BALBOA AVENUE STATION AREA SPECIFIC PLAN

Transportation Impact Study



DECEMBER 2017

Prepared By:



EXECUTIVE SUMMARY

The Balboa Avenue station is being constructed as part of the Mid-Coast Trolley project. The Mid-Coast Trolley will extend Blue Line Trolley service from Santa Fe Depot in Downtown San Diego to the University City community, serving major activity centers such as Old Town, UC San Diego, and Westfield UTC. Construction began in fall 2016 and service is anticipated to begin in 2021. The project is being led by the San Diego Association of Governments (SANDAG).

The Balboa Avenue station is located south of Balboa Avenue, east of Interstate 5 and west of Morena Boulevard; near the border of the Pacific Beach and Clairemont communities in the City of San Diego, California. Access is provided off Morena Boulevard via two new signalized driveways; one at an existing intersection and one new bus-only driveway intersection. As part of the Mid-Coast Trolley project, the following changes to the roadway network will also occur:

- Closure of the eastbound Balboa Avenue to Morena Boulevard Southbound ramp
- Widening of the northbound Interstate 5 to eastbound Balboa Avenue off-ramp from one to two lanes
- New traffic signal at the northbound Interstate 5 and eastbound Balboa Avenue intersection
- A pedestrian walkway crossing Balboa Avenue adjacent to the railroad, including access from Balboa Avenue to the pedestrian walkway on either side
- Reconfiguration of the ramps between Balboa Avenue and Morena Boulevard, south of Balboa Avenue

The features included with the Mid Coast trolley project provide infrastructure and access to the site for all modes of travel, but does not provide connections beyond the immediate access points. To provide a plan for connecting the Balboa Avenue station with the surrounding communities, City of San Diego staff obtained a grant from Caltrans to develop the Balboa Avenue Station Area Specific Plan. The purpose of the grant is to encourage land uses and multimodal mobility connections that work in concert to enhance and provide access to and from the Balboa Avenue station. This document is the traffic study associated with the proposed Balboa Avenue Station Area Specific Plan.

The purpose of the study is to provide guidance on mobility decisions related to the Balboa Avenue Station Area Specific Plan and provide documentation of technical evaluations for inclusion in environmental documents. The evaluation includes walkshed coverage and qualitative evaluation for pedestrians, quantitative level of stress and qualitative evaluation for bicycle facilities and connections, and level of service and travel time calculations for vehicles including transit.

Three future year scenarios were evaluated:

- Adopted Community Plan this scenario uses the land uses assumed in the current Pacific Beach and Clairemont Mesa community plans with minimal changes to the existing roadway network
- Preferred Specific Plan this scenario uses preferred land uses and preferred roadway network modifications within the Specific Plan area
- Reduced Specific Plan this scenario uses a reduced intensity of land uses and the same roadway network modifications as the preferred scenario within the Specific Plan area

The focus of the Specific Plan mobility network is to increase non-vehicle modes of travel while maintaining vehicular connections and operations. In some cases, prioritizing non-motorized mobility improvements within the area may hinder improvements for vehicular operations.

Active Transportation - Pedestrians

A half-mile walkshed from the Balboa Avenue station was used as the focus area for pedestrian improvements. This is considered to be a distance that most pedestrians are willing to comfortably walk to access high-frequency transit such as the Blue Line trolley. The following recommendations were made as part of the Balboa Avenue Station Area Specific Plan:

- Remove gaps in the sidewalk network by constructing missing sidewalk areas
- Extend the sidewalk on the west side of Mission Bay Drive from its current northern terminus to Bluffside Avenue
- Provide a shared-use path along Garnet Avenue from Rose Creek to Balboa Avenue Station on the south side and from Rose Creek to Moraga Avenue on the north side
- Provide a shared-use path along both sides of Mission Bay Drive from Garnet Avenue to Grand Avenue; with extensions of the path north to Damon Avenue and south to Rosewood Street and connecting to Mission Bay Park
- Provide a shared-use path along Santa Fe Street between Garnet Avenue and Damon Avenue
- Provide a shared-use pedestrian and bicycle facility across the Interstate 5 freeway between the south side of the Balboa Avenue station and the corner of Bunker Hill Street and Del Rey Street
- Upgrade curb ramps, crosswalk striping, traffic signal operations, and implement pedestrianfocused features at intersections, such as advanced stop bars, no right turn on red signs, and pedestrian lead intervals.
- Implement a wayfinding signage program to guide pedestrians between the Balboa Avenue station platform and nearby attractions.
- Implement pedestrian-scale lighting along major pedestrian routes of travel such as Mission Bay Drive, Garnet Avenue/ Balboa Avenue and Grand Avenue as well as along the Rose Creek Path.

With implementation of the proposed pedestrian network, the majority of the routes between the Balboa Avenue station and the adjacent communities would be considered medium or high facilities using the qualitative Pedestrian Environment Quality Evaluation.

Active Transportation – Bicycles

The Balboa Avenue Station Area Specific Plan provides a recommended bicycle network that includes a mix of separated paths (Class I), bicycle lanes (Class II) including buffers, bicycle routes (Class III), and separated bicycle facilities adjacent to roadways (Class IV). The proposed network provides more facilities with buffers or separation from vehicles than what was identified originally in the City of San Diego's Bicycle Master Plan. The following recommendations were made as part of the Balboa Avenue Station Area Specific Plan:

- Realign intersections to remove free right turns along Garnet Avenue/Balboa Avenue
- Provide dedicated bicycle lanes along the south side of Garnet Avenue/Balboa Avenue. east of Mission Bay Drive
- Provide buffered bike lanes, where feasible, along Mission Bay Drive between Damon Avenue and Rosewood Street
- Provide a shared-use path along Garnet Avenue on the north side from Rose Creek to Moraga Avenue and on the south side from Rose Creek to Balboa Avenue Station
- Provide a shared-use path along both sides of Mission Bay Drive from Garnet Avenue to Grand Avenue; with extensions of the path north to Damon Avenue and south to Rosewood Street and connecting to Mission Bay Park

- Provide a shared-use path along Santa Fe Street between Garnet Avenue and Damon Avenue
- Upgrade connections to Rose Creek Trail at Garnet Avenue, Magnolia Avenue, and Grand Avenue
- Upgrade Rose Creek Trail to allow for increased volume of users
- Designate Magnolia Avenue as a bicycle boulevard
- Provide a shared-use pedestrian and bicycle facility across the Interstate 5 freeway between the south side of the Balboa Avenue station and the corner of Bunker Hill Street and Del Rey Street
- Provide a Class IV cycle track on Morena Boulevard from the Balboa Avenue station to Clairemont Drive Station, where it will connect with other currently planned cycle track improvements.
- Provide buffered bike lanes along Bunker Hill Street from Mission Bay Drive to the shared-use facility across I-5

The completed network would reduce the bicycle level of traffic stress by providing facilities separated from vehicle travel lanes and along the roadways where investments are made in bicycle facilities.

Public Transit

Considering public transit as connections between the Balboa Avenue station and the adjacent areas, transit performance was evaluated primarily on auto (bus) travel time in the area. Travel time along Garnet Avenue/Balboa Avenue is similar between alternatives.

Table E-1 Garnet Avenue/ Balboa Avenue Future Travel Time Summary

Direction	Peak Period	Existing	Future Adopted	Future Preferred	Future Reduced
Coathound	AM	321.0	373.3	324.6	322.5
Eastbound	PM	337.3	417.5	378.9	375.9
Maathau ad	AM	292.9	307.0	288.8	291.0
Westbound	PM	305.6	344.7	341.2	338.2

Notes:

Travel Time reported in seconds.

Study corridor is between Olney Street and Clairemont Drive and approximately 1.92 miles.

Speed limit varies between 30 mph and 45 mph.

Study corridor is considered an Urban Street Class II.

To help improve travel time, the following recommendations were made for the Balboa Avenue Specific Plan:

 Provide a bus-only lane on Garnet Avenue in the eastbound direction between the I-5 overpass and Moraga Avenue

Street Network

A traffic model was prepared by SANDAG for existing and future community build-out conditions. Traffic counts obtained in 2016 and historical count data provided by City staff were used to calibrate the existing model results. Using the attributes included in the calibrated existing model and the future land uses associated with each alternative, the future volumes on the street network were estimated.

The following improvements are included as part of the Preferred Specific Plan Scenario:

Mission Bay Drive at Damon Avenue would be reconfigured to eliminate the northbound free right turn movement, and provide a larger refuge area and bicycle lane in the northeast corner.

Mission Bay Drive at Garnet Avenue would include pedestrian safety improvements, including lead pedestrian intervals, continental crosswalks, and stop bars.

Mission Bay Drive at Grand Avenue would be changed to realign the lanes in a way such that Grand Avenue becomes the through movement rather than Mission Bay Drive. Pedestrian crossings would be included in the reconfigured intersection design. This would also modify the intersection of Grand Avenue at Figueroa Drive to have two eastbound travel lanes instead of one.

Mission Bay Drive between Rosewood Street and Damon Avenue would be reconfigured to include shared-use paths, northbound and southbound, and bike lanes would also be provided between Grand Avenue and Garnet Avenue by removing the existing parking lane along both sides of Mission Bay Drive.

Balboa Avenue between Mission Bay Drive and Moraga Avenue would be reconfigured to provide improved bicycle facilities, dedicated bus areas in the eastbound direction, and removal of free right turns. This includes reconfiguration of the Morena Boulevard ramps to remove the westbound free right movements at Balboa Avenue/Garnet Avenue and remove the northbound Morena Boulevard to westbound Balboa Avenue loop ramp.

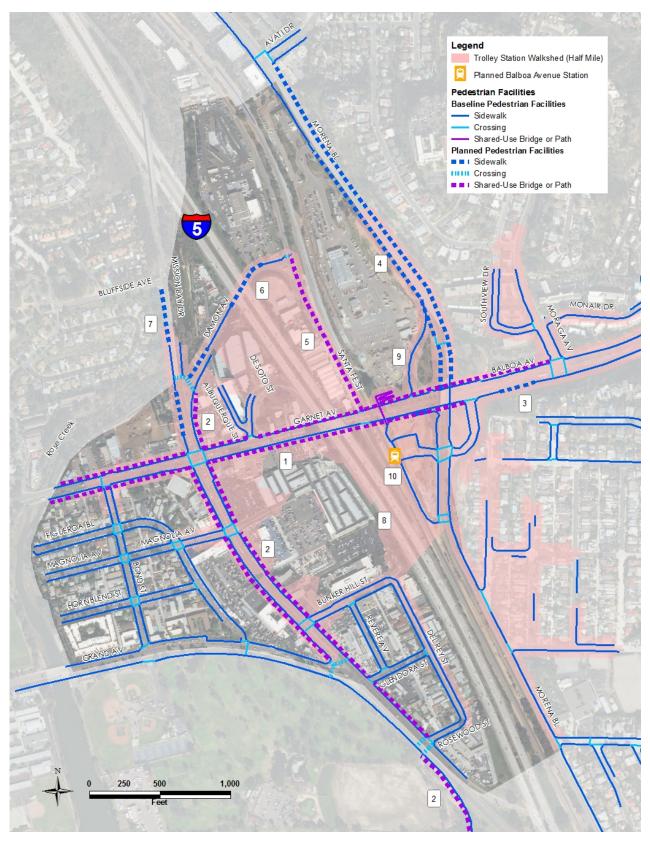


Figure E-1 Future Planned Pedestrian Network and Station Walkshed



Figure E-2 Future Planned Bicycle Facilities



Figure E-3 Mission Bay Drive at Damon Avenue





Figure E-4 Mission Bay Drive at Garnet Avenue





Figure E-5 Balboa Avenue



Figure E-6 Mission Bay Drive at Grand Avenue

Vehicle Operations

Intersections and roadway segments within the Specific Plan area were evaluated to determine if impacts are anticipated in the future year when compared against the existing setting. Impact criteria used in the evaluations are consistent with City of San Diego guidelines for determining significant impacts for a CEQA document.

Mitigations that would return operations to better than existing conditions were identified for each location that was found to have an impact. The mitigations were either recommended or not recommended, depending on the associated physical impacts to adjacent land uses, active transportation facilities, natural features, and other engineering and environmental considerations.

Table E-2 Impacted Intersection Locations

ID	Intersection	Future Adopted Conditions	Future Preferred Conditions	Future Reduced Conditions
1	Olney St at Garnet Ave	X	X	
5	Garnet Ave at Mission Bay Dr	X	Х	Х
7	Balboa Ave at Morena Blvd NB Ramps	Х	Х	Х
9	Clairemont Dr at Balboa Ave	X	X	Х
22	Morena Blvd at Jutland Dr	Х	Х	Х

Table E-3 Recommended Mitigation Intersection Locations

ID	Intersection	Future Adopted Conditions	Future Preferred Conditions	Future Reduced Conditions
1	Olney St at Garnet Ave	X	X	Х
5 Garnet Ave at Mission Bay Dr			X	Х
7 Balboa Ave at Morena Blvd NB Ramps		Х	Х	Х
9 Clairemont Dr at Balboa Ave				
22 Morena Blvd at Jutland Dr		Х	X	Х

Table E-4 Impacted Roadway Segment Locations

Roadway Segment	Future Adopted Conditions	Future Preferred Conditions	Future Reduced Conditions
Garnet Ave, Bond St to Mission Bay Dr	Х		
Garnet Ave, Mission Bay Dr to I-5 SB On-Ramp	Х	X	Х
Garnet Ave, I-5 SB On-Ramp to I-5 NB Off-Ramp	Х	X	Х
Garnet Ave, I-5 NB Off-Ramp to Morena Blvd SB Ramps	X	X	Х
Balboa Ave, Morena Blvd NB Ramps to Moraga Ave	Х		
Balboa Ave, Moraga Ave to Clairemont Dr	X		
Balboa Ave, East of Clairemont Dr	Х	X	Х
Mission Bay Dr, Bluffside Ave to Damon Ave	Х	Х	Х
Mission Bay Dr, Damon Ave to Garnet Ave	Х	X	Х
Mission Bay Dr, Garnet Ave to Magnolia Ave		Х	Х
Mission Bay Dr, Magnolia Ave to Bunker Hill St		Х	Х
Mission Bay Dr, Bunker Hill St to Grand Ave		Х	Х
Mission Bay Dr, Grand Avenue to I-5 Ramps		Х	Х
Clairemont Dr, Denver Street to Morena Boulevard	Х	X	Х

None of the changes to roadway segments required to mitigate impacts were recommended in this study.

No mitigation measures are identified for impacts to freeways because freeway improvements are not within the authority of the City. The improvements identified in SANDAG's RTP would improve operations along the freeway segments and ramps; however, to what extent is still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. The City will continue to coordinate with Caltrans and SANDAG on future improvements, as future project-level developments proceed, to develop potential "fair share" multi-modal mitigation strategies for freeway impacts, and address ramp capacity at impacted on-ramp locations. Improvements could include additional lanes, interchange reconfigurations, Transportation Demand Measures (TDM);

however, specific capacity improvements are still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements.

Table E-5 Impacted Freeway Segment Locations

	Freeway Segment	Future Adopted Conditions	Future Preferred Conditions	Future Reduced Conditions
	SR-52 to Mission Bay Dr	Х	Х	Х
-5	Mission Bay Dr to Garnet Ave/Balboa Ave	Х	Х	Х
<u> </u>	Garnet Ave/Balboa Ave to Mission Bay Dr	Х	Х	Х
	Mission Bay Dr to Clairemont Dr	Х	Х	Х

Table E-6 Impacted Freeway Ramp Meter Locations

On Ramp	Future Adopted Conditions	Future Preferred Conditions	Future Reduced Conditions
I-5 SB & Mission Bay Dr	X	X	Х
I-5 NB & Mission Bay Dr		Х	Х

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1 INTRODUCTION

The Balboa Avenue station is being constructed as part of the Mid-Coast LRT project, led by the San Diego Association of Governments (SANDAG). The City of San Diego obtained active transportation grant funding to develop a Balboa Avenue Station Area Specific Plan to identify ways to connect people to the Balboa Avenue station via all modes of travel, with a focus on active modes of transportation. This mobility assessment is part of the Balboa Avenue Area Specific Plan grant effort.

This document was prepared to determine and evaluate the traffic impacts associated with potential changes in the mobility network within the Balboa Avenue station area as part of the Specific Plan. The purpose of this report is to identify potential deficiencies and conflicts within the Specific Plan area for the Balboa Avenue station. The evaluation includes walkshed coverage and qualitative evaluation for pedestrians, quantitative level of stress and qualitative evaluation for bicycle facilities and connections, and level of service and travel time calculations for vehicles.

BACKGROUND

The Balboa Avenue Station Area Specific Plan boundary includes areas where land use and urban design opportunities may be available near the new Balboa Avenue station. The area is roughly bounded by Grand Avenue to the southwest, Rose Creek to the west, and Morena Boulevard to the east. **Figure 1-1** depicts the location of the Specific Plan area in a regional context and **Figure 1-2** shows the Specific Plan area boundary in a localized context. This evaluation includes this defined boundary area, but also extends beyond the boundary where relevant to show pedestrian and bicycle connections or additional key intersections and roadway segments.

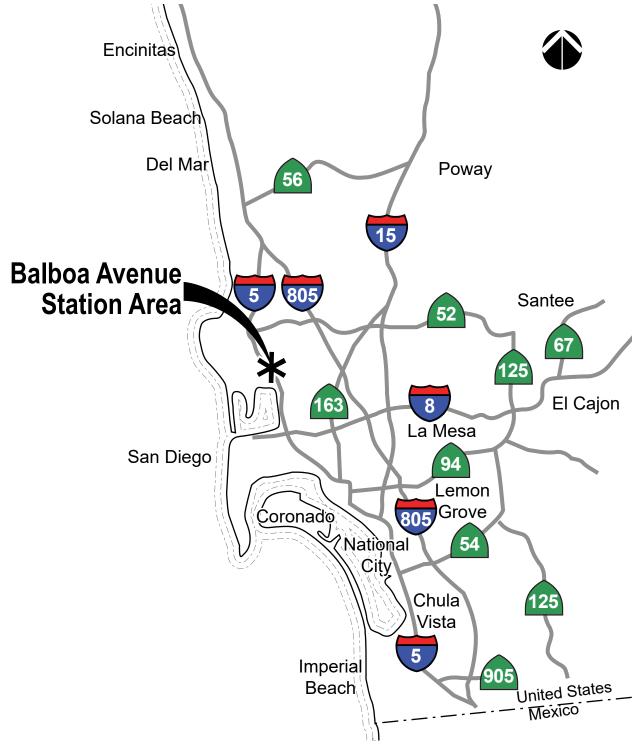


Figure 1-1 Regional Project Vicinity

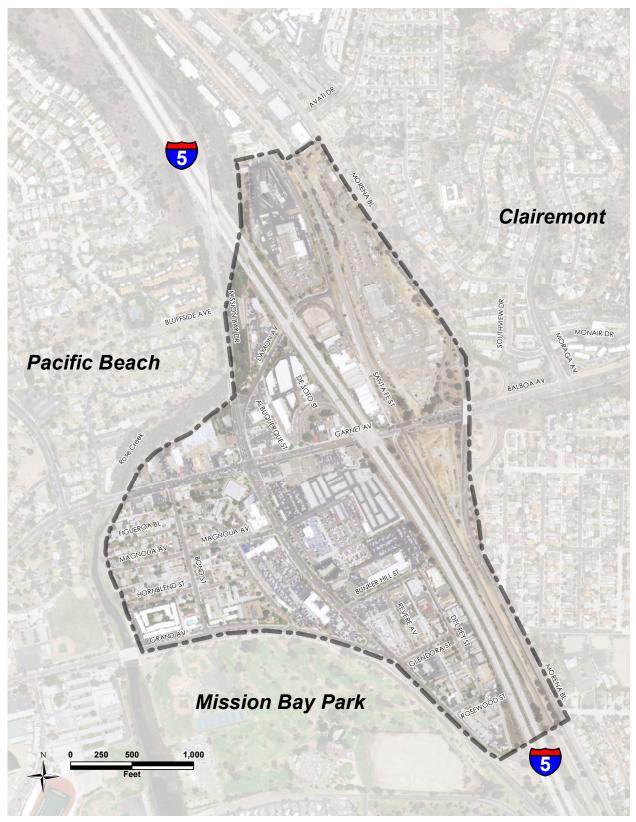


Figure 1-2 Specific Plan Area Boundary

2 SPECIFIC PLAN AREA FACILITIES AND ANALYSIS SCENARIOS

The following section describes the Specific Plan area and the alternatives being evaluated.

SPECIFIC PLAN AREA

INTERSECTIONS

A total of 29 intersections were selected for inclusion in the analysis of the Specific Plan area. **Table 2-1** provides a list of the intersections and assigns an identification number to each intersection for use in this study. **Figure 2-1** graphically displays the location of each of the study intersections.

Table 2-1 Study Intersections

ID	Intersection
1	Garnet Ave at Olney St
2	Garnet Ave at Balboa Ave
3	Garnet Ave at Soledad Mountain Rd
4	Garnet Ave at Bond St
5	Garnet Ave at Mission Bay Dr
6	Garnet Ave at Santa Fe St
7	Balboa Ave at Morena Blvd NB Ramps
8	Balboa Ave at Moraga Ave
9	Balboa Ave at Clairemont Dr
10	Balboa Ave at Olney St
11	Grand Ave at Olney St
12	Grand Ave at Culver St
13	Grand Ave at Lee St
14	Grand Ave at Figueroa Blvd
15	Grand Ave at Mission Bay Dr

ID	Intersection
16	Mission Bay Dr at Bluffside Ave
17	Mission Bay Dr at Damon Ave
18	Mission Bay Dr at Magnolia Ave
19	Mission Bay Dr at Bunker Hill St
20	Mission Bay Dr at Rosewood St
21	Santa Fe St at Damon Ave
22	Morena Blvd at Jutland Dr
23	Morena Blvd at Costco Dwy
24	Morena Blvd at Avati Dr
25	Morena Blvd at WB Balboa Ave Ramps
26	Morena Blvd at EB Balboa Ave Ramps
27	Morena Blvd at Baker St
28	Morena Blvd at Gesner St
29	Balboa Ave at Morena Blvd SB Ramps
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ROADWAY SEGMENTS AND CORRIDORS

A total of 29 roadway segments were selected for analyses. **Figure 2-2** graphically displays the location of each of the roadway segments and corridors in the community selected for analyses.

Two corridors were selected to have travel time analysis performed to understand the flow of traffic through the Specific Plan area: Mission Bay Drive and Garnet Avenue/ Balboa Avenue.

FREEWAY FACILITIES

Four freeway segments along I-5, bisecting the study area, were selected for analyses. Freeway on-ramps that are controlled by ramp meters within the study area were also selected for analyses.

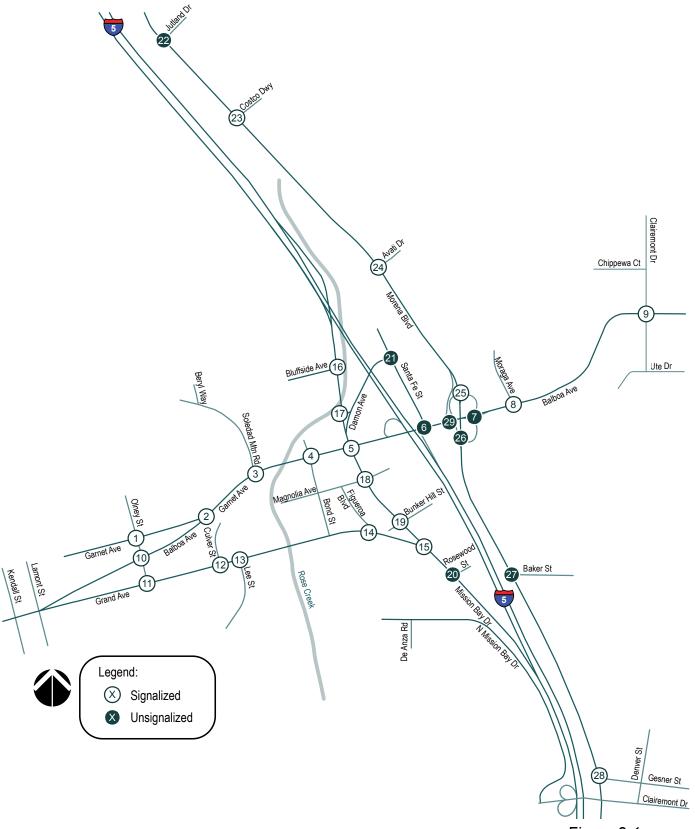


Figure 2-1 Specific Plan Area: Intersections

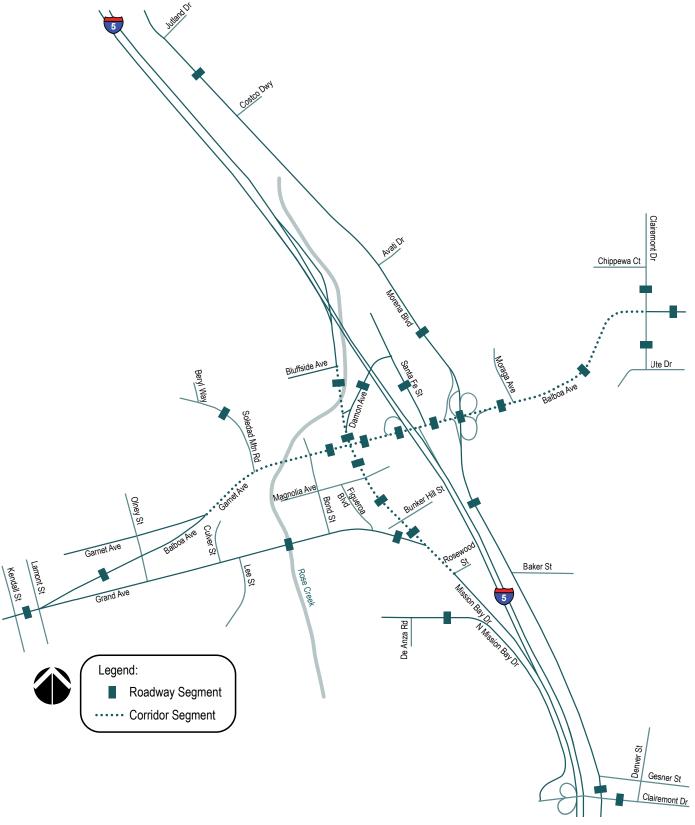


Figure 2-2 Specific Plan Area: Roadway Segments and Corridors

ANALYSIS SCENARIOS

A total of four scenarios were analyzed as part of the project.

- Existing Conditions (2016)
- Future Year Adopted Community Plan Land Use
- Future Year Preferred Land Use Scenario
- Future Year Reduced Land Use Scenario

Existing Conditions

1) Existing Conditions: Represents the traffic conditions of the street network as it exists today.

Future Year Conditions

- 2) Future Year Adopted Community Plan Conditions: The future adopted community build-out conditions were developed based on land use and network assumptions within the Pacific Beach and Clairemont Community Plans with volumes estimated using the SANDAG 2035 regional model.
- 3) Future Year Preferred Conditions: The future preferred build-out conditions were developed based on land use and network assumptions consistent with the Preferred Specific Plan recommendations with volumes estimated using the SANDAG 2035 regional model.
- 4) Future Year Reduced Conditions: The future reduced build-out conditions were developed based on land use and network assumptions consistent with the Reduced Specific Plan recommendations with volumes estimated using the SANDAG 2035 regional model.

ANALYSES INCLUDED

The evaluation process includes the following analyses:

- Pedestrian walkshed
- Bicycle level of traffic stress
- Transit travel times using corridor speed
- Levels of service at all study intersections for the AM and PM peak periods during a typical weekday
- Levels of service for all study roadway segments for the average daily traffic and theoretical capacity based on the roadway classification
- Levels of service along study corridors based on average speed
- Levels of service of freeway facilities for the AM and PM peak hours

3 METHODOLOGY

The following section describes the methodology used to perform capacity analyses and determine significant impacts.

PEDESTRIAN WALKSHED

To assess the areas that the Balboa Avenue station provides pedestrian access to, a half-mile walkshed was created from the station platform. The walksheds were generated using the ArcGIS Network Analyst tool and the pedestrian network (with the additional assumption that residential area streets are walkable regardless if sidewalks are provided). A half-mile is considered to be a distance that most pedestrians are willing to comfortably walk to access high-frequency transit. For low-frequency transit routes, a quarter-mile walkshed from each local transit stop is considered to be the distance most pedestrians are willing to comfortably walk.

PEDESTRIAN ENVIRONMENT QUALITY EVALUATION (PEQE)

The San Francisco Department of Public Health developed a Pedestrian Environmental Quality Index approach to evaluate pedestrian facilities. It is an "observational field study" to assess the suitability of the built environment for pedestrians. The City of San Diego Mobility staff provided guidance on a modified version of that criteria, called the Pedestrian Environment Quality Evaluation (PEQE). The PEQE system considers three facility types, Segments, Intersections and Mid-Block Crossings, for scoring. Each facility type has four sub-categories, such as speed of adjacent roadway, lighting, pedestrian features, and traffic control, which are scored from 0-2 points, with improved pedestrian facilities corresponding to a higher score. The sum of the sub-categories scores (a max score of 8) is used to assign the final rank. PEQE ranks pedestrian facilities using a score of greater than 6 as "High", from 4-6 as "Medium" and less than 4 as "Low". The scoring criteria used in the PEQE analysis can be found in **Table 3-1**.

Table 3-1 Pedestrian Environment Quality Evaluation Scoring Criteria

Facility Type	Measure	Description/Feature	Scoring
	Horizontal Buffer	between the edge of auto travel way and the edge of clear pedestrian zone	0 point: < 6 feet 1 point: 6 - 14 feet 2 points: > 14 feet
Segment between two	2. Lighting		point: below standard/requirement point: meet standard/requirement points: exceed standard/requirement
intersections	3. Clear Pedestrian Zone	5' minimum	0 point: has obstructions 2 points: no obstruction
	4. Posted Speed Limit		0 point: > 40 mph 1 point: 30 - 40 mph 2 points: < 30 mph
Maximum			8 points
	Physical Feature	 Enhanced/High Visibility Crosswalk (x4) Raised Crosswalk/Speed Table (x4) Advanced Stop Bar (x4) Bulb out/Curb Extension (x4) 	0 point: < 4 features 1 point: 5-8 features 2 points: > 8 features
Intersection	Operation al Feature	 Pedestrian Countdown Signal (x4) Pedestrian Lead Interval (x4) No-Turn On Red Sign/Signal (x4) Additional Pedestrian Signage (x4) 	0 point: < 4 features 1 point: 5-8 features 2 points: > 8 features
	3. ADA Curb Ramp	City of San Diego	point: below standard/requirement points: meet standard/requirement
	4. Traffic Control		point: No control point: Stop sign controlled points: Signal/Roundabout/Traffic Circle
Maximum			8 points
	1. Visibility		0 point: w/o high visibility crosswalk 2 points: with high visibility crosswalk
	Crossing Distance		O point: no treatment Points: with bulb out or median pedestrian refuge
Mid-block Crossing	3. ADA		0 point: below standard/requirement 2 points: meet standard/requirement
	4. Traffic Control		0 point: No control 1 point: Flashing Beacon (In-pavement, RRFB, etc) 2 points: Signal/Pedestrian Hybrid Beacon (HAWK)
Maximum			8 points

Source: Chen Ryan Associates, September 2015

Final Pedestrian Ranking System: Low < 4 pt; Medium = 4 - 6 pt; High > 6 pt

BICYCLE LEVEL OF TRAFFIC STRESS

The Mineta Transportation Institute published Low-Stress Bicycling and Network Connectivity (2012) which establishes a methodology for evaluating the level of stress for bicyclists riding on a designated bicycle facility associated with specific factors. The Mineta Transportation Institute document, developed by Mekuria et. al., used the City of San Jose as a test case to apply the methodology. This methodology applies a level of traffic stress (LTS) on a scale of LTS 1 (lowest stress) to LTS 4 (highest stress) for the following criteria:

- Roadway Classifications
- Roadway Speeds
- Bicycle Facility Type
- Bike Lane and Buffer Widths

- Intersection Control
- Bike Lane configuration at Intersections
- Parking Lane width
- **Existing Transit Routes**

LTS 1 facilities present little traffic stress and demand little attention from cyclists. They are suitable for almost all cyclists and attractive enough for a relaxing bike ride. LTS 2 facilities are suitable for most adult cyclists but demand more attention than might be expected from children. LTS 3 starts to introduce a stress level that not all adult cyclists feel comfortable with. LTS 4 is the highest level of stress and may be used by experienced bicyclists or not used at all.

Per the methodology guidance, both directions of a roadway segment are independently assigned a score between LTS 1 and LTS 4 based on several criteria shown in Tables 3-2 through 3-8. The resulting directional roadway level of traffic stress is the worst level of stress assigned to a segment from the several individual criteria scores. Where a table cell shows a result of "(no effect)", the resulting LTS for that situation is equal to the lower adjacent LTS.

Data on roadway classifications, speeds, bicycle facility type, and intersection control were compiled using field observations of roadway segments and intersections for classified roadways in the Specific Plan area. This information was supplemented with measurement estimates and documentation of bike lane configurations at intersections taken from aerial imagery.

Table 3-2 Criteria for Bike Lanes Alongside a Parking Lane

	LTS≥1	LTS ≥ 2	LTS≥3	LTS ≥ 4
Street Width** (through lanes per direction)	1	(no effect)	2 or more	(no effect)
Sum of bike lane and parking lane width	15 ft. or more	14 or 14.5 ft.*	13.5 ft or less	(no effect)
Speed Limit or prevailing speed	25 mph or less	30 mph	35 mph	40 mph
Bike Lane Blockage	Rare	(no effect)	Frequent	(no effect)

Source: Mineta Transportation Institute, 2012

Note: (no effect)=factor does not trigger an increase to this level of traffic stress.

^{*} If speed limit < 25 mph or Class= residential, then any width is acceptable for LTS 2.

Table 3-3 Criteria for Bike Lanes Not Alongside a Parking Lane

	LTS ≥ 1	LTS≥2	LTS≥3	LTS ≥ 4
Street Width (through lanes per direction)	1	2, if directions are separated by a raised median	More than 2 or 2 without a separating median	(no effect)
Bike Lane width (includes marked buffer and paved gutter)	6 ft. or more	5.5 ft or less	(no effect)	(no effect)
Speed Limit or prevailing speed	30 mph or less	(no effect)	35 mph	40 mph or more
Bike Lane Blockage	Rare	(no effect)	Frequent	(no effect)

Source: Mineta Transportation Institute, 2012

Note: (no effect)=factor does not trigger an increase to this level of traffic stress.

Table 3-4 Criteria for Level of Traffic Stress in Mixed Traffic

Speed Limits		Street Width	
Ореси Епптэ	2-3 Lanes	4-5 Lanes	6+ Lanes
Up to 25 mph	LTS 1* or 2*	LTS 3	LTS 4
30 mph	LTS 2* or 3*	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

Source: Mineta Transportation Institute, 2012

Note: * Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 lanes; use higher values otherwise.

Table 3-5 Level of Traffic Stress Criteria for Pocket Bike Lanes

Configuration	Level of Traffic Stress	
Single right-turn lane up to 150 ft. long, starting abruptly while the bike lane continues straight, and having intersection angle and curb radius such that turning speed ≤ 15 mph.	LTS≥2	
Single right-turn lane up to 150 ft. long, starting abruptly while the bike lane continues straight, and having intersection angle and curb radius such that turning speed ≤ 20 mph.	LTS≥3	
Single right-turn lane in which the bike lane shifts to the left but the intersection angle and curb radius are such that turning speed is < 15 mph.	LTS ≥ 3	
Single right-turn lane with any other configuration; dual right-turn lanes; or right-turn lane along with an option (through-right) lane.	LTS <u>></u> 4	

Source: Mineta Transportation Institute, 2012

Table 3-6 Level of Traffic Stress Criteria for Mixed Traffic in the Presence of a Right-turn Lane

Configuration	Level of Traffic Stress
Single right-turn lane with length ≤ 75 ft. and intersection angle and curb radius limit turning speed to 15 mph.	(No effect on LTS)
Single right-turn lane with length between 75 ft. and 150 ft., and intersection angle and curb radius limit turning speed to 15 mph.	LTS ≥ 3
Otherwise	LTS = 4
Source: Mineta Transportation Institute, 2012	•

Table 3-7 Level of Traffic Stress Criteria for Unsignalized Crossings Without a Median Refuge

Speed Limit of Street	Width of Street Being Crossed				
Being Crossed	Up to 3 lanes	4-5 lanes	6+ lanes		
Up to 25 mph LTS 1		LTS 2	LTS 4		
30 mph	LTS 1	LTS 2	LTS 4		
35 mph	LTS 2	LTS 3	LTS 4		
40 mph	LTS 3	LTS 4	LTS 4		

Source: Mineta Transportation Institute, 2012

Table 3-8 Level of Traffic Stress Criteria for Unsignalized Crossings with a Median Refuge at Least Six Feet Wide

Speed Limit of Street	Width of Street Being Crossed				
Being Crossed	Up to 3 lanes	4-5 lanes	6+ lanes		
Up to 25 mph	Up to 25 mph LTS 1		LTS 2		
30 mph	LTS 1	LTS 2	LTS 3		
35 mph	LTS 2	LTS 3	LTS 4		
40 mph	LTS 3	LTS 4	LTS 4		

Source: Mineta Transportation Institute, 2012

SIGNALIZED AND UNSIGNALIZED INTERSECTION LEVEL OF SERVICE

The Highway Capacity Manual (*HCM*) published by the Transportation Research Board establishes procedures to evaluate highway facilities and rate their ability to process traffic volumes. The terminology "level of service" is used to provide a qualitative evaluation based on certain quantitative calculations, which are related to empirical values. The criteria for the various levels of service designations for intersections are shown in **Table 3-9**.

Level of service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria is stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time, in addition to the stop delay.

LOS for unsignalized intersections is determined by the computed or measured control delay and is defined for each movement. At an all-way stop control intersection, the delay reported is the average control delay of all movements at the intersection. At a one-way or two-way stop control intersection, the delay reported represents the worst movement, which is typically the left-turn from the minor street approach.

Synchro 9 (Trafficware) software was used to analyze the operations of both signalized and unsignalized intersections. Synchro provides the option to report methodologies for both 2010 and 2000 editions of the HCM. The 2010 version of the HCM is similar to the 2000 HCM methodologies but focused more on specific controller set ups. Due to the changes in the 2010 HCM, there are several limitations within Synchro that do not allow results to be produced for an intersection. Some of these limitations include:

- Exclusive pedestrian phases
- Exclusive U-turn phases
- Right turn overlaps with through movements
- Permissive left turns yielding to pedestrians at a T-intersection
- Split phasing

Since 12 of the 29 intersections within the area would not be able to produce results using the 2010 HCM methodology, the 2000 HCM methodology was used for the intersection analysis.

The following list contains the assumptions used for the existing conditions intersection analyses:

- HCM 2000 methodology
- Peak-hour factor (PHF) = Measured in field PHFs were used for the analysis
- Percent of heavy vehicle (PHV) = 2 percent
- Pedestrians & Bicycles = Volumes measured in field
- Signal Timing = Existing signal timing was used for all existing signalized intersections

The acceptable Level of Service (LOS) standard for intersections in the City of San Diego is LOS D.

Table 3-9 LOS Criteria for Intersections

	Control Delay (sec/veh)		
LOS	Signalized Intersections (a)	Unsignalized Intersections (b)	Description
Α	<u>≤</u> 10.0	<u>≤</u> 10.0	Operations with very low delay and most vehicles do not stop.
В	>10.0 and <20.0	>10.0 and <u><</u> 15.0	Operations with good progression but with some restricted movement.
С	>20.0 and <35.0	>15.0 and <25.0	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35.0 and <u>≤</u> 55.0	>25.0 and <u>≤</u> 35.0	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines
Е	>55.0 and <u><</u> 80.0	>35.0 and <u><</u> 50.0	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80.0	>50.0	Operations that is unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Notes:

⁽a) 2000 Highway Capacity Manual, Chapter 18, Page 6, Exhibit 18-4

⁽b) 2000 Highway Capacity Manual, Chapter 19, Page 2, Exhibit 19-1 and Chapter 20, Page 3, Exhibit 20-2

ROADWAY SEGMENT CAPACITY LEVEL OF SERVICE ANALYSIS

In order to determine the operations along the Specific Plan area roadway segments, capacity thresholds and associated LOS have been developed by the City of San Diego and is used as a reference. **Table 3-10** presents this information. The segment traffic volumes under LOS E as shown in this table are considered to be the capacity of the roadway. It should be noted that the values listed in the table are planning-level estimates only. The actual operations of a roadway segment would be affected by the type and frequency of traffic control, driveway density, on street parking, grade, lane width, percent of heavy vehicles, and other factors.

Table 3-10 City of San Diego Roadway Segment Capacity and LOS Summary

Road Class	Lanes	Cross Section ¹	Α	В	С	D	E
Freeway	8		60,000	84,000	120,000	140,000	150,000
Freeway	6		45,000	63,000	90,000	110,000	120,000
Freeway	4		30,000	42,000	60,000	70,000	80,000
Expressway	6	102/122	30,000	42,000	60,0000	70,000	80,000
Prime Arterial	8		35,000	50,000	70,000	75,000	80,000
Prime Arterial	7		30,000	42,500	60,000	65,000	70,000
Prime Arterial	6	102/122	25,000	35,000	50,000	55,000	60,000
Prime Arterial	5		22,500	31,500	45,000	50,000	55,000
Prime Arterial	4		20,000	28,000	40,000	45,000	50,000
Major Arterial	8		25,000	35,000	50,000	55,000	60,000
Major Arterial	7		22,500	31,500	45,000	50,000	55,000
Major Arterial	6	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	5		17,500	24,500	35,000	40,000	45,000
Major Arterial	4	78/98	15,000	21,000	30,000	35,000	40,000
Major Arterial	3		11,000	15,500	22,500	26,000	30,000
Collector (w/ two-way left turn lane)	4	72/92	10,000	14,000	20,000	25,000	30,000
Collector (w/o two-way left turn lane)	4	64/84	5,000	7,000	10,000	13,000	15,000
Collector (w/ two-way left turn lane)	3		7,500	10,500	15,000	18,750	22,500
Collector (w/ two-way left turn lane)	2	50/70	5,000	7,000	10,000	13,000	15,000
Collector (No fronting property)	2	40/60	4,000	5,500	7,500	9,000	10,000
Collector (w/o two-way left turn lane)	2	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2	36/56			2,200		

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.

¹Cross Section: Curb to Curb width (feet)/Right-of-way width (feet)

Sources:

City of San Diego Traffic Impact Study Manual, Table 2, Page 8, July 1998.

City of San Diego Planning Department Mobility Staff Input

CORRIDOR SPEED ANALYSIS

Two corridors within the Specific Plan area were selected for analysis of travel time during the peak periods in addition to the estimated daily capacity; these corridors include Mission Bay Drive and Garnet Avenue/Balboa Avenue. The corridor travel time analysis is simulated using the Synchro software. The analysis was performed using the 2000 HCM methodology which provides a computation of LOS using average vehicle travel speed. This average speed is computed by adding the running time between signalized intersections assuming free flow speed along the corridor and the control delay associated with each signalized intersection. **Table 3- 11** presents the arterial LOS criteria based on the urban street class and average travel speed.

Table 3-11 HCM 2000 Urban Street LOS Criteria

Urban Street Class	I	II	III	IV			
Range of free-flow speeds (FFS)	55 to 45 mi/h	45 to 35 mi/h	45 to 35 mi/h 35 to 30 mi/h				
Typical FFS	50 mi/h	40 mi/h	35 mi/h	30 mi/h			
LOS	Average Travel Speed (mi/h)						
А	> 42	> 35	> 30	> 25			
В	>34 – 42	> 28 – 35	> 24 – 30	> 19 – 25			
С	> 27 – 34	> 22 – 28	> 18 – 24	> 13 – 19			
D	> 21 – 27	> 17 – 22	> 14 – 18	> 9 – 13			
E	> 16 – 21	> 13 – 17	> 10 – 14	> 7 -9			
F	≤ 16	≤ 13	≤ 10	≤ 7			

Source: HCM 2010, Exhibit 15-2

FREEWAY SEGMENT ANALYSIS

Freeway segments were analyzed during the AM and PM peak hours based on the methodologies outlined in the 2010 HCM. The free-flow speed of each freeway segment was calculated from a base free-flow speed of 75.4 mph (HCM 2010 11-11), and factors affecting the free-flow speed of each segment including the lane width, lateral clearance, interchange density, and geometric design. Based on each segment's free-flow speed, the density was calculated, which is the primary factor for determining the segment's LOS. **Table 3-12** presents the freeway segment criteria based on density.

Table 3-12 HCM 2010 Freeway Segment LOS Criteria

LOS	Density Range (pc/mi/ln)*
A	0 – 11
В	> 11 – 18
С	> 18 – 26
D	> 26 – 35
Е	> 35 – 45
F	>45

Source: HCM 2010, Exhibit 15-2 *passenger car per mile per lane

FREEWAY RAMP METER ANALYSIS

Ramp metering is a means of controlling the volume of traffic entering the freeway with the goal of improving the safety, traffic operations, and flow on the freeway main lanes. Freeway ramp meter analysis estimates the peak hour queues and delays at freeway ramps by comparing existing volumes to the meter rate at the given location. The fixed rate and uniform 15-minute maximum delay approaches are two approaches that are currently accepted by the City. The fixed rate approach is based solely on the specific time intervals that ramp meters are programmed to release traffic. The uniform 15-minute approach is based on the assumption that any demand exceeding 15-minutes will seek an alternate route or will choose to use the ramp during other time periods when the traffic demand is lower. The fixed rate approach was utilized in this study to analyze freeway ramp meters.

The excess demand at a freeway ramp forms the basis for calculating the maximum queues and maximum delays anticipated at each location. Substantial queues and delays can form where demand significantly exceeds the meter rate. This approach assumes a static rate throughout the course of the peak hour; however, Caltrans has indicated that the meter rates operate in a traffic responsive mode and based on the level of traffic using the on-ramp. To the extent possible, the meter rate in the field is set such that the queue length does not exceed the available storage, smooth flows on the freeway mainline are maintained, and there is no interference to arterial traffic.

Meter rates were provided by Caltrans and include a range between the least and most restrictive rates. Since many of the freeways currently operate at or above its capacity during the peak hours, the most restrictive rate was used for the analysis.

The following list contains the assumptions used for the existing conditions ramp meter analyses based on field observations:

- Storage length measured from recent aerials of the area
- 20% High Occupancy Vehicle (HOV)
- 80% Single Occupancy Vehicle (SOV) and evenly distributed between the SOV lanes
- 25-foot vehicle length

SIGNIFICANCE THRESHOLDS

The City of San Diego and Caltrans have developed acceptable threshold standards to determine the significance of project impacts to intersections and roadway segments. At intersections, the measurement of effectiveness (MOE) is based on allowable increases in delay. Along roadway segments and freeway segments, the MOE is based on allowable increases in the volume-to-capacity (v/c) ratio. Along corridors, the MOE is based on allowable increases in speed.

LOS F is not acceptable for any approach leg except for side streets on an interconnected arterial system. If vehicle trips from a project cause an intersection approach leg to operate at LOS F, except in the cases of side streets on an interconnected arterial system, this would be considered a significant project traffic impact that requires mitigation. At intersections that are expected to operate at LOS E or F without the project, the allowable increase in delay is two seconds at LOS E and one second at LOS F with the addition of the project. If vehicle trips from a project cause the delay at an intersection to increase by more than the allowable threshold, this would be considered a significant project impact that requires mitigation. Also, if the project causes an intersection that was operating at an acceptable LOS to operate at LOS E or F, this would be considered a significant project impact that requires mitigation.

For roadway segments that are forecasted to operate at LOS E or F with the project, the allowable increase in v/c ratio is 0.02 at LOS E and 0.01 at LOS F. If vehicle trips from a project cause the v/c ratio to increase by more than the allowable threshold, this would be considered a significant project traffic impact that requires mitigation. Also, if the project causes a street segment that was operating at an acceptable LOS to operate at LOS E or F, this would be considered a significant impact that requires mitigation.

Where the roadway segment operates at LOS E or F, if the intersections at the ends of the segment are calculated to operate at an acceptable LOS with the project; and a peak period HCM arterial analysis for the same segment shows that the segment operates at an acceptable LOS with the project; then the project impacts are determined to be less than significant and no mitigation is required. If analysis shows either the intersections or segment under the peak period HCM analysis do not operate acceptably, the project impacts are considered significant and unmitigated, requiring the adoption of findings of infeasibility and a statement of over-riding considerations before the project may be approved.

In certain instances, mitigation may not be required even if a roadway segment operates at LOS E or LOS F. In such cases the following three conditions must all be met:

- 1. The roadway is built to its ultimate classification per the community plan;
- 2. The intersections on both ends of the failing segment operate at an acceptable LOS; and
- 3. An HCM arterial analysis indicates an acceptable LOS on the segment.

For corridor travel times, the allowable decrease in speed is 0.5 miles per hour (mph) at LOS E and 1 mph at LOS F. If vehicle trips from a project cause the speed to decrease by more than the allowable threshold, this would be considered a significant project traffic impact that requires mitigation.

For freeway segments that are forecasted to operate at LOS E or F with the project, the allowable decrease in speeds is 1.0 mph at LOS E and 0.5 mph at LOS F. If vehicle trips from a project cause the speed to decrease by more than the allowable threshold, this would be considered a significant project traffic impact that requires mitigation. Also, if the project causes a freeway segment that was operating at an acceptable LOS to operate at LOS E or F, this would be considered a significant impact that requires mitigation.

If vehicle trips from a project cause a metered ramp with a delay of 15 minutes per vehicle or higher to increase its delay by more than 2 minutes per vehicle, this would be considered a significant project traffic impact that requires mitigation if the freeway segment operates at LOS E or F.

Table 3-13 shows the criteria for determining levels of significance for the different facilities in the Specific Plan area.

Table 3-13 Significance Criteria For Facilities in Specific Plan Area

Facility	Measures of Effectiveness (MOE)	Significance Threshold ^(a)
Intersection	Seconds of Delay	>2.0 seconds at LOS E or >1.0 second at LOS F
Roadway Segment	ADT, v/c Ratio	>0.02 at LOS E, or >0.01 at LOS F
Corridor	Speed	>1.0 mph at LOS E, or >0.5 mph at LOS F
Freeway Segment	Speed	>1.0 mph at LOS E, or >0.5 mph at LOS F
Freeway Ramp Meter	Minutes of delay per vehicle	>2.0 minutes for freeway segments operating at LOS E, or >1.0 minutes for freeway segments operating at LOS F. The criteria only apply for ramp meters where the delay without project is 15 minutes or higher.

Source: City of San Diego Significance Determination Thresholds, page 72, January 2011. Notes:

⁽a) Significance threshold applies only when the type of facility operates at LOS E or F.

If a project adds any increment of delay to cause the operations of an intersection to go from LOS D to either LOS E or LOS F, then the project is considered to cause a significant impact.

4 EXISTING CONDITIONS

This section describes the existing mobility network within the Balboa Avenue Station Area Specific Plan area.

ROAD NETWORK

Table 4-1 provides a description of the existing study roadways within the Specific Plan area. Ultimate roadway classifications are taken from the Clairemont Mesa Community Plan (adopted in 1989) and Pacific Beach Community Plans (adopted in 1995). The portions of the roadways described are intended to reflect the areas within the given Specific Plan area, and may not reflect the entirety of the roadway. Functional classifications are based on field observations performed during preparation of this report. The City of San Diego Bicycle Master Plan (City BMP) proposes several bicycle facilities in the Specific Plan Area as noted in Table 4-1 as well.

