. Para tomar ventaja del programa GRH, usted debe registrarse con iCommute. Visite 511sd.com/iCommute o llame al 511 y diga "Español."

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)* Compass Card required ($2) / *Se requiere un Compass Card ($2)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.25
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.10*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for $2 at select outlets. A $5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional $2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por $2 en selectas sucursales. Un pase de un día por $5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de $2.

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
SafeWatch	**(619) 557-4500**
Lost & Found *Objetos extraviados*	**(877) 841-3278**
The Transit Store	**(619) 234-1060** 1st & Broadway, Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**www.sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.

*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a **www.sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective JANUARY 25, 2015

944

Sabre Springs – Poway

via Poway Rd.

945

Rancho Bernardo – Old Poway Park

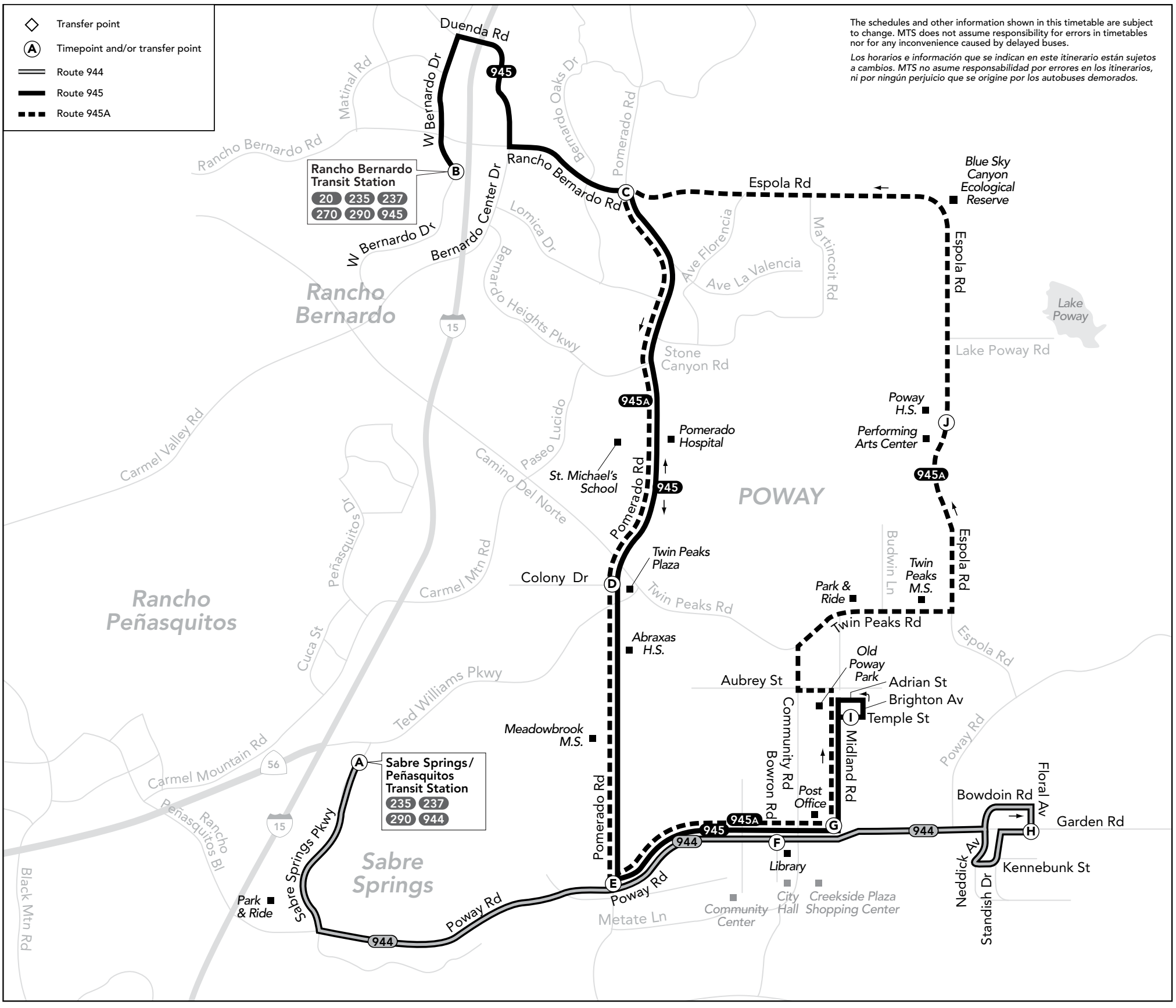
via Pomerado Rd. / Poway Rd.

DESTINATIONS

- Abraxas High School (945)
- Meadowbrook Middle School (945)
- Pomerado Hospital (945)
- Poway Civic Center
- Poway High School (945A)
- Poway Performing Arts Center (945A)
- Rancho Bernardo Transit Station (945)
- Twin Peaks Plaza (945)
- Sabre Springs / Peñasquitos Transit Station (944)

MTS® Metropolitan Transit System

- ◇ Transfer point
- Ⓐ Timepoint and/or transfer point
- Route 944
- Route 945
- Route 945A



The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.

Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*

Route 945A – Monday through Friday / *lunes a viernes*

Morning only

Pomerado ➡ Poway ➡ Espola Loop

Ⓒ Pomerado Rd. & R. Bernardo Rd. **DEPART**	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd.	Ⓙ Poway High School	Ⓒ Pomerado Rd. & R. Bernardo Rd. **ARRIVE**
6:36a	6:43a	6:51a	7:00a	7:15a	7:25a
7:41	7:48	7:56	8:05	8:15	8:25

Afternoon only

Poway ➡ Espola ➡ Pomerado Loop

Ⓖ Midland Rd. & Poway Rd. **DEPART**	Ⓙ Poway High School	Ⓒ Pomerado Rd. & R. Bernardo Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd. **ARRIVE**
2:35p	**2:45p**	**2:55p**	**3:02p**	**3:10p**	**3:19p**
3:50	**4:00**	**4:10**	**4:17**	**4:25**	**4:34**

Route 945A does not operate on weekends or on the following holidays and observed holidays
La ruta 945A no ofrece servicio durante el fin de semana ó durante los siguientes días festivos y feriados observados

>>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Route 944 – Monday through Friday / *lunes a viernes*

Sabre Springs ➡ Poway

Ⓐ Sabre Springs/Peñasquitos Transit Station **DEPART**	Ⓔ Poway Rd. & Pomerado Rd.	Ⓕ Poway Rd. & Bowron Rd.	Ⓗ Garden Rd. & Floral Av. **ARRIVE**
5:32a	5:41a	5:44a	5:52a
6:02	6:11	6:14	6:22
6:32	6:41	6:44	6:52
7:04	7:14	7:17	7:26
7:34	7:44	7:47	7:56
8:04	8:14	8:17	8:26
8:34	8:44	8:47	8:56
9:04	9:14	9:17	9:26
9:34	9:44	9:47	9:56
10:04	10:14	10:17	10:26
10:34	10:44	10:47	10:56
11:04	11:14	11:17	11:26
11:34	11:44	11:47	11:56
12:04p	**12:14p**	**12:17p**	**12:26p**
12:34	**12:44**	**12:47**	**12:56**
1:05	**1:15**	**1:18**	**1:27**
1:35	**1:45**	**1:48**	**1:57**
2:05	**2:15**	**2:19**	**2:28**
2:35	**2:46**	**2:50**	**2:59**
3:09	**3:20**	**3:24**	**3:33**
3:39	**3:50**	**3:54**	**4:03**
4:09	**4:20**	**4:24**	**4:33**
4:39	**4:50**	**4:54**	**5:03**
5:09	**5:20**	**5:24**	**5:33**
5:39	**5:50**	**5:54**	**6:03**
6:09	**6:20**	**6:24**	**6:33**
6:39	**6:49**	**6:52**	**7:00**
7:09	**7:19**	**7:22**	**7:30**

Poway ➡ Sabre Springs

Ⓗ Garden Rd. & Floral Av. **DEPART**	Ⓕ Poway Rd. & Bowron Rd.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓐ Sabre Springs/Peñasquitos Transit Station **ARRIVE**
5:00a	5:06a	5:12a	5:22a
5:30	5:36	5:42	5:52
6:00	6:06	6:12	6:22
6:30	6:36	6:42	6:52
7:01	7:07	7:13	7:23
7:32	7:38	7:44	7:54
8:02	8:08	8:14	8:24
8:32	8:38	8:44	8:54
9:00	9:07	9:13	9:24
9:30	9:37	9:43	9:54
10:00	10:07	10:13	10:24
10:30	10:37	10:43	10:54
11:00	11:07	11:13	11:24
11:30	11:37	11:43	11:54
12:00p	**12:07p**	**12:13p**	**12:24p**
12:30	**12:37**	**12:43**	**12:54**
1:00	**1:07**	**1:13**	**1:24**
1:30	**1:37**	**1:43**	**1:54**
2:01	**2:08**	**2:14**	**2:25**
2:31	**2:38**	**2:44**	**2:55**
3:07	**3:14**	**3:20**	**3:31**
3:37	**3:44**	**3:50**	**4:01**
4:07	**4:14**	**4:20**	**4:31**
4:37	**4:44**	**4:50**	**5:01**
5:07	**5:14**	**5:20**	**5:31**
5:37	**5:44**	**5:50**	**6:01**
6:10	**6:16**	**6:21**	**6:31**
6:37	**6:43**	**6:48**	**6:58**

Route 944 – Saturday / *sábado*

Sabre Springs ➡ Poway

Ⓐ Sabre Springs/Peñasquitos Transit Station **DEPART**	Ⓔ Poway Rd. & Pomerado Rd.	Ⓕ Poway Rd. & Bowron Rd.	Ⓗ Garden Rd. & Floral Av. **ARRIVE**
6:32a	6:40a	6:43a	6:51a
7:34	7:43	7:47	7:56
8:34	8:43	8:47	8:56
9:34	9:43	9:47	9:56
10:34	10:43	10:47	10:56
11:36	11:45	11:49	11:58
12:36p	**12:45p**	**12:49p**	**12:58p**
1:36	**1:45**	**1:49**	**1:58**
2:36	**2:45**	**2:49**	**2:58**
3:36	**3:45**	**3:49**	**3:58**
4:36	**4:45**	**4:49**	**4:58**
5:37	**5:46**	**5:50**	**5:59**
6:38	**6:46**	**6:49**	**6:57**

Poway ➡ Sabre Springs

Ⓗ Garden Rd. & Floral Av. **DEPART**	Ⓕ Poway Rd. & Bowron Rd.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓐ Sabre Springs/Peñasquitos Transit Station **ARRIVE**
6:00a	6:06a	6:11a	6:20a
7:00	7:06	7:11	7:20
8:01	8:07	8:12	8:21
9:02	9:08	9:13	9:22
9:59	10:06	10:12	10:22
10:59	11:06	11:12	11:22
12:00p	**12:07p**	**12:13p**	**12:23p**
1:00	**1:07**	**1:13**	**1:23**
2:00	**2:07**	**2:13**	**2:23**
3:00	**3:07**	**3:13**	**3:23**
4:00	**4:07**	**4:13**	**4:23**
5:00	**5:07**	**5:13**	**5:23**
6:02	**6:08**	**6:13**	**6:22**

Route 945 – Monday through Friday / *lunes a viernes*

Rancho Bernardo ➡ Old Poway

Ⓑ Rancho Bernardo Transit Station **DEPART**	Ⓒ Pomerado Rd. & R. Bernardo Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd.	Ⓘ Temple St. & Midland Rd. **ARRIVE**
5:55a	6:04a	6:11a	6:18a	6:27a	6:30a
6:25	6:34	6:41	6:48	6:57	7:00
6:55	7:04	7:11	7:18	7:27	7:30
7:26	7:36	7:43	7:51	8:01	8:04
7:56	8:06	8:13	8:21	8:31	8:34
8:26	8:36	8:43	8:51	9:01	9:04
8:56	9:06	9:13	9:21	9:31	9:34
9:26	9:36	9:43	9:51	10:01	10:04
9:56	10:06	10:13	10:21	10:31	10:34
10:25	10:35	10:42	10:50	11:00	11:03
10:55	11:05	11:12	11:20	11:30	11:33
11:24	11:34	11:41	11:49	11:59	**12:02p**
11:54	**12:04p**	**12:11p**	**12:19p**	**12:29p**	**12:32**
12:24p	**12:34**	**12:41**	**12:49**	**12:59**	**1:02**
12:54	**1:04**	**1:11**	**1:19**	**1:29**	**1:32**
1:24	**1:34**	**1:41**	**1:49**	**1:59**	**2:02**
1:54	**2:04**	**2:11**	**2:19**	**2:29**	**2:32**
2:24	**2:34**	**2:41**	**2:49**	**2:59**	**3:02**
2:54	**3:04**	**3:11**	**3:19**	**3:29**	**3:32**
3:23	**3:33**	**3:40**	**3:48**	**3:58**	**4:01**
3:53	**4:03**	**4:10**	**4:18**	**4:28**	**4:31**
4:23	**4:33**	**4:40**	**4:48**	**4:58**	**5:01**
4:53	**5:03**	**5:10**	**5:18**	**5:28**	**5:31**
5:23	**5:33**	**5:40**	**5:48**	**5:58**	**6:01**
5:53	**6:03**	**6:10**	**6:18**	**6:28**	**6:31**
6:23	**6:33**	**6:40**	**6:48**	**6:58**	**7:01**
6:53	**7:02**	**7:09**	**7:16**	**7:25**	**7:28**
7:28	**7:37**	**7:44**	**7:51**	**8:00**	**8:03**

Old Poway ➡ Rancho Bernardo

Ⓘ Temple St. & Midland Rd. **DEPART**	Ⓖ Midland Rd. & Poway Rd.	Ⓔ Pomerado Rd. & Poway Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓒ R. Bernardo Rd. & Pomerado Rd.	Ⓑ Rancho Bernardo Transit Station **ARRIVE**
5:12a	5:15a	5:22a	5:28a	5:35a	5:45a
5:42	5:45	5:52	5:58	6:05	6:15
6:12	6:15	6:22	6:28	6:35	6:45
6:42	6:45	6:52	6:58	7:05	7:15
7:10	7:13	7:21	7:27	7:35	7:45
7:40	7:43	7:51	7:57	8:05	8:15
8:10	8:13	8:21	8:27	8:35	8:45
8:40	8:43	8:51	8:57	9:05	9:15
9:10	9:13	9:21	9:27	9:35	9:45
9:40	9:43	9:51	9:57	10:05	10:15
10:10	10:13	10:21	10:27	10:35	10:45
10:40	10:43	10:51	10:57	11:05	11:15
11:10	11:13	11:21	11:27	11:35	11:45
11:39	11:43	11:51	11:57	**12:05p**	**12:16p**
12:08p	**12:12p**	**12:20p**	**12:26p**	**12:34**	**12:45**
12:38	**12:42**	**12:50**	**12:56**	**1:04**	**1:15**
1:08	**1:12**	**1:20**	**1:26**	**1:34**	**1:45**
1:38	**1:42**	**1:50**	**1:56**	**2:04**	**2:15**
2:08	**2:12**	**2:20**	**2:26**	**2:34**	**2:45**
2:38	**2:42**	**2:50**	**2:56**	**3:04**	**3:15**
3:08	**3:12**	**3:20**	**3:26**	**3:34**	**3:45**
3:38	**3:42**	**3:50**	**3:56**	**4:04**	**4:15**
4:08	**4:12**	**4:20**	**4:26**	**4:34**	**4:45**
4:38	**4:42**	**4:50**	**4:56**	**5:04**	**5:15**
5:08	**5:12**	**5:20**	**5:26**	**5:34**	**5:45**
5:38	**5:42**	**5:50**	**5:56**	**6:04**	**6:15**
6:08	**6:12**	**6:20**	**6:26**	**6:34**	**6:45**
6:42	**6:45**	**6:52**	**6:58**	**7:05**	**7:15**

Route 945 – Saturday / *sábado*

Rancho Bernardo ➡ Old Poway

Ⓑ Rancho Bernardo Transit Station **DEPART**	Ⓒ Pomerado Rd. & R. Bernardo Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd.	Ⓘ Temple St. & Midland Rd. **ARRIVE**
6:42a	6:52a	6:59a	7:06a	7:14a	7:18a
7:27	7:37	7:44	7:52	8:01	8:05
8:12	8:22	8:29	8:37	8:46	8:50
8:57	9:07	9:14	9:22	9:31	9:35
9:42	9:52	9:59	10:07	10:16	10:20
10:27	10:37	10:44	10:52	11:01	11:05
11:12	11:22	11:29	11:37	11:46	11:50
11:57	**12:07p**	**12:14p**	**12:22p**	**12:31p**	**12:35p**
12:42p	**12:52**	**12:59**	**1:07**	**1:16**	**1:20**
1:27	**1:37**	**1:44**	**1:52**	**2:01**	**2:05**
2:12	**2:22**	**2:29**	**2:37**	**2:46**	**2:50**
2:57	**3:07**	**3:14**	**3:22**	**3:31**	**3:35**
3:42	**3:52**	**3:59**	**4:07**	**4:16**	**4:20**
4:27	**4:37**	**4:44**	**4:52**	**5:01**	**5:05**
5:12	**5:22**	**5:29**	**5:37**	**5:46**	**5:50**
5:57	**6:07**	**6:14**	**6:22**	**6:31**	**6:35**
6:57	**7:07**	**7:14**	**7:21**	**7:29**	**7:33**

Old Poway ➡ Rancho Bernardo

Ⓘ Temple St. & Midland Rd. **DEPART**	Ⓖ Midland Rd. & Poway Rd.	Ⓔ Pomerado Rd. & Poway Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓒ R. Bernardo Rd. & Pomerado Rd.	Ⓑ Rancho Bernardo Transit Station **ARRIVE**
6:40a	6:43a	6:49a	6:55a	7:02a	7:11a
7:25	7:28	7:34	7:40	7:47	7:56
8:08	8:11	8:17	8:24	8:31	8:41
8:55	8:58	9:04	9:11	9:18	9:28
9:40	9:43	9:49	9:56	10:03	10:13
10:25	10:28	10:34	10:41	10:48	10:58
11:11	11:14	11:20	11:27	11:35	11:45
11:56	11:59	**12:05p**	**12:12p**	**12:20p**	**12:30p**
12:41p	**12:44p**	**12:50**	**12:57**	**1:05**	**1:15**
1:26	**1:29**	**1:35**	**1:42**	**1:50**	**2:00**
2:11	**2:14**	**2:20**	**2:27**	**2:35**	**2:45**
2:56	**2:59**	**3:05**	**3:12**	**3:20**	**3:30**
3:41	**3:44**	**3:50**	**3:57**	**4:05**	**4:15**
4:26	**4:29**	**4:35**	**4:42**	**4:50**	**5:00**
5:11	**5:14**	**5:20**	**5:27**	**5:35**	**5:45**
5:56	**5:59**	**6:05**	**6:12**	**6:20**	**6:30**

Routes 944 and 945 do not operate on Sundays or on holidays that run a Sunday schedule. To determine which holidays run on a Sunday schedule, visit www.sdmts.com or call 511. / *Las rutas 944 ni 945 no ofrecen servicio en los domingos ó los días festivos que operan con servicio de domingo. Para detalles sobre los días festivos que operan con servicio de domingo, visite www.sdmts.com o llame 511.*

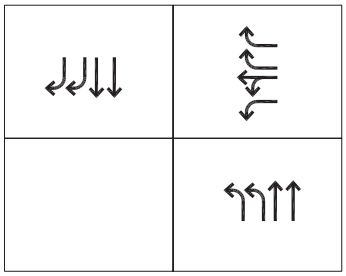
APPENDIX N

ILV CALCULATIONS
FOR CALTRANS CONTROLLED INTERCHANGES

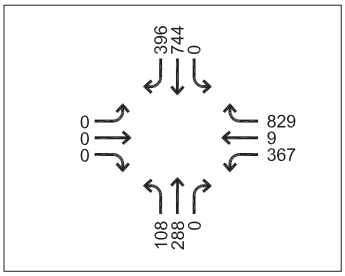
ILV Calculation

6. CAMINO DEL SUR & SR-56 WB RAMPS
EXISTING (2014) AM PEAK HOUR

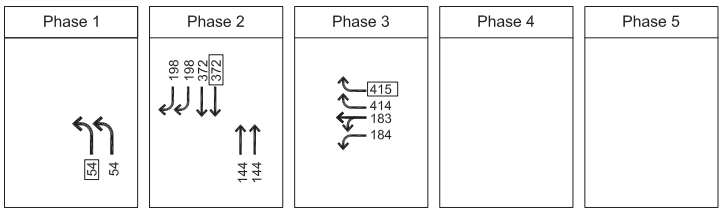
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
54	372	415		

Total Operating Level (ILV/Hr) Is...

Σ
841

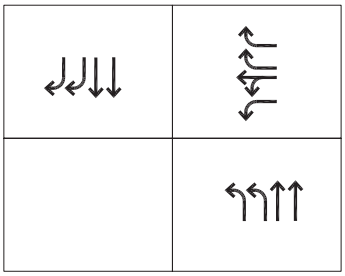
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

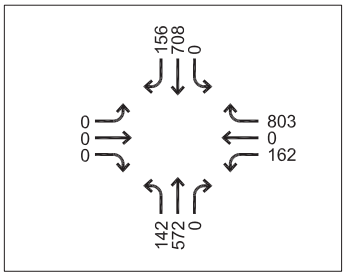
ILV Calculation

6. CAMINO DEL SUR & SR-56 WB RAMPS
EXISTING (2014) PM PEAK HOUR

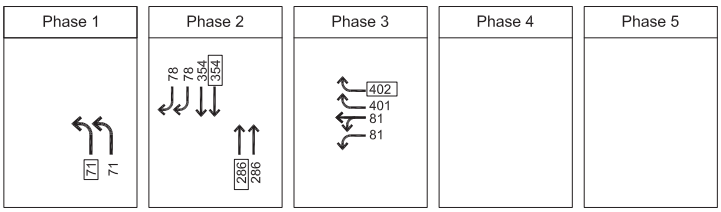
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
71	354	402		

Total Operating Level (ILV/Hr) Is...

Σ
827

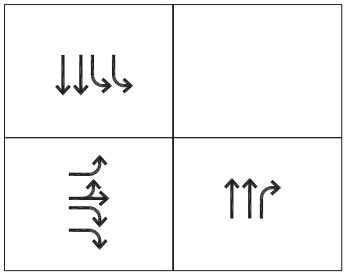
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

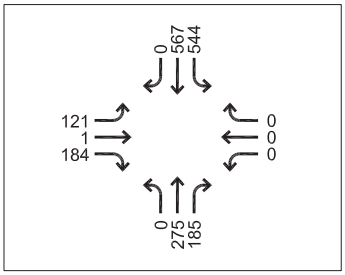
ILV Calculation

7. CAMINO DEL SUR & SR-56 EB RAMPS
EXISTING (2014) AM PEAK HOUR

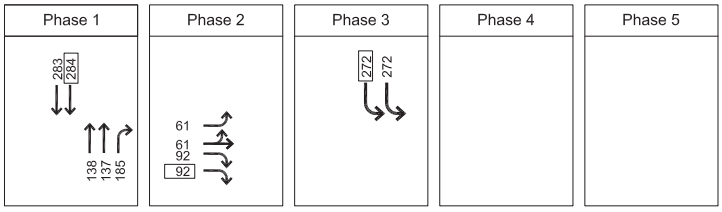
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
272	284	92		

Total Operating Level (ILV/Hr) Is...

Σ
648

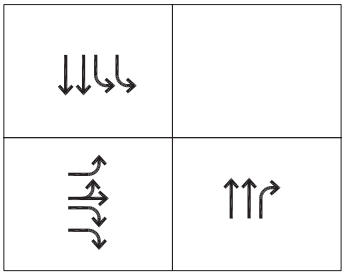
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

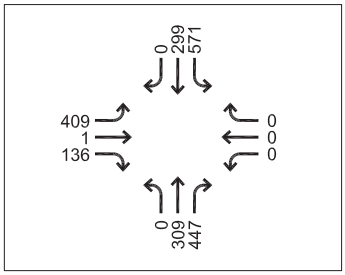
ILV Calculation

7. CAMINO DEL SUR & SR-56 EB RAMPS
EXISTING (2014) PM PEAK HOUR

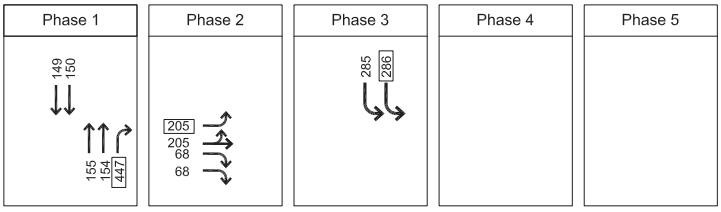
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
286	447	205		

Total Operating Level (ILV/Hr) Is...

Σ
938

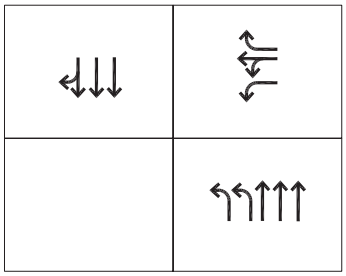
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

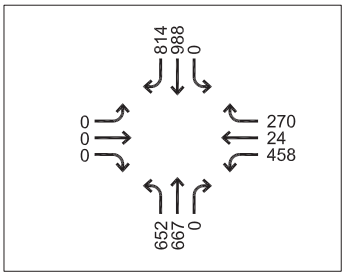
ILV Calculation

16. BLACK MOUNTAIN ROAD & SR-56 WB RAMPS
EXISTING (2014) AM PEAK HOUR

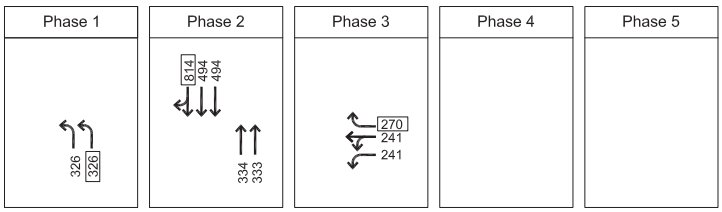
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
326	814	270		

Total Operating Level (ILV/Hr) Is...

Σ
1410

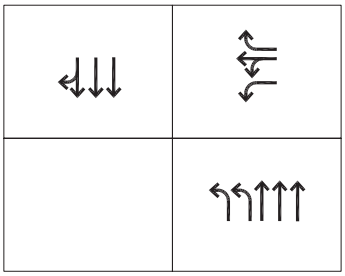
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

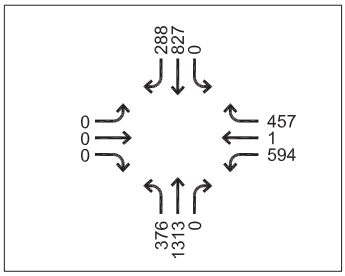
ILV Calculation

16. BLACK MOUNTAIN ROAD & SR-56 WB RAMPS
EXISTING (2014) PM PEAK HOUR

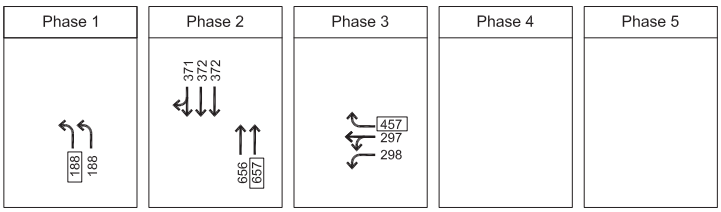
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
188	657	457		

Total Operating Level (ILV/Hr) Is...

Σ
1302

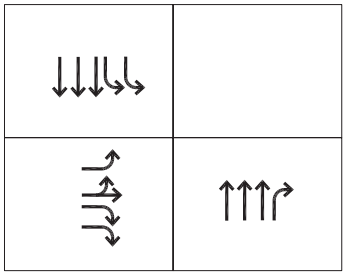
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

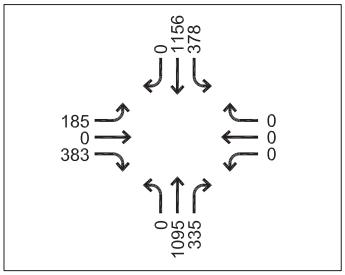
ILV Calculation

17. BLACK MOUNTAIN ROAD & SR-56 EB RAMPS
EXISTING (2014) AM PEAK HOUR

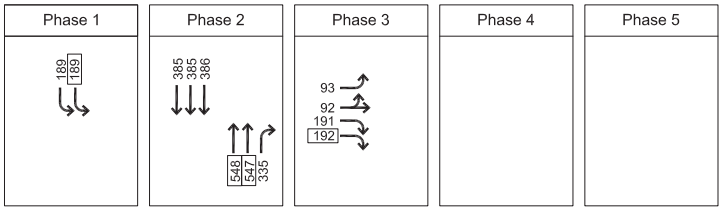
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
189	548	192		

Total Operating Level (ILV/Hr) Is...

Σ
929

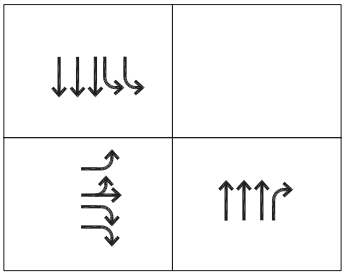
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

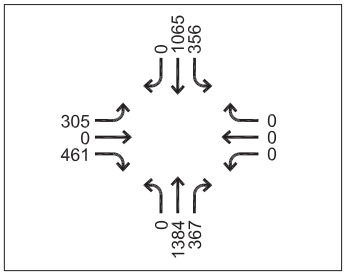
ILV Calculation

17. BLACK MOUNTAIN ROAD & SR-56 EB RAMPS
EXISTING (2014) PM PEAK HOUR

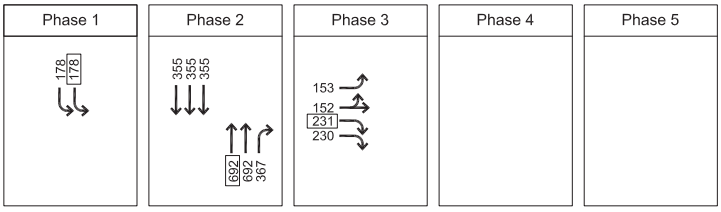
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
178	692	231		

Total Operating Level (ILV/Hr) Is...

Σ
1101

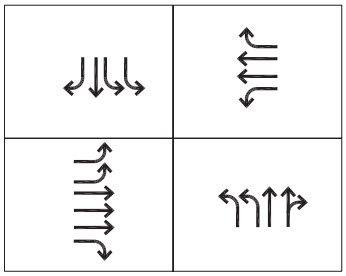
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

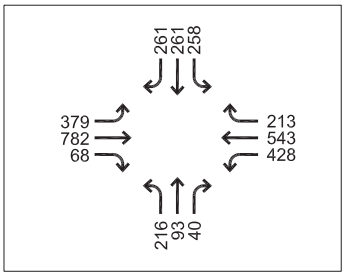
ILV Calculation

24. CARMEL MOUNTAIN ROAD & SR-56 WB RAMPS
EXISTING (2014) AM PEAK HOUR

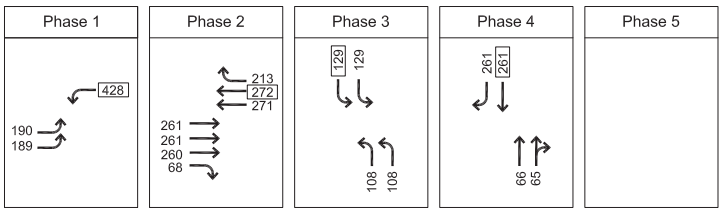
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
428	272	129	261	

Total Operating Level (ILV/Hr) Is...

Σ
1090

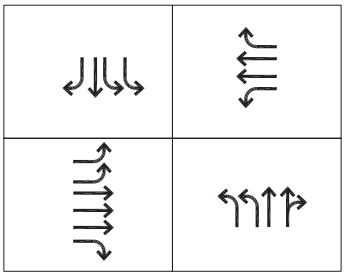
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

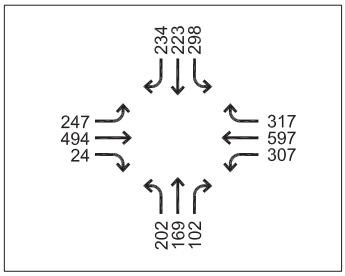
ILV Calculation

24. CARMEL MOUNTAIN ROAD & SR-56 WB RAMPS
EXISTING (2014) PM PEAK HOUR

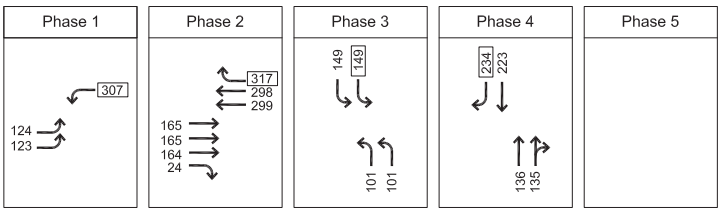
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
307	317	149	234	

Total Operating Level (ILV/Hr) Is...

Σ
1007

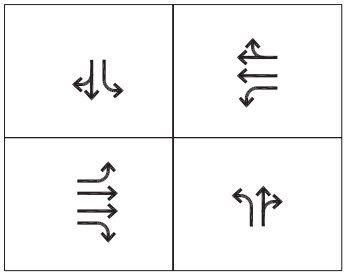
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

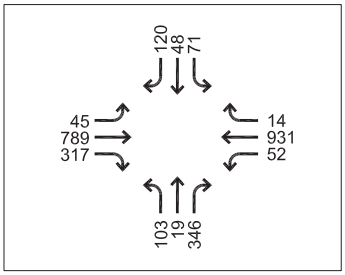
ILV Calculation

25. RANCHO PENASQUITOS BOULEVARD & SR-56 EB RAMPS
EXISTING (2014) AM PEAK HOUR

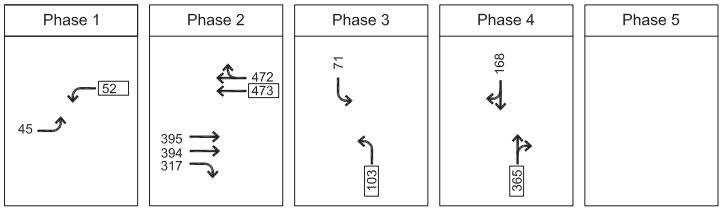
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
52	473	103	365	

Total Operating Level (ILV/Hr) Is...

Σ
993

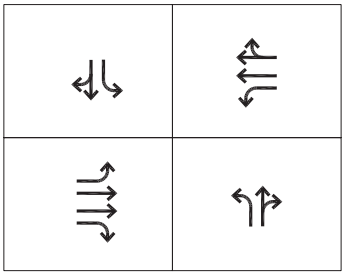
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

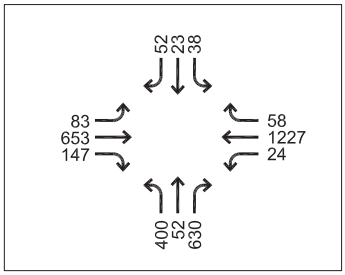
ILV Calculation

25. RANCHO PENASQUITOS BOULEVARD & SR-56 EB RAMPS
EXISTING (2014) PM PEAK HOUR

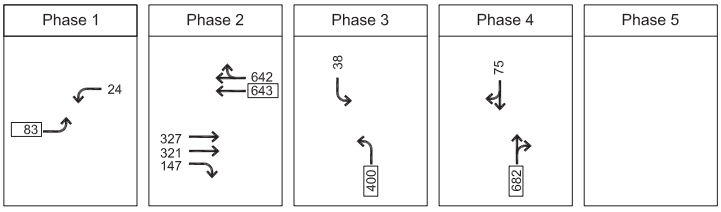
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
83	643	400	682	

Total Operating Level (ILV/Hr) Is...

Σ
1808

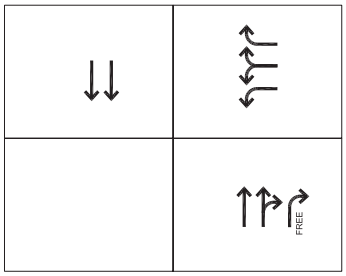
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

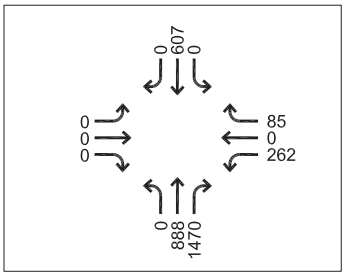
ILV Calculation

29. RANCHO PENASQUITOS BOULEVARD & I-15 SB RAMPS
EXISTING (2014) AM PEAK HOUR

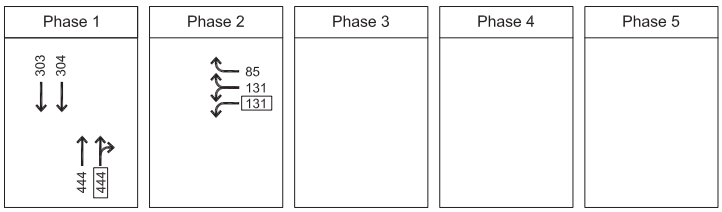
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
444	131			

Total Operating Level (ILV/Hr) Is...

Σ
575

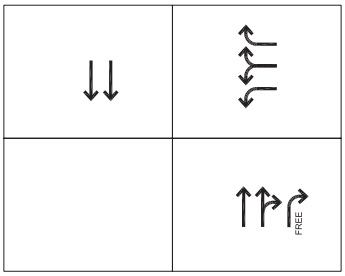
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

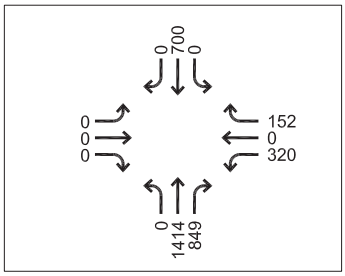
ILV Calculation

29. RANCHO PENASQUITOS BOULEVARD & I-15 SB RAMPS
EXISTING (2014) PM PEAK HOUR

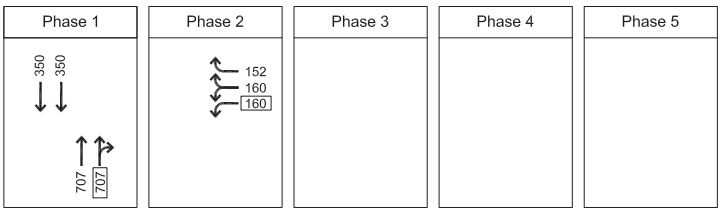
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
707	160			

Total Operating Level (ILV/Hr) Is...

Σ
867

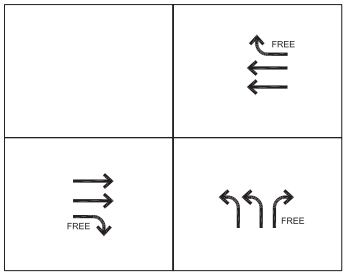
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

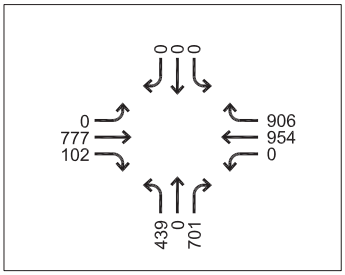
ILV Calculation

30. RANCHO PENASQUITOS BOULEVARD & I-15 NB RAMPS
EXISTING (2014) AM PEAK HOUR

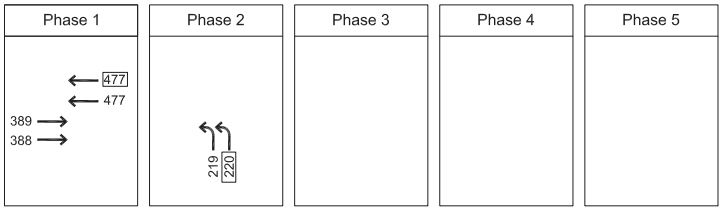
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
477	220			

Total Operating Level (ILV/Hr) Is...

Σ
697

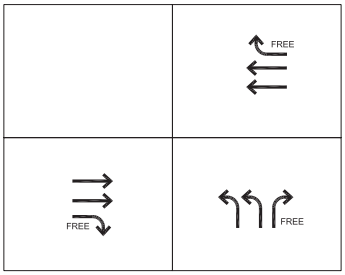
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

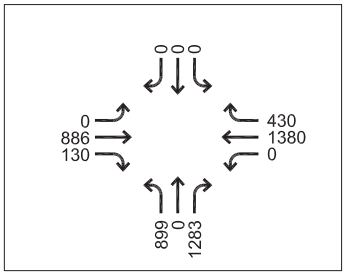
ILV Calculation

30. RANCHO PENASQUITOS BOULEVARD & I-15 NB RAMPS
EXISTING (2014) PM PEAK HOUR

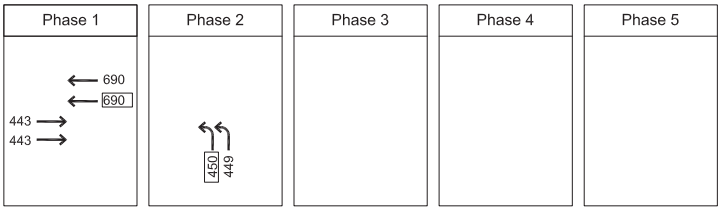
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
690	450			

Total Operating Level (ILV/Hr) Is...

Σ
1140

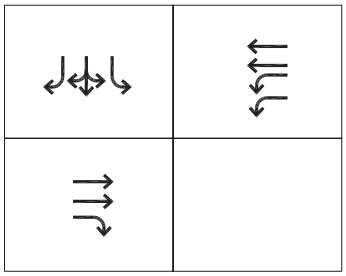
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

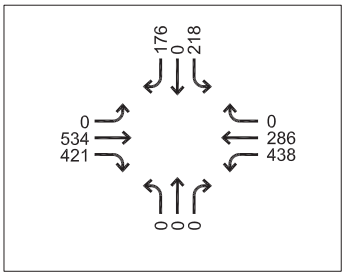
ILV Calculation

49. I-15 SB RAMPS & CARMEL MOUNTAIN ROAD
EXISTING (2014) AM PEAK HOUR

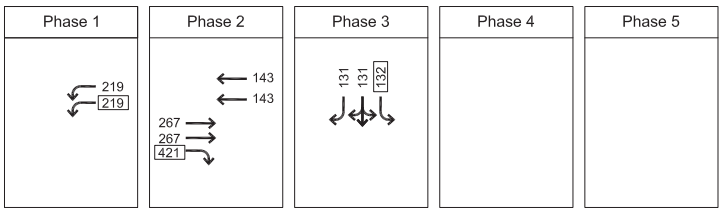
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
219	421	132		

Total Operating Level (ILV/Hr) Is...

Σ
772

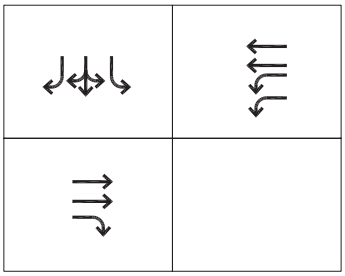
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

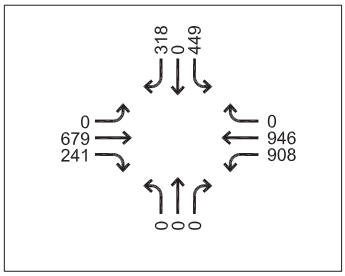
ILV Calculation

49. I-15 SB RAMPS & CARMEL MOUNTAIN ROAD
EXISTING (2014) PM PEAK HOUR

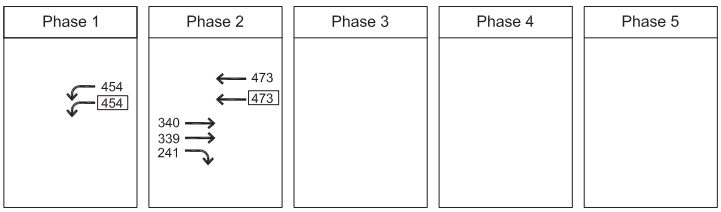
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
454	473			

Total Operating Level (ILV/Hr) Is...

Σ
927

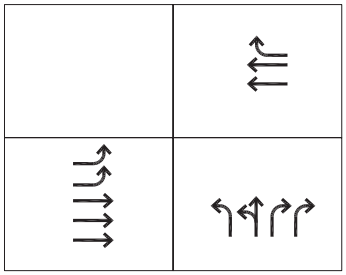
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

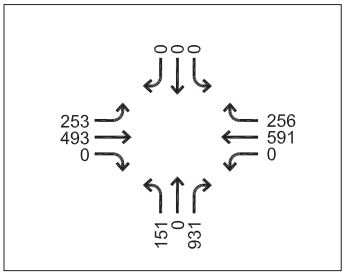
ILV Calculation

50. I-15 NB RAMPS & CARMEL MOUNTAIN ROAD
EXISTING (2014) AM PEAK HOUR

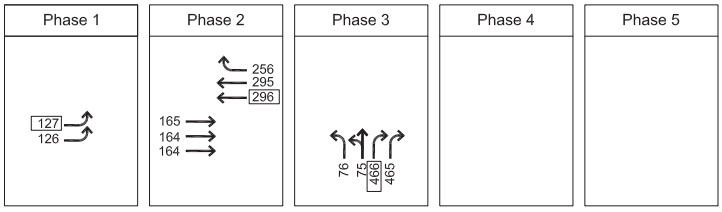
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
127	296	466		

Total Operating Level (ILV/Hr) Is...

Σ
889

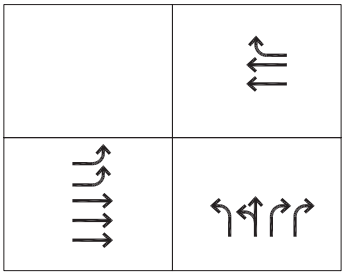
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

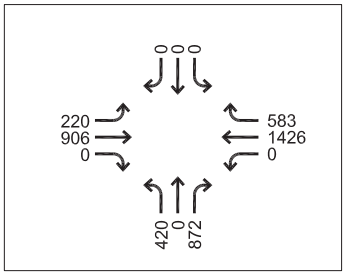
ILV Calculation

50. I-15 NB RAMPS & CARMEL MOUNTAIN ROAD
EXISTING (2014) PM PEAK HOUR

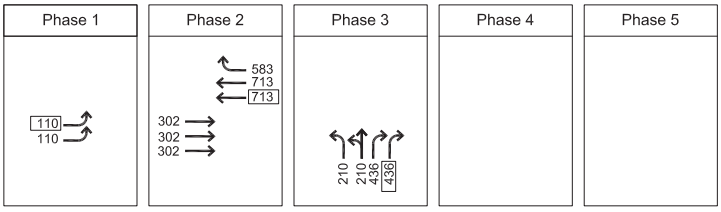
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
110	713	436		

Total Operating Level (ILV/Hr) Is...

Σ
1259

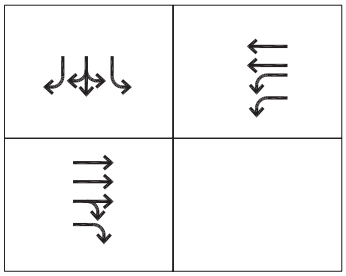
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

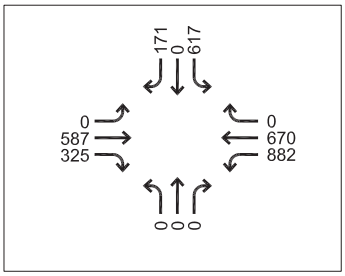
ILV Calculation

56. I-15 SB RAMPS & MERCY ROAD
EXISTING (2014) AM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
441 441	335 335 228 228 228 228	171 308 309		

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
441	335	309		

Total Operating Level (ILV/Hr) Is...

Σ
1085

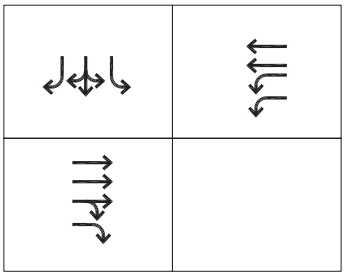
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

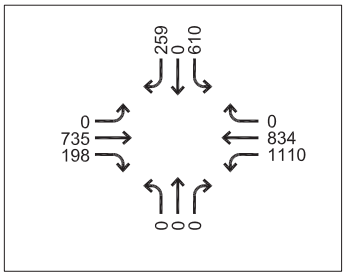
ILV Calculation

56. I-15 SB RAMPS & MERCY ROAD
EXISTING (2014) PM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
555 555	417 417 245 245 245 198	259 305 305		

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
555	417	305		

Total Operating Level (ILV/Hr) Is...

Σ
1277

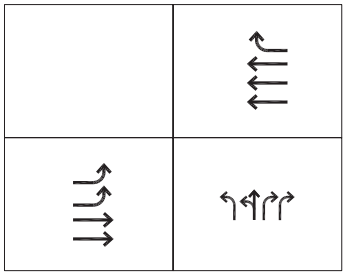
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

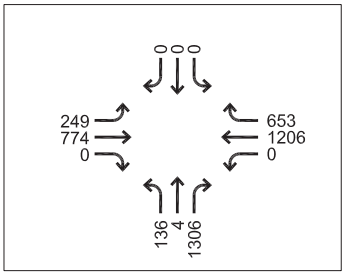
ILV Calculation

57. I-15 NB RAMPS & MERCY ROAD
EXISTING (2014) AM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
125 124	653 402 402 402 387 387	70 70 653 653		

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
125	653	653		

Total Operating Level (ILV/Hr) Is...

Σ
1431

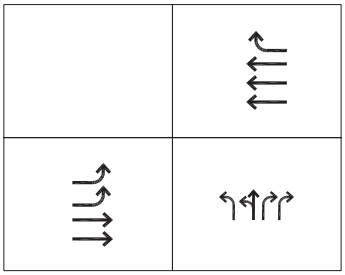
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

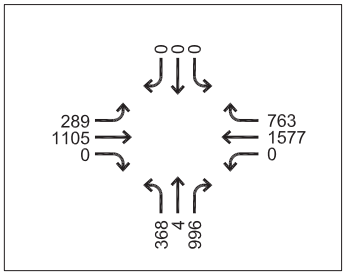
ILV Calculation

57. I-15 NB RAMPS & MERCY ROAD
EXISTING (2014) PM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
145 144	763 526 526 525 553 552	186 186 498 498		

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
145	763	498		

Total Operating Level (ILV/Hr) Is...

Σ
1406

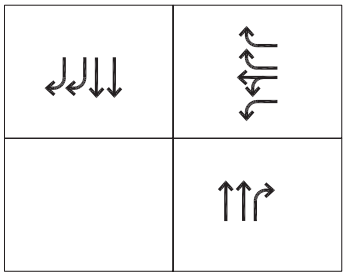
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

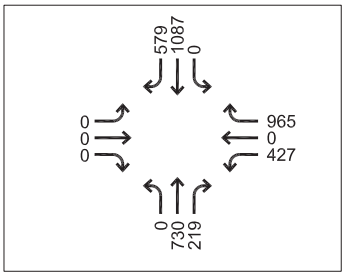
ILV Calculation

6. CAMINO DEL SUR & SR-56 WB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

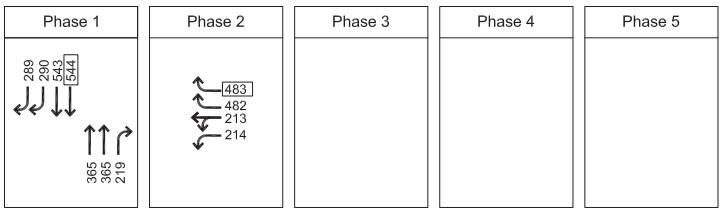
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
544	483			

Total Operating Level (ILV/Hr) Is...

Σ
1027

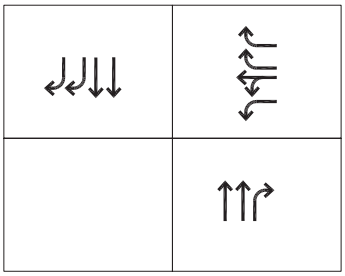
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

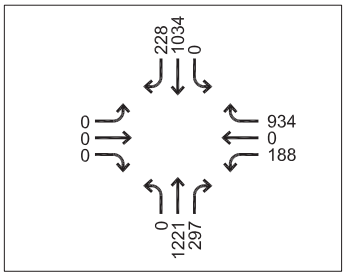
ILV Calculation

6. CAMINO DEL SUR & SR-56 WB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

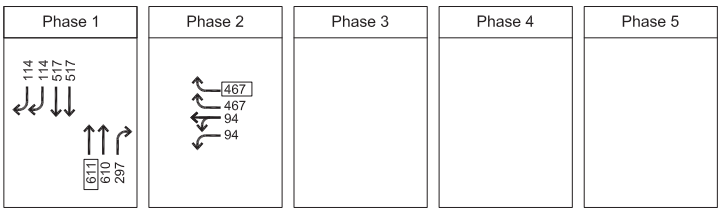
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
611	467			

Total Operating Level (ILV/Hr) Is...

Σ
1078

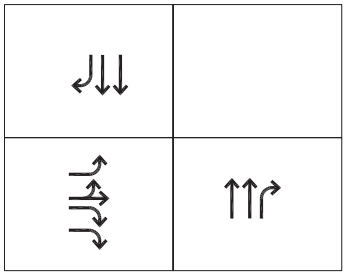
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

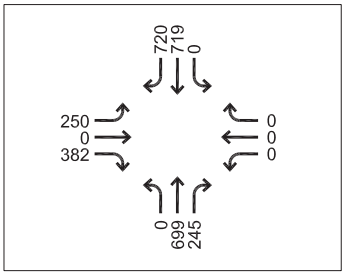
ILV Calculation

7. CAMINO DEL SUR & SR-56 EB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

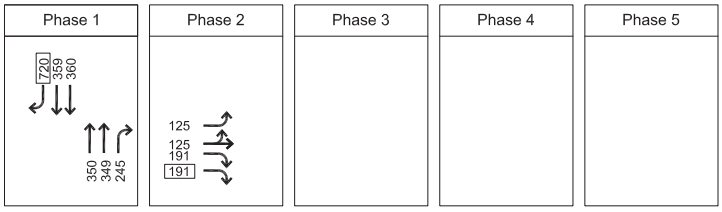
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
720	191			

Total Operating Level (ILV/Hr) Is...

Σ
911

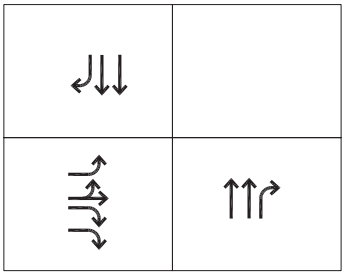
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

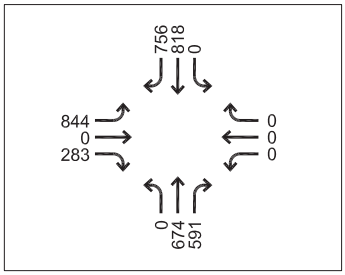
ILV Calculation

7. CAMINO DEL SUR & SR-56 EB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

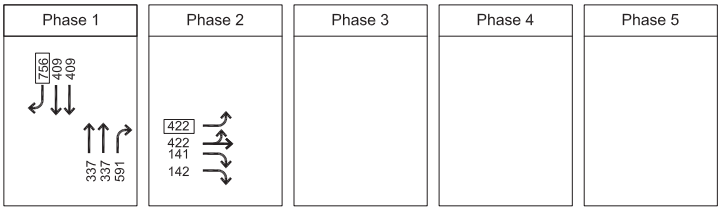
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
756	422			

Total Operating Level (ILV/Hr) Is...

Σ
1178

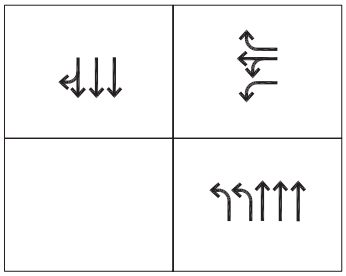
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

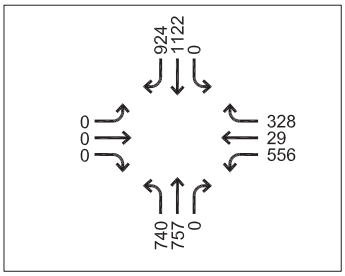
ILV Calculation

16. BLACK MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

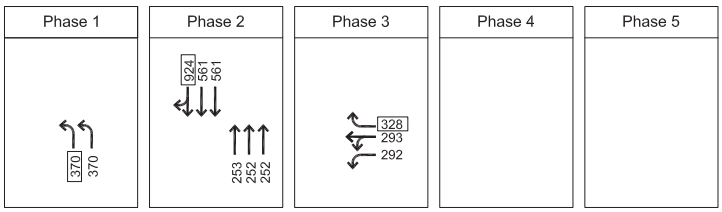
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
370	924	328		

Total Operating Level (ILV/Hr) Is...

Σ
1622

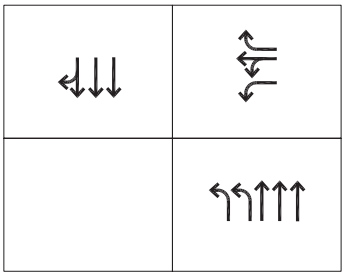
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

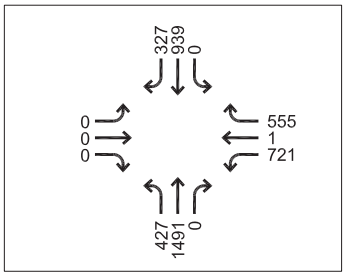
ILV Calculation

16. BLACK MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

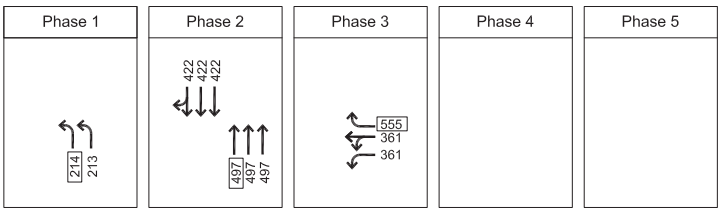
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
214	497	555		

Total Operating Level (ILV/Hr) Is...

Σ
1266

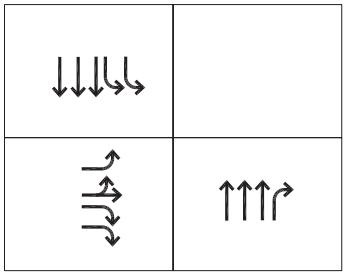
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

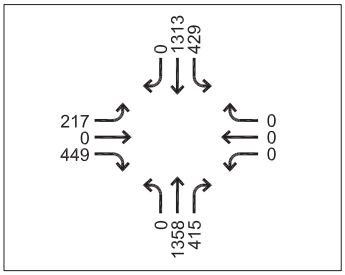
ILV Calculation

17. BLACK MOUNTAIN ROAD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

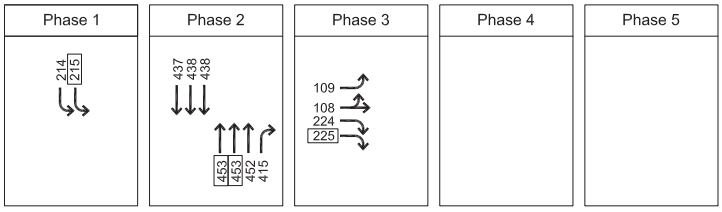
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
215	453	225		

Total Operating Level (ILV/Hr) Is...

Σ
893

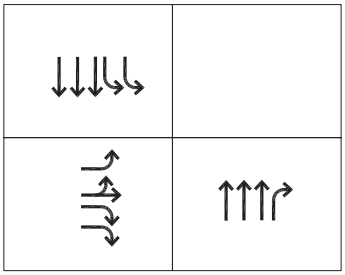
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

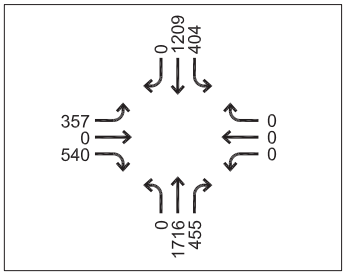
ILV Calculation

17. BLACK MOUNTAIN ROAD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

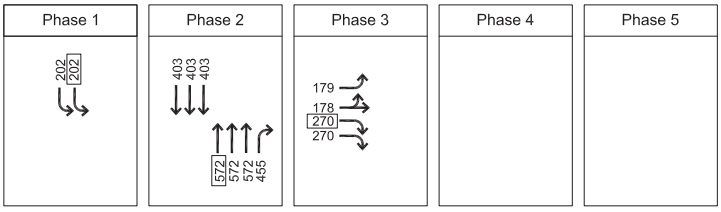
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
202	572	270		

Total Operating Level (ILV/Hr) Is...

Σ
1044

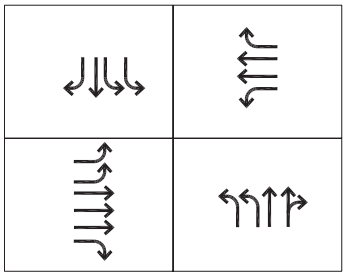
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

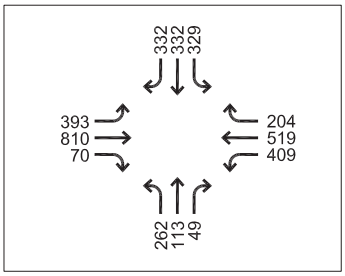
ILV Calculation

24. CARMEL MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

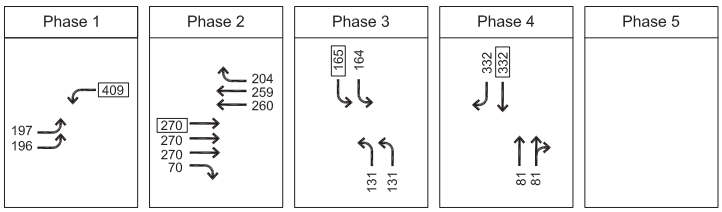
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
409	270	165	332	

Total Operating Level (ILV/Hr) Is...

Σ
1176

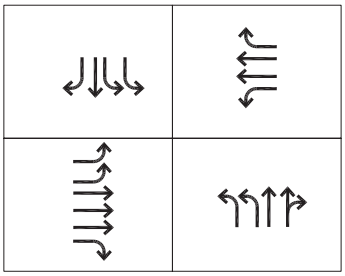
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

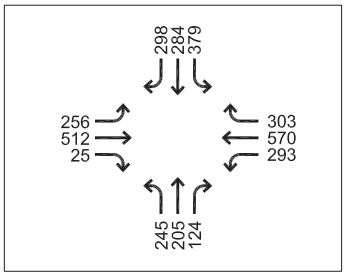
ILV Calculation

24. CARMEL MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

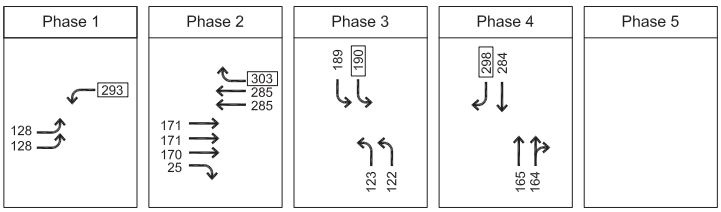
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
293	303	190	298	

Total Operating Level (ILV/Hr) Is...

Σ
1084

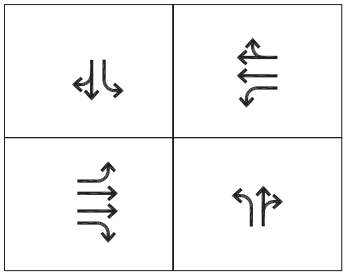
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

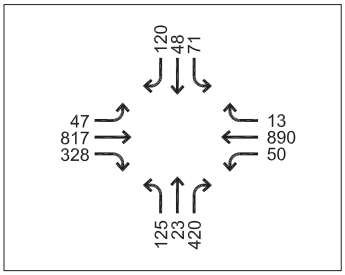
ILV Calculation

25. RANCHO PENASQUITOS BOULEVARD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

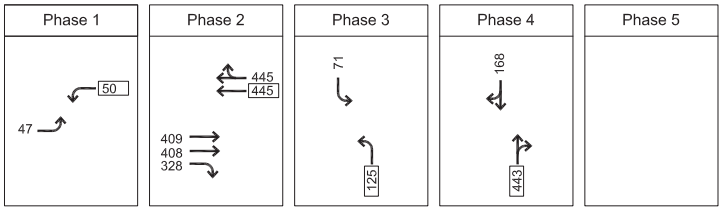
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
50	445	125	443	

Total Operating Level (ILV/Hr) Is...

Σ
1063

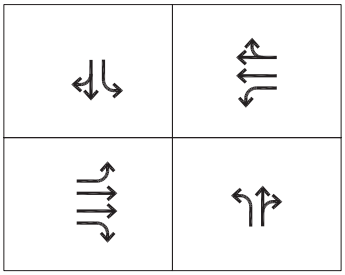
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

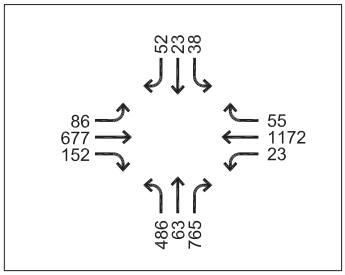
ILV Calculation

25. RANCHO PENASQUITOS BOULEVARD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

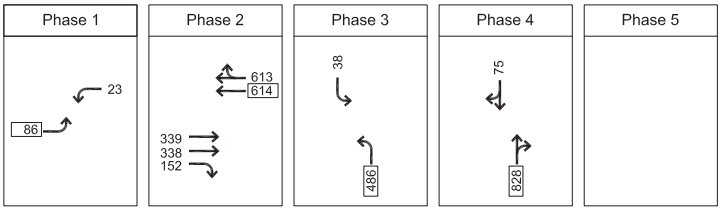
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
86	614	486	828	

Total Operating Level (ILV/Hr) Is...

Σ
2014

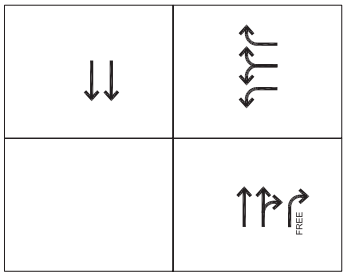
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

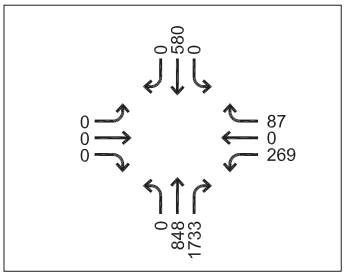
ILV Calculation

29. RANCHO PENASQUITOS BOULEVARD & I-15 SB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

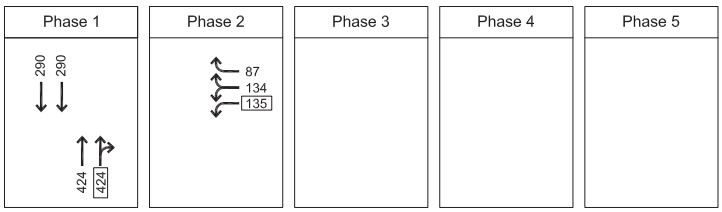
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
424	135			

Total Operating Level (ILV/Hr) Is...

Σ
559

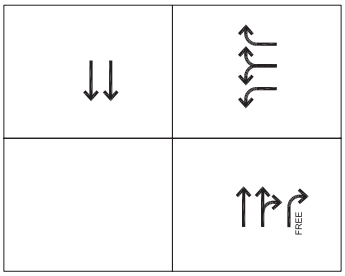
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

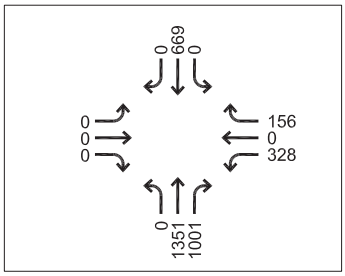
ILV Calculation

29. RANCHO PENASQUITOS BOULEVARD & I-15 SB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

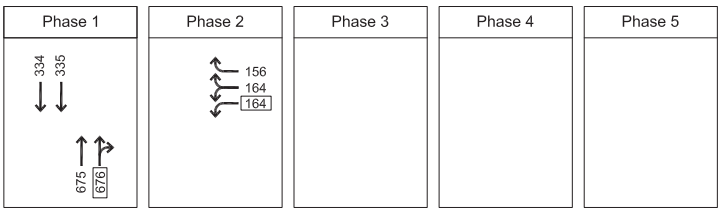
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
676	164			

Total Operating Level (ILV/Hr) Is...

Σ
840

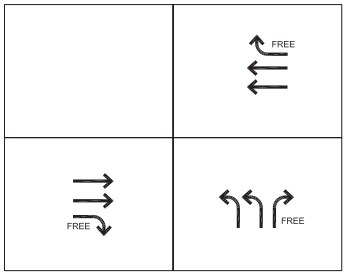
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

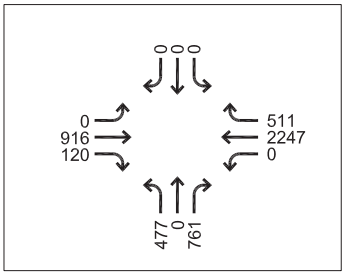
ILV Calculation

30. RANCHO PENASQUITOS BOULEVARD & I-15 NB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

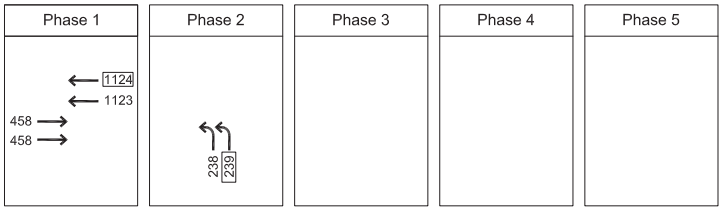
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
1124	239			

Total Operating Level (ILV/Hr) Is...

Σ
1363

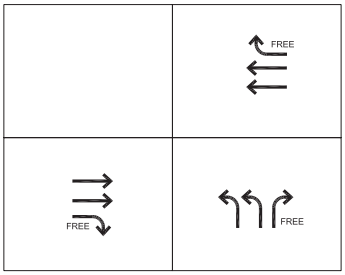
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

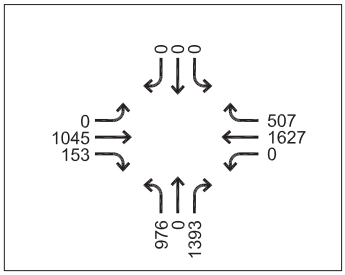
ILV Calculation

30. RANCHO PENASQUITOS BOULEVARD & I-15 NB RAMPS
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

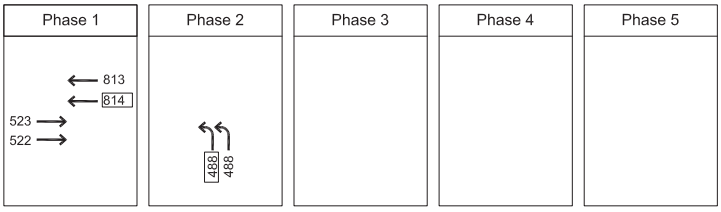
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
814	488			

Total Operating Level (ILV/Hr) Is...

Σ
1302

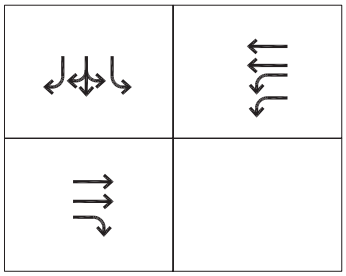
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

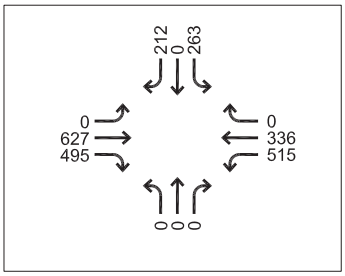
ILV Calculation

49. I-15 SB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

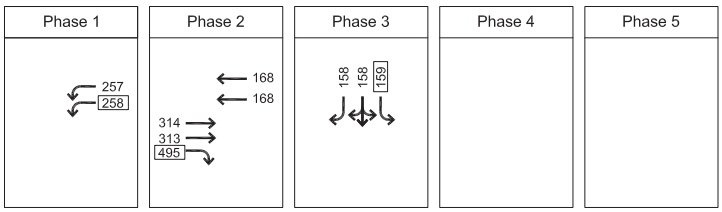
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
258	495	159		

Total Operating Level (ILV/Hr) Is...

Σ
912

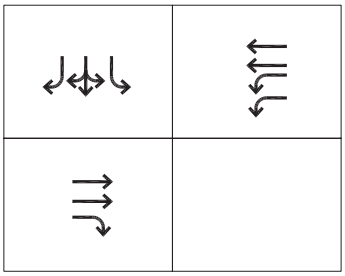
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

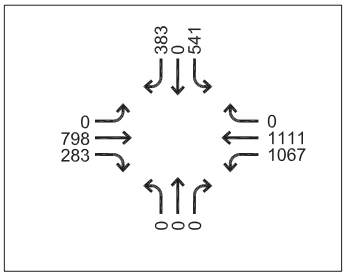
ILV Calculation

49. I-15 SB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

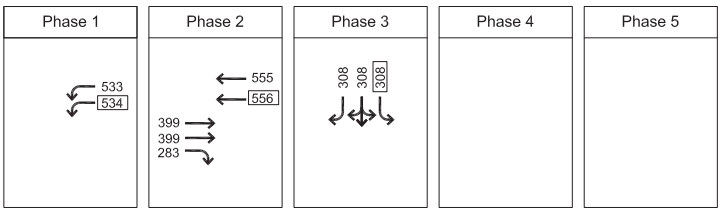
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
534	556	308		

Total Operating Level (ILV/Hr) Is...

Σ
1398

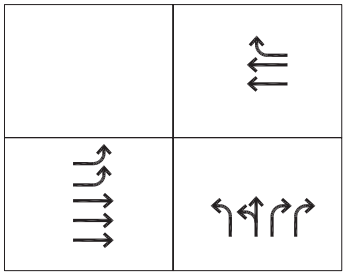
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

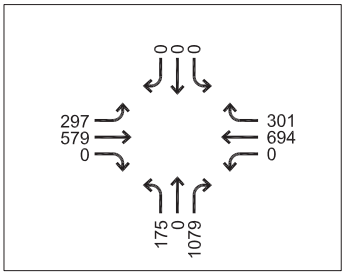
ILV Calculation

50. I-15 NB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

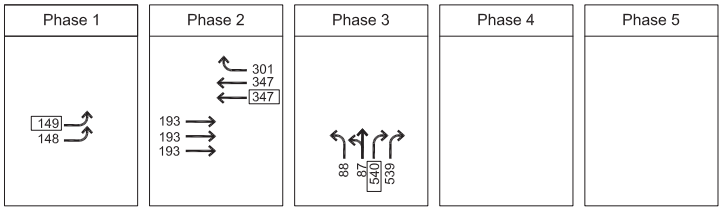
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
149	347	540		

Total Operating Level (ILV/Hr) Is...

Σ
1036

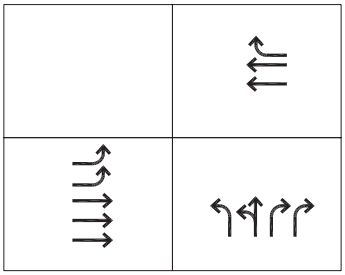
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

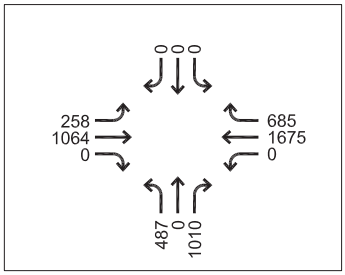
ILV Calculation

50. I-15 NB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

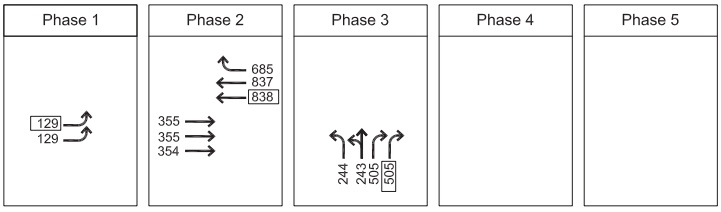
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
129	838	505		

Total Operating Level (ILV/Hr) Is...

Σ
1472

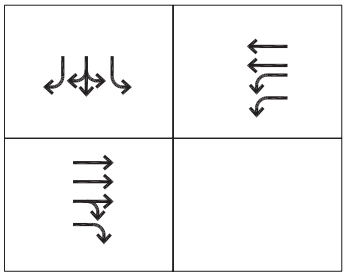
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

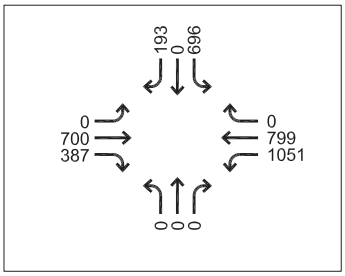
ILV Calculation

56. I-15 SB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

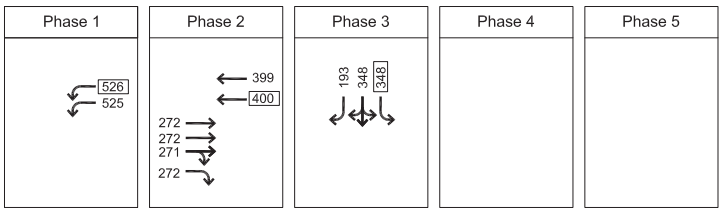
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
526	400	348		

Total Operating Level (ILV/Hr) Is...

Σ
1274

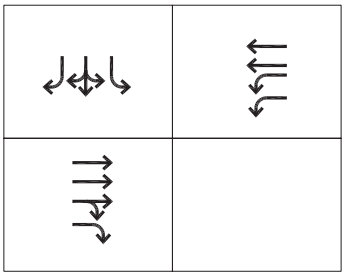
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

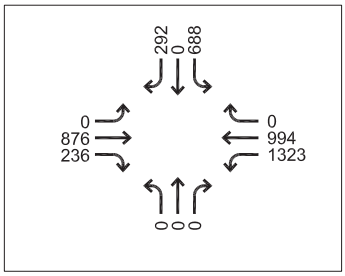
ILV Calculation

56. I-15 SB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

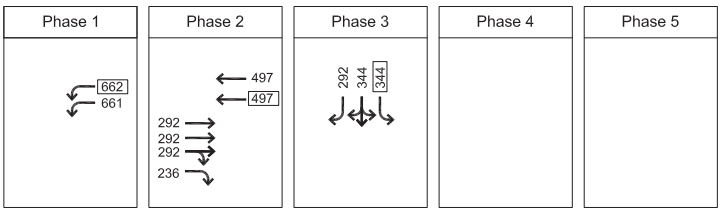
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
662	497	344		

Total Operating Level (ILV/Hr) Is...

Σ
1503

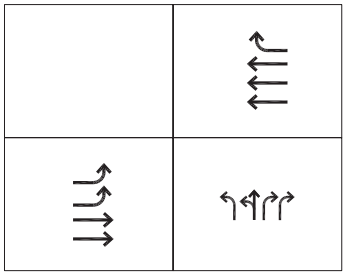
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

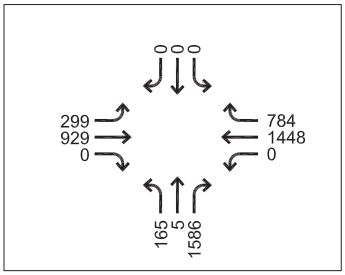
ILV Calculation

57. I-15 NB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITHOUT PROJECT AM PEAK HOUR

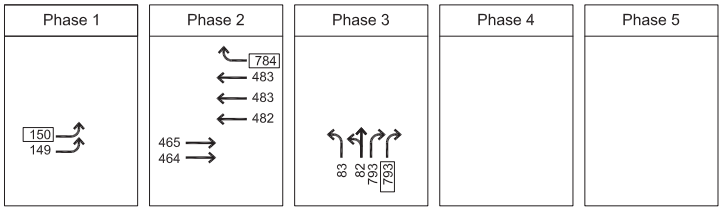
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
150	784	793		

Total Operating Level (ILV/Hr) Is...

Σ
1727

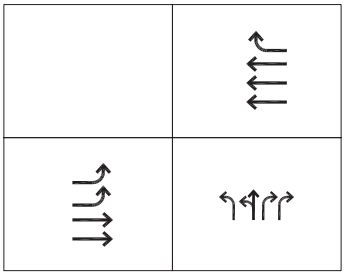
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

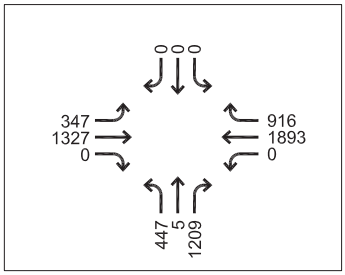
ILV Calculation

57. I-15 NB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITHOUT PROJECT PM PEAK HOUR

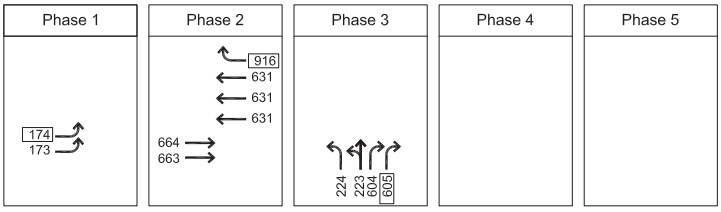
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
174	916	605		

Total Operating Level (ILV/Hr) Is...

Σ
1695

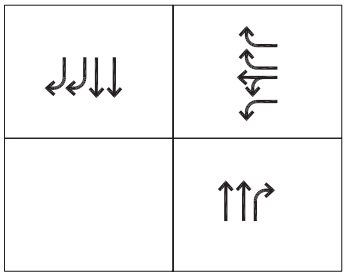
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

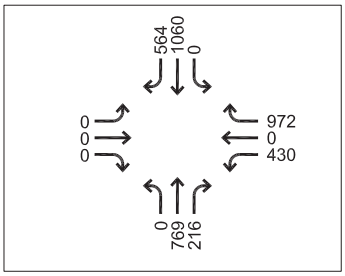
ILV Calculation

6. CAMINO DEL SUR & SR-56 WB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

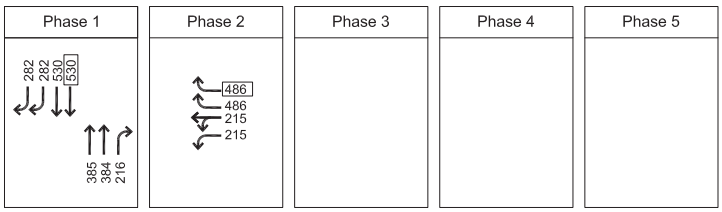
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
530	486			

Total Operating Level (ILV/Hr) Is...

Σ
1016

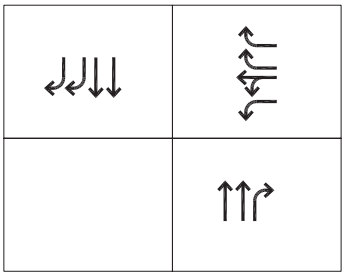
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

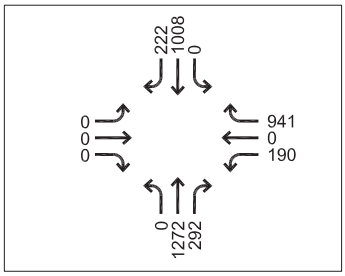
ILV Calculation

6. CAMINO DEL SUR & SR-56 WB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

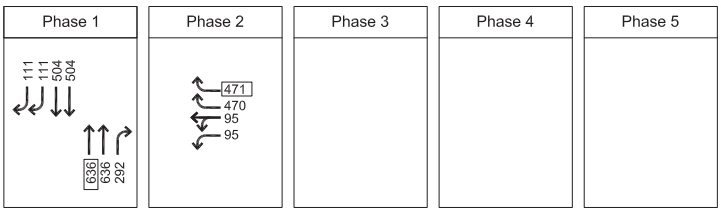
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
636	471			

Total Operating Level (ILV/Hr) Is...

Σ
1107

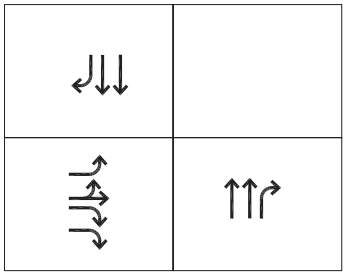
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

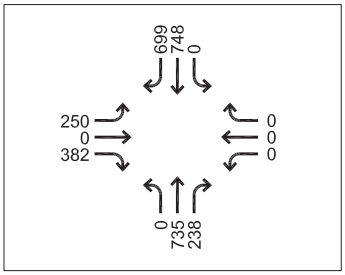
ILV Calculation

7. CAMINO DEL SUR & SR-56 EB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

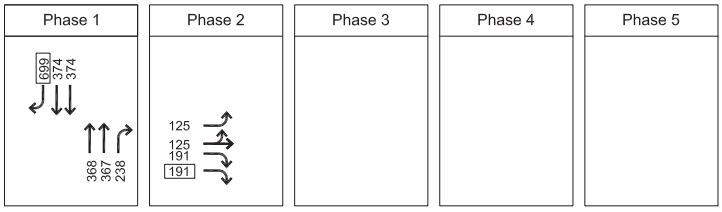
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
699	191			

Total Operating Level (ILV/Hr) Is...

Σ
890

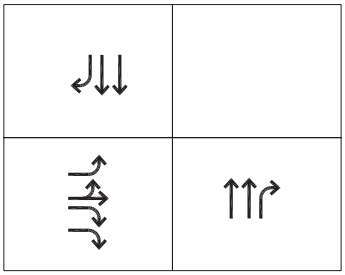
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

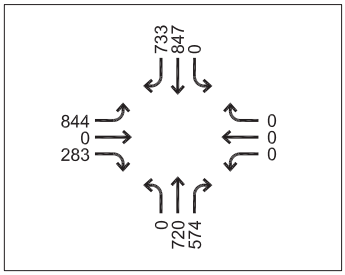
ILV Calculation

7. CAMINO DEL SUR & SR-56 EB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

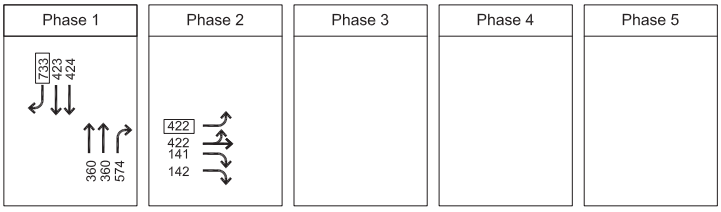
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
733	422			

Total Operating Level (ILV/Hr) Is...

Σ
1155

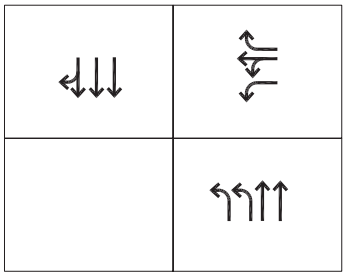
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

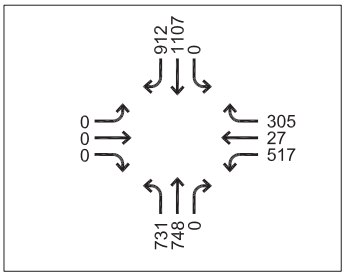
ILV Calculation

16. BLACK MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

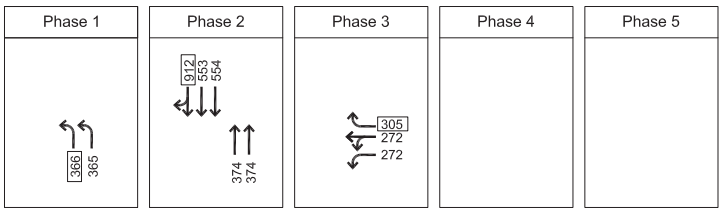
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
366	912	305		

Total Operating Level (ILV/Hr)

Σ
1583

Is...

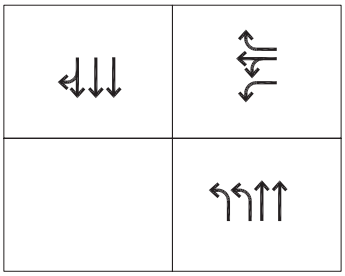
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

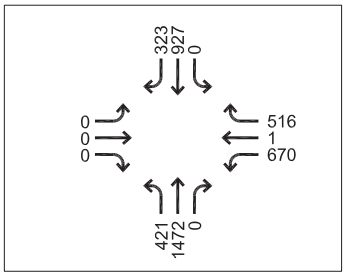
ILV Calculation

16. BLACK MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

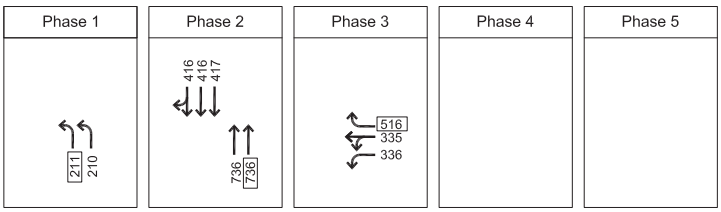
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
211	736	516		

Total Operating Level (ILV/Hr)

Σ
1463

Is...

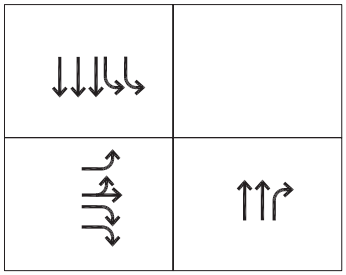
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

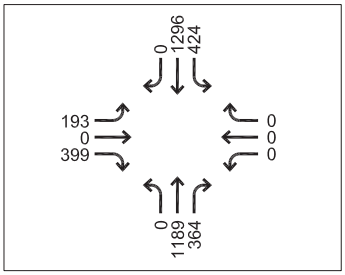
ILV Calculation

17. BLACK MOUNTAIN ROAD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

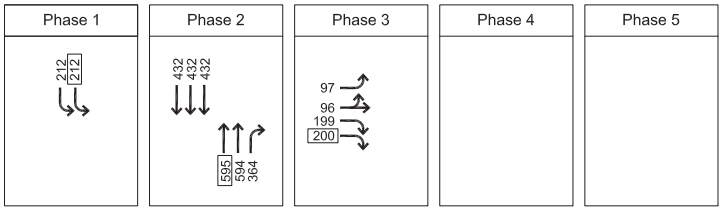
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
212	595	200		

Total Operating Level (ILV/Hr)

Σ
1007

Is...

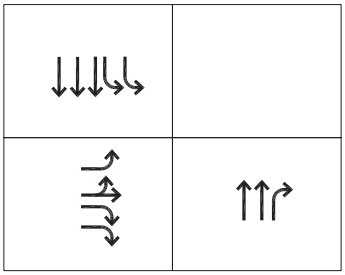
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

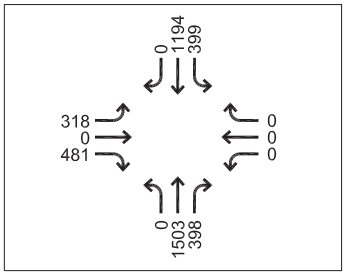
ILV Calculation

17. BLACK MOUNTAIN ROAD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

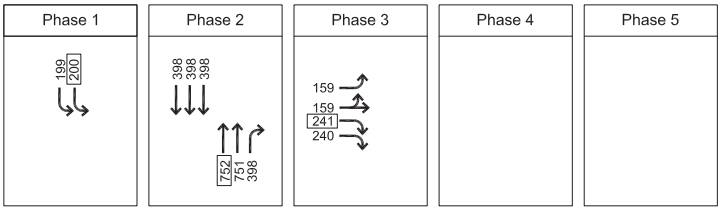
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
200	752	241		

Total Operating Level (ILV/Hr)

Σ
1193

Is...

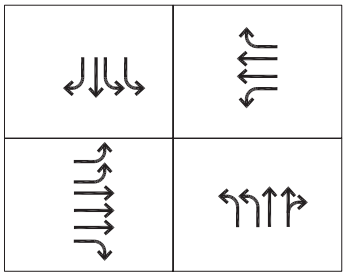
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

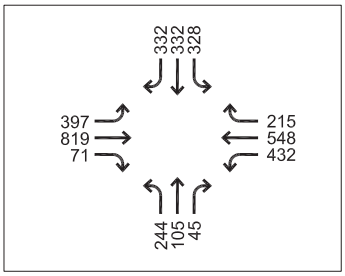
ILV Calculation

24. CARMEL MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

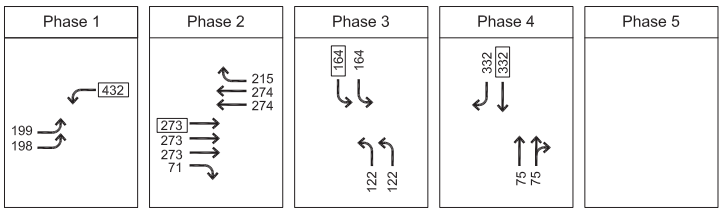
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
432	273	164	332	

Total Operating Level (ILV/Hr) Is...

Σ
1201

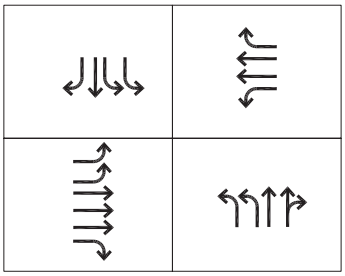
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

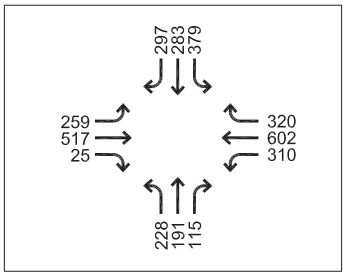
ILV Calculation

24. CARMEL MOUNTAIN ROAD & SR-56 WB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

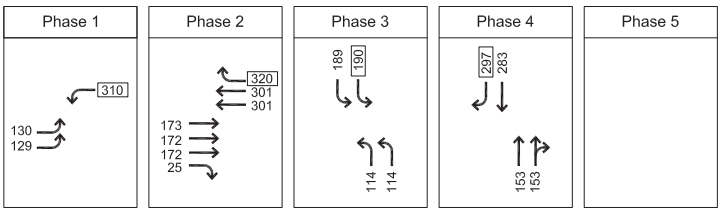
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
310	320	190	297	

Total Operating Level (ILV/Hr) Is...

Σ
1117

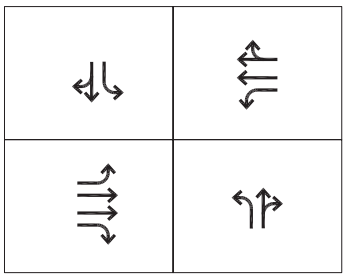
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

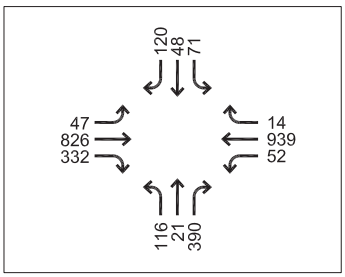
ILV Calculation

25. RANCHO PENASQUITOS BOULEVARD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

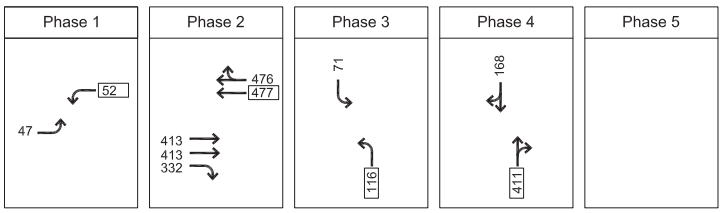
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
52	477	116	411	

Total Operating Level (ILV/Hr) Is...

Σ
1056

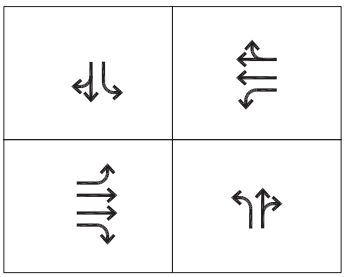
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

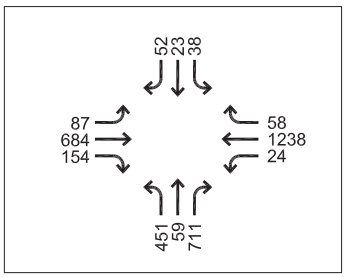
ILV Calculation

25. RANCHO PENASQUITOS BOULEVARD & SR-56 EB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

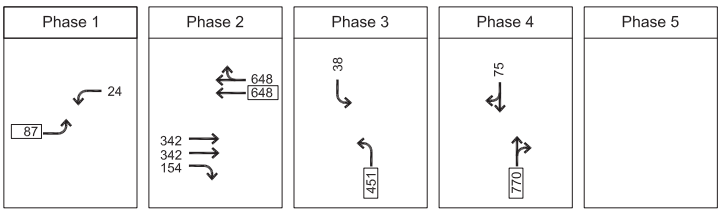
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
87	648	451	770	

Total Operating Level (ILV/Hr) Is...

Σ
1956

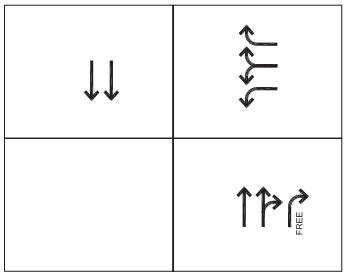
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

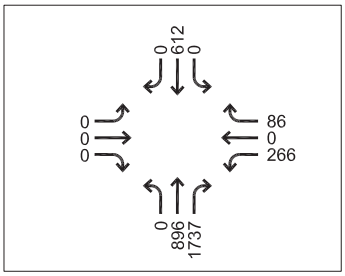
ILV Calculation

29. RANCHO PENASQUITOS BOULEVARD & I-15 SB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
306 306 448 448	86 133 133			

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
448	133			

Total Operating Level (ILV/Hr) Is...

Σ
581

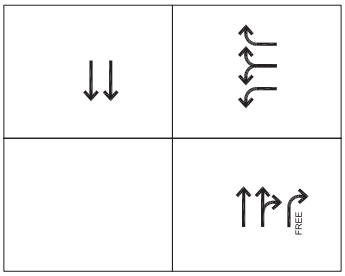
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

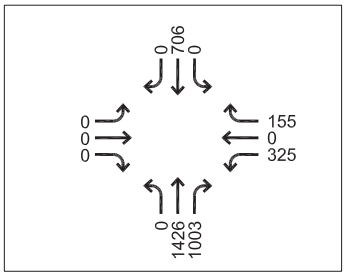
ILV Calculation

29. RANCHO PENASQUITOS BOULEVARD & I-15 SB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
353 353 713 713	155 162 163			

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
713	163			

Total Operating Level (ILV/Hr) Is...

Σ
876

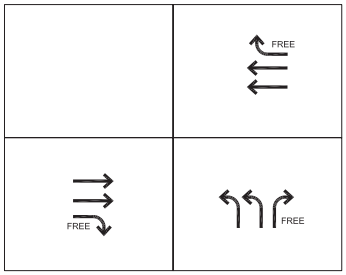
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

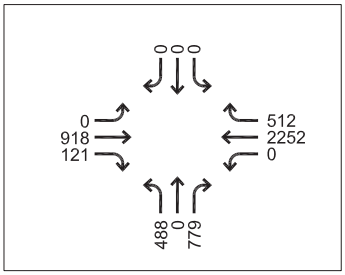
ILV Calculation

30. RANCHO PENASQUITOS BOULEVARD & I-15 NB RAMPS
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
1126 1126 459 459	244 244			

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
1126	244			

Total Operating Level (ILV/Hr) Is...

Σ
1370

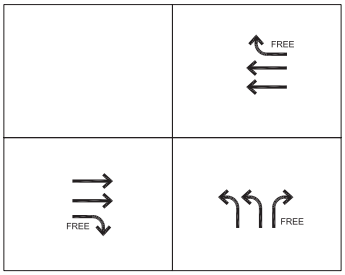
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

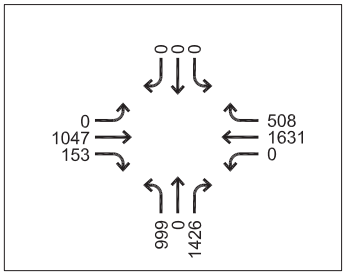
ILV Calculation

30. RANCHO PENASQUITOS BOULEVARD & I-15 NB RAMPS
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
815 816 524 523	500 498			

Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
816	500			

Total Operating Level (ILV/Hr) Is...

Σ
1316

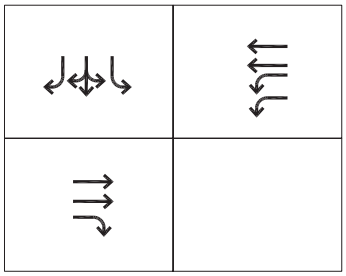
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

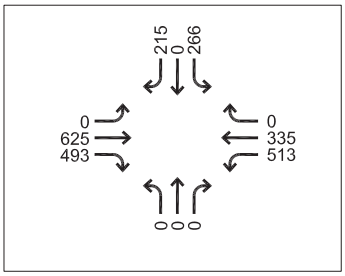
ILV Calculation

49. I-15 SB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

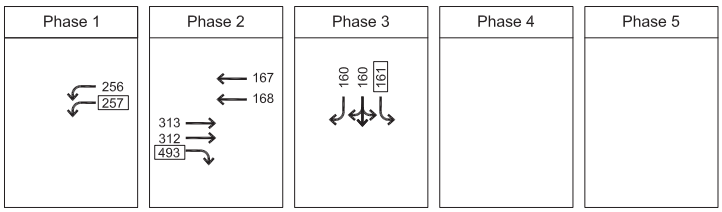
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
257	493	161		

Total Operating Level (ILV/Hr) Is...

Σ
911

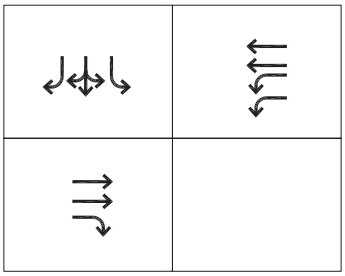
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

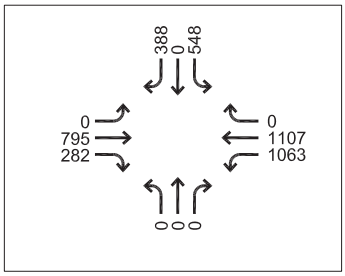
ILV Calculation

49. I-15 SB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

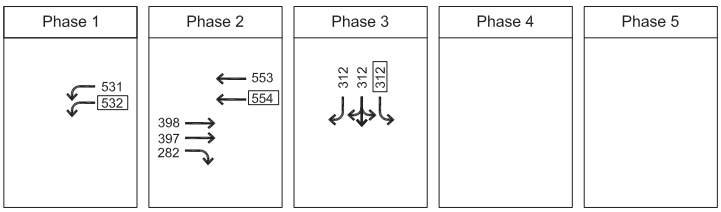
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
532	554	312		

Total Operating Level (ILV/Hr) Is...

Σ
1398

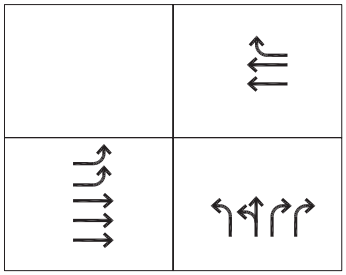
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

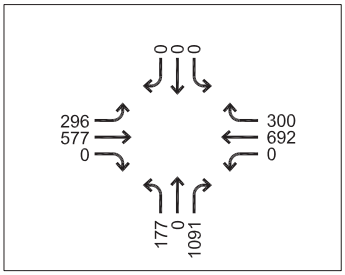
ILV Calculation

50. I-15 NB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

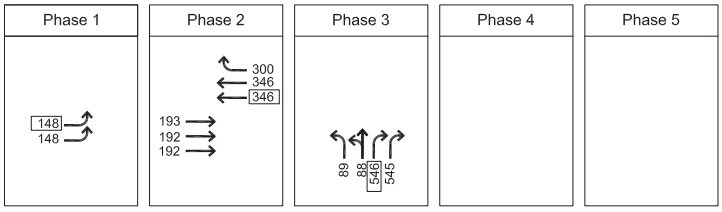
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
148	346	546		

Total Operating Level (ILV/Hr) Is...

Σ
1040

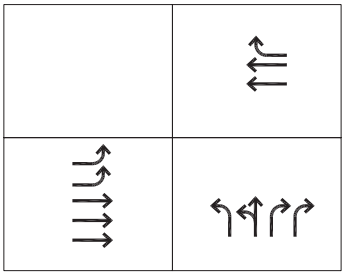
- ☒ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

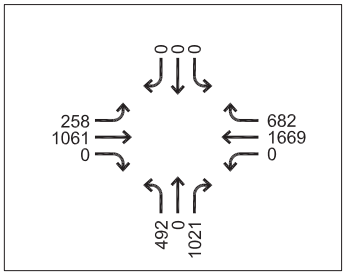
ILV Calculation

50. I-15 NB RAMPS & CARMEL MOUNTAIN ROAD
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

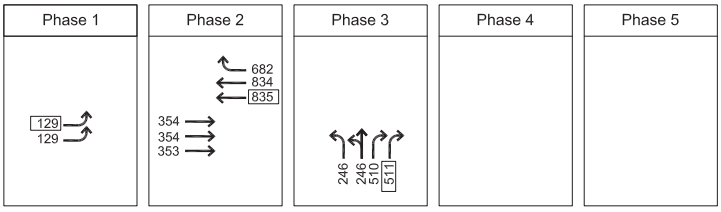
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
129	835	511		

Total Operating Level (ILV/Hr) Is...

Σ
1475

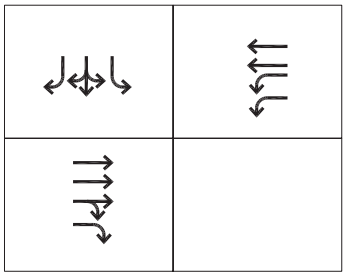
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

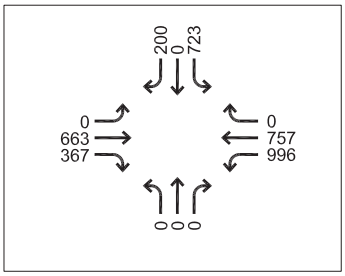
ILV Calculation

56. I-15 SB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

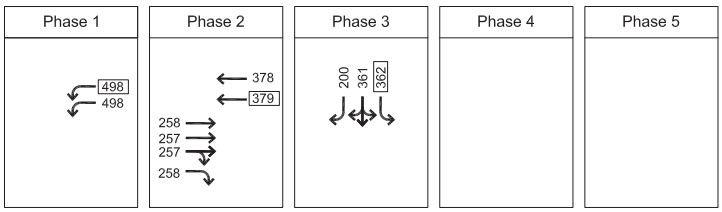
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
498	379	362		

Total Operating Level (ILV/Hr) Is...

Σ
1239

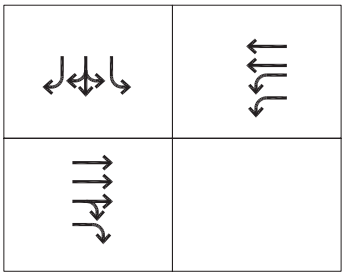
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

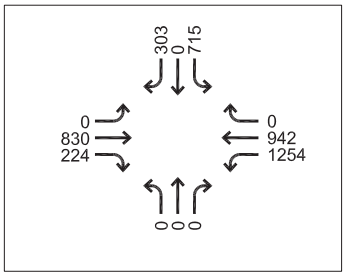
ILV Calculation

56. I-15 SB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

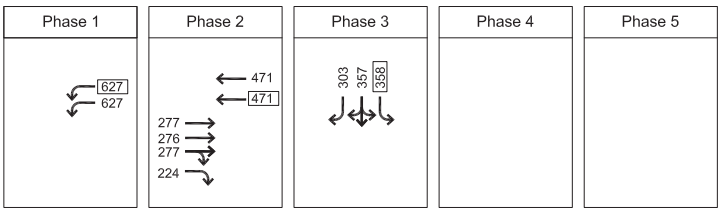
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
627	471	358		

Total Operating Level (ILV/Hr) Is...

Σ
1456

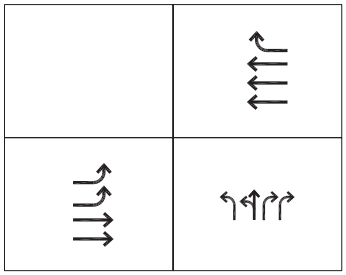
- ☐ <1200 ILV/hr
- ☒ >1200 ILV/hr but <1500 ILV/hr
- ☐ >1500 ILV/hr (CAPACITY)

Remarks:

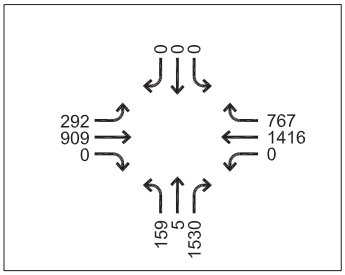
ILV Calculation

57. I-15 NB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITH PROJECT AM PEAK HOUR

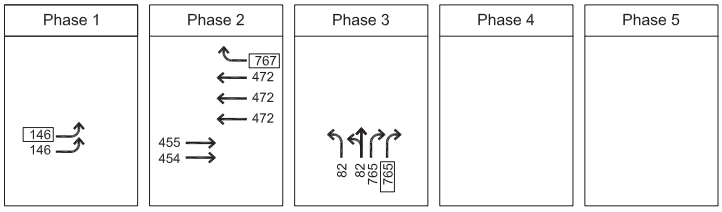
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
146	767	765		

Total Operating Level (ILV/Hr) Is...

Σ
1678

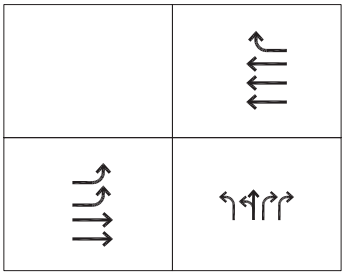
- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

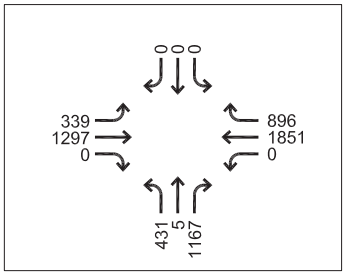
ILV Calculation

57. I-15 NB RAMPS & MERCY ROAD
HORIZON YEAR (2050) WITH PROJECT PM PEAK HOUR

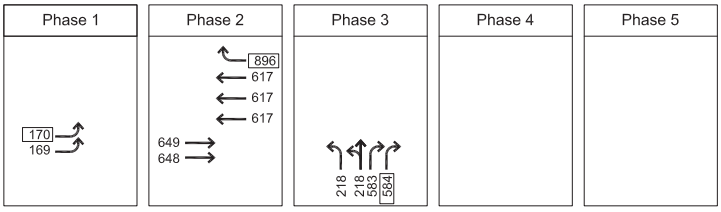
Geometry Diagram



Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
170	896	584		

Total Operating Level (ILV/Hr) Is...

Σ
1650

- ☐ <1200 ILV/hr
- ☐ >1200 ILV/hr but <1500 ILV/hr
- ☒ >1500 ILV/hr (CAPACITY)

Remarks:

APPENDIX O

PFFP PROJECT SHEETS

CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM
DRAFT

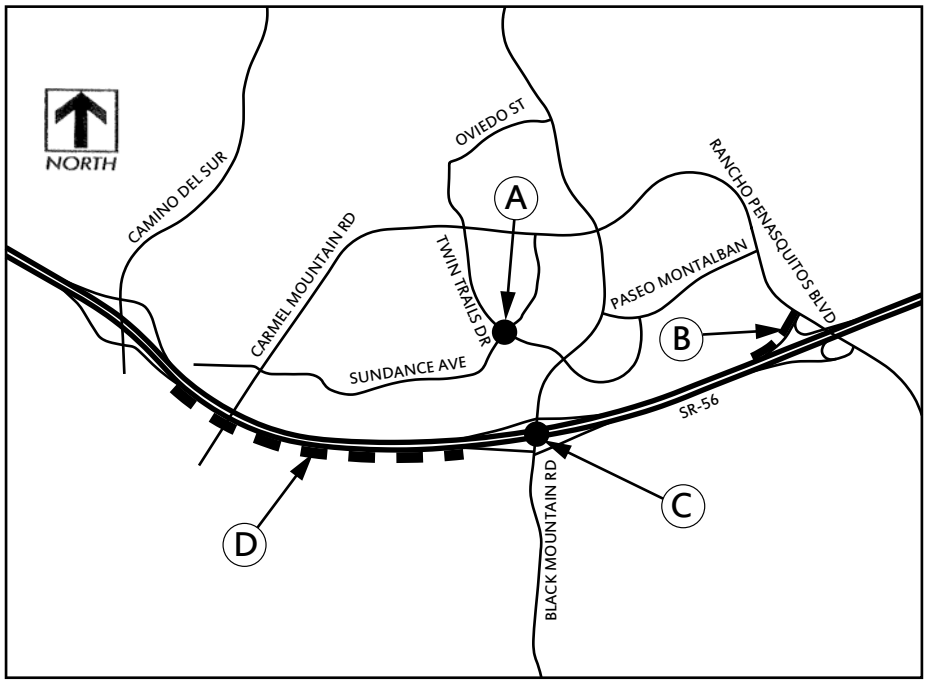
TITLE: **BLACK MOUNTAIN ROAD MITIGATION**

PROJECT: T-11.1

DEPARTMENT: ENGINEERING & CAPITAL PROJECTS
COUNCIL DISTRICT: 1
CIP, JO, or WBS #: N/A
COMMUNITY PLAN: PHR

SOURCE	**FUNDING:**	EXPENDED	CONT APPROP	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
FBA-PHR	**$284,960**				$284,960			
FBA-BMR	**$377,572**							
FBA-TH								
FBA-DMM								
FBA-RP								
DEV. ADV								
DEV/SUBD								
COUNTY								
STATE								
OTHER								
UNIDEN	**$2,899,468**							
TOTAL	**$3,562,000**	$0	$0	$0	$377,572	$0	$0	$0

SOURCE	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
FBA-PHR								
FBA-BMR								
FBA-TH								
FBA-DMM								
FBA-RP								
DEV. ADV								
DEV/SUBD								
COUNTY								
STATE								
OTHER								
UNIDEN								
TOTAL	$0	$0	$0	$0	$0	$0	$0	$0



CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM
DRAFT

TITLE: **BLACK MOUNTAIN ROAD MITIGATION**

		PROJECT:	**T-11.1**
DEPARTMENT:	ENGINEERING & CAPITAL PROJECTS	COUNCIL DISTRICT:	1
CIP, JO, or WBS #:	N/A	COMMUNITY PLAN:	PHR

DESCRIPTION:

A. PROVIDE A TRAFFIC SIGNAL AT THE INTERSECTION OF SUNDANCE AVENUE AND TWIN TRAILS DRIVE.
B. PROVIDE AN ADDITIONAL METERED ON-RAMP LANE AT THE WESTBOUND ON-RAMP FROM RANCHO PENASQUITOS BLVD TO SR-56.
C. RECONFIGURE BLACK MOUNTAIN ROAD WITHIN THE EXISTING IMPROVEMENTS BETWEEN THE EASTBOUND SR-56 RAMPS AND WESTBOUND RAMPS BY PROVIDING SIDE-BY-SIDE DUAL LEFT TURN LANES ON BRIDGE, MAINTAINTING TWO THRU LANES IN EACH DIRECTION, AND PROVIDE FOR A WIDENING FOR NB LANES JUST NORTH OF BRIDGE TO RECEIVE THE OFFSET NB LANES.
D. PROVIDE CONTINUOUS EASTBOUND SR-56 AUXILIARY LANE BETWEEN THE EASTBOUND ON-RAMP AT CAMINO DEL SUR AND THE EASTBOUND OFF-RAMP AT BLACK MOUNTAIN ROAD.