Figure 4-1 shows the existing geometrics of the study intersections within the Specific Plan area.

TRAFFIC VOLUMES

Peak period intersection turning movements and roadway segment traffic data was collected by National Data and Surveying Services (NDS) and obtained in May and June of 2016 as part of the data collection process for this project. The existing traffic volume data is shown in **Figure 4-2**. Existing Counts are included in **Appendix A**.

INTERSECTION ANALYSIS

Peak period LOS analyses were performed for the morning (AM) and afternoon (PM) peak periods at each of the intersections within the Specific Plan area. The analyses represent the one-hour timeframe that experiences the highest total intersection volume at each individual location. Existing Synchro worksheets are included in **Appendix B**.

Table 4-2 presents the LOS analysis results for the study intersections.

As shown in the results, all study intersections operate at acceptable conditions (LOS A through LOS D), except for the following:

- Garnet Avenue at Mission Bay Drive (Int 5) LOS E in the AM and PM peak periods
- Garnet Avenue at Santa Fe Street (Int 6) LOS F in the PM peak period
- Balboa Avenue at Morena Boulevard Northbound Ramps (Int 7) LOS F in the PM peak period
- Balboa Avenue at Clairemont Drive (Int 9) LOS E in the PM peak period
- Mission Bay Drive at Rosewood Street (Int 20) LOS E in the AM peak period and LOS F in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period
- Morena Boulevard at Eastbound Balboa Avenue Ramps (Int 26) LOS F in the AM and PM peak periods
- Morena Boulevard at Baker Street (Int 27) LOS E in the AM peak period

Table 4-1 Existing Roadway Network

Roadway Segment	Current Cross Section	Speed Limit (mph)	Community Plan Classification	Built to Ultimate?
Garnet Avenue				
Olney St to Balboa Ave	 2 WB lanes/ 1 EB lanes Continuous two-way left-turn lane On-street parking on both sides Sidewalk, curb and gutter on both sides 	30	4-Lane Major	No
Balboa Avenue to Soledad Mountain Rd	 2 WB lanes/ 2 EB lanes Raised center median On-street parking on both sides Sidewalk, curb and gutter on both sides 	35	4-Lane Major	Yes
Soledad Mountain Rd to Mission Bay Dr	 2 WB lanes/ 2 EB lanes Raised center median No on-street parking Sidewalk, curb and gutter on both sides 	35	6-Lane Major	No
Mission Bay Dr to I-5 NB Off Ramp	 3 WB lanes/ 2 EB lanes Raised center median No on-street parking Sidewalk, curb and gutter on both sides 	35	6-Lane Major	No
I-5 NB Off Ramp to Morena Blvd SB On Ramp	 3 WB lanes/ 2 EB lanes(1 Aux lane in EB direction) Raised center median No on-street parking Sidewalk, curb and gutter on both sides 	35	6-Lane Major	No
Balboa Avenue (CA-2				
Morena Blvd SB Ramps to Morena Blvd NB Ramps	 2 WB lanes(1 Aux lane in WB direction)/ 2 EB lanes Raised center median No on-street parking Sidewalk on north side Curb and gutter on both sides 	45	6-Lane Major	No
Morena Blvd NB Ramps to Clairemont Dr	 2 WB lanes/ 2 EB lanes Raised center median No on-street parking Class II (Bike Lane) facility 	45	6-Lane Major	No

Table 4-1 Existing Roadway Network (Cont.)

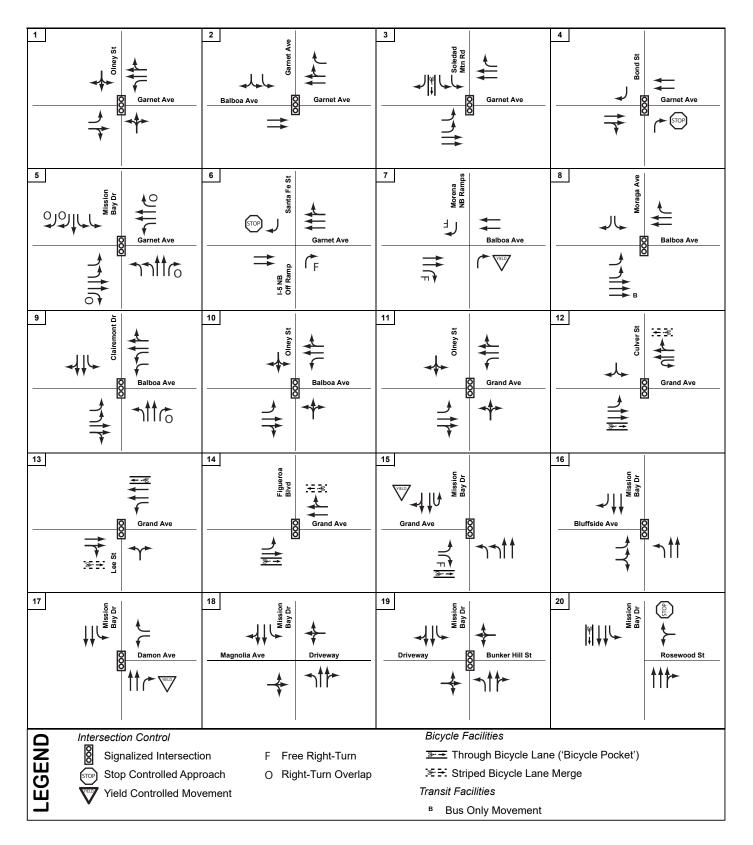
Roadway Segment	Current Cross Section	Speed Limit (mph)	Community Plan Classification	Built to Ultimate?
Mission Bay Driv	e			
Bluffside Ave to Rosewood St	 2 NB lanes/ 2 SB lanes Raised center median On-street parking on both sides Sidewalk, curb and gutter on both sides between the bridge over Rose Creek and Rosewood St 	35	4-Lane Major	Yes
Morena Boulevar	d			
Jutland Ave to Avati Dr	2 NB lanes/ 2 SB lanesContinuous two-way left-turn laneOn-street parking on the west side	45	4-Lane Collector	Yes
Avati Dr to Balboa Ave	2 NB lanes/ 2 SB lanesContinuous two-way left-turn laneNo on-street parking	45	4-Lane Major	Yes
Balboa Ave to Baker St	 1 NB lanes/ 2 SB lanes Raised center median On-street parking on the east side Sidewalk on the east side Curb and gutter on both sides 	45	4-Lane Major	Yes
Baker St to Clairemont Dr	 2 NB lanes/ 2 SB lanes Raised center median On-street parking on the east side Sidewalk on the east side Curb and gutter on both sides 	45	4-Lane Major	Yes
Clairemont Drive				
Chippewa Ct to Balboa Ave	 2 NB lanes/ 2 SB lanes Raised center median On-street parking on the west side Class II (Bike Lane) facility on east side Class III (Bike Route) facility on west side Sidewalk, curb and gutter on both sides 	35	4-Lane Major	Yes
Balboa Ave to Morena Blvd	 2 NB lanes/ 2 SB lanes Continuous two-way left-turn lane On-street parking on both sides Sidewalk, curb and gutter on both sides 	35	4-Lane Major	Yes
Damon Avenue				
Mission Bay Dr to Santa Fe St	 1 NB lane/ 1 SB lane On-street parking on both sides Class III (Bike Route) facility on both sides Sidewalk, curb and gutter on west side 	35	N/A*	Yes

Table 4-1 Existing Roadway Network (Cont.)

Roadway Segment	Current Cross Section	Speed Limit (mph)	Community Plan Classification	Built to Ultimate?
Grand Avenue				
Olney St to Mission Bay Dr	 2 WB lanes/ 2 EB lanes Raised center median No on-street parking Class II (Bike Lane) facility Sidewalk, curb and gutter on both sides 	35	4-Lane Major	Yes
Santa re Street	T		2 Lane Collector	
Damon Ave to Balboa Ave	1 NB lane/ 1 SB lane	25	(w/o two-way left turn lane)	Yes
Soledad Mountain	n Road			
Beryl St to Garnet Ave	 2 WB lanes/ 2 EB lanes Raised center median No on-street parking Class II (Bike Lane) facility Sidewalk, curb and gutter on both sides 	40	4-Lane Major	Yes

Notes:

^{*}This roadway segment is not classified in the Pacific Beach Community Plan



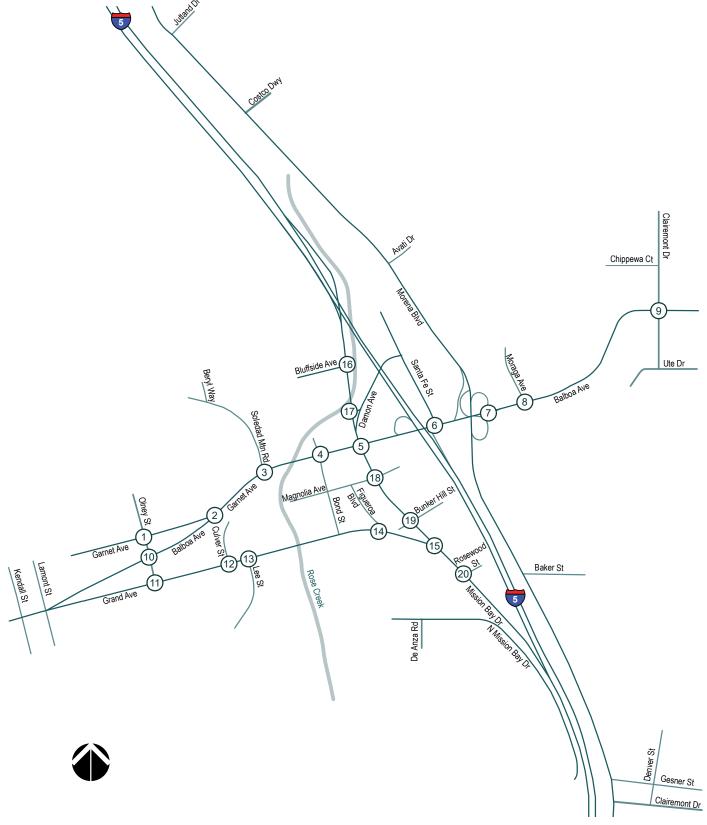
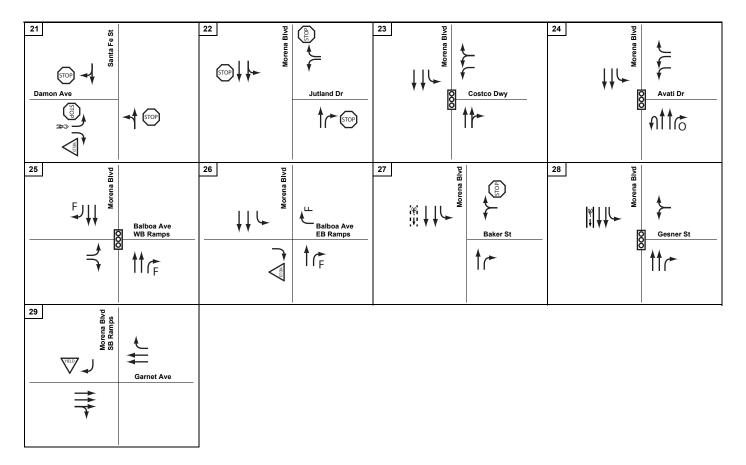
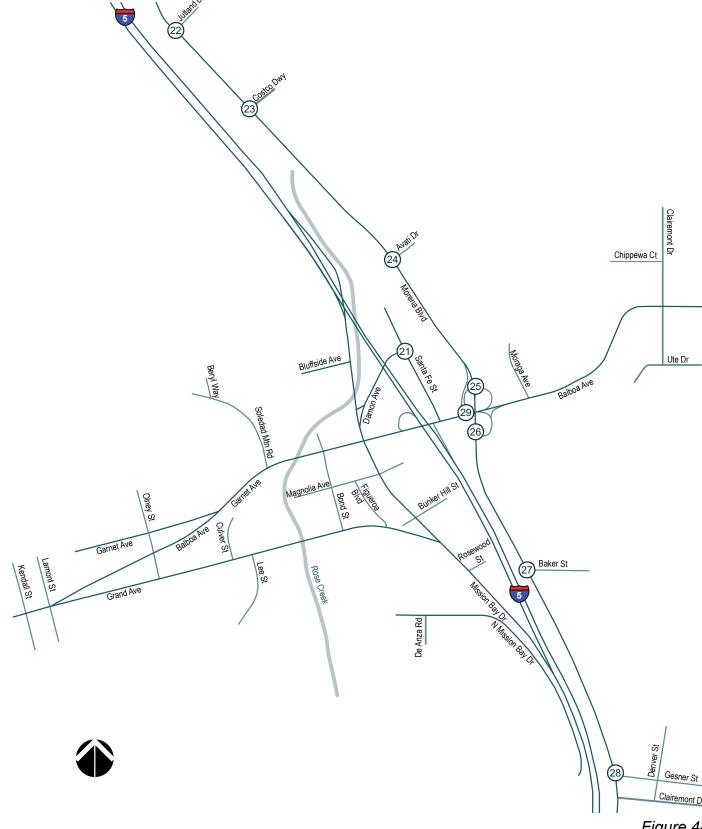


Figure 4-1 Existing Intersection Geometrics





Intersection Control
Signalized Intersection
Stop Controlled Approach
Yield Controlled Movement

F Free Right-Turn

O Right-Turn Overlap

HOV Only Movement

Bicycle Facilities

→ Through Bicycle Lane ('Bicycle Pocket')

Striped Bicycle Lane Merge

Figure 4-1 Existing Intersection Geometrics (Cont.)

503 €	/ 34		2 48 / 94 2 571 / 553 Soledad Mrn Rd	S 607 / 609 ⇔ 847 / 1766 Garnet Ave	4	⇔ 1511 / 2243 ঐ 0 / 1 Garnet Ave
5 / 12	1/0 Ø 576/433 ⇔		112 / 74		2029 / 1699 💠 😿 23 / 53 😘 💆	24 /29 🜣
9 9 9 8 8	6 50 50 50 50 50 50 50	S 126 / 60 ⇔ 1873 / 2139 Garnet Ave	7 230 /197	⇔ 1408 / 1578 Ваlboa Ave	© 267 /299 © 99 /100 Moraga Ave	⊳ 81 / 91 ⇔ 1141 / 1279 Balboa Ave
742 / 499 & 882 / 835 \ 467 / 390 \ \Sigma \ 67 / 390 \ \Sigma \ 77 / 390 \ \Sigma \ 7	1263 / 1369 D	236 / 905 s	Moren a NB ⇔ (297 / 292 / 293 / 293 / 294 / 295	269 /257 %	324 / 356	
% % ₹ ii	/ 104 / 1020 / 410 / Ave	□ 7 / 10 □ 179 / 557 □ 42 / 110 Balboa Ave	2 4 / 24 2 51 / 102 2 128 / 89 Oliney Street	S 57 / 176 ← 497 / 1212 ≥ 53 / 138 Grand Ave	2 39 / 24 6 149 / 68 Culver St	S 110 / 62 ⇔ 523 / 1524 Grand Ave
208 / 379 Ø S û Ø Ø 815 / 1083 ⇔ 69 / 57 S 8 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	34 / 16	14 /16 & 92 /177 & 75 /44 &	12 / 15	10 /13 & 86 /70 & 305 /125 &	48 / 16	
	/ 1573 / 88 Ave	S 22 / 30	12 105 / 286 1		16	
34 / 28 & 8 5 7 7 7 7 7 7 7 7 7	65 / 61		307 / 111	499 / 1293 ⊘ 705 / 927 ⇔	576 / 247 Ø	81 / 277 & 1244 / 982 &
7 Viss	/ 146 141	S 5/7 ⇔ 1/1 № 9/7 Driveway	Durineman A 224 / 860 Pr 119 / 85 Mission Bay Dr	S 35 / 38 ☑ 36 / 118 Bunker Hill St	⇔ 2107 / 1769 ⇔ 7 / 2 Mission Bay Dr	5 8 / 11
1297 / 1117 ÷ 96 / 170 %	74/53	31 / 53 & 912 / 1072 & 7 / 3 &		883 / 984 🕁 90 / 43 🔯		1211 / 2216 🕁



Figure 4-2 Existing Peak Period Volumes

21	19 / 66 2 2 90 / 39 th	ch 129 / 233 ch 4 / 35 ch	162 / 539 Jutland Dr	\$ 241 /745 \$ 32 /51 Morena Blvd	© 46 / 70 Ø 104 / 371 Costco Dwy	# 312 / 1122 # 17 / 55 # Morena Bivd	33 / 44 2 223 / 192 Avati Dr 2 4 61 / 61 / 61 / 61 / 61 / 61
25 629 204 111 20 204 207 20	Ŷ Ø	8E Samps = 240 / 800	© 262 / 514	e 354 / 1012 2 17 / 44 Morena Bivd	© 29 / 23 Ø 23 / 12 Baker St	\$351 / 928 \$2 46 / 101 Morena Bivd	S 47 / 84 2 32 / 36 Gesner St
94 / 205 😘	784 /731 290 /197	141 / 323 😘	799 /404		946 /465		895 /416 40 /43
Garnet Ave 1358 / 1951	S 167 / 316 ⇔ 1531 / 1459 Balboa Ave						

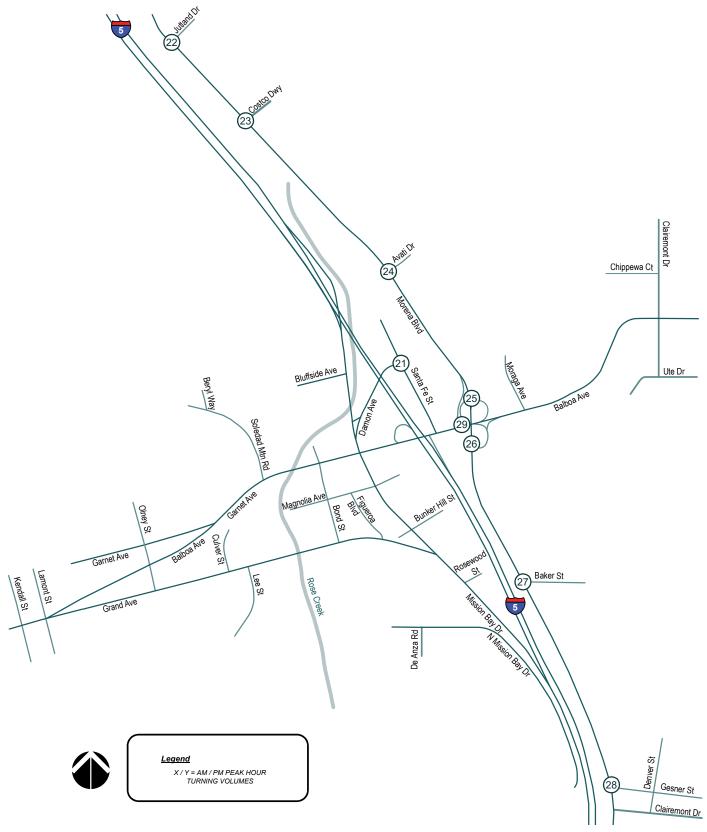


Figure 4-2
Existing Peak Period Volumes (Cont.)

Table 4-2 Existing Intersection Analysis Results

Interception		Tueffie	Peak	Existing		
	Intersection	Traffic Control	Period	Delay (a)	LOS (b)	
1	Garnet Ave at Olney St	Signal	AM	15.4	В	
ı	Garriet Ave at Officey St	Signal	PM	12.1	В	
2	Garnet Ave at Balboa Ave	Signal	AM	11.1	В	
	Gairiet Ave at Baiboa Ave	Signal	PM	15.0	В	
3	Garnet Ave at Soledad	Signal	AM	18.6	В	
	Mountain Rd	Signal	PM	29.2	С	
4	Garnet Ave at Bond St	Signal	AM	0.5	Α	
	Carriet Ave at Bond of	Signal	PM	0.6	Α	
5	Garnet Ave at Mission Bay	Signal	AM	55.7	Е	
	Dr	Signal	PM	58.0	Е	
6	Garnet Ave at Santa Fe St	One Way Step	AM	16.8	С	
	Carriet Ave at Carria i e ot	One-Way Stop	PM	151.9	F	
7	Balboa Ave at Morena Blvd	One Way Viold	AM	27.0	D	
′	NB Ramps	One-Way Yield	PM	50.7	F	
8	Balboa Ave at Moraga Ave	Signal	AM	16.2	В	
	5 Baiboa / We at Woraga / We	Signal	PM	16.3	В	
a	9 Balboa Ave at Clairemont Dr	Signal	AM	47.6	D	
			PM	59.2	E	
10	Balboa Ave at Olney St	Signal	AM	12.4	В	
	Daisou / Wo at Onloy Ot	Signal	PM	12.9	В	
11	Grand Ave at Olney St	Signal	AM	32.9	С	
	Grand 7 We at Ginley Gt	Signal	PM	27.2	С	
12	Grand Ave at Culver St	Signal	AM	10.2	В	
	Grana 7.00 at Garver Gt	Signal	PM	5.8	Α	
13	Grand Ave at Lee St	Signal	AM	9.5	Α	
-10	Grana 7.ve at 200 ot	Signal	PM	5.2	Α	
14	Grand Ave at Figueroa Blvd	Signal	AM	14.9	В	
	Ciana / We at 1 igacioa biva	Signal	PM	3.0	Α	
15	Grand Ave at Mission Bay	Signal	AM	34.5	С	
	Dr	Signal	PM	32.3	С	
16	Mission Bay Dr at Bluffside	Signal	AM	21.6	С	
	Ave	Signal	PM	20.4	С	
17	Mission Bay Dr at Damon	Signal	AM	8.2	Α	
. ' <i>'</i>	Ave	Signal	PM	14.3	В	
18	Mission Bay Dr at Magnolia	Signal	AM	14.7	В	
٠٠	Ave	Signal	PM	16.1	В	

Notes: **Bold** values indicate intersections operations at LOS E or F.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 4-2 Existing Intersection Analysis Results (Cont.)

Interposition		Tueffie	Peak	Existing		
	Intersection	Traffic Control	Period	Delay (a)	LOS (b)	
19	Mission Bay Dr at Bunker	Cianal	AM	6.5	Α	
13	Hill St	Ker Signal AM 6.5 PM 8.2 One-Way Stop AM 41.7 Ave All-Way Stop AM 7.8 PM 8.1 AM 12.7 PM 55.2 AM 9.6 PM 11.0 AM 9.1 PM 8.9 AM 9.1 PM 8.9 AM 3.3 PM 4.7 AM 96.7 PM 50.2 AM 35.1	8.2	Α		
20	Mission Bay Dr at	One-Way	AM	41.7	E	
20	Rosewood St	Stop	PM	176.0	F	
21	Santa Fe St at Damon Ave	All Mov Stop	AM	7.8	Α	
۷۱	Santa Fe St at Damon Ave	All-way Stop	Period Delay (a) AM 6.5 PM 8.2 y AM 41.7 PM 176.0 AM 7.8 PM 8.1 AM 12.7 PM 55.2 AM 9.6 PM 11.0 AM 9.1 PM 8.9 AM 3.3 PM 4.7 AM 96.7 PM 50.2 AM 35.1	8.1	Α	
22	Marana Blud at Jutland Dr	A II	AM	12.7	В	
22	Morena Blvd at Jutland Dr	All-vvay Stop	PM	55.2	F	
23	Morena Blvd at Costco	C: I	AM	9.6	Α	
23	²³ Dwy	Signai	PM	11.0	В	
24	Marana Plyd at Aveti Dr	6: 1	AM	9.1	Α	
24	Morena Blvd at Avati Dr Signal	PM	8.9	Α		
25	Morena Blvd at WB Balboa	C: I	AM	3.3	А	
23	Ave Ramps	Signai	PM	4.7	Α	
00	Morena Blvd at EB Balboa	Tive Mer	AM	96.7	F	
26	Ave Ramps	,	PM	50.2	F	
		0 111	AM	35.1	Е	
27	Morena Blvd at Baker St	One-vvay Stop	PM	17.6	С	
28	Morena Blvd at Gesner St	C: I	AM	8.6	Α	
20	INDICIA DIVU AL GESTIEL SL	Signal	PM	7.5	А	
29	Balboa Ave at Morena Blvd		AM	N/A	N/A	
29	SB Ramps	Free	PM	N/A	N/A	

Notes: **Bold** values indicate intersections operations at LOS E or F.

ROADWAY SEGMENT VOLUME-BASED ANALYSIS

Each roadway segment in the Specific Plan area was evaluated by comparing the daily traffic volume with the roadway's theoretical capacity based on its classification. The capacity represents the maximum daily volume before the roadway is expected to begin to operate at a LOS E. This volume-to-capacity comparison (v/c ratio) is a planning tool used to determine the general traffic demand on a segment and its sensitivity to delays.

Table 4-3 presents the results of the roadway segment analysis for a typical weekday.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 4-3 Existing Volume-Based Roadway Segment Analysis Results

Roadway Segment	olume-Based Roadway Seg Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio	LOS			
Balboa Ave				(c)				
Garnet Ave to Grand Ave	4 Lane Major Arterial	40,000	14,263	0.357	Α			
Garnet Ave	Garnet Ave							
Bond St to Mission Bay Dr	4 Lane Major Arterial	40,000	58,694	1.467	F			
Mission Bay Dr to I-5 SB On-Ramp	5 Lane Major Arterial	45,000	37,406	0.831	D			
I-5 SB On-Ramp to I-5 NB Off-Ramp	5 Lane Major Arterial	45,000	48,857	1.086	F			
I-5 NB Off-Ramp to Morena Boulevard SB Ramps	5 Lane Major Arterial	45,000	52,073	1.157	F			
Balboa Ave (CA-274)								
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	4 Lane Major Arterial	40,000	49,079	1.227	F			
Morena Boulevard NB Ramps to Moraga Avenue	4 Lane Major Arterial	40,000	43,115	1.078	F			
Moraga Avenue to Clairemont Drive	4 Lane Major Arterial	40,000	34,903	0.873	D			
East of Clairemont Drive	4 Lane Major Arterial	40,000	37,383	0.935	Е			
Grand Ave								
Kendall St to Lamont St	4 Lane Major Arterial	40,000	51,778	1.294	F			
Lee St to Bond St (On Rose Creek Bridge)	4 Lane Major Arterial	40,000	37,915	0.948	E			
Figueroa Blvd to Mission Bay Dr	4 Lane Major Arterial	40,000	38,202	0.955	E			
Mission Bay Dr								
Bluffside Ave to Damon Ave	4 Lane Major Arterial	40,000	35,580	0.890	E			
Damon Ave to Garnet Ave	4 Lane Major Arterial	40,000	40,680	1.017	F			
Garnet Ave to Magnolia Ave	4 Lane Major Arterial	40,000	29,702	0.743	С			
Magnolia Ave to Bunker Hill St	4 Lane Major Arterial	40,000	29,821	0.746	С			
Bunker Hill St to Grand Ave	4 Lane Major Arterial	40,000	29,002	0.725	С			
Grand Avenue to I-5 Ramps	5 Lane Major Arterial	45,000	55,051	1.223	F			
Morena Blvd								
Jutland Dr to Avati Dr	4 Lane Major Arterial	40,000	11,554	0.289	А			
Avati Dr to Balboa Ave Ramps	4 Lane Major Arterial	40,000	20,136	0.503	В			
Balboa Ave Ramps to Ticonderoga St	3 Lane Major Arterial	30,000	15,823	0.527	С			
Gesner St to Clairemont Dr	4 Lane Major Arterial	40,000	15,584	0.390	В			

Notes: **Bold** values indicate roadway segments operating at LOS E or F.

⁽a) Existing road classifications are based on field work conducted in May 2016.

⁽b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.

⁽c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

Table 4-3 Existing Volume-Based Roadway Segment Analysis Results (Cont.)

Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS			
Clairemont Dr								
Chippewa Ct to Balboa Ave	4 Lane Major Arterial	40,000	21,259	0.531	С			
Balboa Ave to Ute Dr	4 Lane Major Arterial	40,000	19,325	0.483	В			
Denver St to Morena Blvd	4 Lane Major Arterial	40,000	31,162	0.779	D			
Damon Ave (d)								
Mission Bay Dr to Santa Fe St	2 Lane Collector (w/o two-way left turn lane)	8,000	4,415	0.552	С			
Santa Fe St								
Damon Ave to Balboa Ave	2 Lane Collector (w/o two-way left turn lane)	8,000	2,431	0.304	А			
Soledad Mountain Rd								
Beryl St to Garnet Ave	4 Lane Major Arterial	40,000	27,235	0.681	С			
N Mission Bay Dr	N Mission Bay Dr							
De Anza Rd to Mission Bay Dr	2 Lane Collector (w/o two-way left turn lane)	8,000	2,456	0.307	А			

Notes: **Bold** values indicate roadway segments operating at LOS E or F.

- (a) Existing road classifications are based on field work conducted in May 2016.
- (b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.
- (c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.
- (d) Damon Avenue is classified as a local street but functions as a collector with in the community.

As shown in the table, it is estimated that all roadway segments function at an acceptable LOS D or better in the Specific Plan area, except for the following segments.

- Garnet Avenue between Bond Street and Mission Bay Drive LOS F
- Garnet Avenue between I-5 SB On-Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off-Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue between Morena Boulevard SB ramps and Morena Boulevard NB ramps LOS F
- Balboa Avenue between Morena Boulevard NB ramps and Moraga Avenue LOS F
- Balboa Avenue east of Clairemont Drive LOS E
- Grand Avenue between Kendall Street and Lamont Street LOS F
- Grand Avenue between Lee Street and Bond Street (On Rose Creek Bridge) LOS E
- Grand Avenue between Figueroa Boulevard and Mission Bay Drive LOS E
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS F

CORRIDOR SPEED-BASED ANALYSIS

A speed-based travel time analysis of key corridors within the Specific Plan area was conducted during peak periods of the day. This analysis evaluates the roadway segment LOS perceived by auto users based on the average speed a vehicle maintains along the corridor. The following corridors were evaluated:

- · Mission Bay Drive
- Garnet Avenue/ Balboa Ave

The travel time information along each corridor was calculated using Synchro. The simulation uses the highest 1-hour volume at each intersection. The Mission Bay Drive corridor is approximately 0.93 miles and includes 6 traffic signals. The Garnet Avenue/ Balboa Avenue corridor is approximately 1.92 miles and includes 6 traffic signals. A summary of speed-based LOS along the study corridors are presented in **Table 4-4**. Existing Synchro worksheets are included in **Appendix B**.

As shown in the table, it is estimated that all corridor segments function at an acceptable LOS D or better in the Specific Plan area, except for the following segments.

- Northbound Mission Bay Drive between Grand Avenue and Bluffside Avenue LOS E in the PM peak period
- Southbound Mission Bay Drive between Bluffside Avenue and Grand Avenue LOS E in the AM and PM peak periods

Table 4-4 Existing Speed-Based Corridor Analysis Results

Corridor	Direction	Urban Street Class	Peak Period	Travel Time (sec)	Speed (mph)	LOS (a)			
Mission Bay Drive									
Grand Avenue to Bluffside	Northbound	III	AM	140.5	15.9	D			
Avenue	Northbourid	'''	PM	167.5	13.3	Е			
Bluffside Avenue to Grand	Soutbound	III	AM	157.9	13.9	Е			
Avenue	Soutbourid		PM	218.6	10.0	Е			
Garnet Avenue/ Balboa Avenue									
Olney Street to Clairemont	Eastbound II AM 321.0				20.5	D			
Drive	Easibourid	"	PM	337.3	19.5	D			
Clairemont Drive to Olney	Westbound	П	AM	292.9	22.6	С			
Street	vvesibound	11	PM	305.6	21.7	D			

Notes: **Bold** values indicate intersections operations at LOS E or F.

⁽a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

FREEWAY SEGMENTS

Freeway volumes were obtained from Caltrans and reflect the latest year 2016 volumes that had been published at the time of this report. The freeways were evaluated using procedures for a freeway mainline as outlined in the HCM 2010.

Table 4-5 displays the LOS analysis results for the freeway segments within the community during the morning and afternoon peak hours. As shown in the table, all freeway segments within the Specific Plan area operate with an LOS D or better.

Appendix A includes the "k" and "d" factors published by Caltrans that are included in the analysis.

Freeway Segment		Dir	Number of		-Hour me (a)		eed ph)		sity ni/ln)	LOS	S (b)
			Lanes	AM	PM	AM	PM	AM	PM	AM	PM
	SR-52 to Mission	NB	5	9,662	6,153	61.1	68.0	34.0	23.7	D	С
	Bay Dr	SB	5	5,614	9,365	68.0	62.4	23.7	32.2	С	D
	Mission Bay Dr to Garnet Ave/ Balboa Ave Garnet Ave/ Balboa Ave to Mission Bay Dr	NB	4	7,066	4,500	64.3	68.0	29.6	23.7	D	С
2		SB	4	4,106	6,849	68.0	65.2	23.7	28.3	С	D
-		NB	4	6,492	5,788	66.5	68.0	26.3	23.7	D	С
		SB	4	5,000	6,910	68.0	65.0	23.7	28.6	С	D
	Mission Bay Dr to Clairemont Dr	NB	5	8,164	7,279	66.4	68.0	26.5	23.7	D	С
		SB	5	6,288	8,691	68.0	64.8	23.7	28.9	С	D

Table 4-5 Existing Freeway Segment Analysis Results

Notes:

FREEWAY RAMP METERS

Freeway entrance ramps that currently have ramp meters installed and in operation were evaluated to determine the delay and queue associated with the ramp meters. Calculations were made using the peak hour demand at the entrance ramp and the current meter rate to quantify the number and frequency of vehicles that are processed through the meter. The excess demand not being processed is then quantified along with its respective queue length. Ramp volumes were obtained from the intersection turning movements collected in May 2016. **Appendix A** contains the ramp meter rates provided by Caltrans.

Table 4-6 displays the results of the freeway ramp meters in the study area. As shown in the table, the meter rate adequately controls the expected demand with delays resulting in less than 15 minutes, except at the following location:

I-5 SB and Mission Bay Drive – PM peak period (53 minute delay)

⁽a) Peak-hour volumes were estimated by applying the K and D factors to the published 2016 Caltrans AADT volumes.

⁽b) The LOS for the respective freeway segments were based on the methodologies contained in Chapter 11 of the 2010 Highway Capacity Manual

Table 4-6 Existing Freeway Ramp Meter Analysis Results

On Ramp	Peak Hour	eak of Lanes		_	ge Length (feet) Total Ramp Volume ^a		Demand (veh/hr/lane)		Meter Rate	Excess Demand (veh/hr)		Delay (min)		Queue (feet) ^d										
	GF	GP	HOV	GP	HOV	(veh/hr)	GP	HOVb	(veh/hr) ^c	GP	HOV	GP	HOV	GP	HOV									
I-5 SB & Mission Bay	AM	2	4	375	375	1,460	584	292	n/a															
Drive	PM		'			2,235	894	447	475	419	0	53	0	10,475	0									
I-5 SB & WB Balboa	AM	2	2	0	0	0	0	0	0	0	0	0	315	n/o	480	240	n/a	n/a						
Ave	PM	_	. 0					315	315 n/a	735	368	n/a	542	0	n/a	0	n/a	0	n/a					
I-5 NB & Mission Bay	AM	2	0	0	0	1 655	n/o	1820	910	n/a	811	99	n/a	7	n/a	2,475	n/a							
Drive	PM	2				U	U		0	0	0	U	1,655	n/a	1229	615	n/a	n/a						

Notes: Bold values indicate a ramp meter delay greater than 15 minutes (SANTEC/ ITE Significant Threshold).

⁽a) Demand is the peak hour demand expected to use the on-ramp

⁽b) Assume 20 percent of demand utilizes the HOV lanes

⁽c) Meter Rate is the peak hour capacity expected to be processed through the ramp meter. Values were obtained from Caltrans. Most Conservative rate (Rate 15) was used.

⁽d) Assumes an average vehicle length of 25 feet

PEDESTRIAN FACILITIES

Existing pedestrian-facilities located within the Specific Plan area were identified through data provided by the City and supplemented with a review of aerial imagery. **Figure 4-3** displays the pedestrian network within and adjacent to the Specific Plan area, including existing pedestrian facilities and proposed improvements resulting from the Balboa Avenue station.

ACCESS TO TRANSIT

To assess the areas that the Balboa Avenue station provides pedestrian access to, a half-mile walkshed was created from the station platform. The half-mile walkshed is shown in **Figure 4-4**, this is considered to be a distance that most pedestrians are willing to comfortably walk to access high-frequency transit.

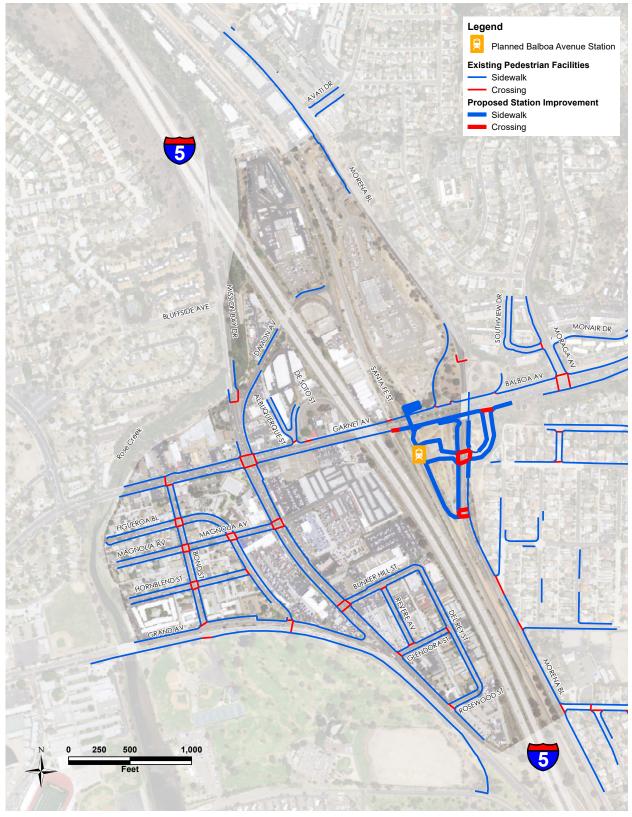


Figure 4-3 Existing Pedestrian Network

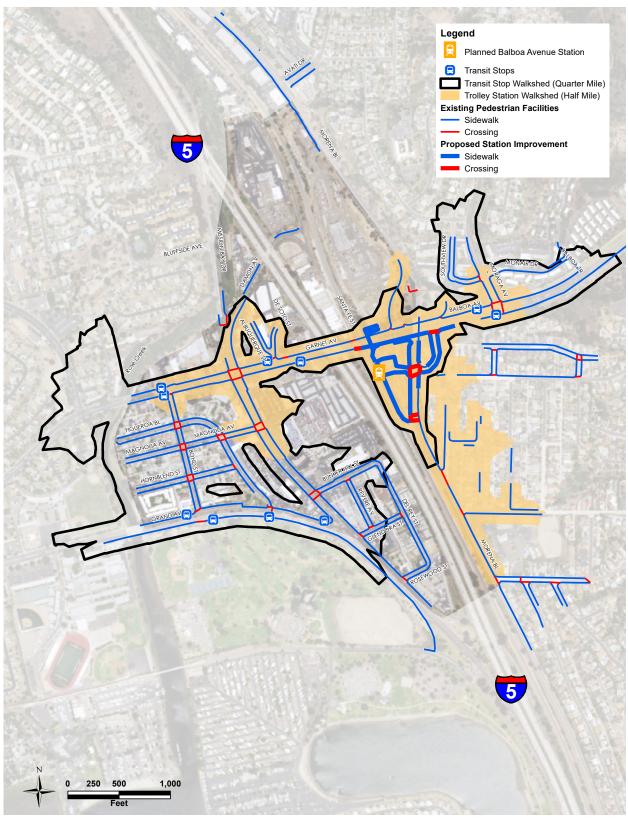


Figure 4-4 Existing Pedestrian Walkshed

BICYCLE FACILITIES

The City of San Diego has developed a network of designated Class I, II, and III bikeways as part of their Bicycle Master Plan efforts. A Class I facility is a bike path that provides for bicycles to travel on a paved right-of-way completely separated from any street or highway. A Class II facility is a bike lane that provides bicycles an exclusive or semi-exclusive lane of travel on a roadway separated by a painted line. A Class III facility is a bike route that provides for shared use with motor vehicle traffic and is only identified by signage and/or pavement markings. **Table 4-5** provides more description and illustrates the types of bikeway identified in the City of San Diego Bicycle Master Plan (BMP).

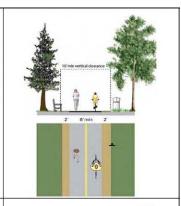
Two additional bicycle facilities, Cycle Track (referred to as a Class IV Bicycle Lane by the City of San Diego) and Bicycle Boulevard, have been adopted into the SANDAG Regional Bike Plan (RBP). A Class IV Cycle Track is a bicycle facility that is located within the roadway right-of-way but physically separated from vehicle lanes by a physical barrier. Bicycle Boulevards are roadways where physical improvements such as traffic calming and diversions are intended to provide priority to bicyclists. Bicycle Boulevards are typically installed on local roads with a low volume of vehicles. **Table 4-6** further explains the two new bicycle facilities.

Existing bicycle facilities immediately adjacent to and within the Specific Plan area are shown in **Figure 4-5**. SanGIS, a data source provided by the San Diego Association of Governments (SANDAG), was referenced to provide a baseline for existing bicycle facilities. Updates and modifications to SanGIS data were completed as a result of field verifications. As seen in Figure 4-5, the existing bicycle network does not include any facilities that connect to the future Balboa Avenue station. Planned station improvements do not include any roadway re-striping or dedicated facilities to accommodate bicyclists; however, the Balboa Avenue station lot will provide bicycle amenities such as bicycle lockers and racks. The lack of roadway re-striping or dedicated facilities results in no changes to the existing network as a result of the Balboa Avenue station being constructed.

Table 4-5 Regional Bicycle Facility Classifications

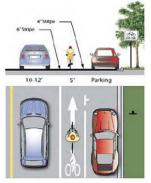
Class I - Bike Path

Bike paths are bikeways that are physically separated from vehicular traffic. Also termed shared-use paths, bike paths accommodate bicycle, pedestrian, and other non-motorized travel. Paths can be constructed in roadway right-of-way or independent right-of-way. Bike paths provide critical connections in the region where roadways are absent or are not conducive to bicycle travel.



Class II - Bike Lanes

Bike lanes are defined by pavement markings and signage used to allocate a portion of a roadway for exclusive or preferential bicycle travel. Within the regional corridor system, bike lanes should be enhanced with treatments that improve safety and connectivity by addressing site-specific issues. Such treatments include innovative signage, intersection treatments, and bicycle loop detectors.



Class III - Bike Routes

Bike routes are located on shared roadways that accommodate vehicles and bicycles in the same travel lane. Established by signs, bike routes provide continuity to other bike facilities or designate preferred routes through corridors with high demand. Within the regional corridor system, bike routes should be enhanced with treatments that improve safety and connectivity by addressing site-specific issues.

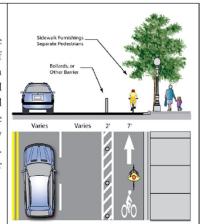


Source: SANDAG Regional Bicycle Plan, dated April 2010 (ALTA Planning)

Table 4-6 Additional Bicycle Facility Classifications

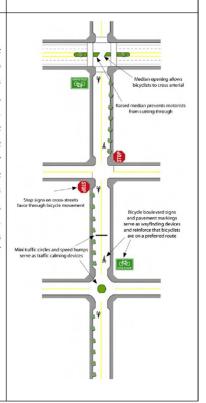
Cycle Tracks

A cycle track is a hybrid type bicycle facility that combines the experience of a separated path with the on-street infrastructure of a conventional bike lane. Cycle tracks are bikeways located in roadway right-of-way but separated from vehicle lanes by physical barriers or buffers. Cycle tracks provide for one-way bicycle travel in each direction adjacent to vehicular travel lanes and are exclusively for bicycle use. Cycle tracks are not recognized by Caltrans Highway Design Manual as a bikeway facility. Development of cycle track on segments of the regional corridor system is proposed through experimental, pilot projects.



Bicycle Boulevards

Bicycle boulevards are local roads or residential streets that have been enhanced with traffic calming and other treatments to facilitate safe and convenient bicycle travel. Bicycle boulevards accommodate bicyclists and motorists in the same travel lanes, typically without specific vehicle or bicycle lane delineation. These roadway designations prioritize bicycle travel above vehicular travel. The treatments applied to create a bike boulevard heighten motorists' awareness of bicyclists and slow vehicle traffic, making the boulevard more conducive to safe bicycle and pedestrian activity. Bicycle boulevard treatments include signage, pavement markings, intersection treatments, traffic calming measures and can include traffic diversions. Bicycle boulevards are not defined as bikeways by Caltrans Highway Design Manual; however, the basic design features of bicycle boulevards comply with Caltrans standards.



Source: SANDAG Regional Bicycle Plan, dated April 2010 (ALTA Planning)



Figure 4-5 Existing Bicycle Network

BICYCLE LEVEL OF TRAFFIC STRESS

The Bicycle Level of Traffic Stress (BLTS) analysis was completed to summarize the biking conditions in the Specific Plan area. **Figure 4-6** summarizes the LTS score for each direction of roadway segments under existing conditions. **Table 4-7** details the percent of the total distance that fell within each level of traffic stress for the roadways studied.

Table 4-7 Existing Bicycle Facility Quality within Specific Plan Area

LTS 1	LTS 2	LTS 3	LTS 4
35%	0%	3%	62%

The results of the BLTS analysis show the percentages assigned to each level of traffic stress score based on linear distance of roadway. As seen in the table, a majority of the streets included in the analysis were scored at a high level of stress, or a LTS 4. The corridors scoring a LTS of 4 include Garnet Avenue, Grand Avenue, Morena Boulevard, and Balboa Avenue. These corridors represent the major north/south and east/west connections to the Balboa Avenue Station. The results show access to the Balboa Avenue station along these major corridors are difficult due to high speeds and lack of connecting facilities. The residential streets between Garnet Avenue and Grand Avenue, and between Mission Bay Drive and I-5 received low traffic stress scores. Although these streets do not have bicycle facilities, low traffic speeds result in a LTS 1 score. These minor streets currently lack connection to the Balboa Avenue Station.

PARKING SUPPLY

Aerial images and field verification was utilized to inventory existing parking lots, taking into consideration whether the existing parking lot is open to the public or closed for private purposes only. Additionally, inventory of approximate curbside parking spaces, and parking restrictions (meters or time-restrictions) were verified. Locations of on-street and off-street parking, including the surface parking associated with the Balboa Avenue station, were inventoried and are shown in **Figure 4-7.** The field review found no metered curbside parking spaces within the community boundary. With the exception of Mission Bay Drive which has a two-hour time restriction of on-street parking, all on-street parking spaces are available for free public parking 24 hours a day.

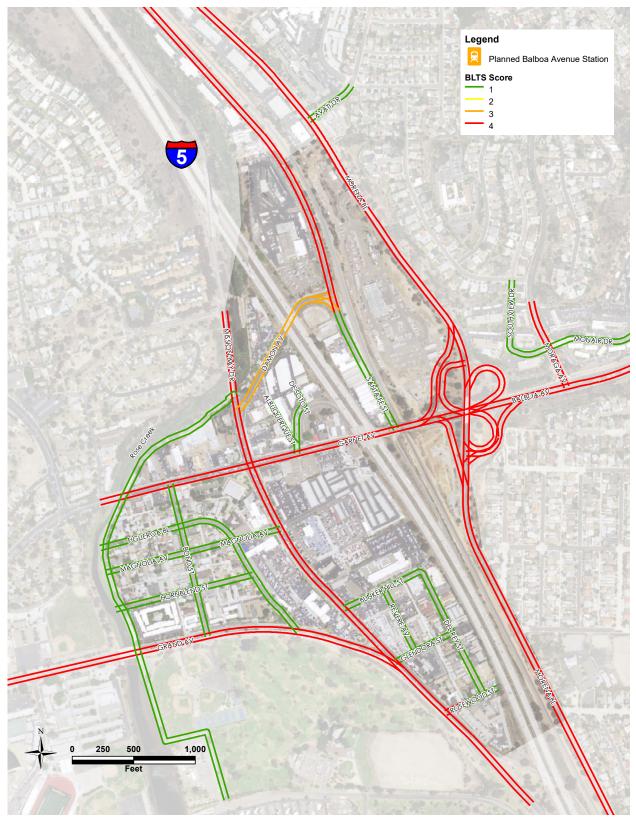


Figure 4-6
Existing BLTS Results

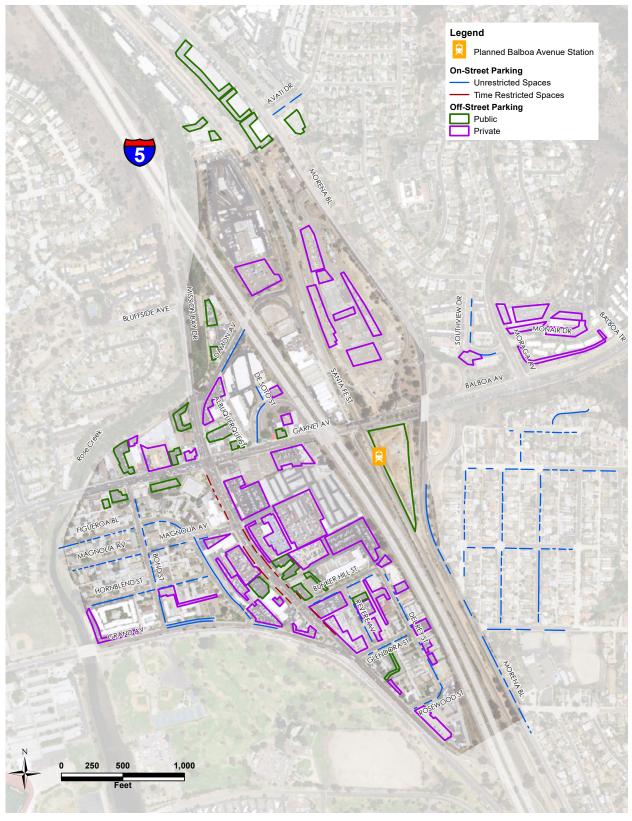


Figure 4-7 Existing Parking Supply

5 ACTIVE TRANSPORTATION: WALKABLE COMMUNITY

Figure 4-4 presented an overview of the existing pedestrian walkshed from Balboa Avenue station.

BASELINE NETWORK CONDITIONS

As shown in Figure 4-4, the Balboa Avenue station includes new pedestrian facilities adjacent to the station. These include a pedestrian facility adjacent to the rail bridge crossing Balboa Avenue, pedestrian ramps from the bridge to the street on both sides of Balboa Avenue, and new sidewalks and curb ramps along Balboa Avenue and Morena Boulevard within the vicinity of the Balboa Avenue station. Beyond the station improvements, no pedestrian facilities were identified. Recommendations within the Specific Plan area were made based on the existing network with station improvements assumed complete.

ACCESS TO TRANSIT

A half-mile walkshed from the station platform was created to define the areas that the Balboa Avenue station provides pedestrian access to. The half-mile walkshed is shown in **Figure 5-1**. This area is considered to be a distance that most pedestrians are willing to comfortably walk to access high-frequency transit.

RECOMMENDED IMPROVEMENTS

The existing conditions assessment identified gaps in the existing sidewalk network. By removing gaps in the existing sidewalk network, pedestrians will be able to access the Balboa Avenue station from greater distances without disruption or need to cross the street to continue use of the sidewalk. Taking into consideration the findings from the mobility assessment and previous planning studies, a variety of pedestrian-related opportunities have been identified. **Figure 5-1** shows the planned pedestrian network with changes summarized below:

- Install Shared-Use Paths along both sides of Garnet Avenue east of Mission Bay Drive. The south side of Garnet Avenue would have a path between Mission Bay Drive and the station. The north side of Garnet Avenue would have a path between Mission Bay Drive and Moraga Avenue.
- 2. Install Shared-Use Paths on both sides of Mission Bay Drive from Garnet Avenue to Grand Avenue. Additional Shared-Use path connections are recommended along the east side of Mission Bay Drive from Grand Avenue to Rosewood Street, and from Garnet Avenue to Damon Avenue, and along the west side of Mission Bay Drive from Rosewood Street to the path within Mission Bay Park.
- Install sidewalk on the south side of Balboa Avenue between the Morena Boulevard ramp and Moraga Avenue, connecting an existing bus stop to the sidewalk network adjacent to the Balboa Avenue station.
- 4. Install sidewalk on the east and west side of Morena Boulevard between the Balboa Avenue station and Avati Drive.
- Install a shared-use path along Santa Fe Street from Garnet Avenue to Damon Avenue, with a crossing on Santa Fe Street to connect to the existing sidewalk along Damon Avenue.
- Complete sidewalk connections along Damon Avenue between Mission Bay Drive and Santa Fe Street. Lighting improvements along this portion would also be provided to support a key bicycle connection on Damon Avenue and would benefit the pedestrian network.

- 7. Extend sidewalk along the west side of Mission Bay Drive from its current terminus to Bluffside Avenue provides connections to Rose Creek Trail and residents in the Mount Soledad area.
- 8. It is recommended that a shared-use pedestrian and bicycle facility be constructed across the I-5 freeway to create a low-stress connection for non-motorized uses to access the station and facilitate access to residences and Mission Bay Park. Additional enhancements and improvements should be considered to complement this connection and create a better interface between the built environment and this new facility.
- Reconfigure the Morena Boulevard to westbound Balboa Avenue ramps to remove the free right
 movement and reduce conflicts for pedestrians. This improvement facilitates access to Balboa
 Avenue station for the residential areas east of Morena Boulevard and would reduce conflicts for
 pedestrians and cyclists as well.
- 10. A wayfinding signage program is recommended to guide pedestrians between the Balboa Avenue station platform and nearby key attractions.
- 11. General opportunities to improve pedestrian access to the Balboa Avenue station include pedestrian-scale lighting.

Planned Operational Improvements

The City continues to upgrade curb ramps and traffic signal operations as part of their ongoing maintenance and operations programs. Recommended improvements include pedestrian signal countdown timers, advanced stop bars, no right turn on red signs, and pedestrian lead intervals in addition to the operational improvements previously mentioned. It is also recommended that ADA compliant curb ramps are installed along Garnet Avenue/Balboa Avenue and Mission Bay Drive. Specific recommendations at the intersections at Garnet Avenue / Mission Bay Drive and Grand Avenue / Mission Bay Drive are provided in Figure 8-4 and 8-6.

PEDESTRIAN ENVIRONMENTAL QUALITY EVALUATION (PEQE)

Figure 5-2 shows the results of the PEQE analysis within the half-mile walkshed with the recommended network in place. Compared to the existing network, the planned network provides increased access along high and medium quality pedestrian facilities to businesses and retail along Garnet Avenue and Mission Bay Drive, and residential areas in Clairemont. The planned sidewalk network allows people travelling from the Balboa Avenue station to travel on average 0.35 miles before reaching a low quality pedestrian facility. **Table 5-1** summarizes the distance within the half-mile walkshed a pedestrian can travel in each direction before a low quality facility is encountered for both existing and planned conditions.

Table 5-1 Pedestrian Half Mile Walk from Station on Medium or High Quality Pedestrian Facilities Evaluation

Condition	North	South	East	West
Existing Network	0	30%	6%	0
Future Network	100%	100%	100%	100%

Note: Percent of Half Mile Walkshed that can be travelled in each direction

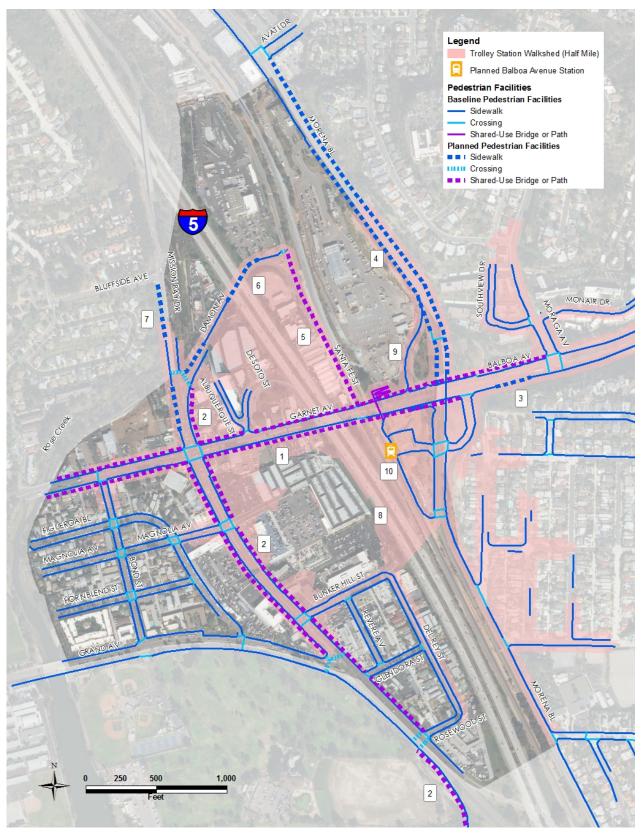


Figure 5-1
Future Planned Pedestrian Network and Station Walkshed

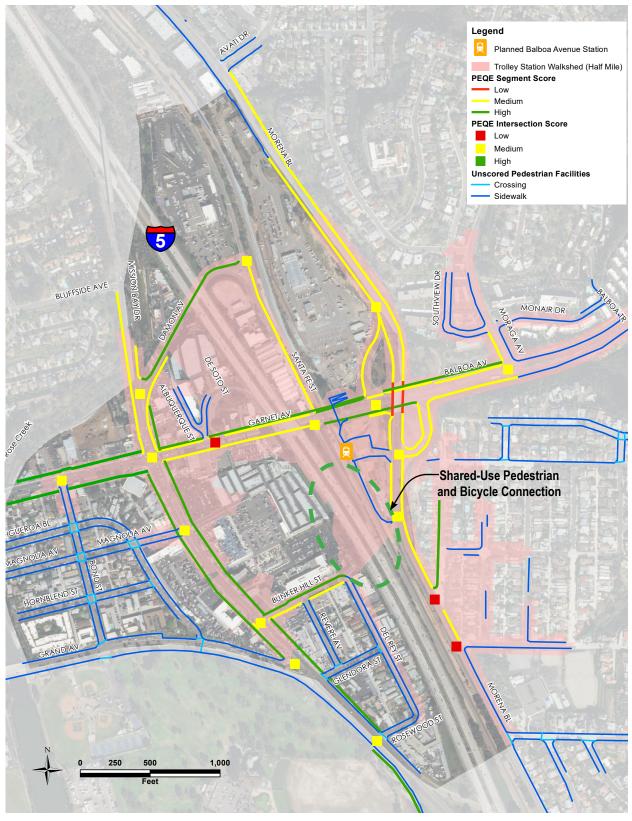


Figure 5-2 Future Planned PEQE Analysis Results

6 ACTIVE TRANSPORTATION: BICYCLING

Figure 4-5 presented an overview of the existing bicycle network in the Specific Plan area.

FUTURE NETWORK CHANGES

Based on the City of San Diego Bicycle Master Plan, Class II or Class III facilities are planned for Garnet Avenue/Balboa Avenue, Mission Bay Drive, and Santa Fe Drive and a Class II facility is planned for Morena Boulevard. Additionally, Class I facilities are proposed along the east side of I-5 from Gesner Street to Balboa Avenue and extension of the Rose Creek Trail to the north. The Balboa Avenue Station Area Specific Plan recommendations provide more specifics on these planned improvements and develop a network to connect these facilities with the Balboa Avenue station. It is assumed that all proposed bike lane (Class II) facilities shall include a buffer and all proposed bike route (Class III) facilities shall provide bicycle sharrow pavement markings, unless otherwise approved by the City Engineer.

RECOMMENDED IMPROVEMENTS

Garnet Avenue/Balboa Avenue provides the most direct connection between the Balboa Avenue station and the communities of Pacific Beach and Clairemont. It is recommended to modify the Garnet Avenue/Balboa Avenue corridor between Moraga Avenue and Soledad Mountain Road to add bicycle facilities and improve bicycle safety by removing free right-turn vehicle movements. Due to varied right-of-way constraints, the facilities provided along Garnet Avenue/Balboa Avenue would range from shared-use facilities adjacent to buffered bike lanes to shared-use facilities adjacent to sharrow pavement markings. Connections between the Balboa Avenue station and Garnet Avenue/Balboa Avenue are provided either via pedestrian ramps or roadway connections. The pedestrian ramps would be shared with pedestrians and are not specifically designed to accommodate bicyclists. As such, they would most likely require dismounting and walking bicycles, but provide direct and secluded access compared to sharing the roadway with vehicles. Bicycle channels should be installed on the stairways to facilitate the connection for bicyclists.

Mission Bay Drive will provide north-south connections between the station, Rose Creek Trail, and the Mission Bay Park. It is recommended to reconfigure the Mission Bay Drive corridor to accommodate Class I shared-use paths and Class II bicycle facilities. On Mission Bay Drive between Damon Avenue and Garnet Avenue, it is recommended to construct a Class I bicycle facility along the east side of the road by closing the existing free-right movement to Damon Avenue, a northbound Class II, and southbound Class III. Between Garnet Avenue and Grand Avenue, it is recommended that Mission Bay Drive be reconfigured to remove parking to include a Class II bicycle facilities along both sides of the corridor, and construct a Class I along both sides. South of Grand Avenue, it is recommended that a Class I is provided on the east side between Grand Avenue and Rosewood Street and on the west side south of Rosewood Street to connect with Mission Bay Park.

A shared-use pedestrian and bicycle facility across I-5 connecting the Balboa Avenue station to Bunker Hill Street is recommended. This improvement, in coordination with the addition of Class II bike lanes on Mission Bay Drive and Bunker Hill Street, provides an alternative connection from the Balboa Avenue station to Pacific Beach, Mission Bay Park and the Rose Creek Trail. This connection is an alternative to using the bicycle facilities along Garnet Avenue. The intersections along Mission Bay Drive at Bunker Hill Street and Magnolia Avenue should be considered for the addition of bicycle detection.

Rose Creek Trail is a major focus of the bicycle network in the area, providing connections north to the University community and south to Mission Bay Park. Existing ramps connect the trail to the sidewalk at Garnet Avenue and Grand Avenue, but do not provide easy transitions from the roadway to the ramps. It is recommended that these ramps are upgraded to improve bicycle access and visibility from these roadways.

With improved connectivity to Rose Creek Trail it is anticipated that bicycle ridership along the trail will increase. The existing trail is relatively narrow and is shared by pedestrians and bicyclists. It is recommended that the trail is modified to provide additional capacity for shared use.

A connection to Rose Creek Trail is also provided at the west end of Magnolia Avenue where it terminates as a cul-de-sac. It is recommended that **Magnolia Avenue** becomes a bicycle boulevard to provide a connection between Rose Creek Trail and Mission Bay Drive on a low-volume residential roadway. Improved visibility and reconstruction of the existing ramp from the cul-de-sac on Magnolia Avenue to the trail is recommended as part of the bicycle boulevard.

Santa Fe Street provides access to the Rose Canyon trail on the southern end of the University community and is a low-volume street that begins across Balboa Avenue from the Balboa Avenue station. Using MTS right-of-way between Damon Avenue and Balboa Avenue provides space for a two-directional shared-use path. To get from the Balboa Avenue station to Santa Fe Street, bicyclists would utilize the pedestrian facilities that cross Balboa Avenue adjacent to the rail and connect on the north side of Balboa Avenue near Santa Fe Street via ramps. The ramps, which are part of the Balboa Avenue station improvements, allow for space for a multi-use path at the base, providing a connection from Santa Fe Street to the Balboa Avenue station. This concept is provided in Figure 8-5.

A Class IV cycle track is recommended extending along **Morena Boulevard** from the Balboa Avenue station to Clairemont Drive where it will connect with the planned two-way cycle track along the west side of Morena Boulevard near the Clairemont and Tecolote stations. Class II bike lanes will then connect north of the Balboa Avenue station to Jutland Drive.

Figure 6-1 presents the recommended bicycle facilities within the Specific Plan area. The effectiveness of bicycle facilities is a combination of the facility provided along the side of the road and its continuity through each intersection. To address safety concerns for bicycles at intersections, it is recommended that signals along Class II and IV facilities include detection for bicyclists and consideration of additional improvements such as bicycle boxes, no right-turn-on-red restrictions for vehicles, and bicycle signal head indications. Specific recommendations at the intersections at Garnet Avenue / Mission Bay Drive and Grand Avenue / Mission Bay Drive are provided in **Figure 8-4 and 8-6**.

BICYCLE LEVEL OF TRAFFIC STRESS

The Bicycle Level of Traffic Stress (BLTS) analysis was completed for the recommended network to evaluate the bicycle conditions in the Specific Plan area. Residential streets within the Specific Plan area were assigned a BLTS score of 1 due to low traffic volumes and speeds, regardless of the presence of marked bicycle facilities. Additionally, per the Mineta Transportation Institute report on BLTS, bikeways with physical separation from motor vehicles have the lowest stress between intersections. For this analysis, Class IV bicycle facilities were are considered BLTS 1 facilities. **Figure 6-2** summarizes the BLTS score for each direction of roadway segments throughout the area with the recommended improvements in place.

With the completed bicycle network in the community, the BLTS is reduced along the corridors where there is an investment in bicycle facilities. The BLTS methodology allows for moderate improvements in score with buffered or separated bicycle facilities, but has limits to how much the stress level can change since speed and number of lanes play a factor in the analysis and remain unchanged on several roadways. The proposed bicycle network includes several separated facilities that would provide bicyclists increased comfort that is not reflected in the BLTS scoring. As seen in Figure 6-2, separated paths provide low-stress opportunities. Riding on Balboa Avenue, and Garnet Avenue, still provide high traffic stress connections to the Balboa Avenue station. For changes to be reflected in the BLTS score assigned to facilities along the corridor, traffic calming or reduction in the posted speed limit would need to be implemented.

Table 6-1 summarizes the BLTS score between existing and future conditions for the facilities within the Specific Plan area. As seen in the table, over 60 percent of the bicycle facilities scored a LTS of 2 or better under future network conditions compared to 35 percent under existing network conditions.

Table 6-1 Proposed Bicycle Facility Quality within Specific Plan Area

Condition	LTS 1	LTS 2	LTS 3	LTS 4
Existing Network	35%	0%	3%	62%
Future Network	54%	12%	21%	13%



Figure 6-1 Future Planned Bicycle Facilities



Figure 6-2 Future Planned BLTS Results

7 PUBLIC TRANSIT

Figure 7-1 shows an overview of the current transit system within the Specific Plan area with the proposed pedestrian network.

EXISTING NETWORK

Data regarding the existing network was documented in 2016. The following is a quick summary of available transit in the community.

Bus Routes

There are currently two transit lines providing access to the Specific Plan area.

Route 27 runs east/west along Balboa Avenue and Garnet Avenue with 30 minute peak headways and 30 minute off-peak headways and a daily ridership of 1,112. Route 27 serves destinations including Mission Beach, Kearny Mesa Transit Center, and Genesee Plaza (shopping centers, transit centers, employment, etc). The closest stops are located at Garnet Avenue and De Soto Street and they have a daily ridership of 92. The next closest stops are located at Balboa Avenue and Moraga Avenue and they have a daily ridership of 62. Transit route and stop data is shown in Figure 7-2.

Route 30 runs along Grand Avenue with 15-minute peak headways and 25 minute off-peak headways and a daily ridership of 9,731. Route 30 serves destinations including the VA Medical Center, UTC Shopping Mall, and the Old Town Transit Center (shopping centers, transit centers, employment, etc). The closest stops are located at Grand Avenue and Bond Street. The next closest stops are located at Grand Avenue and Mission Bay Drive. Current ridership data was unavailable at these locations. Transit route and stop data is shown in **Figure 7-3.**

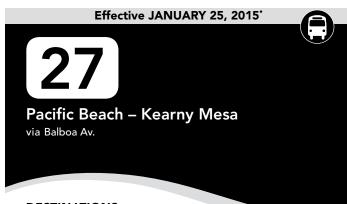
FUTURE NETWORK CHANGES

A key focus of the Regional Transportation Plan prepared by the San Diego Association of Governments (SANDAG) is to develop an ambitious and far-reaching transit network that significantly expands the role that transit plays. As identified in the SANDAG 2050 Regional Transportation Plan (2050 RTP), these improvements include different transit options such as Light Rail Transit (LRT), Bus Rapid Transit (BRT), and High Frequency (Rapid) Local Bus. The Future Year conditions included transit projects identified in the 2050 RTP that are planned to be implemented by Year 2035. The following summarizes these planned improvements for the Balboa Avenue Station Specific Plan area:

- Mid-Coast LRT Extension. As stated previously, the Blue Line Trolley is planned to be
 extended from the Old Town Transit Center to the UTC Transit Center. The expected year for
 completion of this improvement is 2021.
- **Kearney Mesa to Pacific Beach Trolley.** This trolley route was planned to connect Kearny Mesa to Pacific Beach. The expected year for completion of this improvement is 2035.
- COASTER Improvements. The COASTER commuter train is planned to be expanded to have double tracking and increased frequencies between Oceanside and downtown San Diego. It is planned to achieve 20-minute peak headways. The expected year for completion of this improvement is consistent with the Mid-Coast LRT Extension.



Figure 7-1 Transit Network Summary



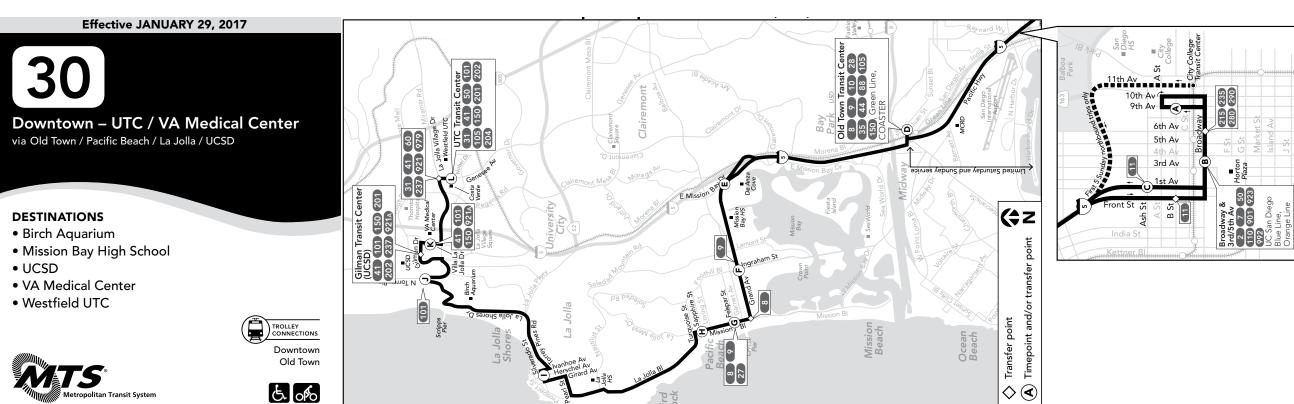
DESTINATIONS

- Balboa Av.
- Clairemont High School
- Crystal Pier
- Garnet Av.
- Genesee Plaza















TRANSIT TRAVEL TIMES

Bus travel time has a big impact on transit service efficiency. **Table 7-1** compares the vehicle travel times for the future scenarios along the key transit corridor within the Specific Plan area. The comparison was made to assess the impact on overall travel time as a result of changes to the future networks.

Transit trips eastbound along Garnet Avenue will realize a small reduction in delay as a result of a transitonly lane. The proposed network that is assumed in the future preferred and future reduced scenarios include a transit-only lane along Balboa Avenue/Garnet Avenue between I-5 Northbound Off-ramp at Balboa Avenue and the Morena Boulevard ramps, as shown in **Figure 7-5**.

Table 7-1 Garnet Avenue/ Balboa Avenue Future Travel Time Summary

Direction	Peak Period	Existing	Future Adopted	Future Preferred	Future Reduced
Footbound	AM	321.0	373.3	324.6	322.5
Eastbound	PM	337.3	417.5	378.9	375.9
Moothound	AM	292.9	307.0	288.8	291.0
Westbound	PM	305.6	344.7	341.2	338.2

Notes:

Travel Time reported in seconds.

Study corridor is between Olney Street and Clairemont Drive and approximately 1.92 miles.

Speed limit varies between 30 mph and 45 mph.

Study corridor is considered an Urban Street Class II.

8 FUTURE YEAR VEHICLE NETWORK

This chapter discusses the vehicle network analyses and variations in results between the different network alternatives being considered.

FUTURE YEAR VOLUME FORECASTS

Land Use Assumptions

As stated previously, three future scenarios were analyzed. As its name suggests, the Adopted Community Plan Land Use assumptions for the Clairemont Mesa and Pacific Beach communities were considered for the Adopted Community Plan Future Scenario. **Table 8-1** shows the land use and trip generation inputs for the Adopted Community Plan.

Table 8-1 Adopted Land Use Community Trip Generation for Adopted Future Year Build-out

Land Use	Quantity	Trips
Residential	1,221 dwelling units	7,587
Non-Residential (a)	1,142,340 square feet	23,445
Total		31,032

Notes:

An updated land use scenario was then created for the Preferred Land Use Future Scenario. This scenario modified land use assumptions within the Specific Plan area only. **Table 8-2** shows the land use and trip generation inputs for the preferred land use.

Table 8-2 Preferred Land Use Community Trip Generation for Preferred Future Year Build-out

Land Use	Quantity	Trips
Residential	4,729 dwelling units	28,380
Non-Residential	1,037,757 square feet	27,245
Total		55,625

A reduced preferred land use scenario was then created for the Reduced Land Use Future Scenario. This scenario modified land use assumptions within the Specific Plan area only. **Table 8-3** shows the land use and trip generation inputs for the reduced land use.

 Table 8-3
 Reduced Land Use Community Trip Generation for Reduced Future Year Build-out

Land Use	Quantity	Trips
Residential	4,167 dwelling units	25,008
Non-Residential	1,037,757 square feet	27,245
Total		52,253

⁽a) Adopted value does not include auto dealership floor area

Model Calibration Process

A traffic model was prepared by SANDAG for existing and future community build-out conditions. Traffic counts from the data collection efforts for this project and historical counts from the City of San Diego, were used to calibrate the existing model results. Using the attributes included in the calibrated existing model, the future land use and network assumptions for the three future scenarios were input into the model to estimate future volumes. Based on the existing calibration exercise and the future volume projections, several post-model adjustments were made. Details of the adjustments are provided in **Appendix C**. Adjustments were typically required when the model-to-volume comparison was greater than 10%. The same post-model adjustments were made to each alternative.

The model data provides roadway and freeway volumes, and was not used for intersection volumes. Future peak period turning movements at the Specific Plan area intersections were developed using methodologies from National Cooperative Highway Research Program (NCHRP) 255 - Highway Traffic Data for Urbanized Area Project Planning and Design, Chapter 8. NCHRP Report 255 is a compilation of the best techniques that are currently being used in urban areas to forecast future traffic volumes. These techniques were identified through a survey of state and local agencies with follow-up field visits to obtain detailed information on procedural steps and typical applications. The method used to forecast the future turning movement volumes evaluation is the NCHRP's "Directional Volume Forecast". For this method, existing and future daily traffic volumes, existing peak period turning movements, and projected peak period "K" and directional "D" factors are used to calculate future year turning movements. Existing daily segment traffic volumes and peak period intersection turning movements were counted in the field. Future daily traffic volumes were obtained from the forecast model. Using the "Directional Volume Forecast" technique, the existing turning movements at each Specific Plan area intersection were factored based on increases in daily approach traffic and existing K and D factors. Each respective movement was derived using an iterative approach that balances the inflows and outflows for each approach. The supporting worksheets for calculating future volumes and the resulting peak period intersection turning movement volumes are included in Appendix D.

FUTURE ADOPTED COMMUNITY PLAN ANALYSIS

The following section will present the capacity and LOS analysis for the Adopted Community Plan Future Scenario including the significant impacts and mitigation measures. This scenario includes the funded, planned Mid-Coast LRT Extension station improvements. The intersection and roadway geometrics under the Future Adopted Community Plan scenario represent the base for all future scenarios. Intersection and roadway geometrics are shown in **Figure 8-1** and the Future Adopted Community Plan peak period volumes are shown in **Figure 8-2**.

INTERSECTIONS

Table 8-4 displays the LOS analysis results for the study intersections for the Adopted Community Plan Future Scenario. The intersections that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions are as follows:

- Olney Street at Garnet Avenue (Int 1) LOS E in the PM peak period
- Garnet Avenue at Mission Bay Drive (Int 5) LOS E in the AM and PM peak periods
- Balboa Avenue at Morena Blvd NB Ramps (Int 7) LOS F in the AM and PM peak periods
- Clairemont Drive at Balboa Avenue (Int 9) LOS F in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period

Appendix E contains the peak period intersections LOS calculation worksheets.

ROADWAY SEGMENTS VOLUME-BASED

Table 8-5 displays the LOS analysis results for the volume-based roadway segments evaluation for the Adopted Community Plan Future Scenario. The roadway segments that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions are as follows:

- Garnet Avenue between Bond Street and Mission Bay Dr LOS F
- Garnet Avenue between Mission Bay Dr and I-5 SB On Ramp LOS F
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue between Morena Boulevard NB Ramps and Moraga Avenue LOS F
- Balboa Avenue between Moraga Avenue and Clairemont Drive LOS E
- Balboa Avenue east of Clairemont Drive LOS F
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Clairemont Drive between Denver Street and Morena Boulevard LOS E

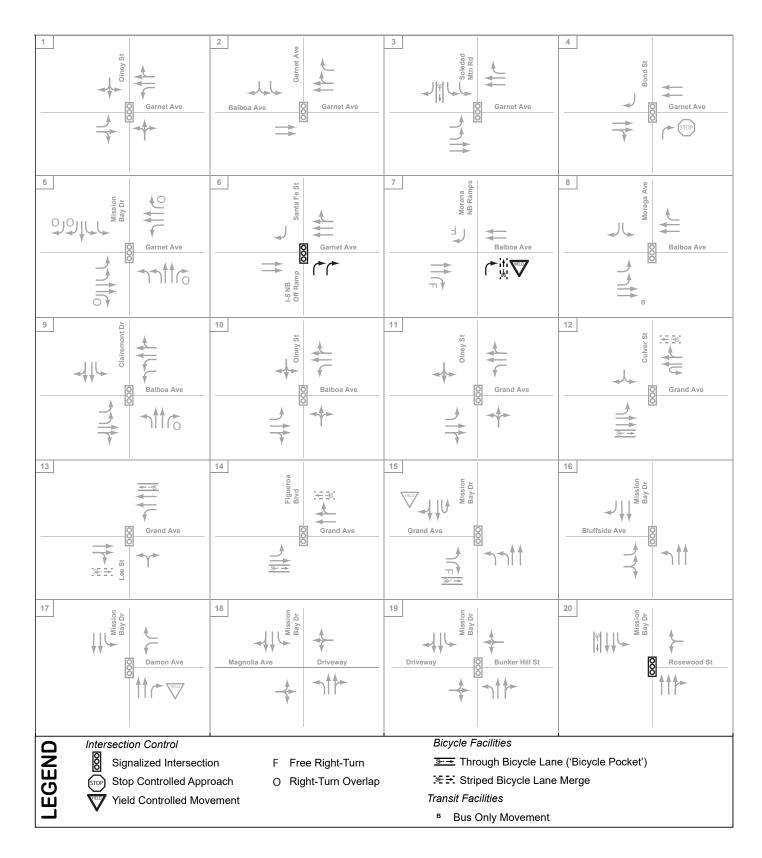
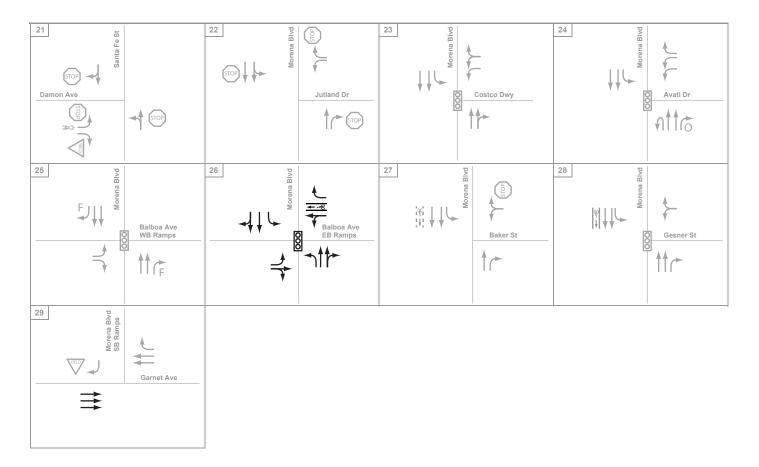
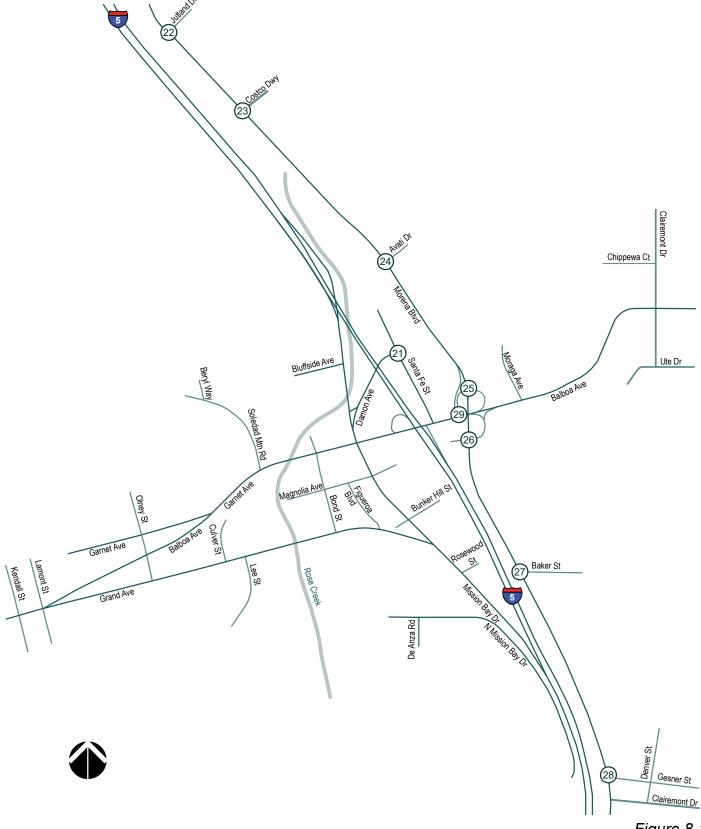




Figure 8-1 Future Adopted Community Plan Intersection Geometrics





Future Adopted Community Plan Intersection Geometrics (Cont.)

F Free Right-Turn

→ Through Bicycle Lane ('Bicycle Pocket') Striped Bicycle Lane Merge

Bicycle Facilities

O Right-Turn Overlap

HOV Only Movement

1 2 9		2 0 0 0 0		3 7 07 BB		4	
5 25/57	S 12 / 28 ⇔ 703 / 1373 № 7 / 18 Garnet Ave	Balpoa Ave	S 602 / 1107	25 / 47 2 564 / 570 Soledad Mtn Rd	S 614 / 599		⇔ 1628 / 2415 Garnet Ave
14 / 31	100 /271 & 73 /110 & 20 /22 &	1/0 Ø 733/576 ⇒		53 / 37 Ø 1683 / 1324 ⇒		2181 / 1822 💠 😿 33 / 68 🕾 💆	34 /41 🌣
259 / 369 259 / 369 251 / 274 Mission Bay Dr	S 243 / 366 ⇔ 693 / 901 № 182 / 273 Garnet Ave	© & 66 /170	□ 153 / 74 □ 1959 / 2229 Garnet Ave	7 06/087	⇔ 1501 / 1682 Balboa Ave	© 265 / 297 © 100 / 102 Moraga Ave	s 82 / 93 ⇔ 1236 / 1385 Balboa Ave
833 / 569 Ø 860 / 832 ⇒ 541 / 456 ∿	461 /663 & 445 /396 & 229 /290 &	1291 / 1416 ⇒ 1291 / 1416 1291 damp	230 /898 😘	Morena NB \Leftrightarrow 098 / 259 Ramps	210 /337 %	322 / 353	
5 355 /335 4 315 /578 2 185 /307 Clairemont Dr	S 114 / 133 ⇔ 815 / 1086 № 368 / 446 Balboa Ave	\$\alpha \text{15 / 38}\$ \$\alpha \text{221 / 193}\$ \$\alpha \text{12 / 18}\$ \$\alpha \text{12 / 18}\$ Oliney Street	S 16 / 24 ⇔ 166 / 527 № 46 / 137 Balboa Ave	11 19 /60	S 37 / 181 ⇔ 471 / 1135 № 37 / 122 Grand Ave	2 48 / 27 0 166 / 77 Culver St	
239 / 434	146 /86	57 / 32	17 /19 & 179 /322 & 90 /44 &	27 / 46 Ø 1229 / 910 ⇔ 27 / 71 %	47 /37 & 194 /182 & 345 /106 &	64 / 22	
13	⇔ 593 / 1482 № 124 / 89 Grand Ave	14 Pigueroa Bivd	S 29 / 45 ⇔ 646 / 1476 Grand Ave	15 Page 100 / 265 Page 100 Pag		Bluffside Ave Mission Bay Dr. 196 / 496	
1631 / 1151 ⇒ 56 43 / 34 № 58	49/17 2	81 / 70		299 / 102	460 / 1231 & 819 / 1071 ⇔	584 / 243	94 / 311 & 1389 / 1093 🖶
4 819 / 1427 2 52 / 64 Mission Bay Dr	s 42 / 135 ≥ 73 / 163 Damon Ave	Magnolian Bay Dr Mission Bay	S 5 / 7 ⇔ 1 / 1 ⋈ 8 / 7 Driveway	Duryemania ⇔ 820 / 984 ⇔ 149 / 105 Mission Bay Dr	5 45 / 56 2 35 / 116 Bunker Hill St	© 2193 / 1843	ß 21 / 29 ⋈ 5 / 5 Rosewood St
Note:	1465 / 1277 💠 107 / 189 😢	100 / 71	39 / 63 ~ 1058 / 1247 \$\infty\$		1020 / 1130 🌣 82 / 36 🗞		1249 / 2295 🕁 26 / 32 😘

Note:

2030 Building Alternative peak hour volumes from the *Mid-Coast Corridor Transit Project Transportation and Mitigation Report*, September 2014, were used for intersections 25 and 26. Through volumes at these intersections were then balanced based on adjacent intersection volumes. Volumes at intersections 7 and 29 were determined based on volumes at adjacent intersections.



Figure 8-2
Future Adopted Community Plan Peak Period Volumes

21 8 6 6 7 1 1 1 8 Page 1 1 1 2 1 8 Page 1 1 1 2 1 8 Page 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 û	## 159 / 303 ## 5 / 24 ## Morena Blvd	s 20 / 17 ≥ 194 / 613 Jutland Dr	⊕ 290 / 900 ⊕ 42 / 51 Morena Bivd	S 55 / 71 ≥ 97 / 369 Costco Dwy	\$ 357 / 1264 \$ 17 / 62 Morena Blvd	© 231 / 193 Avati Dr
20 / 45 %	13 /57 125 / 70		249 / 171		657 / 327		804 / 659
22 Salpoa MB Balpoa MB Balpoa MB Balpoa MB Warena Blvd		Balpoa EB Kambs Morena Bird Morena Bird Morena Bird Morena Bird	5 440 / 530 ⇔ 77 / 30 ঐ 140 / 300 Balboa EB Ramps	4 364 / 1032 7 15 / 39 Morena Blvd		\$ 386 / 1020 \$ 52 / 114 Morena Blvd	S 53 / 94 2 36 / 41 Gesner St
90 / 150 Ø 151 / 259 S	1146 /1093 🕁 280 /90 😘	29/80 Ø 10/27 ⇒ 1/5 §	9 /5 % 957 /59 % 150 /180 %		965 /478 🜣		984 /456 🕁
29 0.0	S 241 / 409 \$ 1540 / 1363 Balboa Ave						

Note:

2030 Building Alternative peak hour volumes from the *Mid-Coast Corridor Transit Project Transportation and Mitigation Report*, September 2014, were used for intersections 25 and 26. Through volumes at these intersections were then balanced based on adjacent intersection volumes. Volumes at intersections 7 and 29 were determined based on volumes at adjacent intersections.

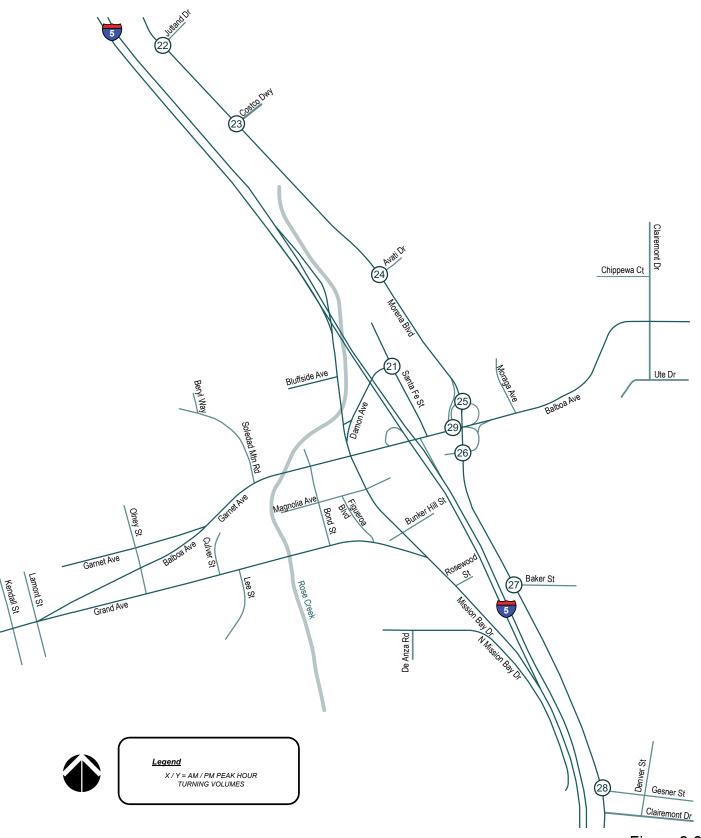


Figure 8-2 Future Adopted Community Plan Peak Period Volumes (Cont.)

Table 8-4 Future Adopted Community Plan Intersection Analysis Summary

		Traffic		Exis	ting	Future A	Adopted	
	Intersection	Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?
1	Garnet Ave at Olney	Signal	AM	15.4	В	36.3	D	
ı	St		PM	12.1	В	56.4	E	Yes
2	Garnet Ave at Balboa	Signal	AM	11.1	В	13.0	В	
	Ave		PM	15.0	В	26.0	С	
3	Garnet Ave at	Signal	AM	18.6	В	18.4	В	
3	Soledad Mountain Rd		PM	29.2	С	30.6	С	
4	Garnet Ave at Bond St	Signal	AM	0.5	A	0.6	Α	
4	Gamet Ave at bond St		PM	0.6	Α	0.6	Α	
5	Garnet Ave at Mission	Signal	AM	55.7	E	61.5	E	Yes
5	Bay Dr		PM	58.0	E	70.5	E	Yes
6	Garnet Ave at Santa	One-Way	AM	16.8	С	12.4	В	
0	Fe St	Stop (c)	PM	151.9	F	12.6	В	
7	Balboa Ave at Morena	One-Way	AM	27.0	D	75.2	F	Yes
′	Blvd NB Ramps	Yield	PM	50.7	F	113.1	F	Yes
8	Balboa Ave at Moraga	Signal	AM	16.2	В	17.0	В	
0	Ave		PM	16.3	В	17.7	В	
9	Balboa Ave at	Signal	AM	47.6	D	51.0	D	
9	Clairemont Dr		PM	59.2	E	84.6	F	Yes
10	Balboa Ave at Olney	Signal	AM	12.4	В	14.9	В	
10	St		PM	12.9	В	19.2	В	
11	Grand Ave at Olney St	Signal	AM	32.9	С	41.6	D	
''	Grand Ave at Onley St		PM	27.2	С	35.5	D	
12	Grand Ave at Culver	Signal	AM	10.2	В	10.4	В	
12	St		PM	5.8	Α	7.0	Α	
13	Grand Ave at Lee St	Signal	AM	9.5	Α	10.4	В	
13	Grand Ave at Lee St		PM	5.2	Α	5.6	Α	
14	Grand Ave at	Signal	AM	14.9	В	12.7	В	
, -	Figueroa Blvd		PM	3.0	Α	3.2	Α	
15	Grand Ave at Mission	Signal	AM	34.5	С	16.2	В	
13	Bay Dr		PM	32.3	С	36.5	D	
16	Mission Bay Dr at	Signal	AM	21.6	С	23.9	С	
	Bluffside Ave		PM	20.4	С	26.7	С	

Notes: **Bold** values indicate intersections operations at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection is assumed to be signalized in the Future Year scenario based on planned development project in the area.

Table 8-4 Future Adopted Community Plan Intersection Analysis Summary (Cont.)

	Intonocation	Traffic	Daala	Exis	ting	Future A	dopted	J
	Intersection	Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?
17	Mission Bay Dr at	Signal	AM	8.2	Α	8.0	Α	
17	Damon Ave	Signal	PM	14.3	В	22.8	С	
18	Mission Bay Dr at	Signal	AM	14.7	В	19.7	В	
	Magnolia Ave	Oigilai	PM	16.1	В	19.9	В	
19	Mission Bay Dr at	Signal	AM	6.5	Α	7.1	Α	
19	Bunker Hill St	Signal	PM	8.2	Α	11.9	В	
20	Mission Bay Dr at	One-Way	AM	41.7	E	5.6	Α	
20	Rosewood St	Stop (c)	PM	176.0	F	6.7	Α	
21	Santa Fe St at Damon	All-Way	AM	7.8	Α	8.1	Α	
<u> </u>	Ave	Stop	PM	8.1	Α	8.3	Α	
22	Morena Blvd at Jutland	All-Way	AM	12.7	В	12.6	В	
	Dr	Stop	PM	55.2	F	92.7	F	Yes
23	Morena Blvd at Costco	Signal	AM	9.6	A	9.4	Α	
23	Dwy	Signal	PM	11.0	В	11.0	В	
24	Morena Blvd at Avati	Signal	AM	9.1	Α	9.7	Α	
24	Dr	Signal	PM	8.9	Α	9.0	Α	
25	Morena Blvd at WB	Signal	AM	3.3	Α	4.1	Α	
25	Balboa Ave Ramps	Olgriai	PM	4.7	Α	5.7	Α	
26	Morena Blvd at EB	Two-Way	AM	96.7	F	21.8	С	
20	Balboa Ave Ramps	Stop (c)	PM	50.2	F	26.3	С	
27	Morena Blvd at Baker	One-Way	AM	35.1	Е	31.2	D	
	St	Stop	PM	17.6	С	18.2	С	
28	Morena Blvd at Gesner	Signal	AM	8.6	Α	8.7	Α	
	St	Oigilai -	PM	7.5	Α	7.5	Α	
29	Balboa Ave at Morena	Free	AM	N/A	N/A	N/A	N/A	
23	Blvd SB Ramps	1166	PM	N/A	N/A	N/A	N/A	

Notes: **Bold** values indicate intersections operations at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro

⁽c) Intersection is assumed to be signalized in the Future Year scenario based on planned development project in the area.

Table 8-5 Future Adopted Community Plan Volume-Based Roadway Segment Analysis Summary

		Exis	ting				Future A	dopted			
Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Functional Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	Impact?
Balboa Ave											
Garnet Ave to Grand Ave	4 Lane Major Arterial	40,000	14,263	0.357	Α	4 Lane Major Arterial	40,000	14,400	0.360	Α	
Garnet Ave											
Bond St to Mission Bay Dr	4 Lane Major Arterial	40,000	58,694	1.467	F	4 Lane Major Arterial	40,000	63,200	1.580	F	Yes
Mission Bay Dr to I-5 SB On-Ramp	5 Lane Major Arterial	45,000	37,406	0.831	D	5 Lane Major Arterial	45,000	48,100	1.069	F	Yes
I-5 SB On-Ramp to I-5 NB Off-Ramp	5 Lane Major Arterial	45,000	48,857	1.086	F	5 Lane Major Arterial	45,000	66,600	1.480	F	Yes
I-5 NB Off-Ramp to Morena Blvd SB Ramps	5 Lane Major Arterial	45,000	52,073	1.157	F	5 Lane Major Arterial	45,000	77,500	1.722	F	Yes
Balboa Ave (CA-274)											
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	4 Lane Major Arterial	40,000	49,079	1.227	F	5 Lane Major Arterial	45,000	49,400	1.098	F	
Morena Blvd NB Ramps to Moraga Ave	4 Lane Major Arterial	40,000	43,115	1.078	F	4 Lane Major Arterial	40,000	45,500	1.138	F	Yes
Moraga Ave to Clairemont Dr	4 Lane Major Arterial	40,000	34,903	0.873	D	4 Lane Major Arterial	40,000	38,200	0.955	Е	Yes
East of Clairemont Dr	4 Lane Major Arterial	40,000	37,383	0.935	E	4 Lane Major Arterial	40,000	43,000	1.075	F	Yes
Grand Ave											
Kendall St to Lamont St	4 Lane Major Arterial	40,000	51,778	1.294	F	4 Lane Major Arterial	40,000	24,500	0.613	С	
Lee St to Bond St (On Rose Creek Bridge)	4 Lane Major Arterial	40,000	37,915	0.948	E	4 Lane Major Arterial	40,000	35,700	0.893	E	
Figueroa Blvd to Mission Bay Dr	4 Lane Major Arterial	40,000	38,202	0.955	Е	4 Lane Major Arterial	40,000	36,500	0.913	E	
Mission Bay Dr											
Bluffside Ave to Damon Ave	4 Lane Major Arterial	40,000	35,580	0.890	E	4 Lane Major Arterial	40,000	39,600	0.990	Е	Yes
Damon Ave to Garnet Ave	4 Lane Major Arterial	40,000	40,680	1.017	F	4 Lane Major Arterial	40,000	42,400	1.060	F	Yes
Garnet Ave to Magnolia Ave	4 Lane Major Arterial	40,000	29,702	0.743	С	4 Lane Major Arterial	40,000	33,800	0.845	D	
Magnolia Ave to Bunker Hill St	4 Lane Major Arterial	40,000	29,821	0.746	С	4 Lane Major Arterial	40,000	34,800	0.870	D	
Bunker Hill St to Grand Ave	4 Lane Major Arterial	40,000	29,002	0.725	С	4 Lane Major Arterial	40,000	34,100	0.853	D	
Grand Avenue to I-5 Ramps	5 Lane Major Arterial	45,000	55,051	1.223	F	5 Lane Major Arterial	45,000	52,400	1.164	F	

Notes: **Bold** values indicate roadway segments operating at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) Existing road classifications are based on field work conducted in May 2016.

⁽b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.

⁽c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

Table 8-5 Future Adopted Community Plan Volume-Based Roadway Segment Analysis Summary (Cont.)

		Exis	ting			Future Adopted							
Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	Functional Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Impact?		
Morena Blvd													
Jutland Dr to Avati Dr	4 Lane Major Arterial	40,000	11,554	0.289	Α	4 Lane Major Arterial	40,000	17,200	0.430	В			
Avati Dr to Balboa Ave Ramps	4 Lane Major Arterial	40,000	20,136	0.503	В	4 Lane Major Arterial	40,000	22,100	0.553	С			
Balboa Ave Ramps to Ticonderoga St	3 Lane Major Arterial	30,000	15,823	0.527	С	4 Lane Major Arterial	40,000	16,900	0.423	В			
Gesner St to Clairemont Dr	4 Lane Major Arterial	40,000	15,584	0.390	В	4 Lane Major Arterial	40,000	16,400	0.41	В			
Clairemont Dr	·												
Chippewa Court to Balboa Avenue	4 Lane Major Arterial	40,000	21,259	0.531	С	4 Lane Major Arterial	40,000	25,800	0.645	С			
Balboa Avenue to Ute Drive	4 Lane Major Arterial	40,000	19,325	0.483	В	4 Lane Major Arterial	40,000	26,700	0.668	С			
Denver Street to Morena Boulevard	4 Lane Major Arterial	40,000	31,162	0.779	D	4 Lane Major Arterial	40,000	39,200	0.980	E	Yes		
Damon Ave (d)													
Mission Bay Drive to Santa Fe Street	2 Lane Collector (w/o two-way left turn lane)	8,000	4,415	0.552	С	2 Lane Collector (w/o two-way left turn lane)	8,000	4,400	0.550	С			
Santa Fe St													
Damon Avenue to Balboa Avenue	2 Lane Collector (w/o two-way left turn lane)	8,000	2,431	0.304	А	2 Lane Collector (w/o two-way left turn lane)	8,000	4,900	0.613	С			
Soledad Mountain Rd													
Beryl Street to Garnet Avenue	4 Lane Major Arterial	40,000	27,235	0.681	С	4 Lane Major Arterial	40,000	28,700	0.718	D			
N Mission Bay Dr													
De Anza Road to Mission Bay Drive	2 Lane Collector (w/o two-way left turn lane)	8,000	2,456	0.307	Α	2 Lane Collector (w/o two-way left turn lane)	8,000	2,500	0.313	D			

Notes: Bold values indicate roadway segments operating at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Existing road classifications are based on field work conducted in May 2016.

⁽b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.
(c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

⁽d) Damon Avenue is classified as a local street but functions as a collector with in the community.

CORRIDORS SPEED-BASED

Table 8-6 displays the LOS analysis results for the speed-based corridor segments evaluation for the Adopted Community Plan Future Scenario using the roadway network discussed in the previous section. The corridors that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions are as follows:

- Northbound Mission Bay Drive between Grand Avenue and Bluffside Avenue LOS E in the PM peak period
- Southbound Mission Bay Drive between Bluffside Avenue and Grand Avenue LOS E in the AM peak period and LOS F in the PM peak period
- Eastbound Garnet Avenue/Balboa Avenue between Olney Street and Clairemont Drive LOS E in the PM peak period

Appendix E contains the travel time details along each corridor.

Table 8-6 Future Adopted Community Plan Speed-Based Corridor Analysis Summary

		Urban		Ex	isting		Futu	re Adopte	d
Corridor	Direction	Street Class	Peak	Travel Time (sec)	Speed (mph)	LOS (a)	Travel Time (sec)	Speed (mph)	LOS (a)
Mission Bay Drive		-	•		-	<u>.</u>			
Grand Avenue to	Northbound	Ш	AM	140.5	15.9	D	147.2	15.2	D
Bluffside Avenue	Northbourid	111	PM	167.5	13.3	Е	202.0	11.0	E
Bluffside Avenue to	Soutbound	III	AM	157.9	13.9	E	178.3	12.5	Е
Grand Avenue	Soutbourid	111	PM	218.6	10.0	Е	292.9	7.6	F
Garnet Avenue/ Balboa	Avenue								
Olney Street to	Eastbound	II	AM	321.0	20.5	D	373.3	17.6	D
Clairemont Drive	Lasibourid	11	PM	337.3	19.5	D	417.5	15.8	E
Clairemont Drive to	Westbound	II	AM	292.9	22.6	С	307.0	21.6	D
Olney Street	vvesibound	"	PM	305.6	21.7	D	344.7	19.2	D

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

FREEWAY SEGMENTS

Table 8-7 displays the LOS analysis results for the study freeway segments for the Adopted Future Scenario. As shown, all segments operate at LOS E in the northbound direction during the AM peak period except I-5 from Mission Bay Drive to Clairemont Driive; and operate at LOS E in the southbound direction during the PM peak period.