JUSTIFICATION:

THESE PROJECTS PROVIDE PARTIAL MITIGATION FOR THE DELETION OF THE PRIOR T-11.1 PROJECT WHICH CALLED FOR THE WIDENING OF BLACK MOUNTAIN ROAD FROM FOUR LANES TO SIX LANES. THESE PROJECTS ARE REQUIRED TO ACCOMODATE THE ADDITIONAL TRAFFIC ANTICIPATED AS A RESULT OF PROJECTED DEVELOPMENT IN THE SURROUNDING COMMUNITIES.

FUNDING ISSUES:

PACIFIC HIGHLANDS RANCH'S FAIR SHARE CONTRIBUTION TO THIS PROJECT IS 8%.
BLACK MOUNTAIN RANCH'S FAIR SHARE CONTRIBUTION IS 10.6%.

THE ACTUAL TIMING FOR COMMUNITY CONTRIBUTIONS MAY DIFFER AS PUBLIC FACILITY FINANCING PLANS ARE UPDATED SEPARATELY.

NOTES:

REFERENCE :
RANCHO PENASQUITOS PUBLIC FACILITIES FINANCING PLAN PROJECT T-2D
BLACK MOUNTAIN RANCH PUBLIC FACILITIES FINANCING PLAN PROJECT T-57

SCHEDULE:

PROJECT COMPLETION IS SCHEDULED WHEN FUNDING IS AVAILABLE.

CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM
DRAFT

TITLE: **BLACK MOUNTAIN ROAD MITIGATION**

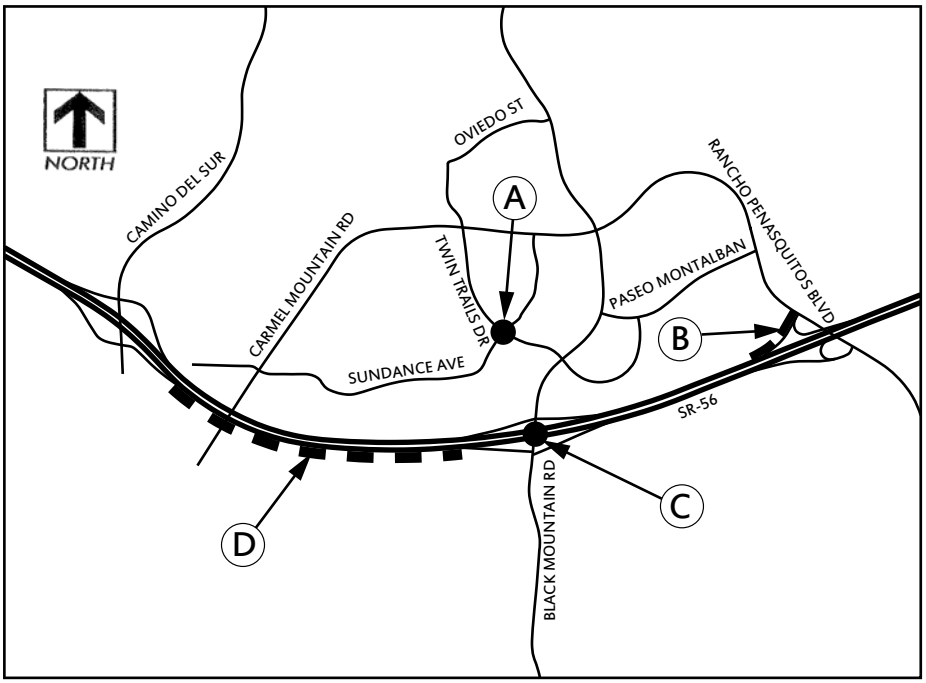
PROJECT: **T-57**

DEPARTMENT: TRANSPORTATION & STORM WATER
CIP or JO #: N/A

COUNCIL DISTRICT: 5
COMMUNITY PLAN: BMR

SOURCE	**FUNDING:**	EXPEN/ENCUM	CONT APPROP	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
FBA-BMR	**$377,572**						$377,572	
FBA-PHR	**$284,960**							
FBA-TH								
FBA-DMM								
COUNTY								
STATE								
DEV/SUBD								
PRIVATE								
MTDB								
OTHER								
UNIDENT	**$2,899,468**							
TOTAL	**$3,562,000**	$0	$0	$0	$0	$0	$376,020	$0

SOURCE	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
FBA-BMR								
FBA-PHR								
FBA-TH								
FBA-DMM								
COUNTY								
STATE								
DEV/SUBD								
PRIVATE								
MTDB								
OTHER								
UNIDENT								
TOTAL	$0	$0	$0	$0	$0	$0	$0	$0



CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM
DRAFT

TITLE: **BLACK MOUNTAIN ROAD MITIGATION**

		PROJECT:	**T-57**
DEPARTMENT:	TRANSPORTATION & STORM WATER	COUNCIL DISTRICT:	5
CIP or JO #:	N/A	COMMUNITY PLAN:	BMR

DESCRIPTION:

A. PROVIDE A TRAFFIC SIGNAL AT THE INTERSECTION OF SUNDANCE AVENUE AND TWIN TRAILS DRIVE.
B. PROVIDE AN ADDITIONAL METERED ON-RAMP LANE AT THE WESTBOUND ON-RAMP FROM RANCHO PEÑASQUITOS BLVD TO SR-56.
C. RECONFIGURE BLACK MOUNTAIN ROAD WITHIN THE EXISTING IMPROVEMENTS BETWEEN THE EASTBOUND SR-56 RAMPS AND WESTBOUND RAMPS BY PROVIDING SIDE-BY-SIDE DUAL LEFT TURN LANES ON BRIDGE, MAINTAINTING TWO THRU LANES IN EACH DIRECTION, AND PROVIDE FOR A WIDENING FOR NB LANES JUST NORTH OF BRIDGE TO RECEIVE THE OFFSET NB LANES.
D. PROVIDE CONTINUOUS EASTBOUND SR-56 AUXILIARY LANE BETWEEN THE EASTBOUND ON-RAMP AT CAMINO DEL SUR AND THE EASTBOUND OFF-RAMP AT BLACK MOUNTAIN ROAD.

JUSTIFICATION:

THESE PROJECTS PROVIDE PARTIAL MITIGATION FOR THE DELETION OF THE PRIOR T-57 PROJECT WHICH CALLED FOR THE WIDENING OF BLACK MOUNTAIN ROAD FROM FOUR LANES TO SIX LANES. THESE PROJECTS ARE REQUIRED TO ACCOMODATE THE ADDITIONAL TRAFFIC ANTICIPATED AS A RESULT OF PROJECTED DEVELOPMENT IN THE SURROUNDING COMMUNITIES.

FUNDING:

THE FUNDING ALLOCATION BETWEEN FBAS IS BASED ON THE SHARE OF TRAFFIC CONTRIBUTED BY EACH COMMUNITY. THE SHARE PERCENTAGES ARE:

BLACK MOUNTAIN RANCH (BMR) - 10.6%
PACIFIC HIGHLANDS RANCH (PHR) - 8%

NOTE:

REFERENCE:
PACIFIC HIGHLANDS RANCH PFFP PROJECT T-11.1
RANCHO PEÑASQUITOS PFFP PROJECT T-2D

AS EACH PUBLIC FACILITIES FINANCING PLAN (PFFP) IS UPDATED SEPARATELY, THE TIMING OF THE CONTRIBUTION FROM FBAs OTHER THAN BMR MAY DIFFER FROM PFFP TO PFFP.

SCHEDULE:

ALTHOUGH THE BMR FBA SHARE OF THE PROJECT IS SCHEDULED FOR FY 2018, THE PROJECT CANNOT GO FORWARD UNTIL 100% OF THE NECESSARY FUNDING IS IDENTIFIED.

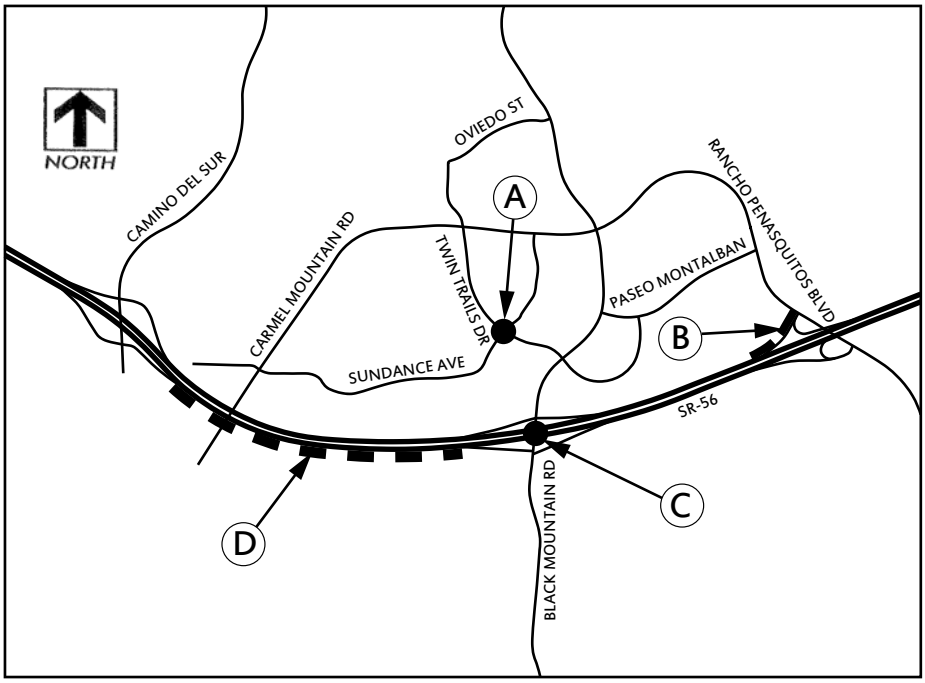
CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM
DRAFT

TITLE: **BLACK MOUNTAIN ROAD MITIGATION**

		PROJECT:	**T-2D**
DEPARTMENT:	ENGINEERING & CAPITAL PROJECTS	COUNCIL DISTRICT:	5&6
CIP or JO #:	52-393.0	COMMUNITY PLAN:	RP

SOURCE	**FUNDING:**	EXPENDED	CONT APPROP	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
FBA-RP								
FBA PHR	**$284,960**							
FBA BMR	**$377,572**							
SPF								
PARKFEE								
STATE								
DEV/SUBD								
PRIVATE								
MTDB								
OTHER								
UNIDENT	**$2,899,468**							
TOTAL	**$3,562,000**	$0	$0	$0	$0	$0	$0	$0

SOURCE	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
FBA-RP								
RP COMM								
FBA-CVN								
SPF								
PARKFEE								
STATE								
DEV/SUBD								
PRIVATE								
MTDB								
OTHER								
UNIDENT								
TOTAL	$0	$0	$0	$0	$0	$0	$0	$0



CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM
DRAFT

TITLE: **BLACK MOUNTAIN ROAD MITIGATION**

		PROJECT:	**T-2D**
DEPARTMENT:	ENGINEERING & CAPITAL PROJECTS	COUNCIL DISTRICT:	5&6
CIP or JO #:	52-393.0	COMMUNITY PLAN:	RP

DESCRIPTION:

A. PROVIDE A TRAFFIC SIGNAL AT THE INTERSECTION OF SUNDANCE AVENUE AND TWIN TRAILS DRIVE.
B. PROVIDE AN ADDITIONAL METERED ON-RAMP LANE AT THE WESTBOUND ON-RAMP FROM RANCHO PENASQUITOS BLVD TO SR-56.
C. RECONFIGURE BLACK MOUNTAIN ROAD WITHIN THE EXISTING IMPROVEMENTS BETWEEN THE EASTBOUND SR-56 RAMPS AND WESTBOUND RAMPS BY PROVIDING SIDE-BY-SIDE DUAL LEFT TURN LANES ON BRIDGE, MAINTAINTING TWO THRU LANES IN EACH DIRECTION, AND PROVIDE FOR A WIDENING FOR NB LANES JUST NORTH OF BRIDGE TO RECEIVE THE OFFSET NB LANES.
D. PROVIDE CONTINUOUS EASTBOUND SR-56 AUXILIARY LANE BETWEEN THE EASTBOUND ON-RAMP AT CAMINO DEL SUR AND THE EASTBOUND OFF-RAMP AT BLACK MOUNTAIN ROAD.

JUSTIFICATION:

THESE PROJECTS PROVIDE PARTIAL MITIGATION FOR THE DELETION OF THE PRIOR T-2D PROJECT WHICH CALLED FOR THE WIDENING OF BLACK MOUNTAIN ROAD FROM FOUR LANES TO SIX LANES. THESE PROJECTS ARE REQUIRED TO ACCOMODATE THE ADDITIONAL TRAFFIC ANTICIPATED AS A RESULT OF PROJECTED DEVELOPMENT IN THE SURROUNDING COMMUNITIES.

RELATIONSHIP TO GENERAL PLAN AND COMMUNITY PLAN(S):

THIS PROJECT WILL BE CONSISTENT WITH THE CITY'S GENERAL PLAN AND THE RANCHO PEÑASQUITOS COMMUNITY PLAN.

SCHEDULE:

DESIGN AND CONSTRUCTION WILL BE SCHEDULED WHEN FUNDING IS IDENTIFIED. THE ULTIMATE PROJECT WOULD INCLUDE 10.6% FUNDING FROM THE BMR FBA AND 8% FROM THE PHR FBA. THE REST OF THE PROJECT, 81.4%, IS CURRENTLY UNFUNDED. FOR TIMING OF FUNDING FOR OTHER COMMUNITY'S, REFER TO EACH COMMUNITIES PUBLIC FACILITIES FINANCING PLAN.

REFERENCE: BLACK MOUNTAIN RANCH PUBLIC FACILITIES FINANCING PLAN PROJECT # T-57; PACIFIC HIGHLANDS RANCH PUBLIC FACILITIES FINANCING PLAN PROJECT #T-11.1

CITY OF SAN DIEGO
PRELIMINARY OPINION OF PROBABLE COST
SUMMARY SHEET

DATE : 4/27/2016

T.R. #

TUNL ID #

*PROJ SIZE (**S**mall, **M**edium, **L**arge, **V**ery **L**arge): **VL**

** COMPLEXITY (**S**imple, **A**verage, **C**omplex) **C**

PROJECT NAME : **Black Mountain Road Mitigation T-57**

PROJECT LIMITS :

COMMUNITY NAME: Rancho Penasquitos

COUNCIL DISTRICT: 5

PROJECT DESCRIP. : Miscellaneous roadway improvements

ASSUMPTIONS:

	CONSTRUCTION SUB-TOTAL COSTS (from attached estimate)			**$2,250,600**
	TRAFFIC CONTROL @ 1.0% OF CONST		(Computer Calculated)	$22,506
	SWPP MEASURES @ 10% OF CONST		(Computer Calculated)	$225,060
***	CONTINGENCY	10%	(Computer Calculated)	$225,060
	BOND COSTS @ 2.5% OF CONST		(Computer Calculated)	$56,265
****	FIELD ORDERS	2.5%	(Computer Calculated)	$56,265
	MOBILIZATION (if const.> $1,000,000), @ 5%		(Computer Calculated)	$112,530
	CONSTRUCTION **T**OTAL			**$2,948,286**
	ADMIN. & ENG. DESIGN TOTAL **	@ **25%**		**$562,650**
	PROPERTY ACQUISITION TOTAL (from attached estimate)			**$50,400**
	ENVIRONMENTAL DETERMINATION (NON CONSTR)			**$0**
	INFLATION LINE ITEM (10% / YEAR) Number of years :	**0**		**$0**
	TOTAL PROJECT COST			**$3,561,336**
	ROUNDED PROJECT COST			**$3,562,000**

FIELD CHECKED

PREPARED BY :

REVIEWED BY :

Engineering Administration Costs (based on construction subtotal):

	* S (0-$100,000)	M ($100,001- $500,000)	L ($500,001- $2M)	VL (>$2M- and up)
**	35 - 70%	25 - 55%	19 - 51%	17 - 47%
***	40%	35%	30%	25%
****	10%	7.5%	5%	2.5%

CLEARING AND GRUBBING BREAKDOWN

SAWCUT	0	L. F.	$4.00	$0
CURB & GUTTER REMOVAL	0	L. F.	$10.00	$0
SIDEWALK REMOVAL	0	S. F.	$3.00	$0
PAVEMENT REMOVAL	0	S. F.	$3.00	$0
REMOVE MEDIAN	0	S. F.	$5.00	$0
REMOVE CROSS GUTTER	0	S. F.	$4.50	$0
INLET REMOVAL	0	EA.	$750.00	$0
			Total	$0
			5% Const Subtotal	$986,333
			Clear & grub Total	$986,333

CONSTRUCTION ESTIMATE for:
Traffic Signal at Sundance/Twin Trail, Penasquito Blvd/56W On-Ramp Widening, 56E Aux. Lane Between CDS and BMR & Black Mountain Road & SR-56 Bridge Restriping

Item	Quantity	Unit	Unit Price	Cost
1) New Traffic Signal at Sundance/Twin Trails	1	EA	$200,000.00	$200,000.00
2) 56W On-Ramp from Penasquito Blvd/Carmel Valley Rd (1500')				
Grading	1,500	CY	$40.00	$60,000.00
Drainage Improvements	1	LS	$50,000.00	$50,000.00
WQ Treatment BMPs	1	LS	$20,000.00	$20,000.00
6' Retaining Wall	500	LF	$200.00	$100,000.00
Upgrade Ramp Meter, Restripe On-Ramp, Add Flashing Beacon	1	LS	$135,000.00	$135,000.00
Pavement Section	18,000	SF	$12.00	$216,000.00
			Total	$581,000.00
3) 56E Aux. Lane Between Camino Del Sur and Black Mountain Road (3400')				
Grading	3,000	CY	$40.00	$120,000.00
Drainage Improvements	1	LS	$80,000.00	$80,000.00
WQ Treatment BMPs	1	LS	$50,000.00	$50,000.00
Pavement Section	40,800	SF	$12.00	$490,000.00
Bridge Widening (400' LF)	4,800	SF	$100.00	$480,000.00
Signage and Striping	1	LS	$8,000.00	$8,000.00
			Total	$1,228,000.00
4) Blk Mtn Road & SR-56 Bridge Restriping + Widening of NB Lanes North of Bridge				
Typr G Curb & Gutter	600	LF	$22.00	$13,200.00
AC Paving	3,600	SF	$10.00	$36,000.00
PCC Sidewalk	3,000	SF	$8.00	$24,000.00
Grading	500	C.Y.	$40.00	$20,000.00
Retaining Wall	300	LF	$200.00	$60,000.00
Relocate Curb Outlet	2	EA.	$3,000.00	$6,000.00
Signage & Striping	1	LS	$20,000.00	$20,000.00
Relocate Street Light	1	EA.	$5,000.00	$5,000.00
Relocate Traffic Signal	1	EA.	$20,000.00	$20,000.00
Landscape & Irrigation	1	LS	$20,000.00	$20,000.00
Remove Existing Curb & Gutter	600	LF	$4.00	$2,400.00
Remove Existing Sidewalk	3,000	SF	$4.00	$12,000.00
Relocate Fire Hydrant	1	EA.	$3,000.00	$3,000.00
Right of Way	3,600	SF	$14.00	$50,400.00
			Total	$292,000.00
				$2,301,000.00
			less ROW	$50,400.00
CONSTRUCTION SUB-TOTAL COSTS				$2,250,600.00

ESTIMATE FOR IMPROVEMMENT PLANS
Black Mountain Road Amendment

Item	Quantity	Unit	Unit Price	Cost
New Traffic Signal at Sundance/Twin Trails	1	EA	$200,000.00	$200,000.00
56W On-Ramp from Penasquito Blvd/Carmel Valley Rd (1500')				
Upgrade Ramp Meter, Restripe On-Ramp, Add Flashing Beacon	1	LS	$135,000.00	$135,000.00
Hot Mix Asphalt (0.25')	400	TON	$100.00	$40,000.00
Jointed Plane Concrete Pavement (0.80')	600	CY	$200.00	$120,000.00
Class 2 Aggregate Subbase (0.70')	500	CY	$100.00	$50,000.00
6' Retaining Wall	250	LF	$200.00	$50,000.00
18" RCP	200	LF	$120.00	$24,000.00
			Total	$419,000.00
56E Aux. Lane Between Camino Del Sur and Black Mountain Road (3400')				
Hot Mix Asphalt (0.25')	700	TON	$100.00	$70,000.00
Jointed Plane Concrete Pavement (0.80')	1100	CY	$200.00	$220,000.00
Class 2 Aggregate Subbase (0.70')	1000	CY	$100.00	$100,000.00
Bridge Widening (400' LF)	4,800	SF	$100.00	$480,000.00
Signage and Striping	1	LS	$7,500.00	$7,500.00
			Total	$877,500.00

RECON

An Employee-Owned Company

March 22, 2019

Mr. William Dumka
Black Mountain Ranch LLC
16010 Camino Del Sur
San Diego, CA 92127

Reference: Air Quality Analysis for the Black Mountain Road Community Plan Amendment Project (RECON Number 6524)

Dear Mr. Dumka:

The purpose of this report is to assess potential short-term local and regional air quality impacts resulting from the Black Mountain Road Community Plan Amendment (CPA) Project (project) located in the city of San Diego, California. The analysis of impacts is based on national and state Ambient Air Quality Standards (AAQS) and assessed in accordance with the regional guidelines, policies, and standards and the San Diego Air Pollution Control District (SDAPCD). As discussed in this analysis, all air quality impacts would be less than significant.

1.0 PROJECT DESCRIPTION

The project proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project roadway currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over State Route 56 (SR-56) is wider and operates as a 5-lane Primary Arterial. The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Rancho Peñasquitos Community Plan Circulation Element to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City of San Diego (City) Planning Commission initiated the CPA on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

[1] The City General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

The following three roadway improvements identified in the Transportation Impact Study (TIS) would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road.

MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

Figure 1 shows the regional location, while Figure 2 shows the locations of the project design feature and three traffic mitigation measures in relation to the project roadway. Figures 3 through 5 show the footprints of MM-TRA-2, MM-TRA-3, and the project design feature, respectively. A figure showing the footprint of MM-TRA-1 is not included since this traffic mitigation measure is limited to installation of a traffic signal.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the Transportation Phasing Plan for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the Public Facilities Financing Plans are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

2.0 ENVIRONMENTAL SETTING

The project site lies within the San Diego Air Basin (SDAB), which is regulated locally by the SDAPCD. Air quality at a given location is a function of the types and quantities of pollutants being emitted into the air locally and throughout the basin, and the dispersal rates of pollutants within the region. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants (which is affected by inversions), and the local topography.

2.1 Regulatory Framework

2.2.1 Ambient Air Quality Standards

AAQS represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. Six criteria pollutants of primary concern have been designated: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and respirable particulate matter (particulate matter less than 10 microns [PM_{10}] and particulate matter less than 2.5 microns [$PM_{2.5}$]). The U.S. Environmental Protection Agency (U.S. EPA) developed primary and secondary National AAQS (NAAQS). Additionally, the state of California has developed the California AAQS (CAAQS), which generally set limits that are more stringent on the criteria pollutants. The NAAQS and CAAQS are summarized in Table 1.

If an air basin is not in either federal or state attainment for a particular pollutant, the basin is classified as non-attainment area for that pollutant. The SDAB is currently classified as a federal non-attainment area for ozone. At the state level, the SDAB is classified a non-attainment area for ozone, PM_{10}, and $PM_{2.5}$.



Project Location

RECON

M:\JOBS4\6524\common_gis\fig1.mxd 12/4/2017 sab

FIGURE 1

Regional Location

Image source: Nearmap (flown June 2018)



Project Roadway

Project Design Feature and Traffic Mitigation Measures

RECON

M:\JOBS4\6524\common_gis\fig2_nos.mxd 9/26/2018 sab

FIGURE 2

Project Location on Aerial Photograph

Image Source: NearMaps (flown June 2018)



FIGURE 3

MM-TRA-2 Footprint

RECON

M:\JOBS4\6524\common_gis\Fig3_nos.mxd 9/25/2018 sab

Image Source: NearMaps (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\Fig4_nos.mxd 9/25/2018 sab

FIGURE 4

MM-TRA-3 Footprint

Image Source: NearMaps (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\Fig5_nos.mxd 9/25/2018 sab

FIGURE 5

Project Design Feature Footprint

Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM_{10})[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		–		
Fine Particulate Matter ($PM_{2.5}$)[9]	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-dispersive Infrared Photometry	35 ppm (40 mg/m³)	–	Non-dispersive Infrared Photometry
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		–	–	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemi-luminescence	100 ppb (188 µg/m³)	–	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm (1,300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chroma-tography			

Table 1
Ambient Air Quality Standards

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; – = not applicable.

[1] California standards for ozone, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24-hour), NO_2, particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California AAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 degrees Celsius and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent measurement method which can be shown to the satisfaction of the California Air Resources Board (CARB) to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standards of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of ppb. California standards are in units of ppm. To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[14] In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

SOURCE: CARB 2016.

2.2.2 State Implementation Plan

The State Implementation Plan (SIP) is a collection of documents that set forth the state's strategies for achieving AAQS. The SDAPCD is responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The SDAPCD adopts rules, regulations, and programs to attain state and federal air quality standards, and appropriates money (including permit fees) to achieve its objectives.

2.2.3 Regional Air Quality Strategy

The SDAPCD prepared the original 1991/1992 Regional Air Quality Strategy (RAQS) in response to requirements set forth in the California Clean Air Act (CAA). The California CAA requires areas that are designated state non-attainment areas for ozone, CO, SO2, and NO2 prepare and implement plans to attain the standards by the earliest practicable date. The California CAA does not provide guidance on timing or requirements for attaining the state PM10 and PM2.5 standards. Attached as part of the RAQS are the Transportation Control Measures (TCMs) adopted by the San Diego Association of Governments (SANDAG). Updates of the RAQS and corresponding TCM are required every three years. The RAQS and TCM set forth the steps needed to accomplish attainment of state and federal AAQS. The most recent update of the RAQS and TCM occurred in 2016.

2.2 Existing Air Quality

Air quality is commonly expressed as the number of days per year in which air pollution levels exceed federal standards set by the U.S. EPA or state standards set by the CARB. The SDAPCD maintains 10 air-quality monitoring stations located throughout the greater San Diego metropolitan region. Air pollutant concentrations and meteorological information are continuously recorded at these stations. Measurements are then used by scientists to help forecast daily air pollution levels.

The San Diego-Rancho Carmel Drive monitoring station, located at 11403 Rancho Carmel Drive approximately 3.5 miles northeast of the project site, is the closest monitoring station to the project site. The San Diego-Rancho Carmel Road monitoring station began operation in 2015 and measures CO, NO_2, and $PM_{2.5}$, however, only 2015 and 2016 NO_2 data is available. The nearest monitoring station that measures a wider range of data and pollutants is the San Diego-Kearny Villa Road monitoring station, located at 6125A Kearny Villa Road, approximately 7.5 miles southeast of the project site. The San Diego-Kearny Villa Road monitoring station measures ozone, NO_2, PM_{10}, and $PM_{2.5}$. Table 2 provides a summary of measurements collected at the San Diego-Rancho Carmel Road and San Diego-Kearny Villa Road monitoring stations for the years 2012 through 2016.

Table 2
Summary of Air Quality Measurements

Pollutant/Standard	2012	2013	2014	2015	2016
San Diego-Rancho Carmel Drive					
NO_2					
Days State 1-hour Standard Exceeded (0.18 ppm)	--	--	--	0	0
Days Federal 1-hour Standard Exceeded (0.100 ppm)	--	--	--	0	0
Max 1-hr (ppm)	--	--	--	0.055	0.062
Annual Average (ppm)	--	--	--	--	0.017
San Diego-Kearny Villa Road					
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	1	0	1	0	0
Days State 8-hour Standard Exceeded (0.07 ppm)	3	1	4	0	3
Days 2015 Federal 8-hour Standard Exceeded (0.07 ppm)	2	0	4	0	3
Days 2008 Federal 8-hour Standard Exceeded (0.075 ppm)	1	0	1	0	0
Max. 1-hr (ppm)	0.099	0.081	0.099	0.077	0.087
Max 8-hr (ppm)	0.077	0.071	0.082	0.070	0.075

Table 2
Summary of Air Quality Measurements

Pollutant/Standard	2012	2013	2014	2015	2016
NO_2					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Days Federal 1-hour Standard Exceeded (0.100 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.057	0.067	0.051	0.051	0.053
Annual Average (ppm)	--	0.011	0.010	0.009	0.009
PM_{10}*					
Measured Days State 24-hour Standard Exceeded (50 µg/m^3)	0	0	0	0	0
Calculated Days State 24-hour Standard Exceeded (50 µg/m^3)	--	0.0	0.0	0.0	--
Measured Days Federal 24-hour Standard Exceeded (150 µg/m^3)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (150 µg/m^3)	--	0.0	0.0	0.0	0.0
Max. Daily (µg/m^3)	35.0	38.0	39.0	37.0	35.0
State Annual Average (µg/m^3)	--	20.5	19.5	16.7	--
Federal Annual Average (µg/m^3)	14.7	19.9	19.4	17.0	17.1
$PM_{2.5}$*					
Measured Days Federal 24-hour Standard Exceeded (35 µg/m^3)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (35 µg/m^3)	--	0.0	0.0	0.0	0.0
Max. Daily (µg/m^3)	20.1	22.0	20.2	25.7	20.3
State Annual Average (µg/m^3)	--	8.3	8.2	--	7.8
Federal Annual Average (µg/m^3)	--	8.3	8.1	7.2	7.5

SOURCE: CARB 2017.
ppm = parts per million; µg/m^3 = micrograms per cubic meter; -- = Not available.
* Calculated days value. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

3.0 THRESHOLDS OF SIGNIFICANCE

Thresholds used to evaluate potential impacts to air quality are based on applicable criteria in the California Environmental Quality Act Guidelines Appendix G and the City Significance Determination Thresholds. The project would have a significant air quality impact if it would (City of San Diego 2016):

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a violation of any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Create objectionable odors affecting a substantial number of people.
5. Result in exceeding 100 pounds per day of Particulate Matter (dust).
6. Result in substantial alteration of air movement in the area of the project.

The SDAPCD does not provide specific numeric thresholds for determining the significance of air quality impacts under the California Environmental Quality Act. However, the SDAPCD does specify Air Quality Impact Analysis trigger levels for new or modified stationary sources (SDAPCD Rules 20.1, 20.2, and 20.3). The SDAPCD does not consider these trigger levels to represent adverse air quality impacts, rather, if these trigger levels are exceeded by a project, the SDAPCD requires an air quality analysis to determine if a significant air quality impact would occur. While, these trigger levels do not generally apply to mobile sources or general land development projects, for comparative purposes these levels are used to evaluate the increased emissions that would be discharged to the SDAB if the project were approved.

The SDAPCD trigger levels are also utilized by the City Significance Determination Thresholds (City of San Diego 2016) as one of the considerations when determining the potential significance of air quality impacts for projects within the city. The air quality impact screening criteria used in this analysis are shown in Table 3.

Table 3
Air Quality Impact Screening Criteria

Pollutant	Emission Rate		
	Pounds/Hour	Pounds/Day	Tons/Year
Nitrogen Oxides (NO_X)	25	250	40
Sulfur Oxides (SO_X)	25	250	40
CO	100	550	100
PM_{10}	--	100	15
Lead	--	3.2	0.6
Volatile Organic Compounds, Reactive Organic Gases	--	137	15
$PM_{2.5}$*	--	67*	10

SOURCE: City of San Diego 2016.
* SDAPCD Resolution 16-041 was adopted on April 27, 2016. It amended Rules 20.1, 20.2, and 20.3. City of San Diego significance thresholds have not been updated to reflect this amendment.

4.0 EMISSION CALCUALTIONS

As the project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement roadway improvements, it would not generate additional traffic or increase vehicle miles traveled. The main source of project emissions would be associated with construction of the roadway improvements.

4.1 Construction Emissions

Construction-related activities are temporary, short-term sources of air emissions. Sources of construction-related air emissions include fugitive dust from grading activities; construction equipment exhaust; construction-related trips by workers, delivery trucks, and material-hauling trucks; and construction-related power consumption.

Construction-related pollutants result from dust raised during grading, emissions from construction vehicles, and chemicals used during construction. Fugitive dust emissions vary greatly during construction and are dependent on the amount and type of activity, silt content of the soil, and the weather. Vehicles moving over paved and unpaved surfaces, demolition, excavation, earth movement, grading, and wind erosion from exposed surfaces are all sources of fugitive dust. Construction operations are subject to the requirements established in SDAPCD Regulation 4, Rules 52, 54, and 55.

Heavy-duty construction equipment is usually diesel powered. In general, emissions from diesel-powered equipment contain more NO_X, SO_X, and particulate matter than gasoline-powered engines. However, diesel-powered engines generally produce less CO and less ROG than gasoline-powered engines. Standard construction equipment includes tractors, loaders, backhoes, rubber-tired dozers, excavators, graders, cranes, forklifts, rollers, paving equipment, generator sets, welders, cement and mortar mixers, and air compressors.

Air emissions were calculated using the Road Construction Emissions Model, Version 8.1.0 (Sacramento Metropolitan Air Quality Management District 2016). The model is a spreadsheet that estimates emissions based on numerous parameters regarding the type of construction, area to be disturbed, the period of construction and year of construction. Inputs were the length of the improvement, the type of improvement (new roadway or road widening), the year of construction, and area of construction. The roadway

construction emissions model estimates emissions from vehicle and equipment exhausts, fugitive dust, and off-gassing emissions during all phases of construction.

As discussed in Section 1.0, there are four proposed roadway improvements. Emissions due to construction of these improvements were calculated. The exact construction schedule and equipment required for these improvements is not known at this time. Emission calculations are based on model defaults and estimates of the maximum disturbance area based on preliminary concept drawings provided in the TIS prepared for the project (KOA Corporation 2016). It was assumed that installation of the signal at the intersection of Sundance Avenue and Twin Trails Drive would take five days and would require a crane and a drill rig. The auxiliary lane would be approximately 0.5 mile in length, and it was assumed that construction would last for six months. The ramp lane would be approximately 0.3 mile in length, and it was assumed that construction would last for one month. The segment of Black Mountain Road that would be widened would be approximately 0.15 mile in length, and it was assumed that construction would last for one month. The typical equipment required for roadway construction includes backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. Additionally, construction of the auxiliary lane would require the reconstruction of an existing bridge. Therefore, in addition to the listed equipment, cranes and drill rigs were included in the emissions estimate.

Tables 4, 5, 6, and 7 summarize the construction emissions associated with installation of the traffic signal (MM-TRA-1), construction of the SR-56 auxiliary lane (MM-TRA-2), and construction of the Rancho Peñasquitos Boulevard/SR-56 on-ramp lane (MM-TRA-3), and Black Mountain Road restriping/widening (project design feature), respectively. Road Construction Emissions Model input and output are contained in Attachments 1 through 4.

Table 4
MM-TRA-1 Signal Installation Construction Emissions
(pounds per day)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Signal Installation	1	11	5	0	5	1
Maximum Daily Emissions	**9**	**95**	**62**	**0**	**15**	**6**
Significance Threshold	*137*	*250*	*550*	*250*	*100*	*67*

Table 5
MM-TRA-2 Auxiliary Lane Construction Emissions
(pounds per day)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Grubbing/Land Clearing	1	15	10	0	11	3
Grading/Excavation	9	95	62	0	15	6
Drainage/Utilities/Sub-Grade	5	44	35	0	13	4
Paving	2	20	18	0	1	1
Maximum Daily Emissions	**9**	**95**	**62**	**0**	**15**	**6**
Significance Threshold	*137*	*250*	*550*	*250*	*100*	*67*

Table 6
MM-TRA-3 Ramp Lane Construction Emissions
(pounds per day)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Grubbing/Land Clearing	1	15	10	0	18	4
Grading/Excavation	8	84	57	0	21	7
Drainage/Utilities/Sub-Grade	5	44	35	0	20	6
Paving	2	20	18	0	1	1
Maximum Daily Emissions	**8**	**84**	**57**	**0**	**21**	**7**
Significance Threshold	*137*	*250*	*550*	*250*	*100*	*67*

Table 7
Project Design Feature Black Mountain Road Restriping/ Widening Construction Emissions
(pounds per day)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Grubbing/Land Clearing	1	12	7	0	13	3
Grading/Excavation	4	45	28	0	14	4
Drainage/Utilities/Sub-Grade	4	39	30	0	14	4
Paving	1	12	11	0	1	1
Maximum Daily Emissions	**4**	**45**	**30**	**0**	**14**	**4**
Significance Threshold	*137*	*250*	*550*	*250*	*100*	*67*

For assessing the significance of the air quality emissions resulting during construction of the project, the construction emissions were compared to the significance thresholds shown in Tables 4 through 7. As shown, under all alternatives the maximum daily construction emissions associated with the project are projected to be less than the applicable thresholds for all criteria pollutants.

4.2 Operational Emissions

As discussed, the project would not generate additional trips. Implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project. However, based on the TIS prepared for the project which analyzed year 2050 traffic volumes on area roadways with and without implementation of the project, the project would not result in an increase in vehicle miles traveled on roadways in the vicinity of the project (KOA Corporation 2016). Therefore, the project would not result in an increase in mobile source emissions.

Area sources include consumer products, natural gas used in space and water heating, architectural coatings, landscaping equipment, hearths (fireplaces), and woodstoves. The project would not include any area sources of emissions.

5.0 IMPACT ANALYSIS

1. Would the project obstruct or conflict with the implementation of the San Diego RAQS?

The RAQS is the applicable regional air quality plan that sets forth the SDAPCD's strategies for achieving the NAAQS and CAAQS. The SDAB is designated a non-attainment area for the federal and state ozone standard. Accordingly, the RAQS was developed to identify feasible emission control measures and provide expeditious progress toward attaining the standards for ozone. The two pollutants addressed in the RAQS are ROG and NO_X, which are precursors to the formation of ozone. Projected increases in motor vehicle usage, population, and growth create challenges in controlling emissions and, by extension, to maintaining and improving air quality. The RAQS was most recently adopted in 2016.

The growth projections used by the SDAPCD to develop the RAQS emissions budgets are based on the population, vehicle trends, and land use plans developed in general plans and used by SANDAG in the development of the regional transportation plans and sustainable communities strategy. As such, projects that propose development that is consistent with the growth anticipated by SANDAG's growth projections and/or the General Plan would not conflict with the RAQS. In the event that a project would propose development that is less dense than anticipated by the growth projections, the project would likewise be consistent with the RAQS. In the event a project proposes development that is greater than anticipated in the growth projections, further analysis would be warranted to determine if the project would exceed the growth projections used in the RAQS for the specific subregional area.

The project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement roadway improvements. The project would not include any land use change or development that would result growth. Therefore, the project would not obstruct or conflict with implementation of the SDAPCD RAQS, and impacts would be less than significant.

2. *Would the project result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

As shown in Tables 4 through 7, project construction would not exceed the applicable regional emissions thresholds. Further, should construction of all improvements occur simultaneously, total emissions would be less than the applicable thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project construction emissions would be well below these limits, project construction would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations. The project would not be a source of long-term emissions of regional air pollutants from operational sources, and impacts would be less than significant.

3. *Would the project expose sensitive receptors to substantial pollutant concentrations?*

Sensitive land uses include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities. There are residential uses located near the traffic improvement areas.

Construction of the project and associated infrastructure would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Construction of the project would result in the generation of diesel-exhaust diesel particulate matter (DPM) emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities and on-road diesel equipment used to bring materials to and from the project site.

Generation of DPM from construction projects typically occurs in a single area for a short period. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015). Thus, if the duration of proposed construction activities near any specific sensitive receptor were 12 months, the exposure would be less than 3 percent of the total exposure period used for health risk calculation.

Therefore, because of the limited size of the project and the short duration of construction, DPM generated by project construction is not expected to create conditions where the probability is greater than 10 in 1 million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of noncarcinogenic toxic air contaminants that exceed a Hazard Index greater than 1 for the Maximally Exposed Individual. Additionally, with ongoing implementation of U.S. EPA and CARB requirements for cleaner fuels; off-road diesel engine retrofits; and new, low-emission diesel engine types, the DPM emissions of individual equipment would be substantially reduced over the years as the project construction continues. Therefore, project construction would not expose sensitive receptors to substantial pollutant concentration.

Localized CO concentration is a direct function of motor vehicle activity at signalized intersections (e.g., idling time and traffic flow conditions), particularly during peak commute hours and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses. CO hotspots due to traffic almost exclusively occur at signalized intersections that operate at a level of service (LOS) E or below. Projects may result in or contribute to a CO hotspot if they worsen traffic flow at signalized intersections operating at LOS E or F.

Due to increased requirements for cleaner vehicles, equipment, and fuels, CO levels in the state have dropped substantially. All air basins are attainment or maintenance areas for CO. Therefore, more recent screening procedures based on more current methodologies have been developed. The Sacramento Metropolitan Air Quality Management District developed a screening threshold in 2011, which states that any project involving an intersection experiencing 31,600 vehicles per hour or more will require detailed analysis.

As discussed, the project would not generate traffic. However, implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project. The TIS prepared for the project analyzed future year 2050 intersection volumes with and without implementation of the project. Based on this analysis, four intersections are projected to operate at LOS E in year 2050; however, implementation of the project would decrease the delay and improve operation at these intersections. Additionally, the turning volumes at these intersections would be well below 31,600 vehicles per hour. Consequently, the project would reduce CO concentration at these four intersections and reduce the potential for CO hotspots. All other signalized intersections are project to operate at LOS D or better and would not contribute to CO hotspots. Therefore, impacts associated with CO hot spots would be less than significant.

4. Would the project create objectionable odors affecting a substantial number of people?

The project does not include heavy industrial or agricultural uses that are typically associated with odor complaints. During construction, diesel equipment may generate some nuisance odors. Sensitive receptors near the project site include residential uses; however, exposure to odors associated with project construction would be short term and temporary in nature. Impacts would be less than significant.

5. Would the project result in exceed 100 pounds per day of particulate matter/dust?

As shown in Tables 4 through 7, project construction would not result in more than 100 pounds per day of particulate matter. Impacts would be less than significant.

6. Would the project result in a substantial alteration of air movement in the area?

Local topographic variation such as that caused by the height and shape of a row of buildings can influence air movement in a given location (Boston Redevelopment Authority 1986). Alterations in the built environment may increase the dispersion of air pollutants or cause stagnation that may result in a harmful concentration of air pollutants. Urban canyons are places where the street is flanked by buildings on both sides creating a canyon-like environment. Where urban canyons are oriented perpendicular to the prevailing wind patterns, the likelihood of restricted air movement and associated pollutant accumulation may increase. The project would not construct any buildings or structures. Therefore, there would be no impact associated with the alteration of air movement.

6.0 CONCLUSIONS

The primary goal of the RAQS is to reduce ozone precursor emissions. Consistency with the RAQS is determined by analyzing a project with the assumptions in the RAQS. The project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement roadway improvements. The project would not include any land use change or development that would result growth. Therefore, the project would not obstruct or conflict with implementation of the SDAPCD's RAQS, and impacts would be less than significant.

The project would not generate additional traffic or increase vehicle miles traveled. The main source of project emissions would be associated with construction of the roadway improvements. Construction emissions were calculated for the installation of the traffic signal (MM-TRA-1), the addition of the SR-56 auxiliary lane (MM-TRA-2), the additional Rancho Peñasquitos Boulevard/SR-56 on-ramp lane (MM-TRA-3),

and the restriping/widening of a portion of Black Mountain Road (project design feature). As shown in Tables 4 through 7, project construction emissions would not exceed the applicable regional emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project emissions are well below these limits, project construction and operation would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations. Additionally, construction emissions would be temporary, intermittent, and would cease at the end of project construction.

Further, the project would not result in the exposure of sensitive receptors to substantial pollutant concentrations, generate odors that would affect a substantial number of people, or alter air movement in the area. Air quality impacts would be less than significant.

If you have any questions about the results of this analysis, please contact me at jfleming@reconenvironmental.com or (619) 308-9333 x177.

Sincerely,

Jessica Fleming
Associate Environmental Analyst

JLF:jg

cc: Anna L. McPherson, City of San Diego

Attachments

7.0 REFERENCES CITED

Boston Redevelopment Authority
1986 Air Quality at Street-Level: Strategies for Urban Design. June 1986.

California Air Resources Board (CARB)
2016 Ambient Air Quality Standards. California Air Resources Board. May 4.

2017 California Air Quality Data Statistics. California Air Resources Board Internet Site. http://www.arb.ca.gov/adam/welcome.html. Top 4 Summary and Hourly Listing. Accessed July 20, 2017.

KOA Corporation
2016 Black Mountain Road Transportation Impact Study (8th Submittal). May 2016.

Office of Environmental Health Hazard Assessment (OEHHA)
2015 Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments (Guidance Manual), February.

Sacramento Metropolitan Air Quality Management District
2016 Road Emissions Construction Model, Version 8.1.0. May 2016.

San Diego, City of
2016 California Environmental Quality Act Significance Determination Thresholds. July 2016.

ATTACHMENTS

ATTACHMENT 1

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Signal Installation

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.88	5.07	10.65	5.01	0.42	4.59	1.33	0.38	0.96	0.02	1,623.87	0.46	0.02	1,639.93
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	0.88	5.07	10.65	5.01	0.42	4.59	1.33	0.38	0.96	0.02	1,623.87	0.46	0.02	1,639.93
Total (tons/construction project)	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	4.10

Notes:

Project Start Year ->	2018
Project Length (months) ->	1
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	0	0
Grading/Excavation	0	0	0	0	200	0
Drainage/Utilities/Sub-Grade	0	0	0	0	0	0
Paving	0	0	0	0	0	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Signal Installation

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	3.72
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	3.72
Total (tons/construction project)	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	3.72

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Signal Installation	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	5.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.02	miles
Total Project Area	0.23	acres
Maximum Area Disturbed/Day	0.23	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.10	1/1/2018	1/1/2018
Grading/Excavation	1.00	0.45	1/11/2018	1/1/2018
Drainage/Utilities/Sub-Grade	0.00	0.30	3/1/2018	2/1/2018
Paving	0.00	0.15	4/1/2018	2/1/2018
Totals (Months)	1			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input					
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input					
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker			
User Input	Commute Default Values	Default Values		
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing			0	0.00
No. of employees: Grading/Excavation	5		10	200.00
No. of employees: Drainage/Utilities/Sub-Grade			0	0.00
No. of employees: Paving			0	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.44
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.44

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Miles Traveled/Vehicle/Day	Miles Traveled/Vehicle/Day	Daily VMT
Grubbing/Land Clearing - Exhaust					0.00
Grading/Excavation - Exhaust					0.00
Drainage/Utilities/Subgrade					0.00
Paving					0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max	Default	PM10	PM10	PM2.5	PM2.5
	Acreage Disturbed/Day	Maximum Acreage/Day	pounds/day	tons/per period	pounds/day	tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			4.59	0.01	0.96	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.00	0.00	0.00	0.00

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Bore/Drill Rigs	0.28	1.95	3.91	0.11	0.10	0.01	880.26	0.27	0.01	889.42
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cranes	0.56	2.47	6.67	0.29	0.27	0.01	568.03	0.18	0.00	573.92
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	0.84	4.42	10.58	0.40	0.37	0.01	1,448.29	0.45	0.01	1,463.35
Grading/Excavation	tons per phase	0.00	0.01	0.03	0.00	0.00	0.00	3.62	0.00	0.00	3.66

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>				0.00	0.01	0.03	0.00	0.00	0.00	3.62	0.00	0.00	3.66

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

ATTACHMENT 2

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Black Mountain Road Auxiliary Lane

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.32	10.32	15.16	10.66	0.66	10.00	2.68	0.60	2.08	0.02	2,072.44	0.59	0.02	2,092.86
Grading/Excavation	8.53	61.88	94.79	14.60	4.60	10.00	6.27	4.19	2.08	0.11	11,268.36	3.30	0.10	11,381.71
Drainage/Utilities/Sub-Grade	4.57	35.12	44.10	12.50	2.50	10.00	4.41	2.33	2.08	0.06	5,624.74	1.22	0.05	5,670.32
Paving	2.02	17.97	19.66	1.27	1.27	0.00	1.15	1.15	0.00	0.03	2,748.37	0.75	0.03	2,774.96
Maximum (pounds/day)	8.53	61.88	94.79	14.60	4.60	10.00	6.27	4.19	2.08	0.11	11,268.36	3.30	0.10	11,381.71
Total (tons/construction project)	0.37	2.78	3.98	0.76	0.20	0.56	0.30	0.19	0.12	0.00	486.93	0.13	0.00	491.59

Notes:

Project Start Year ->	2018
Project Length (months) ->	6
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	0	0	0	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Black Mountain Road Auxiliary Lane

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.07	0.10	0.07	0.00	0.07	0.02	0.00	0.01	0.00	13.68	0.00	0.00	12.53
Grading/Excavation	0.25	1.84	2.82	0.43	0.14	0.30	0.19	0.12	0.06	0.00	334.67	0.10	0.00	306.66
Drainage/Utilities/Sub-Grade	0.09	0.70	0.87	0.25	0.05	0.20	0.09	0.05	0.04	0.00	111.37	0.02	0.00	101.85
Paving	0.02	0.18	0.19	0.01	0.01	0.00	0.01	0.01	0.00	0.00	27.21	0.01	0.00	24.92
Maximum (tons/phase)	0.25	1.84	2.82	0.43	0.14	0.30	0.19	0.12	0.06	0.00	334.67	0.10	0.00	306.66
Total (tons/construction project)	0.37	2.78	3.98	0.76	0.20	0.56	0.30	0.19	0.12	0.00	486.93	0.13	0.00	445.97

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 8.1.0**

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Black Mountain Road Auxiliary Lane	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.50	miles
Total Project Area	2.20	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.60		1/1/2018
Grading/Excavation		2.70		1/20/2018
Drainage/Utilities/Sub-Grade		1.80		4/13/2018
Paving		0.90		6/7/2018
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
User Input				
Miles/ one-way trip		20		
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Paving (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grubbing/Land Clearing (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00	0.00	1.17
Pounds per day - Grading/Excavation	0.15	2.62	0.28	0.08	0.03	0.01	702.34	0.02	0.01	706.33
Tons per const. Period - Grading/Excavation	0.00	0.08	0.01	0.00	0.00	0.00	20.86	0.00	0.00	20.98
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.84	0.20	0.06	0.02	0.00	491.64	0.01	0.01	494.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.04	0.00	0.00	0.00	0.00	9.73	0.00	0.00	9.79
Pounds per day - Paving	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	3.48	0.00	0.00	3.50
Total tons per construction project	0.01	0.13	0.01	0.00	0.00	0.00	35.23	0.00	0.00	35.43

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
User Input					
Grubbing/Land Clearing - Exhaust		0		40.00	0.00
Grading/Excavation - Exhaust		0		40.00	0.00
Drainage/Utilities/Subgrade		0		40.00	0.00
Paving		0		40.00	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	10.00	0.07	2.08	0.01
Fugitive Dust - Grading/Excavation		0.50	10.00	0.30	2.08	0.06
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	10.00	0.20	2.08	0.04

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.60	6.76	6.39	0.31	0.28	0.01	1,072.06	0.33	0.01	1,083.19
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	1.28	9.67	15.09	0.64	0.59	0.02	1,896.85	0.58	0.02	1,916.28
Grubbing/Land Clearing	tons per phase	0.01	0.06	0.10	0.00	0.00	0.00	12.52	0.00	0.00	12.65

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Bore/Drill Rigs	0.28	1.95	3.91	0.11	0.10	0.01	880.26	0.27	0.01	889.42
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0		Model Default Tier	Cranes	0.56	2.47	6.67	0.29	0.27	0.01	568.03	0.18	0.00	573.92
1.00	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3		Model Default Tier	Excavators	0.90	10.14	9.58	0.46	0.43	0.02	1,608.08	0.50	0.01	1,624.78
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	2		Model Default Tier	Graders	1.67	9.39	16.72	0.94	0.86	0.01	1,258.82	0.39	0.01	1,271.83
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rubber Tired Loaders	0.42	1.71	5.25	0.18	0.16	0.01	619.57	0.19	0.01	626.01
2.00	2		Model Default Tier	Scrapers	2.26	17.33	28.00	1.10	1.01	0.03	3,008.05	0.94	0.03	3,039.27
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	4		Model Default Tier	Tractors/Loaders/Backhoes	1.08	9.44	10.63	0.75	0.69	0.01	1,264.00	0.39	0.01	1,277.10
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	8.38	59.26	94.50	4.51	4.15	0.11	10,566.02	3.28	0.09	10,675.38
Grading/Excavation	tons per phase	0.25	1.76	2.81	0.13	0.12	0.00	313.81	0.10	0.00	317.06

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27	0.04	0.00	377.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04	0.04	0.00	625.56
	1		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.53	3.81	4.17	0.28	0.28	0.01	623.04	0.05	0.00	625.61
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.16	2.31	2.01	0.10	0.09	0.00	346.54	0.11	0.00	350.13
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	4.46	33.29	43.91	2.44	2.31	0.05	5,133.10	1.20	0.04	5,175.89
Drainage/Utilities/Sub-Grade	tons per phase	0.09	0.66	0.87	0.05	0.05	0.00	101.64	0.02	0.00	102.48

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.32	2.84	3.50	0.17	0.16	0.00	458.58	0.14	0.00	463.33
	1		Model Default Tier	Paving Equipment	0.24	2.52	2.64	0.13	0.12	0.00	406.90	0.13	0.00	411.13
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	1.94	16.66	19.51	1.23	1.13	0.02	2,397.20	0.74	0.02	2,421.80
Paving	tons per phase	0.02	0.16	0.19	0.01	0.01	0.00	23.73	0.01	0.00	23.98
Total Emissions all Phases (tons per construction period) =>		0.36	2.65	3.97	0.20	0.18	0.00	451.70	0.13	0.00	456.16

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

ATTACHMENT 3

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Black Mountain Road Ramp Widening

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.32	10.32	15.16	17.66	0.66	17.00	4.13	0.60	3.54	0.02	2,072.44	0.59	0.02	2,092.86
Grading/Excavation	7.69	57.47	84.20	21.20	4.20	17.00	7.36	3.82	3.54	0.10	9,820.07	2.85	0.09	9,918.36
Drainage/Utilities/Sub-Grade	4.57	35.12	44.10	19.50	2.50	17.00	5.87	2.33	3.54	0.06	5,624.74	1.22	0.05	5,670.32
Paving	2.02	17.97	19.66	1.27	1.27	0.00	1.15	1.15	0.00	0.03	2,748.37	0.75	0.03	2,774.96
Maximum (pounds/day)	7.69	57.47	84.20	21.20	4.20	17.00	7.36	3.82	3.54	0.10	9,820.07	2.85	0.09	9,918.36
Total (tons/construction project)	0.06	0.44	0.61	0.19	0.03	0.16	0.06	0.03	0.03	0.00	73.99	0.02	0.00	74.69

Notes:

Project Start Year ->	2018
Project Length (months) ->	1
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	0	0	0	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Black Mountain Road Ramp Widening

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.01	0.02	0.02	0.00	0.02	0.00	0.00	0.00	0.00	2.28	0.00	0.00	2.09
Grading/Excavation	0.04	0.28	0.42	0.10	0.02	0.08	0.04	0.02	0.02	0.00	48.61	0.01	0.00	44.54
Drainage/Utilities/Sub-Grade	0.02	0.12	0.15	0.06	0.01	0.06	0.02	0.01	0.01	0.00	18.56	0.00	0.00	16.98
Paving	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.53	0.00	0.00	4.15
Maximum (tons/phase)	0.04	0.28	0.42	0.10	0.02	0.08	0.04	0.02	0.02	0.00	48.61	0.01	0.00	44.54
Total (tons/construction project)	0.06	0.44	0.61	0.19	0.03	0.16	0.06	0.03	0.03	0.00	73.99	0.02	0.00	67.76

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Black Mountain Road Ramp Widening	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.30	miles
Total Project Area	0.85	acres
Maximum Area Disturbed/Day	0.85	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.10		1/1/2018
Grading/Excavation		0.45		1/5/2018
Drainage/Utilities/Sub-Grade		0.30		1/19/2018
Paving		0.15		1/29/2018
Totals (Months)		1		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated	Calculated
One-way trips/day		2	Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Paving (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grubbing/Land Clearing (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
Pounds per day - Grading/Excavation	0.15	2.62	0.28	0.08	0.03	0.01	702.34	0.02	0.01	706.33
Tons per const. Period - Grading/Excavation	0.00	0.01	0.00	0.00	0.00	0.00	3.48	0.00	0.00	3.50
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.84	0.20	0.06	0.02	0.00	491.64	0.01	0.01	494.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00	0.00	1.63
Pounds per day - Paving	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.58
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	5.87	0.00	0.00	5.90

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
User Input					
Grubbing/Land Clearing - Exhaust		0		40.00	0.00
Grading/Excavation - Exhaust		0		40.00	0.00
Drainage/Utilities/Subgrade		0		40.00	0.00
Paving		0		40.00	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.85	17.00	0.02	3.54	0.00
Fugitive Dust - Grading/Excavation		0.85	17.00	0.08	3.54	0.02
Fugitive Dust - Drainage/Utilities/Subgrade		0.85	17.00	0.06	3.54	0.01

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.60	6.76	6.39	0.31	0.28	0.01	1,072.06	0.33	0.01	1,083.19
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	1.28	9.67	15.09	0.64	0.59	0.02	1,896.85	0.58	0.02	1,916.28
Grubbing/Land Clearing	tons per phase	0.00	0.01	0.02	0.00	0.00	0.00	2.09	0.00	0.00	2.11

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Excavators	0.90	10.14	9.58	0.46	0.43	0.02	1,608.08	0.50	0.01	1,624.78
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Graders	1.67	9.39	16.72	0.94	0.86	0.01	1,258.82	0.39	0.01	1,271.83
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rubber Tired Loaders	0.42	1.71	5.25	0.18	0.16	0.01	619.57	0.19	0.01	626.01
	2		Model Default Tier	Scrapers	2.26	17.33	28.00	1.10	1.01	0.03	3,008.05	0.94	0.03	3,039.27
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Tractors/Loaders/Backhoes	1.08	9.44	10.63	0.75	0.69	0.01	1,264.00	0.39	0.01	1,277.10
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	7.54	54.84	83.92	4.12	3.79	0.09	9,117.73	2.83	0.08	9,212.03
Grading/Excavation	tons per phase	0.04	0.27	0.42	0.02	0.02	0.00	45.13	0.01	0.00	45.60

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27	0.04	0.00	377.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04	0.04	0.00	625.56
	1		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.53	3.81	4.17	0.28	0.28	0.01	623.04	0.05	0.00	625.61
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.16	2.31	2.01	0.10	0.09	0.00	346.54	0.11	0.00	350.13
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	4.46	33.29	43.91	2.44	2.31	0.05	5,133.10	1.20	0.04	5,175.89
Drainage/Utilities/Sub-Grade	tons per phase	0.01	0.11	0.14	0.01	0.01	0.00	16.94	0.00	0.00	17.08

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.32	2.84	3.50	0.17	0.16	0.00	458.58	0.14	0.00	463.33
	1		Model Default Tier	Paving Equipment	0.24	2.52	2.64	0.13	0.12	0.00	406.90	0.13	0.00	411.13
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Paving	pounds per day	1.94	16.66	19.51	1.23	1.13	0.02	2,397.20	0.74	0.02	2,421.80
	Paving	tons per phase	0.00	0.03	0.03	0.00	0.00	0.00	3.96	0.00	0.00	4.00
Total Emissions all Phases (tons per construction period) =>			0.06	0.42	0.61	0.03	0.03	0.00	68.11	0.02	0.00	68.78

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

ATTACHMENT 4

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Black Mountain Road Restriping/Widening

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.02	6.94	11.97	12.51	0.51	12.00	2.95	0.46	2.50	0.02	1,536.41	0.42	0.01	1,551.27
Grading/Excavation	4.06	28.30	44.96	14.13	2.13	12.00	4.41	1.92	2.50	0.05	5,399.38	1.47	0.05	5,451.82
Drainage/Utilities/Sub-Grade	4.03	30.40	38.79	14.13	2.13	12.00	4.48	1.99	2.50	0.05	4,992.74	1.02	0.05	5,031.77
Paving	1.22	11.29	11.82	0.72	0.72	0.00	0.64	0.64	0.00	0.02	1,849.16	0.47	0.02	1,866.44
Maximum (pounds/day)	4.06	30.40	44.96	14.13	2.13	12.00	4.48	1.99	2.50	0.05	5,399.38	1.47	0.05	5,451.82
Total (tons/construction project)	0.04	0.27	0.38	0.13	0.02	0.11	0.04	0.02	0.02	0.00	47.94	0.01	0.00	48.38

Notes:

Project Start Year ->	2018
Project Length (months) ->	1
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	0	0	0	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Black Mountain Road Restriping/Widening

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	1.69	0.00	0.00	1.55
Grading/Excavation	0.02	0.14	0.22	0.07	0.01	0.06	0.02	0.01	0.01	0.00	26.73	0.01	0.00	24.48
Drainage/Utilities/Sub-Grade	0.01	0.10	0.13	0.05	0.01	0.04	0.01	0.01	0.01	0.00	16.48	0.00	0.00	15.06
Paving	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.05	0.00	0.00	2.79
Maximum (tons/phase)	0.02	0.14	0.22	0.07	0.01	0.06	0.02	0.01	0.01	0.00	26.73	0.01	0.00	24.48
Total (tons/construction project)	0.04	0.27	0.38	0.13	0.02	0.11	0.04	0.02	0.02	0.00	47.94	0.01	0.00	43.89

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Black Mountain Road Restriping/Widening	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.15	miles
Total Project Area	0.60	acres
Maximum Area Disturbed/Day	0.60	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.10		1/1/2018
Grading/Excavation		0.45		1/5/2018
Drainage/Utilities/Sub-Grade		0.30		1/19/2018
Paving		0.15		1/29/2018
Totals (Months)		1		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated	Calculated
One-way trips/day		2	Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Paving (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grubbing/Land Clearing (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
Pounds per day - Grading/Excavation	0.15	2.62	0.28	0.08	0.03	0.01	702.34	0.02	0.01	706.33
Tons per const. Period - Grading/Excavation	0.00	0.01	0.00	0.00	0.00	0.00	3.48	0.00	0.00	3.50
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.84	0.20	0.06	0.02	0.00	491.64	0.01	0.01	494.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00	0.00	1.63
Pounds per day - Paving	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.58
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	5.87	0.00	0.00	5.90

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
User Input					
Grubbing/Land Clearing - Exhaust		0		40.00	0.00
Grading/Excavation - Exhaust		0		40.00	0.00
Drainage/Utilities/Subgrade		0		40.00	0.00
Paving		0		40.00	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.60	12.00	0.01	2.50	0.00
Fugitive Dust - Grading/Excavation		0.60	12.00	0.06	2.50	0.01
Fugitive Dust - Drainage/Utilities/Subgrade		0.60	12.00	0.04	2.50	0.01

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Excavators	0.30	3.38	3.19	0.15	0.14	0.01	536.03	0.17	0.00	541.59
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles		Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		pounds per day		0.98	6.29	11.90	0.48	0.45	0.01	1,360.83	0.41	0.01	1,374.69
	Grubbing/Land Clearing		tons per phase		0.00	0.01	0.01	0.00	0.00	0.00	1.50	0.00	0.00	1.51

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Excavators	0.30	3.38	3.19	0.15	0.14	0.01	536.03	0.17	0.00	541.59
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.26	1.96	2.52	0.17	0.16	0.00	267.21	0.08	0.00	269.98
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rubber Tired Loaders	0.42	1.71	5.25	0.18	0.16	0.01	619.57	0.19	0.01	626.01
1.00	2		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4		Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00	0.10	0.00	319.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	3.91	25.68	44.68	2.05	1.88	0.05	4,697.04	1.45	0.04	4,745.50
Grading/Excavation	tons per phase	0.02	0.13	0.22	0.01	0.01	0.00	23.25	0.01	0.00	23.49

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27	0.04	0.00	377.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04	0.04	0.00	625.56
1.00	1		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pumps	0.53	3.81	4.17	0.28	0.28	0.01	623.04	0.05	0.00	625.61
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rough Terrain Forklifts	0.16	2.31	2.01	0.10	0.09	0.00	346.54	0.11	0.00	350.13
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00	0.10	0.00	319.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	3.93	28.57	38.59	2.07	1.96	0.05	4,501.10	1.01	0.04	4,537.34
Drainage/Utilities/Sub-Grade	tons per phase	0.01	0.09	0.13	0.01	0.01	0.00	14.85	0.00	0.00	14.97

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pavers	0.32	2.84	3.50	0.17	0.16	0.00	458.58	0.14	0.00	463.33
1.00	1		Model Default Tier	Paving Equipment	0.24	2.52	2.64	0.13	0.12	0.00	406.90	0.13	0.00	411.13
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.26	1.96	2.52	0.17	0.16	0.00	267.21	0.08	0.00	269.98
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00	0.10	0.00	319.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Paving	pounds per day	1.14	9.97	11.68	0.68	0.62	0.02	1,497.99	0.46	0.01	1,513.27
	Paving	tons per phase	0.00	0.02	0.02	0.00	0.00	0.00	2.47	0.00	0.00	2.50
Total Emissions all Phases (tons per construction period) =>			0.04	0.24	0.38	0.02	0.02	0.00	42.07	0.01	0.00	42.47

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

RECON

An Employee-Owned Company

March 22, 2019

Mr. William Dumka
Black Mountain Ranch LLC
16010 Camino Del Sur
San Diego, CA 92127

Reference: Greenhouse Gas Analysis for the Black Mountain Road Project (RECON Number 6524)

Dear Mr. Dumka:

This letter describes the results of a greenhouse gas (GHG) analysis for the Black Mountain Road Community Plan Amendment (CPA) Project (project) located in the city of San Diego, California. As discussed in this analysis, implementation of the project would not conflict with the City's Climate Action Plan (CAP). Therefore, impacts associated with GHG emissions would be less than significant.

1.0 PROJECT DESCRIPTION

The project proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project roadway currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over State Route 56 (SR-56) is wider and operates as a 5-lane Primary Arterial. The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Rancho Peñasquitos Community Plan Circulation Element to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City of San Diego (City) Planning Commission initiated the CPA on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

The following three roadway improvements identified in the Transportation Impact Study (TIS) would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

[1] The City of San Diego General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road.

MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

Figure 1 shows the regional location, while Figure 2 shows the locations of the project design feature and three traffic mitigation measures in relation to the project roadway. Figures 3 through 5 show the footprints of MM-TRA-2, MM-TRA-3, and the project design feature, respectively. A figure showing the footprint of MM-TRA-1 is not included since this traffic mitigation measure is limited to installation of a traffic signal.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the Transportation Phasing Plan for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the Public Facilities Financing Plans are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

2.0 REGULATORY FRAMEWORK

In response to rising concern associated with increasing GHG emissions and global climate change impacts, several plans and regulations have been adopted at the international, national, and state levels with the aim of reducing GHG emissions. The following is a discussion of the plans and regulations most applicable to the project.

2.1 State

2.1.1 Executive Orders and Statewide GHG Emission Targets

EO S-3-05

This Executive Order (EO) established the following GHG emission reduction targets for the State of California:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

This EO also directs the secretary of the California Environmental Protection Agency (EPA) to oversee the efforts made to reach these targets, and to prepare biannual reports on the progress made toward meeting the targets and on the impacts to California related to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. With regard to impacts, the report shall also prepare and report on mitigation and adaptation plans to combat the impacts. The first Climate Action Team Assessment Report was produced in March 2006 and has been updated every two years.



Project Location

FIGURE 1
Regional Location

RECON

M:\JOBS4\6524\common_gis\fig1.mxd 12/4/2017 sab

Image source: Nearmap (flown June 2018)



Project Roadway

Project Design Feature and Traffic Mitigation Measures

RECON

M:\JOBS4\6524\common_gis\fig2_nos.mxd 9/26/2018 sab

FIGURE 2

Project Location on Aerial Photograph

Image Source: NearMaps (flown June 2018)



FIGURE 3

MM-TRA-2 Footprint

RECON

M:\JOBS4\6524\common_gis\Fig3_nos.mxd 9/25/2018 sab

Image Source: NearMaps (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\Fig4_nos.mxd 9/25/2018 sab

FIGURE 4

MM-TRA-3 Footprint

Image Source: NearMaps (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\Fig5_nos.mxd 9/25/2018 sab

FIGURE 5

Project Design Feature Footprint

EO B-30-15

This EO, issued on April 29, 2015, establishes an interim GHG emission reduction goal for the State of California by 2030 of 40 percent below 1990 levels. This EO also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in EO S-3-05. Additionally, this EO directed California Air Resources Board (CARB) to update its Climate Change Scoping Plan to address the 2030 goal. Therefore, in the coming months, CARB is expected to develop statewide inventory projection data for 2030 as well as commence its efforts to identify reduction strategies capable of securing emission reductions that allow for achievement of the EO's new interim goal.

2.1.2 California Global Warming Solutions Act

In response to EO S-3-05, the California Legislature passed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, and thereby enacted Sections 38500–38599 of the California Health and Safety Code. The heart of Assembly Bill (AB) 32 is its requirement that CARB establish an emissions cap and adopt rules and regulations that would reduce GHG emissions to 1990 levels by 2020. AB 32 also required CARB to adopt a plan by January 1, 2009 indicating how emission reductions would be achieved from significant GHG sources via regulations, market mechanisms, and other actions.

Approved in September 2016, Senate Bill (SB) 32 updates the California Global Warming Solutions Act of 2006. Under SB 32, the state would reduce its GHG emissions to 40 percent below 1990 levels by 2030. In implementing the 40 percent reduction goal, CARB is required to prioritize emissions reductions to consider the social costs of the emissions of GHGs. 'Social costs' is defined as "an estimate of the economic damages, including, but not limited to, changes in net agricultural productivity; impacts to public health; climate adaptation impacts, such as property damages from increased flood risk; and changes in energy system costs, per metric ton of greenhouse gas emission per year."

2.1.3 Climate Change Scoping Plan

As directed by the California Global Warming Solutions Act of 2006, CARB adopted the *Climate Change Scoping Plan: A Framework for Change* (Scoping Plan) in 2008, which identifies the main strategies California will implement to achieve the GHG reductions necessary to reduce forecasted business as usual (BAU) emissions in 2020 to the state's historic 1990 emissions level (CARB 2008). In October 2017, CARB released a revised version of *The 2017 Climate Change Scoping Plan Update, The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target* (Proposed Second Update to the Scoping Plan; CARB 2017). The Proposed Second Update to the Scoping Plan identifies the state strategy for achieving its 2030 interim reduction target codified by SB 32. The plan proposes to build on existing programs such as the Cap-and-Trade Regulation, Low Carbon Fuel Standard (LCFS), Advanced Clean Cars Program (ACC), Renewable Portfolio Standard (RPS), Sustainable Communities Strategy (SCS), and the Short-Lived Climate Pollutant Reduction Strategy. It also proposes further strategies to reduce waste emissions through cogeneration, reduce GHG emissions from the refinery sector by 20 percent, and new policies to address GHG emissions from natural and working lands.

2.1.4 California Advanced Clean Car Program

The ACC Program, adopted January 2012, combines the control of smog, soot-causing pollutants, and GHG emissions into a single coordinated package of requirements for model years 2015 through 2025. Accordingly, the ACC program coordinates the goals of the Pavley, low emissions vehicle (LEV), zero emission vehicle (ZEV), and Clean Fuels Outlet (CFO) programs in order to lay the foundation for the commercialization and support of ultra-clean vehicles.

AB 1493 (Pavley) directed CARB to adopt vehicle standards that lowered GHG emissions from passenger vehicles and light-duty trucks to the maximum extent technologically feasible, beginning with the 2009

model year. CARB has adopted amendments to its regulations that would enforce AB 1493 but provide vehicle manufacturers with new compliance flexibility.

CARB has also adopted a second phase of the Pavley regulations, originally termed 'Pavley II' but now called the 'Low Emission Vehicle III' (LEV III) Standards or ACC Program, which covers model years 2017 to 2025. CARB estimates that LEV III will reduce vehicle GHGs by an additional 4.0 million metric tons (MT) of carbon dioxide equivalent (CO_2E) for a 2.4 percent reduction over Pavley I. These reductions come from improved vehicle technologies such as smaller engines with superchargers, continuously variable transmissions, and hybrid electric drives. On August 7, 2012, the final regulation for the adoption of LEV III became effective.

2.1.5 Low Carbon Fuel Standard

EO S-01-07 directed that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through a LCFS. LCFS promotes the use of GHG-reducing transportation fuels (e.g., liquid biofuels, renewable natural gas, electricity, and hydrogen) through a declining carbon intensity standard. The carbon intensity of a fuel is a measure of the GHG emissions associated with the production, distribution, and consumption of a fuel. CARB approved LCFS in 2009 and implemented it in 2010 as an early action measure under AB 32. Subsequently CARB approved amendments to the LCFS, which began implementation January 1, 2013. Due to a court ruling that found procedural issues related to the original adoption of the LCFS, CARB re-adopted the LCFS regulation in September 2015, which went into effect on January 1, 2016. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG goals (CARB 2016).

2.1.6 Regional Emissions Targets – Senate Bill 375

SB 375, the 2008 Sustainable Communities and Climate Protection Act, was signed into law in September 2008 and requires CARB to set regional targets for reducing passenger vehicle GHG emissions in accordance with the Scoping Plan. The purpose of SB 375 is to align regional transportation planning efforts, regional GHG reduction targets, and fair-share housing allocations under state housing law. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy or Alternative Planning Strategy to address GHG reduction targets from cars and light-duty trucks in the context of that MPO's Regional Transportation Plan (RTP). San Diego Association of Governments (SANDAG) is the San Diego region's MPO. The CARB targets for the SANDAG region require a 7 percent reduction in GHG emissions per capita from automobiles and light-duty trucks compared to 2005 levels by 2020 and a 13 percent reduction by 2035.

2.2 Local

2.2.1 San Diego Forward: The Regional Plan

SANDAG is the regional authority that creates regional-specific documents to provide guidance to local agencies, as SANDAG does not have land use authority. SANDAG's San Diego Forward: The Regional Plan, adopted in 2015, combines two of the region's existing planning documents: the Regional Comprehensive Plan for the San Diego Region (RCP) and the RTP/SCS. The RCP, adopted in 2004, laid out key principles for managing the region's growth while preserving natural resources and limiting urban sprawl. The plan covered eight policy areas, including urban form, transportation, housing, health environment, economic prosperity, public facilities, our borders, and social equity. These policy areas were addressed in the 2050 RTP/SCS and are now fully integrated into the Regional Plan.

2.2.2 City of San Diego General Plan

The City General Plan includes several climate change-related policies aimed at reducing GHG emissions from future development and City operations. For example, Conservation Element policy CE-A.2 aims to

"reduce the City's carbon footprint" and to "develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth" related to climate change. The Land Use and Community Planning Element, the Mobility Element, the Urban Design Element, and the Public Facilities, Services, and Safety Element also identify GHG reduction and climate change adaptation goals. These elements contain policy language related to sustainable land use patterns, alternative modes of transportation, energy efficiency, water conservation, waste reduction, and greater landfill efficiency. The overall intent of these policies is to support climate protection actions, while retaining flexibility in the design of implementation measures, which could be influenced by new scientific research, technological advances, environmental conditions, or state and federal legislation.

2.2.3 Climate Action Plan

In December 2015, the City adopted its CAP (City of San Diego 2015). The CAP identifies measures to meet GHG reduction targets for 2020 and 2035. The CAP consists of a 2010 inventory of GHG emissions, a BAU projection for emissions at 2020 and 2035, state targets, and emission reductions with implementation of the CAP. The City identifies GHG reduction strategies focusing on energy- and water-efficient buildings; clean and renewable energy; bicycling, walking, transit, and land use; zero waste; and climate resiliency. Accounting for future population and economic growth, the City projects that GHG emissions will be approximately 15.9 million metric tons (MMT) CO_2E in 2020 and 16.7 MMT CO_2E in 2035. To achieve its proportional share of the state reduction targets for 2020 (AB 32) and 2050 (EO S-3-05), the City would need to reduce emissions below the 2010 baseline by 15 percent in 2020 and 50 percent by 2035. To meet these goals, the City must implement strategies that reduce emissions to approximately 11.0 MMT CO_2E in 2020 and 6.5 MMT CO_2E in 2035. Through implementation of the CAP, the City is projected to reduce emissions even further below targets by 1.2 MMT CO_2E by 2020 and 205,462 MTCO_2E by 2035.

In 2016, the City amended the Land Development Manual to include a GHG emission significance threshold and amended the Climate Action Plan to revise text and incorporate a Climate Action Plan Consistency Checklist that is required for new development projects subject to CEQA to demonstrate consistency with the City's CAP. Additionally, the Planning Department has provided guidance for determining CAP consistency for program-level environmental documents (e.g. community plan updates). The Consistency Checklist was most recently updated in February 2017.

3.0 THRESHOLDS OF SIGNIFICANCE

In accordance with CEQA Section 15064.4, the GHG significance threshold used in this analysis is based on the project's consistency with the City's adopted CAP. Thus, implementation of a project would be considered to have a significant climate change impact if it would:

- Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHG, specifically the City CAP.

As a means to implement the CAP, the City created a Consistency Checklist utilized by projects to assure compliance with the measures identified in the CAP (City of San Diego 2017). The Consistency Checklist includes three steps in evaluating if a project is consistent with the CAP. Step 1 of the CAP Consistency Checklist evaluates a project's consistency with the growth projections used in the development of the CAP. Projects that are consistent with the adopted General Plan and Community Plan land use and zoning designations, or projects that are not consistent with these designations but would result in an equivalent or less GHG-intensive project when compared to the existing designations, would be consistent with the growth projections used in development with the CAP. With implementation of the applicable project-specific measures identified in Step 2 of the checklist, these projects would be consistent with the CAP. A project that is not consistent with the existing land use and zoning designations and would result in a more GHG-intensive project may still be consistent with the CAP if it is located within a Transit Priority Area (TPA) and implements CAP Strategy 3 actions, as determined in Step 3.

Step 2 of the CAP Consistency Checklist is to review and evaluate a project's consistency with specific applicable strategies and actions of the CAP. Step 2 applies to development projects that involve permits that would require a certificate of occupancy, and includes measures associated with cool/green roofs, plumbing fixtures and fittings, energy performance standards/renewable energy, electric vehicle charging, bicycle parking spaces, shower facilities, designated parking spaces, and a transportation demand management program.

Step 3 of the CAP Consistency Checklist is to determine if a project that is located in a TPA but includes a land use plan and/or zoning designation amendment that would result in an increase in GHG emissions when compared to the existing designations, is nevertheless consistent with the assumptions in the CAP, because it would implement CAP Strategy 3 actions.

The following is a discussion of the project's consistency with the City's CAP. GHG emissions calculations are also provided for informational purposes only.

4.0 EMISSION CALCULATIONS

As the project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement roadway improvements, it would not generate additional traffic or increase vehicle miles traveled. The main source of project emissions would be associated with construction of the roadway improvements.

4.1 Construction Emissions

Construction activities emit GHGs primarily though combustion of fuels (mostly diesel) in the engines of off-road construction equipment and through combustion of diesel and gasoline in on-road construction vehicles and the commute vehicles of the construction workers. Smaller amounts of GHGs are also emitted through the energy use embodied in water use for fugitive dust control.

GHG emissions were calculated using the Road Construction Emissions Model, Version 8.1.0 (Sacramento Metropolitan Air Quality Management District 2016). The model is a spreadsheet that estimates emissions based on numerous parameters regarding the type of construction, area to be disturbed, the period of construction and year of construction. Inputs were the length of the improvement, the type of improvement (new roadway or road widening), the year of construction, and area of construction. The roadway construction emissions model estimates emissions from vehicle and equipment exhausts, fugitive dust, and off-gassing emissions during all phases of construction.

As discussed in Section 1.0, there are four proposed roadway improvements. Emissions due to construction of these improvements were calculated for each roadway improvement.

The exact construction schedule and equipment required for these improvements is not known at this time. Emission calculations are based on model defaults and estimates of the maximum disturbance area based on preliminary concept drawings provided in the TIS prepared for the project (KOA Corporation 2016). It was assumed that installation of the signal at the intersection of Sundance Avenue and Twin Trails Drive would take five days and would require a crane and a drill rig. The auxiliary lane would be approximately 0.5-mile in length, and it was assumed that construction would last for six months. The ramp lane would be approximately 0.3 mile in length, and it was assumed that construction would last for one month. The portion of Black Mountain Road that would be widened would be approximately 0.15 mile in length, and it was assumed that construction would last for one month. The typical equipment required for roadway construction includes backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. Additionally, construction of the auxiliary lane would require the reconstruction of an existing bridge. Therefore, in addition to the listed equipment, cranes and drill rigs were included in the emissions estimates.

Table 1 summarizes the construction GHG emissions associated with installation of the traffic signal (MM-TRA-1), construction of the SR-56 auxiliary lane (MM-TRA-2), and construction of the Rancho Peñasquitos Boulevard/SR-56 on-ramp lane (MM-TRA-3), and Black Mountain Road restriping/widening (project design feature), respectively. Road Construction Emissions Model input and output are contained in Attachments 1 through 4.

Table 1
Construction GHG Emissions

Roadway Improvement	GHG Emissions ($MT CO_2E$)
MM-TRA-1 Sundance Avenue/Twin Trails Drive Signal Installation	4
MM-TRA-2 SR-56 Auxiliary Lane	446
MM-TRA-3 Rancho Peñasquitos Boulevard/SR-56 Ramp Lane	68
Project Design Feature Black Mountain Road Restriping/Widening	44
Total	**562**

4.2 Operational Emissions

As discussed, the project would not generate additional trips. Implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project. However, based on the TIS prepared for the project that analyzed year 2050 traffic volumes on area roadways with and without implementation of the project, the project would not result in an increase in vehicle miles traveled on roadways in the vicinity of the project (KOA Corporation 2016). Therefore, the project would not result in an increase in mobile sources of GHG emissions. Other operational sources of GHG emissions include energy (electricity and natural gas), area (landscape maintenance equipment), water and wastewater, and solid waste sources. The energy required to operate the additional traffic signal would be negligible. The project would not include any area, water and wastewater, or solid waste sources of emissions.

5.0 CAP CONSISTENCY

The following is a discussion of the Specific Plan's consistency with Steps 1 through 3 of the checklist.

5.1 Step 1

The first step in determining CAP consistency is to assess the project's consistency with the growth projections used in the development of the CAP. Step 1 of the CAP Consistency Checklist evaluates the Specific Plan as follows (City of San Diego 2017):

A. Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations? OR

B. If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment, would the proposed amendment result in an increased density within a TPA and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department? OR

C. If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?

However, the project is not a development project. The project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement the project design feature and three traffic mitigation measures. The project would not include any land use or zoning change, and would therefore be consistent

with the existing General Plan and Community Plan land use and zoning designations. Therefore, the project would be consistent with the growth projections used in the development of the CAP.

5.2 Step 2

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. As stated in the CAP Checklist, "Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Office or project comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures" (City of San Diego 2017). The Checklist also states that non-building infrastructure projects such as roads and pipelines are not subject to Step 2. Because the project is limited to reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the project design feature and three traffic mitigation measures, the project is not subject to the requirements of Step 2 of the Checklist because "such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved."

5.3 Step 3

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option B. The project would be consistent with the existing General Plan and Community Plan land use and zoning designations. Therefore, Step 3 is not applicable to the project.

6.0 CONCLUSIONS

Implementation of a project would be considered to have a significant climate change impact if it would conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHG, specifically the City CAP. As the project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement roadway improvements, it would not generate additional traffic or increase vehicle miles traveled. The main source of project emissions would be associated with construction of the roadway improvements. The significance of the project's GHG impacts was assessed using the City's CAP Checklist. As discussed in this analysis, the project would not include any land use or zoning change, and would therefore be consistent with the existing General Plan and Community Plan land use and zoning designations. Therefore, the project would be consistent with the growth projections used in the development of the CAP. As the project would reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implement four roadway improvements, the project is not subject to the requirements of Step 2 of the Checklist, and Step3 is not applicable. The project would not conflict with the City's CAP, and impacts would be less than significant.

If you have any questions about the results of this analysis, please contact me at jfleming@reconenvironmental.com or (619) 308-9333 x177.

Sincerely,

Jessica Fleming
Associate Environmental Analyst

JLF:jg

cc: Anna L. McPherson, City of San Diego

Attachments

7.0 REFERENCES CITED

California Air Resources Board (CARB)

2008 Climate Change Scoping Plan: A Framework for Change. http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. December.

2017 The 2017 Climate Change Scoping Plan Update, The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target. October 27, 2017.

KOA Corporation

2016 Black Mountain Road Transportation Impact Study (8th Submittal). May 2016.

Sacramento Metropolitan Air Quality Management District

2016 Road Emissions Construction Model, Version 8.1.0. May 2016.

San Diego, City of

2015 Climate Action Plan. Adopted December.

2017 Climate Action Plan Consistency Checklist. Approved by City Council July 12, 2016. Revised February 2017.

ATTACHMENTS

ATTACHMENT 1

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Signal Installation

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.88	5.07	10.65	5.01	0.42	4.59	1.33	0.38	0.96	0.02	1,623.87	0.46	0.02	1,639.93
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	0.88	5.07	10.65	5.01	0.42	4.59	1.33	0.38	0.96	0.02	1,623.87	0.46	0.02	1,639.93
Total (tons/construction project)	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	4.10

Notes:

Project Start Year ->	2018
Project Length (months) ->	1
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	0	0
Grading/Excavation	0	0	0	0	200	0
Drainage/Utilities/Sub-Grade	0	0	0	0	0	0
Paving	0	0	0	0	0	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Signal Installation

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	3.72
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	3.72
Total (tons/construction project)	0.00	0.01	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.06	0.00	0.00	3.72

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Signal Installation	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	5.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.02	miles
Total Project Area	0.23	acres
Maximum Area Disturbed/Day	0.23	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.10	1/1/2018	1/1/2018
Grading/Excavation	1.00	0.45	1/11/2018	1/1/2018
Drainage/Utilities/Sub-Grade	0.00	0.30	3/1/2018	2/1/2018
Paving	0.00	0.15	4/1/2018	2/1/2018
Totals (Months)	1			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input					
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input					
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker			
User Input	Commute Default Values	Default Values		
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing			0	0.00
No. of employees: Grading/Excavation	5		10	200.00
No. of employees: Drainage/Utilities/Sub-Grade			0	0.00
No. of employees: Paving			0	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.44
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.44

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Miles Traveled/Vehicle/Day	Miles Traveled/Vehicle/Day	Daily VMT
Grubbing/Land Clearing - Exhaust					0.00
Grading/Excavation - Exhaust					0.00
Drainage/Utilities/Subgrade					0.00
Paving					0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max	Default	PM10	PM10	PM2.5	PM2.5
	Acreage Disturbed/Day	Maximum Acreage/Day	pounds/day	tons/per period	pounds/day	tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			4.59	0.01	0.96	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.00	0.00	0.00	0.00

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Bore/Drill Rigs	0.28	1.95	3.91	0.11	0.10	0.01	880.26	0.27	0.01	889.42
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cranes	0.56	2.47	6.67	0.29	0.27	0.01	568.03	0.18	0.00	573.92
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	0.84	4.42	10.58	0.40	0.37	0.01	1,448.29	0.45	0.01	1,463.35
Grading/Excavation	tons per phase	0.00	0.01	0.03	0.00	0.00	0.00	3.62	0.00	0.00	3.66

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.00	0.01	0.03	0.00	0.00	0.00	3.62	0.00	0.00	3.66

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

ATTACHMENT 2

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Black Mountain Road Auxiliary Lane

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.32	10.32	15.16	10.66	0.66	10.00	2.68	0.60	2.08	0.02	2,072.44	0.59	0.02	2,092.86
Grading/Excavation	8.53	61.88	94.79	14.60	4.60	10.00	6.27	4.19	2.08	0.11	11,268.36	3.30	0.10	11,381.71
Drainage/Utilities/Sub-Grade	4.57	35.12	44.10	12.50	2.50	10.00	4.41	2.33	2.08	0.06	5,624.74	1.22	0.05	5,670.32
Paving	2.02	17.97	19.66	1.27	1.27	0.00	1.15	1.15	0.00	0.03	2,748.37	0.75	0.03	2,774.96
Maximum (pounds/day)	8.53	61.88	94.79	14.60	4.60	10.00	6.27	4.19	2.08	0.11	11,268.36	3.30	0.10	11,381.71
Total (tons/construction project)	0.37	2.78	3.98	0.76	0.20	0.56	0.30	0.19	0.12	0.00	486.93	0.13	0.00	491.59

Notes:

Project Start Year ->	2018
Project Length (months) ->	6
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	0	0	0	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Black Mountain Road Auxiliary Lane

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.07	0.10	0.07	0.00	0.07	0.02	0.00	0.01	0.00	13.68	0.00	0.00	12.53
Grading/Excavation	0.25	1.84	2.82	0.43	0.14	0.30	0.19	0.12	0.06	0.00	334.67	0.10	0.00	306.66
Drainage/Utilities/Sub-Grade	0.09	0.70	0.87	0.25	0.05	0.20	0.09	0.05	0.04	0.00	111.37	0.02	0.00	101.85
Paving	0.02	0.18	0.19	0.01	0.01	0.00	0.01	0.01	0.00	0.00	27.21	0.01	0.00	24.92
Maximum (tons/phase)	0.25	1.84	2.82	0.43	0.14	0.30	0.19	0.12	0.06	0.00	334.67	0.10	0.00	306.66
Total (tons/construction project)	0.37	2.78	3.98	0.76	0.20	0.56	0.30	0.19	0.12	0.00	486.93	0.13	0.00	445.97

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 8.1.0**

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Black Mountain Road Auxiliary Lane	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.50	miles
Total Project Area	2.20	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.60		1/1/2018
Grading/Excavation		2.70		1/20/2018
Drainage/Utilities/Sub-Grade		1.80		4/13/2018
Paving		0.90		6/7/2018
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
User Input				
Miles/ one-way trip		20		
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Paving (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grubbing/Land Clearing (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00	0.00	1.17
Pounds per day - Grading/Excavation	0.15	2.62	0.28	0.08	0.03	0.01	702.34	0.02	0.01	706.33
Tons per const. Period - Grading/Excavation	0.00	0.08	0.01	0.00	0.00	0.00	20.86	0.00	0.00	20.98
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.84	0.20	0.06	0.02	0.00	491.64	0.01	0.01	494.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.04	0.00	0.00	0.00	0.00	9.73	0.00	0.00	9.79
Pounds per day - Paving	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	3.48	0.00	0.00	3.50
Total tons per construction project	0.01	0.13	0.01	0.00	0.00	0.00	35.23	0.00	0.00	35.43

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
User Input					
Grubbing/Land Clearing - Exhaust		0		40.00	0.00
Grading/Excavation - Exhaust		0		40.00	0.00
Drainage/Utilities/Subgrade		0		40.00	0.00
Paving		0		40.00	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	10.00	0.07	2.08	0.01
Fugitive Dust - Grading/Excavation		0.50	10.00	0.30	2.08	0.06
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	10.00	0.20	2.08	0.04

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.60	6.76	6.39	0.31	0.28	0.01	1,072.06	0.33	0.01	1,083.19
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	1.28	9.67	15.09	0.64	0.59	0.02	1,896.85	0.58	0.02	1,916.28
Grubbing/Land Clearing	tons per phase	0.01	0.06	0.10	0.00	0.00	0.00	12.52	0.00	0.00	12.65

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Bore/Drill Rigs	0.28	1.95	3.91	0.11	0.10	0.01	880.26	0.27	0.01	889.42
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0		Model Default Tier	Cranes	0.56	2.47	6.67	0.29	0.27	0.01	568.03	0.18	0.00	573.92
1.00	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3		Model Default Tier	Excavators	0.90	10.14	9.58	0.46	0.43	0.02	1,608.08	0.50	0.01	1,624.78
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	2		Model Default Tier	Graders	1.67	9.39	16.72	0.94	0.86	0.01	1,258.82	0.39	0.01	1,271.83
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rubber Tired Loaders	0.42	1.71	5.25	0.18	0.16	0.01	619.57	0.19	0.01	626.01
2.00	2		Model Default Tier	Scrapers	2.26	17.33	28.00	1.10	1.01	0.03	3,008.05	0.94	0.03	3,039.27
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	4		Model Default Tier	Tractors/Loaders/Backhoes	1.08	9.44	10.63	0.75	0.69	0.01	1,264.00	0.39	0.01	1,277.10
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation		pounds per day	8.38	59.26	94.50	4.51	4.15	0.11	10,566.02	3.28	0.09	10,675.38
Grading/Excavation		tons per phase	0.25	1.76	2.81	0.13	0.12	0.00	313.81	0.10	0.00	317.06

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27	0.04	0.00	377.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04	0.04	0.00	625.56
	1		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.53	3.81	4.17	0.28	0.28	0.01	623.04	0.05	0.00	625.61
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.16	2.31	2.01	0.10	0.09	0.00	346.54	0.11	0.00	350.13
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment Number of Vehicles	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Drainage/Utilities/Sub-Grade	pounds per day	4.46	33.29	43.91	2.44	2.31	0.05	5,133.10	1.20	0.04	5,175.89
	Drainage/Utilities/Sub-Grade	tons per phase	0.09	0.66	0.87	0.05	0.05	0.00	101.64	0.02	0.00	102.48

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.32	2.84	3.50	0.17	0.16	0.00	458.58	0.14	0.00	463.33
	1		Model Default Tier	Paving Equipment	0.24	2.52	2.64	0.13	0.12	0.00	406.90	0.13	0.00	411.13
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Paving	pounds per day	1.94	16.66	19.51	1.23	1.13	0.02	2,397.20	0.74	0.02	2,421.80
	Paving	tons per phase	0.02	0.16	0.19	0.01	0.01	0.00	23.73	0.01	0.00	23.98
Total Emissions all Phases (tons per construction period) =>			0.36	2.65	3.97	0.20	0.18	0.00	451.70	0.13	0.00	456.16

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

ATTACHMENT 3

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Black Mountain Road Ramp Widening

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.32	10.32	15.16	17.66	0.66	17.00	4.13	0.60	3.54	0.02	2,072.44	0.59	0.02	2,092.86
Grading/Excavation	7.69	57.47	84.20	21.20	4.20	17.00	7.36	3.82	3.54	0.10	9,820.07	2.85	0.09	9,918.36
Drainage/Utilities/Sub-Grade	4.57	35.12	44.10	19.50	2.50	17.00	5.87	2.33	3.54	0.06	5,624.74	1.22	0.05	5,670.32
Paving	2.02	17.97	19.66	1.27	1.27	0.00	1.15	1.15	0.00	0.03	2,748.37	0.75	0.03	2,774.96
Maximum (pounds/day)	7.69	57.47	84.20	21.20	4.20	17.00	7.36	3.82	3.54	0.10	9,820.07	2.85	0.09	9,918.36
Total (tons/construction project)	0.06	0.44	0.61	0.19	0.03	0.16	0.06	0.03	0.03	0.00	73.99	0.02	0.00	74.69

Notes:

Project Start Year ->	2018
Project Length (months) ->	1
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	0	0	0	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Black Mountain Road Ramp Widening

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.01	0.02	0.02	0.00	0.02	0.00	0.00	0.00	0.00	2.28	0.00	0.00	2.09
Grading/Excavation	0.04	0.28	0.42	0.10	0.02	0.08	0.04	0.02	0.02	0.00	48.61	0.01	0.00	44.54
Drainage/Utilities/Sub-Grade	0.02	0.12	0.15	0.06	0.01	0.06	0.02	0.01	0.01	0.00	18.56	0.00	0.00	16.98
Paving	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.53	0.00	0.00	4.15
Maximum (tons/phase)	0.04	0.28	0.42	0.10	0.02	0.08	0.04	0.02	0.02	0.00	48.61	0.01	0.00	44.54
Total (tons/construction project)	0.06	0.44	0.61	0.19	0.03	0.16	0.06	0.03	0.03	0.00	73.99	0.02	0.00	67.76

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Black Mountain Road Ramp Widening	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.30	miles
Total Project Area	0.85	acres
Maximum Area Disturbed/Day	0.85	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.10		1/1/2018
Grading/Excavation		0.45		1/5/2018
Drainage/Utilities/Sub-Grade		0.30		1/19/2018
Paving		0.15		1/29/2018
Totals (Months)		1		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated	Calculated
One-way trips/day		2	Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Paving (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grubbing/Land Clearing (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
Pounds per day - Grading/Excavation	0.15	2.62	0.28	0.08	0.03	0.01	702.34	0.02	0.01	706.33
Tons per const. Period - Grading/Excavation	0.00	0.01	0.00	0.00	0.00	0.00	3.48	0.00	0.00	3.50
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.84	0.20	0.06	0.02	0.00	491.64	0.01	0.01	494.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00	0.00	1.63
Pounds per day - Paving	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.58
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	5.87	0.00	0.00	5.90

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
User Input					
Grubbing/Land Clearing - Exhaust		0		40.00	0.00
Grading/Excavation - Exhaust		0		40.00	0.00
Drainage/Utilities/Subgrade		0		40.00	0.00
Paving		0		40.00	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.85	17.00	0.02	3.54	0.00
Fugitive Dust - Grading/Excavation		0.85	17.00	0.08	3.54	0.02
Fugitive Dust - Drainage/Utilities/Subgrade		0.85	17.00	0.06	3.54	0.01

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.60	6.76	6.39	0.31	0.28	0.01	1,072.06	0.33	0.01	1,083.19
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	1.28	9.67	15.09	0.64	0.59	0.02	1,896.85	0.58	0.02	1,916.28
Grubbing/Land Clearing	tons per phase	0.00	0.01	0.02	0.00	0.00	0.00	2.09	0.00	0.00	2.11

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Excavators	0.90	10.14	9.58	0.46	0.43	0.02	1,608.08	0.50	0.01	1,624.78
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Graders	1.67	9.39	16.72	0.94	0.86	0.01	1,258.82	0.39	0.01	1,271.83
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rubber Tired Loaders	0.42	1.71	5.25	0.18	0.16	0.01	619.57	0.19	0.01	626.01
	2		Model Default Tier	Scrapers	2.26	17.33	28.00	1.10	1.01	0.03	3,008.05	0.94	0.03	3,039.27
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Tractors/Loaders/Backhoes	1.08	9.44	10.63	0.75	0.69	0.01	1,264.00	0.39	0.01	1,277.10
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	7.54	54.84	83.92	4.12	3.79	0.09	9,117.73	2.83	0.08	9,212.03
Grading/Excavation	tons per phase	0.04	0.27	0.42	0.02	0.02	0.00	45.13	0.01	0.00	45.60

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27	0.04	0.00	377.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04	0.04	0.00	625.56
	1		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.53	3.81	4.17	0.28	0.28	0.01	623.04	0.05	0.00	625.61
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.16	2.31	2.01	0.10	0.09	0.00	346.54	0.11	0.00	350.13
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	4.46	33.29	43.91	2.44	2.31	0.05	5,133.10	1.20	0.04	5,175.89
Drainage/Utilities/Sub-Grade	tons per phase	0.01	0.11	0.14	0.01	0.01	0.00	16.94	0.00	0.00	17.08

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.32	2.84	3.50	0.17	0.16	0.00	458.58	0.14	0.00	463.33
	1		Model Default Tier	Paving Equipment	0.24	2.52	2.64	0.13	0.12	0.00	406.90	0.13	0.00	411.13
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.52	3.92	5.05	0.35	0.32	0.01	534.41	0.17	0.00	539.95
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.81	7.08	7.97	0.56	0.52	0.01	948.00	0.30	0.01	957.82
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Paving	pounds per day	1.94	16.66	19.51	1.23	1.13	0.02	2,397.20	0.74	0.02	2,421.80
	Paving	tons per phase	0.00	0.03	0.03	0.00	0.00	0.00	3.96	0.00	0.00	4.00
Total Emissions all Phases (tons per construction period) =>			0.06	0.42	0.61	0.03	0.03	0.00	68.11	0.02	0.00	68.78

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

ATTACHMENT 4

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Black Mountain Road Restriping/Widening

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.02	6.94	11.97	12.51	0.51	12.00	2.95	0.46	2.50	0.02	1,536.41	0.42	0.01	1,551.27
Grading/Excavation	4.06	28.30	44.96	14.13	2.13	12.00	4.41	1.92	2.50	0.05	5,399.38	1.47	0.05	5,451.82
Drainage/Utilities/Sub-Grade	4.03	30.40	38.79	14.13	2.13	12.00	4.48	1.99	2.50	0.05	4,992.74	1.02	0.05	5,031.77
Paving	1.22	11.29	11.82	0.72	0.72	0.00	0.64	0.64	0.00	0.02	1,849.16	0.47	0.02	1,866.44
Maximum (pounds/day)	4.06	30.40	44.96	14.13	2.13	12.00	4.48	1.99	2.50	0.05	5,399.38	1.47	0.05	5,451.82
Total (tons/construction project)	0.04	0.27	0.38	0.13	0.02	0.11	0.04	0.02	0.02	0.00	47.94	0.01	0.00	48.38

Notes:

Project Start Year ->	2018
Project Length (months) ->	1
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	0	0	0	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Black Mountain Road Restriping/Widening

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	1.69	0.00	0.00	1.55
Grading/Excavation	0.02	0.14	0.22	0.07	0.01	0.06	0.02	0.01	0.01	0.00	26.73	0.01	0.00	24.48
Drainage/Utilities/Sub-Grade	0.01	0.10	0.13	0.05	0.01	0.04	0.01	0.01	0.01	0.00	16.48	0.00	0.00	15.06
Paving	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.05	0.00	0.00	2.79
Maximum (tons/phase)	0.02	0.14	0.22	0.07	0.01	0.06	0.02	0.01	0.01	0.00	26.73	0.01	0.00	24.48
Total (tons/construction project)	0.04	0.27	0.38	0.13	0.02	0.11	0.04	0.02	0.02	0.00	47.94	0.01	0.00	43.89

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Black Mountain Road Restriping/Widening	
Construction Start Year	2018	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.15	miles
Total Project Area	0.60	acres
Maximum Area Disturbed/Day	0.60	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.10		1/1/2018
Grading/Excavation		0.45		1/5/2018
Drainage/Utilities/Sub-Grade		0.30		1/19/2018
Paving		0.15		1/29/2018
Totals (Months)		1		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated	Calculated
One-way trips/day		2	Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grading/Excavation (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Paving (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
Grubbing/Land Clearing (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Grading/Excavation (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.66	0.07	0.02	0.01	0.00	175.58	0.01	0.00	176.58
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
Pounds per day - Grading/Excavation	0.15	2.62	0.28	0.08	0.03	0.01	702.34	0.02	0.01	706.33
Tons per const. Period - Grading/Excavation	0.00	0.01	0.00	0.00	0.00	0.00	3.48	0.00	0.00	3.50
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.84	0.20	0.06	0.02	0.00	491.64	0.01	0.01	494.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00	0.00	1.63
Pounds per day - Paving	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.58
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	5.87	0.00	0.00	5.90

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
User Input					
Grubbing/Land Clearing - Exhaust		0		40.00	0.00
Grading/Excavation - Exhaust		0		40.00	0.00
Drainage/Utilities/Subgrade		0		40.00	0.00
Paving		0		40.00	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Grading/Excavation (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.60	12.00	0.01	2.50	0.00
Fugitive Dust - Grading/Excavation		0.60	12.00	0.06	2.50	0.01
Fugitive Dust - Drainage/Utilities/Subgrade		0.60	12.00	0.04	2.50	0.01

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Excavators	0.30	3.38	3.19	0.15	0.14	0.01	536.03	0.17	0.00	541.59
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	0.98	6.29	11.90	0.48	0.45	0.01	1,360.83	0.41	0.01	1,374.69
Grubbing/Land Clearing	tons per phase	0.00	0.01	0.01	0.00	0.00	0.00	1.50	0.00	0.00	1.51

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Crawler Tractors	0.63	2.61	8.34	0.32	0.29	0.01	775.49	0.24	0.01	783.53
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Excavators	0.30	3.38	3.19	0.15	0.14	0.01	536.03	0.17	0.00	541.59
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.26	1.96	2.52	0.17	0.16	0.00	267.21	0.08	0.00	269.98
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rubber Tired Loaders	0.42	1.71	5.25	0.18	0.16	0.01	619.57	0.19	0.01	626.01
1.00	2		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4		Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00	0.10	0.00	319.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Grading/Excavation	pounds per day	3.91	25.68	44.68	2.05	1.88	0.05	4,697.04	1.45	0.04	4,745.50
	Grading/Excavation	tons per phase	0.02	0.13	0.22	0.01	0.01	0.00	23.25	0.01	0.00	23.49

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27	0.04	0.00	377.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04	0.04	0.00	625.56
1.00	1		Model Default Tier	Graders	0.84	4.69	8.36	0.47	0.43	0.01	629.41	0.20	0.01	635.92
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pumps	0.53	3.81	4.17	0.28	0.28	0.01	623.04	0.05	0.00	625.61
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rough Terrain Forklifts	0.16	2.31	2.01	0.10	0.09	0.00	346.54	0.11	0.00	350.13
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Scrapers	1.13	8.67	14.00	0.55	0.51	0.02	1,504.03	0.47	0.01	1,519.64
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00	0.10	0.00	319.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	3.93	28.57	38.59	2.07	1.96	0.05	4,501.10	1.01	0.04	4,537.34
Drainage/Utilities/Sub-Grade	tons per phase	0.01	0.09	0.13	0.01	0.01	0.00	14.85	0.00	0.00	14.97

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pavers	0.32	2.84	3.50	0.17	0.16	0.00	458.58	0.14	0.00	463.33
1.00	1		Model Default Tier	Paving Equipment	0.24	2.52	2.64	0.13	0.12	0.00	406.90	0.13	0.00	411.13
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.26	1.96	2.52	0.17	0.16	0.00	267.21	0.08	0.00	269.98
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00	0.10	0.00	319.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	1.14	9.97	11.68	0.68	0.62	0.02	1,497.99	0.46	0.01	1,513.27
Paving	tons per phase	0.00	0.02	0.02	0.00	0.00	0.00	2.47	0.00	0.00	2.50
Total Emissions all Phases (tons per construction period) =>		0.04	0.24	0.38	0.02	0.02	0.00	42.07	0.01	0.00	42.47

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Noise Analysis for the Black Mountain Road Community Plan Amendment Project San Diego, California

Prepared for
Black Mountain Ranch LLC
16010 Camino Del Sur
San Diego, CA 92127
Contact: Mr. William Dumka

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333

RECON Number 6524
March 25, 2019

Jessica Fleming, Environmental Analyst

TABLE OF CONTENTS

Acronyms ..... **iii**

Executive Summary **1**

1.0 Introduction **4**
- 1.1 Project Description 4
- 1.2 Fundamentals of Noise 5

2.0 Applicable Standards **11**
- 2.1 General Plan 11
- 2.2 San Diego Significance Determination Thresholds 13
- 2.3 Construction Noise Level Limits 13

3.0 Existing Conditions **14**

4.0 Analysis Methodology **16**
- 4.1 Construction Noise Analysis 16
- 4.2 Traffic Noise Analysis 19

5.0 Future Acoustical Environment and Impacts **23**
- 5.1 Construction Noise 23
- 5.2 Traffic Noise 29

6.0 Conclusions and Noise Abatement Measures **37**
- 6.1 Construction Noise 37
- 6.2 Traffic Noise 37

7.0 References Cited **39**

FIGURES

1: Regional Location 6
2: Project Location on Aerial Photograph 7
3: MM-TRA-2 Footprint 8
4: MM-TRA-3 Footprint 9
5: Project Design Feature Footprint 10
6: Noise Measurement Locations 15
7: MM-TRA-1 Construction Noise Contours 24
8: MM-TRA-2 Construction Noise Contours 25
9: MM-TRA-3 Construction Noise Contours 27
10: Project Design Feature Construction Noise Contours 28
11a: MM-TRA-1 Traffic Noise Contours with Stop Sign 33
11b: MM-TRA-1 Traffic Noise Contours with Traffic Signal 34

TABLE OF CONTENTS (cont.)

TABLES

1: City of San Diego Land Use–Noise Compatibility Guidelines....12
2: Traffic Noise Significance Thresholds....13
3: Noise Measurements....16
4: 15-minute Traffic Counts....16
5: Typical Construction Equipment Noise Levels....18
6:: Vehicle Traffic Parameters....20
7: MM-TRA-1 Traffic Parameters....21
8: Future SR-56 Traffic Volumes....22
9: Future Rancho Peñasquitos Boulevard/SR-56 Westbound On-Ramp Traffic Volumes....22
10: MM-TRA-1 Construction Noise Levels....23
11: MM-TRA-2 Construction Noise Levels....26
12: MM-TRA-3 Construction Noise Levels....26
13: Project Design Feature Construction Noise Levels....29
14:: Changes in Vehicle Traffic Noise Levels....31
15: MM-TRA-1 Noise Levels....35
16: MM-TRA-2 Noise Levels....35
17: MM-TRA-3 Noise Levels....36

ATTACHMENTS

1: Noise Measurement Data
2: SoundPLAN Data–MM-TRA-1 Signal Installation
3: SoundPLAN Data–MM-TRA-2 SR-56 Auxiliary Lane Construction
4: SoundPLAN Data–MM-TRA-3 On-ramp Improvements Construction
5: SoundPLAN Data–Project Design Feature Black Mountain Road Restriping/Widening Construction
6: FHWA RD-77-108–Roadway Segment Noise Level Calculations
7: SoundPLAN Data–MM-TRA-1 Intersection–Stop Sign and Signal Traffic Noise Levels
8: FHWA RD-77-108–MM-TRA-2 Traffic Noise Levels
9: FHWA RD-77-108–MM-TRA-3 Traffic Noise Levels

Acronyms

ADT	average daily traffic
Caltrans	California Department of Transportation
City	City of San Diego
CNEL	community noise equivalent level
dB	decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
GPA	General Plan Amendment
L_{eq}	one-hour equivalent noise level
LOS	Level of Service
L_{pw}	sound power level
SANDAG	San Diego Association of Governments
SEL	sound exposure level
SR-56	State Route 56

Executive Summary

The Black Mountain Road Community Plan Amendment (CPA) Project (project) proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project also includes the following four roadway improvements: (1) installation of a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive (MM-TRA-1), (2) construction of a continuous auxiliary lane on eastbound State Route 56 (SR-56) between Camino Del Sur and Black Mountain Road (MM-TRA-2), (3) construction of an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp (MM-TRA-3), and (4) restriping of the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps (project design feature).

This report discusses potential noise impacts from the construction and operation of the project. As part of this assessment, noise levels due to vehicle traffic were calculated and evaluated against City of San Diego (City) thresholds of significance. In addition, the potential for noise to impact adjacent receivers from construction activity was assessed. Where impacts were identified, measures have been identified to comply with the City's noise standards. A summary of the findings is provided below.

Construction Noise

Construction of proposed roadway improvements would potentially result in short-term impacts to surrounding residential properties. A variety of noise-generating equipment–backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards–would be used to construct these roadway improvements. Construction noise levels at the residential uses located adjacent to the roadway improvement areas were calculated. Construction noise levels would be less than 75 A-weighted decibels dB(A) one-hour equivalent noise level (L_{eq}) at all adjacent residential uses. Although the existing adjacent residences would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Because construction activities associated with the roadway improvements would comply with the applicable regulation for construction, temporary increases in noise levels associated with construction activities would be less than significant.

Traffic Noise

Off-site Traffic Noise

Reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the roadway improvements would not generate additional traffic. However, implementation of the project would result in a future redistribution of vehicles

on the roadway network in the vicinity of the project, and would therefore result in a change in vehicle traffic noise levels adjacent to these roadways. The City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant.

The cumulative increases in noise levels between the existing condition and year 2050, without and with the project, are due to regional growth and are not attributed to the project, as the project itself would not result in any growth or trip generation. Off-site traffic noise impacts were determined by comparing year 2050 noise levels with and without implementation of the project. Noise levels would either decrease or increase adjacent to the project area roadways. This is due to the redistribution of traffic on these roadways. As calculated in this analysis, the changes in noise levels due to the project would be less than 1 decibel (dB). These changes in noise levels would not be perceivable and would not exceed the City's significance thresholds. Vehicle traffic noise impacts to off-site uses would be less than significant.

Roadway Improvement Areas

MM-TRA-1 would replace the stop sign at the intersection of Sundance Avenue and Twin Trails Drive with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Noise levels at the adjacent residential uses were calculated with and without the project. As calculated in this analysis, installation of the traffic signal would improve the traffic flow at the intersection of Sundance Avenue and Twin Trails Drive, and thereby decrease noise levels at the adjacent uses. Therefore, there would be no operational impacts associated with MM-TRA-1.

MM-TRA-2 would construct a continous auxiliary lane on eastbound SR-56, between Camino Del Sur and Black Mountain Road, that would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without construction of the auxiliary lane were calculated at the nearest sensitive receiver. As calculated in this analysis, the construction of the eastbound auxiliary lane would increase noise levels at the nearest residential uses to the south of SR-56 by less than 1 dB. Noise level increases of this magnitude would not be perceivable. Noise levels at the residential uses north of SR-56 would decrease because the additional auxiliary lane would shift some traffic further to the south. Therefore, noise impacts associated with operation of MM-TRA-2 would be less than significant.

MM-TRA-3 would construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp, which would shift some on-ramp traffic closer to the residential uses to the north and therefore increase traffic noise levels at these uses. Traffic noise levels with and without the additional on-ramp lane were calculated at the nearest sensitive receiver. As calculated in this analysis, the construction of the additional on-ramp lane would increase noise levels at the nearest residential uses to the north by less than 1 dB. Noise level increases of this magnitude would not be perceivable. Therefore, noise impacts associated with operation of MM-TRA-3 would be less than significant.