FREEWAY RAMP METERS

Table 8-8 displays the LOS analysis results for the study intersections for the Adopted Future Scenario. As shown, the following location is projected to result in a delay greater than 15-minutes and would be considered to have a significant impact when compared to existing conditions:

I-5 SB and Mission Bay Drive – PM peak period (54 minute delay)

⁽a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 8-7 Future Adopted Community Plan Freeway Segment Analysis Summary

						Futu	ıre Ado	pted					Exist	ing						
	Freeway Segment		Number of Lanes	Peak-Hour Volume (a)				Density (pc/mi/ln)		LOS (c)		Speed (mph) (b)		LOS (c)		LOS (c)		∆ in Speed		Impact?
				АМ	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM			
	SR-52 to Mission Bay	NB	5	10,431	6,642	56.6	68.0	40.2	23.7	Е	С	61.1	68.0	D	С	4.5	0.0	YES		
	Dr	SB	5	6,061	10,110	68.0	58.3	23.7	37.8	С	Е	68.0	62.4	С	D	0.0	4.1	YES		
	Mission Bay Dr to	NB	4	8,209	5,227	57.5	68.0	38.9	23.7	Ε	С	64.3	68.0	D	O	6.8	0.0	YES		
-5	Garnet Ave/ Balboa Ave	SB	4	4,770	7,956	68.0	59.1	23.7	36.7	С	E	68.0	65.2	С	D	0.0	6.1	YES		
-	Garnet Ave/ Balboa	NB	4	7,849	6,998	59.8	64.2	35.8	29.7	Ε	D	66.5	68.0	D	С	6.8	3.8	YES		
	Ave to Mission Bay Dr	SB	4	6,045	8,355	67.7	56.5	24.4	40.3	С	Е	68.0	65.0	С	D	0.3	8.4	YES		
	Mission Bay Dr to	NB	5	9,153	8,161	62.7	66.1	31.9	26.9	D	D	66.4	68.0	D	O	3.8	1.9	NO		
	Clairemont Dr	SB	5	7,050	9,743	68.0	60.1	23.7	35.4	С	Ε	68.0	64.8	O	D	0.0	4.7	YES		

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

- (a) Peak-hour volumes were estimated using SANDAG forecast model outputs.
- (b) The speed was calculated from a base free-flow speed (BFFS) of 75.4 mph (per equation 11-1 in the 2010 HCM) using Exhibit 11-3 in the 2010 HCM. (c) The LOS for the respective freeway segments were based on the methodologies contained in Chapter 11 of the 2010 Highway Capacity Manual.

Table 8-8 Future Adopted Community Plan Freeway Ramp Meter Analysis Summary

On Ramp	Peak Hour	Number of Lanes		Meter Rate (veh/hr) (a)	Future Adopted				Existing				
					Demand (veh/hr/ln)	Excess Demand	Delay (min)	Queue (feet)	Demand (veh/hr/ln)	Excess Demand	Delay (min)	Queue (feet)	Impact?
		GP	HOV	(a)	(b)	(veh/hr)	(,	(c)	(b)	(veh/hr)	()	(c)	
I-5 SB & Mission Bay	AM	2	1	n/a	590				584				
Drive	PM		'	475	903	428	54	10,700	894	419	53	10,475	YES
I-5 SB & Westbound	AM	2	2 0	n/a	269				240				
Balboa Ave	PM			542	412	0	0	0	368	0	0	0	NO
I-5 NB & Mission Bay	AM	2	0	811	987	176	13	4,400	910	99	7	2,475	NO
Drive	PM		0	n/a	668				615				

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

- (a) Meter Rate is the peak hour capacity expected to be processed through the ramp meter. Values were obtained from Caltrans. Most Conservative rate (Rate 15) was used.
- (b) Demand is the peak hour demand expected to use the on-ramp.
- (c) Assumes an average vehicle length of 25 feet.

SIGNIFICANT IMPACTS

Project impacts for the Adopted Community Plan Future Scenario were determined based on a comparison between the future year and existing conditions. Per the City of San Diego's significance thresholds and the analysis methodology presented in this report, the following cumulative impacts were identified:

Intersections

Cumulative impacts were identified at the following study intersections:

- Olney Street at Garnet Avenue (Int 1) LOS E in the PM peak period
- Garnet Avenue at Mission Bay Drive (Int 5) LOS E in the AM and PM peak periods
- Balboa Avenue at Morena Blvd NB Ramps (Int 7) LOS F in the AM and PM peak periods
- Clairemont Drive at Balboa Avenue (Int 9) LOS F in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period

Roadway Segments

Cumulative impacts were determined at the following study roadway segments:

- Garnet Avenue between Bond Street and Mission Bay Dr LOS F
- Garnet Avenue between Mission Bay Dr and I-5 SB On Ramp LOS F
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue between Morena Boulevard NB Ramps and Moraga Avenue LOS F
- Balboa Avenue between Moraga Avenue and Clairemont Drive LOS E
- Balboa Avenue east of Clairemont Drive LOS F
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Clairemont Drive between Denver Street and Morena Boulevard LOS E

Freeway Segments

Cumulative impacts were determined at the following study freeway segments:

- I-5 between SR-52 and Mission Bay Drive LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Mission Bay Drive and Garnet Avenue/Balboa Avenue LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Garnet Avenue/Balboa Avenue and Mission Bay Drive LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Mission Bay Drive and Clairemont Drive LOS E in SB during PM peak period

Freeway Ramp Meters

Cumulative impacts were determined at the following study freeway ramp meters:

I-5 SB and Mission Bay Drive PM peak period (54 minute delay)

MITIGATION MEASURES

The required mitigation measures for roadway and intersections that would be significantly impacted under the Adopted Community Plan Future Scenario when compared to existing conditions are presented below.

Intersections

Garnet Avenue & Olney Street (Intersection 1): Remove parking and restripe to include a northbound left-turn lane. The required mitigation at this intersection is shown in **Appendix F.** The impact at this intersection associated with the Future Adopted Land Use scenario would be fully mitigated with the implementation of this measure. This improvement is recommended under the Adopted Community Plan Scenario.

Garnet Avenue & Mission Bay (Intersection 5): Construct a second southbound through lane, a third westbound through lane, and a second westbound left-turn lane. The impact at this intersection associated with the Future Adopted Land Use scenario would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition that would significantly impact four adjacent commercial properties. These properties are not assumed to be redeveloped as part of the Future Adopted Land Use scenario. Due to the impact to adjacent properties and potential effect on pedestrian travel, this improvement is not recommended under the Adopted Community Plan scenario.

Balboa Avenue & Morena Boulevard NB Ramps (Intersection 7): Install a partial traffic signal at this intersection to control the eastbound and northbound approaches. The impact at this intersection associated with the Future Adopted Land Use scenario would be fully mitigated with the implementation of this measure. This improvement is recommended under the Adopted Community Plan Scenario.

Balboa Avenue & Clairemont Drive (Intersection 9): Construct a southbound right-turn lane and a second southbound left-turn lane. Construct a westbound right-turn lane. The required mitigation at this intersection is shown in Appendix F. The impact at this intersection associated with the Future Adopted Land Use scenario would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition that would significantly impact one adjacent commercial property and would increase pedestrian crossing distances. Further, the Clairemont Community Plan Update is currently underway and may further consider the need for and feasibility of these improvements as part of their evaluation when looking at land use changes for the community as a whole. Due to the impact to adjacent properties and potential effect on pedestrian travel, this improvement is not recommended under the Adopted Community Plan scenario.

Morena Boulevard & Jutland Drive (Intersection 22): Install a traffic signal or roundabout at this intersection. The required mitigation at this intersection is shown in **Appendix F.** The impact at this intersection associated with the Future Adopted Land Use scenario would be fully mitigated with the implementation of this measure. This improvement is recommended under the Adopted Community Plan Scenario.

Roadway Segments

Garnet Avenue between Bond Street and Mission Bay Drive: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this mitigation, the roadway segment will still operate at unacceptable conditions, but would operate better than existing conditions and therefore would not be considered a significant impact. This improvement would require right-of-way acquisition and significantly

impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp: Widen this segment of Garnet Avenue to a 7-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this partial mitigation, the roadway segment will still operate at unacceptable conditions and the significant traffic associated with the Future Adopted Land Use scenario would remain significant. This improvement would require reconstruction of the freeway undercrossing. It would also impact properties on either side of the freeway undercrossing to create transitions or widen the roadway on either side to match this width. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this partial mitigation, the roadway segment will still operate at unacceptable conditions and the significant traffic associated with the Future Adopted Land Use scenario would remain significant. This improvement would require right-of-way acquisition and significantly impact the Balboa Avenue Station on the south and the City's operations yard on the north side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue between Morena Boulevard NB Ramps and Moraga Avenue: Widen this segment of Balboa Avenue to a 8-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition. Doing this widening in isolation without widening of adjacent roadway widths to the west would not improve operations as it is a very short segment and appropriate transitions would be required. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue between Moraga Avenue and Clairemont Drive: Widen this segment of Balboa Avenue to a 5-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significant cost to design for the steep slopes on either side of the roadway. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue east of Clairemont Drive: Widen this segment of Balboa Avenue to a 6-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significant cost to design for the steep slopes on either side of the roadway. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Bluffside Avenue and Damon Avenue: Widen this segment of Mission Bay Drive to a 6-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure;

however, this would require widening of the bridge over Rose Creek. Due to the environmental constraints and concerns with impacting Rose Creek, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Damon Avenue and Garnet Avenue: Widen this segment of Mission Bay Drive to a 6-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Clairemont Drive between Denver Street and Morena Boulevard: Widen this segment of Clairemont Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Adopted Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Freeway Segments

No mitigation measures are identified for impacts to freeways because freeway improvements are not within the authority of the City. The improvements identified in SANDAG's RTP would improve operations along the freeway segments and ramps; however, to what extent is still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. The City will continue to coordinate with Caltrans and SANDAG on future improvements, as future project-level developments proceed, to develop potential "fair share" multi-modal mitigation strategies for freeway impacts, as appropriate. The following are the freeway mainline improvements identified in SANDAG's RTP:

I-5 between SR-52 and Clairemont Drive: SANDAG San Diego Forward 2050 Revenue Constrained Network includes operational improvements and construction of managed lanes along I-5 between SR-52 and Clairemont Drive. This project is expected to be constructed by the year 2050. There is some uncertainty related to the actual improvements and associated traffic impacts that will materialize over time. Future development projects' transportation studies would be able to more accurately identify individual project-level impacts and provide the mechanism to mitigate them through fair share contributions in addition to the funding identified in the Revenue Constrained Network.

Freeway Ramp Meters

The City of San Diego shall coordinate with Caltrans to address ramp capacity at impacted on-ramp locations. Improvements could include additional lanes, interchange reconfigurations, Transportation Demand Measures (TDM); however, specific capacity improvements are still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements.

POST-MITIGATION ANALYSIS

The following section will present the capacity and LOS analysis for the Adopted Community Plan Future Scenario with the implementation of the traffic mitigation measures described above.

Intersections

Table 8-9 displays the LOS analysis results for the study intersections after the implementation of the mitigation measures described above for the Future Adopted Land Use Scenario. As shown in the table, all intersections would operate at LOS D or better during both peak periods after the implementation of the traffic mitigation measures.

Appendix G contains the peak period intersection LOS calculation worksheets.

Roadway Segments

Table 8-10 displays the LOS analysis results for the study roadway segments after the implementation of the mitigation measures described above for the Future Adopted Land Use Scenario. As shown in the table, all but three segments would operate at LOS D or better. The three roadway segments that would continue to operate at poor LOS (E or F) after implementation of the traffic mitigation measures are as follows:

- Garnet Avenue between Bond Street and Mission Bay Drive LOS F
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F

Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp and between I-5 NB Off Ramp and Morena Boulevard SB Ramps would be considered to continue to have a significant impact when compared to existing conditions. Based on the feasibility of the traffic mitigation measures, none of the roadway segment improvements are recommended as part of the Adopted Community Plan scenario.

Table 8-7 Future Adopted Community Plan with Recommended Mitigation Intersection Analysis Summary

Intersection		Peak	Future Adopted		After Mitigations		Recommended?	Description	
		Period	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Recommended?	Description	
Olney St & Garnet		AM	36.3	D	30.0	С	YES	Remove parking and restripe NB approach	
	Ave	PM	56.4	Е	39.0	D	163	to include a left-turn lane.	
_	_ Mission Bay Dr &	AM	61.5	E	52.1	D	NO	Widen Garnet Avenue to add a third WB	
5	Garnet Áve	PM	70.5	Е	50.3	D	NO	through lane and second WB left-turn lane. Add second SB through lane.	
7	Balboa EB Ramps	AM	75.2	F	4.5	Α	YES	Install a partial traffic signal at this intersection to control the EB and NB	
/	& Balboa Ave	PM	113.1	F	8.3	Α	TES	approaches.	
	9 Clairemont Dr & Balboa Ave	AM	51.0	D	33.3	С	NO	Add a SB right-turn lane and second SB	
9		PM	84.6	F	52.4	D	INO	left-turn lane. Add a WB right-turn lane.	
1 22	Morena Blvd &	AM	12.6	В	5.9 / 7.4	A/A	YES	Install a traffic signal or roundabout.	
	Jutland Dr	PM	92.7	F	10.7 / 14.7	В/В	160	nistali a tranic signal of Touridabout.	

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 8-8 Future Adopted Community Plan with Recommended Mitigation Roadway Segment Analysis Summary

	Future	Future Adopted			After Mitigations					
Roadway Segment	ADT (a)	Functional Classification	V/C Ratio (b)	LOS	Functional Classification	V/C Ratio (b)	LOS	Recommended?		
Garnet Avenue										
Bond St to Mission Bay Dr	63,200	4 Lane Major Arterial	1.58	F	8 Lane Major Arterial	1.053	F	NO		
Mission Bay Dr to I-5 SB On-Ramp	48,100	5 Lane Major Arterial	1.069	F	7 Lane Major Arterial	0.875	D	NO		
I-5 SB On-Ramp to I-5 NB Off-Ramp	66,600	5 Lane Major Arterial	1.48	F	8 Lane Major Arterial	1.110	F	NO		
I-5 NB Off-Ramp to Morena Blvd SB Ramps	77,500	5 Lane Major Arterial	1.722	F	8 Lane Major Arterial	1.292	F	NO		
Balboa Avenue										
Morena Boulevard NB Ramps to Moraga Avenue	45,500	4 Lane Major Arterial	1.138	F	8 Lane Major Arterial	0.758	С	NO		
Moraga Avenue to Clairemont Drive	38,200	4 Lane Major Arterial	0.955	Е	5 Lane Major Arterial	0.849	D	NO		
East of Clairemont Drive	43,000	4 Lane Major Arterial	1.075	F	6 Lane Major Arterial	0.860	D	NO		
Mission Bay Drive										
Bluffside Avenue to Damon Avenue	39,600	4 Lane Major Arterial	0.99	Е	6 Lane Major Arterial	0.792	С	NO		
Damon Ave to Garnet Ave	42,400	4 Lane Major Arterial	1.06	F	6 Lane Major Arterial	0.848	D	NO		
Clairemont Drive										
Denver St to Morena Blvd	39,200	4 Lane Major Arterial	0.98	Е	5 Lane Major Arterial	0.871	D	NO		

Notes: Bold values indicate roadway segments operating at LOS E or F. Bold and shaded values indicate an impact.

⁽a) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.(b) ADT volumes for the roadway segments were determined from SANDAG Modeling.

FUTURE PREFERRED SPECIFIC PLAN ANALYSIS

The following section will present the capacity and LOS analysis for the Future Preferred Specific Plan Scenario. The Preferred Specific Plan Scenario includes the change in land use assumptions associated with the Preferred Specific Plan alternative and recommended transportation projects to connect people to the Balboa Avenue station via all modes of travel.

The following improvements are included as part of the Preferred Specific Plan Scenario:

Mission Bay Drive at Damon Avenue would be reconfigured to eliminate the northbound free right turn movement, and provide a larger refuge area in the northeast corner. Planned improvement concepts for this intersection are displayed in **Figure 8-3**.

Mission Bay Drive at Garnet Avenue would have pedestrian crossings upgraded to have a more visible appearance by use of continental striping or textured pavement. Class II bicycle facilities will be included on Mission Bay Drive between Damon Avenue and Rosewood Street and on Garnet Avenue between Soledad Mountain Road and Mission Bay Drive. In addition, Class I shared-use paths will be provided along both sides of Mission Bay Drive and Garnet Avenue for the majority of the roadway segments, providing connections to the existing Rose Creek Trail. Planned improvement concepts for this intersection are displayed in **Figure 8-4.**

Balboa Avenue/Garnet Avenue between Mission Bay Drive and the I-5 NB off-ramp would be reconfigured to provide a shared-use path for pedestrians and bicycles in both the eastbound and westbound direction. The westbound shared-use path will connect to Moraga Avenue east of the Balboa Station. Additional changes in this segment include a dedicated bus lane and stop in the eastbound direction, and removal of several free right turns. This includes reconfiguration of the Morena Boulevard ramps to remove the westbound free right movements at Balboa Avenue/Garnet Avenue and remove the northbound Morena Boulevard to westbound Balboa Avenue loop ramp. Planned improvement concepts for this roadway segment are displayed in Figure 8-5.

Mission Bay Drive at Grand Avenue would be changed to realign the lanes in a way such that Grand Avenue becomes the through movement rather than Mission Bay Drive. Pedestrian crossings would be included in the reconfigured intersection design. Planned improvement concepts for this intersection are displayed in **Figure 8-6.** This would also modify the intersection of Grand Avenue at Figueroa Drive to have two eastbound travel lanes instead of one.

Mission Bay Drive between Rosewood Street and Damon Avenue would be reconfigured to include shared-use paths northbound and southbound bike lanes would also be provided between Grand Avenue and Garnet Avenue by removing the existing parking lane along both sides of Mission Bay Drive. Planned improvements along Mission Bay Drive can be seen in **Figure 8-7.**

The Preferred Specific Plan intersection geometrics when compared to adopted scenario, are shown in **Figure 8-8** and the Preferred Specific Plan peak period volumes are shown in **Figure 8-9**.

INTERSECTIONS

Table 8-11 displays the LOS analysis results for the study intersections for the Preferred Specific Plan Future Scenario.



Figure 8-3 Preferred Specific Plan Projects: Mission Bay Drive at Damon Avenue





Figure 8-4
Preferred Specific Plan Projects: Mission Bay Drive at Garnet Avenue



Figure 8-5 Preferred Specific Plan Projects: Balboa Avenue



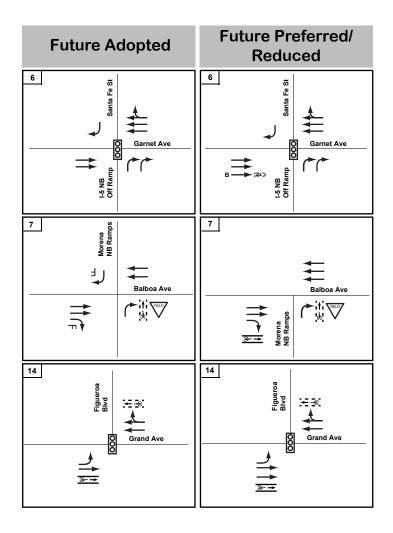


Figure 8-6 Preferred Specific Plan Projects: Mission Bay Drive at Grand Avenue



Figure 8-7
Preferred Specific Plan Projects: Mission Bay Drive between Damon Avenue and Rosewood Street

Match Line - See Upper Right





Intersection Control
Signalized Intersection
Stop Controlled Approach
Yield Controlled Movement

F Free Right-Turn

O Right-Turn Overlap

Bicycle Facilities

→ Through Bicycle Lane ('Bicycle Pocket')

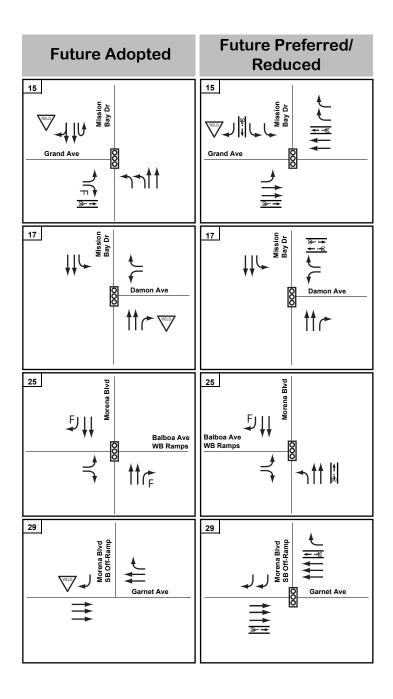
→ Striped Bicycle Lane Merge

→ Cycle Track

Transit Facilities

B Bus Only Movement

Figure 8-8 Preferred Specific Plan Intersection Geometrics





Intersection Control
Signalized Intersection
Stop Controlled Approach
Yield Controlled Movement

F Free Right-Turn

O Right-Turn Overlap

Bicycle Facilities

Through Bicycle Lane ('Bicycle Pocket')

Striped Bicycle Lane Merge
Cycle Track

Transit Facilities

Bus Only Movement

Figure 8-8
Preferred Specific Plan Intersection Geometrics (Cont.)

1		2 0 0		3		4	
5 26 / 60 0 131 / 66 2 69 / 48 Olney Street	□ 9 / 24 □ 679 / 1319 □ 7 / 15 Garnet Ave	Ave Balpoa ave 831 / 796 Garnet Ave	□ 722 / 1307 □ 328 / 516	© 67 / 129	S 512 / 511 ⇔ 815 / 1683 Garnet Ave		⇔ 1384 / 2044 Garnet Ave
13 / 31	75 /110 ÷ 75 /118 %	46 / 0		142 / 103		1796 / 1488 ⇔ ₩ 37 / 84 % ₽	37 /46 🜣
5 358 / 731 \$\times\$ 338 / 481 \$\times\$ 252 / 277	S 247 / 357 ⇔ 526 / 678 № 231 / 331 Garnet Ave	5 74 / 189	⊳ 174 / 84 ⇔ 1759 / 1986 Garnet Ave	7	⇔ 1312 / 1470 Ваlboa Ave	© 261/288 © 94/94 Moraga Ave	5 77 / 86 ⇔ 1051 / 1182 Balboa Ave
661 / 445	441 /653 ⊘ 568 /507 ⇔ 282 /354 ଛ	1193 / 1327 ⇒ RB Off Ramp	205 /805 %	M Grena NB \Leftrightarrow 098 / 259	210 /337 🜣	311 / 342	
6 285 / 253 9 344 / 605 10 210 / 346 Clairemont Dr	S 124 / 160 ⇔ 716 / 954 № 434 / 538 Balboa Ave	10 14 / 39	© 17 / 24 ⇔ 165 / 524 ⋈ 46 / 140 Balboa Ave	8 17 /54	5 49 / 216 ⇔ 479 / 1151 ঐ 45 / 134 Grand Ave	2 48 / 28	
186 / 351	126 /72 & 406 /392 & 440 /435 &	57 / 33	19 / 20 & 192 / 340 & 91 / 46 &	28 / 41 Ø 1247 / 930 ⇒ 25 / 57 %	34 /30 & 193 /174 & 361 /119 &	64 / 20 Ø 1611 / 1164 ⇔	
13	⇔ 617 / 1543	Higueroa Bivd	S 47 / 70	Grand Ave Grand Ave Grand Ave	S 897 / 1151 ⇔ 488 / 1323	16 S 256 / 650 O S 4 17 1275 Wilssion Bay Dr	
1698 / 1200 ⇒ 55 48 / 35 % 8 3	52 / 18 & 48 / 28 %	130 / 115		275 / 86		728 / 322 Ø 129 / 155 S	101 / 329 a
## 779 / 1362 12 1362 12 1362 1363 1364 1364 1365 1364 1365	≲ 59 / 190 2 86 / 189 Damon Ave	18	S 5/7 ⇔ 2/2 ≥ 8/6 Driveway	Durineman	s 87 / 126 ≥ 45 / 154 Bunker Hill St	⇔ 2372 / 1993 ⇔ 16 / 5 Mission Bay Dr	s 18 / 25
Note:	1419 / 1203 🕁	173 / 132 Ø 10 / 8 ⇔ 163 / 213 §	55 / 92		1076 / 1194 ಈ		1355 / 2486 <code-block></code-block>

2030 Building Alternative peak hour volumes from the *Mid-Coast Corridor Transit Project Transportation and Mitigation Report*, September 2014, were used for intersections 25 and 26. Through volumes at these intersections were then balanced based on adjacent intersection volumes. Volumes at intersections 7 and 29 were determined based on volumes at adjacent intersections.



Figure 8-9 Future Preferred Specific Plan Peak Period Volumes

	134/65 & 164/317 & 164/317 & 164/317	Morean Blvd 257 / 1476 268	\$\triangle 287 /892\$\$\$\alpha 42 /55\$	\$ 56 / 76 2 100 / 378 Costco Dwy 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	## 356 /1255 ## 20 /67 Morena Blvd	38 / 54 2 222 / 184 Avati Dr 2 989 / 000 911
25 0.0 0	Balboa EB Ramps	© 440 / 530 ⇔ 77 / 30 ⇒ 140 / 300 Balboa EB Ramps	c 290 / 840 c 20 / 47 Morena Bivd	S 36 / 28 Ø 27 / 15 Baker St	## 342 / 906	\$ 48 / 86 2 33 / 38 Gesner St
79 1060 na SB	06,087 7,087	9 /5		782 /380 23 /22		875 /404

Note:

2030 Building Alternative peak hour volumes from the *Mid-Coast Corridor Transit Project Transportation and Mitigation Report*, September 2014, were used for intersections 25 and 26. Through volumes at these intersections were then balanced based on adjacent intersection volumes. Volumes at intersections 7 and 29 were determined based on volumes at adjacent intersections.

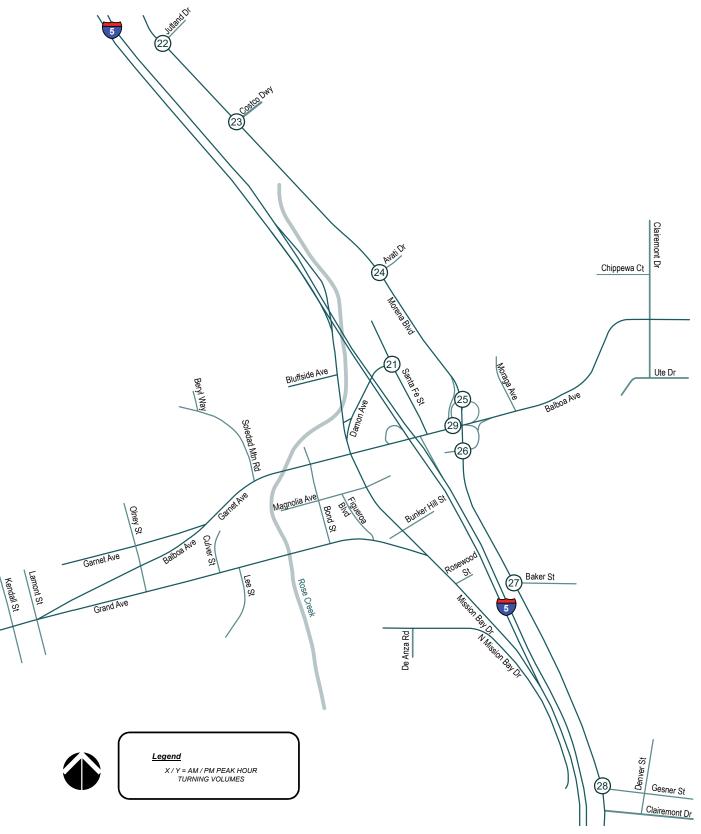


Figure 8-9 Future Preferred Specific Plan Peak Period Volumes (Cont.)

Table 8-9 Future Preferred Specific Plan Intersection Analysis Summary

	Intercetion	Traffic	Dools	Exis	ting	Future P	referred	lmm a a t 2
	Intersection	Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?
1	Garnet Ave at Olney	Signal	AM	15.4	В	36.2	D	
ı	St	Signal	PM	12.1	В	58.8	E	Yes
2	Garnet Ave at Balboa	Signal	AM	11.1	В	10.9	В	
	Ave	Signal	PM	15.0	В	14.7	В	
3	Garnet Ave at Soledad	Signal	AM	18.6	В	16.6	В	
3	Mountain Rd	Signal	PM	29.2	С	24.5	С	
4	Garnet Ave at Bond St	Signal	AM	0.5	Α	0.4	Α	
-	Gamet Ave at bond St	Signal	PM	0.6	Α	0.4	Α	
5	Garnet Ave at Mission	Signal	AM	55.7	E	57.5	Е	
3	Bay Dr	Signal	PM	58.0	E	66.3	E	Yes
6	Garnet Ave at Santa	Signal (c)	AM	16.8	С	5.5	Α	
	Fe St	Signal (c)	PM	151.9	F	9.3	Α	
7	Balboa Ave at Morena	One-Way	AM	27.0	D	14.7	В	
,	Blvd NB Ramps	Yield	PM	50.7	F	57.9	F	Yes
8	Balboa Ave at Moraga	Signal	AM	16.2	В	14.6	В	
	Ave	Signal	PM	16.3	В	15.2	В	
9	Balboa Ave at	Signal	AM	47.6	D	40.9	D	
3	Clairemont Dr	Signal	PM	59.2	E	72.1	E	Yes
10	Balboa Ave at Olney	Signal	AM	12.4	В	15.3	В	
10	St	Jigilai	PM	12.9	В	20.4	С	
11	Grand Ave at Olney St	Signal	AM	32.9	С	47.8	D	
' '	Grand Ave at Onley St	Olgilai	PM	27.2	С	37.9	D	
12	Grand Ave at Culver	Signal	AM	10.2	В	10.7	В	
12	St	Signal	PM	5.8	Α	7.1	Α	
13	Grand Ave at Lee St	Signal	AM	9.5	Α	11.8	В	
13	Orana Ave at Lee of	Olgilai	PM	5.2	Α	5.8	Α	
14	Grand Ave at Figueroa	Signal	AM	14.9	В	4.6	Α	
17	Blvd	Jigilai	PM	3.0	Α	13.8	В	
15	Grand Ave at Mission	Signal	AM	34.5	С	36.7	D	
13	Bay Dr	Jigilai	PM	32.3	С	39.8	D	
16	Mission Bay Dr at	Signal	AM	21.6	С	23.3	С	
10	Bluffside Ave	Signal	PM	20.4	С	32.8	С	

Notes: **Bold** values indicate intersections operating at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection was analyzed as a one-way stop under Existing Conditions.

⁽d) Intersection was analyzed as a two-way stop under Existing Conditions.

⁽e) Intersection was analyzed as a free movement under Existing Conditions.

Table 8-9 Future Preferred Specific Plan Intersection Analysis Summary (Cont.)

		Traffic	<u> </u>	Exis	ting	Future P	referred	
	Intersection	Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?
17	Mission Bay Dr at	Signal	AM	8.2	Α	14.9	В	
17	Damon Ave	Signal	PM	14.3	В	20.7	С	
18	Mission Bay Dr at	Signal	AM	14.7	В	34.1	С	
10	Magnolia Ave	Signal	PM	16.1	В	36.9	D	
19	Mission Bay Dr at	Signal	AM	6.5	Α	25.8	С	
13	Bunker Hill St	Signal	PM	8.2	Α	22.9	С	
20	Mission Bay Dr at	Signal (c)	AM	41.7	Е	4.3	Α	
20	Rosewood St	Oignai (c)	PM	176.0	F	3.9	Α	
21	Santa Fe St at Damon	All-Way	AM	7.8	Α	8.7	Α	
	Ave	Stop	PM	8.1	Α	9.3	Α	
22	Morena Blvd at Jutland	All-Way	AM	12.7	В	12.1	В	
	Dr	Stop	PM	55.2	F	81.5	F	Yes
23	Morena Blvd at Costco	Signal	AM	9.6	Α	9.6	Α	
20	Dwy	Olgilai	PM	11.0	В	11.9	В	
24	Morena Blvd at Avati	Signal	AM	9.1	Α	10.7	В	
	Dr	Olgilai	PM	8.9	Α	8.9	Α	
25	Morena Blvd at WB	Signal	AM	3.3	Α	7.1	Α	
25	Balboa Ave Ramps	Signal	PM	4.7	Α	7.7	Α	
26	Morena Blvd at EB	Signal (d)	AM	96.7	F	21.7	С	
20	Balboa Ave Ramps	Oignai (u)	PM	50.2	F	13.2	В	
27	Morena Blvd at Baker	One-Way	AM	35.1	E	23.8	С	
	St	Stop	PM	17.6	С	15.5	С	
28	Morena Blvd at Gesner	Signal	AM	8.6	Α	10.7	В	
20	St	Oigilai	PM	7.5	Α	7.4	Α	
29	Balboa Ave at Morena	Signal (e)	AM	NA	NA	6.8	Α	
	Blvd SB Ramps		PM	NA	NA	12.0	В	

Notes: **Bold** values indicate intersections operating at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection was analyzed as a one-way stop under Existing Conditions.

⁽d) Intersection was analyzed as a two-way stop under Existing Conditions.

⁽e) Intersection was analyzed as a free movement under Existing Conditions.

The intersections that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions are as follows:

- Olney Street at Garnet Avenue (Int 1) LOS E in the PM peak period
- Mission Bay Drive at Garnet Avenue (Int 5) LOS E in the PM peak period
- Balboa Avenue at Morena Boulevard NB Ramps (Int 7) LOS F in the PM peak period
- Clairemont Drive at Balboa Avenue (Int 9) LOS E in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period

Appendix H contains the peak period intersections LOS calculation worksheets.

ROADWAY SEGMENTS VOLUME-BASED

Table 8-10 displays the LOS analysis results for the volume-based roadway segments evaluation for the Preferred Community Plan Future Scenario. The roadway segments that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions is as follows:

- Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp LOS E
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue east of Clairemont Drive LOS F
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Mission Bay Drive between Garnet Avenue and Magnolia Ave LOS E
- Mission Bay Drive between Magnolia Avenue to Bunker Hill Street LOS E
- Mission Bay Drive between Bunker Hill Street and Grand Avenue LOS E
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS F
- Clairemont Drive between Denver Street and Morena Boulevard LOS F

CORRIDORS SPEED-BASED

Table 8-11 displays the LOS analysis results for the speed-based corridor segments evaluation for the Preferred Specific Plan Scenario using the roadway network discussed in the previous section. The corridors that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions are as follows:

- Northbound Mission Bay Drive between Grand Avenue and Bluffside Avenue LOS E in both the AM and PM peak periods.
- Southbound Mission Bay Drive between Bluffside Avenue and Grand Avenue LOS E in the AM peak period and LOS F in the PM peak period.

Appendix H contains the travel time details along each corridor.

Table 8-10 Future Preferred Specific Plan Volume-Based Roadway Segment Analysis Summary

		Exis	sting			Future Preferred					
Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Functional Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Impact?
Balboa Ave											
Garnet Ave to Grand Ave	4 Lane Major Arterial	40,000	14,263	0.357	А	4 Lane Major Arterial	40,000	13,200	0.330	Α	
Garnet Ave											
Bond St to Mission Bay Dr	4 Lane Major Arterial	40,000	58,694	1.467	F	4 Lane Major Arterial	40,000	52,200	1.305	F	
Mission Bay Dr to I-5 SB On-Ramp	5 Lane Major Arterial	45,000	37,406	0.831	D	5 Lane Major Arterial	45,000	43,000	0.956	E	Yes
I-5 SB On-Ramp to I-5 NB Off-Ramp	5 Lane Major Arterial	45,000	48,857	1.086	F	5 Lane Major Arterial	45,000	60,500	1.344	F	Yes
I-5 NB Off-Ramp to Morena Blvd SB Ramps	5 Lane Major Arterial	45,000	52,073	1.157	F	5 Lane Major Arterial	45,000	71,500	1.589	F	Yes
Balboa Ave (CA-274)											
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	4 Lane Major Arterial	40,000	49,079	1.227	F	5 Lane Major Arterial	45,000	45,700	1.016	F	
Morena Blvd NB Ramps to Moraga Ave	4 Lane Major Arterial	40,000	43,115	1.078	F	5 Lane Major Arterial	45,000	39,800	0.884	D	
Moraga Ave to Clairemont Dr	4 Lane Major Arterial	40,000	34,903	0.873	D	4 Lane Major Arterial	40,000	32,600	0.815	D	
East of Clairemont Dr	4 Lane Major Arterial	40,000	37,383	0.935	E	4 Lane Major Arterial	40,000	42,500	1.063	F	Yes
Grand Ave											
Kendall St to Lamont St	4 Lane Major Arterial	40,000	51,778	1.294	F	4 Lane Major Arterial	40,000	24,000	0.600	С	
Lee St to Bond St (On Rose Creek Bridge)	4 Lane Major Arterial	40,000	37,915	0.948	Е	4 Lane Major Arterial	40,000	37,200	0.930	E	
Figueroa Blvd to Mission Bay Dr	4 Lane Major Arterial	40,000	38,202	0.955	Е	4 Lane Major Arterial	40,000	37,900	0.948	E	
Mission Bay Dr											
Bluffside Ave to Damon Ave	4 Lane Major Arterial	40,000	35,580	0.890	Е	4 Lane Major Arterial	40,000	39,000	0.975	E	Yes
Damon Ave to Garnet Ave	4 Lane Major Arterial	40,000	40,680	1.017	F	4 Lane Major Arterial	40,000	41,300	1.033	F	Yes
Garnet Ave to Magnolia Ave	4 Lane Major Arterial	40,000	29,702	0.743	С	4 Lane Major Arterial	40,000	38,300	0.958	E	Yes
Magnolia Ave to Bunker Hill St	4 Lane Major Arterial	40,000	29,821	0.746	С	4 Lane Major Arterial	40,000	38,700	0.968	E	Yes
Bunker Hill St to Grand Ave	4 Lane Major Arterial	40,000	29,002	0.725	С	4 Lane Major Arterial	40,000	35,900	0.898	Е	Yes
Grand Avenue to I-5 Ramps	5 Lane Major Arterial	45,000	55,051	1.223	F	5 Lane Major Arterial	45,000	56,600	1.258	F	Yes

Notes: Bold values indicate roadway segments operating at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Existing road classifications are based on field work conduted in May 2016.
(b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.
(c) The v/c Ratio is calculated by dividing the ADT volume by each respectie roadway segment's capacity.

Table 8-10 Future Preferred Specific Plan Volume-Based Roadway Segment Analysis Summary (Cont.)

		Exis	sting			Future Preferred					
Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Funcitonal Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Impact?
Morena Blvd											
Jutland Dr to Avati Dr	4 Lane Major Arterial	40,000	11,554	0.289	А	4 Lane Major Arterial	40,000	17,200	0.430	В	
Avati Dr to Balboa Ave Ramps	4 Lane Major Arterial	40,000	20,136	0.503	В	4 Lane Major Arterial	40,000	21,800	0.545	С	
Balboa Ave Ramps to Ticonderoga St	3 Lane Major Arterial	30,000	15,823	0.527	С	3 Lane Collector (w/ two-way left-turn lane)	22,500	13,900	0.618	С	
Gesner St to Clairemont Dr	4 Lane Major Arterial	40,000	15,584	0.390	В	3 Lane Collector (w/ two-way left-turn lane)	22,500	14,600	0.649	С	
Clairemont Dr											
Chippewa Court to Balboa Avenue	4 Lane Major Arterial	40,000	21,259	0.531	С	4 Lane Major Arterial	40,000	25,300	0.633	С	
Balboa Avenue to Ute Drive	4 Lane Major Arterial	40,000	19,325	0.483	В	4 Lane Major Arterial	40,000	22,900	0.573	С	
Denver Street to Morena Boulevard	4 Lane Major Arterial	40,000	31,162	0.779	D	4 Lane Major Arterial	40,000	41,200	1.030	F	Yes
Damon Ave (d)			<u> </u>								
Mission Bay Drive to Santa Fe Street	2 Lane Collector (w/o two-way left- turn lane)	8,000	4,415	0.552	С	2 Lane Collector (w/o two-way left turn lane)	8,000	5,900	0.738	D	
Santa Fe St											
Damon Avenue to Balboa Avenue	2 Lane Collector (w/o two-way left- turn lane)	8,000	2,431	0.304	А	2 Lane Collector (w/o two-way left turn lane)	8,000	5,600	0.700	D	
Soledad Mountain Rd											
Beryl Street to Garnet Avenue	4 Lane Major Arterial	40,000	27,235	0.681	С	4 Lane Major Arterial	40,000	27,900	0.698	С	
N Mission Bay Dr											
De Anza Road to Mission Bay Drive	2 Lane Collector (w/o two-way left- turn lane)	8,000	2,456	0.307	А	2 Lane Collector (w/o two-way left turn lane)	8,000	2,500	0.313	В	

Notes: Bold values indicate roadway segments operating at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Existing road classifications are based on field work conduted in May 2016.

⁽b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.

⁽c) The v/c Ratio is calculated by dividing the ADT volume by each respectie roadway segment's capacity.

⁽d) Damon Avenue is classified as a local street but functions as a collecotr with in the community.

Table 8-83 Future Preferred Specific Plan Speed-Based Corridor Analysis Summary

		Urban	D l	Е	xisting		Future	Preferred	
Corridor	Direction	Street Class	Peak Period	Travel Time (sec)	Speed (mph)	LOS (a)	Travel Time (sec)	Speed (mph)	LOS (a)
Mission Bay Drive	•			•			·		•
Grand Avenue to	Northbound	III	AM	140.5	15.9	D	180.0	12.4	Е
Bluffside Avenue	Northbourid	111	PM	167.5	13.3	Е	180.4	12.4	E
Bluffside Avenue	Soutbound	111	AM	157.9	13.9	Е	191.6	11.7	E
to Grand Avenue	Soulbound	111	PM	218.6	10.0	Е	294.7	7.5	F
Garnet Avenue/ B	alboa Avenue								
Olney Street to	Eastbound	II	AM	321.0	20.5	D	324.6	20.3	D
Clairemont Drive	Easibound	11	PM	337.3	19.5	D	378.9	17.4	D
Clairemont Drive	Westbound	II	AM	292.9	22.6	С	288.8	22.9	С
to Olney Street	vvesibound		PM	305.6	21.7	D	341.2	19.4	D

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

FREEWAY SEGMENTS

Table 8-14 displays the LOS analysis results for the study freeway segments for the Preferred Specific Plan Future Scenario. As shown, all segments operate at LOS E in the northbound direction during the AM peak period except I-5 from Mission Bay Drive to Clairemont Drive; and all segments operate at LOS E in the southbound direction during the PM peak period within the study area.

FREEWAY RAMP METERS

Table 8-15 displays the analysis results for the ramp meters using the existing configuration and meter rates and the future peak-hour traffic volumes for the Preferred Specific Plan Future Scenario. As shown, the following locations are projected to result in a delay greater than 15-minutes and would be considered to have a significant impact when compared to existing conditions:

- I-5 SB and Mission Bay Drive PM peak period (60 minute delay)
- I5 NB and Mission Bay Drive AM peak period (17 minute delay)

⁽a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 8-14 Future Preferred Specific Plan Freeway Segment Analysis Summary

						Futu	re Pref	erred					Exist	ing				
	Freeway Segment	Dir	Number of Lanes	Peak- Volur	-Hour ne (a)	Spe (mpł		Den (pc/n	sity ni/ln)	LOS	S (c)		eed n) (b)	LOS	S (c)		in eed	Impact?
				AM	PM	AM	PM	AM	PM	AM	PM	AM	РМ	AM	PM	AM	PM	
	SR-52 to Mission Bay	NB	5	10,662	6,789	55.3	68.0	42.0	23.7	Е	С	61.1	68.0	D	С	5.8	0.0	YES
	Dr	SB	5	6,195	10,334	68.0	57.1	23.7	39.5	С	Е	68.0	62.4	С	D	0.0	5.3	YES
	Mission Bay Dr to	NB	4	8,320	5,298	56.8	68.0	40.0	23.7	Е	O	64.3	68.0	D	O	7.5	0.0	YES
-5	Garnet Ave/ Balboa Ave	SB	4	4,834	8,064	68.0	58.4	23.7	37.6	O	ш	68.0	65.2	O	D	0.0	6.8	YES
-	Garnet Ave/ Balboa	NB	4	7,827	6,978	59.9	64.3	35.6	29.6	Ε	D	66.5	68.0	D	С	6.6	3.7	YES
	Ave to Mission Bay Dr	SB	4	6,028	8,331	67.7	56.7	24.3	40.1	С	Ε	68.0	65.0	C	D	0.3	8.3	YES
	Mission Bay Dr to	NB	5	9,238	8,237	62.3	65.9	32.3	27.3	D	D	66.4	68.0	D	С	4.1	2.1	NO
	Clairemont Dr	SB	5	7,116	9,834	68.0	59.6	23.7	36.0	С	Е	68.0	64.8	С	D	0.0	5.1	YES

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

Table 8-15 Future Preferred Specific Plan Freeway Ramp Meter Analysis Summary

			. ,	Meter		Future Pref	erred			Existing	9		
On Ramp	Peak Hour	_	ber of nes	Rate (veh/hr)	Demand (veh/hr/ln)	Excess Demand	Delay (min)	Queue (feet)	Demand (veh/hr/ln)	Excess Demand	Delay (min)	Queue (feet)	Impact?
		GP	HOV	(a)	(b)	(veh/hr)	(,	(c)	(b)	(veh/hr)	()	(c)	
I-5 SB & Mission Bay	AM	2	1	n/a	621				584				
Drive	PM			475	951	476	60	11,900	894	419	53	10,475	YES
I-5 SB & Westbound	AM	2	0	n/a	253				240				
Balboa Ave	PM		U	542	387	0	0	0	368	0	0	0	NO
I-5 NB & Mission Bay	AM	2	0	811	1041	230	17	5,750	910	99	7	2,475	YES
Drive	PM	2	0	n/a	695				615				

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Peak-hour volumes were estimated using SANDAG forecast model outputs.

⁽b) The speed was calculated from a base free-flow speed (BFFS) of 75.4 mph (per equation 11-1 in the 2010 HCM) using Exhibit 11-3 in the 2010 HCM. (c) The LOS for the respective freeway segments were based on the methodologies contained in Chapter 11 of the 2010 Highway Capacity Manual.

⁽a) Meter Rate is the peak hour capacity expected to be processed through the ramp meter. Values were obtained from Caltrans. Most Conservative rate (Rate 15) was used.

⁽b) Demand is the peak hour demand expected to use the on-ramp.

⁽c) Assumes an average vehicle length of 25 feet.

SIGNIFICANT IMPACTS

Project impacts for the Preferred Specific Plan Scenario were determined based on a comparison between the future year and existing conditions. Per the City of San Diego's significance thresholds and the analysis methodology presented in this report, the following cumulative impacts were identified.

Intersections

Cumulative impacts were determined at the following study intersections:

- Olney Street at Garnet Avenue (Int 1) LOS E in the PM peak period
- Mission Bay Drive at Garnet Avenue (Int 5) LOS E in the PM peak period
- Balboa Avenue at Morena Boulevard NB Ramps (Int 7) LOS F in the PM peak period
- Clairemont Drive at Balboa Avenue (Int 9) LOS E in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period

Roadway Segments

Cumulative impacts were determined at the following study roadway segments:

- Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp LOS E
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue east of Clairemont Drive LOS F
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Mission Bay Drive between Garnet Avenue and Magnolia Ave LOS E
- Mission Bay Drive between Magnolia Avenue to Bunker Hill Street LOS E
- Mission Bay Drive between Bunker Hill Street and Grand Avenue LOS E
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS F
- Clairemont Drive between Denver Street and Morena Boulevard LOS F

Freeway Segments

Cumulative impacts were determined at the following study freeway segments:

- I-5 between SR-52 and Mission Bay Drive LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Mission Bay Drive and Garnet Avenue/Balboa Avenue LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Garnet Avenue/Balboa Avenue and Mission Bay Drive LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Mission Bay Drive and Clairemont Drive LOS E in SB during PM peak period

Freeway Ramp Meters

Cumulative impacts were determined at the following study freeway ramp meters:

- I-5 SB and Mission Bay Drive PM peak period (54 minute delay)
- I-5 NB and Mission Bay Drive AM peak period (17 minute delay)

MITIGATION MEASURES

The required mitigation measures for roadway and intersections that would be significantly impacted under the Preferred Specific Plan Future Scenario when compared to existing conditions are presented below.

Intersections

Garnet Avenue & Olney Street (Intersection 1): Remove parking and restripe to include a northbound left-turn lane. The required mitigation at this intersection is shown in **Appendix F.** The impact at this intersection associated with the Future Preferred Land Use scenario would be fully mitigated with the implementation of this measure. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive & Garnet Avenue (Intersection 5): Expand Garnet Avenue between Soledad Mountain Road and Mission Bay Drive to include three eastbound through lanes with the outside eastbound through lane becoming a right-turn lane at the intersection with Mission Bay Drive and construct a second westbound left-turn lane. The required mitigation at this intersection is shown in **Figure 8-4**. The impact at this intersection associated with the Future Preferred Land Use scenario would be fully mitigated with the implementation of this measure. With this mitigation, the intersection would operate still operate at a LOS E in the PM peak period, however it would operate better than existing conditions. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue & Morena Boulevard NB Ramps (Intersection 7): Install a partial traffic signal at this intersection to control the eastbound and northbound approaches. The required mitigation at this intersection is shown in **Figure 8-5.** The impact at this intersection associated with the Future Preferred Land Use scenario would be fully mitigated with the implementation of this measure. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue & Clairemont Drive (Intersection 9): Construct a southbound right-turn lane and a second southbound left-turn lane. Construct a westbound right-turn lane. The required mitigation at this intersection is shown in Appendix F. The impact at this intersection associated with the Future Preferred Land Use scenario would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition that would significantly impact one adjacent commercial property and would increase pedestrian crossing distances. Further, the Clairemont Community Plan Update is currently underway and may further consider the need for and feasibility of these improvements as part of their evaluation when looking at land use changes for the community as a whole. Due to the impact to adjacent properties and potential effect on pedestrian travel, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Morena Boulevard & Jutland Drive (Intersection 22): Install a traffic signal or roundabout at this intersection. The required mitigation at this intersection is shown in **Appendix F.** The significant traffic impact associated with the Future Preferred Land Use scenario to this intersection would be fully mitigated

with the implementation of this measure. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Roadway Segments

Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp: Widen this segment of Garnet Avenue to a 6-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this mitigation, the roadway segment will still operate at unacceptable conditions, but would operate better than existing conditions and would therefore not be considered a significant impact. This improvement would require reconstruction of the freeway undercrossing. It would also impact properties on either side of the freeway undercrossing to create transitions or widen the roadway on either side to match this width. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this partial mitigation, the roadway segment will still operate at unacceptable conditions and the significant traffic associated with the Future Preferred Land Use scenario would remain significant. This improvement would require right-of-way acquisition and significantly impact the Balboa Avenue Station on the south and the City's operations yard on the north side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue east of Clairemont Drive: Widen this segment of Balboa Avenue to a 6-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significant cost to design for the steep slopes on either side of the roadway. Further, the Clairemont Community Plan Update is currently underway and may further consider the need for the feasibility of these improvements as part of their evaluation when looking at land use changes for the community as a whole. Due to these factors, these improvements are not recommended as part of the Balboa Avenue Station Area Specific Plan.

Mission Bay Drive between Bluffside Avenue and Damon Avenue: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require widening of the bridge over Rose Creek. Due to the environmental constraints and concerns with impacting Rose Creek, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Damon Avenue and Garnet Avenue: Widen this segment of Mission Bay Drive to a 6-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Garnet Avenue and Magnolia Avenue: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Magnolia Avenue and Bunker Hill Street: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Bunker Hill Street and Grand Avenue: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Grand Avenue and I-5 Ramps: Widen this segment of Mission Bay Drive to an 8-lane Major Arterial. With the implementation of this mitigation, the roadway segment will still operate at unacceptable conditions, but would operate better than existing conditions and would therefore not be considered a significant impact; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment and potential wetland areas adjacent to the west side of the roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Clairemont Drive between Denver Street and Morena Boulevard: Widen this segment of Clairemont Drive to a 6-lane Major Arterial. The significant traffic impact associated with the Future Preferred Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Further, the Clairemont Community Plan Update is currently underway and may further consider the need for and feasibility of this mitigation as part of their evaluation when looking at land use changes for the community as a whole. Due to these factors, these improvements are not recommended as part of the Balboa Avenue Station Area Specific Plan.

Freeway Segments

No mitigation measures are identified for impacts to freeways because freeway improvements are not within the authority of the City. The improvements identified in SANDAG's RTP would improve operations along the freeway segments and ramps; however, to what extent is still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. The City will continue to coordinate with Caltrans and SANDAG on future improvements, as future project-level developments proceed, to develop potential "fair share" multi-modal mitigation strategies for freeway impacts, as appropriate. The following are the freeway mainline improvements identified in SANDAG's RTP:

I-5 between SR-52 and Clairemont Drive: SANDAG San Diego Forward 2050 Revenue Constrained Network includes operational improvements and construction of managed lanes along I-5 between SR-52 and Clairemont Drive. This project is expected to be constructed by the year 2050. There is some uncertainty related to the actual improvements and associated traffic impacts that will materialize over time. Future development projects' transportation studies would be able to more accurately identify individual project-level impacts and provide the mechanism to mitigate them through fair share contributions in addition to the funding identified in the Revenue Constrained Network.

Freeway Ramp Meters

The City of San Diego shall coordinate with Caltrans to address ramp capacity at impacted on-ramp locations. Improvements could include additional lanes, interchange reconfigurations, Transportation Demand Measures (TDM); however, specific capacity improvements are still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. Additionally, the Preferred Plan includes a variety of transit, pedestrian and bicycle facilities that may help to reduce single-occupancy vehicle (SOV) travel which can help improve ramp capacity.

POST-MITIGATION ANALYSIS

The following section will present the capacity and LOS analysis for the Preferred Community Plan Future Scenario with the implementation of the traffic mitigation measures described above.

Intersections

Table 8-16 displays the LOS analysis results for the study intersections after the implementation of the mitigation measures described above for the Future Preferred Land Use Scenario. As shown in the table, all intersections would operate at better than existing conditions during both peak periods after the implementation of the traffic mitigation measures. **Appendix I** contains the peak period intersection LOS calculation worksheets.

Roadway Segments

Table 8-17 displays the LOS analysis results for the study roadway segments after the implementation of the mitigation measures described above for the Future Preferred Land Use Scenario. As shown in the table, the roadway segment that would continue to operate at poor LOS (E or F) after implementation of the traffic mitigation measures are as follows:

- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS E

Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps would be considered to continue to have a significant impact when compared to existing conditions. Based on the feasibility of the traffic mitigation measures, none of the roadway segment improvements are recommended as part of the Balboa Avenue Specific Plan.

Table 8-96 Future Preferred Specific Plan with Recommended Mitigation Intersection Analysis Summary

	Intersection	Peak	Future P	referred	After Mitig	ations	Recommended?	Description
	intersection	Period	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Recommended?	Description
1	Olney St & Garnet	AM	36.2	D	28.5	С	YES	Remove parking and restripe NB approach to
'	Ave	PM	58.8	E	41.3	D	150	include a left-turn lane.
5	Mission Bay Dr &	AM	57.5	E	54.9	D	YES	Expand Garnet Avenue to 3 EB through lanes with the outside lane becoming a right-turn
	Garnet Ave	PM	66.3	E	56.9	E	123	lane at the intersection and construct a second WB left-turn lane.
7	Balboa EB Ramps &	AM	14.7	В	4.1	Α	YES	Install a partial traffic signal at this intersection
	Balboa Ave	PM	57.9	F	7.2	Α	ILS	to control the EB and NB approaches.
9	Clairemont Dr &	AM	40.9	D	27.4	С	NO	Add a SB right-turn lane and second left-turn
٩	Balboa Ave	PM	72.1	E	39.5	D	INO	lane. Add a WB right-turn lane.
22	Morena Blvd &	AM	12.1	В	5.8 / 7.3	A/A	YES	Install a traffic signal or roundabout.
	Jutland Dr	PM	81.5	F	10.4 / 13.8	B/B	165	install a traine signal of foundabout.

Notes: **Bold** values indicate intersections operations at LOS E or F. **Bold and shaded** values indicate an impact.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 8-13 Future Preferred Specific Plan with Recommended Mitigation Roadway Segment Analysis Summary

	Future	Future I	Preferred		After Mitig	ations		
Roadway Segment	ADT (a)	Functional Classification	V/C Ratio (b)	LOS	Functional Classification	V/C Ratio (b)	LOS	Recommended?
Garnet Avenue								
Mission Bay Drive to I-5 SB On-Ramp	43,000	5 Lane Major Arterial	0.956	E	6 Lane Major Arterial	0.860	D	NO
I-5 SB On-Ramp to I-5 NB Off-Ramp	60,500	5 Lane Major Arterial	1.344	F	8 Lane Major Arterial	1.008	F	NO
I-5 NB Off-Ramp to Morena Blvd SB Ramps	71,500	5 Lane Major Arterial	1.589	F	8 Lane Major Arterial	1.192	F	NO
Balboa Avenue								
East of Clairemont Drive	42,500	4 Lane Major Arterial	1.063	F	6 Lane Major Arterial	0.850	D	NO
Mission Bay Drive						<u>'</u>	•	
Bluffside Ave to Damon Ave	39,000	4 Lane Major Arterial	0.975	E	5 Lane Major Arterial	0.867	D	NO
Damon Avenue to Garnet Avenue	41,300	4 Lane Major Arterial	1.033	F	6 Lane Major Arterial	0.826	D	NO
Garnet Ave to Magnolia Ave	38,300	4 Lane Major Arterial	0.958	E	5 Lane Major Arterial	0.851	D	NO
Magnolia Ave to Bunker Hill St	38,700	4 Lane Major Arterial	0.968	E	5 Lane Major Arterial	0.860	D	NO
Bunker Hill St to Grand Ave	35,900	4 Lane Major Arterial	0.898	E	5 Lane Major Arterial	0.798	D	NO
Grand Ave to I-5 Ramps	56,600	5 Lane Major Arterial	1.258	F	8 Lane Major Arterial	0.943	E	NO
Clairemont Drive						,		
Denver St to Morena Blvd	41,200	4 Lane Major Arterial	1.03	F	6 Lane Major Arterial	0.824	D	NO

Notes: **Bold** values indicate roadway segments operating at LOS E or F. **Bold and shaded** values indicate an impact.

(a) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

(b) ADT volumes for the roadway segments were determined from SANDAG Modeling.

FUTURE REDUCED SPECIFIC PLAN ANALYSIS

The following section will present the capacity and LOS analysis for the Future Reduced Specific Plan Scenario. The Reduced Specific Plan Scenario includes the change in land use assumptions associated with the Reduced Specific Plan alternative and the same recommended transportation projects identified in the Preferred Specific Plan to connect people to the Balboa Avenue station. As shown in the tables at the beginning of Chapter 7, the Reduced Specific Plan is slightly less intensified compared to the Preferred Specific Plan. The location of redevelopment opportunities within the Specific Plan area are the same between the Preferred and Reduced scenarios; therefore, transportation connection locations were kept constant between the scenarios. Future Reduced Specific Plan peak period volumes are shown in **Figure 8-10.** Changes to intersection and roadway geometrics are consistent with the Preferred Specific Plan scenario, shown in Figure 7-7 in the previous section.

INTERSECTIONS

Table 8-14 displays the LOS analysis results for the study intersections for the Reduced Specific Plan Scenario. The intersections that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions are as follows:

- Mission Bay Drive at Garnet Avenue (Int 5) LOS E PM peak period
- Balboa Avenue at Morena Boulevard NB Ramps (Int 7) LOS F in the PM peak period
- Clairemont Drive at Balboa Avenue (Int 9) LOS E in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period

Appendix J contains the peak period intersections LOS calculation worksheets.

ROADWAY SEGMENTS VOLUME-BASED

Table 8-15 displays the LOS analysis results for the volume-based roadway segments evaluation for the Reduced Specific Plan Scenario. The roadway segments that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions is as follows:

- Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp LOS E
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue east of Clairemont Drive LOS F
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Mission Bay Drive between Garnet Avenue and Magnolia Avenue LOS E
- Mission Bay Drive between Magnolia Avenue and Bunker Hill Street LOS E
- Mission Bay Drive between Bunker Hill Street and Grand Avenue LOS E
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS F
- Clairemont Drive between Denver Street and Morena Boulevard LOS F

1 80 / 118 45 / 81 80 / 118 45 / 81 80 / 118 6 103 / 49 6 103 / 49	5 15 / 30 6 689 / 1370 2 3 / 7 Garnet Ave	് പ്	□ 723 / 1315 □ 328 / 514 Garnet Ave	3 60 60 60 60 60 60 60 60 60 60 60 60 60	S 508 / 505 ⇔ 828 / 1706 Garnet Ave	1824 / 1514 \Rightarrow 53	⇔ 1398 / 2065 Garnet Ave Ø 8 6 6 6 6 6 7 8 8 8 9 8 9 9 9 9 9 9 9 9
29 / 259 / 269 / 250 / 272 / 250 / 2	S 242 / 353 ⇔ 528 / 678 Ø 214 / 308 Garnet Ave	es so	S 175 / 84 ⇔ 1722 / 1948 Garnet Ave	738 / 1268 ⇒ 🛱 💆	⇔ 1299 / 1457 Balboa Ave	8 L 282 / 369 / 360 / 360 / 360 / 340 Ø 902 / 1251 & \$ 60 / 360 /	© 77 / 86 ⇔ 1043 / 1170 Balboa Ave
285 /253	2 123 / 160	15 / 38 237 / 209 12 / 20 Oliney Street I-5 NB Off F	\$\\ \begin{align*} \	11 15 / 51	200 500 500 500 500 500 500 500	2 48 / 28	5 120 / 70 ⇔ 503 / 1489 Grand Ave
187 / 351	125 /71 & 404 /391 & 436 /429 &	520 / 351 ⇒ 19 / 40 %	18 / 20 27 192 / 341 \Leftrightarrow 92 / 46 $^{\circ}$	28 / 38	34 /29 & 189 /171 & 372 /126 & 189	240 / 609 / 609 / 1292 Silon Bay Dr Property of the second	
1718 / 1214 \Rightarrow 56 46 / 34 $&$ 3	© 625 / 1560 © 129 / 95 Grand Ave	¥		15		16 600 / 300 Ø 131 / 155 9	103 / 332 ⊘ 1366 / 1076 ⇔
⇔ 786 / 1376 ≈ 74 / 98 Mission Bay Dr	59 / 190 S 59 / 190 Damon Ave 2 53 3 4 4 7 17 17 4 7 7 7 7 7 7 7 7 7 7 7 7 7	### #################################	5/7 2/2 2/2 8/6 Driveway \$\times \tau \text{2}{\text{331}} \text{88}. \$\text{89} \tau \text{2}	Dutyeman Dut	24 / 114 Bunker Hill St	⇔ 2363 / 1984 ≈ 9 / 2 Mission Bay Dr	1357 / 2484 \Leftrightarrow 2 / 2484 \Leftrightarrow 10 / 14 \Leftrightarrow 2 / 24 Rosewood St
Note:	1434 / 121:	, c	1126 /		1058 /		1357 /

2030 Building Alternative peak hour volumes from the *Mid-Coast Corridor Transit Project Transportation and Mitigation Report*, September 2014, were used for intersections 25 and 26. Through volumes at these intersections were then balanced based on adjacent intersection volumes. Volumes at intersections 7 and 29 were determined based on volumes at adjacent intersections.



Figure 8-10 Future Reduced Specific Plan Peak Period Volumes

21 866 25 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	21/80 ≈ 134/66 ⇔	C 163 / 316 C 4 / 17 Morena Blvd	© 13 / 11 2 190 / 588 Jutland Dr 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	C 287 /891 C 42 /55 Morena Blvd	56 / 75 2 99 / 376 Costco Dwy 4 0 026 6 25 / 121 25 9	⇔ 352 / 1254 ≈ 21 / 68 Morena Bivd	\$ 37 / 53 \$ 230 / 190 Avati Dr \$ 2 16 6 6 6 6 6 6 6 6
25 DA DA DA	280 /90 ≈ 1439 /1268 ⇔	26 10 / 27 + 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5 440 / 530 \$\top 77 / 30 \$\alpha 140 / 300\$ Balboa EB Ramps \$\times \alpha \text{\pi}	4 290 / 840 0 21 / 46 Morena Blvd	\$ 35 / 27 2 27 / 15 Baker St	## 342 / 906 ## 47 / 103 ## Morena Bivd	674 / 404 /
29 000 000 000 000 000 000 000 000 000 0	© 241 / 409 ⇔ 1058 / 1048 Balboa Ave						

Note:

2030 Building Alternative peak hour volumes from the *Mid-Coast Corridor Transit Project Transportation and Mitigation Report*, September 2014, were used for intersections 25 and 26. Through volumes at these intersections were then balanced based on adjacent intersection volumes. Volumes at intersections 7 and 29 were determined based on volumes at adjacent intersections.

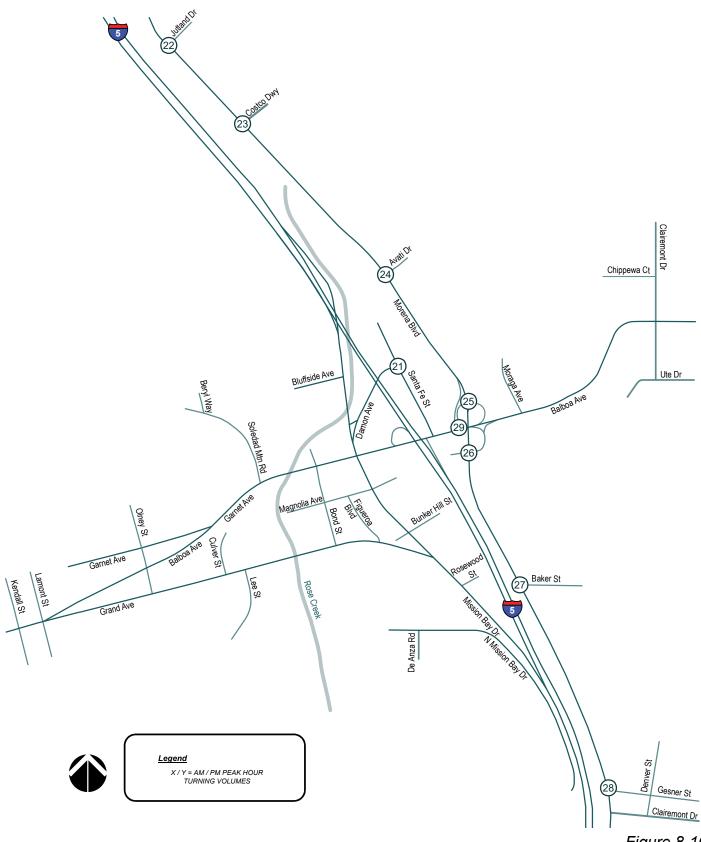


Figure 8-10 Future Reduced Specific Plan Peak Period Volumes (Cont.)

Table 8-14 Future Reduced Specific Plan Intersection Analysis Summary

		Traffic		Exist	ing	Future R	Reduced	
	Intersection	Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?
1	Cornet Ave et Olney St	Cianal	AM	15.4	В	24.8	С	
	Garnet Ave at Olney St	Signal	PM	12.1	В	22.2	С	
2	Garnet Ave at Balboa	Cianal	AM	11.1	В	11.2	В	
	Ave	Signal	PM	15.0	В	14.5	В	
3	Garnet Ave at Soledad	Signal	AM	18.6	В	16.5	В	
၁ 	Mountain Rd	Signal	PM	29.2	С	24.0	С	
4	Cornet Ave at Band Ct	Cianal	AM	0.5	Α	0.4	Α	
4	Garnet Ave at Bond St	Signal	PM	0.6	Α	0.5	А	
_	Garnet Ave at Mission	Cianal	AM	55.7	E	55.8	E	
5	Bay Dr	Signal	PM	58.0	Е	64.0	Е	Yes
	Garnet Ave at Santa	0'	AM	16.8	С	5.5	Α	
6	Fe St	Signal (c)	PM	151.9	F	9.3	Α	
	Balboa Ave at Morena	One-Way	AM	27.0	D	14.7	В	
7	Blvd NB Ramps	Yield	PM	50.7	F	65.5	F	Yes
	Balboa Ave at Moraga	0'	AM	16.2	В	14.5	В	
8	Ave	Signal	PM	16.3	В	15.1	В	
	Balboa Ave at	Ciana al	AM	47.6	D	40.3	D	
9	Clairemont Dr	Signal	PM	59.2	Е	70.9	Е	Yes
40	Balboa Ave at Olney	Cianal	AM	12.4	В	15.3	В	
10	St	Signal	PM	12.9	В	20.5	С	
44	Orace d Assa at Oleans Ot	Ciana al	AM	32.9	С	49.4	D	
11	Grand Ave at Olney St	Signal	PM	27.2	С	40.6	D	
40	Oraca d Assa at Ossberg Ot	Ciana al	AM	10.2	В	10.7	В	
12	Grand Ave at Culver St	Signal	PM	5.8	Α	8.2	Α	
40	Oraced Assault as Ot	Ciana al	AM	9.5	Α	11.7	В	
13	Grand Ave at Lee St	Signal	PM	5.2	Α	7.3	Α	
4.4	Grand Ave at Figueroa	Cianal	AM	14.9	В	4.2	Α	
14	Blvd	Signal	PM	3.0	Α	13.1	В	
4.5	Grand Ave at Mission	CiaI	AM	34.5	С	35.6	D	
15	Bay Dr	Signal	PM	32.3	С	37.9	D	
10	Mission Bay Dr at	Cian-al	AM	21.6	С	22.7	С	
16	Bluffside Ave	Signal	PM	20.4	С	30.6	С	

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection was analyzed as a one-way stop under Existing Conditions.

⁽d) Intersection was analyzed as a two-way stop under Existing Conditions.

⁽e) Intersection was analyzed as a free movement under Existing Conditions.

Table 8-14 Future Reduced Specific Plan Intersection Analysis Summary (Cont.)

	lutana atian	Traffic	Peak	Exist	ing	Future R	Reduced	Image 540
	Intersection	Control	Period	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?
17	Mission Bay Dr at	Signal	AM	8.2	Α	14.9	В	
17	Damon Ave	Signal	PM	14.3	В	20.5	С	
18	Mission Bay Dr at	Signal	AM	14.7	В	29.4	С	
10	Magnolia Ave	Olgilai	PM	16.1	В	31.5	С	
19	Mission Bay Dr at	Signal	AM	6.5	Α	21.0	С	
13	Bunker Hill St	Olgilai	PM	8.2	Α	19.9	В	
20	Mission Bay Dr at	Signal (c)	AM	41.7	Е	3.4	Α	
20	Rosewood St	Olgriai (c)	PM	176.0	F	3.3	Α	
21	Santa Fe St at Damon	All-Way	AM	7.8	Α	8.7	Α	
۷۱	Ave	Stop	PM	8.1	Α	9.3	Α	
22	Morena Blvd at Jutland	All-Way	AM	12.7	В	12.1	В	
	Dr	Stop	PM	55.2	F	81.3	F	Yes
23	Morena Blvd at Costco	Signal	AM	9.6	Α	9.6	Α	
20	Dwy	Olgilai	PM	11.0	В	11.9	В	
24	Morena Blvd at Avati	Signal	AM	9.1	Α	11.1	В	
24	Dr	Olgilai	PM	8.9	Α	9.0	Α	
25	Morena Blvd at WB	Signal	AM	3.3	Α	7.1	Α	
	Balboa Ave Ramps	Signal	PM	4.7	Α	7.8	Α	
26	Morena Blvd at EB	Signal (d)	AM	96.7	F	21.9	С	
20	Balboa Ave Ramps	Signal (u)	PM	50.2	F	13.4	В	
27	Morena Blvd at Baker	One-Way	AM	35.1	E	23.9	С	
21	St	Stop	PM	17.6	С	15.5	С	
28	Morena Blvd at Gesner	Signal	AM	8.6	Α	10.4	В	
	St	Signal	PM	7.5	Α	7.5	Α	
29	Balboa Ave at Morena	Signal (e)	AM	NA	NA	6.7	Α	
29	Blvd SB Ramps	Signal (e)	PM	NA	NA	12.3	В	

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.
(c) Intersection was analyzed as a one-way stop under Existing Conditions.
(d) Intersection was analyzed as a two-way stop under Existing Conditions.

⁽e) Intersection was analyzed as a free movement under Existing Conditions.

Table 8-15 Future Reduced Specific Plan Volume-Based Roadway Segment Analysis Summary

		Exis	sting				Future R	educed			
Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Functional Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	Impact?
Balboa Ave											
Garnet Ave to Grand Ave	4 Lane Major Arterial	40,000	14,263	0.357	А	4 Lane Major Arterial	40,000	13,200	0.330	Α	
Garnet Ave											
Bond St to Mission Bay Dr	4 Lane Major Arterial	40,000	58,694	1.467	F	4 Lane Major Arterial	40,000	52,900	1.323	F	
Mission Bay Dr to I-5 SB On-Ramp	5 Lane Major Arterial	45,000	37,406	0.831	D	5 Lane Major Arterial	45,000	42,100	0.936	E	Yes
I-5 SB On-Ramp to I-5 NB Off-Ramp	5 Lane Major Arterial	45,000	48,857	1.086	F	5 Lane Major Arterial	45,000	59,200	1.316	F	Yes
I-5 NB Off-Ramp to Morena Blvd SB Ramps	5 Lane Major Arterial	45,000	52,073	1.157	F	5 Lane Major Arterial	45,000	71,200	1.582	F	Yes
Balboa Ave (CA-274)											
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	4 Lane Major Arterial	40,000	49,079	1.227	F	5 Lane Major Arterial	45,000	45,300	1.007	F	
Morena Blvd NB Ramps to Moraga Ave	4 Lane Major Arterial	40,000	43,115	1.078	F	5 Lane Major Arterial	45,000	39,400	0.876	D	
Moraga Ave to Clairemont Dr	4 Lane Major Arterial	40,000	34,903	0.873	D	4 Lane Major Arterial	40,000	32,400	0.810	D	
East of Clairemont Dr	4 Lane Major Arterial	40,000	37,383	0.935	E	4 Lane Major Arterial	40,000	42,200	1.055	F	Yes
Grand Ave											
Kendall St to Lamont St	4 Lane Major Arterial	40,000	51,778	1.294	F	4 Lane Major Arterial	40,000	23,600	0.590	С	
Lee St to Bond St (On Rose Creek Bridge)	4 Lane Major Arterial	40,000	37,915	0.948	E	4 Lane Major Arterial	40,000	37,600	0.940	E	
Figueroa Blvd to Mission Bay Dr	4 Lane Major Arterial	40,000	38,202	0.955	E	4 Lane Major Arterial	40,000	38,200	0.955	E	
Mission Bay Dr											
Bluffside Ave to Damon Ave	4 Lane Major Arterial	40,000	35,580	0.890	E	4 Lane Major Arterial	40,000	39,400	0.985	E	Yes
Damon Ave to Garnet Ave	4 Lane Major Arterial	40,000	40,680	1.017	F	4 Lane Major Arterial	40,000	41,600	1.040	F	Yes
Garnet Ave to Magnolia Ave	4 Lane Major Arterial	40,000	29,702	0.743	С	4 Lane Major Arterial	40,000	37,200	0.930	E	Yes
Magnolia Ave to Bunker Hill St	4 Lane Major Arterial	40,000	29,821	0.746	С	4 Lane Major Arterial	40,000	37,700	0.943	Е	Yes
Bunker Hill St to Grand Ave	4 Lane Major Arterial	40,000	29,002	0.725	С	4 Lane Major Arterial	40,000	35,300	0.883	Е	Yes
Grand Avenue to I-5 Ramps	5 Lane Major Arterial	45,000	55,051	1.223	F	5 Lane Major Arterial	45,000	56,300	1.251	F	Yes

Notes: **Bold** values indicate roadway segments operating at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) Existing road classifications are based on field work conducted in May 2016.

⁽b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.

⁽c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

Table 8-15 Future Reduced Specific Plan Volume-Based Roadway Segment Analysis Summary (Cont.)

		Exis	sting				Future R	educed			
Roadway Segment	Funcitonal Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Functional Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	Impact?
Morena Blvd											
Jutland Dr to Avati Dr	4 Lane Major Arterial	40,000	11,554	0.289	А	4 Lane Major Arterial	40,000	17,200	0.430	В	
Avati Dr to Balboa Ave Ramps	4 Lane Major Arterial	40,000	20,136	0.503	В	4 Lane Major Arterial	40,000	21,900	0.548	С	
Balboa Ave Ramps to Ticonderoga St	3 Lane Major Arterial	30,000	15,823	0.527	С	3 Lane Collector (w/ two-way left-turn lane)	22,500	13,900	0.618	С	
Gesner St to Clairemont Dr	4 Lane Major Arterial	40,000	15,584	0.390	В	3 Lane Collector (w/ two-way left-turn lane)	22,500	14,600	0.649	С	
Clairemont Dr											
Chippewa Court to Balboa Avenue	4 Lane Major Arterial	40,000	21,259	0.531	С	4 Lane Major Arterial	40,000	25,200	0.630	С	
Balboa Avenue to Ute Drive	4 Lane Major Arterial	40,000	19,325	0.483	В	4 Lane Major Arterial	40,000	22,700	0.568	С	
Denver Street to Morena Boulevard	4 Lane Major Arterial	40,000	31,162	0.779	D	4 Lane Major Arterial	40,000	40,500	1.013	F	Yes
Damon Ave (d)											
Mission Bay Drive to Santa Fe Street	2 Lane Collector (w/o two-way left turn lane)	8,000	4,415	0.552	С	2 Lane Collector (w/o two-way left- turn lane)	8,000	5,900	0.738	D	
Santa Fe St											
Damon Avenue to Balboa Avenue	2 Lane Collector (w/o two-way left turn lane)	8,000	2,431	0.304	А	2 Lane Collector (w/o two-way left- turn lane)	8,000	5,600	0.700	D	
Soledad Mountain Rd											
Beryl Street to Garnet Avenue	4 Lane Major Arterial	40,000	27,235	0.681	С	4 Lane Major Arterial	40,000	26,800	0.670	С	
N Mission Bay Dr											
De Anza Road to Mission Bay Drive	2 Lane Collector (w/o two-way left turn lane)	8,000	2,456	0.307	А	2 Lane Collector (w/o two-way left- turn lane)	8,000	2,800	0.350	В	

Notes: Bold values indicate roadway segments operating at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Existing road classifications are based on field work conducted in May 2016.

⁽b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.

⁽c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

⁽d) Damon Avenue is classified as a local street but functions as a collector with in the community.

CORRIDORS SPEED-BASED

Table 8-16 displays the LOS analysis results for the speed-based corridor segments evaluation for the Reduced Specific Plan Scenario using the roadway network discussed in the previous section. The corridors that would operate at poor LOS (E or F) and would be considered to have a significant impact when compared to existing conditions is as follows:

- Northbound Mission Bay Drive between Grand Avenue and Bluffside LOS E in the AM and PM peak periods
- Southbound Mission Bay Drive between Bluffside Avenue and Grand Avenue LOS E in the AM peak period and LOS F in the PM peak period

Appendix J contains the travel time details along each corridor.

Table 8-16 Future Reduced Specific Plan Speed-Based Corridor Analysis Summary

		Urban		E	xisting		Future	Reduced	
Corridor	Direction	Street Class	Peak Period	Travel Time (sec)	Speed (mph)	LOS (a)	Travel Time (sec)	Speed (mph)	LOS (a)
Mission Bay Drive	•								
Grand Avenue to	Northbound	III	AM	140.5	15.9	D	178.7	12.5	Е
Bluffside Avenue	Northbound	111	PM	167.5	13.3	Е	178.2	12.5	E
Bluffside Avenue	Soutbound	III	AM	157.9	13.9	E	192.7	11.4	Е
to Grand Avenue	Soutbourid	111	PM	218.6	10.0	Е	283.9	7.7	F
Garnet Avenue/ B	alboa Avenue								
Olney Street to	Factbound	II	AM	321.0	20.5	D	322.5	20.4	D
Clairemont Drive	Facinolina		PM	337.3	19.5	D	375.9	17.5	D
Clairemont Drive	Westbound	11	AM	292.9	22.6	С	291.0	22.8	С
to Olney Street	vvesibound	II -	PM	305.6	21.7	D	338.2	19.6	D

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

FREEWAY SEGMENTS

Table 8-21 displays the LOS analysis results for the study freeway segments for the Reduced Specific Plan Future Scenario. As shown, all segments operate at LOS E in the northbound direction during the AM peak period except I-5 from Mission Bay Drive to Clairemont Drive; and all segments operate at LOS E in the southbound direction during the PM peak period within the study area.

FREEWAY RAMP METERS

Table 8-22 displays the analysis results for the ramp meters using the existing configuration and meter rates and the future peak-hour traffic volumes for the Reduced Specific Plan Future Scenario. As shown, the following locations are projected to result in a delay greater than 15-minutes and would be considered to have a significant impact when compared to existing conditions:

- I-5 SB and Mission Bay Drive PM peak period (60 minute delay)
- I5 NB and Mission Bay Drive AM peak period (16 minute delay)

Table 8-21 Future Reduced Specific Plan Freeway Segment Analysis Summary

						Futu	ıre Red	luced					Exist	ing				
	Freeway Segment	Dir	Number of Lanes		·Hour ne (a)		eed n) (b)		sity ni/ln)	LOS	S (c)	Spe (mpl	eed n) (b)	LOS	S (c)		in eed	Impact?
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
	SR-52 to Mission Bay	NB	5	10,609	6,756	55.6	68.0	41.6	23.7	Е	С	61.1	68.0	D	С	5.5	0.0	YES
	Dr	SB	5	6,164	10,283	68.0	57.4	23.7	39.1	С	Е	68.0	62.4	С	D	0.0	5.0	YES
	Mission Bay Dr to	NB	4	8,296	5,282	56.9	68.0	39.7	23.7	Е	С	64.3	68.0	D	O	7.4	0.0	YES
ည	Garnet Ave/ Balboa Ave	SB	4	4,820	8,040	68.0	58.6	23.7	37.4	С	E	68.0	65.2	С	D	0.0	6.6	YES
-	Garnet Ave/ Balboa	NB	4	7,793	6,948	60.1	64.4	35.4	29.4	Е	D	66.5	68.0	D	С	6.5	3.6	YES
	Ave to Mission Bay Dr	SB	4	6,003	8,296	67.8	56.9	24.1	39.7	С	Е	68.0	65.0	С	D	0.2	8.0	YES
	Mission Bay Dr to	NB	5	9,199	8,201	62.5	66.0	32.1	27.1	D	D	66.4	68.0	D	С	3.9	2.0	NO
	Clairemont Dr	SB	5	7,085	9,792	68.0	59.9	23.7	35.7	С	Е	68.0	64.8	С	D	0.0	4.9	YES

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

Table 8-22 Future Preferred Specific Plan Freeway Ramp Meter Analysis Summary

			. ,	Meter		Future Red	uced			Existing	9		
On Ramp	Peak Hour	_	ber of ines	Rate (veh/hr)	Demand (veh/hr/ln)	Excess Demand	Delay (min)	Queue (feet)	Demand (veh/hr/ln)	Excess Demand	Delay (min)	Queue (feet)	Impact?
		GP	HOV	(a)	(b)	(veh/hr)	(,	(c)	(b)	(veh/hr)	()	(c)	
I-5 SB & Mission Bay	AM	2	1	n/a	621				584				
Drive	PM	_	ı	475	950	475	60	11,875	894	419	53	10,475	YES
I-5 SB & Westbound	AM	2	0	n/a	246				240				
Balboa Ave	PM		U	542	376	0	0	0	368	0	0	0	NO
I-5 NB & Mission Bay	AM	_	0	811	1028	217	16	5,425	910	99	7	2,475	YES
Drive	PM	2	U	n/a	688				615				

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Peak-hour volumes were estimated using SANDAG forecast model outputs.

⁽b) The speed was calculated from a base free-flow speed (BFFS) of 75.4 mph (per equation 11-1 in the 2010 HCM) using Exhibit 11-3 in the 2010 HCM.

⁽c) The LOS for the respective freeway segments were based on the methodologies contained in Chapter 11 of the 2010 Highway Capacity Manual.

⁽a) Meter Rate is the peak hour capacity expected to be processed through the ramp meter. Values were obtained from Caltrans. Most Conservative rate (Rate 15) was used.

⁽b) Demand is the peak hour demand expected to use the on-ramp.

⁽c) Assumes an average vehicle length of 25 feet.

SIGNIFICANT IMPACTS

Project impacts for the Reduced Specific Plan Scenario were determined based on a comparison between the future year and existing conditions. Per the City of San Diego's significance thresholds and the analysis methodology presented in this report, the following cumulative impacts were identified.

Intersections

Cumulative impacts were determined at the following study intersections:

- Mission Bay Drive at Garnet Avenue (Int 5) LOS E PM peak period
- Balboa Avenue at Morena Boulevard NB Ramps (Int 7) LOS F in the PM peak period
- Clairemont Drive at Balboa Avenue (Int 9) LOS E in the PM peak period
- Morena Boulevard at Jutland Drive (Int 22) LOS F in the PM peak period

Roadway Segments

Cumulative impacts were determined at the following study roadway segments:

- Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp LOS E
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps LOS F
- Balboa Avenue east of Clairemont Drive LOS F
- Mission Bay Drive between Bluffside Avenue and Damon Avenue LOS E
- Mission Bay Drive between Damon Avenue and Garnet Avenue LOS F
- Mission Bay Drive between Garnet Avenue and Magnolia Avenue LOS E
- Mission Bay Drive between Magnolia Avenue and Bunker Hill Street LOS E
- Mission Bay Drive between Bunker Hill Street and Grand Avenue LOS E
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS F
- Clairemont Drive between Denver Street and Morena Boulevard LOS F

Freeway Segments

Cumulative impacts were determined at the following study freeway segments:

- I-5 between SR-52 and Mission Bay Drive LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Mission Bay Drive and Garnet Avenue/Balboa Avenue LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Garnet Avenue/Balboa Avenue and Mission Bay Drive LOS E in NB during AM peak period and in SB during PM peak period
- I-5 between Mission Bay Drive and Clairemont Drive LOS E in SB during PM peak period

Freeway Ramp Meters

Cumulative impacts were determined at the following study freeway ramp meters:

- I-5 SB and Mission Bay Drive PM peak period (60 minute delay)
- I-5 NB and Mission Bay Drive AM peak period (16 minute delay)

MITIGATION MEASURES

The required mitigation measures for roadway and intersections that would be significantly impacted under the Reduced Specific Plan Future Scenario when compared to existing conditions are presented below.

Intersections

Mission Bay Drive & Garnet Avenue (Intersection 5): Expand Garnet Avenue between Soledad Mountain Road and Mission Bay Drive to include three eastbound through lanes with the outside eastbound through lane becoming a right-turn lane at the intersection with Mission Bay Drive and construct a second westbound left-turn lane. The required mitigation at this intersection is shown in **Figure 8-4**. The impact at this intersection associated with the Future Reduced Land Use scenario would be fully mitigated with the implementation of this measure. With this mitigation, the intersection would operate still operate at a LOS E in the PM peak period, however it would operate better than existing conditions. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue & Morena Boulevard NB Ramps (Intersection 7): Install a partial traffic signal at this intersection to control the eastbound and northbound approaches. The required mitigation at this intersection is shown in Figure 8-5. The significant traffic impact associated with the Future Reduced Land Use scenario to this intersection would be fully mitigated with the implementation of this measure. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue & Clairemont Drive (Intersection 9): Construct a southbound right-turn lane and a second southbound left-turn lane. Construct a westbound right-turn lane. The required mitigation at this intersection is shown in Appendix F. The impact at this intersection associated with the Future Reduced Land Use scenario would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition that would significantly impact one adjacent commercial property and would increase pedestrian crossing distances. Further, the Clairemont Community Plan Update is currently underway and may further consider the need for and feasibility of these improvements as part of their evaluation when looking at land use changes for the community as a whole. Due to the impact to adjacent properties and potential effect on pedestrian travel, this improvement is not recommended as part of the Reduced Specific Plan Future scenario.

Morena Boulevard & Jutland Drive (Intersection 22): Install a traffic signal or roundabout at this intersection. The required mitigation at this intersection is shown in **Appendix F.** The significant traffic impact associated with the Future Reduced Land Use scenario to this intersection would be fully mitigated with the implementation of this measure. This improvement is recommended as part of the Balboa Avenue Specific Plan.

Roadway Segments

Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp: Widen this segment of Garnet Avenue to a 6-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between I-5 Southbound On Ramp and I-5 Northbound Off Ramp: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this mitigation, the roadway segment will still operate at unacceptable conditions, but would operate better than existing conditions and would therefore not be considered a significant impact. This improvement would require reconstruction of the freeway undercrossing. It would also impact properties on either side of the freeway undercrossing to create transitions or widen the roadway on either side to match this width. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps: Widen this segment of Garnet Avenue to an 8-lane Major Arterial. With the implementation of this partial mitigation, the roadway segment will still operate at unacceptable conditions, therefore, the significant traffic associated with the Future Reduced Land Use scenario would remain significant. This improvement would require right-of-way acquisition and significantly impact the Balboa Avenue station on the south and the City's operations yard on the north side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Balboa Avenue east of Clairemont Drive: Widen this segment of Balboa Avenue to a 6-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significant cost to design for the steep slopes on either side of the roadway. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Bluffside Avenue and Damon Avenue: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require widening of the bridge over Rose Creek. Due to the environmental constraints and concerns with impacting Rose Creek, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Damon Avenue and Garnet Avenue: Widen this segment of Mission Bay Drive to a 6-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Garnet Avenue and Magnolia Avenue: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use

scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Magnolia Avenue and Bunker Hill Street: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Bunker Hill Street and Grand Avenue: Widen this segment of Mission Bay Drive to a 5-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Mission Bay Drive between Grand Avenue and I-5 Ramps: Widen this segment of Mission Bay Drive to an 8-lane Major Arterial. With the implementation of this mitigation, the roadway segment will still operate at unacceptable conditions, but would operate better than existing conditions and would therefore not be considered a significant impact; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment and potential wetland areas adjacent to the west side of the roadway. Due to the impact to adjacent properties, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Clairemont Drive between Denver Street and Morena Boulevard: Widen this segment of Clairemont Drive to a 6-lane Major Arterial. The significant traffic impact associated with the Future Reduced Land Use scenario to this roadway segment would be fully mitigated with the implementation of this measure; however, this would require right-of-way acquisition and significantly impact the properties on each side of this roadway segment. Further, the Clairemont Community Plan Update is currently underway and may further consider the need and feasibility of this mitigation as part of their evaluation when looking at land use changes for the community as a whole. Due to these factors, this improvement is not recommended as part of the Balboa Avenue Specific Plan.

Freeway Segments

No mitigation measures are identified for impacts to freeways because freeway improvements are not within the authority of the City. The improvements identified in SANDAG's RTP would improve operations along the freeway segments and ramps; however, to what extent is still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. The City will continue to coordinate with Caltrans and SANDAG on future improvements, as future project-level developments proceed, to develop potential "fair share" multi-modal mitigation strategies for freeway impacts, as appropriate. The following are the freeway mainline improvements identified in SANDAG's RTP:

I-5 between SR-52 and Clairemont Drive: SANDAG San Diego Forward 2050 Revenue Constrained Network includes operational improvements and construction of managed lanes along I-5 between SR-52 and Clairemont Drive. This project is expected to be constructed by the year 2050. There is some uncertainty related to the actual improvements and associated traffic impacts that will materialize over time. Future development projects' transportation studies would be able to more accurately identify individual project-level impacts and provide the mechanism to mitigate them through fair share contributions in addition to the funding identified in the Revenue Constrained Network.

Freeway Ramp Meters

The City of San Diego shall coordinate with Caltrans to address ramp capacity at impacted on-ramp locations. Improvements could include additional lanes, interchange reconfigurations, Transportation Demand Measures (TDM); however, specific capacity improvements are still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. Additionally, the Reduced Plan includes a variety of transit, pedestrian and bicycle facilities that may help to reduce single-occupancy vehicle (SOV) travel which can help improve ramp capacity.

POST-MITIGATION ANALYSIS

The following section will present the capacity and LOS analysis for the Reduced Community Plan Future Scenario with the implementation of the traffic mitigation measures described above.

Intersections

Table 8-23 displays the LOS analysis results for the study intersections after the implementation of the mitigation measures described above for the Future Reduced Land Use Scenario. As shown in the table, all intersections would operate at LOS D or better during both peak periods after the implementation of the traffic mitigation measures except for the intersection of Garnet Avenue at Mission Bay Drive (Int 5) which would operate at poor LOS (E or F) after implementation of the traffic mitigation measures but would not be considered to have a significant impact when compared to existing conditions.

Appendix K contains the peak intersection LOS calculation worksheets.

Roadway Segments

Table 8-24 displays the LOS analysis results for the study roadway segments after the implementation of the mitigation measures described above for the Future Reduced Land Use Scenario. As shown in the table, the roadway segment that would continue to operate at poor LOS (E or F) after implementation of the traffic mitigation measures are as follows:

- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS E
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp LOS F
- Mission Bay Drive between Grand Avenue and I-5 Ramps LOS E

Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps would be considered to continue to have a significant impact when compared to existing conditions. Based on the feasibility of the traffic mitigation measures, none of the roadway segment improvements are recommended as part of the Balboa Avenue Specific Plan.

Table 8-17 Future Reduced Specific Plan with Recommended Mitigation Intersection Analysis Summary

	Intersection	Peak	Future R	educed	After Mitig	ations	Recommended?	Description	
	intersection	Period	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Recommended:	Description	
	Mission Bay Dr at	AM	55.8	E	51.0	D		Expand Garnet Avenue to three EB through lanes with the outside lane becoming a right-turn lane at	
5	Garnet Ave	PM	64.0	E	55.9	E	YES	the intersection and construct a second WB left- turn lane.	
	Balboa Ave at	AM	14.7	В	4.6	Α		Install a partial traffic signal at this intersection	
7	Morena Blvd NB Ramps	PM	65.5	F	7.2	Α	YES	to control the EB and NB approaches.	
9	Clairemont Dr at	AM	40.3	D	33.3	С	NO	Add a SB right-turn lane and second SB left-	
9	Balboa Ave	PM	70.9	E	52.3	D	INO	turn lane. Add a WB right-turn lane.	
22	Morena Blvd at	AM	12.1	В	6.5 / 7.3	A/A	YES	Install a traffic signal or roundahout	
22	Jutland Dr	PM	81.3	F	10.4 / 13.8	B/B	163	Install a traffic signal or roundabout.	

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

Table 8-18 Future Reduced Specific Plan with Recommended Mitigation Roadway Segment Analysis Summary

	Future	Future Ro	educed		After Mitig	gations		
Roadway Segment	ADT (a)	Functional Classification	V/C Ratio (b)	LOS	Functional Classification	V/C Ratio (b)	LOS	Recommended?
Garnet Avenue								
Mission Bay Drive to I-5 SB On-Ramp	42,100	5 Lane Major Arterial	0.936	Е	6 Lane Major Arterial	0.842	D	NO
I-5 SB On-Ramp to I-5 NB Off-Ramp	59,200	5 Lane Major Arterial	1.316	F	8 Lane Major Arterial	0.987	E	NO
I-5 NB Off-Ramp to Morena Blvd SB Ramps	71,200	5 Lane Major Arterial	1.582	F	8 Lane Major Arterial	1.187	F	NO
Balboa Avenue								
East of Clairemont Drive	42,200	4 Lane Major Arterial	1.055	F	6 Lane Major Arterial	0.844	D	NO
Mission Bay Drive							•	
Bluffside Ave to Damon Ave	39,400	4 Lane Major Arterial	0.985	Е	5 Lane Major Arterial	0.876	D	NO
Damon Ave to Garnet Ave	41,600	4 Lane Major Arterial	1.04	F	6 Lane Major Arterial	0.832	D	NO
Garnet Ave to Magnolia Ave	37,200	4 Lane Major Arterial	0.93	E	5 Lane Major Arterial	0.827	D	NO
Magnolia Ave to Bunker Hill St	37,700	4 Lane Major Arterial	0.943	E	5 Lane Major Arterial	0.838	D	NO
Bunker Hill St to Grand Ave	35,300	4 Lane Major Arterial	0.883	E	5 Lane Major Arterial	0.784	D	NO
Grand Ave to I-5 Ramps	56,300	5 Lane Major Arterial	1.251	F	8 Lane Major Arterial	0.938	Е	NO
Clairemont Drive								
Denver St to Morena Blvd	40,500	4 Lane Major Arterial	1.013	F	6 Lane Major Arterial	0.810	D	NO

Notes: Bold values indicate roadway segments operating at LOS E or F. Bold and shaded values indicate an impact.

⁽a) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.(b) ADT volumes for the roadway segments were determined from SANDAG Modeling.

9 SUMMARY OF SCENARIOS

Table 9-1 displays the LOS analysis results for the study intersections for all future scenarios. **Table 9-2** displays the LOS analysis results for the volume-based roadway segments evaluation for all future scenarios. Intersections and roadway segments within the Specific Plan area were evaluated to determine cumulative impacts when compared against existing conditions. Impact criteria used in the evaluations are consistent with City of San Diego guidelines for determining significant impacts for a CEQA document.

INTERSECTIONS

As shown in Table 9-1, cumulative impacts were identified at the following study intersections under each of the Future Land Use Scenarios (Adopted, Preferred, and Reduced):

- Garnet Avenue at Mission Bay Drive (Int 5)
- Balboa Avenue at Morena Boulevard Northbound Ramps (Int 7)
- Clairemont Drive at Balboa Avenue (Int 9)
- Morena Boulevard at Jutland Drive (Int 22)

As shown in Table 9-1, additional cumulative impacts were identified at the following study intersection only under the Future Adopted and Future Preferred Land Use Scenario:

Olney Street at Garnet Avenue (Int 1)

Traffic mitigation measures were determined for each location that was found to have an impact to return operation to better than existing conditions. Mitigation measures are described in Chapter 8. The mitigations were either recommended or not recommended, depending on the associated physical impacts to adjacent land uses, active transportation facilities, natural features, and other engineering and environmental considerations. Recommended mitigation measures under the Future Adopted, Preferred, or Reduced Land Use Scenarios include:

- Garnet Avenue & Olney Street (Intersection 1): Remove parking and restripe to include a northbound left-turn lane. (Future Adopted and Future Preferred Land Use Scenarios)
- Mission Bay Drive & Garnet Avenue (Intersection 5): Expand Garnet Avenue between Soledad Mountain Road and Mission Bay Drive to include three eastbound through lanes with the outside eastbound through lane becoming a right-turn lane at the intersection with Mission Bay Drive and construct a second westbound left-turn lane. (Future Preferred and Reduced Land Use Scenarios)
- Balboa Avenue & Morena Boulevard NB Ramps (Intersection 7): Install a partial traffic signal at this intersection to control the eastbound and northbound approaches. (All Scenarios)
- Morena Boulevard & Jutland Drive (Intersection 22): Install a traffic signal or roundabout at this intersection. (All Scenarios)

Table 9-1 Future Intersection Analysis Summary

		-		Exis	ting	Fut	ture Adop	ted	Fut	ure Prefe	rred	Fut	ure Redu	ced
	Intersection	Traffic Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?	Delay (a)	LOS (b)	Impact?	Delay (a)	LOS (b)	Impact?
1	Garnet Ave at Olney	Signal	AM	15.4	В	36.3	D		36.2	D		24.8	С	
'	St	Signai	PM	12.1	В	56.4	Е	Yes	58.8	Е	Yes	22.2	С	
2	Garnet Ave at Balboa	Cianal	AM	11.1	В	13.0	В		10.9	В		11.2	В	
2	Ave	Signal	PM	15.0	В	26.0	С		14.7	В		14.5	В	
3	Garnet Ave at Soledad	Signal	AM	18.6	В	18.4	В		16.6	В		16.5	В	
3	Mountain Rd	Signal	PM	29.2	С	30.6	С		24.5	С		24.0	С	
4	Garnet Ave at Bond St	C: I	AM	0.5	Α	0.6	Α		0.4	Α		0.4	Α	
4	Garriet Ave at bond St	Signal	PM	0.6	Α	0.6	Α		0.4	Α		0.5	Α	
5	Garnet Ave at Mission	C: I	AM	55.7	E	61.5	Е	Yes	57.5	Е		55.8	Е	
5	Bay Dr	Signal	PM	58.0	Е	70.5	Е	Yes	66.3	Е	Yes	64.0	Е	Yes
6	Garnet Ave at Santa	One-Way	AM	16.8	С	12.4	В		5.5	Α		5.5	Α	
0	Fe St	Stop	PM	151.9	F	12.6	В		9.3	Α		9.3	Α	
7	Balboa Ave at Morena	Signal (c)	AM	27.0	D	75.2	F	Yes	14.7	В		14.7	В	
	Blvd NB Ramps	Signal (c)	PM	50.7	F	113.1	F	Yes	57.9	F	Yes	65.5	F	Yes
8	Balboa Ave at Moraga	0'	AM	16.2	В	17.0	В		14.6	В		14.5	В	
٥	Ave	Signal	PM	16.3	В	17.7	В		15.2	В		15.1	В	
9	Balboa Ave at	0'	AM	47.6	D	51.0	D		40.9	D		40.3	D	
9	Clairemont Dr	Signal	PM	59.2	Е	84.6	F	Yes	72.1	Е	Yes	70.9	Е	Yes
10	Balboa Ave at Olney	C: I	AM	12.4	В	14.9	В		15.3	В		15.3	В	
10	St	Signal	PM	12.9	В	19.2	В		20.4	С		20.5	С	
11	Crand Ava at Olney Ct	C: I	AM	32.9	С	41.6	D		47.8	D		49.4	D	
11	Grand Ave at Olney St	Signal	PM	27.2	С	35.5	D		37.9	D		40.6	D	

Notes: **Bold** values indicate intersections operations at LOS E or F.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection was analyzed as a one-way stop under Existing and Future Adopted Conditions.

⁽d) Intersection is assumed to be signalized in the Future Year scenarios based on planned development project in the area.

⁽e) Intersection was analyzed as a two-way stop under Existing Conditions.

f) Intersection was analyzed as a free movement under Existing and Future Adopted Conditions.

Table 9-1 Future Intersection Analysis Summary (Cont.)