The project design feature would restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass. There are residential uses to the west of this portion of Black Mountain Road. The proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Therefore, implementation of the project design feature would not result in an increase in noise levels due to vehicle traffic on Black Mountain Road at the adjacent sensitive receivers.

1.0 Introduction

1.1 Project Description

The project proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project segment of Black Mountain Road subject to the Community Plan Amendment (CPA) (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project roadway currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over SR-56 is wider and operates as a 5-lane Primary Arterial. The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Rancho Peñasquitos Community Plan Circulation Element to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City of San Diego (City) Planning Commission initiated the Community Plan Amendment on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

The following three roadway improvements identified in the Transportation Impact Study (TIS) would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road.

MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

[1] The City of San Diego General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

Figure 1 shows the regional location, while Figure 2 shows the locations of the project design feature and three traffic mitigation measures in relation to the project roadway. Figures 3 through 5 show the footprints of MM-TRA-2, MM-TRA-3, and the project design feature, respectively. A figure showing the footprint of MM-TRA-1 is not included since this traffic mitigation measure is limited to installation of a traffic signal.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the Transportation Phasing Plan for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the Public Facilities Financing Plans are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

1.2 Fundamentals of Noise

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Additionally, in technical terms, sound levels are described as either a “sound power level” or a “sound pressure level,” which while commonly confused are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw}, is the energy converted into sound by the source. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an eardrum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure, and noise level limits used in standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the “A-weighted” noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A).



Project Location

FIGURE 1
Regional Location

RECON

M:\JOBS4\6524\common_gis\fig1.mxd 12/4/2017 sab

Image source: Nearmap (flown June 2018)



Project Roadway

Project Design Feature and Traffic Mitigation Measures

RECON

M:\JOBS4\6524\common_gis\fig2_nos.mxd 9/26/2018 sab

FIGURE 2

Project Location on Aerial Photograph

Image Source: NearMaps (flown June 2018)



FIGURE 3

MM-TRA-2 Footprint

RECON

M:\JOBS4\6524\common_gis\Fig3_nos.mxd 9/25/2018 sab

Image Source: NearMaps (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\Fig4_nos.mxd 9/25/2018 sab

FIGURE 4

MM-TRA-3 Footprint

Image Source: NearMaps (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\Fig5_nos.mxd 9/25/2018 sab

FIGURE 5

Project Design Feature Footprint

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this study are the one-hour equivalent noise level (L_{eq}), the community noise equivalent level (CNEL), and the sound exposure level. The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and an additional 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night. The sound exposure level is a noise level over a stated period of time or event and normalized to one second.

Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

Traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) receives an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would attenuate at 7.5 dB(A) per doubling of distance.

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 dB(A) barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013).

2.0 Applicable Standards

2.1 General Plan

The City's Noise Element of the General Plan specifies compatibility standards for different categories of land use. The noise land use compatibility guidelines are intended to be used for future development within San Diego to prevent future incompatibilities. uses The City's land use/noise compatibility guidelines are shown in Table 1. The project does not proposes the construction of a noise sensitive land use. However, a majority of the development in the vicinity of the project consists of single family residential uses. As shown, for single family residential uses, exterior noise levels up to 60 CNEL are

considered "compatible" and exterior noise levels up to 65 CNEL are considered "conditionally compatible."

Table 1
City of San Diego Land Use–Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure [dB(A) CNEL] 60	65	70	75
Parks and Recreational				
Parks, Active and Passive Recreation				
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities				
Agricultural				
Crop Raising and Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries and Greenhouses; Animal Raising, Maintaining and Keeping; Commercial Stables				
Residential				
Single Dwelling Units; Mobile Homes		**45**		
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		**45**	**45**	
Institutional				
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		**45**		
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		**45**	**45**	
Cemeteries				
Retail Sales				
Building Supplies/Equipment; Food, Beverage, and Groceries; Pets and Pet Supplies; Sundries, Pharmaceutical, and Convenience Sales; Wearing Apparel and Accessories			**50**	**50**
Commercial Services				
Building Services; Business Support; Eating and Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly and Entertainment (includes public and religious assembly); Radio and Television Studios; Golf Course Support			**50**	**50**
Visitor Accommodations		**45**	**45**	**45**
Offices				
Business and Professional; Government; Medical, Dental, and Health Practitioner; Regional and Corporate Headquarters			**50**	**50**
Vehicle and Vehicular Equipment Sales and Services Use				
Commercial or Personal Vehicle Repair and Maintenance; Commercial or Personal Vehicle Sales and Rentals; Vehicle Equipment and Supplies Sales and Rentals; Vehicle Parking				
Wholesale, Distribution, Storage Use Category				
Equipment and Materials Storage Yards; Moving and Storage Facilities; Warehouse; Wholesale Distribution				
Industrial				
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking and Transportation Terminals; Mining and Extractive Industries				
Research and Development				**50**

	Compatible	**Indoor Uses**	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level.
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	**Conditionally Compatible**	**Indoor Uses**	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable.
	Incompatible	**Indoor Uses**	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

SOURCE: City of San Diego 2015.

2.2 San Diego Significance Determination Thresholds

The noise section of the City of San Diego's Significance Determination Thresholds for the California Environmental Quality Act (CEQA) identifies thresholds for traffic noise. These noise levels are summarized in Table 2.

Table 2
Traffic Noise Significance Thresholds
(dB[A] CNEL)

Structure or Proposed Use that would be Impacted by Traffic Noise	Interior Space	Exterior Useable Space*	General Indication of Potential Significance
Single-family detached	45 dB	65 dB	Structure or outdoor useable area is <50 feet from the center of the closest (outside) lane on a street with existing or future ADTs >7,500
Multi-family, school, library, hospital, day care center, hotel, motel, park, convalescent home	Development Services Department ensures 45 dB pursuant to Title 24	65 dB	
Office, church, business, professional uses	n/a	70 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >20,000
Commercial, retail, industrial, outdoor spectator sports uses	n/a	75 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >40,000

ADT = Average Daily Trips
*If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

2.3 Construction Noise Level Limits

Section 59.5.0404 of the City's Noise Abatement and Control Ordinance states that:

> A. It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. . . .
>
> B. . . . it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

The project construction would be restricted to between the hours of 7:00 a.m. and 7:00 p.m. and construction noise levels may not exceed 75 dB(A) $L_{eq(12)}$ as assessed at or beyond the property line of a property zoned residential.

3.0 Existing Conditions

Existing noise levels in the vicinity of the roadway improvement sites were measured on June 28, 2017, using a Larson-Davis LxT Sound Expert Sound Level Meter, serial number 3827. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Time History Period:	5 seconds
Height of Instrument:	5 feet above ground level

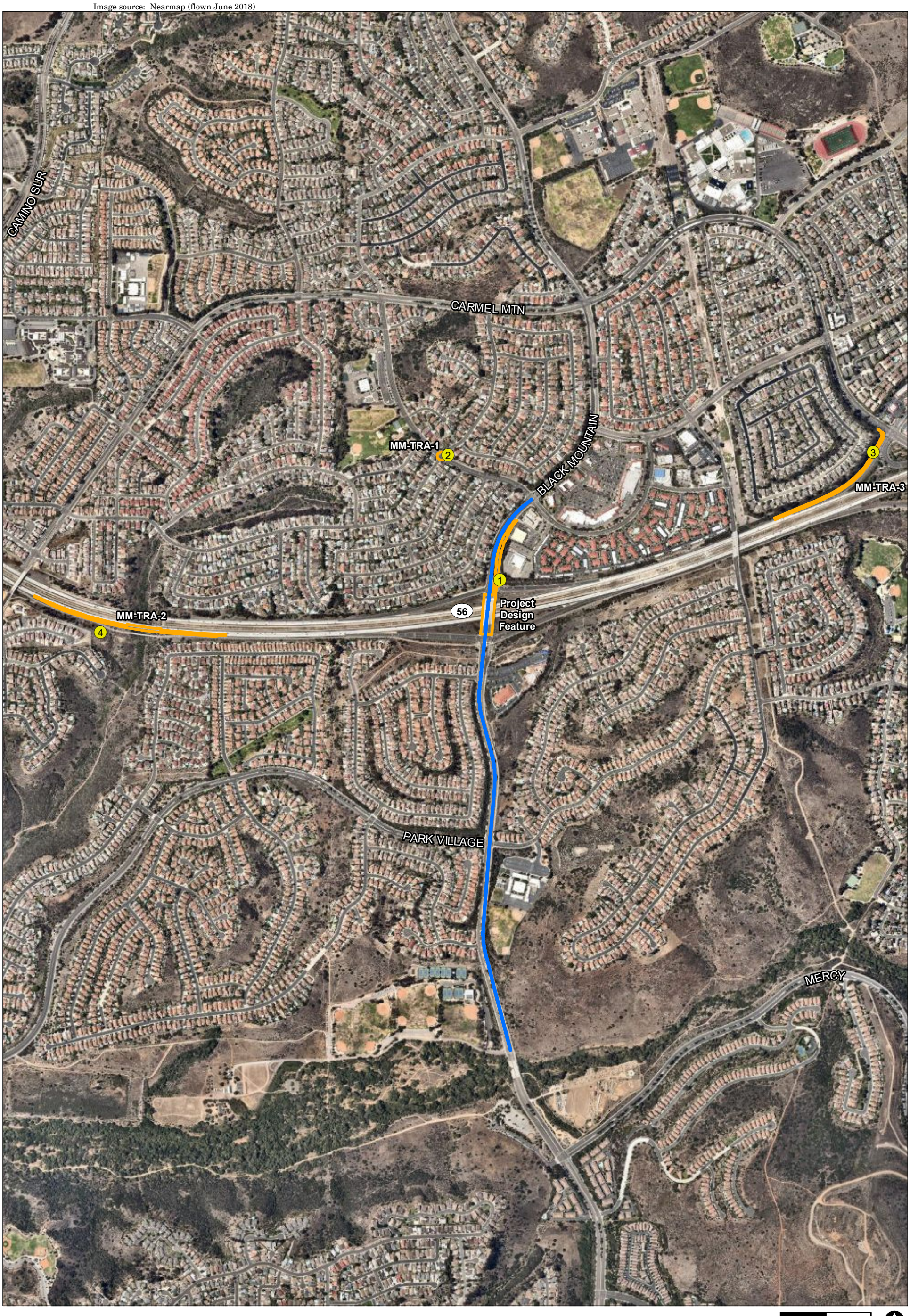
The meter was calibrated before and after each measurement. Four 15-minute measurements were made on the project site, as described below. The locations of the measurements are shown on Figure 6, and the noise measurement data are contained in Attachment 1.

Measurement 1 was located in the vicinity of the project design feature restriping/widening roadway improvements. The measurement was located on the corner of Black Mountain Road and the SR-56 westbound off-ramp, on a slope approximately 50 feet east of Black Mountain Road. The slope is elevated approximately 15 feet above the elevation of Black Mountain Road. The main source of noise at the measurement location was vehicle traffic on Black Mountain Road. Vehicle traffic on SR-56 and the on- and off-ramps was also audible from the measurement location. Noise levels were measured for 15 minutes. Traffic volumes on Black Mountain Road were counted during the measurement. The average measured noise level during Measurement 1 was 71.1 dB(A) L_{eq}.

Measurement 2 was located in the vicinity of the MM-TRA-1 signal installation roadway improvements. The measurement was located approximately 10 feet north of Twin Trails Drive and 30 feet east of Sundance Avenue. The main source of noise at the measurement location was vehicle traffic on Twin Trails Drive and Sundance Avenue. Other sources of noise included a moving truck and bird vocalizations. Noise levels were measured for 15 minutes. Traffic volumes on Twin Trails Drive were counted during the measurement. The average measured noise level during Measurement 2 was 60.7 dB(A) L_{eq}.

Measurement 3 was located in the vicinity of the MM-TRA-3 on-ramp roadway improvements. The measurement was located approximately 30 feet north of the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp. The main source of noise at the measurement location was vehicle traffic on SR-56 and the on-ramp. Noise levels were measured for 15 minutes. Traffic volumes on the on-ramp were counted during the measurement. The average measured noise level during Measurement 3 was 63.9 dB(A) L_{eq}.

Image source: Nearmap (flown June 2018)



RECON

M:\JOBS4\6524\common_gis\fig6_nos.mxd 9/25/2018 sab

FIGURE 6

Noise Measurement Locations

Measurement 4 was located in the vicinity of the MM-TRA-2 SR-56 auxiliary lane roadway improvements. The measurement was located on a hillside approximately 200 feet south of SR-56. The main source of noise at the measurement location was vehicle traffic on SR-56. Other sources of noise included aircraft. Noise levels were measured for 15 minutes. Traffic volumes on SR-56 were counted during the measurement. The average measured noise level during Measurement 4 was 67.1 dB(A) L_{eq}.

Noise measurements are summarized in Table 3. Vehicle traffic counts are summarized in Table 4.

Table 3
Noise Measurements

Measurement	Location	Time	Noise Sources	L_{eq}	L_{90}
1	Project Design Feature: 50 feet east of Black Mountain Road, north of SR-56 westbound off-ramp	10:28 a.m.–10:43 a.m.	Vehicle traffic on Black Mountain Road, SR-56, and on- and off-ramps	71.1	62.8
2	MM-TRA-1: 10 feet north of Twin Trails Drive and 30 feet east of Sundance Avenue	11:07 a.m.–11:22 a.m.	Vehicle traffic on Twin Trails Drive and Sundance Avenue	60.7	50.1
3	MM-TRA-3: 30 feet north of the Rancho Peñasquitos Boulevard/ SR-56 westbound on-ramp	11:51 a.m.–12:06 p.m.	Vehicle traffic on SR-56 and on-ramp	63.9	55.4
4	MM-TRA-2: 200 feet south of SR-56	12:56 p.m.–1:11 p.m.	Vehicle traffic on SR-56	67.1	64.2

L_{90} = Noise level exceeded 90 percent of the time.
NOTE: Noise measurement data are contained in Attachment 1.

Table 4
15-minute Traffic Counts

Measurement	Roadway	Speed (mph)	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
1	Black Mountain Road	45	433	5	1	0	0
2	Twin Trails Drive	30	141	2	0	0	0
3	Rancho Peñasquitos Boulevard/ SR-56 westbound on-ramp	30	101	1	0	0	0
4	SR-56	65	1,128	21	7	5	2

4.0 Analysis Methodology

4.1 Construction Noise Analysis

As discussed in Section 1.1, there are four proposed roadway improvements: signalizing the intersection of Sundance Avenue and Twin Trails Drive (MM-TRA-1), constructing an auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road (MM-TRA-2), constructing an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp (MM-TRA-3), and restriping/widening a segment of Black Mountain Road (project design feature). Construction of these roadway improvements would require heavy duty construction equipment that could include

backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. These improvement areas are located adjacent to residential uses. Therefore, construction noise impacts associated with activities required for these three improvements were analyzed.

Noise level predictions and contour mapping were developed using noise modeling software, SoundPlan Essential, version 3.0 (Navcon Engineering 2015). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at 5 feet above ground elevation, which represents the average height of the human ear.

For MM-TRA-1, installation of a new traffic signal would require a drill for drilling holes at the corners for the signal posts and a crane or similar equipment for lifting the poles into place. Noise associated with the signal installation would be minimal when compared to the other traffic improvements, as much of the time taken to install a new signal is associated with wiring and a minimal amount of equipment. Noise levels due to operation of a crane or a drill were modeled at the adjacent residential receivers. As work during a given day would occur at each corner of the intersection, the center of the construction activity was modeled at the center of the intersection. Additionally, as equipment would mostly be stationary, it was modeled as a point source. Construction noise is considered a point source and would attenuate at approximately 6 dB(A) for every doubling of distance. Hourly average noise levels from a crane and a drill would be 78 dB(A) Leq at 50 feet, or a LPW of approximately 118 dB(A) from the center of construction activity.

A variety of noise-generating equipment– such as backhoes, front-end loaders, rollers, pavers, and concrete saws, along with others–would be used during construction of MM-TRA-2, MM-TRA-3, and the project design feature. Equipment moves to different locations and goes through varying load cycles during construction, and there are breaks for the operators and for non-equipment tasks, such as measurement. Table 5 summarizes noise levels and cycles of typical construction equipment. Although maximum noise levels may be 85 to 90 dB(A) at a distance of 50 feet, hourly average noise levels would be lower when taking into account the equipment usage factors. For the project, the loudest phase of construction would be the excavation phase and would include dozers, loaders, and excavators. Construction noise levels were calculated based on all three pieces of equipment being active simultaneously. Hourly average noise levels would be 82 dB(A) Leq at 50 feet, or an LPW of approximately 114 dB(A) from the center of construction activity when assessing the loudest pieces of equipment working simultaneously.

Construction noise from a linear project, such as a roadway, is assessed from the centerline of the alignment and work area. Maximum noise levels would occur when the loudest construction equipment is nearest to a noise sensitive receiver. Although construction

equipment may temporarily be located at the point on the alignment nearest to a receiver, over time equipment would move along the alignment. Therefore, the distance from a receiver to the centerline of the alignment is not the same as the average distance during a given day from the receiver to construction equipment. Thus, average noise levels correlate to the area of active construction. To reflect the nature of construction activities, equipment was modeled as an area source distributed over the footprint of each traffic improvement area.

Table 5
Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Auger Drill Rig	85	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	85	20%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 kilovolt ampts or less)	70	50%
Generator (more than 25 kilovolt amps)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
Impact Pile Driver (diesel or drop)	95	20%
Insitu Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Roller	74	40%
Scraper	85	40%
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%
SOURCE: Federal Highway Administration (FHWA) 2006.		

4.2 Traffic Noise Analysis

4.2.1 Off-Site Traffic Noise

Reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the project design feature and traffic mitigation measures would not generate additional traffic. However, implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project, and would therefore result in a change in vehicle traffic noise levels adjacent to these roadways.

Off-site traffic noise was modeled using the Federal Highway Administration's Traffic Noise Prediction Model algorithms and reference levels. Traffic noise levels were calculated at 50 feet from the centerline of the affected roadways to determine the noise level increase associated with the project. The model uses various input parameters, such as traffic volumes; vehicle mix, distribution, and speed. Traffic noise levels were calculated based on the future total average daily traffic volume on each roadway segment with and without the project. For modeling purposes, "hard" ground conditions were used for the analysis of future conditions, since a majority of the project area is paved and the hard site provides the most conservative impact assessment.

Table 6 summarizes the existing and future traffic volumes for the area roadway segments. The roadway segments presented in Table 6 are consistent with those analyzed in the TIS prepared for the project.

4.2.2 Roadway Improvement Areas

4.2.2.1 MM-TRA-1 Traffic Signal

There is currently a stop sign at the intersection of Sundance Avenue and Twin Trails Drive. MM-TRA-1 would replace the stop sign with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Noise generated by future traffic with and without the traffic signal was modeled using SoundPLAN Essential, version 3.0. The SoundPLAN program (Navcon Engineering 2015) uses the Federal Highway Administration (FHWA) Traffic Noise Model algorithms and reference levels to calculate noise levels at selected receiver locations. The model uses various input parameters, such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; traffic control devices; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. Receivers, roadways, and barriers were input into the model using three-dimensional coordinates.

Table 6 Vehicle Traffic Parameters						
			Average Daily Traffic (ADT)			
No.	Roadway	Segment	Existing	Year 2050 without Project	Year 2050 with Project	Speed (mph)
1	Camino Del Sur	South of Carmel Valley Road	17,728	25,903	25,250	45
2	Camino Del Sur	South of Wolverine Way-Fallhaven Road	20,710	30,260	29,497	45
3	Camino Del Sur	North of SR-56 Westbound Ramps	25,921	37,874	36,919	45
4	Camino Del Sur	South of SR-56 Eastbound Ramps	9,818	26,700	27,400	40
5	Carmel Valley Road	West of Black Mountain Road	10,489	17,223	17,349	55
6	Carmel Valley Road	East of Black Mountain Road	13,793	22,648	22,814	50
7	Black Mountain Road	North of Maler Road	12,303	18,262	19,204	45
8	Black Mountain Road	South of Oviedo Street	18,956	23,562	23,472	40
9	Black Mountain Road	South of Carmel Mountain Road	14,740	18,353	17,709	40
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	14,315	17,824	17,198	40
11	Black Mountain Road	South of Twin Trails Drive	33,492	38,028	37,540	45
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	30,567	34,707	34,261	45
13	Black Mountain Road	North of Park Village Road - Adolphia Street	35,443	43,949	35,500	45
14	Black Mountain Road	North of Canyonside Park Drive	30,380	40,431	34,677	45
15	Black Mountain Road	Between Mercy Road and Babuta Road	28,862	38,411	32,944	50
16	Black Mountain Road	South of Westview Parkway	22,214	29,564	25,356	50
17	Westview Parkway	East of Black Mountain Road	6,099	8,854	7,197	45
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,152	14,661	14,819	40
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	21,907	22,696	22,940	40
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps-Azuaga Street and Calle De Las Rosas	27,441	26,218	27,500	50
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	28,120	26,867	28,200	50
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Southbound Ramps	33,066	31,592	33,100	40
23	Poway Road	East of I-15 Northbound Ramps	45,045	53,230	53,230	50
24	Carmel Mountain Road	South of Sundance Avenue	1,241	9,784	9,980	40
25	Carmel Mountain Road	West of Sparren Avenue	6,811	8,895	9,312	40
26	Carmel Mountain Road	West of Black Mountain Road	8,316	10,400	10,600	40
27	Sundance Avenue	West of War Bonnet Street	1,884	2,500	2,600	25
28	Carmel Mountain Road	East of Freeport Road	11,328	14,425	14,396	40
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	13,655	17,389	17,354	40
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	25,071	29,444	29,337	40
31	Carmel Mountain Road	East of I-15 Northbound Ramps	44,953	52,794	52,601	35
32	Camino Del Sur	North of Park Village Road	1,185	10,700	10,200	40
33	Park Village Road	East of Camino Del Sur	8,430	12,600	11,700	45
34	Park Village Road	West of Black Mountain Road	17,546	17,757	17,600	45
35	Mercy Road	Between Chabola Road and Branicole Lane	14,279	18,662	17,420	45
36	Mercy Road	North of Alemania Road	19,851	23,662	22,420	45
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	52,815	63,408	62,005	50
SOURCE:						

For the purpose of traffic noise compatibility analysis, the loudest traffic noise condition is represented as the maximum level of service (LOS) C/minimum LOS D traffic volume. The maximum LOS C/minimum LOS D represents a condition where the maximum number of vehicles are using the roadway at the maximum speed. LOS A and B categories allow full travel speed but do not have as many vehicles, while LOS E and F have a greater number of vehicles, but due to the traffic volume travel at reduced speeds, thus generating less noise. Twin Trails Drive is a 2-lane collector with a maximum LOS C/minimum LOS D volume of 13,000 Average Daily Trips (ADTs). Sundance Avenue is a residential local roadway which are not assigned LOS criteria. The design volume for a residential local roadway is 1,500 ADT. However, San Diego Association of Governments (SANDAG) projects that Sundance Avenue would carry future traffic volumes of 4,100 ADT west of Twin Trails Drive and 2,100 ADT east of Twin Trails Drive (SANDAG 2017). As a worst-case analysis, these SANDAG volumes were used to model future traffic noise on Sundance Avenue and are considered conservative.

Traffic noise levels are calculated based on the peak-hour traffic volumes, which is approximately 10 percent of the ADT volume. Typically, the peak-hour noise level is equivalent to the CNEL. The vehicle classification mix for these roadways was modeled as 95 percent automobiles, 2 percent medium trucks, 1 percent heavy trucks, 1 percent buses, and 1 percent motorcycles. Based on field traffic counts, this is considered a conservative vehicle classification mix.

Table 7 summarizes the traffic volumes and vehicle classification mixes for the modeled roadways.

Table 7
MM-TRA-1 Traffic Parameters

Roadway	Volume (ADT)	Peak Hour Volume	Speed	Vehicle Mix (Percent)				
				Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
Twin Trails Drive	13,000	1,300	30	95	2	1	1	1
Sundance Avenue								
East of Twin Trails Drive	4,100	410	25	95	2	1	1	1
West of Twin Trails Drive	2,100	210						

4.2.2.2 MM-TRA-2 Auxiliary Lane

Construction of the SR-56 auxiliary lane would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise with and without construction of the auxiliary lane was modeled using the FHWA's Traffic Noise Prediction Model algorithms and reference levels. The model uses various input parameters, such as traffic volumes; vehicle mix, distribution, and speed. To determine the noise level increase associated with the project, traffic noise levels were calculated at the closest sensitive receiver, which is 78 feet south of the existing SR-56 eastbound centerline and would be 72 feet south of the SR-56 centerline with construction of the auxiliary lane.

The project would not alter the centerline of the SR-56 westbound lanes, which is 208 feet north of the closest sensitive receiver to the south.

Noise levels were calculated for the AM and PM peak hours with and without the project. The vehicle classification mix was modeled as 96 percent automobiles, 3 percent medium trucks, and 1 percent heavy trucks, and was based on Caltrans truck counts (Caltrans 2017). Future peak hour volumes with and without the project are summarized in Table 8.

Table 8
Future SR-56 Traffic Volumes

Segment	Without Project		With Project	
	AM Peak Hour Volume	PM Peak Hour Volume	AM Peak Hour Volume	PM Peak Hour Volume
SR-56 Westbound Lanes	7,888	2,902	7,925	2,916
SR-56 Eastbound Lanes	3,024	7,744	3,038	7,780

4.2.2.3 MM-TRA-3 On Ramp

Construction of an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp would shift some on-ramp traffic closer to the residential uses to the north, and therefore increase traffic noise levels at these uses. As with MM-TRA-2, traffic noise with and without construction of the additional on-ramp lane was modeled using the FHWA's Traffic Noise Prediction Model algorithms and reference levels. To determine the noise level increase associated with the project, traffic noise levels were calculated at the closest sensitive receiver, which is 136 feet north of the existing on-ramp centerline and would be 130 feet north of the on-ramp centerline with construction of the additional lane.

Noise levels were calculated for the worst case AM peak hour with and without the project. PM peak hour volumes would be less than AM peak hour volumes. The same vehicle mix discussed in Section 4.2.2.2 was modeled. Future peak hour volumes with and without the project are summarized in Table 9.

Table 9
Future Rancho Peñasquitos Boulevard/SR-56
Westbound On-Ramp Traffic Volumes

Segment	AM Peak Hour Volume Without Project	AM Peak Hour Volume With Project
Westbound On-Ramp	811	835

4.2.2.4 Project Design Feature on Black Mountain Road

There are residential uses to the west of the segment of Black Mountain Road that would be restriped and widened. The proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Because this improvement would not result in an increase in noise levels at the adjacent sensitive uses, the change in noise levels due to this shift were not calculated.

5.0 Future Acoustical Environment and Impacts

5.1 Construction Noise

Construction of the project design feature and traffic mitigation measures would potentially result in short-term impacts to surrounding residential properties. As discussed, a variety of noise-generating equipment would be used to construct these improvements such as backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. Using the methodology discussed in Section 4.1, construction noise levels at the residential uses located adjacent to these roadway improvement areas were calculated.

Construction noise levels adjacent to the MM-TRA-1 signal installation at Sundance Avenue and Twin Trail Drive are summarized in Table 10, modeled receiver locations and construction contours are shown in Figure 7, and SoundPLAN data is contained in Attachment 2.

Table 10
MM-TRA-1 Construction Noise Levels

Receiver	Construction Noise Level [dB(A) L_{eq}]
1	62
2	72
3	74
4	67
5	68
6	75
7	75
8	64
9	68
10	74
11	72
12	65
13	59
14	67
15	72
16	63

Construction noise levels adjacent to the MM-TRA-2 SR-56 auxiliary lane are summarized in Table 11, modeled receiver locations and construction contours are shown in Figure 8, and SoundPLAN data is contained in Attachment 3.

Image Source: NearMaps (flown June 2018)



Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 120

FIGURE 7

MM-TRA-1 Construction Noise Contours

RECON

M:\JOBS4\6524\common_gis\fig7_nos.mxd 9/25/2018 sab

Image Source: NearMaps (flown June 2017)



Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 350

FIGURE 8

MM-TRA-2 Construction Noise Contours

RECON

M:\JOBS4\6524\common_gis\Fig8_nos.mxd 9/25/2018 sab

Table 11 MM-TRA-2 Construction Noise Levels	
Receiver	Construction Noise Level [dB(A) L_{eq}]
1	51
2	57
3	60
4	57
5	59
6	66
7	55
8	59
9	61
10	56

Construction noise levels adjacent to the MM-TRA-3 on-ramp improvements are summarized in Table 12, modeled receiver locations and construction contours are shown in Figure 9, and SoundPLAN data is contained in Attachment 4.

Table 12 MM-TRA-3 Construction Noise Levels	
Receiver	Construction Noise Level [dB(A) L_{eq}]
1	62
2	67
3	67
4	67
5	67
6	67
7	66
8	66
9	67
10	67
11	67
12	66
13	65
14	66
15	66
16	62

Construction noise levels adjacent to the project design feature Black Mountain Road restriping/widening are summarized in Table 13, modeled receiver locations and construction contours are shown in Figure 10, and SoundPLAN data is contained in Attachment 5.

Image Source: NearMaps (flown June 2018)



Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 200

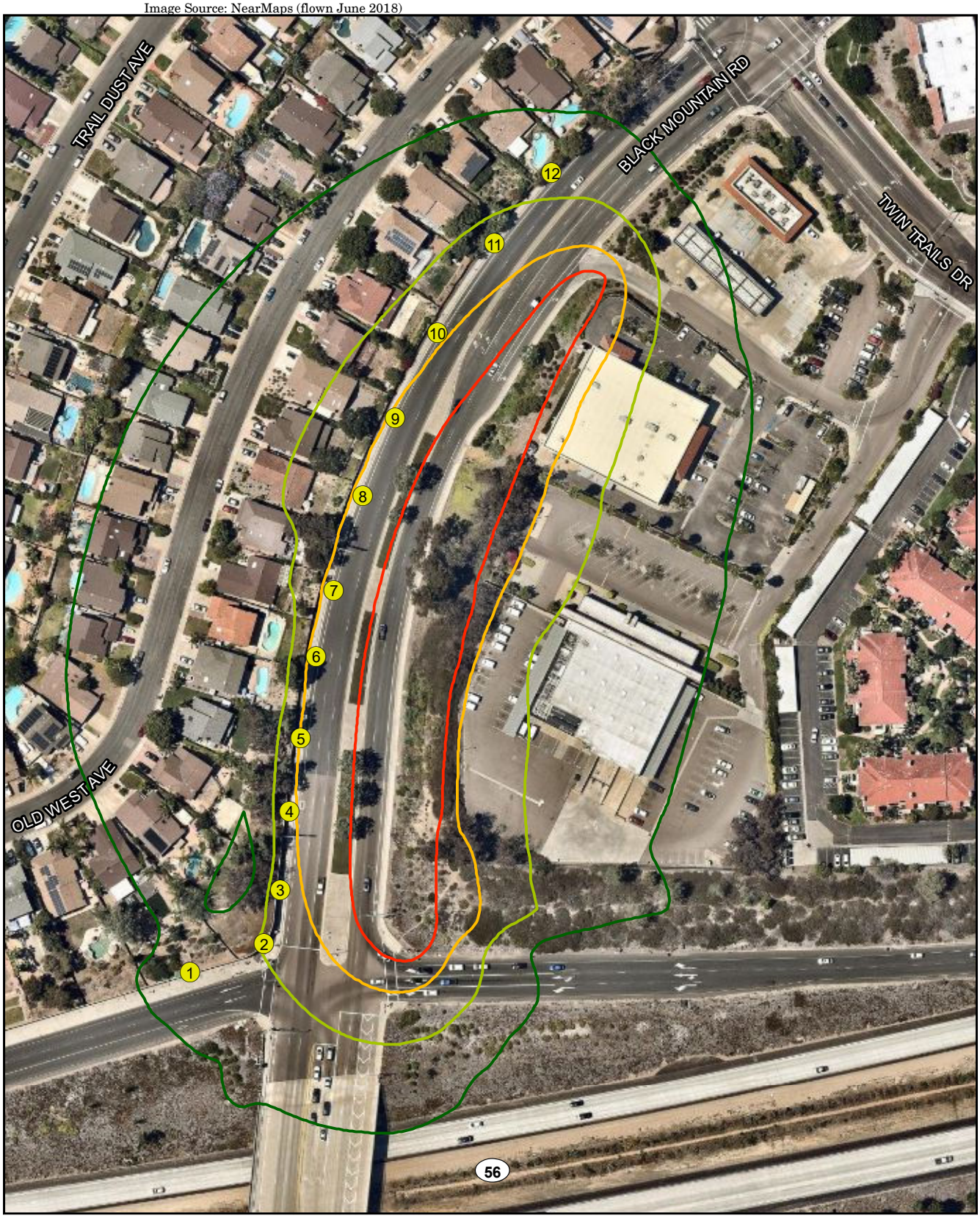
FIGURE 9

MM-TRA-3 Construction Noise Contours

RECON

M:\JOBS4\6524\common_gis\Fig9_nos.mxd 9/25/2018 sab

Image Source: NearMaps (flown June 2018)



Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 150

FIGURE 10

Project Design Feature Construction Noise Contours

RECON

M:\JOBS4\6524\common_gis\Fig10_nos.mxd 9/25/2018 sab

Table 13 Project Design Feature Construction Noise Levels	
Receiver	Construction Noise Level [dB(A) L_{eq}]
1	62
2	65
3	68
4	69
5	70
6	71
7	71
8	71
9	71
10	69
11	67
12	63

Although the existing residences adjacent to all four roadway improvements would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Additionally, construction activities are not anticipated to exceed 75 dB(A)L_{eq} at the nearest residential uses. Because construction activities associated with the project would comply with the applicable regulation for construction, temporary increases in noise levels from construction activities would be less than significant.

5.2 Traffic Noise

5.2.1 Off-Site Traffic Noise

The project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project. However, the project would not substantially alter the vehicle volumes or classifications mix on local or regional roadways, nor would the project alter the speed on an existing roadway; thus, the primary factor affecting off-site noise levels would be increased traffic volumes.

A significant impact would occur if the project resulted in or created a significant increase in the existing ambient noise levels. Studies have shown that the average human ear can barely perceive a change in sound level of 3 dB(A). A change of at least 5 dB(A) is considered a readily perceivable change in a normal environment. A 10 dB(A) increase is subjectively heard as a doubling in loudness and would cause a community response. The City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant (City of San Diego 2016).

Noise levels were calculated using the FHWA Traffic Noise Prediction Model algorithms and reference levels. The results are shown in Table 14. The roadway segments presented in Table 14 are consistent with those analyzed in the TIS prepared for the project. Noise level calculations are contained in Attachment 6.

The cumulative increases in noise levels between the existing condition and year 2050, without and with the project, are due to regional growth and are not attributed to the project, as the project itself would not result in any growth or trip generation. Off-site traffic noise impacts were determined by comparing year 2050 noise levels with and without implementation of the project. As shown, existing noise levels due to vehicle traffic currently exceed the City's residential noise level limit of 65 CNEL adjacent to all roadway segments except Carmel Mountain Road south of Sundance Avenue, Sundance Avenue west of War Bonnet Street, and Camino Del Sure north of Park Village Road. Noise levels would either decrease or increase adjacent to the project area roadways. This is due to the redistribution of traffic on these roadways. As shown, the changes in noise levels due to the project would range from -0.9 to 0.2 CNEL. These changes in noise levels would not be perceivable and would not exceed the City's significance thresholds. Vehicle traffic noise impacts to off-site uses would be less than significant.

5.2.2 Roadway Improvement Areas

As discussed in Section 5.2.1, the City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant (City of San Diego 2016).

5.2.2.2 MM-TRA-1 Traffic Signal

There is currently a stop sign at the intersection of Sundance Avenue and Twin Trails Drive. MM-TRA-1 would replace the stop sign with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Using the methodology discussed in Section 4.2.1, noise levels at the adjacent residential uses were calculated with and without the project. The results are shown in Table 15, and SoundPLAN data is contained in Attachment 7. Figure 11a shows the vehicle traffic noise contours with the stop sign, and Figure 11b shows the vehicle traffic noise contours with the traffic signal. As shown, installation of the traffic signal would improve the traffic flow at the intersection of Sundance Avenue and Twin Trails Drive, and thereby decrease noise levels at the adjacent uses. Therefore, there would be no operational impacts associated with the installation of a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

Table 14 Changes in Vehicle Traffic Noise Levels							
			Noise Level (CNEL)				
No.	Roadway	Segment	Existing	Year 2050 without Project	Year 2050 with Project	Cumulative Δ dB	Direct Δ dB
1	Camino Del Sur	South of Carmel Valley Road	71.0	72.7	72.6	1.6	-0.1
2	Camino Del Sur	South of Wolverine Way-Fallhaven Road	71.7	73.4	73.2	1.5	-0.2
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.7	74.3	74.2	1.5	-0.1
4	Camino Del Sur	South of SR-56 Eastbound Ramps	67.3	71.6	71.7	4.4	0.1
5	Carmel Valley Road	West of Black Mountain Road	70.9	73.1	73.1	2.2	0.0
6	Carmel Valley Road	East of Black Mountain Road	71.1	73.2	73.2	2.1	0.0
7	Black Mountain Road	North of Maler Road	69.4	71.2	71.4	2.0	0.2
8	Black Mountain Road	South of Oviedo Street	70.1	71.1	71.0	0.9	-0.1
9	Black Mountain Road	South of Carmel Mountain Road	69.0	70.0	69.8	0.8	-0.2
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.9	69.8	69.7	0.8	-0.1
11	Black Mountain Road	South of Twin Trails Drive	73.8	74.3	74.3	0.5	0.0
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	73.4	74.0	73.9	0.5	-0.1
13	Black Mountain Road	North of Park Village Road-Adolphia Street	74.0	75.0	74.1	0.1	-0.9
14	Black Mountain Road	North of Canyonside Park Drive	73.4	74.6	73.9	0.5	-0.7
15	Black Mountain Road	Between Mercy Road and Babuta Road	74.3	75.5	74.8	0.5	-0.7
16	Black Mountain Road	South of Westview Parkway	73.1	74.4	73.7	0.6	-0.7
17	Westview Parkway	East of Black Mountain Road	66.4	68.0	67.1	0.7	-0.9
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	68.8	69.0	69.0	0.2	0.0
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	70.7	70.9	70.9	0.2	0.0
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps-Azuaga Street and Calle De Las Rosas	74.0	73.9	74.1	0.1	0.2
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	74.2	74.0	74.2	0.0	0.2
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and Interstate 15 (I-15) Southbound Ramps	72.5	72.3	72.5	0.0	0.2
23	Poway Road	East of I-15 Northbound Ramps	76.2	76.9	76.9	0.7	0.0
24	Carmel Mountain Road	South of Sundance Avenue	58.3	67.2	67.3	9.0	0.1
25	Carmel Mountain Road	West of Sparren Avenue	65.7	66.8	67.0	1.3	0.2
26	Carmel Mountain Road	West of Black Mountain Road	66.5	67.5	67.6	1.1	0.1
27	Sundance Avenue	West of War Bonnet Street	56.1	57.4	57.5	1.4	0.1
28	Carmel Mountain Road	East of Freeport Road	67.9	68.9	68.9	1.0	0.0
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.7	69.7	69.7	1.0	0.0

Table 14 Changes in Vehicle Traffic Noise Levels							
			Noise Level (CNEL)				
No.	Roadway	Segment	Existing	Year 2050 without Project	Year 2050 with Project	Cumulative Δ dB	Direct Δ dB
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	71.3	72.0	72.0	0.7	0.0
31	Carmel Mountain Road	East of I-15 Northbound Ramps	72.5	73.2	73.2	0.7	0.0
32	Camino Del Sur	North of Park Village Road	58.1	67.6	67.4	9.3	-0.2
33	Park Village Road	East of Camino Del Sur	67.8	69.6	69.2	1.4	-0.4
34	Park Village Road	West of Black Mountain Road	71.0	71.0	71.0	0.0	0.0
35	Mercy Road	Between Chabola Road and Branicole Lane	70.1	71.3	71.0	0.9	-0.3
36	Mercy Road	North of Alemania Road	71.5	72.3	72.1	0.6	-0.2
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.9	77.7	77.6	0.7	-0.1

Image Source: NearMaps (flown June 2018)



Noise Receiver **Noise Contours (CNEL)**

55

60

65

0 Feet 200

FIGURE 11a

MM-TRA-1 Traffic Noise Contours with Stop Sign

RECON

M:\JOBS4\6524\common_gis\Fig11a_nos.mxd 9/25/2018 sab

Image Source: NearMaps (flown June 2018)



Noise Receiver **Noise Contours (CNEL)**

55

60

65

0 Feet 200

FIGURE 11b

MM-TRA-1 Traffic Noise Contours with Traffic Signal

RECON

M:\JOBS4\6524\common_gis\Fig11b_nos.mxd 9/25/2018 sab

Table 15 MM-TRA-1 Noise Levels (CNEL)			
Receiver	Noise Level with Stop Sign	Noise Level with Traffic Signal	Difference
1	64	63	-1
2	68	65	-3
3	67	62	-5
4	63	60	-3
5	63	60	-3
6	67	62	-5
7	68	63	-5
8	64	63	-1
9	65	63	-2
10	68	64	-4
11	65	61	-5
12	61	58	-3
13	56	54	-2
14	62	59	-4
15	67	64	-3
16	64	63	-1

5.2.2.2 MM-TRA-2 Auxiliary Lane

MM-TRA-2 would introduce an auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road that would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without construction of the auxiliary lane were calculated at the nearest sensitive receiver as discussed in Section 4.2.2.2, and the results are shown in Table 16.

Table 16 MM-TRA-2 Noise Levels (CNEL)						
	AM Peak Hour			PM Peak Hour		
Roadway	Without Auxiliary Lane	With Auxiliary Lane	Difference	Without Auxiliary Lane	With Auxiliary Lane	Difference
Westbound SR-56	75	75	0	71	71	0
Eastbound SR-56	75	76	<1	80	80	<1
SR-56–All Lanes	78	79	<1	80	80	<1
NOTE: Differences may vary due to independent rounding. FHWA RD-77-108 output contained in Attachment 8						

As shown, the construction of the eastbound auxiliary lane would increase noise levels at the nearest residential uses to the south of SR-56 by less than 1 dB. Noise level increases of this magnitude would not be perceivable Noise levels at the residential uses north of SR-56 would decrease because the additional auxiliary lane would shift freeway traffic further to

the south. Noise impacts associated with operation of MM-TRA-2 would be less than significant.

5.2.2.3 MM-TRA-3 On Ramp

Construction of an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp would shift some on-ramp traffic closer to the residential uses to the north, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without the additional on-ramp lane were calculated at the nearest sensitive receiver as discussed in Section 4.2.2.3, and the results are shown in Table 17.

Table 17
MM-TRA-3 Noise Levels
(CNEL)

Roadway	Without Additional Lane	With Additional Lane	Difference
Westbound On-Ramp	54	55	<1

Note: Difference may vary due to independent rounding.
FHWA RD-77-108 output contained in Attachment 9

As shown, the construction of the additional on-ramp lane would increase noise levels at the nearest residential uses to the north by less than 1 dB. This increase would not be readily perceivable. Noise impacts associated with operation of MM-TRA-3 would be less than significant. It should be noted that the dominant noise source at the residential uses adjacent to the MM-TRA-3 roadway improvement area is vehicle traffic on SR-56. As shown in Table 3, the measured noise level in this vicinity was 63.9 dB(A) L_{eq}. Noise due to vehicle traffic on the ramp does not contribute measurably to the overall ambient noise environment.

5.2.2.4 Project Design Feature on Black Mountain Road

There are residential uses to the west of the portion of Black Mountain Road that would be restriped and widened. As discussed in Section 4.2.2.4, the proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Therefore, implementation of the project design feature would not result in an increase in noise levels due to vehicle traffic on Black Mountain Road at the adjacent sensitive receivers. Additionally, as with MM-TRA-3, the dominant noise source at the residential uses adjacent to the project design feature roadway improvement area is also vehicle traffic on SR-56. As shown in Table 3, the measured noise level in this vicinity was 71.1 dB(A) Leq. The restriping/widening of Black Mountain Road would not result in a perceptible change in the ambient noise environment.

6.0 Conclusions and Noise Abatement Measures

6.1 Construction Noise

Construction of the project design feature and traffic mitigation measures would potentially result in short-term impacts to surrounding residential properties. A variety of noise-generating equipment would be used to construct these improvements such as backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. Construction noise levels at the residential uses located adjacent to the roadway improvement areas were calculated. Construction noise levels would be less than 75 dB(A) L_{eq} at all adjacent residential uses. Although the existing adjacent residences would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Because construction activities associated with the roadway improvements would comply with the applicable regulation for construction, temporary increases in noise levels from construction activities would be less than significant.

6.2 Traffic Noise

6.2.1 Off-Site Traffic Noise

Reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the project design feature and traffic mitigation measures would not generate additional traffic. However, implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project, and would therefore result in a change in vehicle traffic noise levels adjacent to these roadways. The City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant (City of San Diego 2016).

The cumulative increases in noise levels between the existing condition and year 2050, without and with the project, are due to regional growth and are not attributed to the project, as the project itself would not result in any growth or trip generation. Off-site traffic noise impacts were determined by comparing year 2050 noise levels with and without implementation of the project. Noise levels would either decrease or increase adjacent to the project area roadways. This is due to the redistribution of traffic on these roadways. As shown in Table 14, the changes in noise levels due to the project would be less than 1 dB. These changes in noise levels would not be perceivable and would not exceed the City's significance thresholds. Vehicle traffic noise impacts to off-site uses would be less than significant.

6.2.2 Roadway Improvement Areas

MM-TRA-1 would replace the stop sign at the intersection of Sundance Avenue and Twin Trails Drive with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Noise levels at the adjacent residential uses were calculated with and without the project. As shown in Table 15, installation of the traffic signal would improve the traffic flow at the intersection of Sundance Avenue and Twin Trails Drive, and thereby decrease noise levels at the adjacent uses. Therefore, there would be no operational impacts associated with MM-TRA-1.

MM-TRA-2 would introduce an auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road that would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without construction of the auxiliary lane were calculated at the nearest sensitive receiver. As shown in Table 16, the construction of the eastbound auxiliary lane would increase noise levels at the nearest residential uses to the south of SR-56 by less than 1 dB. Noise level increases of this magnitude would not be perceivable. Noise levels at the residential uses north of SR-56 would decrease because the additional auxiliary lane would shift freeway traffic further to the south. Noise impacts associated with operation of MM-TRA-2 would be less than significant.

MM-TRA-3 would construction an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp, which would shift some on-ramp traffic closer to the residential uses to the north and therefore increase traffic noise levels at these uses. Traffic noise levels with and without the additional on-ramp lane were calculated at the nearest sensitive receiver. As shown in Table 17, the construction of the additional on-ramp lane would increase noise levels at the nearest residential uses to the north by less than 1 dB. This increase would not be readily perceivable. Noise impacts associated with operation of MM-TRA-3 would be less than significant.

The project design feature would restripe a segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, it is estimated for modeling purposes that the roadway north of the overpass bridge would need to be widened by up to 22 feet for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway. There are residential uses to the west of this portion of Black Mountain Road. The proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Therefore, implementation of the project design feature would not result in an increase in noise levels due to vehicle traffic on Black Mountain Road at the adjacent sensitive receivers.

7.0 References Cited

California Department of Transportation (Caltrans)
2013 Technical Noise Supplement. November.

Federal Highway Administration (FHWA)
2006 FHWA Roadway Construction Noise Model User's Guide, Final Report. January 2006.

KOA Corporation
2016 Black Mountain Road Transportation Impact Study (8th Submittal). May 2016.

Navcon Engineering, Inc.
2015 SoundPLAN Essential version 3.0

San Diego, City of
2015 City of San Diego General Plan. Amended June 29.

2016 California Environmental Quality Act Significance Determination Thresholds. July 2016.

ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

Summary

Filename	LxT_Data.027
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 10:27:48
Stop	2017/06/28 10:42:49
Duration	0:15:01.2
Run Time	0:15:01.2
Pause	0:00:00.0
Pre Calibration	2017/06/28 10:24:37
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.6 dB

	A	C	Z
Under Range Peak	**77.9**	74.9	79.9 dB
Under Range Limit	**26.0**	25.2	32.0 dB
Noise Floor	16.2	16.0	21.9 dB

Results

LAeq	71.1 dB	
LAE	100.6 dB	
EA	1.275 mPa²h	
LApeak (max)	2017/06/28 10:40:11	101.7 dB
LASmax	2017/06/28 10:40:11	90.0 dB
LASmin	2017/06/28 10:33:03	58.8 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	1	8.1 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	71.1	71.1	-99.9	71.1	71.1	-99.9	-99.9

LCeq	77.4 dB
LAeq	71.1 dB
LCeq - LAeq	6.3 dB
LAleq	73.3 dB
LAeq	71.1 dB
LAleq - LAeq	2.2 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	72.7 dB
LAS10.00	71.3 dB
LAS33.30	68.1 dB
LAS50.00	66.7 dB
LAS66.60	65.1 dB
LAS90.00	62.8 dB

Summary

Filename	LxT_Data.028
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 11:06:54
Stop	2017/06/28 11:21:55
Duration	0:15:01.2
Run Time	0:15:01.2
Pause	0:00:00.0
Pre Calibration	2017/06/28 11:03:04
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.5 dB

	A	C	Z
Under Range Peak	**77.8**	74.8	79.8 dB
Under Range Limit	**25.9**	25.2	31.9 dB
Noise Floor	16.2	16.0	21.9 dB

Results

LAeq	60.7 dB	
LAE	90.2 dB	
EA	117.030 µPa²h	
LApeak (max)	2017/06/28 11:19:28	87.7 dB
LASmax	2017/06/28 11:09:13	73.8 dB
LASmin	2017/06/28 11:16:23	43.4 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	60.7	60.7	-99.9	60.7	60.7	-99.9	-99.9

LCeq	72.0 dB
LAeq	60.7 dB
LCeq - LAeq	11.3 dB
LAleq	61.6 dB
LAeq	60.7 dB
LAleq - LAeq	0.9 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	65.7 dB
LAS10.00	63.5 dB
LAS33.30	59.6 dB
LAS50.00	58.0 dB
LAS66.60	55.7 dB
LAS90.00	50.1 dB

Summary

Filename	LxT_Data.029
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 11:50:40
Stop	2017/06/28 12:05:41
Duration	0:15:00.7
Run Time	0:15:00.7
Pause	0:00:00.0
Pre Calibration	2017/06/28 11:47:57
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.7 dB

	A	C	Z
Under Range Peak	**77.9**	74.9	79.9 dB
Under Range Limit	**26.0**	25.2	32.0 dB
Noise Floor	16.2	16.1	21.9 dB

Results

LAeq	63.9 dB	
LAE	93.4 dB	
EA	245.089 µPa²h	
LApeak (max)	2017/06/28 11:55:08	94.9 dB
LASmax	2017/06/28 11:55:09	77.0 dB
LASmin	2017/06/28 11:53:54	52.8 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	63.9	63.9	-99.9	63.9	63.9	-99.9	-99.9

LCeq	70.7 dB
LAeq	63.9 dB
LCeq - LAeq	6.8 dB
LAleq	64.9 dB
LAeq	63.9 dB
LAleq - LAeq	1.0 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	69.8 dB
LAS10.00	68.3 dB
LAS33.30	61.6 dB
LAS50.00	59.2 dB
LAS66.60	57.7 dB
LAS90.00	55.4 dB

Summary

Filename	LxT_Data.031
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 12:55:55
Stop	2017/06/28 13:10:57
Duration	0:15:02.2
Run Time	0:15:02.2
Pause	0:00:00.0
Pre Calibration	2017/06/28 12:50:15
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.5 dB

	A	C	Z
Under Range Peak	**77.8**	74.8	79.8 dB
Under Range Limit	**25.9**	25.2	31.9 dB
Noise Floor	16.2	16.0	21.9 dB

Results

LAeq	67.1 dB	
LAE	96.6 dB	
EA	511.074 µPa²h	
LApeak (max)	2017/06/28 13:09:31	91.3 dB
LASmax	2017/06/28 13:05:22	73.0 dB
LASmin	2017/06/28 12:58:09	59.7 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	67.1	67.1	-99.9	67.1	67.1	-99.9	-99.9

LCeq	73.9 dB
LAeq	67.1 dB
LCeq - LAeq	6.9 dB
LAleq	68.2 dB
LAeq	67.1 dB
LAleq - LAeq	1.1 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	69.9 dB
LAS10.00	69.3 dB
LAS33.30	67.3 dB
LAS50.00	66.6 dB
LAS66.60	65.8 dB
LAS90.00	64.2 dB

ATTACHMENT 2

SoundPLAN Data–MM-TRA-1 Signal Installation

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Signal Installation	Unit	110	-	-	-

6524 Black Mountain Road
SoundPLAN Data - TRA-1 Signal Installation

No.	Coordinates X	Coordinates Y	Floor	Height	Limit Leq1	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1	Conflict Leq1
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	487733.15	3646663.56	1.Fl	161.22	-	62.3	0	-62.3	-
2	487700.83	3646683.63	1.Fl	158.23	-	72.0	0	-72.0	-
3	487677.35	3646683.29	1.Fl	156.95	-	73.9	0	-73.9	-
4	487667.49	3646669.00	1.Fl	156.59	-	67.3	0	-67.3	-
5	487653.88	3646677.85	1.Fl	156.87	-	67.5	0	-67.5	-
6	487665.10	3646694.18	1.Fl	156.95	-	74.9	0	-74.9	-
7	487660.34	3646710.51	1.Fl	155.82	-	74.7	0	-74.7	-
8	487633.46	3646734.32	1.Fl	152.79	-	63.8	0	-63.8	-
9	487661.36	3646742.83	1.Fl	153.90	-	67.7	0	-67.7	-
10	487675.31	3646731.60	1.Fl	154.55	-	73.8	0	-73.8	-
11	487698.79	3646735.00	1.Fl	157.04	-	71.7	0	-71.7	-
12	487719.88	3646747.59	1.Fl	159.48	-	64.8	0	-64.8	-
13	487760.71	3646748.27	1.Fl	161.82	-	59.3	0	-59.3	-
14	487722.60	3646730.24	1.Fl	159.16	-	66.9	0	-66.9	-
15	487714.78	3646705.06	1.Fl	158.45	-	71.6	0	-71.6	-
16	487744.04	3646688.73	1.Fl	160.60	-	62.8	0	-62.8	-

ATTACHMENT 3

SoundPLAN Data–MM-TRA-2 SR-56 Auxiliary Lane Construction

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Cosntruction	Unit	114	-	-	-

No.	Coordinates X	Coordinates Y	Floor	Height	Limit Leq1	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1	Conflict Leq1	Conflict Leq2	Conflict Leq3	Conflict Lmax
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)			
1	487032.50	3646077.20	1.Fl	123.60	-	50.9	0	-50.9	-	-	-	-
2	486969.67	3646078.52	1.Fl	121.52	-	57.0	0	-57.0	-	-	-	-
3	486911.46	3646077.86	1.Fl	119.33	-	60.3	0	-60.3	-	-	-	-
4	486853.25	3646076.54	1.Fl	117.93	-	57.1	0	-57.1	-	-	-	-
5	486790.41	3646078.52	1.Fl	117.74	-	59.0	0	-59.0	-	-	-	-
6	486750.06	3646070.58	1.Fl	114.78	-	66.4	0	-66.4	-	-	-	-
7	486961.73	3646188.99	1.Fl	125.56	-	55.1	0	-55.1	-	-	-	-
8	486879.71	3646183.69	1.Fl	123.41	-	59.3	0	-59.3	-	-	-	-
9	486777.84	3646196.92	1.Fl	123.42	-	61.0	0	-61.0	-	-	-	-
10	486554.93	3646235.95	1.Fl	126.69	-	56.0	0	-56.0	-	-	-	-

ATTACHMENT 4

SoundPLAN Data–MM-TRA-3 On-ramp Improvements Construction

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Construction1	Unit	114	-	-	-

6524 Black Mountain Road
SoundPLAN Data - TRA-3 On-Ramp Improvements Construction

No.	Coordinates X	Y	Floor	Height	Limit Leq1	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1	Conflict Leq1
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	489125.96	3646796.54	1.Fl	194.53	-	62.3	0	-62.3	-
2	489133.33	3646778.12	1.Fl	194.16	-	66.6	0	-66.6	-
3	489118.59	3646750.49	1.Fl	193.38	-	66.9	0	-66.9	-
4	489106.01	3646730.23	1.Fl	193.47	-	66.9	0	-66.9	-
5	489092.19	3646709.97	1.Fl	194.13	-	66.7	0	-66.7	-
6	489076.23	3646688.48	1.Fl	194.74	-	67.0	0	-67.0	-
7	489055.97	3646673.44	1.Fl	195.00	-	66.1	0	-66.1	-
8	489037.24	3646657.17	1.Fl	195.66	-	66.2	0	-66.2	-
9	489017.60	3646640.28	1.Fl	195.96	-	66.5	0	-66.5	-
10	488998.26	3646626.16	1.Fl	196.57	-	66.6	0	-66.6	-
11	488966.21	3646605.52	1.Fl	197.41		67.1	0	-67.1	
12	488938.91	3646590.36	1.Fl	197.82		65.8	0	-65.8	
13	488904.17	3646573.81	1.Fl	198.43		65.2	0	-65.2	
14	488867.22	3646561.13	1.Fl	199.32		66.4	0	-66.4	
15	488833.58	3646549.27	1.Fl	200.23		66.0	0	-66.0	
16	488790.84	3646534.11	1.Fl	200.84		62.4	0	-62.4	

ATTACHMENT 5

SoundPLAN Data–Project Design Feature Black Mountain Road Restriping/Widening Construction

Source name	Reference	Level	Corrections		
		Leq1	Kwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)
Construction1	Unit	114	-	-	-

ATTACHMENT 6

FHWA RD-77-108–Roadway Segment Noise Level Calculations

Segment	Roadway	Segment	Existing	2050 Without Project	2050 With Project	Δ dB
1	Camino Del Sur	South of Carmel Valley Road	71.0	72.7	72.6	-0.1
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	71.7	73.4	73.2	-0.2
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.7	74.3	74.2	-0.1
4	Camino Del Sur	South of SR-56 Eastbound Ramps	67.3	71.6	71.7	0.1
5	Carmel Valley Road	West of Black Mountain Road	70.9	73.1	73.1	0.0
6	Carmel Valley Road	East of Black Mountain Road	71.1	73.2	73.2	0.0
7	Black Mountain Road	North of Maler Road	69.4	71.2	71.4	0.2
8	Black Mountain Road	South of Oviedo Street	70.1	71.1	71.0	-0.1
9	Black Mountain Road	South of Carmel Mountain Road	69.0	70.0	69.8	-0.2
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.9	69.8	69.7	-0.1
11	Black Mountain Road	South of Twin Trails Drive	73.8	74.3	74.3	0.0
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	73.4	74.0	73.9	-0.1
13	Black Mountain Road	North of Park Village Road - Adolphia Street	74.0	75.0	74.1	-0.9
14	Black Mountain Road	North of Canyonside Park Drive	73.4	74.6	73.9	-0.7
15	Black Mountain Road	Between Mercy Road and Babuta Road	74.3	75.5	74.8	-0.7
16	Black Mountain Road	South of Westview Parkway	73.1	74.4	73.7	-0.7
17	Westview Parkway	East of Black Mountain Road	66.4	68.0	67.1	-0.9
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	68.8	69.0	69.0	0.0
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	70.7	70.9	70.9	0.0
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	74.0	73.9	74.1	0.2
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	74.2	74.0	74.2	0.2
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	72.5	72.3	72.5	0.2
23	Poway Road	East of I-15 Northbound Ramps	76.2	76.9	76.9	0.0
24	Carmel Mountain Road	South of Sundance Avenue	58.3	67.2	67.3	0.1
25	Carmel Mountain Road	West of Sparren Avenue	65.7	66.8	67.0	0.2
26	Carmel Mountain Road	West of Black Mountain Road	66.5	67.5	67.6	0.1
27	Sundance Avenue	West of War Bonnet Street	56.1	57.4	57.5	0.1
28	Carmel Mountain Road	East of Freeport Road	67.9	68.9	68.9	0.0
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.7	69.7	69.7	0.0
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	71.3	72.0	72.0	0.0
31	Carmel Mountain Road	East of I-15 Northbound Ramps	72.5	73.2	73.2	0.0
32	Camino Del Sur	North of Park Village Road	58.1	67.6	67.4	-0.2
33	Park Village Road	East of Camino Del Sur	67.8	69.6	69.2	-0.4
34	Park Village Road	West of Black Mountain Road	71.0	71.0	71.0	0.0
35	Mercy Road	Between Chabola Road and Branicole Lane	70.1	71.3	71.0	-0.3
36	Mercy Road	North of Alemania Road	71.5	72.3	72.1	-0.2
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.9	77.7	77.6	-0.1

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : Existing

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Camino Del Sur	South of Carmel Valley Road	17,728	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	20,710	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
3	Camino Del Sur	North of SR-56 Westbound Ramps	25,921	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
4	Camino Del Sur	South of SR-56 Eastbound Ramps	9,818	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
5	Carmel Valley Road	West of Black Mountain Road	10,489	55	50	96.00	3.00	1.00	80.00	10.00	10.00	
6	Carmel Valley Road	East of Black Mountain Road	13,793	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
7	Black Mountain Road	North of Maler Road	12,303	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
8	Black Mountain Road	South of Oviedo Street	18,956	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
9	Black Mountain Road	South of Carmel Mountain Road	14,740	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	14,315	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
11	Black Mountain Road	South of Twin Trails Drive	33,492	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	30,567	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
13	Black Mountain Road	North of Park Village Road - Adolphia Street	35,443	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
14	Black Mountain Road	North of Canyonside Park Drive	30,380	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
15	Black Mountain Road	Between Mercy Road and Babuta Road	28,862	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
16	Black Mountain Road	South of Westview Parkway	22,214	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
17	Westview Parkway	East of Black Mountain Road	6,099	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,152	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	21,907	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	27,441	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	28,120	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	33,066	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
23	Poway Road	East of I-15 Northbound Ramps	45,045	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
24	Carmel Mountain Road	South of Sundance Avenue	1,241	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
25	Carmel Mountain Road	West of Sparren Avenue	6,811	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
26	Carmel Mountain Road	West of Black Mountain Road	8,316	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
27	Sundance Avenue	West of War Bonnet Street	1,884	25	50	96.00	3.00	1.00	80.00	10.00	10.00	
28	Carmel Mountain Road	East of Freeport Road	11,328	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	13,655	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	25,071	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
31	Carmel Mountain Road	East of I-15 Northbound Ramps	44,953	35	50	96.00	3.00	1.00	80.00	10.00	10.00	
32	Camino Del Sur	North of Park Village Road	1,185	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
33	Park Village Road	East of Camino Del Sur	8,430	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
34	Park Village Road	West of Black Mountain Road	17,546	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
35	Mercy Road	Between Chabola Road and Branicole Lane	14,279	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
36	Mercy Road	North of Alemania Road	19,851	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	52,815	50	50	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : Existing
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Camino Del Sur	South of Carmel Valley Road	69.6	62.8	62.5	71	20	63	199	629	1,991	6,295
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	70.2	63.4	63.2	72	23	74	234	740	2,339	7,396
3	Camino Del Sur	North of SR-56 Westbound Ramps	71.2	64.4	64.1	73	29	93	294	931	2,944	9,310
4	Camino Del Sur	South of SR-56 Eastbound Ramps	65.5	59.4	59.4	67	8	27	85	269	849	2,685
5	Carmel Valley Road	West of Black Mountain Road	69.8	61.8	61.0	71	19	62	195	615	1,945	6,151
6	Carmel Valley Road	East of Black Mountain Road	69.8	62.4	61.8	71	20	64	204	644	2,037	6,441
7	Black Mountain Road	North of Maler Road	68.0	61.2	60.9	69	14	44	138	435	1,377	4,355
8	Black Mountain Road	South of Oviedo Street	68.4	62.2	62.3	70	16	51	162	512	1,618	5,116
9	Black Mountain Road	South of Carmel Mountain Road	67.3	61.2	61.2	69	13	40	126	397	1,256	3,972
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	67.2	61.0	61.1	69	12	39	123	388	1,227	3,881
11	Black Mountain Road	South of Twin Trails Drive	72.3	65.5	65.2	74	38	120	379	1,199	3,793	11,994
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	71.9	65.1	64.8	73	35	109	346	1,094	3,459	10,939
13	Black Mountain Road	North of Park Village Road - Adolphia Street	72.6	65.8	65.5	74	40	126	397	1,256	3,972	12,559
14	Black Mountain Road	North of Canyonside Park Drive	71.9	65.1	64.8	73	35	109	346	1,094	3,459	10,939
15	Black Mountain Road	Between Mercy Road and Babuta Road	73.0	65.6	65.0	74	43	135	426	1,346	4,256	13,458
16	Black Mountain Road	South of Westview Parkway	71.9	64.5	63.9	73	32	102	323	1,021	3,228	10,209
17	Westview Parkway	East of Black Mountain Road	64.9	58.1	57.8	66	7	22	69	218	690	2,183
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	67.1	61.0	61.0	69	12	38	120	379	1,199	3,793
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	69.0	62.9	62.9	71	19	59	186	587	1,858	5,874
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	72.8	65.4	64.8	74	40	126	397	1,256	3,972	12,559
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	72.9	65.5	64.9	74	42	132	416	1,315	4,159	13,151
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	70.8	64.7	64.7	73	28	89	281	889	2,812	8,891
23	Poway Road	East of I-15 Northbound Ramps	74.9	67.5	67.0	76	66	208	659	2,084	6,591	20,843
24	Carmel Mountain Road	South of Sundance Avenue	56.5	50.4	50.5	58	1	3	11	34	107	338
25	Carmel Mountain Road	West of Sparren Avenue	63.9	57.8	57.9	66	6	19	59	186	587	1,858
26	Carmel Mountain Road	West of Black Mountain Road	64.8	58.7	58.7	67	7	22	71	223	706	2,233
27	Sundance Avenue	West of War Bonnet Street	52.5	49.0	51.9	56	1	2	6	20	64	204
28	Carmel Mountain Road	East of Freeport Road	66.1	60.0	60.1	68	10	31	97	308	975	3,083
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	67.0	60.8	60.9	69	12	37	117	371	1,172	3,707
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	69.6	63.5	63.5	71	21	67	213	674	2,133	6,745
31	Carmel Mountain Road	East of I-15 Northbound Ramps	70.5	65.1	65.5	73	28	89	281	889	2,812	8,891
32	Camino Del Sur	North of Park Village Road	56.3	50.2	50.3	58	1	3	10	32	102	323
33	Park Village Road	East of Camino Del Sur	66.3	59.5	59.3	68	10	30	95	301	953	3,013
34	Park Village Road	West of Black Mountain Road	69.5	62.7	62.4	71	20	63	199	629	1,991	6,295
35	Mercy Road	Between Chabola Road and Branicole Lane	68.6	61.8	61.5	70	16	51	162	512	1,618	5,116
36	Mercy Road	North of Alemania Road	70.0	63.2	63.0	72	22	71	223	706	2,233	7,063
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	75.6	68.2	67.6	77	77	245	774	2,449	7,744	24,489

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 Without Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Camino Del Sur	South of Carmel Valley Road	25,903	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	30,260	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
3	Camino Del Sur	North of SR-56 Westbound Ramps	37,874	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
4	Camino Del Sur	South of SR-56 Eastbound Ramps	26,700	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
5	Carmel Valley Road	West of Black Mountain Road	17,223	55	50	96.00	3.00	1.00	80.00	10.00	10.00	
6	Carmel Valley Road	East of Black Mountain Road	22,648	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
7	Black Mountain Road	North of Maler Road	18,262	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
8	Black Mountain Road	South of Oviedo Street	23,562	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
9	Black Mountain Road	South of Carmel Mountain Road	18,353	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	17,824	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
11	Black Mountain Road	South of Twin Trails Drive	38,028	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	34,707	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
13	Black Mountain Road	North of Park Village Road - Adolphia Street	43,949	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
14	Black Mountain Road	North of Canyonside Park Drive	40,431	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
15	Black Mountain Road	Between Mercy Road and Babuta Road	38,411	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
16	Black Mountain Road	South of Westview Parkway	29,564	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
17	Westview Parkway	East of Black Mountain Road	8,854	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,661	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	22,696	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	26,218	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	26,867	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	31,592	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
23	Poway Road	East of I-15 Northbound Ramps	53,230	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
24	Carmel Mountain Road	South of Sundance Avenue	9,784	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
25	Carmel Mountain Road	West of Sparren Avenue	8,895	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
26	Carmel Mountain Road	West of Black Mountain Road	10,400	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
27	Sundance Avenue	West of War Bonnet Street	2,500	25	50	96.00	3.00	1.00	80.00	10.00	10.00	
28	Carmel Mountain Road	East of Freeport Road	14,425	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	17,389	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	29,444	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
31	Carmel Mountain Road	East of I-15 Northbound Ramps	52,794	35	50	96.00	3.00	1.00	80.00	10.00	10.00	
32	Camino Del Sur	North of Park Village Road	10,700	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
33	Park Village Road	East of Camino Del Sur	12,600	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
34	Park Village Road	West of Black Mountain Road	17,757	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
35	Mercy Road	Between Chabola Road and Branicole Lane	18,662	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
36	Mercy Road	North of Alemania Road	23,662	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	63,408	50	50	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 Without Project
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Camino Del Sur	South of Carmel Valley Road	71.2	64.4	64.1	73	29	93	294	931	2,944	9,310
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	71.9	65.1	64.8	73	35	109	346	1,094	3,459	10,939
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.9	66.1	65.8	74	43	135	426	1,346	4,256	13,458
4	Camino Del Sur	South of SR-56 Eastbound Ramps	69.9	63.7	63.8	72	23	72	229	723	2,285	7,227
5	Carmel Valley Road	West of Black Mountain Road	71.9	64.0	63.2	73	32	102	323	1,021	3,228	10,209
6	Carmel Valley Road	East of Black Mountain Road	71.9	64.5	64.0	73	33	104	330	1,045	3,303	10,446
7	Black Mountain Road	North of Maler Road	69.7	62.9	62.6	71	21	66	208	659	2,084	6,591
8	Black Mountain Road	South of Oviedo Street	69.3	63.2	63.2	71	20	64	204	644	2,037	6,441
9	Black Mountain Road	South of Carmel Mountain Road	68.2	62.1	62.2	70	16	50	158	500	1,581	5,000
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.1	62.0	62.0	70	15	48	151	477	1,510	4,775
11	Black Mountain Road	South of Twin Trails Drive	72.9	66.1	65.8	74	43	135	426	1,346	4,256	13,458
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	72.5	65.7	65.4	74	40	126	397	1,256	3,972	12,559
13	Black Mountain Road	North of Park Village Road - Adolphia Street	73.5	66.7	66.4	75	50	158	500	1,581	5,000	15,811
14	Black Mountain Road	North of Canyonside Park Drive	73.1	66.3	66.1	75	46	144	456	1,442	4,560	14,420
15	Black Mountain Road	Between Mercy Road and Babuta Road	74.2	66.8	66.3	76	56	177	561	1,774	5,610	17,741
16	Black Mountain Road	South of Westview Parkway	73.1	65.7	65.1	74	44	138	435	1,377	4,355	13,771
17	Westview Parkway	East of Black Mountain Road	66.5	59.7	59.5	68	10	32	100	315	998	3,155
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	67.3	61.1	61.2	69	13	40	126	397	1,256	3,972
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	69.2	63.0	63.1	71	19	62	195	615	1,945	6,151
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	72.6	65.2	64.6	74	39	123	388	1,227	3,881	12,274
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	72.7	65.3	64.7	74	40	126	397	1,256	3,972	12,559
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	70.6	64.5	64.5	72	27	85	269	849	2,685	8,491
23	Poway Road	East of I-15 Northbound Ramps	75.7	68.2	67.7	77	77	245	774	2,449	7,744	24,489
24	Carmel Mountain Road	South of Sundance Avenue	65.5	59.4	59.4	67	8	26	83	262	830	2,624
25	Carmel Mountain Road	West of Sparren Avenue	65.1	59.0	59.0	67	8	24	76	239	757	2,393
26	Carmel Mountain Road	West of Black Mountain Road	65.8	59.6	59.7	68	9	28	89	281	889	2,812
27	Sundance Avenue	West of War Bonnet Street	53.7	50.3	53.1	57	1	3	9	27	87	275
28	Carmel Mountain Road	East of Freeport Road	67.2	61.1	61.1	69	12	39	123	388	1,227	3,881
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.0	61.9	61.9	70	15	47	148	467	1,476	4,666
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	70.3	64.2	64.2	72	25	79	251	792	2,506	7,924
31	Carmel Mountain Road	East of I-15 Northbound Ramps	71.2	65.8	66.2	73	33	104	330	1,045	3,303	10,446
32	Camino Del Sur	North of Park Village Road	65.9	59.8	59.8	68	9	29	91	288	910	2,877
33	Park Village Road	East of Camino Del Sur	68.1	61.3	61.0	70	14	46	144	456	1,442	4,560
34	Park Village Road	West of Black Mountain Road	69.6	62.8	62.5	71	20	63	199	629	1,991	6,295
35	Mercy Road	Between Chabola Road and Branicole Lane	69.8	63.0	62.7	71	21	67	213	674	2,133	6,745
36	Mercy Road	North of Alemania Road	70.8	64.0	63.7	72	27	85	269	849	2,685	8,491
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.4	69.0	68.4	78	93	294	931	2,944	9,310	29,442

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 With Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Camino Del Sur	South of Carmel Valley Road	25,250	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	29,497	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
3	Camino Del Sur	North of SR-56 Westbound Ramps	36,919	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
4	Camino Del Sur	South of SR-56 Eastbound Ramps	27,400	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
5	Carmel Valley Road	West of Black Mountain Road	17,349	55	50	96.00	3.00	1.00	80.00	10.00	10.00	
6	Carmel Valley Road	East of Black Mountain Road	22,814	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
7	Black Mountain Road	North of Maler Road	19,204	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
8	Black Mountain Road	South of Oviedo Street	23,472	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
9	Black Mountain Road	South of Carmel Mountain Road	17,709	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	17,198	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
11	Black Mountain Road	South of Twin Trails Drive	37,540	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	34,261	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
13	Black Mountain Road	North of Park Village Road - Adolphia Street	35,500	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
14	Black Mountain Road	North of Canyonside Park Drive	34,677	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
15	Black Mountain Road	Between Mercy Road and Babuta Road	32,944	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
16	Black Mountain Road	South of Westview Parkway	25,356	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
17	Westview Parkway	East of Black Mountain Road	7,197	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,819	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	22,940	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	27,500	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	28,200	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	33,100	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
23	Poway Road	East of I-15 Northbound Ramps	53,230	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
24	Carmel Mountain Road	South of Sundance Avenue	9,980	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
25	Carmel Mountain Road	West of Sparren Avenue	9,312	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
26	Carmel Mountain Road	West of Black Mountain Road	10,600	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
27	Sundance Avenue	West of War Bonnet Street	2,600	25	50	96.00	3.00	1.00	80.00	10.00	10.00	
28	Carmel Mountain Road	East of Freeport Road	14,396	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	17,354	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	29,337	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
31	Carmel Mountain Road	East of I-15 Northbound Ramps	52,601	35	50	96.00	3.00	1.00	80.00	10.00	10.00	
32	Camino Del Sur	North of Park Village Road	10,200	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
33	Park Village Road	East of Camino Del Sur	11,700	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
34	Park Village Road	West of Black Mountain Road	17,600	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
35	Mercy Road	Between Chabola Road and Branicole Lane	17,420	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
36	Mercy Road	North of Alemania Road	22,420	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	62,005	50	50	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 With Project
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Camino Del Sur	South of Carmel Valley Road	71.1	64.3	64.0	73	29	91	288	910	2,877	9,099
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	71.8	65.0	64.7	73	33	104	330	1,045	3,303	10,446
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.7	65.9	65.7	74	42	132	416	1,315	4,159	13,151
4	Camino Del Sur	South of SR-56 Eastbound Ramps	70.0	63.8	63.9	72	23	74	234	740	2,339	7,396
5	Carmel Valley Road	West of Black Mountain Road	72.0	64.0	63.2	73	32	102	323	1,021	3,228	10,209
6	Carmel Valley Road	East of Black Mountain Road	72.0	64.6	64.0	73	33	104	330	1,045	3,303	10,446
7	Black Mountain Road	North of Maler Road	69.9	63.1	62.8	71	22	69	218	690	2,183	6,902
8	Black Mountain Road	South of Oviedo Street	69.3	63.2	63.2	71	20	63	199	629	1,991	6,295
9	Black Mountain Road	South of Carmel Mountain Road	68.1	62.0	62.0	70	15	48	151	477	1,510	4,775
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.0	61.8	61.9	70	15	47	148	467	1,476	4,666
11	Black Mountain Road	South of Twin Trails Drive	72.8	66.0	65.7	74	43	135	426	1,346	4,256	13,458
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	72.4	65.6	65.3	74	39	123	388	1,227	3,881	12,274
13	Black Mountain Road	North of Park Village Road - Adolphia Street	72.6	65.8	65.5	74	41	129	406	1,285	4,064	12,852
14	Black Mountain Road	North of Canyonside Park Drive	72.5	65.7	65.4	74	39	123	388	1,227	3,881	12,274
15	Black Mountain Road	Between Mercy Road and Babuta Road	73.6	66.2	65.6	75	48	151	477	1,510	4,775	15,100
16	Black Mountain Road	South of Westview Parkway	72.4	65.0	64.5	74	37	117	371	1,172	3,707	11,721
17	Westview Parkway	East of Black Mountain Road	65.6	58.8	58.6	67	8	26	81	256	811	2,564
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	67.3	61.2	61.2	69	13	40	126	397	1,256	3,972
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	69.2	63.1	63.1	71	19	62	195	615	1,945	6,151
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	72.8	65.4	64.8	74	41	129	406	1,285	4,064	12,852
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	72.9	65.5	64.9	74	42	132	416	1,315	4,159	13,151
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	70.8	64.7	64.7	73	28	89	281	889	2,812	8,891
23	Poway Road	East of I-15 Northbound Ramps	75.7	68.2	67.7	77	77	245	774	2,449	7,744	24,489
24	Carmel Mountain Road	South of Sundance Avenue	65.6	59.5	59.5	67	8	27	85	269	849	2,685
25	Carmel Mountain Road	West of Sparren Avenue	65.3	59.2	59.2	67	8	25	79	251	792	2,506
26	Carmel Mountain Road	West of Black Mountain Road	65.9	59.7	59.8	68	9	29	91	288	910	2,877
27	Sundance Avenue	West of War Bonnet Street	53.9	50.4	53.3	58	1	3	9	28	89	281
28	Carmel Mountain Road	East of Freeport Road	67.2	61.1	61.1	69	12	39	123	388	1,227	3,881
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.0	61.9	61.9	70	15	47	148	467	1,476	4,666
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	70.3	64.1	64.2	72	25	79	251	792	2,506	7,924
31	Carmel Mountain Road	East of I-15 Northbound Ramps	71.1	65.8	66.2	73	33	104	330	1,045	3,303	10,446
32	Camino Del Sur	North of Park Village Road	65.7	59.6	59.6	67	9	27	87	275	869	2,748
33	Park Village Road	East of Camino Del Sur	67.8	61.0	60.7	69	13	42	132	416	1,315	4,159
34	Park Village Road	West of Black Mountain Road	69.5	62.7	62.5	71	20	63	199	629	1,991	6,295
35	Mercy Road	Between Chabola Road and Branicole Lane	69.5	62.7	62.4	71	20	63	199	629	1,991	6,295
36	Mercy Road	North of Alemania Road	70.6	63.8	63.5	72	26	81	256	811	2,564	8,109
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.3	68.9	68.3	78	91	288	910	2,877	9,099	28,772

ATTACHMENT 7

SoundPLAN Data–MM-TRA-1 Intersection–Stop Sign and Signal Traffic Noise Levels

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Twin Trails SB		Traffic direction:	In entry direction							
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+153	15648	Total	-	652	-	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Automobiles	-	618	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Medium trucks	-	13	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Heavy trucks	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Buses	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Motorcycles	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+180	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+396	-					-	-	-	-	-
Twin Trails NB		Traffic direction:	In entry direction							
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+214	15648	Total	-	652	-	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Automobiles	-	618	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Medium trucks	-	13	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Heavy trucks	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Buses	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Motorcycles	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+238	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+387	-					-	-	-	-	-
Sundance EB		Traffic direction:	In entry direction							
0+000	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+123	4920	Total	-	205	-	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Automobiles	-	195	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Medium trucks	-	4	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Heavy trucks	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Buses	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Motorcycles	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+148	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+253	-					-	-	-	-	-
Sundance WB		Traffic direction:	In entry direction							
0+000	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+103	2520	Total	-	105	-	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Automobiles	-	100	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Medium trucks	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Heavy trucks	-	1	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Buses	-	1	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Motorcycles	-	1	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+129	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+250	-					-	-	-	-	-

6524 Black Mountain Road
SoundPLAN Data - TRA-1 Intersection - Stop Sign

No.	Coordinates X	Y	Floor	Height	Limit L(Aeq1h)	Level w/o NP L(Aeq1h)	Level w. NP L(Aeq1h)	Difference L(Aeq1h)	Conflict L(Aeq1h)
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	487733.15	3646663.56	1.Fl	161.22	-	63.7	0	-63.7	-
2	487700.83	3646683.63	1.Fl	158.23	-	67.7	0	-67.7	-
3	487677.35	3646683.29	1.Fl	156.95	-	66.7	0	-66.7	-
4	487667.49	3646669.00	1.Fl	156.59	-	62.5	0	-62.5	-
5	487653.88	3646677.85	1.Fl	156.87	-	62.5	0	-62.5	-
6	487665.10	3646694.18	1.Fl	156.95	-	67.2	0	-67.2	-
7	487660.34	3646710.51	1.Fl	155.82	-	67.8	0	-67.8	-
8	487633.46	3646734.32	1.Fl	152.79	-	63.5	0	-63.5	-
9	487661.36	3646742.83	1.Fl	153.90	-	64.9	0	-64.9	-
10	487675.31	3646731.60	1.Fl	154.55	-	67.6	0	-67.6	-
11	487698.79	3646735.00	1.Fl	157.04	-	65.1	0	-65.1	-
12	487719.88	3646747.59	1.Fl	159.48	-	61.0	0	-61.0	-
13	487760.71	3646748.27	1.Fl	161.82	-	56.0	0	-56.0	-
14	487722.60	3646730.24	1.Fl	159.16	-	62.1	0	-62.1	-
15	487714.78	3646705.06	1.Fl	158.45	-	66.8	0	-66.8	-
16	487744.04	3646688.73	1.Fl	160.60	-	63.8	0	-63.8	-

Source name		Lane		Level w/o NP L(Aeq1h) dB(A)	Level w. NP L(Aeq1h) dB(A)
1	1.Fl	63.7	0.0		
Sundance EB				47.6	0
Sundance WB				44.8	0
Twin Trails NB				56.9	0
Twin Trails SB				62.5	0
2	1.Fl	67.7	0.0		
Sundance EB				56.1	0
Sundance WB				52.1	0
Twin Trails NB				61.0	0
Twin Trails SB				66.1	0
3	1.Fl	66.7	0.0		
Sundance EB				59.9	0
Sundance WB				55.9	0
Twin Trails NB				59.4	0
Twin Trails SB				63.8	0
4	1.Fl	62.5	0.0		
Sundance EB				57.5	0
Sundance WB				54.3	0
Twin Trails NB				55.0	0
Twin Trails SB				57.9	0
5	1.Fl	62.5	0.0		
Sundance EB				55.5	0
Sundance WB				56.9	0
Twin Trails NB				55.3	0
Twin Trails SB				57.8	0
6	1.Fl	67.2	0.0		
Sundance EB				58.6	0
Sundance WB				58.7	0
Twin Trails NB				59.9	0
Twin Trails SB				64.4	0
7	1.Fl	67.8	0.0		
Sundance EB				56.0	0
Sundance WB				55.3	0
Twin Trails NB				61.3	0
Twin Trails SB				66.0	0
8	1.Fl	63.5	0.0		
Sundance EB				47.8	0
Sundance WB				46.2	0
Twin Trails NB				57.7	0
Twin Trails SB				61.9	0
9	1.Fl	64.9	0.0		
Sundance EB				51.1	0
Sundance WB				50.0	0
Twin Trails NB				62.8	0
Twin Trails SB				59.9	0
10	1.Fl	67.6	0.0		
Sundance EB				55.8	0
Sundance WB				55.6	0
Twin Trails NB				65.0	0
Twin Trails SB				62.7	0
11	1.Fl	65.1	0.0		
Sundance EB				56.8	0
Sundance WB				57.0	0
Twin Trails NB				61.2	0
Twin Trails SB				59.7	0
12	1.Fl	61.0	0.0		
Sundance EB				53.6	0
Sundance WB				55.2	0
Twin Trails NB				55.4	0
Twin Trails SB				55.3	0
13	1.Fl	56.0	0.0		
Sundance EB				52.3	0
Sundance WB				48.1	0
Twin Trails NB				49.3	0
Twin Trails SB				48.8	0
14	1.Fl	62.1	0.0		
Sundance EB				57.0	0
Sundance WB				52.3	0
Twin Trails NB				57.2	0
Twin Trails SB				56.5	0
15	1.Fl	66.8	0.0		
Sundance EB				56.3	0
Sundance WB				52.3	0
Twin Trails NB				64.3	0
Twin Trails SB				61.9	0
16	1.Fl	63.8	0.0		
Sundance EB				48.3	0
Sundance WB				45.0	0
Twin Trails NB				62.1	0
Twin Trails SB				58.4	0

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Twin Trails SB	Traffic direction:	In entry direction								
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+153	15648	Total	-	652	-	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Automobiles	-	618	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Medium trucks	-	13	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Heavy trucks	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Buses	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Motorcycles	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Auxiliary Vehicle	-	-	-	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+180	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+396	-					-	-	-	-	-
Twin Trails NB	Traffic direction:	In entry direction								
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+214	15648	Total	-	652	-	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Automobiles	-	618	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Medium trucks	-	13	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Heavy trucks	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Buses	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Motorcycles	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Auxiliary Vehicle	-	-	-	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+238	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+387	-					-	-	-	-	-
Sundance EB	Traffic direction:	In entry direction								
0+000	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+123	4920	Total	-	205	-	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Automobiles	-	195	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Medium trucks	-	4	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Heavy trucks	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Buses	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Motorcycles	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Auxiliary Vehicle	-	-	-	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+148	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+253	-					-	-	-	-	-
Sundance WB	Traffic direction:	In entry direction								
0+000	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+103	2520	Total	-	105	-	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Automobiles	-	100	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Medium trucks	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Heavy trucks	-	1	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Buses	-	1	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Motorcycles	-	1	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Auxiliary Vehicle	-	-	-	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+129	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+250	-					-	-	-	-	-

No.	Coordinates X	Coordinates Y	Floor	Height	Limit L(Aeq1h)	Level w/o NP L(Aeq1h)	Level w. NP L(Aeq1h)	Difference L(Aeq1h)	Conflict L(Aeq1h)
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	487733.15	3646663.56	1.Fl	161.22	-	63.0	0.0	-63.0	-
2	487700.83	3646683.63	1.Fl	158.23	-	64.9	0.0	-64.9	-
3	487677.35	3646683.29	1.Fl	156.95	-	62.1	0.0	-62.1	-
4	487667.49	3646669.00	1.Fl	156.59	-	59.8	0.0	-59.8	-
5	487653.88	3646677.85	1.Fl	156.87	-	59.9	0.0	-59.9	-
6	487665.10	3646694.18	1.Fl	156.95	-	62.3	0.0	-62.3	-
7	487660.34	3646710.51	1.Fl	155.82	-	63.2	0.0	-63.2	-
8	487633.46	3646734.32	1.Fl	152.79	-	62.6	0.0	-62.6	-
9	487661.36	3646742.83	1.Fl	153.90	-	63.3	0.0	-63.3	-
10	487675.31	3646731.60	1.Fl	154.55	-	63.9	0.0	-63.9	-
11	487698.79	3646735.00	1.Fl	157.04	-	60.5	0.0	-60.5	-
12	487719.88	3646747.59	1.Fl	159.48	-	58.0	0.0	-58.0	-
13	487760.71	3646748.27	1.Fl	161.82	-	54.1	0.0	-54.1	-
14	487722.60	3646730.24	1.Fl	159.16	-	58.6	0.0	-58.6	-
15	487714.78	3646705.06	1.Fl	158.45	-	63.5	0.0	-63.5	-
16	487744.04	3646688.73	1.Fl	160.60	-	63.0	0.0	-63.0	-

Source name		Lane		Level w/o NP L(Aeq1h) dB(A)	Level w. NP L(Aeq1h) dB(A)
1	1.Fl	63.0	0.0		
Sundance EB				43.5	0
Sundance WB				41.3	0
Twin Trails NB				55.7	0
Twin Trails SB				62.0	0
2	1.Fl	64.9	0.0		
Sundance EB				51.5	0
Sundance WB				48.3	0
Twin Trails NB				56.8	0
Twin Trails SB				63.8	0
3	1.Fl	62.1	0.0		
Sundance EB				57.6	0
Sundance WB				54.0	0
Twin Trails NB				53.7	0
Twin Trails SB				57.5	0
4	1.Fl	59.8	0.0		
Sundance EB				56.6	0
Sundance WB				53.7	0
Twin Trails NB				49.8	0
Twin Trails SB				52.3	0
5	1.Fl	59.9	0.0		
Sundance EB				54.2	0
Sundance WB				56.5	0
Twin Trails NB				50.1	0
Twin Trails SB				52.3	0
6	1.Fl	62.3	0.0		
Sundance EB				55.3	0
Sundance WB				57.2	0
Twin Trails NB				54.3	0
Twin Trails SB				57.7	0
7	1.Fl	63.2	0.0		
Sundance EB				51.5	0
Sundance WB				51.3	0
Twin Trails NB				56.8	0
Twin Trails SB				61.3	0
8	1.Fl	62.6	0.0		
Sundance EB				43.3	0
Sundance WB				42.1	0
Twin Trails NB				56.4	0
Twin Trails SB				61.2	0
9	1.Fl	63.3	0.0		
Sundance EB				46.6	0
Sundance WB				45.7	0
Twin Trails NB				61.9	0
Twin Trails SB				57.2	0
10	1.Fl	63.9	0.0		
Sundance EB				51.1	0
Sundance WB				50.9	0
Twin Trails NB				62.1	0
Twin Trails SB				57.7	0
11	1.Fl	60.5	0.0		
Sundance EB				53.3	0
Sundance WB				54.9	0
Twin Trails NB				55.3	0
Twin Trails SB				53.9	0
12	1.Fl	58.0	0.0		
Sundance EB				52.1	0
Sundance WB				54.6	0
Twin Trails NB				49.6	0
Twin Trails SB				49.6	0
13	1.Fl	54.1	0.0		
Sundance EB				51.8	0
Sundance WB				47.5	0
Twin Trails NB				43.7	0
Twin Trails SB				44.4	0
14	1.Fl	58.6	0.0		
Sundance EB				55.9	0
Sundance WB				50.6	0
Twin Trails NB				50.9	0
Twin Trails SB				50.1	0
15	1.Fl	63.5	0.0		
Sundance EB				51.6	0
Sundance WB				47.9	0
Twin Trails NB				61.7	0
Twin Trails SB				57.6	0
16	1.Fl	63.0	0.0		
Sundance EB				43.6	0
Sundance WB				41.1	0
Twin Trails NB				61.6	0
Twin Trails SB				57.1	0

ATTACHMENT 8

FHWA RD-77-108–MM-TRA-2 Traffic Noise Levels

	AM Peak Hour			PM Peak Hour		
	Without Project	With Project	Δ	Without Project	With Project	Δ
SR-56 WB	75.3	75.3	0.0	71.0	71.0	0.0
SR-56 EB	75.4	75.8	0.4	79.5	79.9	0.4
SR-56	78.4	78.6	0.2	80.1	80.4	0.4

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road - SR-56 Aux Lane
Project Number : 6524
Modeled Condition : Horizon with and without Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	SR-56 WB - Horizon without Project AM Peak Hour		7,888	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
2	SR-56 WB - Horizon without Project PM Peak Hour		2,902	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
3	SR-56 EB - Horizon without Project AM Peak Hour		3,024	65	78	96.00	3.00	1.00	80.00	10.00	10.00	
4	SR-56 EB - Horizon without Project PM Peak Hour		7,744	65	78	96.00	3.00	1.00	80.00	10.00	10.00	
1	SR-56 WB - Horizon with Project AM Peak Hour		7,925	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
2	SR-56 WB - Horizon with Project PM Peak Hour		2,916	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
3	SR-56 EB - Horizon with Project AM Peak Hour		3,038	65	72	96.00	3.00	1.00	80.00	10.00	10.00	
4	SR-56 EB - Horizon with Project PM Peak Hour		7,780	65	72	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road - SR-56 Aux Lane
Project Number : 6524
Modeled Condition : Horizon with and without Project
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	SR-56 WB - Horizon without Project AM Peak Hour		74.4	65.5	64.2	75.3	223	705	2,229	7,048	22,288	70,480
2	SR-56 WB - Horizon without Project PM Peak Hour		70.1	61.2	59.9	71.0	83	262	828	2,619	8,281	26,186
3	SR-56 EB - Horizon without Project AM Peak Hour		74.5	65.6	64.3	75.4	86	270	855	2,705	8,553	27,045
4	SR-56 EB - Horizon without Project PM Peak Hour		78.6	69.7	68.4	79.5	220	695	2,198	6,952	21,983	69,518
1	SR-56 WB - Horizon with Project AM Peak Hour		74.5	65.6	64.3	75.3	223	705	2,229	7,048	22,288	70,480
2	SR-56 WB - Horizon with Project PM Peak Hour		70.1	61.2	59.9	71.0	83	262	828	2,619	8,281	26,186
3	SR-56 EB - Horizon with Project AM Peak Hour		74.9	66.0	64.7	75.8	87	274	866	2,737	8,656	27,374
4	SR-56 EB - Horizon with Project PM Peak Hour		79.0	70.1	68.8	79.9	223	704	2,225	7,036	22,250	70,361

ATTACHMENT 9

FHWA RD-77-108–MM-TRA-3 Traffic Noise Levels

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road - Rancho Penaquitos/SR-56 WB Ramp
Project Number : 6524
Modeled Condition : Horizon with and without Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Rancho Penaquitos/SR-56 WB Ramp - Horizon without Project		811	15	136	96.00	3.00	1.00	80.00	10.00	10.00	
2	Rancho Penaquitos/SR-56 WB Ramp - Horizon with Project		835	15	130	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road - Rancho Penaquitos/SR-56 WB Ramp
Project Number : 6524
Modeled Condition : Horizon with and without Project
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Rancho Penaquitos/SR-56 WB Ramp - Horizon without Project		48.1	47.6	51.9	54.4	1	4	12	37	118	375
2	Rancho Penaquitos/SR-56 WB Ramp - Horizon with Project		48.4	47.9	52.2	54.7	1	4	12	38	121	384

RECON

Biological Technical Report for the Black Mountain Road Community Plan Amendment Project San Diego, California

Prepared for
CalAtlantic Homes
16465 Via Esprillo, Suite 150
San Diego, CA 92127

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333

RECON Number 6524
March 26, 2019



Gerry Scheid, Senior Biologist

TABLE OF CONTENTS

Acronyms iii

1.0 Summary 1

2.0 Introduction 1

3.0 Survey Methods 2

3.1 Biological Resources Survey 2

4.0 Existing Conditions 3

4.1 Botany 3

4.2 Zoology 11

4.3 Multi-Habitat Planning Area 12

5.0 Sensitive Biological Resources 12

5.1 Sensitivity Criteria 12

5.2 Sensitive Vegetation Communities 13

5.3 Sensitive Plants 13

5.4 Sensitive Wildlife Species 14

5.5 Wetlands 14

6.0 Project Impacts 16

6.1 Direct Impacts 16

6.2 Indirect Impacts 21

7.0 Mitigation 21

7.1 Mitigation for Impacts to Sensitive Upland Vegetation Communities 22

7.2 Mitigation for Impacts to Wetlands 23

8.0 References Cited 25

TABLES

1: Summary of Vegetation and Land Cover Types by Survey Area (acres) 10

2: Summary of Impacts to Vegetation and Land Cover Types by Survey Area (acres) 16

3: Summary of Potential Impacts to Wetlands by Survey Area (acres) 21

4: Mitigation Ratios for Impacts on Upland Vegetation Communities and Land Cover Types 23

5: Wetland Mitigation Ratios Including Biologically Superior Design 24

6: Wetland Mitigation Ratios for a Biologically Superior Project Outside of the Coastal Zone 24

TABLE OF CONTENTS (cont.)

FIGURES

1: Regional Location 4
2: Project Location on USGS Map 5
3: Location of Project Design Feature and Traffic Mitigation Survey Areas on Aerial Photograph 6
4a: Vegetation Communities and Land Cover Types within the Project Design Feature and MM-TRA-1 Survey Area 7
4b: Vegetation Communities and Land Cover Types within the MM-TRA-2 Survey Area 8
4c: Vegetation Communities and Land Cover Types within the MM-TRA-3 Survey Area 9
5: Location of Jurisdictional Waters within the MM-TRA-2 Survey Area 15
6a: Vegetation Community and Land Cover Type Impacts at Project Design Feature and MM-TRA-1 17
6b: Vegetation Community and Land Cover Type Impacts at MM-TRA-2 18
6c: Vegetation Community and Land Cover Type Impacts at MM-TRA-3 19

ATTACHMENTS

1: Plant Species Observed
2: Wildlife Species Observed
3: Sensitive Plant Species Observed or with the Potential for Occurrence
4: Sensitive Wildlife Species Occurring or with the Potential to Occur
5: Jurisdictional Waters Delineation for the Black Mountain Road Project

Acronyms

ACOE	U.S. Army Corps of Engineers
ADD	Assistant Deputy Director
BCME	Biological Construction Mitigation/Monitoring Exhibit
CDFW	California Department of Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CPA	Community Plan Amendment
CSVR	Consultant Site Visit Record
DSD	Development Services Department
ESA	Endangered Species Act
ESL	Environmentally Sensitive Lands
GPA	General Plan Amendment
MHPA	Multi-Habitat Planning Area
MMC	Mitigation Monitoring Coordination
MSCP	Multiple Species Conservation Program
PFFPs	Public Facilities Financing Plans
Project	Black Mountain Road Community Plan Amendment Project
RE	Resident Engineer
RWQCB	Regional Water Quality Control Board
SR-56	State Route 56
TIS	Transportation Impact Study
TPP	Transportation Phasing Plans

1.0 Summary

Only one of the four proposed roadway improvements covered in this biological technical report would result in significant impacts to sensitive biological resources. Implementation of MM-TRA-2 would have the potential to impact a total of 1.26 acres of sensitive upland habitat coastal sage scrub and 0.16 acre of wetland comprised of 0.05 acre of freshwater marsh and 0.11 acre of southern willow scrub. Mitigation would be required for each of these impacts to sensitive biological resources and would be accomplished by either the acquisition of similar habitat or the restoration of similar habitat at the specified mitigation ratio.

2.0 Introduction

The Black Mountain Road Community Plan Amendment (CPA) Project (project) proposes to reclassify Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community. The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the community plan adjacent to the Los Peñasquitos Canyon Preserve. Black Mountain Road currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over State Route 56 (SR-56) is wider and operates as a 5-lane Primary Arterial. The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Transportation Element of the Rancho Peñasquitos Community Plan to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City Planning Commission initiated the Community Plan Amendment on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

[1]The City of San Diego General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

The following three roadway improvements identified in the Transportation Impact Study (TIS) would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

- MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.
- MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 from Carmel Mountain Road to approximately 2,182 feet to the east.
- MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

The project design feature and three traffic mitigation measures were analyzed as part of this biological technical report.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan (TPP) to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the TPP for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans (PFFPs) to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the PFFPs are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

3.0 Survey Methods

3.1 Biological Resources Survey

A RECON biologist conducted a general biological survey for the four traffic mitigation areas on November 3, 2017. Vegetation communities were mapped on a 1-inch-equals-200-feet aerial photograph flown in June of 2017. Vegetation community classifications follow Oberbauer et al. (2008), which are based on Holland's 1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. The corresponding vegetation classification used by the City of San Diego is also presented for reference. All plant species observed on-site were also noted, and plants that could not be identified in the field were identified later in the laboratory using taxonomic keys.

Limitations to the compilation of a comprehensive floral checklist were imposed by seasonal factors, such as blooming period. Animal species observed directly or detected from calls, tracks, scat, nests, or other sign were noted.

Floral nomenclature for common plants follows Hickman (1993), for ornamental plants Brenzel (2001), and for sensitive plants California Native Plant Society (CNPS; 2007). Vegetation community classifications follow Oberbauer (2008), which is based on Holland's 1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. Zoological nomenclature for birds is in accordance with the American Ornithologists' Union Checklist (1998) and Unitt (2004); for mammals with Baker et al. (2003) and Hall (1981); for amphibians and reptiles with Crother (2001) and Crother et al. (2008); and for invertebrates with Mattoni (1990), and Opler and Wright (1999).

Determination of the potential occurrence for listed, sensitive, or noteworthy species is based upon known ranges and habitat preferences for the species (Jennings and Hayes 1994; Unitt 2004; CNPS 2007; Reiser 2001), and species occurrence records from the California Natural Diversity Database (CNDDB; State of California 2011a, 2011b, 2012a, 2012b) and other sites in the vicinity of the survey area.

4.0 Existing Conditions

The four survey areas occur in the northern part of the City of San Diego to the west of Interstate 15 within the community of Rancho Peñasquitos (Figures 1 and 2). The four survey areas are adjacent to existing roads and development (Figure 3). Implementation of the project design feature, MM-TRA-2, and MM-TRA-3 would include some expansion of roadways into the adjacent manufactured slopes. Implementation of MM-TRA-2 would also include the addition of an auxiliary lane along SR-56 and expansion of a bridge over a small canyon. Implementation of MM-TRA-1 involves the installation of a traffic signal within a residential neighborhood.

4.1 Botany

Three vegetation communities and two land cover types occur within the site survey areas. The survey area of the project design feature consists of ornamental plantings and developed land (Figure 4a). The survey area for MM-TRA-1 consists entirely of developed land and does not contain any vegetation (see Figure 4a). The survey area for MM-TRA-2 consists of coastal sage scrub, freshwater marsh, southern willow scrub (riparian scrub), ornamental plantings, and developed land (Figure 4b). The survey area of MM-TRA-3 consists of ornamental plantings and developed land (Figure 4c). All four survey areas include some developed land. The acreages of vegetation communities and land cover types are listed in Table 1. A list of plant species observed is provided in Attachment 1.



Project Location

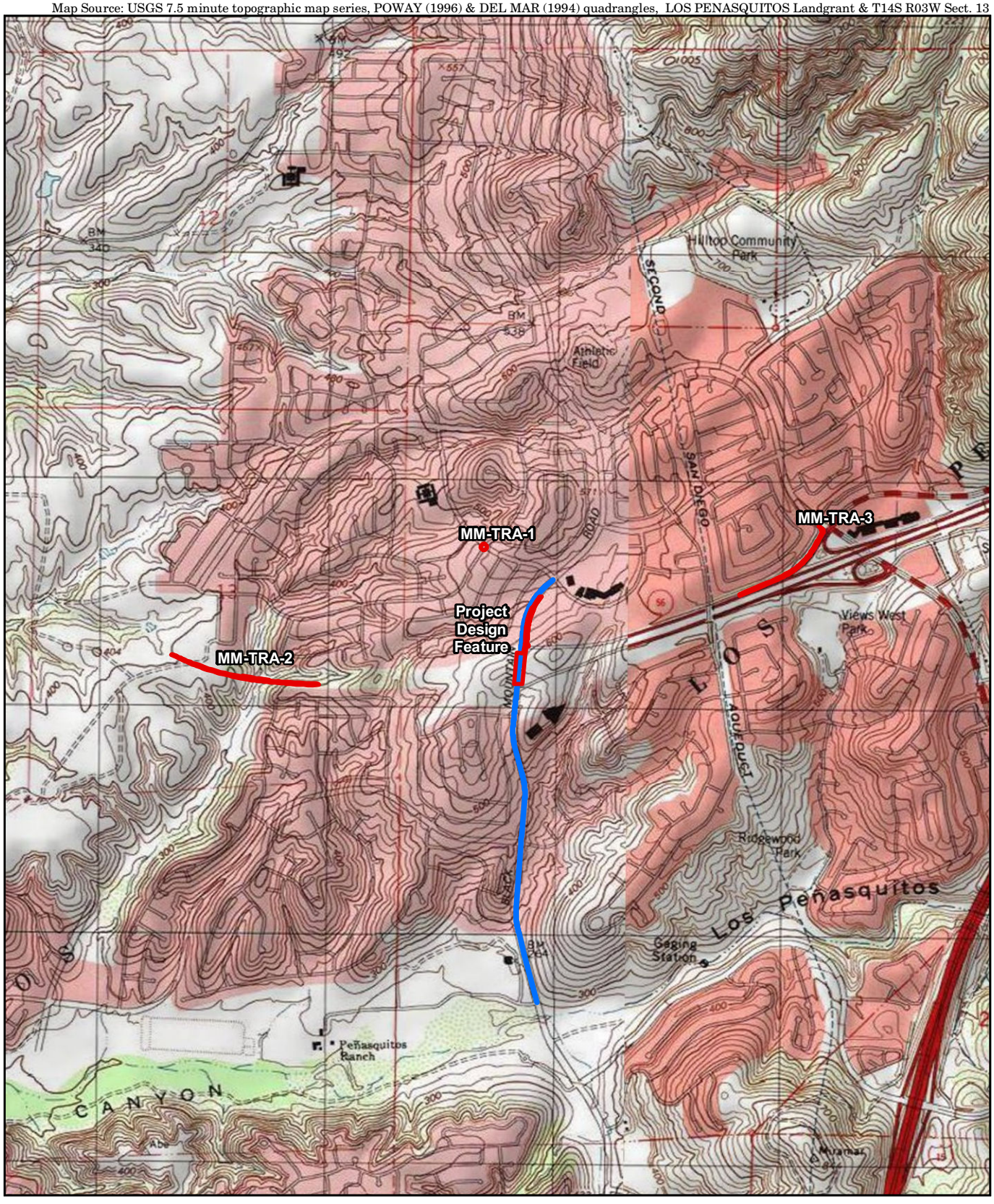
RECON

M:\JOBS4\6524\common_gis\fig1.mxd 12/4/2017 sab

FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, POWAY (1996) & DEL MAR (1994) quadrangles, LOS PENASQUITOS Landgrant & T14S R03W Sect. 13



Project Roadway

Project Design Feature and Traffic Mitigation Measures

RECON

M:\JOBS4\6524\common_gis\fig2_biotec.mxd 2/20/2018 sab

FIGURE 2

Project Location on USGS Map

Image source: NearMaps (flown Nov 2017)



Survey Area

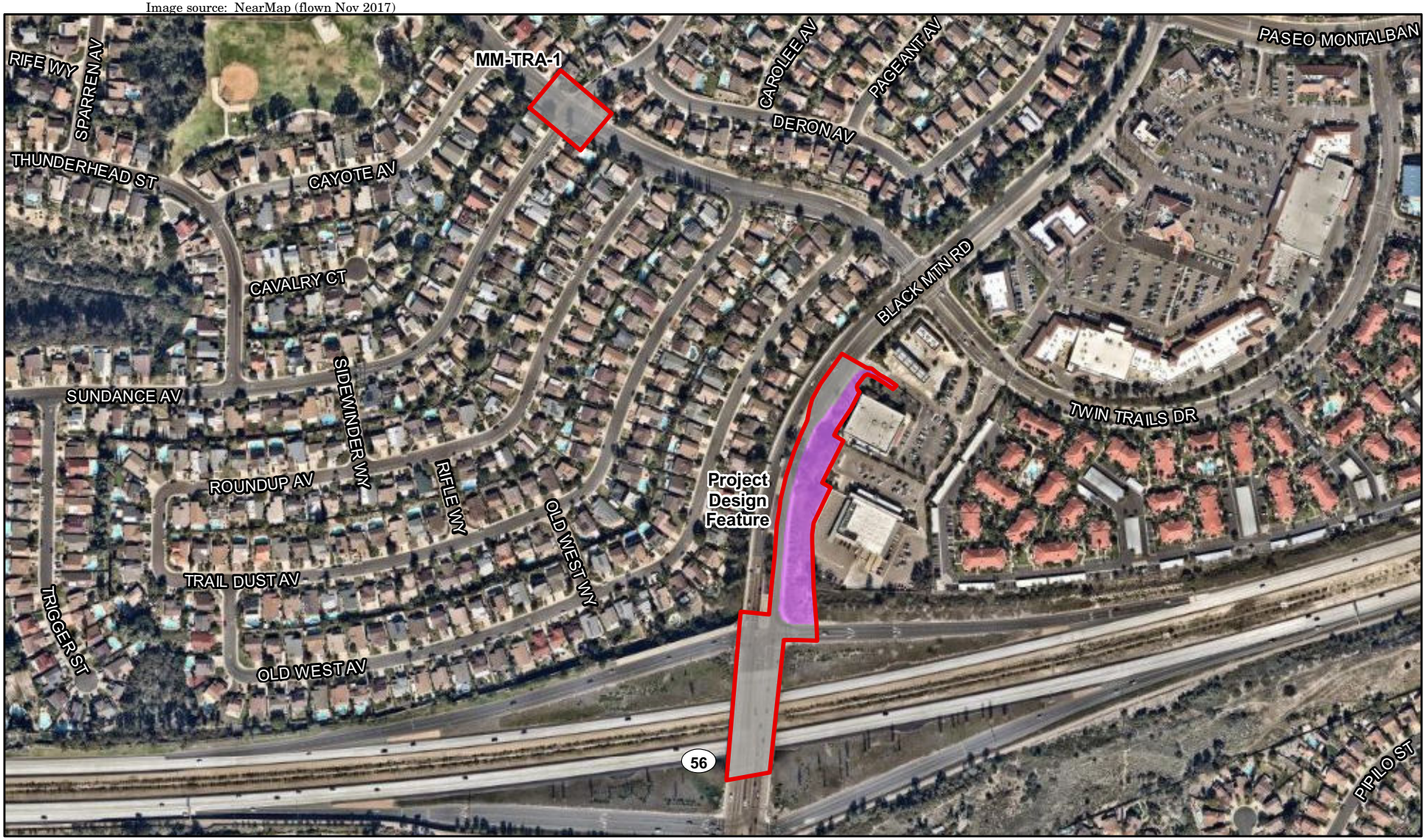
FIGURE 3

Location of Project Design Feature and Traffic Mitigation Survey Areas on Aerial Photograph

RECON

M:\JOBS4\6524\common_gis\fig3_bio.mxd 2/20/2018 sab

Image source: NearMap (flown Nov 2017)



Survey Area

Vegetation Community

Developed

Ornamental Plantings

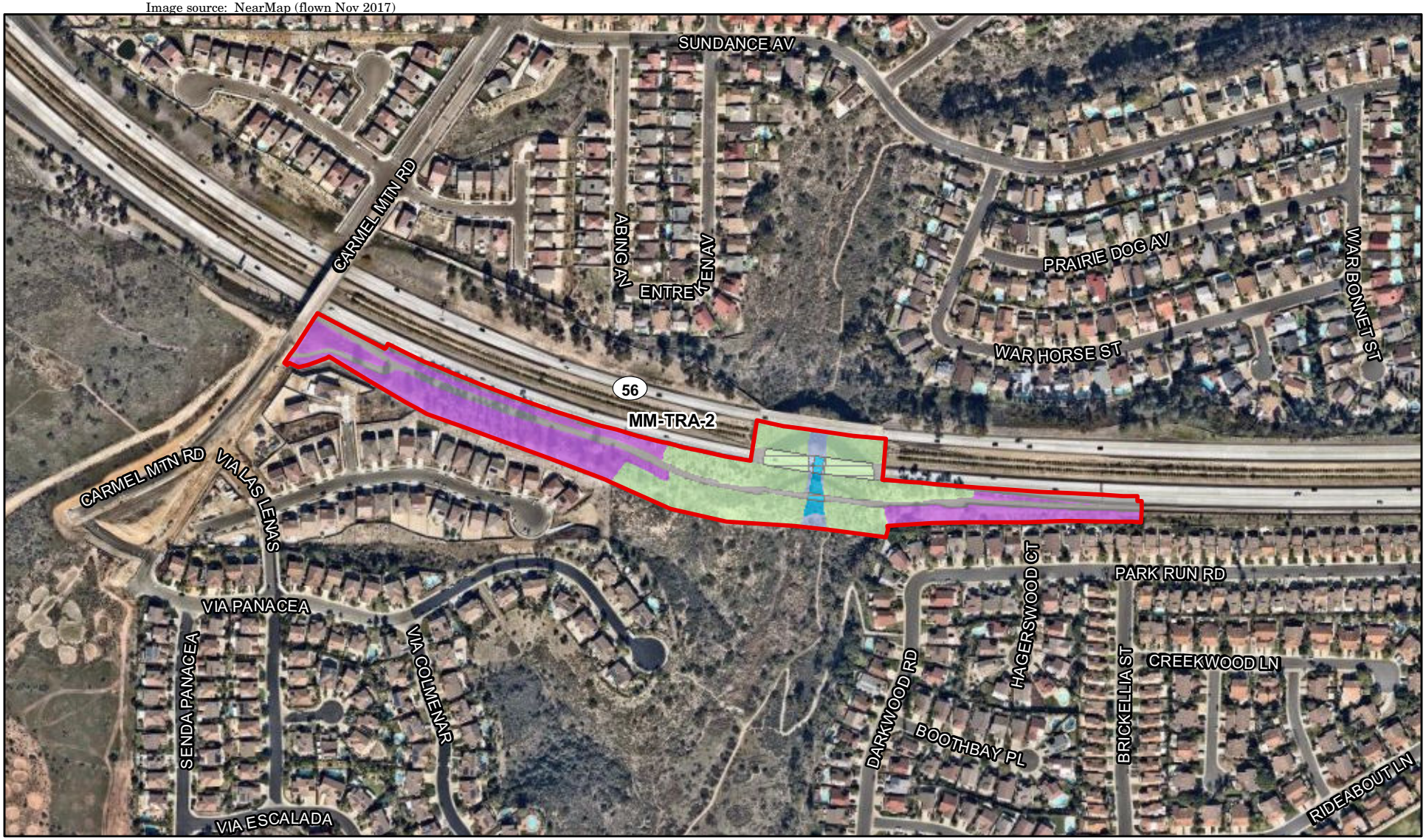
RECON

M:\JOBS4\6524\common_gis\fig4_bio.mxd 2/20/2018 sab

FIGURE 4a

Vegetation Communities and Land Cover Types
within the Project Design Feature and MM-TRA-1 Survey Area

Image source: NearMap (flown Nov 2017)



Survey Area

Vegetation Community

Coastal Sage Scrub

Coastal Sage Scrub (under bridge)

Developed

Freshwater Marsh

Freshwater Marsh (under bridge)

Ornamental Plantings

Southern Willow Scrub

Southern Willow Scrub (under bridge)

0 Feet 400

FIGURE 4b

Vegetation Communities and Land Cover Types within the MM-TRA-2 Survey Area

RECON

M:\JOBS4\6524\common_gis\fig4_bio.mxd 2/20/2018 sab

Image source: NearMap (flown Nov 2017)



Survey Area

Vegetation Community

Developed

Ornamental Plantings

0 Feet 400

FIGURE 4c

Vegetation Communities and Land Cover Types within the MM-TRA-3 Survey Area

RECON

M:\JOBS4\6524\common_gis\fig4_bio.mxd 2/20/2018 sab

Table 1 Summary of Vegetation and Land Cover Types by Survey Area (acres)				
Vegetation Communities/ Land Cover Types	Survey Area			
	Project Design Feature	MM-TRA-1	MM-TRA-2	MM-TRA-3
Coastal Sage Scrub	--	--	3.24	--
Freshwater Marsh	--	--	0.15	--
Southern Willow Scrub	--	--	0.19	--
Ornamental Plantings	1.4	--	3.10	4.5
Developed Land	2.0	0.59	1.58	1.3
TOTAL	**3.4**	**0.59**	**8.26**	**5.8**

4.1.1 Coastal Sage Scrub

Coastal sage scrub occurs on the slopes adjacent to SR-56 and within the survey area for MM-TRA-2. The coastal sage scrub habitat was created from the revegetation of the manufactured slopes and other disturbed areas after the construction of SR-56. Native plant species that have become established are typical of coastal sage scrub habitat and include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Saliva mellifera*), laurel sumac (*Malosma laurina*), and California encelia (*Encelia californica*).