		Tueffie		Exis	ting	Fut	ure Adop	ted	Fut	ure Prefei	red	Fut	ure Redu	ced
	Intersection	Traffic Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?	Delay (a)	LOS (b)	Impact?	Delay (a)	LOS (b)	Impact?
12	Grand Ave at Culver	Cianal	AM	10.2	В	10.4	В		10.7	В		10.7	В	
12	St	Signal	PM	5.8	Α	7.0	Α		7.1	А		8.2	Α	
12	Crand Ava at Las St		AM	9.5	Α	10.4	В		11.8	В		11.7	В	
13	Grand Ave at Lee St	Signal	PM	5.2	Α	5.6	Α		5.8	А		7.3	Α	
14	Grand Ave at Figueroa		AM	14.9	В	12.7	В		4.6	Α		4.2	Α	
14	Blvd	Signal	PM	3.0	Α	3.2	Α		13.8	В		13.1	В	
15	Grand Ave at Mission		AM	34.5	С	16.2	В		36.7	D		35.6	D	
15	Bay Dr	Signal	PM	32.3	С	36.5	D		39.8	D		37.9	D	
16	Mission Bay Dr at		AM	21.6	С	23.9	С		23.3	С		22.7	С	
10	Bluffside Ave	Signal	PM	20.4	С	26.7	С		32.8	С		30.6	С	
17	Mission Bay Dr at		AM	8.2	Α	8.0	Α		14.9	В		14.9	В	
17	Damon Ave	Signal	PM	14.3	В	22.8	С		20.7	С		20.5	С	
18	Mission Bay Dr at		AM	14.7	В	19.7	В		34.1	С		29.4	С	
10	Magnolia Ave	Signal	PM	16.1	В	19.9	В		36.9	D		31.5	С	
19	Mission Bay Dr at		AM	6.5	Α	7.1	Α		25.8	С		21.0	С	
19	Bunker Hill St	Signal	PM	8.2	Α	11.9	В		22.9	С		19.9	В	
20	Mission Bay Dr at	Signal (d)	AM	41.7	E	5.6	Α		4.3	Α		3.4	Α	
20	Rosewood St	Signal (u)	PM	176.0	F	6.7	Α		3.9	Α		3.3	Α	
21	Santa Fe St at Damon	All-Way	AM	7.8	Α	8.1	Α		8.7	Α		8.7	Α	
<u> </u>	Ave	Stop	PM	8.1	Α	8.3	Α		9.3	Α		9.3	Α	
22	Morena Blvd at	All-Way	AM	12.7	В	12.6	В		12.1	В		12.1	В	
	Jutland Dr	Stop	PM	55.2	F	92.7	F	Yes	81.5	F	Yes	81.3	F	Yes

Notes: **Bold** values indicate intersections operations at LOS E or F.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

⁽b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection was analyzed as a one-way stop under Existing and Future Adopted Conditions.

⁽d) Intersection is assumed to be signalized in the Future Year scenarios based on planned development project in the area.

⁽e) Intersection was analyzed as a two-way stop under Existing Conditions.

⁽f) Intersection was analyzed as a free movement under Existing and Future Adopted Conditions.

Table 9-1 Future Intersection Analysis Summary (Cont.)

		T(f): -		Existi	ng	Fut	ure Adopt	ed	Fut	ure Prefei	red	Fut	ure Redu	ced
	Intersection	Traffic Control	Peak	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Impact?	Delay (a)	LOS (b)	Impact?	Delay (a)	LOS (b)	Impact?
23	Morena Blvd at	Signal	AM	9.6	Α	9.4	Α		9.6	Α		9.6	Α	
23	Costco Dwy	Signai	PM	11.0	В	11.0	В		11.9	В		11.9	В	
24	Morena Blvd at Avati	Signal	AM	9.1	Α	9.7	Α		10.7	В		11.1	В	
24	Dr	Signai	PM	8.9	Α	9.0	Α		8.9	Α		9.0	Α	
25	Morena Blvd at WB		AM	3.3	Α	4.1	Α		7.1	Α		7.1	Α	
25	Balboa Ave Ramps	Signal	PM	4.7	Α	5.7	Α		7.7	Α		7.8	Α	
26	Morena Blvd at EB	Cianal (a)	AM	96.7	F	21.8	С		21.7	С		21.9	С	
20	Balboa Ave Ramps	Signal (e)	PM	50.2	F	26.3	С		13.2	В		13.4	В	
27	Morena Blvd at	One-Way	AM	35.1	Е	31.2	D		23.8	С		23.9	С	
21	Baker St	Stop	PM	17.6	С	18.2	С		15.5	С		15.5	С	
28	Morena Blvd at		AM	8.6	Α	8.7	Α		10.7	В		10.4	В	
20	Gesner St	Signal	PM	7.5	Α	7.5	Α		7.4	Α		7.5	Α	
	Balboa Ave at		AM	NA	NA	NA	NA		6.8	Α		6.7	Α	
29	Morena Blvd SB Ramps	Signal (f)	PM	NA	NA	NA	NA		12.0	В		12.3	В	

Notes: **Bold** values indicate intersections operations at LOS E or F.

⁽a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 9.0.

⁽c) Intersection was analyzed as a one-way stop under Existing and Future Adopted Conditions.

⁽d) Intersection is assumed to be signalized in the Future Year scenarios based on planned development project in the area.

Intersection was analyzed as a two-way stop under Existing Conditions.

Intersection was analyzed as a free movement under Existing and Future Adopted Conditions.

ROADWAY SEGMENTS

As shown in Table 9-2, cumulative impacts were identified at the following study roadway segments under each of the Future Land Use Scenarios (Adopted, Preferred, and Reduced):

- Garnet Avenue between Mission Bay Drive and I-5 SB On Ramp
- Garnet Avenue between I-5 SB On Ramp and I-5 NB Off Ramp
- Garnet Avenue between I-5 NB Off Ramp and Morena Boulevard SB Ramps
- Balboa Avenue east of Clairemont Drive
- Mission Bay Drive between Bluffside Avenue and Damon Avenue
- Mission Bay Drive between Damon Avenue and Garnet Avenue
- Clairemont Drive between Denver Street and Morena Boulevard

As shown in Table 9-2, additional cumulative impacts were identified at the following roadway segments only under the Future Preferred and Reduced Land Use Scenario:

- Mission Bay Drive between Garnet Avenue and Magnolia Avenue
- Mission Bay Drive between Magnolia Avenue and Bunker Hill Street
- Mission Bay Drive between Bunker Hill Street and Grand Avenue
- Mission Bay Drive between Grand Avenue and I-5 Ramps

As shown in Table 9-2, additional cumulative impacts were identified at the following roadway segments only under the Future Adopted Land Use Scenario:

- Garnet Avenue between Bond Street to Mission Bay Drive
- Balboa Avenue between Morena Boulevard NB Ramps and Moraga Avenue
- Balboa Avenue between Moraga Avenue and Clairemont Drive

Traffic mitigation measures were determined for each location that was found to have an impact to return operation to better than existing conditions. Mitigation measures are described in Chapter 8. The mitigations were either recommended or not recommended, depending on the associated physical impacts to adjacent land uses, active transportation facilities, natural features, and other engineering and environmental considerations. No improvements to roadway segments required to mitigate impacts were recommended in this study.

Table 9-2 Future Volume-Based Roadway Segment Analysis Summary

		Exist	ing				Futu	re Adopte	ed				Futu	re Preferre	ed				Futu	re Reduce	ed		
Roadway Segment	Functional Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	Los	Functional Classification (a)	LOS E Capacity	ADT (d)	V/C Ratio (c)	LOS	Impact ?	Functional Classification (a)	LOS E Capacity	ADT (d)	V/C Ratio (c)	LOS	Impact ?	Functional Classification (a)	LOS E Capacity	ADT (d)	V/C Ratio (c)	LOS	Impact
Balboa Ave																							
Garnet Ave to Grand Ave	4 Lane Major Arterial	40,000	14,263	0.357	Α	4 Lane Major Arterial	40,000	14,400	0.360	Α		4 Lane Major Arterial	40,000	13,200	0.330	Α		4 Lane Major Arterial	40,000	13,200	0.330	Α	
Garnet Ave																							
Bond St to Mission Bay Dr	4 Lane Major Arterial	40,000	58,694	1.467	F	4 Lane Major Arterial	40,000	63,200	1.580	F	Yes	4 Lane Major Arterial	40,000	52,200	1.305	F		4 Lane Major Arterial	40,000	52,900	1.323	F	
Mission Bay Dr to I-5 SB On- Ramp	5 Lane Major Arterial	45,000	37,406	0.831	D	5 Lane Major Arterial	45,000	48,100	1.069	F	Yes	5 Lane Major Arterial	45,000	43,000	0.956	E	Yes	5 Lane Major Arterial	45,000	42,100	0.936	E	Yes
I-5 SB On-Ramp to I-5 NB Off- Ramp	5 Lane Major Arterial	45,000	48,857	1.086	F	5 Lane Major Arterial	45,000	66,600	1.480	F	Yes	5 Lane Major Arterial	45,000	60,500	1.344	F	Yes	5 Lane Major Arterial	45,000	59,200	1.316	F	Yes
I-5 NB Off-Ramp to Morena Blvd SB Ramps	5 Lane Major Arterial	45,000	52,073	1.157	F	5 Lane Major Arterial	45,000	77,500	1.722	F	Yes	5 Lane Major Arterial	45,000	71,500	1.589	F	Yes	5 Lane Major Arterial	45,000	71,200	1.582	F	Yes
Balboa Ave (CA-274)																							
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	4 Lane Major Arterial	40,000	49,079	1.227	F	5 Lane Major Arterial	45,000	49,400	1.098	F		5 Lane Major Arterial	45,000	45,700	1.016	F		5 Lane Major Arterial	45,000	45,300	1.007	F	
Morena Blvd NB Ramps to Moraga Ave	4 Lane Major Arterial	40,000	43,115	1.078	F	4 Lane Major Arterial	40,000	45,500	1.138	F	Yes	5 Lane Major Arterial	45,000	39,800	0.884	D		5 Lane Major Arterial	45,000	39,400	0.876	D	
Moraga Ave to Clairemont Dr	4 Lane Major Arterial	40,000	34,903	0.873	D	4 Lane Major Arterial	40,000	38,200	0.955	E	Yes	4 Lane Major Arterial	40,000	32,600	0.815	D		4 Lane Major Arterial	40,000	32,400	0.810	D	
East of Clairemont Dr	4 Lane Major Arterial	40,000	37,383	0.935	E	4 Lane Major Arterial	40,000	43,000	1.075	F	Yes	4 Lane Major Arterial	40,000	42,500	1.063	F	Yes	4 Lane Major Arterial	40,000	42,200	1.055	F	Yes
Grand Ave																							
Kendall St to Lamont St	4 Lane Major Arterial	40,000	51,778	1.294	F	4 Lane Major Arterial	40,000	24,500	0.613	С		4 Lane Major Arterial	40,000	24,000	0.600	С		4 Lane Major Arterial	40,000	23,600	0.590	С	
Lee St to Bond St (On Rose Creek Bridge)	4 Lane Major Arterial	40,000	37,915	0.948	E	4 Lane Major Arterial	40,000	35,700	0.893	E		4 Lane Major Arterial	40,000	37,200	0.930	E		4 Lane Major Arterial	40,000	37,600	0.940	E	
Figueroa Blvd to Mission Bay Dr	4 Lane Major Arterial	40,000	38,202	0.955	E	4 Lane Major Arterial	40,000	36,500	0.913	E		4 Lane Major Arterial	40,000	37,900	0.948	E		4 Lane Major Arterial	40,000	38,200	0.955	Е	
Mission Bay Dr									,														
Bluffside Ave to Damon Ave	4 Lane Major Arterial	40,000	35,580	0.890	E	4 Lane Major Arterial	40,000	39,600	0.990	E	Yes	4 Lane Major Arterial	40,000	39,000	0.975	E	Yes	4 Lane Major Arterial	40,000	39,400	0.985	E	Yes
Damon Ave to Garnet Ave	4 Lane Major Arterial	40,000	40,680	1.017	F	4 Lane Major Arterial	40,000	42,400	1.060	F	Yes	4 Lane Major Arterial	40,000	41,300	1.033	F	Yes	4 Lane Major Arterial	40,000	41,600	1.040	F	Yes
Garnet Ave to Magnolia Ave	4 Lane Major Arterial	40,000	29,702	0.743	С	4 Lane Major Arterial	40,000	33,800	0.845	D		4 Lane Major Arterial	40,000	38,300	0.958	E	Yes	4 Lane Major Arterial	40,000	37,200	0.930	Е	Yes
Magnolia Ave to Bunker Hill St	4 Lane Major Arterial	40,000	29,821	0.746	С	4 Lane Major Arterial	40,000	34,800	0.870	D		4 Lane Major Arterial	40,000	38,700	0.968	E	Yes	4 Lane Major Arterial	40,000	37,700	0.943	E	Yes
Bunker Hill St to Grand Ave	4 Lane Major Arterial	40,000	29,002	0.725	С	4 Lane Major Arterial	40,000	34,100	0.853	D		4 Lane Major Arterial	40,000	35,900	0.898	E	Yes	4 Lane Major Arterial	40,000	35,300	0.883	E	Yes
Grand Avenue to I-5 Ramps	5 Lane Major Arterial	45,000	55,051	1.223	F	5 Lane Major Arterial	45,000	52,400	1.164	F		5 Lane Major Arterial	45,000	56,600	1.258	F	Yes	5 Lane Major Arterial	45,000	56,300	1.251	F	Yes
Notes: Bold values indicate road (a) Existing road classifications (b) Average Daily Traffic (ADT) (c) The v/c Ratio is calculated to (d) ADT volumes for the roadw (e) Damon Avenue is classified	are based on field volumes for the ro by dividing the AD ay segments were	d work conduction work conduct	ted in May nents were each resp from SANI	e provided ectie road DAG Mod	wáy seç eling.	gment's capacity.	veying Serv	ices (NDS) and mea	asured i	n May and	June of 2016.											

Table 9-2 Future Volume-Based Roadway Segment Analysis Summary (Cont.)

Morena Boulevard Jutland Dr to Avati Dr Avati Dr to Balboa Ave Ramps Balboa Ave Ramps to Ticonderoga St Gesner St to Clairemont Dr Clairemont Drive Chippewa Court to Balboa Avenue Class Class Class Class Au A A A A A A A A A A A A	Lane Major Arterial Lane Major Arterial Lane Major	40,000 40,000	ADT (b)	V/C Ratio (c)	LOS	Functional Classification (a)	LOS E Capacity	ADT (d)	V/C Ratio (c)	LOS	Impact	Functional Classification	LOSE	ADT	V/C Ratio	LO S	Impact	Functional Classification	LOSE	ADT	V/C Ratio	Los	Impact
Jutland Dr to Avati Dr Avati Dr to Balboa Ave Ramps Balboa Ave Ramps to Ticonderoga St Gesner St to Clairemont Dr Clairemont Drive Chippewa Court to Balboa Avenue 4 Lat All All All All All All All All All Al	Arterial Lane Major Arterial Lane Major		11,554			•			(C)		•	(a)	Capacity	(d)	(c)	S	?	(a)	Capacity	(d)	(c)	LUS	?
Avanti Dr to Avanti Dr Avanti Dr to Balboa Ave Ramps Balboa Ave Ramps to Ticonderoga St Gesner St to Clairemont Dr Clairemont Drive Chippewa Court to Balboa Avenue Auanti Dr to Avanti Dr A Lai Acceptate Auanti Dr A Lai Acceptate A	Arterial Lane Major Arterial Lane Major		11,554																				
Balboa Ave Ramps to Ticonderoga St Gesner St to Clairemont Dr Clairemont Drive Chippewa Court to Balboa Ave Ramps 4 La Avenue 4 La Avenue	Arterial Lane Major	40.000		0.289	Α	4 Lane Major Arterial	40,000	17,200	0.430	В		4 Lane Major Arterial	40,000	17,200	0.430	В		4 Lane Major Arterial	40,000	17,200	0.430	В	
Ticonderoga St Gesner St to Clairemont Dr 4 Lar Al Clairemont Drive Chippewa Court to Balboa Avenue A		70,000	20,136	0.503	В	4 Lane Major Arterial	40,000	22,100	0.553	С		4 Lane Major Arterial	40,000	21,800	0.545	С		4 Lane Major Arterial	40,000	21,900	0.548	С	
Clairemont Drive Chippewa Court to Balboa Avenue A	Arterial	30,000	15,823	0.527	С	4 Lane Major Arterial	40,000	16,900	0.423	В		3 Lane Collector (w/ two-way left- turn lane)	22,500	13,900	0.618	С		3 Lane Collector (w/ two-way left- turn lane)	22,500	13,900	0.618	С	
Chippewa Court to Balboa 4 La Avenue A	Lane Major Arterial	40,000	15,584	0.390	В	4 Lane Major Arterial	40,000	16,400	0.41	В		3 Lane Collector (w/ two-way left- turn lane)	22,500	14,600	0.649	С		3 Lane Collector (w/ two-way left- turn lane)	22,500	14,600	0.649	С	
Avenue		<u> </u>						•			,							,		•			
	Lane Major Arterial	40,000	21,259	0.531	С	4 Lane Major Arterial	40,000	25,800	0.645	С		4 Lane Major Arterial	40,000	25,300	0.633	С		4 Lane Major Arterial	40,000	25,200	0.630	С	
	Lane Major Arterial	40,000	19,325	0.483	В	4 Lane Major Arterial	40,000	26,700	0.668	С		4 Lane Major Arterial	40,000	22,900	0.573	С		4 Lane Major Arterial	40,000	22,700	0.568	С	
	Lane Major Arterial	40,000	31,162	0.779	D	4 Lane Major Arterial	40,000	39,200	0.980	E	Yes	4 Lane Major Arterial	40,000	41,200	1.030	F	Yes	4 Lane Major Arterial	40,000	40,500	1.013	F	Yes
Damon Ave (e)																							
Mission Bay Drive to Santa Fe Colle Street two-	2 Lane ollector (w/o vo-way left- turn lane)	8,000	4,415	0.552	С	2 Lane Collector (w/o two-way left- turn lane)	8,000	4,400	0.550	С		2 Lane Collector (w/o two-way left-turn lane)	8,000	5,900	0.738	D		2 Lane Collector (w/o two-way left- turn lane)	8,000	5,900	0.738	D	
Santa Fe St																							
Damon Avenue to Balboa Colle Avenue two-	2 Lane ollector (w/o vo-way left- turn lane)	8,000	2,431	0.304	Α	2 Lane Collector (w/o two-way left- turn lane)	8,000	4,900	0.613	С		2 Lane Collector (w/o two-way left-turn lane)	8,000	5,600	0.700	D		2 Lane Collector (w/o two-way left- turn lane)	8,000	5,600	0.700	D	
Soledad Mountain Rd																							
	Lane Major Arterial	40,000	27,235	0.681	С	4 Lane Major Arterial	40,000	28,700	0.718	С		4 Lane Major Arterial	40,000	27,900	0.698	С		4 Lane Major Arterial	40,000	26,800	0.670	С	
N Mission Bay Dr																							
De Anza Road to Mission Bay Colle two-turi	2 Lane	8,000				2 Lane Collector (w/o						2 Lane Collector (w/o two-way						2 Lane Collector (w/o		2,800	0.350	В	

Notes: **Bold** values indicate roadway segments operating at LOS E or F.

(a) Existing road classifications are based on field work conduted in May 2016.

(b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by National Data and Surveying Services (NDS) and measured in May and June of 2016.

(c) The v/c Ratio is calculated by dividing the ADT volume by each respectie roadway segment's capacity.

(d) ADT volumes for the roadway segments were determined from SANDAG Modeling.

(e) Damon Avenue is classified as a local street but functions as a collector with in the community.

FREEWAY SEGMENTS

As shown in **Table 9-3**, cumulative impacts were identified along freeway segments under each of the Future Land Use Scenarios (Adopted, Preferred, and Reduced). All freeway segments operate at LOS E in the northbound direction during the AM peak period except I-5 from Mission Bay Drive to Clairemont Drive; and all freeway segments operate at LOS E in the southbound direction during the PM peak period.

No mitigation measures are identified for impacts to freeways because freeway improvements are not within the authority of the City. SANDAG San Diego Forward 2050 Revenue Constrained Network includes operational improvements and construction of managed lanes along I-5 between SR-52 and Clairemont Drive. This project is expected to be constructed by the year 2050. The improvements identified in SANDAG's RTP would improve operations along the freeway segments and ramps; however, to what extent is still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. The City will continue to coordinate with Caltrans and SANDAG on future improvements, as future project-level developments proceed, to develop potential "fair share" multi-modal mitigation strategies for freeway impacts, as appropriate.

FREEWAY RAMP METERS

As shown in **Table 9-4**, a cumulative impact was identified at the following study freeway ramp under each of the Future Land Use Scenarios (Adopted, Preferred, and Reduced):

• I-5 SB and Mission Bay Drive - PM peak period

As shown in **Table 9-4**, an additional cumulative impact was identified at the following freeway ramp only under the Future Preferred and Reduced Land Use Scenarios:

I-5 NB and Mission Bay Drive – AM peak period

The City of San Diego shall coordinate with Caltrans to address ramp capacity at impacted on-ramp locations. Improvements could include additional lanes, interchange reconfigurations, Transportation Demand Measures (TDM); however, specific capacity improvements are still undetermined, as these are future improvements that must be defined more over time. Furthermore, implementation of freeway improvements in a timely manner is beyond the full control of the City since Caltrans has approval authority over freeway improvements. Additionally, the Preferred and Reduced Plans include a variety of transit, pedestrian and bicycle facilities that may help to reduce single-occupancy vehicle (SOV) travel which can help improve ramp capacity.

Table 9-3 Future Freeway Segment Analysis Summary

					Existing (Conditions			Ado	pted				Future F	Preferred				Future F	Reduced		
	Freeway Segment	Dir	Number of Lanes		(mph) (a)	LOS	6 (b)	Speed (mph) (a)	LOS	6 (b)	Impact?	Speed (mph) (a)	LOS	6 (b)	Impact?	Speed (mph) (a)	LOS	6 (b)	Impact?
			Lanes	AM	PM	AM	PM	АМ	PM	АМ	РМ		АМ	PM	АМ	PM		АМ	PM	АМ	PM	
	SR-52 to Mission Bay	NB	5	61.1	68.0	D	С	56.6	68.0	E	С	YES	55.3	68.0	E	С	YES	55.6	68.0	E	С	YES
	Dr	SB	5	68.0	62.4	С	D	68.0	58.3	С	E	YES	68.0	57.1	С	E	YES	68.0	57.4	С	E	YES
	Mission Bay Dr to	NB	4	64.3	68.0	D	С	57.5	68.0	E	С	YES	56.8	68.0	E	С	YES	56.9	68.0	E	С	YES
ىت	Garnet Ave/ Balboa Ave	SB	4	68.0	65.2	С	D	68.0	59.1	С	E	YES	68.0	58.4	С	E	YES	68.0	58.6	С	E	YES
-	Garnet Ave/ Balboa	NB	4	66.5	68.0	D	С	59.8	64.2	Е	D	YES	59.9	64.3	E	D	YES	60.1	64.4	E	D	YES
	Ave to Mission Bay Dr	SB	4	68.0	65.0	С	D	67.7	56.5	С	E	YES	67.7	56.7	С	E	YES	67.8	56.9	С	E	YES
	Mission Bay Dr to	NB	5	66.4	68.0	D	С	62.7	66.1	D	D	NO	62.3	65.9	D	D	NO	62.5	66.0	D	D	NO
	Clairemont Dr	SB	5	68.0	64.8	С	D	68.0	60.1	С	E	YES	68.0	59.6	С	E	YES	68.0	59.9	С	E	YES

Notes: Bold values indicate intersections operations at LOS E or F. Bold and shaded values indicate an impact.

Table 9-4 Future Freeway Ramp Meter Analysis Summary

					Exis	ting Conditi	ons	Fı	uture Adopt	ed		Fut	ture Preferr	ed		Fu	ture Reduc	ed	
On Ramp	Peak Hour		umber Lanes	Meter Rate (veh/hr) (a)	Excess Demand	Delay (min)	Queue (ft) (b)	Excess Demand	Delay (min)	Queue (ft) (b)	Impact?	Excess Demand	Delay (min)	Queue (ft) (b)	Impact?	Excess Demand	Delay (min)	Queue (ft) (b)	Impact?
		GP	HOV		(veh/hr)	(11111)	(11) (15)	(veh/hr)	(11111)	(11) (15)		(veh/hr)	(11111)	(11) (15)		(veh/hr)	(11111)	(11) (15)	
LESP & Mission Poy Drive	AM	2	1	n/a															
I-5 SB & Mission Bay Drive	PM	_	'	475	419	53	10,475	428	54	10,700	YES	476	60	11,900	YES	475	60	11,875	YES
I-5 SB & Westbound Balboa	AM	2	0	n/a															
Ave	PM	_	0	542	0	0	0	0	0	0	NO	0	0	0	NO	0	0	0	NO
LEND 9 Mississ Dev Drive	AM			811	99	7	2,475	176	13	4,400	NO	230	17	5,750	YES	217	16	5,425	YES
I-5 NB & Mission Bay Drive	PM	2	0	n/a															

Notes: Bold values indicate intersections operations at LOS E or F. **Bold and shaded** values indicate an impact.

⁽a) The speed was calculated from a base free-flow speed (BFFS) of 75.4 mph (per equation 11-1 in the 2010 HCM) using Exhibit 11-3 in the 2010 HCM.

(b) The LOS for the respective freeway segments were based on the methodologies contained in Chapter 11 of the 2010 Highway Capacity Manual.

⁽a) Meter Rate is the peak hour capacity expected to be processed through the ramp meter. Values were obtained from Caltrans. Most Conservative rate (Rate 15) was used. (b) Assumes an average vehicle length of 25 feet.

APPENDIX A

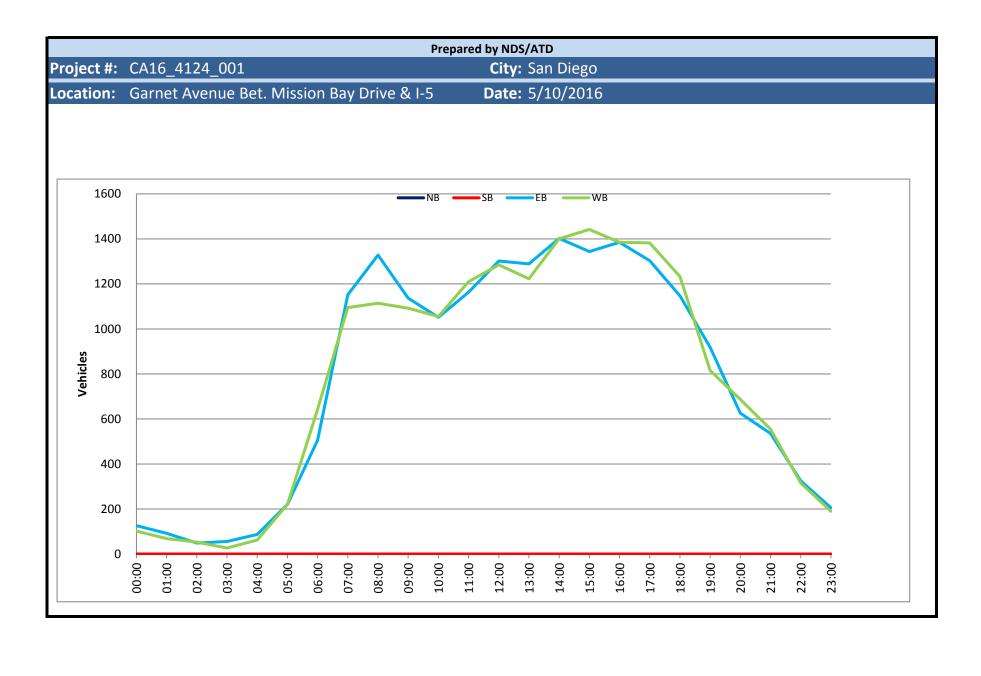
TRAFFIC COUNT AND FREEWAY DATA

VOLUME

Garnet Avenue Bet. Mission Bay Drive & I-5 SB On-Ramp

Day: Tuesday **Date:** 5/10/2016

	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		18,751	18,655						37,	,406
AM Period	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		36		39		75		12:00			292		306		598	
00:15 00:30		30 34		30 21		60 55		12:15 12:30			325 343		323 343		648 686	
00:45		26	126	12	102	38	228	12:45			342	1302	313	1285	655	2587
01:00		25		20		45		13:00			323		340		663	
01:15 01:30		18 28		21 12		39 40		13:15 13:30			333 312		304 280		637 592	
01:45		21	92	16	69	37	161	13:45			321	1289	299	1223	620	2512
02:00		12		13		25		14:00			313		285	_	598	
02:15		5		11		16		14:15			389		361		750	
02:30 02:45		14 18	49	12 17	53	26 35	102	14:30 14:45			342 358	1402	386 369	1401	728 727	2803
03:00		17	13	6	33	23	102	15:00			324	1102	366	1101	690	2003
03:15		9		8		17		15:15			317		350		667	
03:30 03:45		14 16	56	4 9	27	18 25	83	15:30 15:45			334 369	1344	355 371	1442	689 740	2786
04:00		16	30	14	21	30	65	16:00			334	1344	352	1442	686	2780
04:15		24		14		38		16:15			355		371		726	
04:30		22		12		34		16:30			356		326		682	
04:45 05:00		25 30	87	22 27	62	47 57	149	16:45 17:00			340 343	1385	336 343	1385	676 686	2770
05:15		42		47		89		17:00 17:15			348		362		710	
05:30		65		57		122		17:30			342		341		683	
05:45		84	221	90	221	174	442	17:45			270	1303	336	1382	606	2685
06:00 06:15		90 108		74 143		164 251		18:00 18:15			316 300		360 307		676 607	
06:30		134		202		336		18:30			285		262		547	
06:45		173	505	223	642	396	1147	18:45			246	1147	304	1233	550	2380
07:00		191		252		443		19:00			247		219		466	
07:15 07:30		297 331		291 282		588 613		19:15 19:30			255 232		184 222		439 454	
07:45		333	1152	270	1095	603	2247	19:45			184	918	190	815	374	1733
08:00		331		308		639		20:00			177		192		369	
08:15		338		277		615		20:15			152		171		323	
08:30 08:45		326 333	1328	261 268	1114	587 601	2442	20:30 20:45			167 130	626	184 140	687	351 270	1313
09:00		293	1320	294	111.	587	2112	21:00			152	020	169	007	321	1313
09:15		276		269		545		21:15			148		161		309	
09:30 09:45		264 304	1137	252	1092	516	2229	21:30			118	F26	129 96	555	247	1091
10:00		264	1137	277 252	1092	581 516	2229	21:45 22:00			118 99	536	83	555	214 182	1091
10:15		243		274		517		22:15			84		97		181	
10:30		272		259		531		22:30			60		70		130	
10:45 11:00		273 277	1052	270 274	1055	543 551	2107	22:45 23:00			82 67	325	65 57	315	147 124	640
11:15		279		297		576		23:15			54		53		107	
11:30		302		307		609		23:30			48		41		89	
11:45		305	1163	332	1210	637	2373	23:45			37	206	39	190	76	396
TOTALS			6968		6742		13710	TOTALS				11783		11913		23696
SPLIT %			50.8%		49.2%		36.7%	SPLIT %				49.7%		50.3%		63.3%
	DAILY TOTALS			NB		SB		ЕВ	WB						To	otal
	DAILY TOTALS			0		0		18,751	18,655						37,	,406
AM Peak Hour			07:30		11:45		11:45	PM Peak Hour				15:45		14:15		14:15
AM Pk Volume			1333		1304		2569	PM Pk Volume				1414		1482		2895
Pk Hr Factor			0.986		0.950		0.936	Pk Hr Factor				0.958		0.960		0.965
7 - 9 Volume			2480		2209		4689	4 - 6 Volume				2688		2767		5455
7 - 9 Peak Hour 7 - 9 Pk Volume			07:30 1333		07:15 1151			4 - 6 Peak Hour 4 - 6 Pk Volume				16:15 1394		16:00 1385		16:00 2770
Pk Hr Factor			0.986		0.934		0.966	Pk Hr Factor				0.979		0.933		0.954

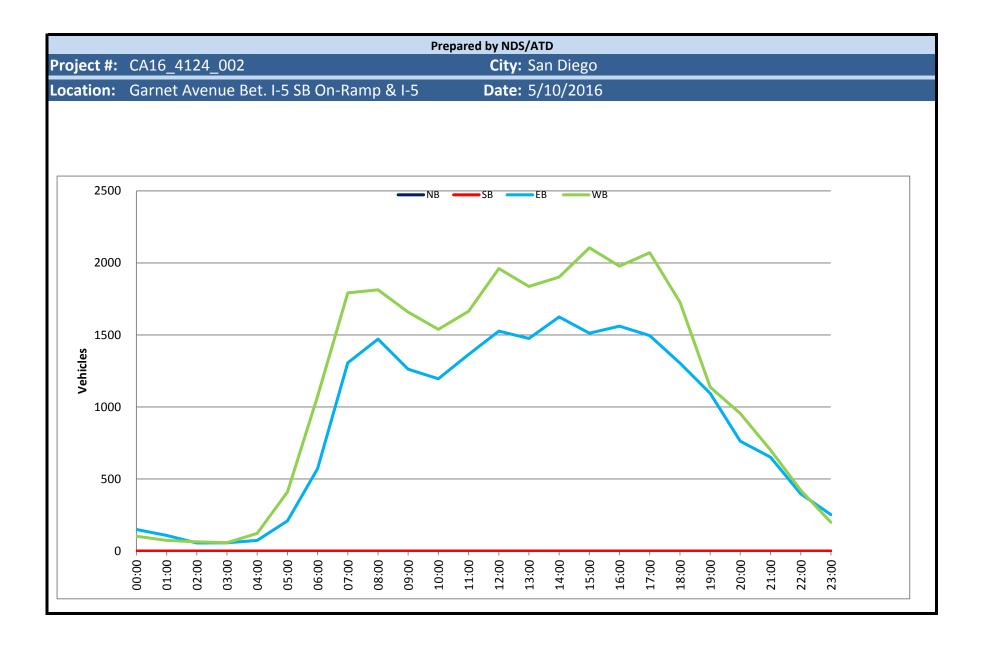


VOLUME

Garnet Avenue Bet. I-5 SB On-Ramp & I-5 NB Off-Ramp

Day: Tuesday **Date:** 5/10/2016

	DAILY T	OTALS			NB		SB		EB	WB						To	otal
	DAILI	OTALS			0		0		21,485	27,372						48,	,857
AM Period	NB	SB	EB		WB			TAL	PM Period	NB	SB	EB		WB			TAL
00:00 00:15			43 41		33 29		76 70		12:00 12:15			353 388		469 502		822 890	
00:30			38		21		59		12:30			390		512		902	
00:45			28	150	20	103	48	253	12:45			396	1527	478	1961	874	3488
01:00			29		15		44		13:00			390		497		887	
01:15 01:30			21 33		22 19		43 52		13:15 13:30			383 355		462 438		845 793	
01:45			25	108	18	74	43	182	13:45			348	1476	439	1836	787	3312
02:00			13		25		38		14:00			368		440		808	
02:15 02:30			5 16		10 15		15 31		14:15 14:30			442 406		482 513		924 919	
02:45			22	56	14	64	36	120	14:45			400	1625	467	1902	876	3527
03:00			18		5		23		15:00			355		558		913	
03:15			12		15		27		15:15			367		533		900	
03:30 03:45			12 15	57	20 18	58	32 33	115	15:30 15:45			375 415	1512	528 486	2105	903 901	3617
04:00			12	37	17	36	29	113	16:00			382	1312	519	2103	901	3017
04:15			19		27		46		16:15			398		487		885	
04:30			22		34		56		16:30			402		494		896	
04:45 05:00			21 25	74	45 61	123	66 86	197	16:45 17:00			379 382	1561	478 590	1978	857 972	3539
05:00 05:15			25 46		91		137		17:00 17:15			382 393		590 492		885	
05:30			57		110		167		17:30			403		480		883	
05:45			81	209	149	411	230	620	17:45			317	1495	509	2071	826	3566
06:00			98 121		152		250		18:00			355		451		806	
06:15 06:30			121 149		228 343		349 492		18:15 18:30			337 338		422 418		759 756	
06:45			203	571	351	1074	554	1645	18:45			274	1304	437	1728	711	3032
07:00			210		377		587		19:00			306		339		645	
07:15			328		453		781		19:15			298		259		557	
07:30 07:45			376 393	1307	485 477	1792	861 870	3099	19:30 19:45			273 218	1095	293 247	1138	566 465	2233
08:00			366	1307	511	1732	877	3033	20:00			218	1033	275	1130	493	2233
08:15			382		470		852		20:15			188		225		413	
08:30			359	1 1 7 1	436	1012	795	2204	20:30			197	762	241	٥٦٦	438	1710
08:45 09:00			364 307	1471	396 471	1813	760 778	3284	20:45 21:00			160 194	763	214 208	955	374 402	1718
09:15			307		372		679		21:15			171		197		368	
09:30			293		406		699		21:30			144		164		308	
09:45			355	1262	410	1659	765	2921	21:45			143	652	133	702	276	1354
10:00 10:15			299 278		367 401		666 679		22:00 22:15			117 103		114 133		231 236	
10:30			306		366		672		22:30			77		91		168	
10:45			313	1196	405	1539	718	2735	22:45			100	397	84	422	184	819
11:00			340		413		753 706		23:00			81 66		68 10		149	
11:15 11:30			320 359		386 394		706 753		23:15 23:30			66 59		19 62		85 121	
11:45			345	1364	471	1664	816	3028	23:45			47	253	51	200	98	453
TOTALS				7825		10374		18199	TOTALS				13660		16998		30658
SPLIT %				43.0%		57.0%		37.2%	SPLIT %				44.6%		55.4%		62.8%
	DAILY T	OTALS			NB		SB		ЕВ	WB						To	otal
	DAILTI	OTALS			0		0		21,485	27,372						48,	,857
AM Peak Hour				07:30		11:45		07:30	PM Peak Hour				14:00		15:00		14:15
AM Pk Volume				1517		1954		3460	PM Pk Volume				1625		2105		3632
Pk Hr Factor		0		0.965		0.954		0.986	Pk Hr Factor	0			0.919		0.943		0.983
7 - 9 Volume 7 - 9 Peak Hour				2778 07:30		3605 07:30		6383 07:30	4 - 6 Volume 4 - 6 Peak Hour				3056 16:00		4049 17:00		7105 16:15
7 - 9 Peak Hour 7 - 9 Pk Volume				1517		1943			4 - 6 Pk Volume				1561		2071		3610
Pk Hr Factor	0.000	0.000		0.965		0.951		0.986	Pk Hr Factor	0.000	0.000)	0.971		0.878		0.928



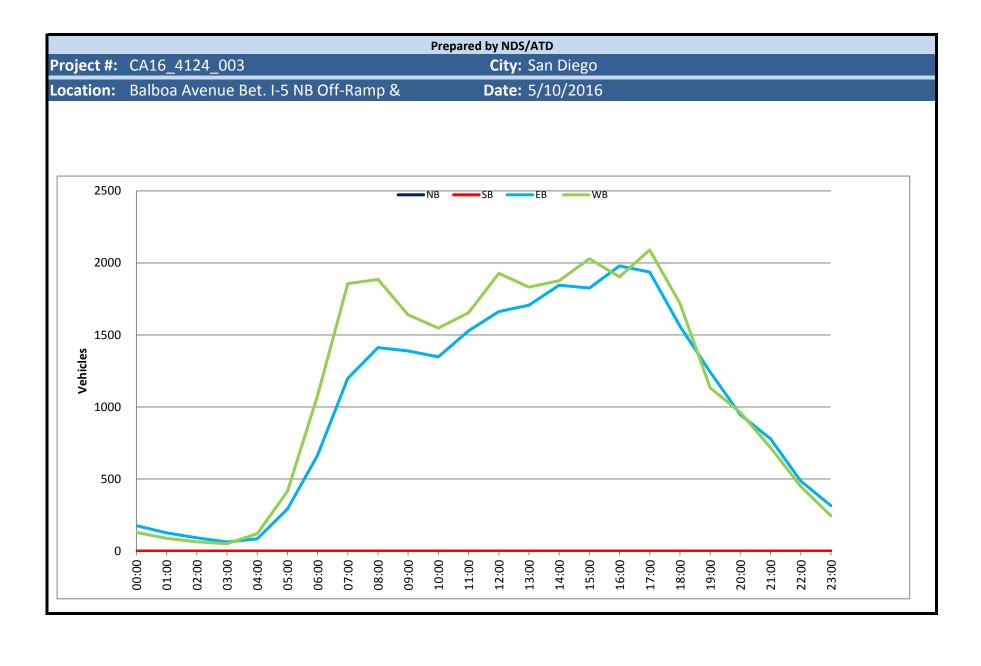
VOLUME

Balboa Avenue Bet. I-5 NB Off-Ramp & Morena Blvd SB On-Ramp

 Day: Tuesday
 City: San Diego

 Date: 5/10/2016
 Project #: CA16_4124_003

	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		24,660	27,413						52,	,073
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		54		53		107		12:00			401		468		869	
00:15		48		33		81	'	12:15			420		466		886	
00:30		41		25		66		12:30			411		511		922	
00:45		33	176	18	129	51	305	12:45			430	1662	482	1927	912	3589
01:00		33		23		56		13:00			447		480		927	
01:15		28		28		56		13:15			430		474		904	
01:30		34	126	21	00	55	24.4	13:30			417	4707	425	4022	842	2520
01:45 02:00		31 23	126	16 16	88	47 39	214	13:45 14:00			413 426	1707	453 430	1832	866 856	3539
02:00		29		11		40		14:00 14:15			503		487		990	
02:30		20		15		35		14:30			460		510		970	
02:45		20	92	22	64	42	156	14:45			456	1845	450	1877	906	3722
03:00		16		7		23		15:00			442		544		986	0.1
03:15		15		12		27		15:15			448		513		961	
03:30		12		13		25		15:30			447		498		945	
03:45		20	63	19	51	39	114	15:45			488	1825	474	2029	962	3854
04:00		15		14		29		16:00			482		498		980	
04:15		18		27		45		16:15			518		469		987	
04:30		22	05	33	424	55	200	16:30			491	4070	475	4000	966	2002
04:45		30	85	47	121	77	206	16:45			488	1979	461	1903	949	3882
05:00 05:15		44 48		63 95		107 143		17:00 17:15			498 503		596 471		1094 974	
05:30		4 8		108		183		17:30			513		487		1000	
05:45		125	292	149	415	274	707	17:45			422	1936	536	2090	958	4026
06:00		116		168	113	284	707	18:00			405	1330	458	2030	863	1020
06:15		165		225		390		18:15			411		406		817	
06:30		168		336		504		18:30			395		412		807	
06:45		216	665	350	1079	566	1744	18:45			350	1561	443	1719	793	3280
07:00		228		376		604		19:00			338		329		667	
07:15		297		469		766		19:15			345		259		604	
07:30		329	4400	518	4056	847	2055	19:30			300	4040	294	4400	594	2275
07:45		345	1199	493	1856	838	3055	19:45 20:00			259	1242	251	1133	510	2375
08:00 08:15		343 339		537 487		880 826		20:00			283223		280 226		563 449	
08:30		354		463		817		20:30			229		242		471	
08:45		376	1412	398	1885	774	3297	20:45			212	947	214	962	426	1909
09:00		332		470		802	0_01	21:00			207	<u> </u>	206		413	
09:15		335		367		702		21:15			206		199		405	
09:30		330		410		740		21:30			181		174		355	
09:45		392	1389	393	1640	785	3029	21:45			185	779	139	718	324	1497
10:00		353		379		732		22:00			146		120		266	
10:15		305		394		699		22:15			127		136		263	
10:30		343	1240	369	4540	712	2006	22:30			96	406	108	4.40	204	024
10:45		347	1348	406 206	1548	753 764	2896	22:45 23:00			117 93	486	84 74	448	201	934
11:00 11:15		368 331		396 386		764		23:00 23:15			93 84		74 70		167 154	
11:15		421		401		822		23:30			68		70 54		122	
11:45		409	1529	471	1654	880	3183	23:45			70	315	47	245	117	560
TOTALS		100	8376	.,_	10530	000	18906	TOTALS				16284	.,	16883		33167
SPLIT %			44.3%		55.7%		36.3%					49.1%		50.9%		63.7%
JI LII /0			7 71 .J/0		JJ.170		30.370	JI LI1 /0				73.170		30.370		JJ.7 /0
	DAILY TOTALS			NB		SB		EB	WB							otal
				0		0		24,660	27,413						52 ,	,073
AM Peak Hour			11:30		07:30		11:45	PM Peak Hour				16:45		17:00		17:00
AM Pk Volume			1651		2035		3557	PM Pk Volume				2002		2090		4026
Pk Hr Factor			0.980		0.947		0.964	Pk Hr Factor				0.976		0.877		0.920
7 - 9 Volume	0 0		2611		3741		6352	4 - 6 Volume	0	0		3915		3993		7908
7 - 9 Peak Hour			08:00		07:30		07:30	4 - 6 Peak Hour				16:45		17:00		17:00
7 - 9 Pk Volume			1412		2035		3391	4 - 6 Pk Volume				2002		2090		4026
Pk Hr Factor	0.000 0.000		0.939		0.947		0.963	Pk Hr Factor	0.000	0.000		0.976		0.877		0.920
								<u> </u>								



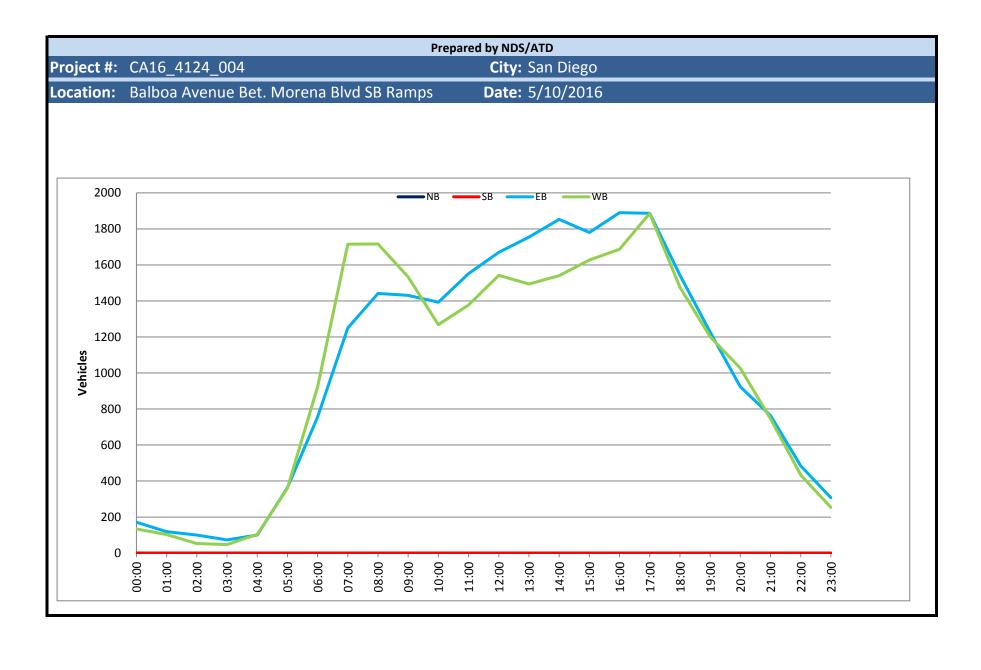
VOLUME

Balboa Avenue Bet. Morena Blvd SB Ramps & Morena Blvd NB On-Ramps

 Day: Tuesday
 City: San Diego

 Date: 5/10/2016
 Project #: CA16_4124_004

	DAILY T	OTALS			NB		SB		EB	WB							otal
		O 17 (LO			0		0		24,833	24,246						49,	,079
AM Period	NB	SB	EB		WB			TAL	PM Period	NB	SB	EB		WB			TAL
00:00 00:15			54 47		54 34		108 81		12:00 12:15			407 422		400 356		807 778	
00:30			38		26		64		12:30			396		378		774	
00:45			32	171	20	134	52	305	12:45			445	1670	408	1542	853	3212
01:00			30		24		54		13:00			445		383		828	
01:15 01:30			25 34		37 26		62 60		13:15 13:30			462 421		381 353		843 774	
01:45			30	119	16	103	46	222	13:45			426	1754	377	1494	803	3248
02:00			25		15		40		14:00			441		364		805	
02:15 02:30			31 22		9 12		40 34		14:15 14:30			484 469		398 400		882 869	
02:45			22	100	17	53	39	153	14:45			459	1853	378	1540	837	3393
03:00			16		6	- 55	22	100	15:00			442	1000	419	25.0	861	3333
03:15			16		11		27		15:15			438		410		848	
03:30 03:45			11 30	73	12 18	47	23 48	120	15:30 15:45			432 468	1780	406 392	1627	838 860	3407
04:00			21	/3	12	47	33	120	16:00			459	1760	404	1027	863	3407
04:15			20		24		44		16:15			492		426		918	
04:30			24		29		53		16:30			454		446		900	
04:45 05:00			35 49	100	39 53	104	74 102	204	16:45 17:00			485 477	1890	411 488	1687	896 965	3577
05:00 05:15			49 62		53 84		102		17:00 17:15			477		488 435		965	
05:30			94		106		200		17:30			500		480		980	
05:45			159	364	117	360	276	724	17:45			416	1887	483	1886	899	3773
06:00			142		149		291		18:00			408		406		814	
06:15 06:30			191 193		185 283		376 476		18:15 18:30			395 398		367 333		762 731	
06:45			229	755	306	923	535	1678	18:45			342	1543	369	1475	711	3018
07:00			249		329		578		19:00			333		311		644	
07:15			303		448		751		19:15			341		280		621	
07:30 07:45			336 362	1250	477 461	1715	813 823	2965	19:30 19:45			292 261	1227	334 276	1201	626 537	2428
08:00			349	1230	458	1713	807	2303	20:00			268	1227	305	1201	573	2420
08:15			346		441		787		20:15			224		243		467	
08:30			354	1442	428	1716	782	2450	20:30			224	024	255	1027	479	1051
08:45 09:00			393 349	1442	389 427	1716	782 776	3158	20:45 21:00			208 208	924	224 219	1027	432 427	1951
09:15			337		344		681		21:15			200		211		411	
09:30			335		389		724		21:30			178		171		349	
09:45			410	1431	373	1533	783	2964	21:45			178	764	145	746	323	1510
10:00 10:15			358 318		313 328		671 646		22:00 22:15			143 126		121 135		264 261	
10:30			356		298		654		22:30			100		90		190	
10:45			361	1393	329	1268	690	2661	22:45			115	484	87	433	202	917
11:00			364		311		675		23:00			93 77		77 71		170	
11:15 11:30			344 422		330 349		674 771		23:15 23:30			77 64		71 57		148 121	
11:45			422	1552	388	1378	810	2930	23:45			73	307	49	254	122	561
TOTALS				8750		9334		18084	TOTALS				16083		14912		30995
SPLIT %				48.4%		51.6%		36.8%	SPLIT %				51.9%		48.1%		63.2%
		OTALS			NB		SB		ЕВ	WB						To	otal
	DAILY T	OTALS			0		0		24,833	24,246						49,	,079
AM Peak Hour				11:30		07:15		07:30	PM Peak Hour				16:45		17:00		17:00
AM Pk Volume				1673		1844		3230	PM Pk Volume				1956		1886		3773
Pk Hr Factor				0.991		0.966		0.981	Pk Hr Factor				0.978		0.966		0.963
7 - 9 Volume 7 - 9 Peak Hour				2692 08:00		3431 07:15		6123 07:30	4 - 6 Volume 4 - 6 Peak Hour				3777 16:45		3573 17:00		7350 17:00
7 - 9 Peak Hour				1442		1844			4 - 6 Pk Volume				1956		1886		3773
Pk Hr Factor	0.000	0.000		0.917		0.966		0.981	Pk Hr Factor	0.000	0.00		0.978		0.966		0.963

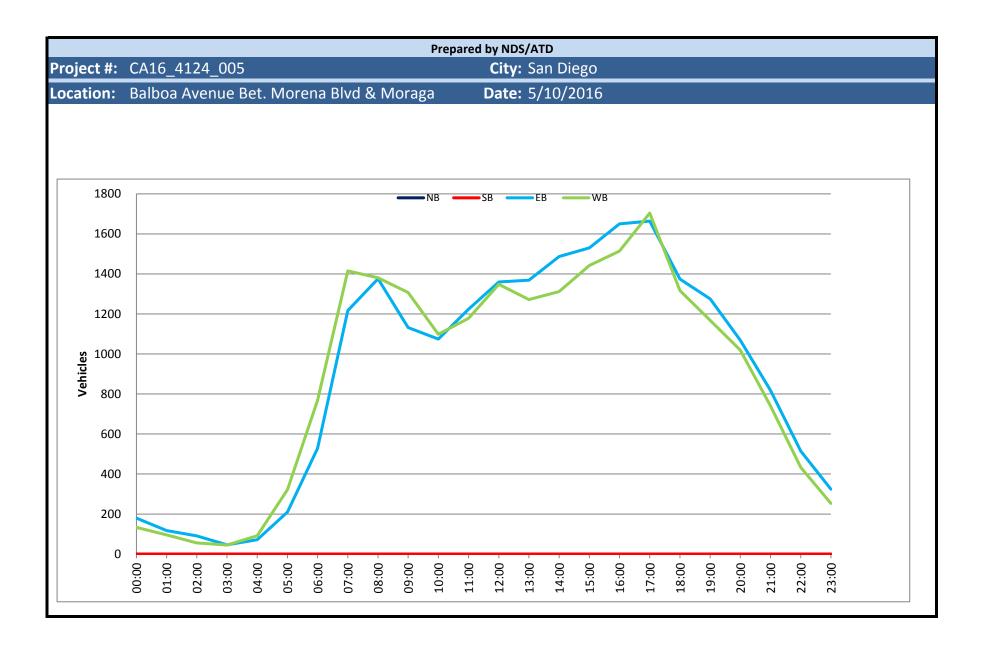


VOLUME

Balboa Avenue Bet. Morena Blvd & Moraga Ave

Day: Tuesday **Date:** 5/10/2016

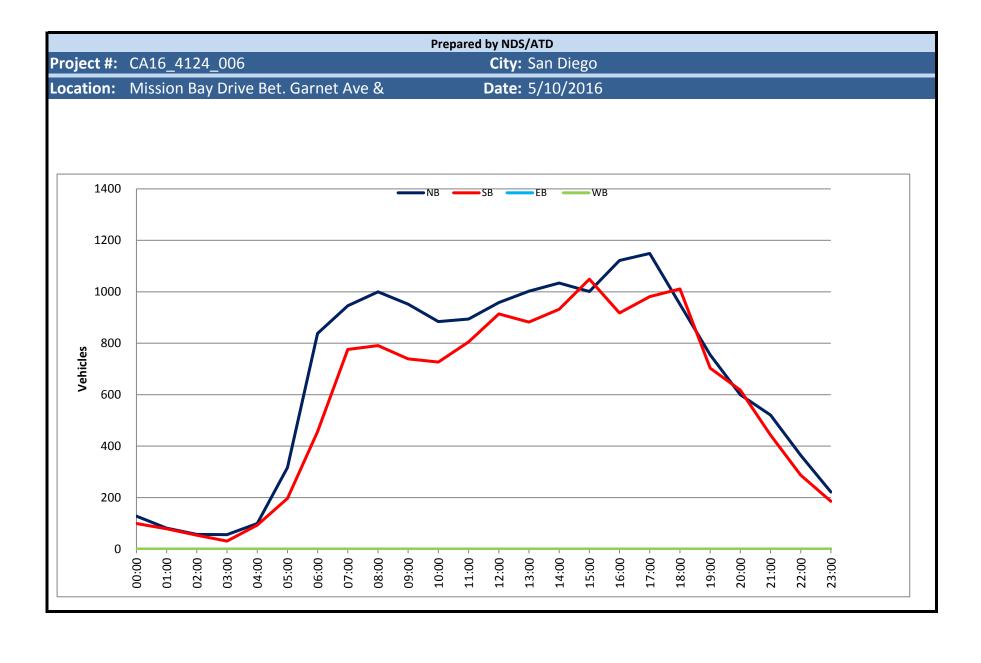
	DAILY TOTALS			NB		SB		EB	WB						То	otal
	DAILT TOTALS			0		0		21,702	21,413						43,	115
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		TO	TAL
00:00		59		53		112		12:00			335		341		676	
00:15 00:30		54 36		34 26		88 62		12:15 12:30			329 345		314 351		643 696	
00:45		31	180	20	133	51	313	12:45			351	1360	342	1348	693	2708
01:00		27		24		51		13:00			350		324		674	
01:15 01:30		32 30		33 23		65 53		13:15 13:30			352 354		321 300		673 654	
01:45		28	117	16	96	44	213	13:45			313	1369	327	1272	640	2641
02:00		25		23		48		14:00			321		302		623	
02:15 02:30		29 18		7 11		36 29		14:15 14:30			378 391		330 354		708 745	
02:45		19	91	15	56	34	147	14:45			397	1487	326	1312	723	2799
03:00		15		6		21		15:00			344		362		706	
03:15 03:30		14 7		10 12		24 19		15:15 15:30			391 389		368 362		759 751	
03:45		10	46	17	45	27	91	15:45			406	1530	350	1442	756	2972
04:00		15		11		26		16:00			395		354		749	
04:15 04:30		15 22		21 28		36 50		16:15 16:30			430 383		386 401		816 784	
04:45		20	72	32	92	52	164	16:45			442	1650	373	1514	815	3164
05:00		33		49		82		17:00			445		447		892	
05:15 05:30		40 56		75 94		115 150		17:15 17:30			438 412		400 438		838 850	
05:45		81	210	104	322	185	532	17:45			369	1664	419	1704	788	3368
06:00		87		125		212		18:00			373		365		738	
06:15 06:30		124 127		161 237		285 364		18:15 18:30			359 332		329 297		688 629	
06:45		190	528	245	768	435	1296	18:45			310	1374	326	1317	636	2691
07:00		232		270		502		19:00			295		283		578	
07:15 07:30		303 332		373 379		676 711		19:15 19:30			355 319		285 332		640 651	
07:45		350	1217	393	1415	743	2632	19:45			306	1275	268	1168	574	2443
08:00		334		357		691		20:00			300		303		603	
08:15		338		357		695		20:15			273		243		516	
08:30 08:45		345 359	1376	336 331	1381	681 690	2757	20:30 20:45			262 234	1069	250 223	1019	512 457	2088
09:00		304		352		656		21:00			224		219		443	
09:15		278		298		576		21:15			222		210		432	
09:30 09:45		273 277	1132	325 332	1307	598 609	2439	21:30 21:45			196 176	818	168 143	740	364 319	1558
10:00		259		269	1007	528	2 .00	22:00			156	010	122	7.10	278	
10:15		255		285		540		22:15			136		134		270	
10:30 10:45		270 290	1074	254 290	1098	524 580	2172	22:30 22:45			111 112	515	90 87	433	201 199	948
11:00		293	10/7	260	1000	553	£11 £	23:00			100	313	77	+33	177	J-10
11:15		275		298		573		23:15			84		71		155	
11:30 11:45		323 333	1224	282 338	1178	605 671	2402	23:30 23:45			70 70	324	57 48	253	127 118	577
TOTALS		333	7267	330	7891	J/1	15158	TOTALS			70	14435	70	13522	110	27957
SPLIT %			47.9%		52.1%		35.2%					51.6%		48.4%		64.8%
JI LII /0			77.3/0		JZ.1/0		JJ.2/0	JI 211 70				31.0/0		70.7/0		U-1.0/0
	DAILY TOTALS			NB		SB		EB	WB							otal
				0		0		21,702	21,413						43,	115
AM Peak Hour			08:00		07:15		07:30	PM Peak Hour				16:45		17:00		16:45
AM Pk Volume			1376		1502		2840	PM Pk Volume				1737		1704		3395
Pk Hr Factor			0.958		0.955		0.956	Pk Hr Factor	0			0.976		0.953		0.952
7 - 9 Volume 7 - 9 Peak Hour			2593 08:00		2796 07:15		5389 07:30	4 - 6 Volume 4 - 6 Peak Hour				3314 16:45		3218 17:00		6532 16:45
7 - 9 Pk Volume			1376		1502			4 - 6 Pk Volume				1737		17.04		3395
Pk Hr Factor	0.000 0.000		0.958		0.955		0.956	Pk Hr Factor	0.000	0.000		0.976		0.953		0.952



Mission Bay Drive Bet. Garnet Ave & Magnolia Ave

Day: Tuesday **Date:** 5/10/2016

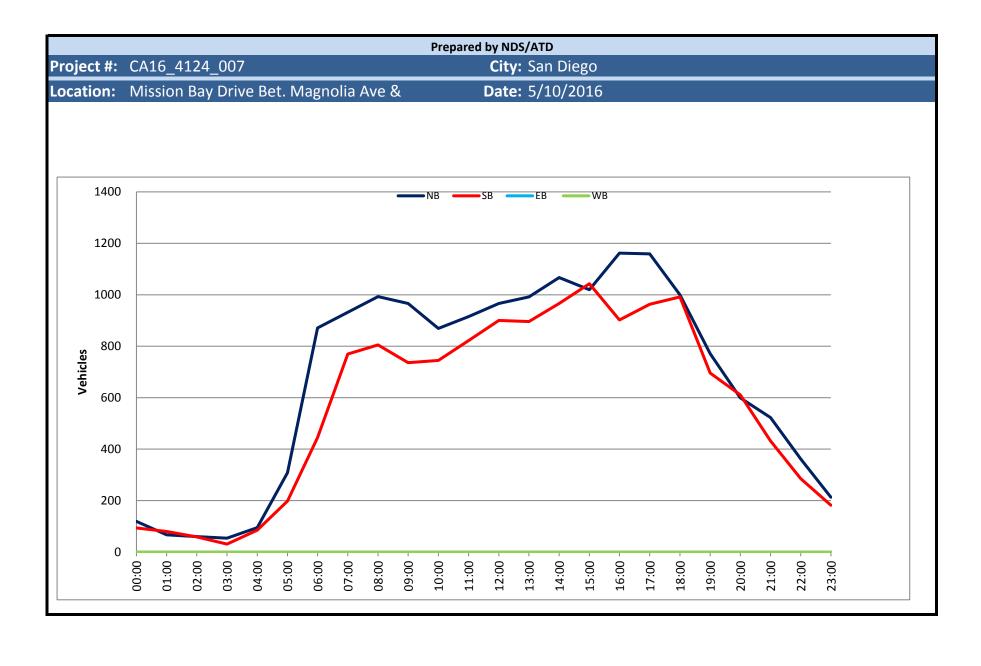
	ח	AILY 1	ΓΩΤΛ	15		NB		SB		EB		WB						To	otal
		AILI		ILJ		15,931		13,771		0		0						29,	,702
AM Period	NB		SB		EB	WB		TOT	ΓAL	PM Period	NB		SB		EB	W	3	ТО	TAL
00:00	42		35					77		12:00	230		212					442	
00:15 00:30	41 29		25 19					66 48		12:15 12:30	257 226		241 245					498 471	
00:45	16	128	20	99				36	227	12:45	245	958	216	914				461	1872
01:00	30		25					55		13:00	244		209					453	
01:15 01:30	9		18					27		13:15 13:30	242 258		234					476	
01:30	24 18	81	14 22	79				38 40	160	13:45	258	1002	213 226	882				471 484	1884
02:00	9		18					27		14:00	245		227					472	
02:15	18		8					26		14:15	273		219					492	
02:30 02:45	18 12	57	13 15	54				31 27	111	14:30 14:45	265 251	1034	242 244	932				507 495	1966
03:00	12		8	<u> </u>				20		15:00	249		279	332				528	2300
03:15	15		9					24		15:15	258		257					515	
03:30 03:45	15 14	56	8 6	31				23 20	87	15:30 15:45	236 258	1001	255 258	1049				491 516	2050
04:00	15		15	<u> </u>				30	07	16:00	290	1001	226	1043				516	2030
04:15	20		22					42		16:15	290		244					534	
04:30	23	00	17	02				40	102	16:30 16:45	268	1122	211	010				479	2040
04:45 05:00	41 42	99	39 33	93				80 75	192	17:00	274 309	1122	237 222	918				511 531	2040
05:15	52		38					90		17:15	287		236					523	
05:30	93	247	39	407				132	544	17:30	274	1110	265	004				539	2420
05:45 06:00	130 144	317	87 90	197				217 234	514	17:45 18:00	279 256	1149	258 262	981				537 518	2130
06:15	200		125					325		18:15	225		242					467	
06:30	239		116					355		18:30	243		260					503	
06:45 07:00	255 251	838	125 179	456				380 430	1294	18:45 19:00	227 187	951	247 181	1011				474 368	1962
07:00 07:15	251		224					474		19:00 19:15	202		172					374	
07:30	220		172					392		19:30	181		165					346	
07:45	225	946	201	776				426	1722	19:45	185	755	185	703				370	1458
08:00 08:15	260 233		168 213					428 446		20:00 20:15	150 149		179 157					329 306	
08:30	242		202					444		20:30	146		152					298	
08:45	265	1000	208	791				473	1791	20:45	155	600	130	618				285	1218
09:00 09:15	247 219		172 186					419 405		21:00 21:15	149 137		127 124					276 261	
09:30	247		171					418		21:30	125		111					236	
09:45	239	952	210	739				449	1691	21:45	110	521	81	443				191	964
10:00 10:15	196 212		188 166					384 378		22:00 22:15	112 91		87 82					199 173	
10:15 10:30	212 246		166 194					378 440		22:15	76		82 62					138	
10:45	230	884	179	727				409	1611	22:45	85	364	56	287				141	651
11:00	203		180					383		23:00	66		70					136	
11:15 11:30	220 223		187 220					407 443		23:15 23:30	65 50		41 48					106 98	
11:45	248	894	218	805				466	1699	23:45	41	222	27	186				68	408
TOTALS		6252		4847					11099	TOTALS		9679		8924					18603
SPLIT %		56.3%		43.7%					37.4%	SPLIT %		52.0%		48.0%					62.6%
						NB		SB		EB		WB						To	otal
	D	AILY 1	OTA	LS		15,931		13,771		0		0							702
AM Peak Hour		08:00		11:45					11:45	PM Peak Hour		17:00		15:00					17:00
AM Pk Volume		1000		916					11:45	PM Pk Volume		17:00		1049					2130
Pk Hr Factor		0.943		0.935					0.942	Pk Hr Factor		0.930		0.940					0.988
7 - 9 Volume		1946		1567	0		0		3513	4 - 6 Volume		2271		1899	()	0		4170
7 - 9 Peak Hour		08:00		08:00						4 - 6 Peak Hour		17:00		17:00					17:00
7 - 9 Pk Volume		1000		791						4 - 6 Pk Volume		1149		981					2130
Pk Hr Factor		0.943		0.928	0.00)()	0.000		0.947	Pk Hr Factor		0.930		0.925	0.0	000	0.000		0.988



Mission Bay Drive Bet. Magnolia Ave & Bunker Hill St

Day: Tuesday **Date:** 5/10/2016

	D	AILY 1	ΓΩΤΔ	AIS.		NB		SB		EB		WB						To	otal
		AIL!		(L)		16,083		13,738	3	0		0						29	,821
AM Period	NB		SB		EB	WB		ТО	TAL	PM Period	NB		SB		EB	W	В	TO	TAL
00:00 00:15	38 39		35 23					73 62		12:00 12:15	243 247		214 237					457 484	
00:30	29		19					48		12:30	221		239					460	
00:45	13	119	17	94				30	213	12:45	255	966	210	900				465	1866
01:00 01:15	30 11		24 18					54 29		13:00 13:15	237 240		190 244					427 484	
01:30	9		21					30		13:30	261		227					488	
01:45	17	67	17	80				34	147	13:45	254	992	235	896				489	1888
02:00 02:15	9 20		19 8					28 28		14:00 14:15	242 289		229 220					471 509	
02:30	19		15					34		14:30	284		251					535	
02:45	12	60	17	59				29	119	14:45	252	1067	266	966				518	2033
03:00 03:15	10 16		8 10					18 26		15:00 15:15	258 271		281 270					539 541	
03:30	17		10					27		15:30	220		242					462	
03:45	11	54	3	31				14	85	15:45	271	1020	250	1043				521	2063
04:00 04:15	16 16		15 18					31 34		16:00 16:15	282 294		215 258					497 552	
04:13	22		14					36		16:30	265		199					464	
04:45	41	95	38	85				79	180	16:45	321	1162	230	902				551	2064
05:00 05:15	39 53		33 35					72 88		17:00 17:15	306 293		207 241					513 534	
05:30	83		38					121		17:30	275		267					542	
05:45	133	308	92	198				225	506	17:45	285	1159	248	963				533	2122
06:00	144		82					226		18:00	285		264					549	
06:15 06:30	200 237		122 115					322 352		18:15 18:30	230 265		238 259					468 524	
06:45	290	871	126	445				416	1316	18:45	220	1000	231	992				451	1992
07:00	283		178					461		19:00	189		200					389	
07:15 07:30	224 195		213 185					437 380		19:15 19:30	203 194		175 151					378 345	
07:45	230	932	194	770				424	1702	19:45	185	771	170	696				355	1467
08:00	265		163					428		20:00 20:15	157 153		176 161					333	
08:15 08:30	223 235		216 212					439 447		20:30	141		161 144					314 285	
08:45	270	993	214	805				484	1798	20:45	148	599	130	611				278	1210
09:00	270		178					448		21:00 21:15	151		122					273	
09:15 09:30	218 238		187 169					405 407		21:30	141 129		118 114					259 243	
09:45	240	966	202	736				442	1702	21:45	102	523	78	432				180	955
10:00 10:15	202 204		191					393 369		22:00 22:15	109 93		76 85					185	
10:15	234		165 205					439		22:30	93 71		66					178 137	
10:45	229	869	184	745				413	1614	22:45	89	362	58	285				147	647
11:00	195		170					365		23:00 22:15	67 60		70 42					137	
11:15 11:30	225 240		198 232					423 472		23:15 23:30	60 44		42 43					102 87	
11:45	255	915	222	822				477	1737	23:45	42	213	27	182				69	395
TOTALS		6249		4870					11119	TOTALS		9834		8868					18702
SPLIT %		56.2%		43.8%					37.3%	SPLIT %		52.6%		47.4%					62.7%
		A II V	rot4	\1C		NB		SB		EB		WB						To	otal
	T D	AILY 1	TOTA	ILS .		16,083		13,738	3	0		0						29	,821
AM Peak Hour		06:30		11:45					11:30	PM Peak Hour		16:45		14:30					17:15
AM Pk Volume		1034		912					1890	PM Pk Volume		1195		1068					2158
Pk Hr Factor		0.891		0.954					0.976	Pk Hr Factor		0.931		0.950					0.983
7 - 9 Volume		1925		1575					3500	4 - 6 Volume		2321		1865					4186
7 - 9 Peak Hour 7 - 9 Pk Volume		08:00 993		08:00 805						4 - 6 Peak Hour 4 - 6 Pk Volume		16:45 1195		17:00 963					16:45 2140
Pk Hr Factor		0.919		0.932	0.0		0.000		0.929	Pk Hr Factor		0.931		0.902		000	0.000		0.971

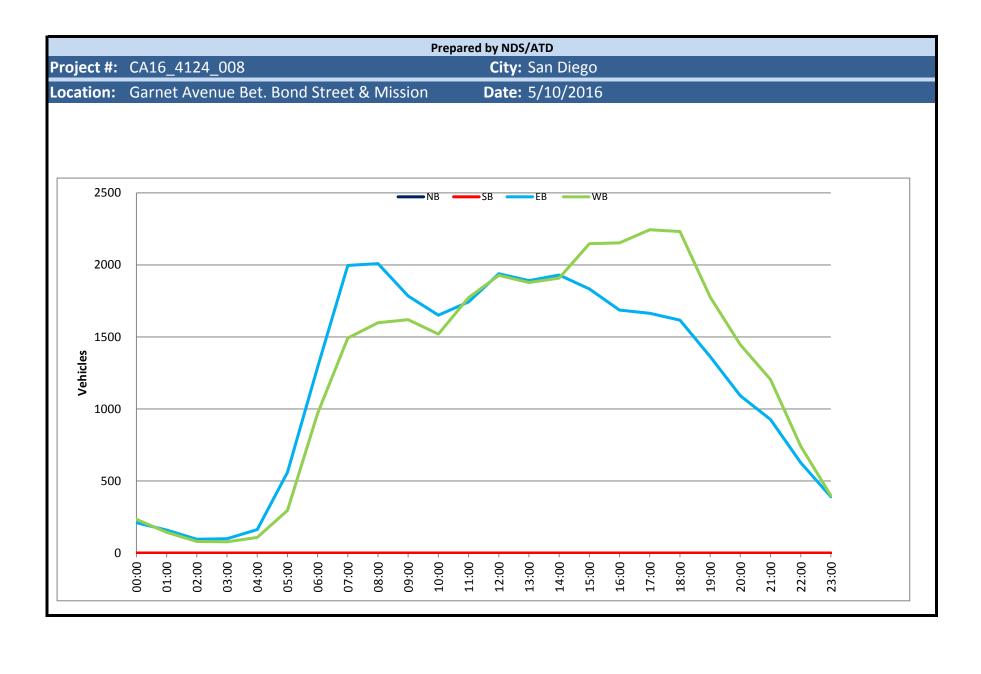


VOLUME

Garnet Avenue Bet. Bond Street & Mission Bay Dr

Day: Tuesday **Date:** 5/10/2016

	DAILY TOTALS			NB		SB		EB	WB						То	otal
	DAILI TOTALS			0		0		28,722	29,972						58,	694
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		56		78		134		12:00			435		499		934	
00:15		68		60		128		12:15			479		469		948	
00:30		49		60		109	,	12:30			557		511		1068	
00:45		38	211	36	234	74	445	12:45			468	1939	449	1928	917	3867
01:00		41		49 20		90 72		13:00 13:15			480		470		950 978	
01:15 01:30		43 36		29 31		67		13:15			513 423		465 453		978 876	
01:30		40	160	35	144	75	304	13:45			475	1891	490	1878	965	3769
02:00		25	100	23		48	30.	14:00			448	1031	421	10.0	869	37.63
02:15		29		21		50		14:15			502		490		992	
02:30		21		20		41		14:30			480		477		957	
02:45		21	96	17	81	38	177	14:45			500	1930	521	1909	1021	3839
03:00		27		22		49		15:00			465		533		998	
03:15		22		22		44		15:15			491		532		1023	
03:30 03:45		24 27	100	10 24	78	34 51	178	15:30 15:45			430 447	1833	547 535	2147	977 982	3980
04:00		28	100	16	70	44	170	16:00			436	1033	538	2147	974	3980
04:15		39		25		64		16:15			408		560		968	
04:30		46		32		78		16:30			411		521		932	
04:45		50	163	35	108	85	271	16:45			432	1687	534	2153	966	3840
05:00		73		28		101		17:00			386		578		964	
05:15		104		67		171		17:15			387		566		953	
05:30		169	F.C.O.	76	206	245	056	17:30			463	1661	541	2244	1004	2000
05:45		214	560	125 123	296	339	856	17:45 18:00			428	1664	559	2244	987	3908
06:00 06:15		250 301		242		373 543		18:15			399 406		561 558		960 964	
06:30		381		280		661		18:30			407		551		958	
06:45		357	1289	323	968	680	2257	18:45			405	1617	562	2232	967	3849
07:00		446		389		835		19:00			357		462		819	
07:15		534		398		932		19:15			361		477		838	
07:30		484		338		822		19:30			344		420		764	
07:45		532	1996	367	1492	899	3488	19:45			301	1363	417	1776	718	3139
08:00		474		397		871		20:00			296		372		668	
08:15 08:30		514 552		400 404		914 956		20:15 20:30			296 261		374 393		670 654	
08:45		469	2009	398	1599	867	3608	20:45			239	1092	308	1447	547	2539
09:00		420	2005	395	1333	815	3000	21:00			256	1032	356	1777	612	2333
09:15		471		419		890		21:15			277		325		602	
09:30		389		355		744		21:30			214		273		487	
09:45		504	1784	451	1620	955	3404	21:45			180	927	251	1205	431	2132
10:00		413		363		776		22:00			199		199		398	
10:15		370		385		755		22:15			155		209		364	
10:30		446	1651	378	1520	824	2171	22:30 22:45			124	627	168	7/12	292	1260
10:45 11:00		422 427	1651	394 387	1520	816 814	3171	23:00			149 131	627	166 117	742	315 248	1369
11:15		434		444		878		23:15			90		108		198	
11:30		462		449		911		23:30			87		90		177	
11:45		420	1743	493	1773	913	3516	23:45			82	390	83	398	165	788
TOTALS			11762		9913		21675	TOTALS				16960		20059		37019
SPLIT %			54.3%		45.7%		36.9%	SPLIT %				45.8%		54.2%		63.1%
				NID		CD		FD	WP							tal
	DAILY TOTALS			NB 0		SB 0		EB 28,722	WB 29,972							otal .694
AM Peak Hour			07:45		11:45		11:45	PM Peak Hour				12:30		17:00		14:45
AM Pk Volume			2072		1972		3863	PM Pk Volume				2018		2244		4019
Pk Hr Factor			0.938		0.965		0.904	Pk Hr Factor				0.906		0.971		0.982
7 - 9 Volume			4005		3091		7096	4 - 6 Volume				3351		4397		7748
7 - 9 Peak Hour			07:45		08:00			4 - 6 Peak Hour				16:00		17:00		17:00
7 - 9 Pk Volume			2072		1599			4 - 6 Pk Volume				1687		2244		3908
Pk Hr Factor	0.000 0.000		0.938		0.989		0.952	Pk Hr Factor	0.000	0.00	U	0.967		0.971		0.973

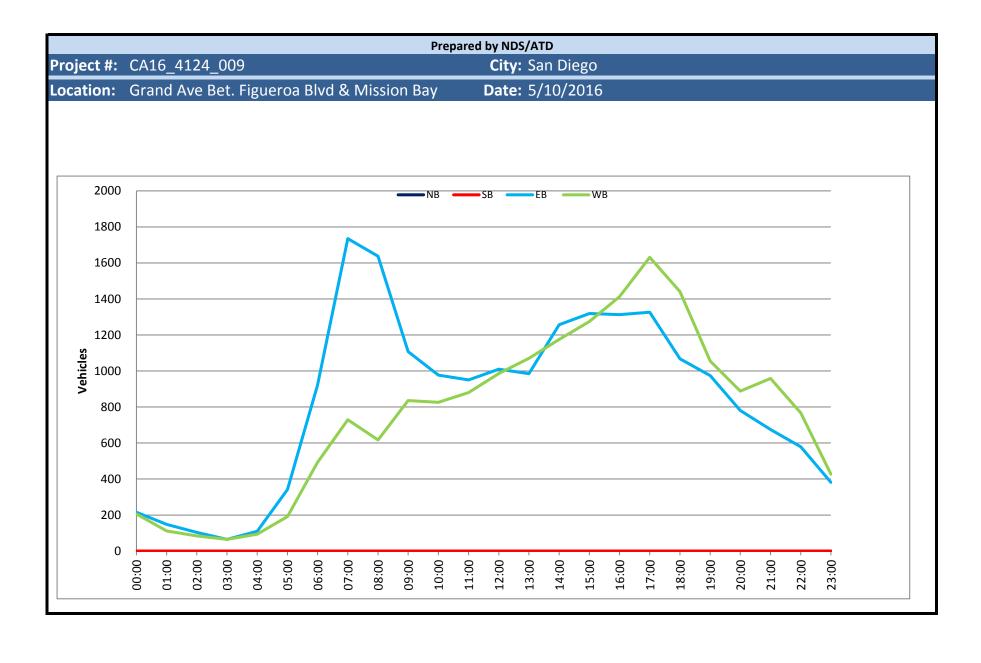


VOLUME

Grand Ave Bet. Figueroa Blvd & Mission Bay Dr

Day: Tuesday **Date:** 5/10/2016

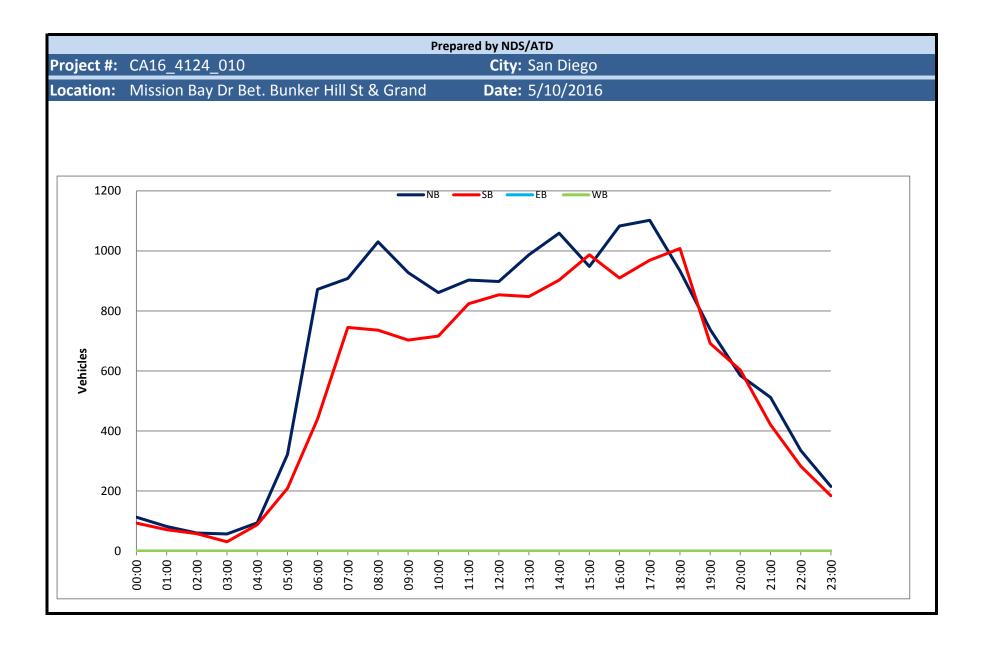
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILI TOTALS			0		0		19,983	18,219						38,	202
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		66		61		127		12:00			257		282		539	
00:15		54		48		102		12:15			234		235		469	
00:30		57	24.6	59	206	116	422	12:30			269	1010	229	006	498	1000
00:45 01:00		39 36	216	38 32	206	77 68	422	12:45 13:00			250 233	1010	240 240	986	490 473	1996
01:00		35		30		65		13:15			236		253		489	
01:30		38		25		63		13:30			248		276		524	
01:45		39	148	25	112	64	260	13:45			268	985	301	1070	569	2055
02:00		46		27		73		14:00			241		271		512	
02:15		30		34		64		14:15			374		316		690	
02:30		16	104	12	0.4	28	100	14:30			332	1257	294	1175	626	2422
02:45 03:00		12 15	104	11 15	84	23 30	188	14:45 15:00			310 296	1257	294 310	1175	604 606	2432
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06:00		157		85		242		18:00			309		348		657	
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08:00		405		133		538		20:00			225		231		456	
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10:00		254		188		442		22:00			152		225		377	
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11:15		235		237		472		23:15			105		116		221	
11:30		277		209		486		23:30			81		108		189	
11:45		223	950	233	880	456	1830	23:45			74	382	82	427	156	809
TOTALS			8314		5134		13448	TOTALS				11669		13085		24754
SPLIT %			61.8%		38.2%		35.2%	SPLIT %				47.1%		52.9%		64.8%
				NB		SB		EB	WB						Io	otal
	DAILY TOTALS			0		0		19,983	18,219							202
AM Peak Hour			07:30		11:45		07:00	PM Peak Hour				15:15		17:00		17:00
AM Pk Volume			1839		979		2464	PM Pk Volume				13.13		1631		2957
Pk Hr Factor			0.929		0.868		0.921	Pk Hr Factor				0.922		0.962		0.936
7 - 9 Volume	0 0		3372		1346		4718	4 - 6 Volume	0	0		2639		3043		5682
7 - 9 Peak Hour			07:30		07:00			4 - 6 Peak Hour				16:45		17:00		17:00
7 - 9 Pk Volume			1839		729			4 - 6 Pk Volume				1339		1631		2957
Pk Hr Factor	0.000 0.000		0.929		0.898		0.921	Pk Hr Factor	0.000	0.00	0	0.915		0.962		0.936



Mission Bay Dr Bet. Bunker Hill St & Grand Ave

Day: Tuesday **Date:** 5/10/2016

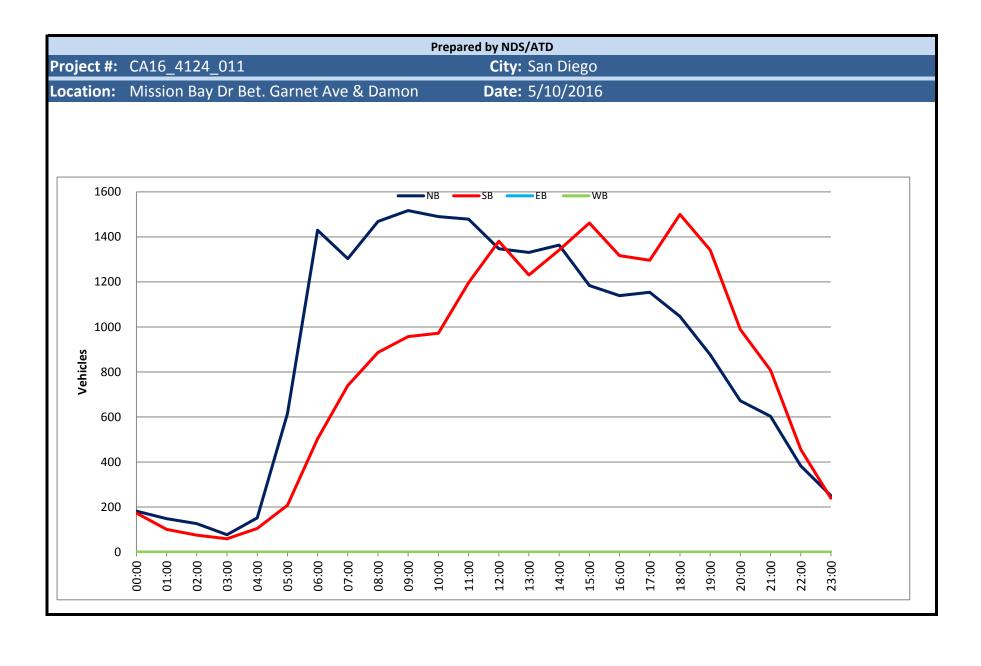
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Mission Bay Dr Bet. Garnet Ave & Damon Ave

Day: Tuesday **Date:** 5/10/2016

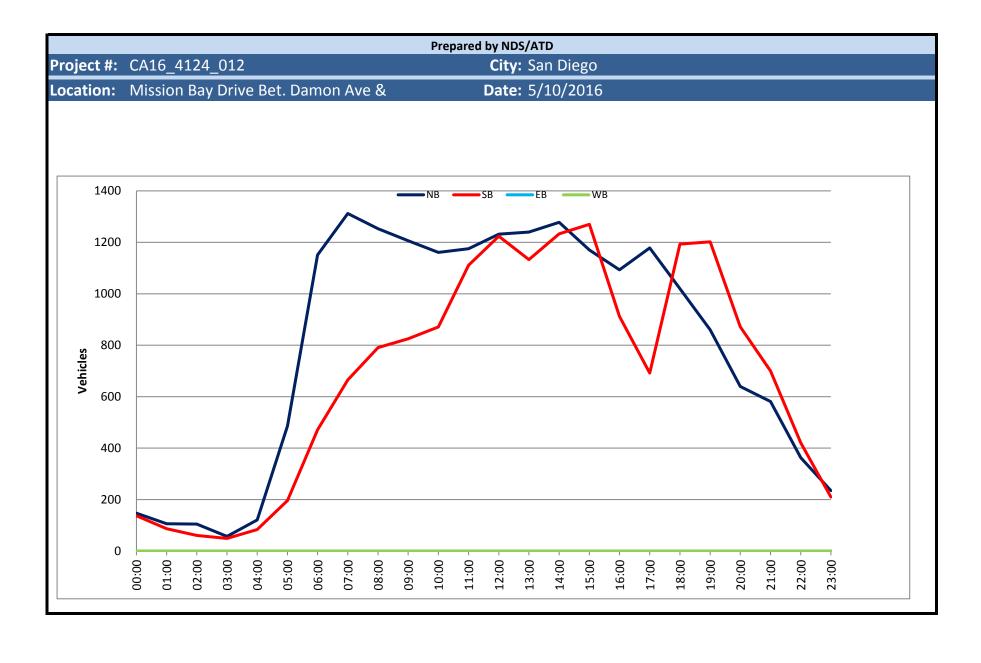
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10:15	370		236					606		22:15	101		118					219	
10:30	395 380	1400	242	072				637	2462	22:30 22:45	87 75	202	104	156				191 169	920
10:45 11:00	368	1490	241 257	972				621 625	2462	23:00	75 71	383	94 73	456				144	839
11:15	369		303					672		23:15	67		62					129	
11:30	373	1470	309 328	1107				682 697	2676	23:30	64 40	251	57 47	239				121 96	490
11:45 TOTALS	369	9988	320	1197 5977				037	2676 15965	23:45 TOTALS	49	251 11352	47	13363				50	24715
SPLIT %		62.6%		37.4%					39.2%	SPLIT %		45.9%		54.1%					60.8%
	D	AILY 1	ΓΩΤΔ	IS		NB		SB		EB		WB							tal
		411-11-1				21,340		19,340		0		0						40,	680
AM Peak Hour		06:30		11:45					11:15	PM Peak Hour		12:30		18:15					14:15
AM Pk Volume		1731		1352					2721	PM Pk Volume		1407		1520					2764
Pk Hr Factor		0.968		0.906					0.976	Pk Hr Factor		0.953		0.955					0.972
7 - 9 Volume		2772 08:00		1627 08:00					4399 08:00	4 - 6 Volume 4 - 6 Peak Hour		2293 16:15		2613 16:00					4906 16:15
7 - 9 Peak Hour 7 - 9 Pk Volume		08:00 1469		08:00 887						4 - 6 Peak Hour 4 - 6 Pk Volume		16:15 1167		16:00 1317					16:15 2480
Pk Hr Factor		0.872		0.968	0.000)	0.000		0.915	Pk Hr Factor		0.960		0.922	0.00	0	0.000		0.938



Mission Bay Drive Bet. Damon Ave & Bluffside Ave

Day: Tuesday **Date:** 5/10/2016

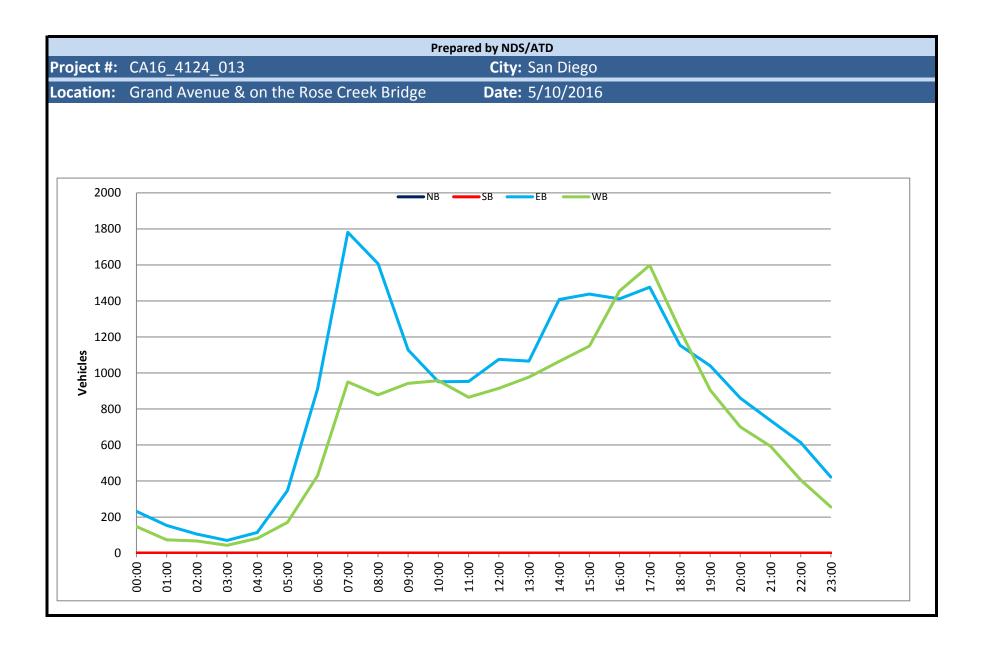
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	D,	AILT		ILO		19,170		16,410)	0		0						35	5,580
AM Period	NB		SB		EB	WB		ТО	TAL	PM Period	NB		SB		EB	V	/B	TC	DTAL
00:00	52		43					95		12:00	257		331					588	
00:15	44		37					81		12:15	299		295					594	
00:30 00:45	32 19	147	41 16	137				73 35	284	12:30 12:45	349 327	1232	271 327	1224				620 654	2456
01:00	23	147	25	137				48	204	13:00	314	1232	236	1224				550	2450
01:15	29		26					55		13:15	331		304					635	
01:30	24		15					39		13:30	283		302					585	
01:45	30	106	21	87				51	193	13:45	312	1240	291	1133				603	2373
02:00 02:15	26 24		20 14					46 38		14:00 14:15	310 305		283 302					593 607	
02:30	32		16					48		14:30	342		314					656	
02:45	23	105	11	61				34	166	14:45	321	1278	334	1233				655	2511
03:00	13		17					30		15:00	312		333					645	
03:15	15		10					25		15:15	293		337					630	
03:30 03:45	14 15	57	8 14	49				22 29	106	15:30 15:45	292 273	1170	286 314	1270				578 587	2440
04:00	23	57	14	43				37	100	16:00	249	1170	277	1270				526	2440
04:15	31		17					48		16:15	306		223					529	
04:30	29	_	29	_				58		16:30	245		190					435	
04:45	38	121	24	84				62	205	16:45	293	1093	222	912				515	2005
05:00 05:15	55 85		17 34					72 119		17:00 17:15	300 260		132 148					432	
05:30	165		69					234		17:30	322		197					519	
05:45	181	486	76	196				257	682	17:45	296	1178	215	692				511	1870
06:00	185		94					279		18:00	263		193					456	
06:15	248		114					362		18:15	272		328					600	
06:30 06:45	366 352	1151	115 148	471				481 500	1622	18:30 18:45	248 237	1020	344 328	1193				592 565	2213
07:00	339	1131	163	7/1				502	1022	19:00	238	1020	343	1133				581	2213
07:15	328		158					486		19:15	219		351					570	
07:30	318		160					478		19:30	211		260					471	
07:45 08:00	327 345	1312	184	665				511	1977	19:45 20:00	192 166	860	248 228	1202				394	2062
08:00	330		208 196					553 526		20:15	158		205					363	
08:30	316		182					498		20:30	155		254					409	
08:45	262	1253	205	791				467	2044	20:45	161	640	185	872				346	1512
09:00	299		196					495		21:00	167		205					372	
09:15	312		206					518 494		21:15 21:30	165		179					344	
09:30 09:45	291 304	1206	203 220	825				524	2031	21:30 21:45	144 105	581	160 156	700				304 261	1281
10:00	267	1200	213	023				480	2031	22:00	99	301	123	700				222	1201
10:15	288		209					497		22:15	102		113					215	
10:30	316	4401	224	074				540	2000	22:30	88	262	94	424				182	70.
10:45 11:00	290 290	1161	225 244	871				515 534	2032	22:45 23:00	74 69	363	91 66	421				165 135	784
11:00	302		244 276					534		23:00	63		63					126	
11:30	302		294					596		23:30	56		45					101	
11:45	281	1175	297	1111				578	2286	23:45	47	235	36	210				83	445
TOTALS		8280		5348					13628	TOTALS		10890		11062					21952
SPLIT %		60.8%		39.2%					38.3%	SPLIT %		49.6%		50.4%					61.7%
		01126				NB		SB		EB		WB						I	otal
	D	AILY 1	OTA	ILS		19,170		16,410		0		0							,580
AM Peak Hour		06:30		11:30					11:45	PM Peak Hour		12:30		18:30					14:30
AM Pk Volume		1385		1217					2380	PM Pk Volume		1321		1366					2586
Pk Hr Factor		0.946		0.919					0.960	Pk Hr Factor		0.946		0.973					0.986
7 - 9 Volume		2565		1456	0		0		4021	4 - 6 Volume		2271		1604		0	0		3875
7 - 9 Peak Hour		07:30		08:00					07:45	4 - 6 Peak Hour		17:00		16:00					16:00
7 - 9 Pk Volume		1320		791					2088	4 - 6 Pk Volume		1178		912					2005
Pk Hr Factor		0.957		0.951	0.00	0	0.000		0.944	Pk Hr Factor		0.915		0.823	0.	000	0.00	0	0.948



Grand Avenue & on the Rose Creek Bridge

Day: Tuesday **Date:** 5/10/2016

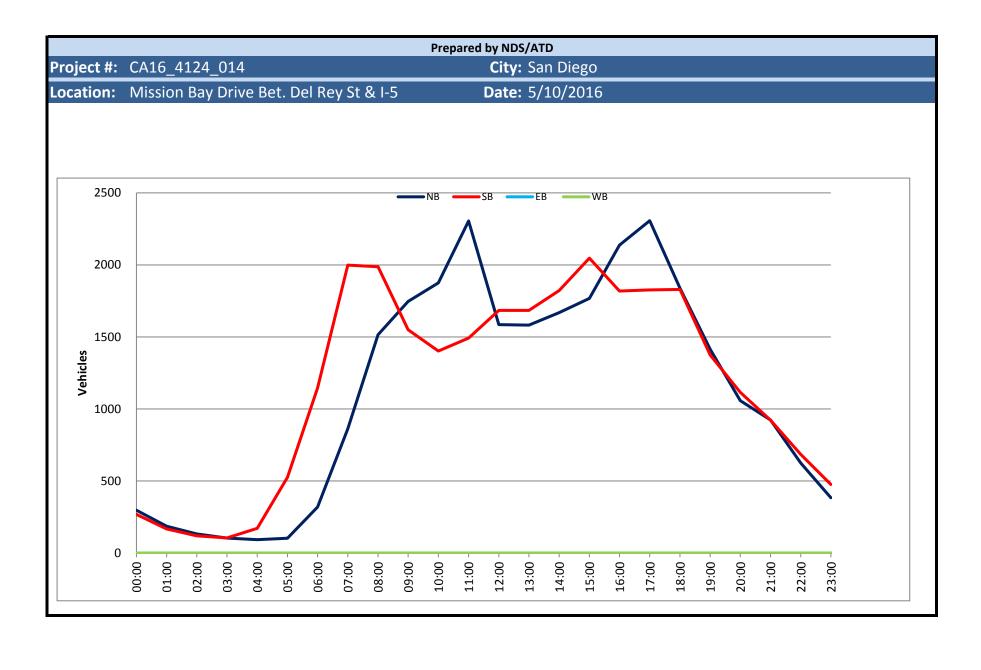
	DAILY TOTALS			NB		SB		ЕВ	WB						To	otal
	DAILI TOTALS			0		0		21,054	16,861						37,	915
AM Period	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		72		53		125		12:00			267		226		493	
00:15		59		45		104		12:15			258		232		490	
00:30		59		25		84		12:30			284		230		514	1001
00:45		42	232	24	147	66	379	12:45			267	1076	227	915	494	1991
01:00 01:15		36 38		18 20		54 58		13:00 13:15			252 259		210 222		462 481	
01:30		37		18		55		13:30			274		282		556	
01:45		42	153	17	73	59	226	13:45			281	1066	263	977	544	2043
02:00		44		23		67		14:00			269		286		555	
02:15		30		18		48		14:15			435		255		690	
02:30		19		16		35		14:30			353		266		619	
02:45		12	105	10	67	22	172	14:45			351	1408	257	1064	608	2472
03:00 03:15		15 27		12 10		27 37		15:00 15:15			310 342		258 298		568 640	
03:30		16		10		26		15:30			416		291		707	
03:45		12	70	11	43	23	113	15:45			370	1438	302	1149	672	2587
04:00		17		17		34		16:00			362		322		684	
04:15		26		14		40		16:15			347		359		706	
04:30		34		19		53		16:30			340		354		694	
04:45		37	114	31	81	68	195	16:45			362	1411	420	1455	782	2866
05:00		52		28		80		17:00			354		379		733	
05:15 05:30		78 109		24 48		102 157		17:15 17:30			404 397		423 412		827 809	
05:45		109	347	70	170	178	517	17:45			321	1476	384	1598	705	3074
06:00		153	J+7	76	170	229	317	18:00			323	1470	361	1330	684	3074
06:15		187		102		289		18:15			285		322		607	
06:30		278		126		404		18:30			279		280		559	
06:45		293	911	126	430	419	1341	18:45			267	1154	276	1239	543	2393
07:00		368		234		602		19:00			264		267		531	
07:15		429		280		709		19:15			261		237		498	
07:30 07:45		512 472	1781	255 181	950	767 653	2731	19:30 19:45			257 258	1040	201 200	905	458 458	1945
08:00		416	1/01	207	930	623	2/31	20:00			263	1040	184	903	447	1343
08:15		437		211		648		20:15			214		183		397	
08:30		416		227		643		20:30			188		154		342	
08:45		338	1607	233	878	571	2485	20:45			196	861	180	701	376	1562
09:00		329		231		560		21:00			206		166		372	
09:15		294		206		500		21:15			188		156		344	
09:30 09:45		244	1128	231 274	942	475	2070	21:30 21:45			170 172	736	130	593	300 313	1329
10:00		261 237	1120	298	942	535 535	2070	22:00			168	730	141 131	393	299	1329
10:15		264		249		513		22:15			149		107		256	
10:30		232		199		431		22:30			149		94		243	
10:45		218	951	211	957	429	1908	22:45			148	614	74	406	222	1020
11:00		218		195		413		23:00			137		57		194	
11:15		243		200		443		23:15			113		74		187	
11:30		267	OE2	226	065	493	1010	23:30 22:45			87 oc	422	61 64	256	148	670
11:45 TOTALS		225	953	244	865	469	1818	23:45			85	12702	64	256	149	678
TOTALS			8352		5603		13955	TOTALS				12702		11258		23960
SPLIT %			59.8%		40.2%		36.8%	SPLIT %				53.0%		47.0%		63.2%
	DAHVTOTALC			NB		SB		EB	WB						To	otal
	DAILY TOTALS			0		0		21,054	16,861						37,	915
AM Peak Hour			07:30		09:30		07:15	PM Peak Hour				16:45		16:45		16:45
AM Pk Volume			1837		1052		2752	PM Pk Volume				1517		1634		3151
Pk Hr Factor			0.897		0.883		0.897	Pk Hr Factor				0.939		0.966		0.953
7 - 9 Volume	0 0		3388		1828		5216	4 - 6 Volume	0	0		2887		3053		5940
7 - 9 Peak Hour			07:30		07:00			4 - 6 Peak Hour				16:45		16:45		16:45
7 - 9 Pk Volume			1837		950			4 - 6 Pk Volume				1517		1634		3151
Pk Hr Factor	0.000 0.000		0.897		0.848		0.897	Pk Hr Factor	0.000	0.00	0	0.939		0.966		0.953