4.1.2 Freshwater Marsh

Freshwater marsh has developed along the creek that flows under the SR-56 bridge within the MM-TRA-2 survey area. Natural and urban storm water runoff provides seasonal flows that support a dense stand of cattail (*Typha latifolia*) in the creek bed. Other plant species occurring along the margins of the stand of cattail include San Diego marsh elder (*Iva haysiana*), spiny rush (*Juncus acutus*), and wild celery (*Apium graveolens*). Freshwater marsh is considered a type of wetland habitat.

4.1.3 Southern Willow Scrub (Riparian Scrub)

A stand of willow trees has become established in the creek that flows beneath the SR-56 bridge both upstream and downstream from the freshwater marsh areas located in the MM-TRA-2 survey area. Trees of red willow (*Salix laevigata*), black willow (*Salix gooddingii*), and arroyo willow (*Salix lasiolepis*) form a mixed stand of willows that dominate this habitat type. Mule fat shrubs (*Baccharis salicifolia*) along with spiny rush, cattail, and San Diego marsh elder occur in the understory of the trees. Southern willow scrub (riparian scrub) is considered a type of wetland habitat.

4.1.4 Ornamental Plantings

Non-native plant species were installed along slopes adjacent to the roadways of the project design feature, MM-TRA-2, and MM-TRA-3 survey areas. Common plants installed in this

land cover type include eucalyptus trees (*Eucalyptus* spp.), sea fig (*Carpobrotus edulis*), vanilla scented wattle (*Acacia redeolons*), plumbago (*Plumbago auriculata*), and Allepo pine (*Pinus hallipensis*).

4.1.5 Developed Land (Disturbed Land)

Developed land refers to the existing paved roadways and development that occur within the four survey areas. These roadways include SR-56, Black Mountain Road, freeway on-ramps, and residential neighborhoods. No vegetation occurs on the developed areas.

4.2 Zoology

A list of the wildlife species detected in the survey areas is provided in Attachment 2. A general discussion of wildlife usage in the survey areas is presented below.

4.2.1 Amphibians

Most amphibians require moisture for at least a portion of their lifecycle, with many requiring a permanent water source for habitat and reproduction. Terrestrial amphibians have adapted to more arid conditions and are not completely dependent on a perennial or standing source of water. These species avoid desiccation by burrowing beneath the soil or leaf litter during the day and during the dry season. No amphibians were detected during field surveys, but common amphibians such as Pacific tree frog (*Pseudacris regilla*) and California toad (*Anaxyrus boreas halophilus*) have a moderate potential to occur in the freshwater marsh and southern willow scrub habitat along the creek beneath the SR-56 bridge.

4.2.2 Reptiles

The diversity and abundance of reptile species vary with habitat type. Many reptiles are restricted to certain plant communities and soil types although some of these species will also forage in adjacent communities. Other species are more ubiquitous using a variety of vegetation types for foraging and shelter. No reptile species were observed in the survey area. However, the sites may support common reptile species such as common side-blotched lizard (*Uta stansburiana*), San Diego alligator lizard (*Elgaria multicarinata webbii*), and western fence lizard (*Sceloporus occidentalis*).

4.2.3 Birds

The diversity of bird species varies with respect to the character, quality, and diversity of vegetation communities present on a site. High-quality vegetation communities typically support a moderate to high variety of bird species. The scrub and woodland habitats provide foraging and shelter opportunities for a wide variety of bird species. Disturbed and developed lands are used by bird species adapted to urban settings.

The most commonly observed species within the survey area include house finch (*Haemorhous mexicanus frontalis*), song sparrow (*Melospiza melodia*), yellow-rumped warbler (*Setophaga coronata*), and northern mockingbird (*Mimus polyglottos*).

4.2.4 Mammals

Most mammal species are nocturnal; therefore, their presence is detected during daytime surveys by observing their sign, such as tracks, scat, and burrows. One mammal species was detected within the MM-TRA-2 survey area of the SR-56 bridge: coyote (*Canis latrans*). There is the potential for small mammals such as mice, gophers, and ground squirrels to occur in the vegetated portions of the survey areas.

4.3 Multi-Habitat Planning Area

Multi-Habitat Planning Area (MHPA) lands are those that have been included within the City's Multiple Species Conservation Program (MSCP) Subarea Plan for habitat conservation. These lands have been determined to provide the necessary habitat quality, quantity, and connectivity to sustain the unique biodiversity of the San Diego region. MHPA lands are considered by the City of San Diego to be a sensitive biological resource. None of the four survey areas occur within or are immediately adjacent to the MHPA.

5.0 Sensitive Biological Resources

5.1 Sensitivity Criteria

For purposes of this report, species will be considered sensitive if they are: (1) covered species or narrow endemic species under the City of San Diego MSCP, (2) listed by state or federal agencies as threatened or endangered or are proposed for listing; (3) on California Rare Plant Rank 1B (considered endangered throughout its range) or California Rare Plant Rank 2 (considered endangered in California but more common elsewhere) of the CNPS Inventory of Rare and Endangered Vascular Plants of California (2007); or (4) considered rare, endangered, or threatened by the CNDDB (State of California 2012c), the City of San Diego's biology guidelines (City of San Diego 2012), or local conservation organizations or specialists. Noteworthy plant species are considered to be those that are on California Rare Plant Rank 3 (more information about the plant's distribution and rarity needed) and California Rare Plant Rank 4 (plants of limited distribution) of the CNPS Inventory. Sensitive vegetation communities are those identified by the CNDDB (Holland 1986) or identified by the City of San Diego (2012).

Under Section 3503 of the California Department of Wildlife (CDFW) Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (raptors) or Strigiformes (owls), or of their nests and eggs (CDFW

1991). The Migratory Bird Treaty Act of 1918 (MBTA) was established to provide protection to the breeding activities of migratory birds throughout the United States. The MBTA protects migratory birds and their breeding activities from take and harassment.

All wetland areas and non-wetland waters of the U.S. are considered sensitive. Wetlands and non-wetland waters are under the jurisdiction of the U.S. Army Corps of Engineers (ACOE). Streambeds and associated vegetation are under the jurisdiction of CDFW. The City of San Diego defines wetlands as:

1. All areas persistently or periodically containing naturally occurring wetland vegetation communities characteristically dominated by hydrophytic vegetation;
2. Areas that have hydric soils or wetland hydrology and lack naturally occurring wetland vegetation communities because human activities have removed the historic wetland vegetation; and
3. Areas lacking wetland vegetation communities, hydric soils, and wetland hydrology due to non-permitted filling of previously existing wetlands (City of San Diego 2012).

Assessments for the potential occurrence of sensitive species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, and species occurrence records from other sites in the vicinity of the project site.

5.2 Sensitive Vegetation Communities

Three vegetation communities identified in the survey areas are considered sensitive or regulated by the City of San Diego (2012). Coastal sage scrub is a Tier II uncommon upland and both freshwater marsh and southern willow scrub are considered wetland habitats.

5.3 Sensitive Plants

Three sensitive plant species were observed in the survey areas. None of these three species is a federal or state listed species. Scattered individuals of Torrey pine (*Pinus torreyana* ssp. *torreyana*), a CNPS List 1B.2 and MSCP covered species, were planted along the slopes adjacent to SR-56 within the MM-TRA-2 survey area, but are not part of a natural population. San Diego marsh elder, a CNPS List 2B.2 species, occurs as scattered individuals along the creek beneath the SR-56 bridge within the MM-TRA-2 survey area. Lastly, scattered individuals of southwestern spiny rush, a CNPS List 4.2 species, occur along the margins of the freshwater marsh associated with the creek beneath the SR-56 bridge.

As the other survey areas occur adjacent to existing roadways that have been altered during the construction of these roads, no sensitive species are expected to occur in these areas. A list of sensitive plant species known to occur in the vicinity of the survey areas (within one mile) that are state or federally listed as threatened or endangered, considered

a City of San Diego narrow endemic, or that have potential to occur based on species range are addressed in Attachment 3.

5.4 Sensitive Wildlife Species

No sensitive wildlife species were detected during the surveys; however, nine species have a moderate potential to occur in low numbers within the coastal sage scrub habitat in the MM-TRA-2 survey area. Two sensitive lizard species, Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*) and coastal whiptail (*Aspidoscelis tigris stejnegeri*), and two sensitive snake species, two-striped gartersnake (*Thamnophis hammondii*) and red diamond rattlesnake (*Crotalus ruber*), are CDFW species of special concern that may occur in the coastal sage scrub habitat.

Sensitive hawk species such as the Cooper's hawk (*Accipiter cooperi*) and sharp-shinned hawk (*Accipiter striatus velox*) have a moderate potential to nest in the willow scrub habitat beneath the SR-56 bridge. Other sensitive bird species such as the southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) and coastal California gnatcatcher (*Polioptila californica californica*; federal listed threatened, CDFW species of species concern) may occur in the coastal sage scrub habitat; however, due to the proximity of the habitat to SR-56, the habitat beneath the bridge may be the only location where these two species have the potential to be found.

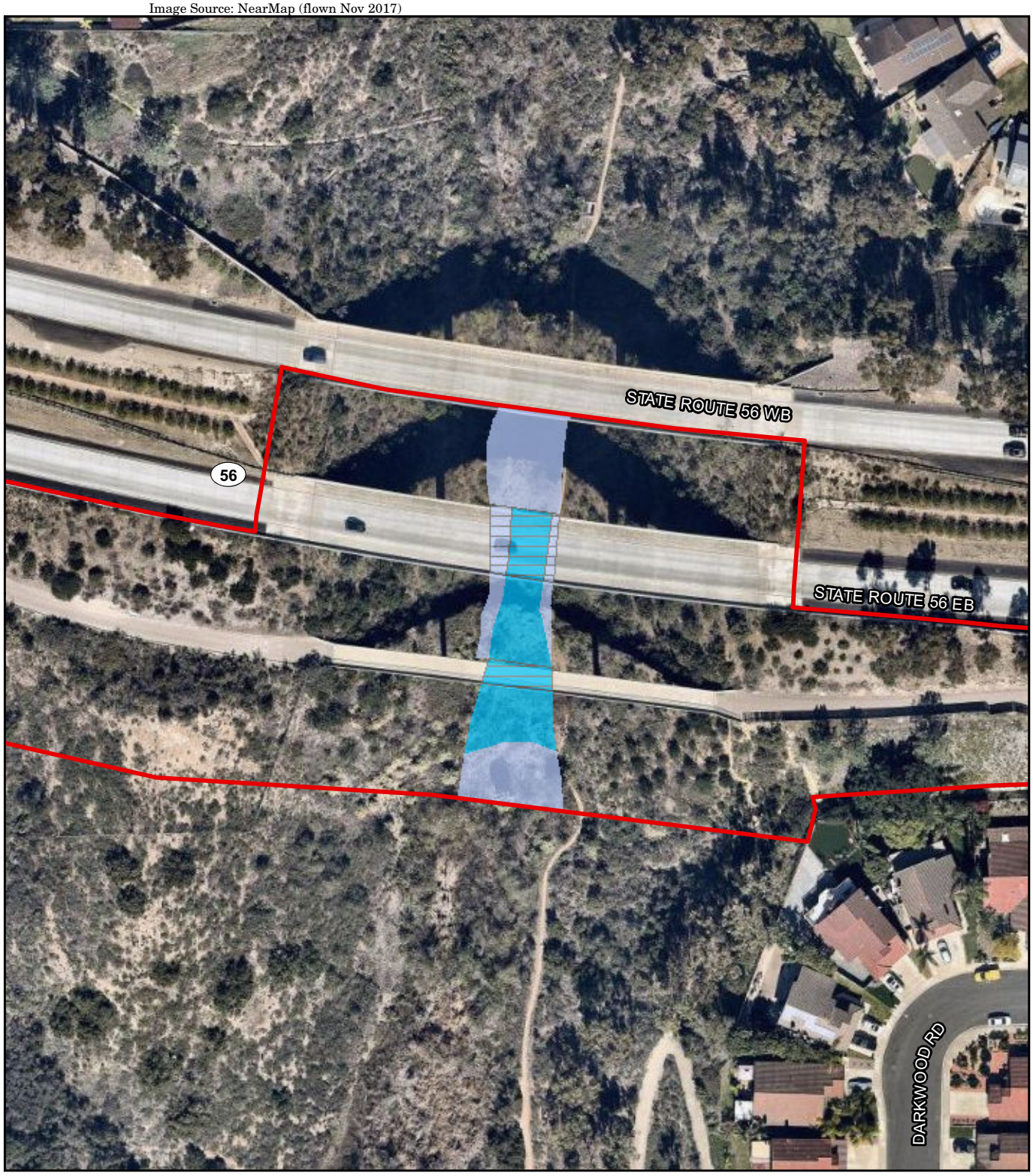
One sensitive mammal species, southern mule deer (*Odocoileus hemionus fuliginata*), has the potential to use the coastal sage scrub and riparian scrub habitats beneath the SR-56 bridge. As this area occurs in the upper part of a canyon surrounded by development, mule deer are not expected in large numbers.

The other survey areas are not expected to support sensitive wildlife species due to the lack of native habitat and the proximity to existing roadways and developed areas. A list of sensitive wildlife species known to occur in the vicinity of the survey areas (within one mile) that are federally listed threatened or endangered or that have potential to occur based on species range are addressed in Attachment 4.

5.5 Wetlands

A wetland delineation was conducted in the MM-TRA-2 survey area (Attachment 5). Wetlands are associated with the creek that flows under the SR-56 bridge. Wetland waters of the U.S. (ACOE), waters of the state (CDFW and Regional Water Quality Control Board [RWQCB]), and City of San Diego wetlands all occur in this area (Figure 5). Wetland vegetation makes up the plant species found in the freshwater marsh and southern willow scrub (riparian scrub) habitats. A total of 0.34 acre of wetland comprised of 0.15 acre of freshwater marsh and 0.19 acre of southern willow scrub occur in the MM-TRA-2 survey area and fall under the jurisdiction of the ACOE, CDFW, RWQCB, and City of San Diego. No wetlands occur in the survey areas of the project design feature, MM-TRA-1, and MM-TRA-3.

Image Source: NearMap (flown Nov 2017)



0 Feet 100

Survey Area

ACOE, CDFW, RWQCB, City of San Diego Wetland Jurisdictional Habitat

- Freshwater Marsh
- Freshwater Marsh (under bridge)
- Southern Willow Scrub
- Southern Willow Scrub (under bridge)

RECON

M:\JOBS4\6524\common_gis\fig5_bio.mxd 2/20/2018 sab

FIGURE 5

Location of Jurisdictional Waters within the MM-TRA-2 Survey Area

6.0 Project Impacts

Impacts to biological resources from the four roadway improvements are discussed below. Direct and indirect impacts to vegetation/land cover types and sensitive biological resources are covered.

6.1 Direct Impacts

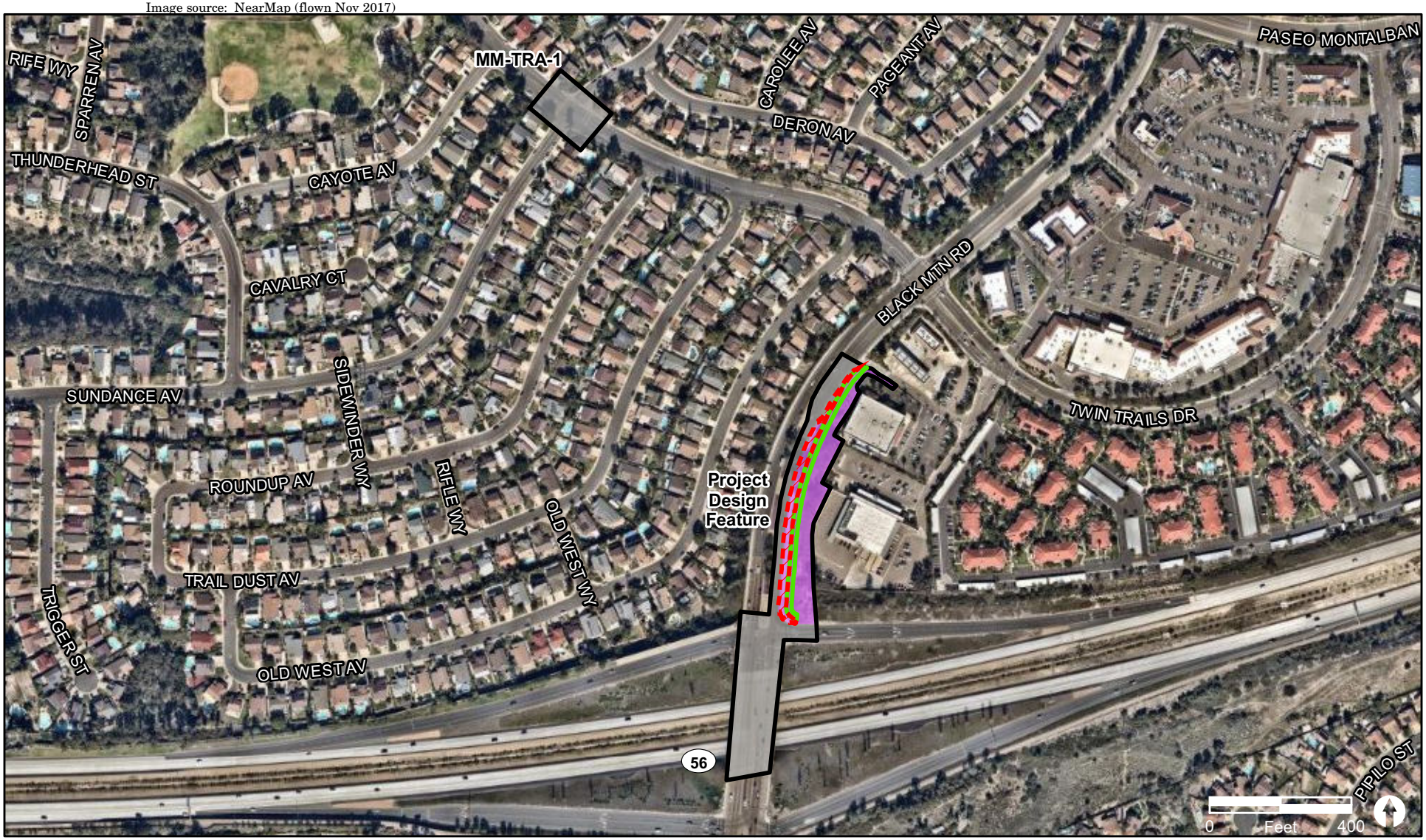
6.1.1 Vegetation Communities

Direct impacts to vegetation communities and land cover types that would occur under each roadway improvement are presented in Table 2 and illustrated on Figures 6a, 6b, and 6c. Impacts to sensitive vegetation communities (i.e., coastal sage scrub, freshwater marsh, and southern willow scrub) would be significant and require mitigation. All impacts would occur outside of the MHPA.

Table 2
Summary of Impacts to Vegetation and Land Cover Types by Survey Area (acres)

Vegetation Communities/ Land Cover Types	Survey Area				
	Project Design Feature	MM-TRA-1	MM-TRA-2	MM-TRA-3	Total Impact
Coastal Sage Scrub (Tier II)					
Permanent	--	--	0.20	--	0.20
Construction Zone	--	--	1.06	--	1.06
Freshwater Marsh (Wetland)					
Permanent	--	--	0.01	--	0.01
Construction Zone	--	--	0.04	--	0.04
Southern Willow Scrub (Wetland)					
Permanent	--	--	--	--	--
Construction Zone	--	--	0.11	--	0.11
Ornamental Plantings (Tier IV)					
Permanent	0.31	--	0.07	0.30	0.68
Construction Zone	0.25	--	0.30	0.55	1.10
Developed Land (Tier IV)					
Permanent	0.02	0.001	0.20	--	0.22
Construction Zone	0.01	--	0.22	--	0.23
TOTAL	**0.59**	**0.001**	**2.21**	**0.85**	**3.65**

Image source: NearMap (flown Nov 2017)



Survey Area

Permanent Impact

Construction Zone

Vegetation Community

Developed

Ornamental Plantings

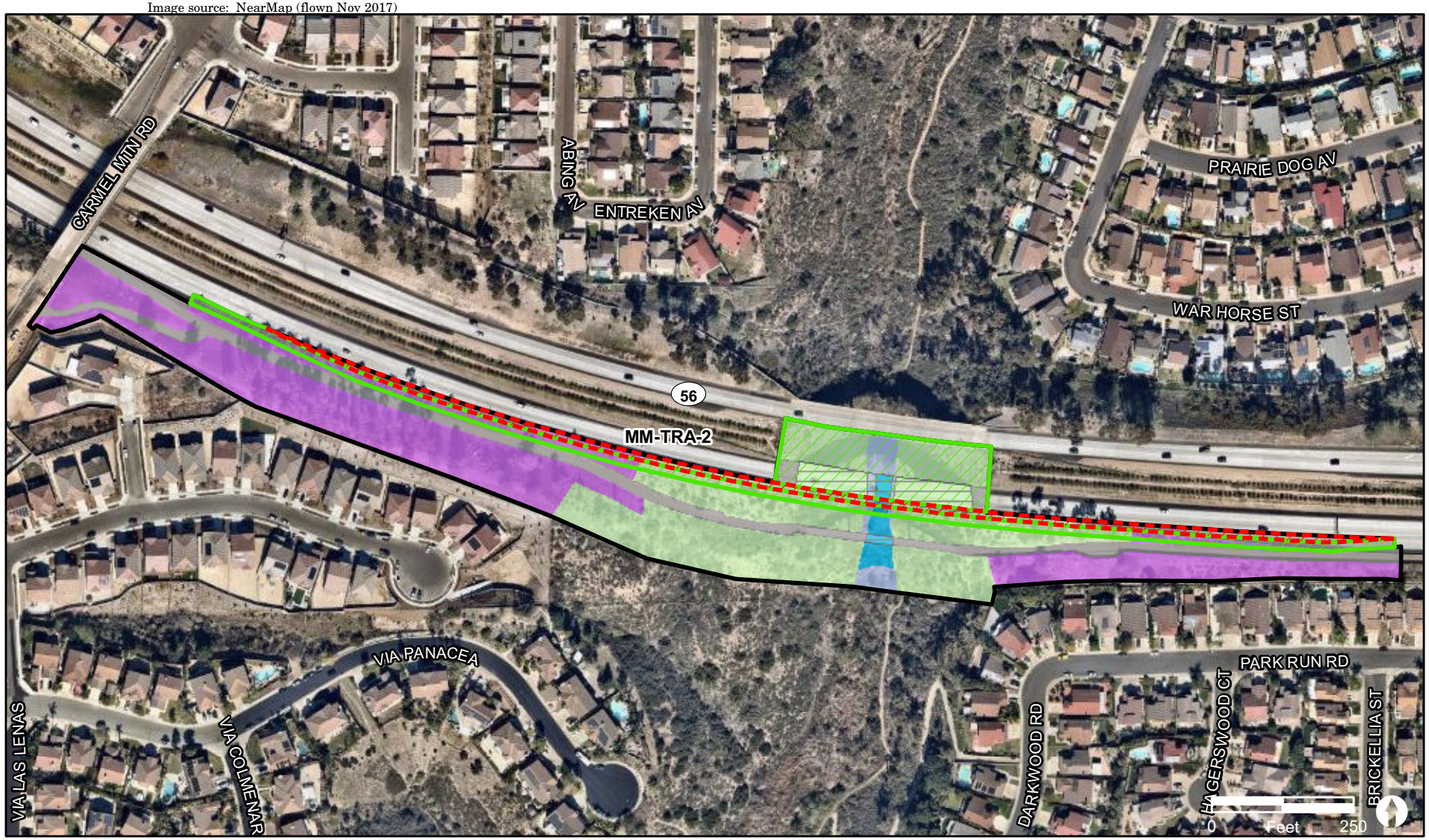
RECON

M:\JOBS4\6524\common_gis\fig6_bio.mxd 2/20/2018 sab

FIGURE 6a

Vegetation Community and Land Cover Type
Impacts at Project Design Feature and MM-TRA-1

Image source: NearMap (flown Nov 2017)



Survey Area
Permanent Impact
Construction Zone

Vegetation Community

Coastal Sage Scrub
Coastal Sage Scrub (under bridge)
Developed
Freshwater Marsh
Freshwater Marsh (under bridge)
Ornamental Plantings
Southern Willow Scrub
Southern Willow Scrub (under bridge)

FIGURE 6b

Vegetation Community and Land Cover Type Impacts at MM-TRA-2

RECON

M:\JOBS4\6524\common_gis\fig6_bio.mxd 2/20/2018 sab

Image source: NearMap (flown Nov 2017)



Survey Area
Permanent Impact
Construction Zone

Vegetation Community

Developed
Ornamental Plantings

RECON

M:\JOBS4\6524\common_gis\fig6_bio.mxd 2/20/2018 sab

FIGURE 6c

Vegetation Community and Land Cover Type Impacts at MM-TRA-3

6.1.2 Sensitive Plants

The project has the potential to impact a low number of individuals (i.e., less than 10) of San Diego marsh elder and southwestern spiny rush, depending on the final project design and footprint. However, the potential small losses of these two species would not reduce overall population numbers, both locally or regionally. The project would only potentially affect a very small portion of the range of these species due to possible minor losses of suitable habitat, and adequate habitat for these species is conserved regionally under the MSCP. Therefore, impacts on sensitive plants would be less than significant.

6.1.3 Sensitive Wildlife

6.1.3.1 General Wildlife

Implementation of the roadway improvements may cause small mammals and reptiles with low mobility to be inadvertently killed during construction. Most birds will be able to move out of the way during grading. However, these species do not meet the criteria for sensitive species presented in Section 5.1, and impacts to general wildlife would be less than significant.

6.1.3.2 Sensitive Wildlife Species

The Belding's orange-throated whiptail, Cooper's hawk, southern California rufous-crowned sparrow, coastal California gnatcatcher, and southern mule deer are considered covered species under the City of San Diego's MSCP (City of San Diego 1997). As the roadway improvement areas are located outside of the MHPA and are not adjacent to an MHPA preserve area, potential impacts to these species would be less than significant. Potential impacts to non-covered species coastal whiptail, two-striped gartersnake, red diamond rattlesnake, and sharp-shinned hawk, if present, would likely only result in the loss of one individual of any of these species. Thus, the overall population level effect locally and regionally would be minimal for any of the species. Only a small fraction of the range of any of these four species would be affected and a very minor loss of habitat would occur. As the project occurs within existing road corridors where habitat for these species is marginal due to proximity to development and road edge effects, regional effects on these species would be very minor as adequate habitat for these species is conserved under the MSCP. Therefore, impacts on sensitive wildlife would be less than significant.

6.1.3.3 Nesting Birds

There is a potential for raptors and other birds to nest in the ornamental trees, shrubs, and in the native habitats within the footprints of the project design feature, TRA-2, and TRA-3. However, the project applicant would be required to comply with restrictions associated with nesting bird species per Section 3503 of the California Fish and Game Code and the MBTA. Under Section 3503 of the CDFW Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code

prohibits take, possession, or destruction of any birds in the orders Falconiformes (raptors) or Strigiformes (owls), or of their nests and eggs. The MBTA was established to provide protection to the breeding activities of migratory birds throughout the United States. The MBTA protects migratory birds and their breeding activities from take and harassment. Therefore, impacts to migratory or nesting birds would be less than significant.

6.1.4 Wetlands

Wetlands may be impacted as part of the SR-56 bridge expansion associated with MM-TRA-2 (Table 3). Wetland impacts could occur to freshwater marsh and southern willow scrub habitats. These wetland habitats are under the jurisdiction of the ACOE, RWQCB, CDFW, and City of San Diego. Impacts to jurisdictional wetlands would be significant and require mitigation.

Table 3
Summary of Potential Impacts to Wetlands by Survey Area
(acres)

Wetlands	Survey Area				
	Project Design Feature	MM-TRA-1	MM-TRA-2	MM-TRA-3	Total Impact
Federal Wetland (ACOE)					
Permanent	--	--	0.01	--	0.01
Construction Zone	--	--	0.15	--	0.15
State Wetland (CDFW, RWQCB)					
Permanent	--	--	0.01	--	0.01
Construction Zone	--	--	0.15	--	0.15
City Wetland					
Permanent	--	--	0.01	--	0.01
Construction Zone	--	--	0.15	--	0.15

6.2 Indirect Impacts

No indirect impacts to sensitive wildlife species are anticipated.

7.0 Mitigation

Impacts to biological resources were evaluated through review of the project's consistency with the City's Environmentally Sensitive Lands (ESL) Regulations and Biology Guidelines, as well as the MSCP Subarea Plan. As such, mitigation is required for project impacts that are considered significant under the California Environmental Quality Act (CEQA; City of San Diego 2011), including impacts to sensitive or listed species and sensitive vegetation communities. All impacts to sensitive biological resources should be avoided to the maximum extent feasible and minimized when possible. Mitigation measures typically employed include resource avoidance, dedication/acquisition of habitat, or habitat restoration.

The impact analysis and corresponding mitigation measures presented in this Biological Technical Report are based on conceptual designs of the project design feature and MM-TRA-1 through MM-TRA-3 that would be refined at a later date. Therefore, future implementation of the project design feature and MM-TRA-1 through MM-TRA-3 would require further refinements. These refinements would require compliance with the programmatic biological resources mitigation framework presented below. Compliance with this mitigation framework would include preparation of an updated biological technical report to document biological conditions, analyze potential impacts, and propose site-specific mitigation measures.

7.1 Mitigation for Impacts to Sensitive Upland Vegetation Communities

MM-BIO-1a: Biological Technical Report

Any future discretionary actions associated with the future construction of the project design feature and MM-TRA-1 through MM-TRA-3 shall be required to prepare a site-specific biological technical report consistent with the City's Biology Guidelines to ensure that potentially significant impacts to unique, rare, endangered, sensitive, or fully protected species of plants or animals, if present within the area of potential effect.

MM-BIO-1b: Sensitive Habitat

Any future discretionary actions associated with the future construction of the project design feature and MM-TRA-1 through MM-TRA-3 resulting in impacts to sensitive upland Tier I, II, IIIA, or IIIB habitats shall occur in accordance with the mitigation ratios specified within the City's Biology Guidelines as presented in Table 4.

Table 4
Mitigation Ratios for Impacts on Upland Vegetation Communities and Land Cover Types

Tier	Habitat Type	Mitigation Ratios			
TIER I (rare uplands)	Southern Foredunes Torrey Pines Forest Coastal Bluff Scrub Maritime Succulent Scrub Maritime Chaparral Scrub Oak Chaparral Native Grassland Oak Woodlands	Location of Impact	Inside Outside	Location of Preservation Inside 2:1 1 :1	 Outside 3:1 2: I
TIER II (uncommon uplands)	Diegan Coastal Sage Scrub Diegan Coastal Sage Scrub/ Chaparral	Location of impact	Inside* Outside	Location of Preservation Inside 1:1 1:1	 Outside 2:1 1.5:1
TIER IIIA (common uplands)	Chamise Chaparral Southern Mixed Chaparral	Location of impact	Inside* Outside	Location of Preservation Inside 21:1 1-0.5:1	 Outside 31.5:1 21:1
TIER IIIB (common uplands)	Non-native Grassland	Location of impact	Inside* Outside	Location of Preservation Inside 0.5:1	 Outside 1.5:1

Notes:
For all Tier I impacts, the mitigation could (I) occur within the MHPA portion of Tier I or (2) occur outside of the MHPA within the affected habitat type (in-kind).

For impacts on Tier II, IIIA, and IIIB habitats, the mitigation could (I) occur within the MHPA portion of Tiers I- Ill (out-of-kind) or (2) occur outside of the MHPA within the affected habitat type (in-kind). Project-specific mitigation will be subject to applicable mitigation ratios at the time of project submittal.

7.2 Mitigation for Impacts to Wetlands

MM-BIO-2a: Wetland Habitat

Any future discretionary actions associated with the future construction of the project design feature and MM-TRA-1 through MM-TRA-3 resulting in impacts to sensitive wetlands shall occur in accordance with the mitigation ratios specified within the City's Biology Guidelines as shown in Tables 5 and 6 below.

Table 5 Wetland Mitigation Ratios Including Biologically Superior Design	
Habitat Type	Mitigation Ratio
Riparian Habitats:	
- Oak riparian forest	3:1
- Riparian forest or woodland	3:1
- Riparian scrub	2:1
- Riparian scrub in the Coastal Overlay Zone	3:1
Freshwater Marsh	2:1
Freshwater Marsh in the Coastal Overlay Zone	4:1
Natural Flood Channel	2:1
Disturbed Wetland	2:1
Notes: Any impacts to wetlands must be mitigated "in-kind" and achieve a "no -net loss" of wetland function and values except as provided for in Section 3B (Economic Viability Option). Mitigation for vernal pools can range from 2:1 when no listed species are present, up to 4:1 when listed species with very limited distributions (e.g., *Pogogyne abramsii*) are present.	

Table 6 Wetland Mitigation Ratios for a Biologically Superior Project Outside of the Coastal Zone	
Habitat Type	Mitigation Ratio
Riparian Forest or Woodland (oak, sycamore, or willow)	6:1
Riparian Scrub	4:1
Freshwater Marsh	4:1
Natural Flood Channel (NFC)*	4:1
Disturbed Wetlands*	4:1
Notes: Mitigation must be provided within or adjacent to the MHPA. Any impacts to wetlands must be mitigated "in -kind" and achieve a "no -net loss" of wetland functions and values. Mitigation for vernal pools can range from 4:1 when no listed species are present, and up to 8:1 when listed species with very limited distributions (e.g., *Pogogyne abramsii*) are present. *Preference for these habitats is out -of-kind mitigation with better habitat. In -kind (e.g., NFC for NFC) could be considered where it would clearly benefit sensitive species and results in a biologically superior alternative.	

MM-BIO-2b: Wetland Habitat

Prior to the commencement of any construction-related activities on-site for projects impacting wetland habitat the applicant shall provide evidence of the following, if applicable, to the Assistant Deputy Director (ADD)/Environmental Designee prior to any construction activity:

- Compliance with U.S. Army Corps of Engineers Section 404 nationwide permit;
- Compliance with the RWQCB Section 401 Water Quality Certification; and
- Compliance with the CDFW Section 1601/1603 Streambed Alteration Agreement.
- Compliance with City ESL wetland deviation process.

8.0 References Cited

American Ornithologists' Union
2015 Checklist of North and Middle American Birds. 7th ed. of the *Check-list of North American Birds* and its supplements through the 56th, accessed 10/23/2015, http://checklist.aou.org/taxa/. July.

Baker, R. J., L. C. Bradley, R. D. Bradley, J. W. Dragoo, M. D. Engstrom, R. S. Hoffmann, C. Jones, C. A. Jones, F. Reid, D. W. Rice
2003 Revised Checklist of North American Mammals North of Mexico. *Occasional Papers, Museum of Texas Tech University* No. 229. December.

Brenzel, K. N. (editor)
2001 *Sunset Western Garden Book*. Sunset Publishing Corporation, Menlo Park, CA.

California, State of
2011a Special Animals. Natural Diversity Database. Department of Fish and Game. January.

2011b State and Federally Listed Endangered, Threatened, and Rare Animals of California. Natural Diversity Database. Department of Fish and Game. January.

2012a State and Federally Listed Endangered, Threatened, and Rare Plants of California. Natural Diversity Database. Department of Fish and Game. May.

2012b Special Vascular Plants, Bryophytes, and Lichens List. Natural Diversity Database. Department of Fish and Game. May.

2012c Natural Diversity Data Base. RareFind Version 3.1.0. Department of Fish and Game.

California Department of Fish and Wildlife (CDFW)
1991 Fish and Game Code of California, Sections 3503 and 3503.3.

2016a Special Animals List. Periodic Publication. 51 pp. October.

2016b State & Federally Listed Endangered & Threatened Animals of California. October.

California Native Plant Society (CNPS)
2007 Inventory of Rare and Endangered Plants (online edition, v7-07b). California Native Plant Society. Sacramento, CA. Accessed on Thursday, June 21, 2007 from http://www.cnps.org/inventory

Crother, B. I., ed.
2001 *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding*. Society for the Study of Amphibians and Reptiles *Herpetological Circular* 29.

Crother, B. I., Jeff Boundy, Frank T. Burbrink, Jonathan A. Campbell, Kevin de Queiroz, Darrel R. Frost, Richard Highton, John B. Iverson, Fred Kraus, Roy W. McDiarmid, Joseph R. Mendelson III, Peter A. Meylan, Tod W. Reeder, Michael E. Seidel, Stephen G. Tilley, David B. Wake

2008 Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding, Sixth Edition. Society for the Study of Amphibians and Reptiles Herpetological Circular No. 37.

Eriksen, Clyde, and Denton Belk

1999 *Fairy Shrimp of California's Puddles, Pools, and Playas.* Mad River Press, Eureka.

Hall, E. R.

1981 *The Mammals of North America.* 2d ed. 2 vols. John Wiley & Sons, New York.

Hickman, J. C., ed.

1993 *The Jepson Manual: Higher Plants of California.* University of California Press, Berkeley and Los Angeles.

Holland, R. F.

1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California Department of Fish and Game.

Jennings, M. R., and M. P. Hayes

1994 Amphibian and Reptile Species of Special Concern in California. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. Contract number 8023.

Mattoni, R.

1990 Butterflies of Greater Los Angeles. The Center for the Conservation of Biodiversity/Lepidoptera Research Foundation, Inc. Beverly Hills, CA.

Oberbauer, T., M. Kelly, and J. Buegge

2008 Draft Vegetation Communities of San Diego County. March. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California", Robert F. Holland, Ph.D., October 1986.

Opler, P. A., and A. B. Wright

1999 *A Field Guide to Western Butterflies.* Peterson Field Guide Series. Houghton Mifflin, Boston.

Page, L. M., H. Espinosa-Pérez, L. T. Findley, C. R. Gilbert, R. N. Lea, N. E. Mandrak, R. L. Mayden, and J. S. Nelson

2013 Common and scientific names of fishes from the United States, Canada, and Mexico, 7th edition. American Fisheries Society, Special Publication 34, Bethesda, Maryland.

Rebman, J. P., and M. G. Simpson
2014 Checklist of the Vascular Plants of San Diego County, 5th edition. San Diego Natural History Museum.

Reiser, C. H.
2001 *Rare Plants of San Diego County*. Aquifir Press, Imperial Beach, CA.

San Diego, City of
1997 City of San Diego Multiple Species Conservation Plan (MSCP) Subarea Plan. March.

2011 Significance Determination Thresholds – Development Services Department January.

2012 San Diego Municipal Code – Land Development Code: Biology Guidelines. April.

San Diego, County of
2010 Guidelines for Determining Significance and Report Format and Content Requirements. Biological Resources. Land Use and Environmental Group. Department of Planning and Land Use. Department of Public Works. Fourth Revision. September 15.

San Diego Natural History Museum
2002 Butterflies of San Diego County, prepared by Micheal Klein. Revised September 2002. http://www.sdnhm.org/science/entomology/projects/checklist-of-butterflies-of-san-diego-county/.

Unitt, P.
2004 *San Diego County Bird Atlas*. San Diego Natural History Museum. Ibis Publishing Company. San Diego, California. October.

U.S. Department of Agriculture (USDA)
1973 *Soil Survey, San Diego Area, California*. Soil Conservation Service and Forest Service. Roy H. Bowman, ed. San Diego. December.

2013 Plants Database. Accessed from http://plants.usda.gov.

University of California
2016 Jepson Flora Project (eds.) 2016. Jepson eFlora, http://ucjeps.berkeley.edu/ IJM.html.

ATTACHMENTS

ATTACHMENT 1

Plant Wildlife Species Observed

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
GYMNOSPERMS			
PINACEAE	**PINE FAMILY**		
Pinus halepensis Mill.	Aleppo pine	OP	I
Pinus torreyana Parry ex Carrière ssp. *torreyana*	Torrey pine	OP	I
ANGIOSPERMS: MONOCOTS			
ARECACEAE	**PALM FAMILY**		
Washingtonia robusta H. Wendl.	Mexican fan palm	OP , WS	I
CYPERACEAE	**SEDGE FAMILY**		
Bolboschoenus maritimus (L.) Palla ssp. *paludosus* (A. Nelson) T. Koyama [=*Scirpus maritimus*]	saltmarsh bulrush, alkali bulrush	FM	N
JUNCACEAE	**RUSH FAMILY**		
Juncus acutus L. ssp. *leopoldii* (Parl.) Snogerup	southwestern spiny rush	FM, WS	N
POACEAE (GRAMINEAE)	**GRASS FAMILY**		
Avena barbata Pott ex Link	slender wild oat	OP	I
Bromus diandrus Roth	ripgut grass	OP	I
Cortaderia selloana (Schult. & Schult. f.) Asch. & Graebn.	pampas grass	OP	I
Pennisetum villosum R. Br. ex Fresen.	feathertop	OP	I
Stipa [=*Nassella*] *pulchra* Hitchc.	purple needle grass	CSS	N
TYPHACEAE	**CATTAIL FAMILY**		
Typha latifolia L.	broad-leaved cattail	FM	N
AIZOACEAE	**FIG-MARIGOLD FAMILY**		
Carpobrotus chilensis (Molina) N.E. Br.	sea fig	OP	I
Carpobrotus edulis (L.) N.E. Br.	freeway iceplant	OP	I
Mesembryanthemum nodiflorum L.	slender-leaved iceplant	OP	I
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**		
Malosma laurina Nutt. ex Abrams	laurel sumac	CSS	N
Rhus integrifolia (Nutt.) Benth. & Hook. f. ex Rothr.	lemonade berry	CSS	N
APIACEAE (UMBELLIFERAE)	**CARROT FAMILY**		
Apium graveolens L.	celery	FM	I
APOCYNACEAE	**DOGBANE FAMILY**		
Nerium oleander L.	common oleander	OP	I

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
ASTERACEAE	**SUNFLOWER FAMILY**		
Artemisia californica Less.	California sagebrush	CSS	N
Baccharis pilularis DC.	chaparral broom, coyote brush	OP, CSS	N
Baccharis salicifolia (Ruiz & Pav.) Pers. ssp. *salicifolia*	mule fat, seep-willow	WS	N
Centaurea melitensis L.	tocalote, Maltese star-thistle	OP	I
Deinandra [=*Hemizonia*] *fasciculata* (DC.) Greene	fascicled tarweed	CSS	N
Dittrichia graveolens (L.) Greuter	stinkwort	OP	I
Encelia californica Nutt.	California encelia	CSS	N
Erigeron [=*Conyza*] *canadensis* L.	horseweed	OP	N
Helminthotheca [=*Picris*] *echioides* (L.) Holub	bristly ox-tongue	WS	I
Heterotheca grandiflora Nutt.	telegraph weed	OP, CSS	N
Isocoma menziesii (Hook. & Arn.) G.L. Nesom	coastal goldenbush	CSS	N
Iva hayesiana A. Gray	San Diego marsh-elder	FM, WS	N
BORAGINACEAE	**BORAGE FAMILY**		
Heliotropium curassavicum L. var. *oculatum* (A. Heller) I. M. Johnst. ex Tidestr.	seaside heliotrope, alkali heliotrope	FM	N
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**		
Acacia redolens Maslin	vanilla-scented wattle	OP	I
GERANIACEAE	**GERANIUM FAMILY**		
Geranium dissectum L.	cut-leaf geranium	OP	I
LAMIACEAE	**MINT FAMILY**		
Salvia mellifera Greene	black sage	CSS	N
MYRTACEAE	**MYRTLE FAMILY**		
Eucalyptus sp.	gum tree	OP	I
POLYGONACEAE	**BUCKWHEAT FAMILY**		
Eriogonum fasciculatum Benth.	California buckwheat	CSS	N
Rumex crispus L.	curly dock	FM, WS	I
ROSACEAE	**ROSE FAMILY**		
Heteromeles arbutifolia (Lindl.) M. Roem.	toyon, Christmas berry	CSS	N
SALICACEAE	**WILLOW FAMILY**		
Salix gooddingii C.R. Ball.	Goodding's black willow	WS	N
Salix laevigata Bebb	red willow	WS	N

Attachment 1 Plant Species Observed			
Scientific Name	Common Name	Habitat	Origin
Salix lasiolepis Benth.	arroyo willow	WS	N
TAMARICACEAE	**TAMARISK FAMILY**		
Tamarix ramosissima Ledeb.	saltcedar	WS	I

Notes: Scientific and common names were primarily derived from the Jepson Online Interchange (University of California 2016). In instances where common names were not provided in this resource, common names were obtained from Rebman and Simpson (2014). Additional common names were obtained from the USDA maintained database (U0053DA 2013) or the Sunset Western Garden Book (Brenzel 2001) for ornamental/horticultural plants. Common names denoted with * are from County of San Diego 2010.

HABITATS

CSS = Coastal Sage Scrub
FM = Freshwater Marsh
WS = Willow Scrub
OP = Ornamental Planting

ORIGIN

N = Native to locality
I = Introduced species from outside locality

ATTACHMENT 2

Wildlife Species Observed

Attachment 2 Wildlife Species Observed				
Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
BIRDS (Nomenclature from American Ornithologists' Union 2015 and Unitt 2004)				
TROCHILIDAE	**HUMMINGBIRDS**			
Calypte anna	Anna's hummingbird	CSS, OP	C / Y	O
TYRANNIDAE	**TYRANT FLYCATCHERS**			
Sayornis nigricans semiatra	black phoebe	CSS, OP	C / Y	O
Sayornis saya	Say's phoebe	CSS, OP	U / W	O
Tyrannus verticalis	western kingbird	CSS, OP	F / S	O
CORVIDAE	**CROWS, JAYS, & MAGPIES**			
Corvus brachyrhynchos hesperis	American crow	CSS, OP	C / Y	O
MIMIDAE	**MOCKINGBIRDS & THRASHERS**			
Mimus polyglottos polyglottos	northern mockingbird	CSS, OP	C / Y	O
PARULIDAE	**WOOD WARBLERS**			
Setophaga [=*Dendroica*] *coronata*	yellow-rumped warbler	WS	U/ W	O
EMBERIZIDAE	**EMBERIZIDS**			
Melospiza melodia	song sparrow	CSS, OP	C / Y	O
FRINGILLIDAE	**FINCHES**			
Spinus [=*Carduelis*] *psaltria hesperophilus*	lesser goldfinch	WS	F / Y	O
Haemorhous [=*Carpodacus*] *mexicanus frontalis*	house finch	OP	C / Y	O
MAMMALS (Nomenclature from Baker et al. 2003)				
CANIDAE	**CANIDS**			
Canis latrans	coyote	CSS		S

HABITATS
CSS = Bays
WS = Coastal waters
OP = Coastal strand, coastal dunes

SEASONALITY (birds only)
W = Winter visitor; does not breed locally
Y = Year-round resident; probable breeder on-site or in vicinity

ABUNDANCE (birds only; based on Garrett and Dunn 1981)
C = Common to abundant; almost always encountered in proper habitat, usually in moderate to large numbers
F = Fairly common; usually encountered in proper habitat, generally not in large numbers
U = Uncommon; occurs in small numbers or only locally

EVIDENCE OF OCCURRENCE
O = Observed
S = Scat

ATTACHMENT 3

Sensitive Plant Species Observed or with the Potential for Occurrence

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence						
Species' *Scientific Name* Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
GYMNOSPERMS						
PINACEAE **PINE FAMILY**						
Pinus torreyana ssp. *torreyana* Torrey pine (native pop.)	–/–	1B.2	MSCP	Evergreen tree; closed-cone coniferous forest, chaparral; sandstone; elevation 250–525 feet. San Diego County endemic. There are approximately 7,000 native trees, most in Torrey Pines State Reserve, others on private property. This species is widely planted as an ornamental in the region.	Yes	Along slopes adjacent to State Route 56 (SR-56) near bridge. Planted stands/individuals are typically not considered sensitive.
ANGIOSPERMS: DICOTS						
CHENOPODIACEAE **GOOSEFOOT FAMILY**						
Aphanisma blitoides aphanisma	–/–	1B.2	NE, MSCP	Annual herb; coastal bluff scrub, coastal sage scrub; sandy soils; blooms March–June; elevation less than 1,000 feet.	No	Low potential. Sites lack suitable habitat and soils.
APIACEAE **CARROT FAMILY**						
Eryngium aristulatum var. *parishii* San Diego button-celery	CE/FE	1B.1	NE, MSCP	Biennial/perennial herb; vernal pools, mesic areas of coastal sage scrub and grasslands, blooms April–June; elevation less than 2,000 feet. Known from San Diego and Riverside counties. Additional populations occur in Baja California, Mexico.	No	Low potential. Sites lack suitable habitat and soils.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence						
Species' *Scientific Name* Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
ASTERACEAE SUNFLOWER FAMILY						
Ambrosia pumila San Diego ambrosia	–/FE	1B.1	NE, MSCP	Perennial herb (rhizomatous); chaparral, coastal sage scrub, valley and foothill grasslands, creek beds, vernal pools, often in disturbed areas; blooms May–September; elevation less than 1,400 feet. Many occurrences extirpated in San Diego County.	No	Low potential. Sites lack suitable habitat and soils.
Baccharis vanessae Encinitas baccharis [=Encinitas coyote brush]	CE/FT	1B.1	NE, MSCP	Perennial deciduous shrub; chaparral; maritime; sandstone; blooms August–November; elevation less than 2,500 feet. San Diego County endemic. Known from fewer than 20 occurrences. Extirpated from Encinitas area.	No	Low potential. Sites lack suitable habitat and soils.
Deinandra [=*Hemizonia*] *conjugens* Otay tarplant	CE/FT	1B.1	NE, MSCP	Annual herb; clayey soils of coastal scrub openings, valley and foothill grassland; blooms April–June, elevation less than 1,000 feet.	No	Low potential. Sites lack suitable habitat and soils.
Iva hayesiana San Diego marsh-elder	–/–	2B.2	–	Perennial herb; marshes and swamps, playas, riparian areas; blooms April–September; elevation below 1,700 feet.	Yes	Observed in low numbers along creek beneath SR-56 bridge.
CACTACEAE CACTUS FAMILY						
Cylindropuntia californica var. *californica* [=*Opuntia parryi* var. *serpentina*] snake cholla	–/–	1B.1	NE, MSCP	Perennial stem succulent; chaparral, coastal sage scrub; blooms April–May; elevation 100–500 feet.	No	Low potential. Easily observed if present.
Ferocactus viridescens San Diego barrel cactus	–/–	2B.1	MSCP	Perennial stem succulent; chaparral, coastal sage scrub, valley and foothill grasslands, vernal pools; blooms May–June; elevation less than 1,500 feet.	No	Low potential. Easily observed if present.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence						
Species' *Scientific Name* Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
CRASSULACEAE STONECROP FAMILY						
Dudleya brevifolia [=*D. blochmaniae* ssp. *brevifolia*] short-leaved dudleya [short-leaved live-forever]	CE/–	1B.1	NE, MSCP	Perennial herb; southern maritime chaparral, coastal sage scrub on Torrey sandstone; blooms in April; elevation less than 1,000 feet. San Diego County endemic. Known from fewer than five occurrences in the Del Mar and La Jolla areas.	No	Low potential. Sites lack suitable habitat and soils.
Dudleya variegata variegated dudleya	–/–	1B.2	NE, MSCP	Perennial herb; openings in chaparral, coastal sage scrub, grasslands, vernal pools; blooms May–June; elevation less than 1,900 feet.	No	Low potential. Sites lack suitable habitat and soils.
FABACEAE LEGUME FAMILY						
Astragalus tener var. *titi* coastal dunes milkvetch	CE/FE	1B.1	NE, MSCP	Annual herb; coastal bluff scrub, coastal dunes, sandy soils, mesic coastal prairie; blooms March–May; elevation less than 200 feet. California endemic. Known from fewer than 10 occurrences in San Diego (presumed extirpated), Los Angeles (presumed extirpated), and Monterey counties.	No	Low potential. Sites lack suitable habitat and soils.
FAGACEAE OAK FAMILY						
Quercus dumosa Nuttall's scrub oak	–/–	1B.1	–	Perennial evergreen shrub; closed-cone coniferous forest, coastal chaparral, coastal sage scrub; sandy and clay loam soils; blooms February–March; elevation less than 1,300 feet.	No	Low potential. Easily observed if present.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence						
Species' *Scientific Name* Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
LAMIACEAE MINT FAMILY						
Acanthomintha ilicifolia San Diego thornmint	CE/FT	1B.1	NE, MSCP	Annual herb; chaparral, coastal sage scrub, and grasslands; friable or broken clay soils; blooms April–June; elevation less than 3,200 feet.	No	Low potential. Sites lack suitable habitat and soils.
Pogogyne abramsii San Diego mesa mint	CE/FE	1B.1	NE, MSCP	Annual herb; vernal pools; blooms April–July; elevation 300–700 feet. San Diego County endemic.	No	Low potential. Sites lack suitable habitat and soils.
Pogogyne nudiuscula Otay mesa mint	CE/FE	1B.1	NE, MSCP	Annual herb; vernal pools; blooms May–July; elevation 300–820 feet. In California, known from approximately 10 occurrences in Otay Mesa in San Diego County. Additional populations occur in Baja California, Mexico.	No	Low potential. Sites lack suitable habitat and soils.
POLEMONIACEAE PHLOX FAMILY						
Navarretia fossalis spreading navarretia [=prostrate navarretia]	–/FT	1B.1	NE, MSCP	Annual herb; vernal pools, marshes and swamps, chenopod scrub; blooms April–June; elevation 100–4,300 feet.	No	Low potential. Sites lack suitable habitat and soils.
RHAMNACEAE BUCKTHORN FAMILY						
Adolphia californica California adolphia	–/–	2B.1	–	Perennial deciduous shrub; Diegan coastal sage scrub and chaparral; clay soils; blooms December–May; elevation 100–2,500 feet.	No	Low potential. Easily observed if present.
ANGIOSPERMS: MONOCOTS						
AGAVACEAE AGAVE FAMILY						
Agave shawii var. *shawii* Shaw's agave	–/–	2B.1	NE, MSCP	Perennial leaf succulent; coastal bluff scrub, coastal sage scrub, maritime succulent scrub; blooms September–May; elevation less than 400 feet.	No	Low potential. Sites lack suitable habitat and soils.

Attachment 3 Sensitive Plant Species Observed or with the Potential for Occurrence						
Species' *Scientific Name* Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
JUNCACEAE RUSH FAMILY						
Juncus acutus ssp. *leopoldii* southwestern spiny rush	–/–	4.2	–	Perennial herb (rhizomatous); coastal dunes, meadows and seeps, coastal salt marsh, riparian; blooms May–June; elevation less than 3,000 feet.	Yes	Scattered individuals along creek beneath State Route 56 bridge.
POACEAE GRASS FAMILY						
Orcuttia californica California Orcutt grass	CE/FE	1B.1	NE, MSCP	Annual herb; vernal pools; blooms April–August; elevation 50–2,200 feet.	No	Low potential. Sites lack suitable habitat and soils.

FEDERAL CANDIDATES AND LISTED PLANTS
FE = Federally listed endangered
FT = Federally listed threatened

STATE LISTED PLANTS
CE = State listed endangered

CALIFORNIA NATIVE PLANT SOCIETY (CNPS): CALIFORNIA RARE PLANT RANKS (CRPR)
1A = Species presumed extinct.
1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
2A = Plants presumed extirpated in California, but more common elsewhere.
2B = Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.
3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.
.1 = Species seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).
.2 = Species fairly threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat).
.3 = Species not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known).
CBR = Considered but rejected

CITY OF SAN DIEGO
NE = Narrow endemic
MSCP = Multiple Species Conservation Program covered species

ATTACHMENT 4

Sensitive Wildlife Species Occurring or with the Potential to Occur

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
IGUANIDAE IGUANID LIZARDS					
Coast horned lizard *Phrynosoma blainvillii* [= *P. coronatum* coastal population]	CSC, MSCP, *	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.	No	Low	Soils in the survey areas have been disturbed and are not suitable for this species.
TEIIDAE WHIPTAIL LIZARDS					
Belding's orange-throated whiptail *Aspidoscelis hyperythra beldingi*	CSC, MSCP	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.	No	Moderate	This species was not observed but may occur in low numbers in the coastal sage scrub habitat.
Coastal whiptail *Aspidoscelis tigris stejnegeri*	CSC	Coastal sage scrub, chaparral, woodlands, and streamsides where plants are sparsely distributed.	No	Moderate	This species was not observed but may occur in low numbers in the coastal sage scrub habitat.
COLUBRIDAE COLUBRID SNAKES					
Two-striped gartersnake *Thamnophis hammondii*	CSC, *	Permanent freshwater streams with rocky bottoms. Mesic areas.	No	Moderate	This species was not observed but may occur in low numbers in the freshwater marsh beneath the State Route 56 bridge.
CROTALIDAE RATTLESNAKES					
Red diamond rattlesnake *Crotalus ruber*	CSC	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.	No	Moderate	This species was not observed but may occur in low numbers in the coastal sage scrub habitat.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
BIRDS (Nomenclature from American Ornithologists' Union 2015 and Unitt 2004)					
ACCIPITRIDAE **HAWKS, KITES, & EAGLES**					
Cooper's hawk (nesting) *Accipiter cooperii*	WL, MSCP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.	No	Moderate	This species was not observed but may use the willow scrub habitat beneath the State Route 56 bridge.
Sharp-shinned hawk (nesting) *Accipiter striatus velox*	WL	Open deciduous woodlands, forests, edges, parks, residential areas. Migrant and winter visitor.	No	Moderate	This species was not observed but may use the willow scrub habitat beneath the State Route 56 bridge.
SYLVIIDAE **GNATCATCHERS**					
Coastal California gnatcatcher *Polioptila californica californica*	FT, CSC, MSCP	Coastal sage scrub, maritime succulent scrub. Resident.	No	Moderate	This species was not observed but may occur in low numbers in the coastal sage scrub habitat.
EMBERIZIDAE **EMBERIZIDS**					
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	WL, MSCP	Coastal sage scrub, chaparral, grassland. Resident.	No	Moderate	This species was not observed but may occur in low numbers in the coastal sage scrub habitat.
ICTERIDAE **BLACKBIRDS & NEW WORLD ORIOLES**					
Tricolored blackbird *Agelaius tricolor*	CSC, MSCP	Freshwater marshes, agricultural areas, lakeshores, parks. Localized resident.	No	Low	This species was not observed. The freshwater marsh habitat present is likely too small in area to support this species.

Attachment 4 Sensitive Wildlife Species Occurring or with the Potential to Occur					
Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MAMMALS (Nomenclature from Jones et al. 1997 and Hall 1981)					
MURIDAE **OLD WORLD MICE & RATS (I)**					
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	Coastal sage scrub and chaparral.	No	Low	This species was not observed in the coastal sage scrub habitat. Woodrat middens are easily observable and none were found in the survey areas.
CERVIDAE **DEER**					
Southern mule deer *Odocoileus hemionus fuliginata*	MSCP	Many habitats.	No	Moderate	This species was not observed, but may use the habitats beneath the State Route 56 bridge.

(I) = Introduced species

STATUS CODES

Listed/Proposed

FT = Listed as threatened by the federal government

Other

CSC = California Department of Fish and Wildlife species of special concern
WL = California Department of Fish and Wildlife watch list species
PSE = Proposed as endangered by the state of California
* = Taxa listed with an asterisk fall into one or more of the following categories:

- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
- Population(s) in California that may be peripheral to the major portion of a taxon's range but which are threatened with extirpation within California
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

RECON

Jurisdictional Waters Delineation for the Black Mountain Road Community Plan Amendment Project San Diego, California

Prepared for
CalAtlantic Homes
16465 Via Esprillo, Suite 150
San Diego, CA 92127

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333

RECON Number 6524
March 26, 2019

Gerry Scheid, Senior Biologist

TABLE OF CONTENTS

Acronyms ii

1.0 Summary of Findings 1

2.0 Introduction 1

3.0 Methods 6

3.1 ACOE Waters of the U.S. 6

3.2 CDFW and RWQCB Waters of the State 9

3.3 City of San Diego Wetlands 10

4.0 Results of Field Data 10

4.1 Vegetation 10

4.2 Soils 11

4.3 Hydrology 11

5.0 Jurisdictional Waters Delineation 11

5.1 Waters of the U.S. (ACOE Jurisdiction) 13

5.2 Waters of the State (CDFW and RWQCB Jurisdiction) 13

5.3 City Wetlands 13

6.0 Regulatory Issues 13

7.0 References Cited 14

FIGURES

1: Regional Location 3

2: Project Location on USGS Map 4

3: Location of MM-TRA-2 Survey Area on Aerial Photograph 5

4: Location of Jurisdictional Waters within the MM-TRA-2 Survey Area 12

ATTACHMENT

1: Field Data Sheets

Acronyms

ACOE	U.S. Army Corps of Engineers
City	City of San Diego
CDFW	California Department of Fish and Wildlife
CPA	Community Plan Amendment
CWA	Clean Water Act
FAC	facultative
FACU	facultative upland
FACW	facultative wet
GPA	General Plan Amendment
NI	not indicated
OBL	obligate
PFFP	Public Facilities Financing Plan
Project	Black Mountain Road Community Plan Amendment Project
RECON	RECON Environmental, Inc.
RWQCB	Regional Water Quality Control Board
SR-56	State Route 56
TPP	Transportation Phasing Plan
UPL	upland

1.0 Summary of Findings

RECON Environmental, Inc. (RECON) biologists performed a routine wetland delineation on four proposed roadway improvements located within in the city of San Diego, California. After review of the footprints of the proposed roadway improvements, it was determined that only one had the potential to support jurisdictional waters. Methods for delineating wetlands followed guidelines set forth by the U.S. Army Corps of Engineers (ACOE; 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008).

ACOE federal waters of the U.S., and California Department of Fish and Wildlife (CDFW) and California Regional Water Quality Control Board (RWQCB) waters of the state were all delineated within the project area. ACOE jurisdictional waters of the U.S. total 0.32 acre of wetland on-site. CDFW and RWQCB jurisdictional waters of the state total 0.32 acre of wetland. City of San Diego wetlands in the survey area also total 0.32 acre.

Each of the agencies will verify this delineation during the discretionary review and permitting processes. Under a no-net-loss to wetlands policy, the agencies will require that impacts be avoided and minimized to the greatest extent practicable, and that any unavoidable impacts be mitigated.

2.0 Introduction

The Black Mountain Road Community Plan Amendment (CPA) Project (project) proposes to reclassify Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community. The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the community plan adjacent to the Los Peñasquitos Canyon Preserve. Black Mountain Road currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over State Route 56 (SR-56) is wider and operates as a 5-lane Primary Arterial. The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Transportation Element of the Rancho Peñasquitos Community Plan to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City Planning Commission initiated the Community Plan Amendment on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

[1]The City of San Diego General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

The following three roadway improvements identified in the Transportation Impact Study would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

- MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.
- MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 from Carmel Mountain Road to approximately 2,182 feet to the east.
- MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan (TPP) to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the TPP for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans (PFFPs) to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the PFFPs are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

This report describes the results of a jurisdictional waters delineation conducted on the survey area for MM-TRA-2, located in the city of San Diego, California (Figures 1 and 2). The MM-TRA-2 survey area is located to the east of Carmel Mountain Road along the south side of SR-56 and beneath a bridge over a small canyon (Figure 3).

This report includes the jurisdictional waters delineation data necessary for a jurisdictional determination by the ACOE, CDFW, RWQCB, and City of San Diego. Review and approval of the jurisdictional waters delineation would occur during the discretionary review and permit processes for each agency.



Project Location

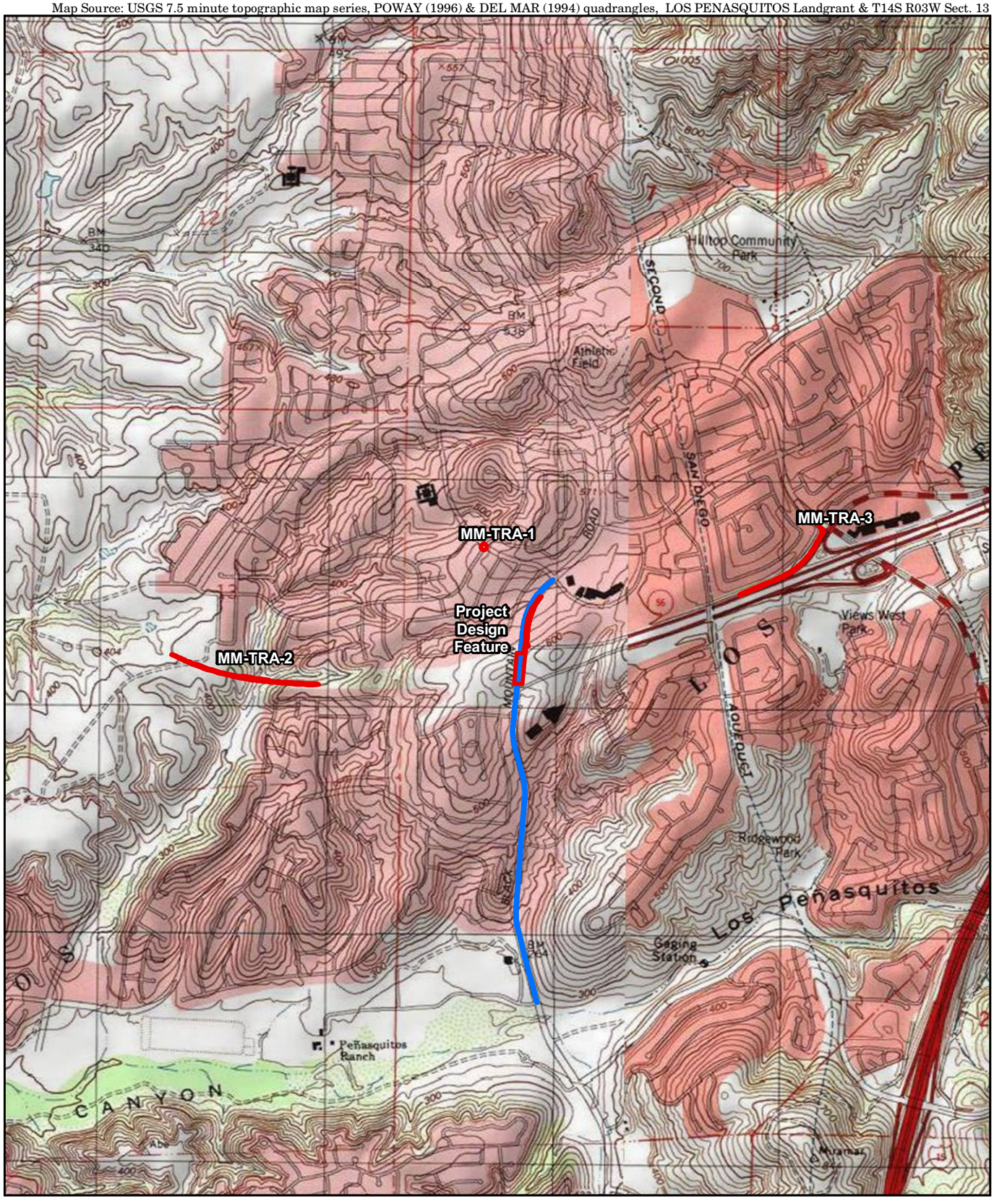
RECON

M:\JOBS4\6524\common_gis\fig1.mxd 12/4/2017 sab

FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, POWAY (1996) & DEL MAR (1994) quadrangles, LOS PENASQUITOS Landgrant & T14S R03W Sect. 13



Project Roadway

Project Design Feature and Traffic Mitigation Measures

RECON

M:\JOBS4\6524\common_gis\fig2_biotec.mxd 2/20/2018 sab

FIGURE 2

Project Location on USGS Map

Image source: NearMaps (flown Nov 2017)



FIGURE 3
Location of MM-TRA-2
Survey Area on Aerial Photograph

RECON

M:\JOBS4\6524\common_gis\fig3_wet.mxd 2/20/2018 sab

3.0 Methods

RECON biologists performed a routine jurisdictional waters delineation within the MM-TRA-2 survey area on November 10, 2017, according to the guidelines set forth by ACOE (1987, 2008). A jurisdictional waters delineation is used to identify and map the extent of the wetlands and waters of the U.S., waters of the state, and City of San Diego wetlands. Prior to conducting the delineation, an aerial photograph was examined to aid in the determination of potential federal, state, and city jurisdictional waters in the survey area. Once on-site, the survey area was examined to determine the presence of any indicators of jurisdictional waters, including wetland vegetation, hydric soils, and hydrology. Soil test pits were located: (1) within potential wetland areas and (2) in or adjacent to the spot where the boundary between wetland and upland was inferred (based on changes in the topography, hydrology, and composition of the vegetation). While in the field, the survey area was also examined for potential ACOE waters of the U.S., potential waters of the state, and potential city wetlands.

3.1 ACOE Waters of the U.S.

According to the ACOE manual (ACOE 1987), wetland waters of the U.S. are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions."

The definition of a wetland includes the phrase "under normal circumstances," because there are situations in which the vegetation of a wetland has been removed or altered as a result of a recent natural event or human activities (ACOE 1987).

Atypical situations and problem areas may lack one or more of the three criteria and still be considered wetlands. Background information on the previous condition of the area and/or field observations may indicate that the site met the wetland criteria prior to disturbance. Additional delineation procedures would be employed if normal circumstances did not occur on a site. For the survey area, atypical situations or problem areas do not occur; normal circumstances are present.

3.1.1 Regulatory Definition

In accordance with Section 404 of the Clean Water Act (CWA), ACOE regulates the discharge of dredged or fill material into waters of the United States. The term "waters of the United States" is defined as:

- All waters currently used, or used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;

- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation, or destruction of which could affect foreign commerce including any such waters, (1) which could be used by interstate or foreign travelers for recreational or other purposes; or (2) from which fish or shellfish are, or could be, taken and sold in interstate or foreign commerce; or (3) which are used or could be used for industries in interstate commerce.
- All other impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified above;
- The territorial seas; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the paragraphs above [33 Code of Federal Regulations (CFR) Part 328.3(a)].

3.1.2 Wetland Parameters

Wetlands are delineated using three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. According to ACOE, indicators for all three parameters must be present to qualify as a wetland.

3.1.2.1 Hydrophytic Vegetation

Hydrophytic vegetation is defined as "the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (ACOE 1987). The potential wetland areas within the survey area were surveyed by walking through the project site and making observations of those areas exhibiting characteristics of jurisdictional waters or wetlands. Vegetation units with potential wetland areas were examined, and data for each vegetation stratum (i.e., tree, shrub, herb, and vine) were recorded on the datasheet provided in the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*[2] (ACOE 2008). The percent absolute cover of each species present was visually estimated and recorded.

The wetland indicator status of each species recorded was determined by using the list of wetland plants for the arid southwest provided by the ACOE (2013). An obligate (OBL) indicator status refers to plants that have a 99 percent probability of occurring in wetlands under natural conditions. A facultative wet (FACW) indicator status refers to plants that occur in wetlands (67 to 99 percent probability) but are occasionally found in non-wetlands. A facultative (FAC) indicator status refers to plants that are equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66 percent). Facultative upland

[2]Hereafter referred to as *Arid Supplement.*

(FACU) species are more often found in upland sites. Upland (UPL) species have a high probability to occur in upland sites. A not indicated (NI) status refers to species that have insufficient data available to determine an indicator status at this time for the local region.

Plant species nomenclature follows that contained in the *online Jepson Flora* (Jepson Flora Project 2015). Dominant species with an indicator status of NI or not listed in the 1997 list were evaluated as either wetland or upland indicator species based on local professional knowledge of where the species are most often observed in habitats characteristic of southern California.

There are three indicators or tests to determine hydrophytic vegetation on a site: the dominance test, prevalence index, and morphological adaptations. The 50/20 rule is a repeatable and objective procedure for selecting a dominant plant species and is recommended when data are available for all species in the community (ACOE 2008). Dominant species are those plants that individually or collectively contribute more than 50 percent of the total vegetative cover plus those species that, by themselves, comprise 20 percent or more of the total cover.

If the vegetation at a particular site passes the dominance test (using the 50/20 rule), the hydrophytic vegetation criterion is considered fulfilled. If it fails the dominance test and positive indicators of hydric soils and/or wetland hydrology are present, it is necessary to apply the prevalence index. The prevalence index is a weighted-average wetland indicator status of all plant species at a test site, where each indicator status category is given a numeric code and weighted by percent cover (ACOE 2008). If a prevalence index is 3.0 or less, the hydrophytic vegetation criterion is considered fulfilled.

If a site fails the prevalence index and positive indicators of hydric soils and/or wetland hydrology are present, it is necessary to assess the presence or absence of morphological adaptations. To apply this indicator, morphological features must be observed on more than 50 percent of the individuals of a FACU species living in an area where indicators of hydric soil and wetland hydrology are present (ACOE 2008). Once this indicator is applied, the dominance test and/or the prevalence index are/is recalculated using a FAC indicator status of this species (ACOE 2008).

3.1.2.2 Hydric Soils

A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (ACOE 1987). Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds (ACOE 2008). The hydric soil criterion is considered fulfilled at a location if soils in the area can be inferred to have a high groundwater table, evidence of prolonged soil saturation exists, or any indicators suggesting a long-term reducing environment in the upper 18 inches of the soil profile are present.

A sample point was selected within a potential wetland area where the apparent boundary between wetland and upland was inferred based on changes in the composition of the

vegetation and topography. The soil pit was dug to a depth of at least 18 inches or to a depth necessary to determine soil color, evidence of soil saturation, depth to groundwater, and indicators of a reducing soil environment (e.g., mottling, gleying, and sulfidic odor).

Hydric soil indicators are presented in three groups in the *Arid Supplement* (ACOE 2008): "all soils, sandy soils, and loamy and clayey soils." Indicators applicable to all soil textures are indicated as A1 through A10 on the datasheet and include histosols, histic epipedon, stratified layers, and muck, among others. Indicators of sandy soils are noted as S1 through S6 and include sandy gleyed matrix, sandy redox, and stripped matrix. F1 (loamy mucky mineral) through F9 (vernal pools) are indicators of hydric conditions within loamy and clayey soils. A complete description of each of the hydric soil indicators is provided in the 2008 *Arid Supplement* and should be referenced during each delineation.

3.1.2.3 Wetland Hydrology

The presence of wetland hydrology indicators confirm that inundation or saturation has occurred on a site, but may not provide information about the timing, duration, or frequency of the event. Hydrology features are generally the most ephemeral of the three wetland parameters (ACOE 2008).

In the 2008 *Arid Supplement*, wetland hydrology indicators are divided into four groups. Those that are determined based on direct observation are in Group A. These include the presence of surface water, a high-water table, and saturation. Water marks, drift deposits, surface soil cracks, and other indicators of flooding or ponding fall within Group B. Group C consists of indicators that provide indirect evidence that a site was saturated recently, such as the presence of sulfidic odors or oxidized rhizospheres along living roots. Group D consists of vegetation and soil features that indicate recent wet conditions, such as the FAC-neutral test or a shallow aquitard (ACOE 2008). These indicators are further classified as primary or secondary indicators.

Hydrologic information for the site was obtained by reviewing U.S. Geological Survey topographic maps and by directly observing hydrology indicators in the field. The wetland hydrology criterion is considered fulfilled at a location if, based upon the conclusions inferred from the field observations, an area has a high probability of being periodically inundated or has soils saturated to the surface at some time during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (ACOE 1987). If at least one primary indicator or at least two secondary indicators are found at a sample point, the wetland hydrology criterion is considered fulfilled.

3.2 CDFW and RWQCB Waters of the State

Under Sections 1600–1607 of the Fish and Game Code, CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats (e.g., southern willow scrub) associated with watercourses. Jurisdictional

waters are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider.

RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes waters of the state as mandated by both the federal CWA Section 401 and the California Porter-Cologne Water Quality Control Act.

3.3 City of San Diego Wetlands

According to the City of San Diego's Municipal Code (City of San Diego 2012), wetlands are areas that are characterized by any of the following conditions: (1) all areas persistently or periodically containing naturally occurring wetland vegetation communities characteristically dominated by hydrophytic vegetation; (2) areas that have hydric soils or wetland hydrology and lack naturally occurring wetland vegetation communities because human activities have removed the historic wetland vegetation; or (3) areas lacking wetland vegetation communities, hydric soils, and wetland hydrology due to non-permitted filling of previously existing wetlands or catastrophic reoccurring natural events that prevent establishment of vegetation; (4) areas mapped as *wetlands* on Map No. C-713 as shown in Chapter 13, Article 2, Division 6 (Sensitive Coastal Overlay Zone) (City of San Diego 2012).

4.0 Results of Field Data

A description of the major vegetation units observed and soil types encountered, and a discussion of the local hydrology in the project area are presented below. Copies of the field data forms summarizing information on vegetation, soils, and hydrology observed at each sample site are provided in Attachment 1.

4.1 Vegetation

Three vegetation communities (coastal sage scrub, southern willow scrub, freshwater marsh) and two land cover types (ornamental plantings, developed land) occur in the MM-TRA-2 survey area. Areas with and without hydrophytic vegetation occur on-site. Areas with hydrophytic vegetation, in general, were considered potential jurisdictional waters. Locations on-site without hydrophytic vegetation were considered upland, unless evidence suggested that a wetland or other jurisdictional water might occur at the particular location. Vegetation dominated by OBL, FACW, and/or FAC hydrophytic indicator plant species usually satisfies the hydrophytic vegetation criteria, one of the three criteria necessary to be identified as an ACOE wetland.

4.1.1 Areas with Hydrophytic Vegetation

Hydrophytic vegetation within the survey area occurs within the areas considered wetland. These areas are dominated by OBL and FACW hydrophytic vegetation indicators such as

cattail (*Typha latifolia*), willows (*Salix laevigata*, *S. lasiolepi*s, *S, gooddingii*), and mule fat (*Baccharis salicifolia*).

4.1.2 Areas Lacking Hydrophytic Vegetation

The coastal sage scrub vegetation community and the ornamental plantings areas are dominated by upland plant species and do not satisfy the hydrophytic vegetation criteria. These vegetation types occur adjacent to the outside of the bed and bank of the drainage or along the slopes adjacent to SR-56.

4.2 Soils

Three soil series are present on-site: Redding gravelly loam, Olivenhain cobbly loam, and terrace escarpments (U.S. Department of Agriculture 1973). Sample points were selected within potential wetland areas and where the apparent boundary between wetland and upland was inferred, based on changes in the topography, hydrology, and composition of the vegetation. Soil test pits were dug to search for indicators of hydric soil conditions. Hydric soil indicators observed in the test pits included a low chroma matrix color, mottling, and saturation.

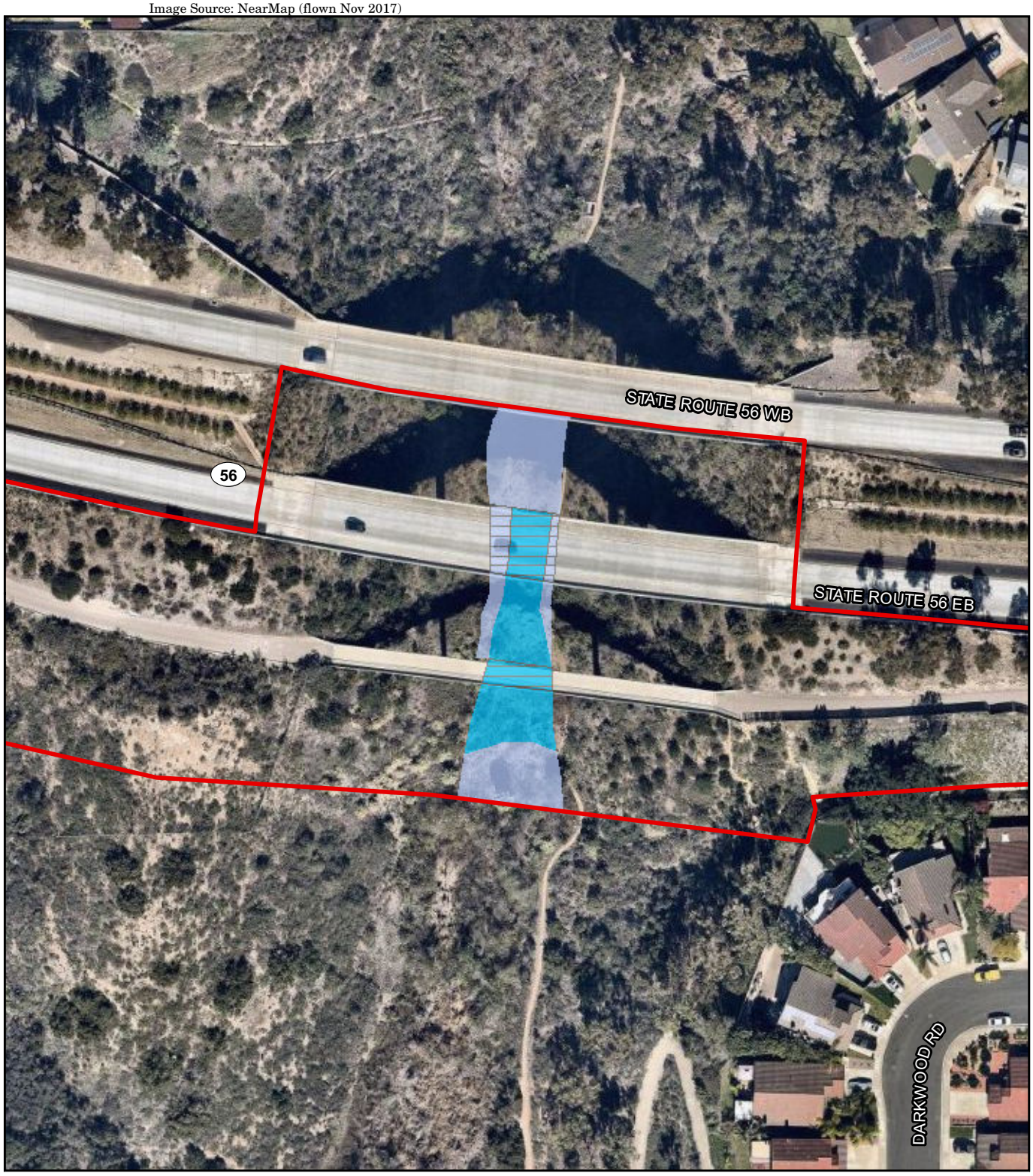
4.3 Hydrology

One drainage courses occurs within the MM-TRA-2 survey area. This drainage has an intermittent hydrologic regime. Hydrology inputs are from seasonal precipitation inputs and year-round urban runoff that drain from the adjacent lands and developed areas. Flows in this drainage travel in a southerly direction and drain into Los Peñasquitos Creek located to the south. Los Peñasquitos Creek drains westerly and connects to the Pacific Ocean via Los Peñasquitos Lagoon. Hydrology indicators observed included inundation, drift deposits, and drainage patterns.

5.0 Jurisdictional Waters Delineation

ACOE, CDFW, RWQCB and the City of San Diego will verify this jurisdictional waters delineation during the discretionary and permit review processes to make a final jurisdictional determination with respect to Section 404 of the CWA, Section 1600 of the Fish and Game Code, the California Porter–Cologne Water Quality Control Act, and the City of San Diego's Biology Guidelines (City of San Diego 2012). The location of federal waters of the U.S., waters of the state, and city wetlands are shown on Figure 4. A total of 0.32 acre of federal, state, and City wetland occurs in the MM-TRA-2 survey area.

Image Source: NearMap (flown Nov 2017)



0 Feet 100

Survey Area

ACOE, CDFW, RWQCB, City of San Diego Wetland Jurisdictional Habitat

- Freshwater Marsh
- Freshwater Marsh (under bridge)
- Southern Willow Scrub
- Southern Willow Scrub (under bridge)

RECON

M:\JOBS4\6524\common_gis\fig4_wet.mxd 2/20/2018 sab

FIGURE 4

Location of Jurisdictional Waters within the MM-TRA-2 Survey Area

5.1 Waters of the U.S. (ACOE Jurisdiction)

Federal waters of the U.S. on-site include 0.32 acre of wetland waters. The limit of the wetland was determined by the lateral extent of the hydrophytic vegetation and Ordinary High Water Mark.

5.2 Waters of the State (CDFW and RWQCB Jurisdiction)

Wetland waters of the state totaling 0.32 acre occur on-site. The limit of the CDFW wetland was estimated to be at the outer drip line of the canopy for the riparian vegetation, including the limits of the bed and bank. The RWQCB takes jurisdiction over all waters of the state and all waters of the U.S. as mandated by both the federal CWA and the California Porter–Cologne Water Quality Control Act. The extent of RWQCB jurisdiction in this case is the same as the limits of the waters of the state as all federal waters of the U.S. are within this limit and total 0.32 acre of wetland.

5.3 City Wetlands

The City of San Diego takes jurisdiction over all naturally occurring wetland vegetation. For this project, city wetlands are the same as those delineated as waters of the state and total 0.32 acre.

6.0 Regulatory Issues

ACOE, CDFW, and RWQCB jurisdictional waters are regulated by federal and state governments under a no-net-loss policy, and all impacts are considered significant and should be avoided to the greatest extent possible. Unavoidable and authorized impacts would require mitigation through habitat creation, enhancement, or preservation as determined by a qualified restoration biologist in consultation with the regulatory agencies during the permitting process. Any impacts to ACOE, CDFW, and RWQCB jurisdictional waters would require a Section 404 permit authorization from ACOE, a 1600 Streambed Alteration Agreement from CDFW, and a 401 State Water Quality Certification from RWQCB, along with compensatory mitigation.

7.0 References Cited

Jepson Flora Project
2014 Jepson eflora. http://ucjeps.berkeley.edu/IJM.html.

San Diego, City of
2012 San Diego Municipal Code – Land Development Code: Biology Guidelines. April.

U.S. Army Corps of Engineers (ACOE)
1987 Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, Department of the Army. January.

2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.

2013 National Wetland Plant List. http://wetland_plants.usace.army.mil.

U.S. Department of Agriculture
1973 Soil Survey, San Diego Area, California. Soil Conservation Service and Forest Service. Roy H. Bowman, ed. San Diego. December.

ATTACHMENT 1

Field Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: TRA-2 Traffic Mitigation Area City/County: San Diego / San Diego Sampling Date: 11/10/17

Applicant/Owner: CalAtlantic Homes State: CA Sampling Point: 1

Investigator(s): G. Scheid Section, Township, Range:

Landform (hillslope, terrace, etc.): canyon bottom Local relief (concave, convex, none): concave Slope (%): 0.2

Subregion (LRR): LRR-C Lat: 32 deg. 57 min. 11.6 sec. Long: 117 deg. 8 min. 32.8 sec. Datum: NAD83

Soil Map Unit Name: Terrace escarpments NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	10	Yes	FACW
2. *Salix lasiolepis*	20	Yes	FACW
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Baccharis salicifolia*	5	Yes	FACW
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Typha latifolia*	60	Yes	OBL
2. *Juncus acutus*	20	No	FACW
3. *Heliotropium curassivicum*	10	No	FACU
4. *Scirpus robustus*	10	No	OBL
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR3/2	90	10YR 3/1	10	RM	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 6

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: TRA-2 Traffic Mitigation Area City/County: San Diego / San Diego Sampling Date: 11/10/17

Applicant/Owner: CalAtlantic Homes State: CA Sampling Point: 2

Investigator(s): G. Scheid Section, Township, Range:

Landform (hillslope, terrace, etc.): canyon bottom Local relief (concave, convex, none): concave Slope (%): 0.2

Subregion (LRR): LRR-C Lat: 32 deg. 57 min. 12.1 sec. Long: 117 deg. 8 min. 32.75 sec Datum: NAD83

Soil Map Unit Name: Terrace escarpments NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	30	Yes	FACW
2. *Washintonia robusta*	5	No	FACW
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Baccharis salicifolia*	15	Yes	FACW
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Typha latifolia*	75	Yes	OBL
2. *Iva haysiana*	20	No	FACW
3. *Apium graveolens*	5	No	FAC
4. *Juncus acutus*	5	No	FACW
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR3/2	95	10YR3/1	5	RM	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 8

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: TRA-2 Traffic Mitigation Area City/County: San Diego / San Diego Sampling Date: 11/10/17

Applicant/Owner: CalAtlantic Homes State: CA Sampling Point: 3

Investigator(s): G. Scheid Section, Township, Range:

Landform (hillslope, terrace, etc.): canyon bottom Local relief (concave, convex, none): concave Slope (%): 0.2

Subregion (LRR): LRR-C Lat: 32 deg. 57 min. 12.6 sec. Long: 117 deg. 8 min. 32.68 sec, Datum: NAD83

Soil Map Unit Name: Terrace escarpments NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix gooddingii*	40	Yes	FACW
2. *Washingtonia robusta*	15	No	FACW
3.			
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Iva haysiana*	25	Yes	FACW
2. *Baccharis salicifolia*	5	No	FACW
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size:)			
1. *Typha latifolia*	50	Yes	OBL
2. *Juncus acutus*	20	Yes	FACW
3. *Cortederia sellona*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
		= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/.2	95	5YR 6/8	5	RM	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 6

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT 5

Jurisdictional Waters Delineation for the
Black Mountain Road Community Plan Amendment Project

RECON

Archaeological Resources Survey for the Black Mountain Road Community Plan Amendment Project San Diego, California

Prepared for
CalAtlantic Homes
16465 Via Esprillo, Suite 150
San Diego, CA 92127
Contact: Mr. William Dumka

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333

RECON Number 6524
March 25, 2019



Carmen Zepeda-Herman, M.A., Project Archaeologist

ARCHAEOLOGICAL RESOURCE REPORT FORM

I. PROJECT DESCRIPTION AND LOCATION

The Black Mountain Road Community Plan Amendment (CPA) Project (project) proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project site is located in the City of San Diego (City), in San Diego County, east of Interstate 5, west of Interstate 15, and crosses State Route 56 (SR-56; Figure 1). The project site occurs in an unsectioned portion of Los Peñasquitos landgrant, Township 14 South, Range 3 West of the U.S. Geological Survey 7.5-minute topographic maps Poway and Del Mar quadrangles, and Section 13, Township 14 South, Range 3 West of the USGS 7.5-minute map Del Mar quadrangle (Figure 2). The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project roadway currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over SR-56 is wider and operates as a 5-lane Primary Arterial.

The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Rancho Peñasquitos Community Plan Circulation Element to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City Planning Commission initiated the Community Plan Amendment on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound land created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

The following three roadway improvements identified in the Transportation Impact Study (TIS) would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 between Camino del Sur and Black Mountain Road.

[1]The City of San Diego General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

Figure 3 shows the locations of the survey areas for the project design feature and three traffic mitigation measures in relation to the project roadway. The footprints of the project design feature, MM-TRA-2, and MM-TRA-3 were surveyed as part of this archaeological resources survey. Although shown on Figure 3, the footprint of MM-TRA-1 is limited to installation of a traffic signal within an existing paved intersection, and therefore was not surveyed.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan (TPP) to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the TPP for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans (PFFPs) to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the PFFPs are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

II. SETTING

Natural Environment (Past and Present)

The project is located north of Los Peñasquitos Canyon. A tributary of Los Peñasquitos Creek runs southwest/northeast beneath the bridge section of SR-56 within the footprint of MM-TRA-2. Elevations at the footprints of the proposed roadway improvement areas range from 400 feet above mean sea level (AMSL) on the west end of MM-TRA-2 to 320 feet AMSL where the tributary is situated; 520 to 580 feet AMSL at the project design feature, and 580 to 600 feet AMSL at MM-TRA-3. The SR-56 corridor is surrounded by residential use and some commercial development.

The soil in MM-TRA-2 consists of the Redding gravelly loam series with 2 to 9 percent slope (RdC), Terrace Escarpments (TeF), and Olivenhain cobbly loam with 9 to 30 percent slope (OhE). The Redding soils series consists of well-drained, undulating to steep gravelly loams with a gravelly clay subsoil and hardpan. The Terrace Escarpment soils consist of steep to very steep escarpments, which occur on the nearly even fronts of terraces or alluvial fans. There are 4 to 10 inches of loamy or gravelly soil over soft marine sandstone, shale, or gravelly sediments. The Olivenhain cobbly loam series consists of well-drained cobbly loams with a very cobbly clay subsoil that formed in old cobbly and gravely alluvium. The soil within the project design feature consists of Olivenhain cobbly loam with 2 to 9 percent (OhC), Diablo clay with 9 to 15 percent slope (DaD), and Diablo Olivenhain complex with 9 to 30 percent slope (DoE). The Diablo series consists of well-drained, moderately deep to deep clays derived from soft, calcareous sandstone and shale and occurs on uplands. The Diablo–Olivenhain complex is 50 percent Diablo clay and 45 percent Olivenhain cobbly loam. The soil in MM-TRA-3 consists of Diablo clay with 9 to 15 percent slopes and Diablo clay with 15 to 30 percent slopes (DaE2) (U.S. Department of Agriculture 1973).

Ethnography/History

The prehistoric cultural sequence in San Diego County is generally conceived as comprising three basic periods: the Paleoindian, dated between about 11,500 and 8,500 years ago and manifested by the artifacts of the San Dieguito Complex; the Archaic, lasting from about 8,500 to 1,500 years ago (A.D. 500) and manifested by the cobble and core technology of the La Jollan Complex; and the Late Prehistoric, lasting from about 1,500 years ago to historic contact (i.e., A.D. 500 to 1769) and represented by the Cuyamaca Complex. This latest complex is marked by the appearance of ceramics, small arrow points, and cremation burial practices.

The Paleoindian Period in San Diego County is most closely associated with the San Dieguito Complex, as identified by Rogers (1938, 1939, 1945). The San Dieguito assemblage consists of well-made scraper planes, choppers, scraping tools, crescentics, elongated bifacial knives, and leaf-shaped points. The San Dieguito Complex is thought to represent an early emphasis on hunting (Warren et al. 1993:III-33).

The Archaic Period in coastal San Diego County is represented by the La Jolla Complex, a local manifestation of the widespread Millingstone Horizon. This period brings an apparent shift toward a more generalized economy and an increased emphasis on seed resources, small game, and shellfish. The local cultural manifestations of the Archaic Period are called the La Jollan Complex along the coast and the Pauma Complex inland. Pauma Complex sites lack the shell that dominates many La Jollan sites. Along with an economic focus on gathering plant resources, the settlement system appears to have been more sedentary. The La Jollan assemblage is dominated by rough, cobble-based choppers and scrapers, and slab and basin metates. Elko series projectile points appeared by about 3,500 years ago. Large deposits of marine shell at coastal sites argue for the importance of shellfish gathering to the coastal Archaic economy.

Near the coast and in the Peninsular Mountains beginning approximately 1,500 years ago, patterns began to emerge that suggest the ethnohistoric Kumeyaay. The Later Prehistoric Period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversify and intensify during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive but effective technological innovations. The late prehistoric archaeology of the San Diego coast and foothills is characterized by the Cuyamaca Complex. It is primarily known from the work of D. L. True at Cuyamaca Rancho State Park (True 1970). The Cuyamaca Complex is characterized by the presence of steatite arrowshaft straighteners, steatite pendants, steatite comales (heating stones), Tizon Brownware pottery, ceramic figurines reminiscent of Hohokam styles, ceramic "Yuman bow pipes," ceramic rattles, miniature pottery various cobble-based tools (e.g., scrapers, choppers, hammerstones), bone awls, manos and metates, mortars and pestles, and Desert Side-Notched (more common) and Cottonwood Series projectile points.

Ethnohistory

The Kumeyaay (also known as Kamia, Ipai, Tipai, and Diegueño) occupied the southern two-thirds of San Diego County. The Kumeyaay lived in semi-sedentary, politically autonomous villages or rancherias. Settlement system typically consisted of two or more seasonal villages with temporary camps radiating away from these central places (Cline 1984a and 1984b). Their economic system consisted of hunting and gathering, with a focus on small game, acorns, grass seeds, and other plant resources. The most basic social and economic unit was the patrilocal extended family. A wide range of tools was made of locally available and imported materials. A simple shoulder-height bow was utilized for hunting. Numerous other

flaked stone tools were made including scrapers, choppers, flake-based cutting tools, and biface knives. Preferred stone types were locally available metavolcanics, cherts, and quartz. Obsidian was imported from the deserts to the north and east. Ground stone objects include mortars, manos, metates, and pestles typically made of locally available fine-grained granite. Both portable and bedrock types are known. The Kumeyaay made fine baskets using either coiled or twined construction. The Kumeyaay also made pottery, utilizing the paddle-and-anvil technique. Most were a plain brown utility ware called Tizon Brown ware, but some were decorated (Meighan 1954; May 1976, 1978).

Spanish/Mexican/American Periods

The Spanish Period (1769–1821) represents a time of European exploration and settlement. Military and naval forces along with a religious contingent founded the San Diego Presidio, the pueblo of San Diego, and the San Diego Mission in 1769 (Rolle 1998). The mission system used forced Native American labor and introduced horses, cattle, other agricultural goods, and implements. Native American culture in the coastal strip of California rapidly deteriorated despite repeated attempts to revolt against the Spanish invaders (Cook 1976). One of the hallmarks of the Spanish colonial scheme was the rancho system. In an attempt to encourage settlement and development of the colonies, large land grants were made to meritorious or well-connected individuals.

In 1821, Mexico declared its independence from Spain. During the Mexican Period (1822–1848), the mission system was secularized by the Mexican government and these lands allowed for the dramatic expansion of the rancho system. The southern California economy became increasingly based on cattle ranching.

The Mexican period ended when Mexico signed the Treaty of Guadalupe Hidalgo on February 2, 1848, concluding the Mexican–American War (1846–1848; Rolle 1998). Just prior to the signing of the Treaty of Guadalupe Hidalgo, gold was discovered in the northern California Sierra–Nevada foothills, the news was published on March 15, 1848, and the California Gold Rush ensued the following year. The great influx of Americans and Europeans eliminated many remaining vestiges of Native American culture. California became a state in 1850.

The American homestead system encouraged settlement beyond the coastal plain into areas where Indians had retreated to avoid the worst of Spanish and Mexican influences (Carrico 1987; Cook 1976). A rural community cultural pattern existed in San Diego County from approximately 1870 to 1930. These communities were composed of an aggregate of people who lived on scattered farmsteads tied together through a common school district, church, post office, and country store (Hector and Van Wormer 1986; Pourade 1963).

III. AREA OF POTENTIAL EFFECT (APE)

The APE encompasses approximately 2.55 acres in total for the three areas surveyed (project design feature, MM-TRA-2, and MM-TRA-3).

IV. STUDY METHODS

The archaeological resources survey included both an archival search and an on-site foot survey of the project design feature and traffic mitigation measures. A records search with a one-mile radius buffer was requested from the South Coastal Information Center at San Diego State University in order to determine if previously recorded prehistoric or historic cultural resources occur within the footprints of the project design feature and traffic

mitigation measures. Historic aerial photographs were also checked in order to see past development within and near the footprints of the project design feature and traffic mitigation measures.

A letter was sent to the Native American Heritage Commission (NAHC) requesting they search their files to identify spiritually significant and/or sacred sites or traditional use areas in the vicinity of the project design feature and traffic mitigation measures. The NAHC was also asked to provide a list of local Native American tribes, bands, or individuals who may have concerns or interests in the cultural resources in the vicinity of the project design feature and traffic mitigation measures (Attachment 1).

The field survey of the project design feature, MM-TRA-2, and MM-TRA-3 was conducted on December 6, 2017, by RECON archaeologist Carmen Zepeda-Herman accompanied by Gabe Kitchen, a Native American representative from Red Tail Monitoring and Research. The spacing between the field personnel was 5 meters. The survey areas were inspected for evidence of archaeological materials such as flaked and ground stone tools, ceramics, milling features, and historic features. Photographs were taken to document the environmental setting and general conditions.

V. RESULTS OF STUDY

The record search indicated that there have been 41 archaeological investigations in the immediate vicinity of the project design feature and traffic mitigation measures, and 79 cultural resources recorded within a one-mile radius of the project design feature and traffic mitigation measures (Confidential Appendix). The cultural resources consist of 51 prehistoric sites, 22 prehistoric isolated artifacts, two historic foundations/homestead sites, and four multicomponent sites (prehistoric and historic). Prehistoric sites include bedrock milling features, lithic scatters, ceramic scatters, shell scatters, and ground stone artifacts. One prehistoric site (CA-SDI-10909) is recorded within the proposed footprint of MM-TRA-2. CA-SDI-10909 was recorded in 1988 as a lithic scatter with over 100 cores and flakes, a scraper, and a mano (Corum and Laylander 1988). The results from the NAHC files have not been received as of the writing of this report.

The survey resulted in finding no cultural material. Land within the footprint of the project design feature consists of a manufactured slope that has been landscaped with eucalyptus trees. The slope was manufactured for the commercial buildings along the east side of Black Mountain Road. Land within the footprint of TRA-1 consists of an existing paved intersection. MM-TRA-2 was impacted in the past during the construction of SR-56 and the bike path along its southern side flank. The mapped location of CA-SDI-10909 was closely inspected. No cultural material was noted. The manufactured slopes along SR-56 are covered in coastal sage scrub. The top soil has been removed and pushed aside during construction of the bike path and adjacent residential development (Photograph 1). The soils exposed consist of tan silty loam with numerous cobbles. The area beneath the bridge section of SR-56 within the footprint of MM-TRA-2 had limited ground visibility due to vegetation coverage from the freshwater marsh plant community (Photograph 2). The path had excellent visibility and contained numerous cobbles.

Land within the footprint of MM-TRA-3 consists of a manufactured slope for the residential development north of the access ramp. The slope has been landscaped with ornamental plants. In summary, the footprints of the project design feature and traffic mitigation measures have been disturbed by construction of the SR-56, a bike path, roadways, or commercial and residential developments.

VI. RECOMMENDATIONS

The cultural resource investigations summarized herein satisfy the study and documentation requirements identified by City of San Diego Development Services staff and are consistent with the goals and policies of the City of San Diego as published in the Land Development Manual. As such, the efforts to identify and document cultural resources in the project APE reveal that implementation of the project design feature and traffic mitigation measures would have no impact on previously recorded cultural resources.

The possibility of significant cultural resources, including buried deposits, being present within the footprints of the project design feature and traffic mitigation measures is considered low. All areas have been disturbed in the past. Land beneath the bridge section of SR-56 within the footprint of MM-TRA-2 was disturbed during the original construction of the state route, including installation of bridge columns within the creek canyon. The remainder of the roadway improvement footprints consists of manufactured slopes (project design feature, the remainder of MM-TRA-2, and MM-TRA-3) and an existing paved intersection (MM-TRA-1). The degree of disturbance by past grading operations suggests that no cultural resources remain intact. RECON recommends no further cultural resource work for the project. Construction monitoring is not recommended.

VII. SOURCES CONSULTED — DATE

National Register of Historic Places ☑	Month and Year: December 2017
California Register of Historical Resources ☑	Month and Year: December 2017
City of San Diego Historical Resources Register ☑	Month and Year: December 2017
Archaeological/Historical Site Records: South Coastal Information Center ☑	Month and Year: December 2017

Other Sources Consulted:

VIII. CERTIFICATION

Preparer: Carmen Zepeda-Herman, M.A.	Title: Principal Investigator
Signature: Carmen Zepeda-Herman	Date: March 25, 2019

IX. ATTACHMENTS

Bibliography
Attached.

National Archaeological Data Base Information
Attached

Maps (include all of the following maps.)
Figure 1. Regional Location
Figure 2. Project Location on USGS Map
Figure 3. Location of Survey Areas on Aerial Photograph

Photographs
Photograph 1: Top Soil Disturbed within CA-SDI-10909
Photograph 2: Dense Vegetation Cover under Bridge at MM-TRA-2

Personnel Qualifications (Include resumes if not already on file with the City.)
Resumes are already on file with the City.

Native American Heritage Commission Correspondence

X. CONFIDENTIAL APPENDICES (bound separately)

Record search results.
Maps from record search results from South Coastal Information Center (Under separate cover).

New or updated historical resource records
None.

BIBLIOGRAPHY

Carrico, Richard L.
1987 Strangers in a Stolen Land. American Indians in San Diego 1850-1880. Sierra Oaks Publishing, Newcastle, California.

Cline, Lora L.
1984a *Just Before Dawn*. L. C. Enterprises, Tombstone, Arizona.

1984b *Just Before Sunset*. J and L Enterprises, Jacumba, California.

Cook, Sherburne F.
1976 *The Population of California Indians, 1769–1970*. Berkeley: University of California Press.

Corum, J. and D. Laylander
1988 Site form for CA-SDI-10909. On file at the South Coastal Information Center, San Diego.

Hector, Susan M., and Stephen R. Van Wormer
1986 Broken Fragments of Past Lifeways: Archaeological Excavations at Los Penasquitos Ranch House, Volumes I and II. RECON.

May, Ronald V.
1976 An Early Ceramic Date Threshold in Southern California. *Masterkey* 50(3):103-107.

1978 A Southern California Indigenous Ceramic Typology: A Contribution to Malcolm J. Rogers Research. *ASA Journal* 2:2.

Meighan, Clement W.
1954 A Late Complex in Southern California Prehistory. *Southwestern Journal of Anthropology* 10:215-227.

Pourade, Richard F. (editor)
1963 *The Silver Dons*. The History of San Diego. Union-Tribune Publishing, San Diego, California.

Rogers, Malcolm J.
1938 Archaeological and Geological Investigations of the Culture Levels in an Old Channel of San Dieguito Valley. *Carnegie Institution of Washington Yearbook* 37:344-45.

1939 Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas. *San Diego Museum of Man Papers* 3.

1945 An Outline of Yuman Prehistory. *Southwestern Journal of Anthropology* 1(2):167-198. Albuquerque.

Rolle, Andrew
1998 *California: A History*. Harlan Davidson, Inc. Wheeling, Illinois.

True, Delbert L.
1970 *Investigation of a Late Prehistoric Complex in Cuyamaca Rancho State Park, San Diego County, California.* Department of Anthropology Publications, University of California, Los Angeles.

U.S. Department of Agriculture (USDA)
1973 *Soil Survey San Diego Area, California*. Soil Conservation Service.

Warren, Claude N., Gretchen Siegler, and Frank Dittmer
1993 Paleoindian and Early Archaic Periods. In Historic Properties Background Study for the City of San Diego Clean Waste Program. On file with Mooney and Associates.

NATIONAL ARCHAEOLOGICAL DATA BASE INFORMATION

Authors:	Carmen Zepeda-Herman, RPA
Consulting Firm:	RECON Environmental 1927 Fifth Avenue San Diego, CA 92101-2358
Report Date:	March 25, 2019
Report Title:	Archaeological Resources Survey for the Black Mountain Road Community Plan Amendment Project, San Diego, California
Prepared for:	William Dumka CalAtlantic 16465 Via Esprillo, Suite 150 San Diego, CA 92127
Contract Number:	RECON 6524
USGS Quadrangle Map:	Del Mar and Poway Quadrangles
Keywords:	Negative survey

ABSTRACT

An archaeological resources survey was conducted for Black Mountain Road CPA Project in the Rancho Peñasquitos community of the City of San Diego. The survey included a record search at the South Coastal Information Center and a sacred lands search with Native American Heritage Commission. One cultural resource has been recorded within the footprint of MM-TRA-2. A RECON archaeologist completed the field investigation on December 6, 2017, accompanied by a Native American monitor. The areas within the footprints of the project design feature and traffic mitigation measures have been impacted by the construction of State Route 56, a bike path, roadways, or commercial and residential developments. No prehistoric or historic cultural resources were found during the field survey. The possibility of significant historical resources being present is considered low; therefore, RECON recommends no further cultural resources work.



Project Location

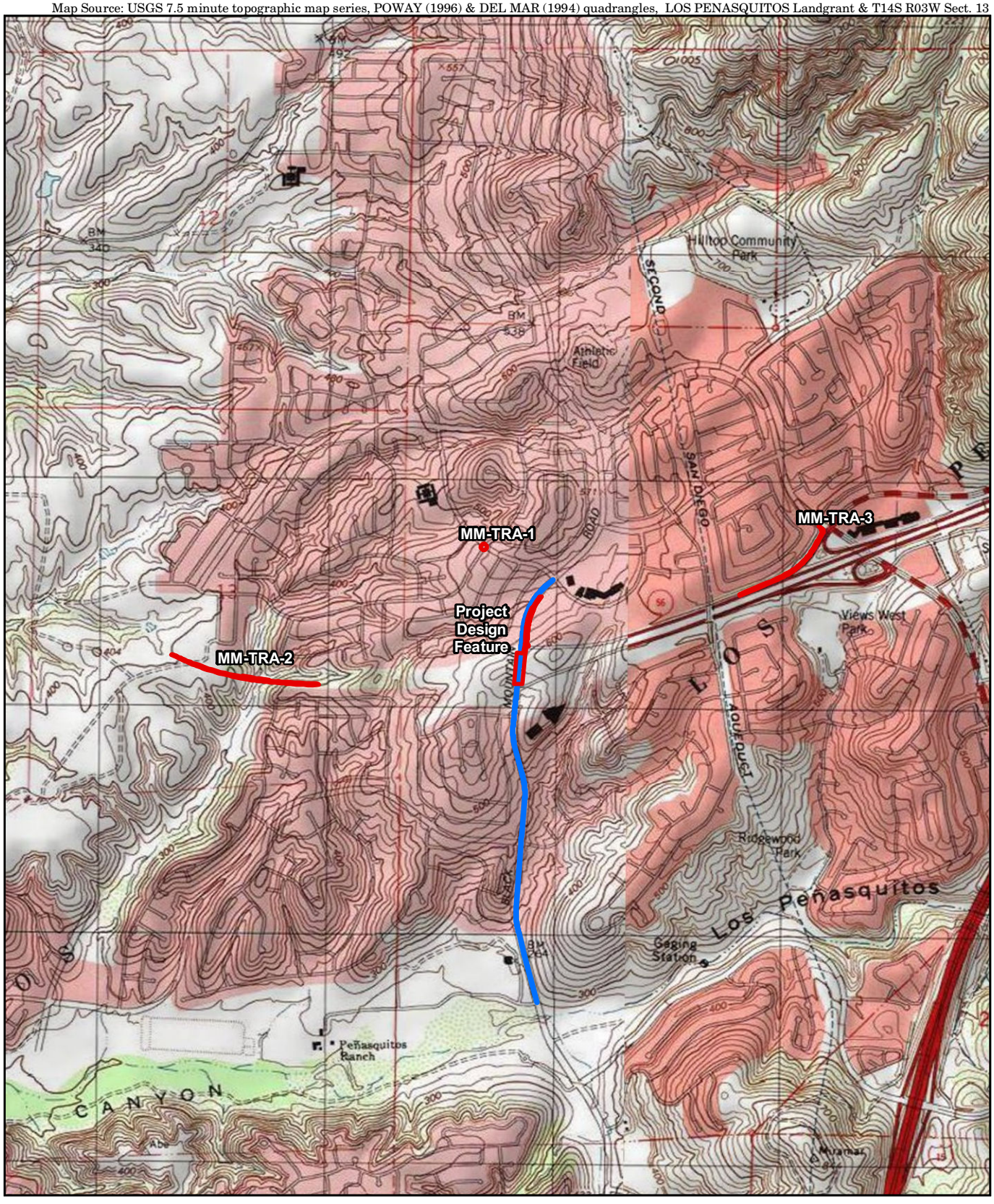
RECON

M:\JOBS4\6524\common_gis\fig1.mxd 12/4/2017 sab

FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, POWAY (1996) & DEL MAR (1994) quadrangles, LOS PENASQUITOS Landgrant & T14S R03W Sect. 13



Project Roadway

Project Design Feature and Traffic Mitigation Measures

RECON

M:\JOBS4\6524\common_gis\fig2_biotec.mxd 2/20/2018 sab

FIGURE 2

Project Location on USGS Map

Image source: NearMaps (flown June 2018)



FIGURE 3

Location of Survey Areas on Aerial Photograph

RECON

M:\JOBS4\6524\common_gis\fig3_arc.mxd 9/25/2018 sab



PHOTOGRAPH 1
Top Soil Disturbed within CA-SDI-10909



PHOTOGRAPH 2
Dense Vegetation Cover under Bridge at MM-TRA-2

RECON

P:\6524\Arc\Photos 09/28/18

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Black Mountain Road project

County: San Diego County

USGS Quadrangle

Name: Del Mar and Poway

Township: 14 South **Range:** 3 West **Section(s):** unsectioned Los Peñasquitos landgrant and Section 13

Contact Information

Company/Firm/Agency: RECON Environmental

Contact: Carmen Zepeda-Herman

Street Address: 1927 Fifth Avenue

City: San Diego **ZIP:**92101

Phone: 619-308-9333

Fax: 619-308-9334

Email: czepeda@reconenvironmental.com

Project Description:

The project proposes to reclassify Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community. The proposed project area stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern community boundary adjacent to the Los Peñasquitos Canyon Preserve. Black Mountain Road bisects the neighborhoods of Twin Trails and Town Center north of State Route 56 (SR-56); it bisects the neighborhoods of Parkview and Ridgewood south of SR-56. Black Mountain Road currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over SR-56 is wider and operates as a 5-lane Primary Arterial.

CONFIDENTIAL APPENDICES
(under separate cover)

Not for Public Review