Mission Bay Drive Bet. Del Rey St & I-5 Ramps

Day: Tuesday **Date:** 5/10/2016

00:15 96 67 163 12:15 381 442 8 00:30 74 66 140 12:230 369 410 8 00:05 56 297 50 268 106 565 12:45 412 1585 435 1684 8 01:00 55 51 106 13:00 393 378 7 01:15 53 44 97 13:15 403 440 8 01:30 44 43 87 13:30 406 425 8 01:45 34 186 29 167 63 353 13:45 380 1582 441 1684 8 02:00 48 31 79 14:00 428 412 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42	TOTAL 820 823 779 847 3269 771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
00:00	820 823 779 847 3269 771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
00:15 96 67 163 12:15 381 442 9 100:15 56 297 50 268 106 565 12:45 412 1585 435 1684 88 100:100 55 51 106 13:00 393 378 37	823 779 847 3269 771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
00:30	779 847 3269 771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956
00:45 56 297 50 268 106 565 12:45 412 1585 435 1684 101:00 13:00 13:00 13:00 13:00 13:00 13:00 13:00 13:00 13:00 13:00 13:15 403 440 887 13:30 406 425	847 3269 771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
01:00 55 51 106 13:00 393 378 1 01:15 53 444 43 87 13:15 403 440 88 01:30 44 43 87 13:30 406 425 88 02:00 48 31 79 14:00 428 412 88 02:01 35 44 79 14:15 427 454 88 02:30 28 19 47 14:30 398 495 88 02:45 22 133 25 119 47 252 14:45 416 1669 461 1822 8 03:00 25 31 56 15:00 405 493 8 8 03:15 29 30 59 15:15 451 501 50 15:30 427 535 9 9 15:45 485 176 518 204 10 </th <td>771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065</td>	771 843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
01:15 53 44 43 87 13:15 403 440 8 8 13:30 406 425 8 8 13:30 406 425 8 8 9 13:45 380 1582 441 1684 8 8 9 14:00 428 412 42 8 8 19 14:70 14:30 398 495 8 8 9 14:30 398 495 8 8 9 14:30 398 495 8 8 9 14:30 398 495 8 8 9 15:15 451 16:69 461 1822 8 8 18:00 405 493 8 8 18:00 405 493 8 8 8 18:00 405 493 8 8 8 18:00 405 493 8 8 8 18:00 405 493 8 8 8 18:00 405	843 831 821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
01:45 34 186 29 167 63 353 13:45 380 1582 441 1684 8 02:00 48 31 79 14:00 428 412 8 02:30 28 19 47 14:30 398 495 8 02:45 22 133 25 119 47 252 14:45 416 1669 461 1822 8 03:00 25 31 56 15:00 405 493 8 8 03:30 22 28 50 15:30 427 535 9 5 15:30 427 535 9 5 9 15:45 485 1768 518 2047 1 44 209 15:45 485 1768 518 2047 1 44 1 16:00 479 482 44 44 16:00 479 482 44 46 46 <td>821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065</td>	821 3266 840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
02:00 48 31 79 14:00 428 412 8 02:15 35 44 79 14:15 427 454 8 02:45 22 133 25 119 47 252 14:45 416 1669 461 1822 8 03:00 25 31 56 15:00 405 493 30 8 03:30 22 28 50 15:30 427 535 50 15:30 427 535 50 9 15:45 485 1768 518 2047 1 44 209 15:45 485 1768 518 2047 1 44 209 15:45 485 1768 518 2047 1 44 209 15:45 485 1768 518 2047 1 482 2 9 44 209 15:45 485 168 168 16:15 536 442	840 881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
02:15 35 44 79 14:15 427 454 88 902:45 22 133 25 119 47 252 14:45 416 1669 461 1822 88 80 30:00 25 31 56 15:00 405 493 80 30:15 29 30 59 15:15 451 501 59 59 15:15 451 501 50 <t< th=""><td>881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065</td></t<>	881 893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
02:30 28 19 47 14:30 398 495 88 02:45 22 133 25 119 47 252 14:45 416 1669 461 1822 88 03:00 25 31 56 15:00 405 493 88 03:15 29 30 59 15:15 451 501 50 03:30 22 28 50 15:30 427 535 55 03:45 28 104 16 105 44 209 15:45 485 1768 518 2047 1 04:00 20 24 44 16:00 479 482 44 94 44 16:00 479 482 44 44 16:00 479 482 44 44 16:00 479 482 44 44 16:00 557 466 1 1 44:35 44 44 <td< th=""><td>893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065</td></td<>	893 877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
02:45 22 133 25 119 47 252 14:45 416 1669 461 1822 8 03:00 25 31 56 15:00 405 493 8 03:15 29 30 59 15:15 451 501 50 03:30 22 28 50 15:30 427 535 50 03:45 28 104 16 105 44 209 15:45 485 1768 518 2047 1 04:00 20 24 44 44 16:00 479 482 482 442 44 44 16:00 479 482 442 44 44 16:30 557 466 442 49 482 44 44 16:30 557 466 442 49 48 45 468 442 48 48 48 48 48 48 48 48 <td>877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065</td>	877 3491 898 952 962 1003 3815 961 978 1023 994 3956 1052 1065
03:15 29 30 59 15:15 451 501 50 50 15:30 427 535 50 50 15:30 427 535 50 50 15:30 427 535 50 50 50 15:30 427 535 50 50 50 15:30 427 535 50 50 50 15:30 427 535 50 50 50 15:30 427 535 50 50 50 16:45 565 518 2047 11 40 44 16:00 479 482 20 40 44 16:00 479 482 42 42 42 42 44 44 16:00 479 482 42 <t< th=""><td>952 962 1003 3815 961 978 1023 994 3956 1052 1065</td></t<>	952 962 1003 3815 961 978 1023 994 3956 1052 1065
03:30 22 28 104 16 105 44 209 15:30 427 535 2047 1 04:00 20 24 44 16:00 479 482 5 04:15 22 38 60 16:15 536 442 5 04:30 31 45 76 16:30 557 466 1 05:00 24 68 92 17:00 584 468 1 05:15 24 112 136 17:15 610 455 1 05:30 30 138 168 17:30 586 455 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 06:00 49 206 255 18:00 478 453 69 69 69 69 69 69 69 69 69 69 <td>962 1003 3815 961 978 1023 994 3956 1052 1065</td>	962 1003 3815 961 978 1023 994 3956 1052 1065
03:45 28 104 16 105 44 209 15:45 485 1768 518 2047 1 04:00 20 24 44 16:00 479 482 9 5 04:15 22 38 60 16:15 536 442 9 5 04:30 31 45 76 16:30 557 466 1	1003 3815 961 978 1023 994 3956 1052 1065
04:00 20 24 44 16:00 479 482 5 04:15 22 38 60 16:15 536 442 5 04:30 31 45 76 16:30 557 466 1 04:45 20 93 65 172 85 265 16:45 565 2137 429 1819 5 05:00 24 68 92 17:00 584 468 1 1 05:15 24 112 136 17:15 610 455 1 1 05:30 30 138 168 17:30 586 455 1 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 9 9 9 9 9 206 255 18:00 478 443 447 9 9 9 9 326 418 18:30	961 978 1023 994 3956 1052 1065
04:15 22 38 60 16:15 536 442 9 04:30 31 45 76 16:30 557 466 1 04:45 20 93 65 172 85 265 16:45 565 2137 429 1819 9 05:00 24 68 92 17:00 584 468 1 05:15 24 112 136 17:15 610 455 1 05:30 30 138 168 17:30 586 455 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 9 06:00 49 206 255 18:00 478 453 9 9 66:15 70 263 333 18:15 454 447 9 9 66:30 92 326 418 18:30 470 468 9 9 66:30 9 399 7 7 7 755	978 1023 994 3956 1052 1065
04:45 20 93 65 172 85 265 16:45 565 2137 429 1819 56 05:00 24 68 92 17:00 584 468 1 05:15 24 112 136 17:15 610 455 1 05:30 30 138 168 17:30 586 455 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 9 06:05 70 263 255 18:00 478 453 9 9 448 18:15 454 447 447 9 9 418 18:30 470 468 9 9 418 18:30 470 468 468 9 9 448 453 457 1830 8 8 9 9 462 1830 8 8 9 333	994 3956 1052 1065
05:00 24 68 92 17:00 584 468 1 05:15 24 112 136 17:15 610 455 1 05:30 30 138 168 17:30 586 455 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 98 06:00 49 206 255 18:00 478 453 98 98 98 448 18:26 98 98 98 455 18 18:26 98 455 18 18 454 447 453 453 18 18 454 447 468	1052 1065
05:15 24 112 136 17:15 610 455 1 05:30 30 138 168 17:30 586 455 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 9 06:00 49 206 255 18:00 478 453 9 9 9 36 418 18:15 454 447 447 9 9 9 320 351 1146 460 1466 18:45 437 1839 462 1830 8 07:00 245 385 630 19:00 369 399 7 07:15 184 486 670 19:15 349 314 6 07:30 178 577 755 19:30 339 315 6 07:45 255 862 551 1999 806 2861 19:45 357 1414 346 1374 7 08:00 312 </th <td>1065</td>	1065
05:30 30 138 168 17:30 586 455 1 05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 9 06:00 49 206 255 18:00 478 453 9 9 9 9 333 18:15 454 447 9 9 9 326 418 18:30 470 468 9 9 418 18:30 470 468 460 460 1466 18:45 437 1839 462 1830 80 80 80 399 399 399 399 30 314 30 30 314 30 30 314 30 30 315 315 30 30 315 315 30 315 315 30 30 315 315 30 315 315 30 315 315 315 315 <td></td>	
05:45 25 103 208 526 233 629 17:45 527 2307 448 1826 9 06:00 49 206 255 18:00 478 453 9 06:15 70 263 333 18:15 454 447 9 06:30 92 326 418 18:30 470 468 9 06:45 109 320 351 1146 460 1466 18:45 437 1839 462 1830 07:00 245 385 630 19:00 369 399 7 07:15 184 486 670 19:15 349 314 6 07:45 255 862 551 1999 806 2861 19:45 357 1414 346 1374 7 08:00 312 496 808 20:00 285 315 60	1041
06:15 70 263 333 18:15 454 447 9 06:30 92 326 418 18:30 470 468 9 06:45 109 320 351 1146 460 1466 18:45 437 1839 462 1830 8 07:00 245 385 630 19:00 369 399 7 7 07:15 184 486 670 19:15 349 314 6 07:30 178 577 755 19:30 339 315 6 07:45 255 862 551 1999 806 2861 19:45 357 1414 346 1374 7 08:00 312 496 808 20:00 285 315 6	975 4133
06:30 92 326 418 18:30 470 468 9 06:45 109 320 351 1146 460 1466 18:45 437 1839 462 1830 8 07:00 245 385 630 19:00 369 399 7 07:15 184 486 670 19:15 349 314 6 07:30 178 577 755 19:30 339 315 6 07:45 255 862 551 1999 806 2861 19:45 357 1414 346 1374 7 08:00 312 496 808 20:00 285 315 6	931
06:45 109 320 351 1146 460 1466 18:45 437 1839 462 1830 8 07:00 245 385 630 19:00 369 399 7 07:15 184 486 670 19:15 349 314 6 07:30 178 577 755 19:30 339 315 6 07:45 255 862 551 1999 806 2861 19:45 357 1414 346 1374 7 08:00 312 496 808 20:00 285 315 6	901
07:00 245 385 630 19:00 369 399 707:15 349 314 349 314 349 314 349 314 349 315 349 314 349 314 349 314 349 314 349 314 349 315 349 315 349 315 349 315	938 899 3669
07:15 184 486 670 19:15 349 314 670 07:30 178 577 755 19:30 339 315 670 07:45 255 862 551 1999 806 2861 19:45 357 1414 346 1374 74 08:00 312 496 808 20:00 285 315 68	768
07:45 255 862 551 1999 08:00 312 496	663
08:00 312 496 808 20:00 285 315	654
	703 2788
08:15 422 497 919 20:15 303 295	600 598
	493
	483 2174
	483
	476
	487 400 1846
	365
	366
10:30 466 374 840 22:30 139 174	313
	266 1310
	284 224
	176
	176 860
TOTALS 9540 10934 20474 TOTALS 17292 17285	34577
SPLIT % 46.6% 53.4% 37.2% SPLIT % 50.0% 50.0%	62.8%
NB SB EB WB	Total
DAILY TOTALS 26,832 28,219 0 0	55,051
AM Peak Hour 11:00 07:30 11:00 PM Peak Hour 16:45 15:00	16:45
AM Pk Volume 2305 2121 3797 PM Pk Volume 2345 2047	4152
Pk Hr Factor 0.867 0.919 0.894 Pk Hr Factor 0.961 0.957	0.975
7 - 9 Volume 2378 3987 0 6365 4 - 6 Volume 4444 3645 0 0	
7 - 9 Peak Hour 08:00 07:30 08:00 4 - 6 Peak Hour 16:45 17:00	8089
7 - 9 Pk Volume 1516 2121 0 0 3504 4 - 6 Pk Volume 2345 1826 0 0	16:45
Pk Hr Factor 0.898 0.919 0.000 0.000 0.953 Pk Hr Factor 0.961 0.975 0.000 0.000	

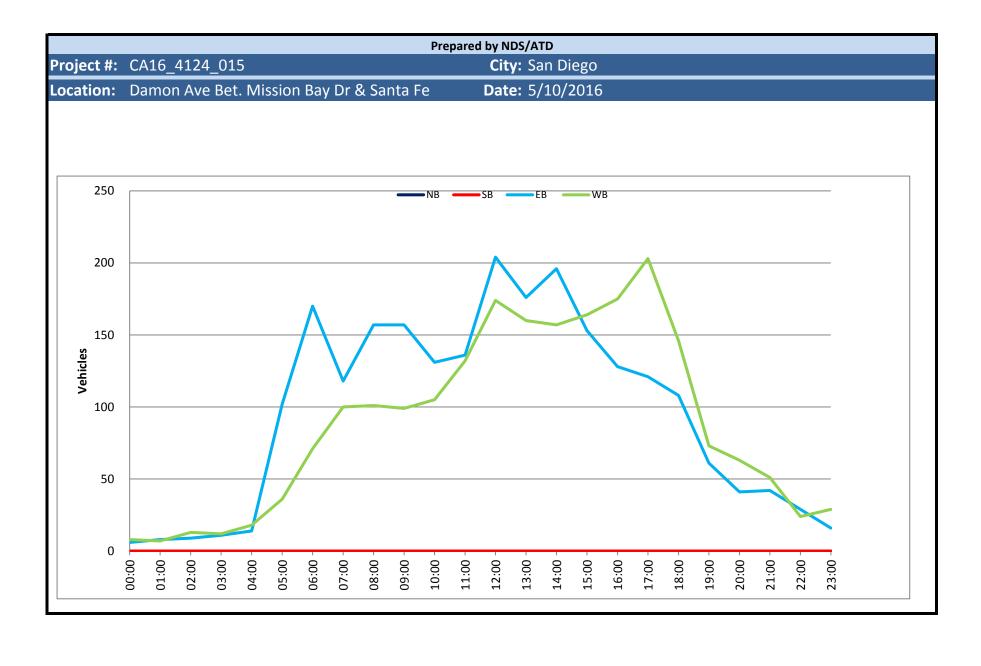


VOLUME

Damon Ave Bet. Mission Bay Dr & Santa Fe St

Day: Tuesday **Date:** 5/10/2016

	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		2,294	2,121						4,4	415
AM Period	NB SB	EB		WB		TC	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		0		0		0		12:00			44		40		84	
00:15 00:30		3 1		4 2		7 3		12:15 12:30			57 49		58 37		115 86	
00:30		2	6	2	8	4	14	12:45			54	204	39	174	93	378
01:00		1		1		2		13:00			52		43		95	
01:15		4		1		5		13:15			34		28		62	
01:30 01:45		2	8	5 0	7	6 2	15	13:30 13:45			48 42	176	47 42	160	95 84	336
02:00		0		1	,	1	13	14:00			53	170	41	100	94	330
02:15		1		1		2		14:15			38		32		70	
02:30 02:45		5 3	9	3 8	13	8 11	22	14:30 14:45			54 51	196	49 35	157	103 86	353
03:00		3	9	2	15	5	22	15:00			37	190	43	137	80	333
03:15		5		5		10		15:15			46		43		89	
03:30		2	4.4	5	4.2	7	22	15:30			32	452	41	164	73	247
03:45 04:00		1	11	9	12	10	23	15:45 16:00			38 42	153	37 40	164	75 82	317
04:15		3		7		10		16:15			30		40		70	
04:30		7		0		7		16:30			29		43		72	
04:45		3	14	2	18	5 15	32	16:45			27	128	52	175	79	303
05:00 05:15		11 19		4 9		15 28		17:00 17:15			36 32		63 69		99 101	
05:30		26		6		32		17:30			27		36		63	
05:45		46	102	17	36	63	138	17:45			26	121	35	203	61	324
06:00 06:15		33 61		8 13		41 74		18:00 18:15			27 27		36 39		63 66	
06:30		41		28		69		18:30			25		34		59	
06:45		35	170	22	71	57	241	18:45			29	108	37	146	66	254
07:00		27		23		50		19:00			23		27		50	
07:15 07:30		22 36		16 34		38 70		19:15 19:30			17 11		11 18		28 29	
07:45		33	118	27	100	60	218	19:45			10	61	17	73	27	134
08:00		48		32		80		20:00			8		25		33	
08:15 08:30		35 29		17 24		52 53		20:15 20:30			13 7		14 16		27 23	
08:45		45	157	28	101	73	258	20:45			13	41	8	63	21	104
09:00		39		28		67		21:00			10		14		24	
09:15		33		18		51		21:15			12		12		24	
09:30 09:45		33 52	157	33 20	99	66 72	256	21:30 21:45			13 7	42	14 11	51	27 18	93
10:00		28	137	24	33	52	230	22:00			11		13	31	24	33
10:15		39		40		79		22:15			8		5		13	
10:30 10:45		29 35	131	16 25	105	45 60	236	22:30 22:45			7 3	29	4 2	24	11 5	53
11:00		25	131	25	102	49	230	23:00			4	23	9	24	13	33
11:15		39		40		79		23:15			5		7		12	
11:30		30 42	126	30	122	60 80	260	23:30 22:45			4 3	16	8 5	20	12	45
11:45 TOTALS		42	136 1019	38	132 702	80	268 1721	23:45 TOTALS			3	16 1275	5	29 1419	8	45 2694
SPLIT %			59.2%		40.8%		39.0%	JPLII 70				47.3%		52.7%		61.0%
	DAILY TOTALS			NB		SB		EB	WB							otal
				0		0		2,294	2,121						4,4	415
AM Peak Hour			11:45		11:45		11:45	PM Peak Hour				12:15		16:30		12:15
AM Pk Volume			192		173		365	PM Pk Volume				212		227		389
Pk Hr Factor			0.842		0.746		0.793	Pk Hr Factor				0.930		0.822		0.846
7 - 9 Volume			275		201		476	4 - 6 Volume 4 - 6 Peak Hour				249		378 16:20		627 16:20
7 - 9 Peak Hour 7 - 9 Pk Volume			08:00 157		07:30 110			4 - 6 Peak Hour 4 - 6 Pk Volume				16:00 128		16:30 227		16:30 351
Pk Hr Factor			0.818		0.809		0.819	Pk Hr Factor				0.762		0.822		0.869

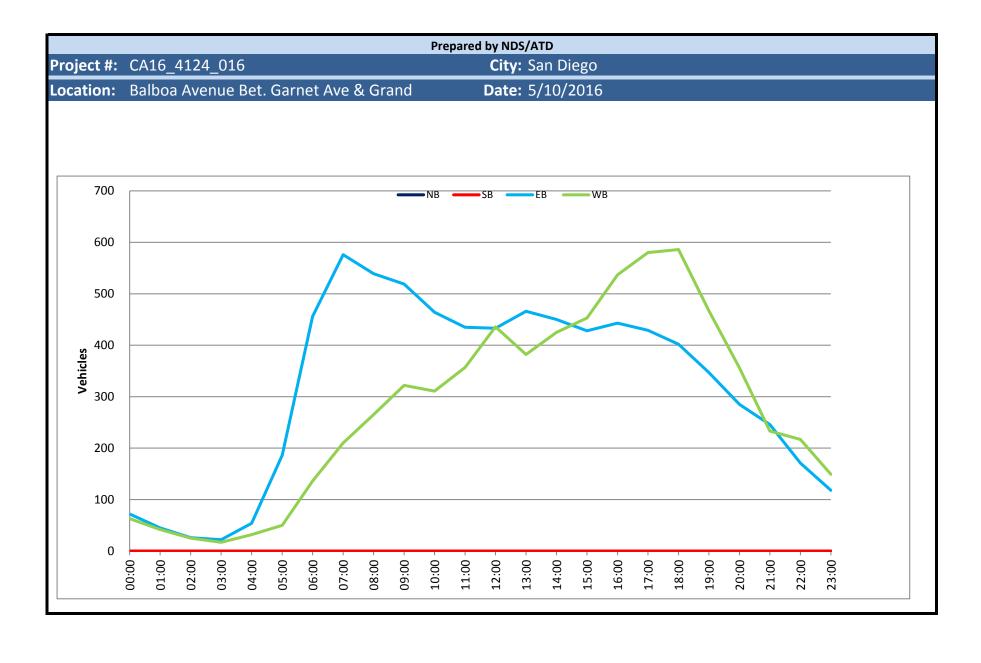


VOLUME

Balboa Avenue Bet. Garnet Ave & Grand Ave

Day: Tuesday **Date:** 5/10/2016

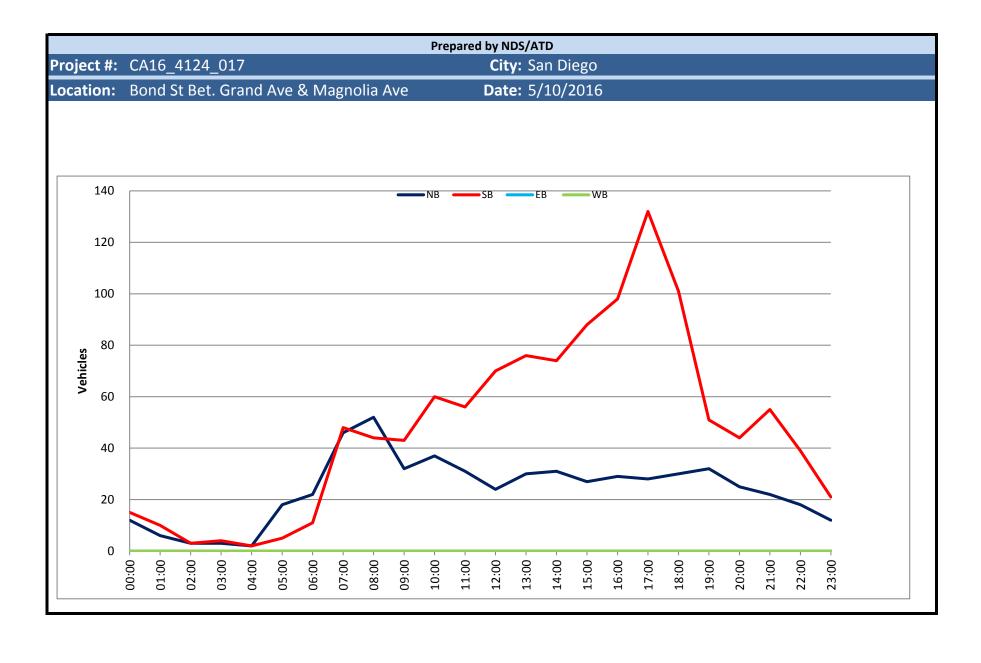
	DAILY TOTALS			NB		SB		EB	WB							otal
	ND CD			0		0	-	7,612	6,651							263
AM Period 00:00	NB SB	EB 22		WB 24		46	TAL	PM Period 12:00	NB	SB	EB 95		WB 106		201	TAL
00:15		17		12		29		12:15			127		111		238	
00:30		19		13		32		12:30			100		108		208	
00:45		14	72	14	63	28	135	12:45			111	433	111	436	222	869
01:00 01:15		16 6		13 12		29 18		13:00 13:15			107 121		97 95		204 216	
01:30		13		6		19		13:30			114		88		202	
01:45		10	45	11	42	21	87	13:45			124	466	102	382	226	848
02:00 02:15		7 7		8 11		15 18		14:00 14:15			122 113		94 107		216 220	
02:30		7		3		10		14:30			109		111		220	
02:45		5	26	3	25	8	51	14:45			106	450	113	425	219	875
03:00		6		3		9		15:00			94		103		197	
03:15 03:30		6 4		4 3		10 7		15:15 15:30			112 100		92 124		204 224	
03:45		6	22	7	17	13	39	15:45			122	428	134	453	256	881
04:00		12		3		15		16:00			108		141		249	
04:15		10		4		14		16:15			119		156		275	
04:30 04:45		11 21	54	12 13	32	23 34	86	16:30 16:45			121 95	443	116 124	537	237 219	980
05:00		18	J 4	9	JL	27	00	17:00			88	443	133	JJI	221	360
05:15		33		12		45		17:15			112		169		281	
05:30		68	406	14	F.0	82	226	17:30			113	420	144	500	257	4000
05:45 06:00		67 69	186	15 17	50	82 86	236	17:45 18:00			116 114	429	134 148	580	250 262	1009
06:15		101		30		131		18:15			103		156		259	
06:30		161		45		206		18:30			85		138		223	
06:45		125	456	44	136	169	592	18:45			100	402	144	586	244	988
07:00 07:15		146 161		42 61		188 222		19:00 19:15			99 83		138 118		237 201	
07:30		133		54		187		19:30			82		108		190	
07:45		136	576	53	210	189	786	19:45			83	347	103	467	186	814
08:00		144		52		196		20:00			72		90		162	
08:15 08:30		156 120		65 71		221 191		20:15 20:30			74 70		98 84		172 154	
08:45		119	539	77	265	196	804	20:45			69	285	84	356	153	641
09:00		132		85		217		21:00			68		72		140	
09:15		128		63		191		21:15			68		54		122	
09:30 09:45		128 131	519	84 90	322	212 221	841	21:30 21:45			57 53	246	47 60	233	104 113	479
10:00		99	313	87	322	186	041	22:00			52	240	54	233	106	473
10:15		135		76		211		22:15			47		54		101	
10:30		115	464	65	244	180	775	22:30			43	171	51	247	94	200
10:45 11:00		115 99	464	83 79	311	198 178	775	22:45 23:00			29 29	171	58 45	217	87 74	388
11:15		113		80		193		23:15			22		38		60	
11:30		90		83		173		23:30			29		33		62	
11:45 TOTALS		133	435 3394	115	357 1830	248	792 5224	23:45 TOTALS			38	4218	33	149 4821	71	267 9039
SPLIT %			65.0%		35.0%		36.6%					46.7%		53.3%		63.4%
JI LII /0			03.070		33.070		30.070					40.7/0		JJ.J/0		
	DAILY TOTALS			NB 0		SB 0		EB 7,612	WB 6,651							tal 263
AM Dook Usur			06:20		11.45		11.45	PM Peak Hour				12,45		17.15		
AM Peak Hour AM Pk Volume			06:30 593		11:45 440		11:45 895	PM Pk Volume				13:15 481		17:15 595		17:15 1050
Pk Hr Factor			0.921		0.957		0.902	Pk Hr Factor				0.970		0.880		0.934
7 - 9 Volume	0 0		1115		475		1590	4 - 6 Volume	0	0		872		1117		1989
7 - 9 Peak Hour			07:00		08:00		08:00	4 - 6 Peak Hour				16:00		17:00		17:00
7 - 9 Pk Volume			576		265			4 - 6 Pk Volume				443		580		1009
Pk Hr Factor	0.000 0.000		0.894		0.860		0.910	Pk Hr Factor	0.000	0.00	0	0.915		0.858		0.898



Bond St Bet. Grand Ave & Magnolia Ave

Day: Tuesday **Date:** 5/10/2016

AM Period NB	Total 1,722					WB 0		EB 0	SB 1,150	NB	-	LS	ОТА	AILY T	D	
DOUGO	TOTAL	A/D	. v		CD	U	NID						CD		NID	ANA Boriod
00:15	23	WD	o v							VD	ED					
00.45 5 12 3 15 8 27 12.45 7 24 18 70	26															
01:00	20						4		8							00:30
O1:15	25 94			70		24						15	3	12		
01:40 2 2 0 4 13:30 4 14 0 0 0 0 0 1 0 0 0 0	27 24												1			
O1:45	18						l '						2			
O2:15	37 106			76		30						10	2	6		
02:30	28						7									
02:45	32						7						_			
03:00	23 22 105			74		31						3	_	3		
03:30 3 3 3 0 4 0 7 15:45 5 27 18 88 04:00	31			, ,		<u> </u>							1			
03:45 0 3 0 4 0 7 15:45 5 27 18 88	35				30		5	15:15	0				0		0	03:15
Od-100	26			0.0								_	_			
Od:15 Od	23 115 40			88		27						4		3		
04:430	24												0			
DS:00	30						7		1				1			
OS:15 3	33 127			98		29						2	1	2		
05:30 5	43								4				0			
OS-45 6	50 34								4 5				1			
O6:00	33 160			132		28						5		18		
O6:30	26												3			
O6:45	31												2			
O7:00 9	40			101		20	l '					4.4	4	22		
O7:15	34 131 24			101		30						11				
07:30	22															
08:00 10 10 10 20 20:00 8 15 08:15 15 10 25 20:15 7 10 08:30 15 11 26 20:30 8 7 08:45 12 52 13 44 25 96 20:45 2 25 12 44 09:00 7 10 17 21:00 2 13 9 15 14 99:30 9 12 21 21:30 9 15 9 15 9 15 9 15 9 15 9 15 9 15 10 10 11 21:45 6 22 13 55 14 4 11 21:45 6 22 13 55 14 4 18 22:00 21:45 6 22 13 55 10 10:15 10:15 10:15 10:15 10:15 10:15 10	15															
08:15 15 10 08:30 15 11 08:45 12 52 13 09:00 7 10 17 09:15 5 7 12 09:30 9 12 21:30 9 09:30 9 12 21 21:30 9 09:45 11 32 14 43 25 75 21:45 6 22 13 55 10:00 4 14 18 22:00 4 16 10:15 10 12 22 22:15 9 8 10:30 15 19 34 22:30 3 7 10:45 8 37 15 60 23 97 22:45 2 18 8 39 11:00 7 15 22 23:00 5 8 11:30 6 9 15 22 23:00 5 8 11:45	22 83			51		32						48		46		
08:30 15 11 26 20:30 8 7 08:45 12 52 13 44 25 96 20:45 2 25 12 44 09:00 7 10 17 21:00 2 13 09:15 5 7 12 21:15 5 14 14 12 21:15 5 14 14 18 22:130 9 15 15 10 10 11 14 18 22:00 4 16 10:15 10 12 22 22:15 9 8 10:30 15 19 34 22:30 3 7 10:45 8 37 15 60 23 97 22:45 2 18 8 39 11:00 7 15 22 23:00 5 8 11:13 7 13 12:30 4 6 11:45 11:45 13:45 12:30 30:87	23 17															
08:45 12 52 13 44 25 96 20:45 2 25 12 44 09:00 7 10 17 21:00 2 13 0 0 12 21:15 5 14 0 9:30 9 12 21:30 9 15 0 10:00 15 10:00 4 14 18 22:00 4 16 10:15 10 12 22 22:15 9 8 10:30 15 19 34 22:30 3 7 10:45 8 37 15 60 23 97 22:45 2 18 8 39 11:04 8 37 15 60 23 97 22:45 2 18 8 39 11:00 7 15 22 23:00 5 8 11:15 7 13 20 23:15 2 4 11:35 11:45 11:	15						I '									
12	14 69			44	12	25						44		52		
09:30 9 12 21 21:30 9 15 09:45 11 32 14 43 25 75 21:45 6 22 13 55 10:00 4 14 18 22:00 4 16 10:15 10 12 22 22:15 9 8 10:30 15 19 34 22:30 3 7 10:45 8 37 15 60 23 97 22:45 2 18 39 11:00 7 15 22 23:00 5 8 11:15 7 13 20 23:15 2 4 11:30 6 9 15 23:30 4 6 11:45 11 31 31 9 56 30 87 23:45 1 12 3 21 DAILY TOTALS NB SB EB	15															
09:45	19												•			
10:00	24 19 77			55		22						43		32		
10:15	20											73		<u> </u>		
10:45 8 37 15 60 23 97 22:45 2 18 8 39 11:00 7 15 22 23:00 5 8 11:15 7 13 20 23:15 2 4 11:30 6 9 15 23:30 4 6 11:45 11 31 19 56 30 87 23:45 1 12 3 21 TOTALS 264 301 565 TOTALS 308 849 SPLIT % 46.7% 53.3% 32.8% SPLIT % 26.6% 73.4% DAILY TOTALS NB SB EB WB 572 1,150 0 0 AM Peak Hour 14:15 17:00	17						9									
11:00 7 15 22 23:00 5 8 11:15 7 13 20 23:15 2 4 11:30 6 9 15 23:30 4 6 11:45 11 31 19 56 30 87 23:45 1 12 3 21 TOTALS 264 301 565 TOTALS 308 849 SPLIT % 46.7% 53.3% 32.8% SPLIT % 26.6% 73.4% DAILY TOTALS NB SB EB WB 572 1,150 0 0 AM Peak Hour 14:15 17:00	10				7											
11:15 7 13 20 23:15 2 4 11:30 6 9 15 23:30 4 6 11:45 11 31 19 56 30 87 23:45 1 12 3 21 TOTALS 264 301 565 TOTALS 308 849 SPLIT % 46.7% 53.3% 32.8% SPLIT % 26.6% 73.4% DAILY TOTALS NB SB EB WB 572 1,150 0 0 AM Peak Hour 07:45 11:45 10:15 PM Peak Hour 14:15 17:00	10 57			39		18						60		37		
11:30 6 9 15 23:30 4 6 11:45 <	13 6				٥ 4											
11:45 11 31 19 56 30 87 23:45 1 12 3 21 TOTALS 264 301 565 TOTALS 308 849 SPLIT % 46.7% 53.3% 32.8% SPLIT % 26.6% 73.4% DAILY TOTALS NB SB EB WB 572 1,150 0 0 AM Peak Hour 07:45 11:45 10:15 PM Peak Hour 14:15 17:00	10				6											
SPLIT % 46.7% 53.3% 32.8% SPLIT % 26.6% 73.4% DAILY TOTALS NB SB EB WB 572 1,150 0 0 AM Peak Hour 07:45 11:45 10:15 PM Peak Hour 14:15 17:00	4 33			21	3	12	1					56	19	31		
DAILY TOTALS NB SB EB WB 572 1,150 0 0 AM Peak Hour 07:45 11:45 17:00	1157			849		308		TOTALS	565			301		264		TOTALS
DAILY TOTALS 572 1,150 0 0 AM Peak Hour 07:45 11:45 10:15 PM Peak Hour 14:15 17:00	67.2%			73.4%		26.6%		SPLIT %	32.8%			53.3%		46.7%		SPLIT %
DAILY TOTALS 572 1,150 0 0 AM Peak Hour 07:45 11:45 10:15 PM Peak Hour 14:15 17:00	Total					WB		EB	SB	NB						
	1,722											ILS	OTA	AILY I	D	
	16:45			17:00		14:15		PM Peak Hour	10:15			11:45		07:45		AM Peak Hour
	160															
Pk Hr Factor 0.883 0.934 0.743 Pk Hr Factor 0.795 0.825	0.800															
7 - 9 Volume 98 92 0 0 190 4 - 6 Volume 57 230 0	287	0	0					4 - 6 Volume	190	0	0					
7 - 9 Peak Hour 07:45 07:00 08:00 4 - 6 Peak Hour 16:30 17:00	16:45			17:00		16:30								07:45		7 - 9 Peak Hour
7 - 9 Pk Volume 53 48 0 0 96 4 - 6 Pk Volume 32 132 0 0	160															
Pk Hr Factor 0.883 0.800 0.000 0.000 Pk Hr Factor 0.800 0.825 0.000 0.000	0.800	0.000	0.000	0.825		0.800		Pk Hr Factor	0.923	0.000	0.000	0.800		0.883		Pk Hr Factor

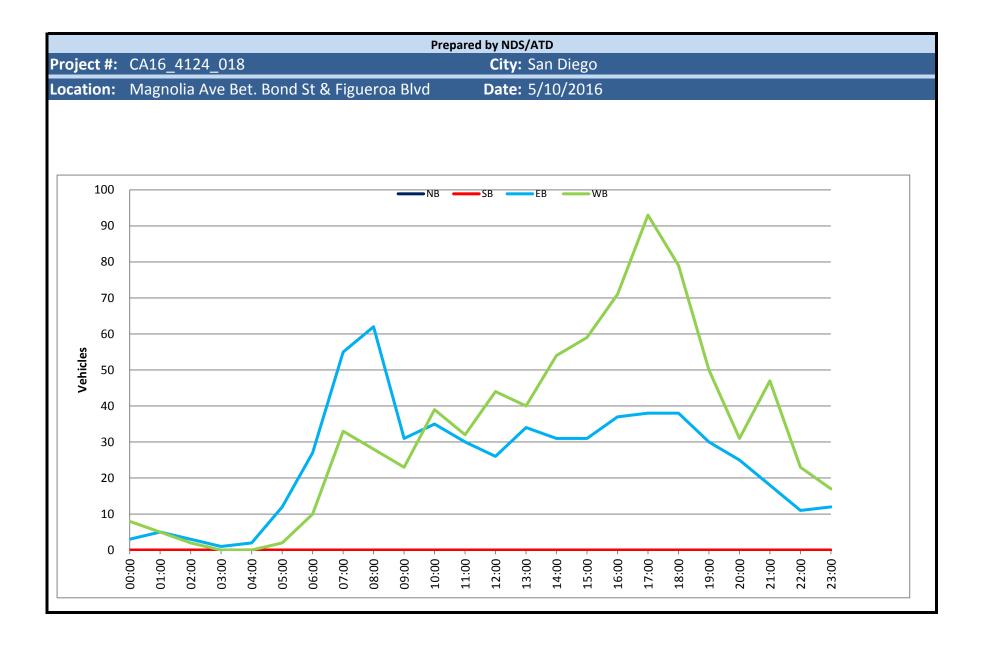


VOLUME

Magnolia Ave Bet. Bond St & Figueroa Blvd

Day: Tuesday **Date:** 5/10/2016

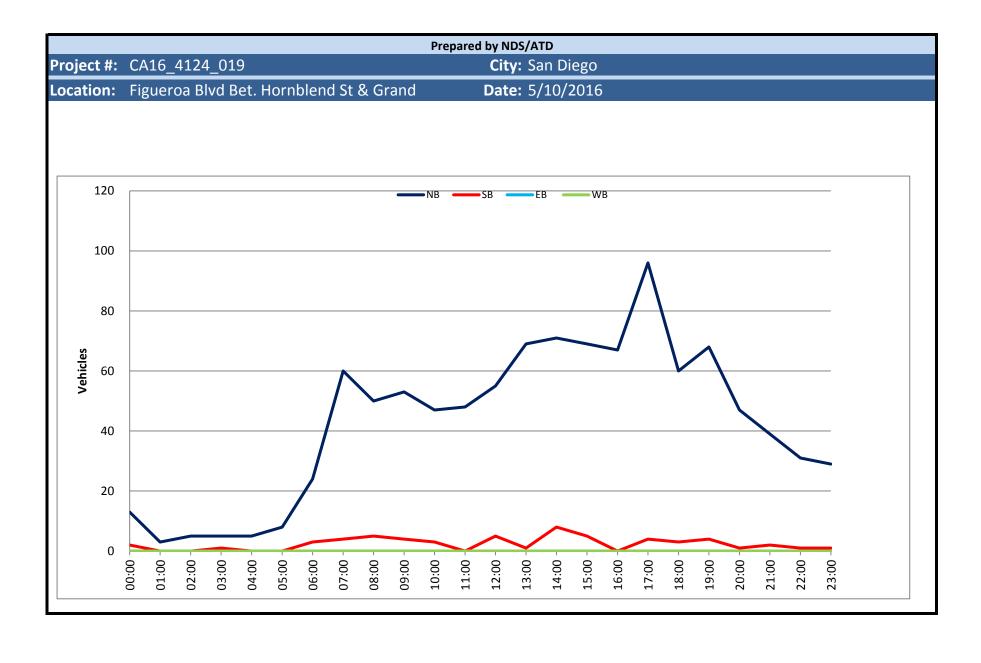
	DAILY TOTA	ΛΙς			NB		SB		ЕВ	,	WB						To	otal
	DAILI TOTA	ALS			0		0		597		790						1,3	387
AM Period	NB SB		EB		WB		ТО	TAL	PM Period	NB		SB	EB		WB		TO	TAL
00:00			0		1		1		12:00				6		9		15	
00:15			1		3		4		12:15				6		13		19	
00:30 00:45			2	3	4 0	8	2	11	12:30 12:45				4 10	26	12 10	44	16 20	70
01:00			0		1	0	1		13:00				5	20	11	44	16	70
01:15			2		3		5		13:15				11		7		18	
01:30			1		1		2		13:30				5		8		13	
01:45			2	5	0	5	2	10	13:45				13	34	14	40	27	74
02:00 02:15			0		0		0 3		14:00 14:15				3 8		12 17		15 25	
02:13			1		1		2		14:30				10		12		22	
02:45			0	3	0	2	0	5	14:45				10	31	13	54	23	85
03:00			0		0		0		15:00				12		14		26	
03:15			0		0		0		15:15				7		18		25	
03:30 03:45			1 0	1	0 0		1 0	1	15:30 15:45				6	31	12 15	59	18 21	90
04:00			1		0		1		16:00				12	31	22	33	34	90
04:15			0		0		0		16:15				10		16		26	
04:30			0		0		0		16:30				6		19		25	
04:45			1	2	0		1	2	16:45				9	37	14	71	23	108
05:00 05:15			3		0		3		17:00 17:15				7 8		24 24		31 32	
05:30			3		0		3		17:30				15		24 19		34	
05:45			4	12	1	2	5	14	17:45				8	38	26	93	34	131
06:00			2		1		3		18:00				8		20		28	
06:15			8		1		9		18:15				7		21		28	
06:30			10 7	27	3	10	13	27	18:30				11	20	24	70	35	117
06:45 07:00			10	27	5 10	10	12 20	37	18:45 19:00				12 12	38	14 16	79	26 28	117
07:15			10		8		18		19:15				6		10		16	
07:30			19		10		29		19:30				5		12		17	
07:45			16	55	5	33	21	88	19:45				7	30	12	50	19	80
08:00			12		11		23		20:00 20:15				8		10		18	
08:15 08:30			15 20		5 5		20 25		20:30				6		6 6		13 12	
08:45			15	62	7	28	22	90	20:45				4	25	9	31	13	56
09:00			7		7		14		21:00				4		9		13	
09:15			9		2		11		21:15				6		15		21	
09:30			10	31	8 6	23	18	54	21:30 21:45				4	18	13 10	47	17 14	65
09:45 10:00			5 10	31	6	23	11 16	54	22:00				<u>4</u> 4	18	11	47	15	05
10:15			11		10		21		22:15				3		5		8	
10:30			9		12		21		22:30				2		2		4	
10:45			5	35	11	39	16	74	22:45				2	11	5	23	7	34
11:00			5		9		14		23:00				4		7		11	
11:15 11:30			8 5		Ծ 7		14 12		23:15 23:30				3 2		ე 1		8 3	
11:45			12	30	10	32	22	62	23:45				3	12	4	17	7	29
TOTALS				266		182		448	TOTALS				·	331		608		939
SPLIT %				59.4%		40.6%		32.3%	SPLIT %					35.3%		64.7%		67.7%
					NID		CD		ED.		\A/P							tal
	DAILY TOTA	ALS			NB 0		SB 0		EB 597		WB 790							otal 387
ANA Deal 11				07.45		14.45		07.00						10.15		47.00		
AM Peak Hour AM Pk Volume				07:45 63		11:45 44		07:30 93	PM Peak Hour PM Pk Volume					18:15 42		17:00 93		17:00 131
Pk Hr Factor				0.788		0.846		0.802	Pk Hr Factor					42 0.875		0.894		0.963
7 - 9 Volume	0	0		117		61		178	4 - 6 Volume		0	0		75		164		239
7 - 9 Peak Hour				07:45		07:15			4 - 6 Peak Hour					16:45		17:00		17:00
7 - 9 Pk Volume				63		34		93	4 - 6 Pk Volume					39		93		131
Pk Hr Factor	0.000	0.000		0.788		0.773		0.802	Pk Hr Factor	(0.000	0.0	00	0.650		0.894		0.963



Figueroa Blvd Bet. Hornblend St & Grand Ave

Day: Tuesday **Date:** 5/10/2016

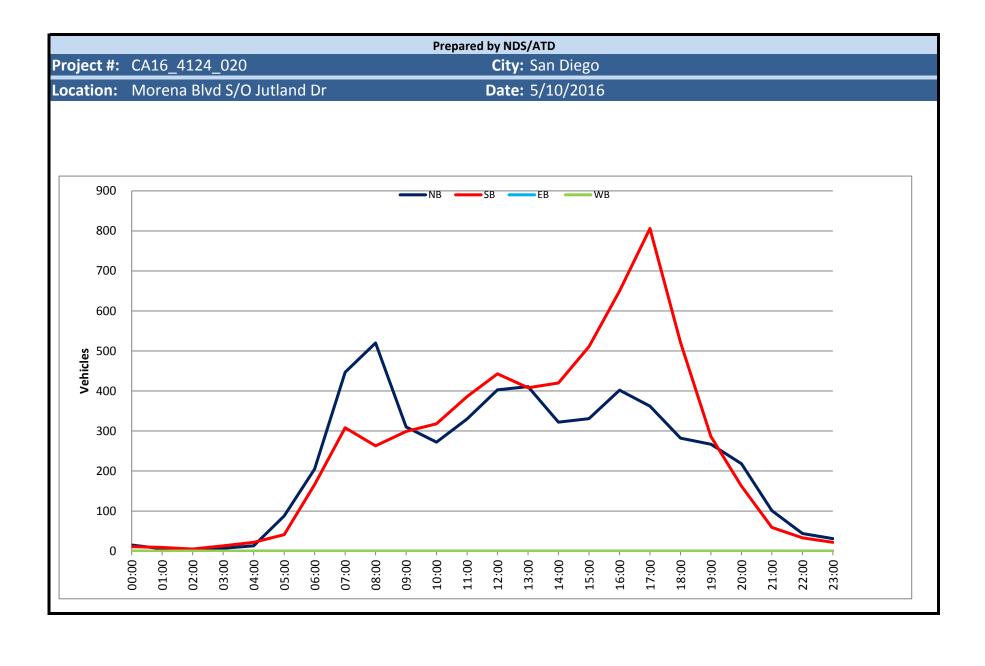
	DΛ	AILY T	ОΤΛ	15		NB		SB		EB		WB						To	otal
	DA	AILY I	UIA	ILO		1,022		57		0		0						1,0	079
AM Period	NB		SB		EB	WB		TO.	TAL	PM Period	NB		SB		EB	WI	R	TO	TAL
00:00	2		0			***		2		12:00	21		2			•		23	
00:15	4		0					4		12:15	9		1					10	
00:30	4		0					4		12:30	16		1					17	
00:45	3	13	2	2				5	15	12:45	9	55	1	5				10	60
01:00 01:15	0 2		0					0 2		13:00 13:15	8 15		0					8 16	
01:30	0		0					0		13:30	26		0					26	
01:45	1	3	0					1	3	13:45	20	69	0	1				20	70
02:00	2		0					2		14:00	16		2					18	
02:15	0		0					0		14:15	24		2					26	
02:30 02:45	3 0	5	0					3 0	5	14:30 14:45	16 15	71	2	8				18 17	79
03:00	0	<u> </u>	0					0	<u> </u>	15:00	13	/1	2	0				15	79
03:15	2		1					3		15:15	17		1					18	
03:30	1		0					1		15:30	24		2					26	
03:45	2	5	0	1				2	6	15:45	15	69	0	5				15	74
04:00	2		0					2		16:00 16:15	23		0					23	
04:15 04:30	1 0		0					0		16:30	15 12		0					15 12	
04:45	2	5	0					2	5	16:45	17	67	0					17	67
05:00	3		0					3		17:00	20		2					22	
05:15	1		0					1		17:15	26		0					26	
05:30	2		0					2		17:30	27	0.5	2	_				29	100
05:45 06:00	2 4	8	0					2	8	17:45 18:00	23	96	0	4				23	100
06:00	2		0 1					3		18:15	17 15		U					18 15	
06:30	7		1					8		18:30	14		1					15	
06:45	11	24	1	3				12	27	18:45	14	60	1	3				15	63
07:00	12		1					13		19:00	18		0					18	
07:15	13		1					14		19:15	22		2					24	
07:30 07:45	18 17	60	1	4				19 18	64	19:30 19:45	13 15	68	0 2	4				13 17	72
08:00	10	00	0	4				10	04	20:00	11	06	0	4				11	12
08:15	14		3					17		20:15	14		0					14	
08:30	17		1					18		20:30	14		0					14	
08:45	9	50	1	5				10	55	20:45	8	47	1	1				9	48
09:00	10 13		0					10		21:00 21:15	11		0					11	
09:15 09:30	16		2					14 18		21:30	5 14		1					6 15	
09:45	14	53	1	4				15	57	21:45	9	39	0	2				9	41
10:00	12		1					13		22:00	9		0					9	
10:15	8		0					8		22:15	5		1					6	
10:30	17	A 📆	1	2				18	F.0	22:30	7	24	0	4				7	22
10:45 11:00	10 13	47	<u>1</u> 0	3				11 13	50	22:45 23:00	10 8	31	<u>0</u> 1	1				10 9	32
11:00	13		0					13		23:15	8 13		0					13	
11:30	11		0					11		23:30	5		0					5	
11:45	11	48	0					11	48	23:45	3	29	0	1				3	30
TOTALS		321		22					343	TOTALS		701		35					736
SPLIT %		93.6%		6.4%					31.8%	SPLIT %		95.2%		4.8%					68.2%
						ND		CD		50		W/P						-	10
	DA	AILY T	OTA	LS		NB		SB		EB		WB							otal
						1,022		57		0		0						1,	079
AM Peak Hour		07:00		07:30					07:00	PM Peak Hour		17:00		14:00					17:00
AM Pk Volume		60		5					64	PM Pk Volume		96		8					100
Pk Hr Factor		0.833		0.417					0.842	Pk Hr Factor		0.889		1.000					0.862
7 - 9 Volume		110		9					119	4 - 6 Volume		163		4					167
7 - 9 Peak Hour		07:00		07:30						4 - 6 Peak Hour		17:00		16:45					17:00
7 - 9 Pk Volume		60		5 0.417					64 0.842	4 - 6 Pk Volume Pk Hr Factor		96 0.889		4 0.500					100
Pk Hr Factor		0.833		0.417	0.000		0.000		0.642	TK TII FALLUI		0.689		0.500	0.0	700	0.000		0.862



Morena Blvd S/O Jutland Dr

Day: Tuesday **Date:** 5/10/2016

	D	AILY 1		\IS		NB		SB		EB		WB						To	otal
	U	-XILT I	UIF	(L)		5,392	6	5,162		0		0						11,	,554
AM Period	NB		SB		EB	WB		TOT	AL	PM Period	NB		SB		EB	WE	3	ТО	TAL
00:00	3		3					6		12:00	73		119					192	
00:15	3		2					5		12:15	81		106					187	
00:30	7		6					13		12:30	121		116					237	
00:45	2	15	0	11				2	26	12:45	128	403	102	443				230	846
01:00	0		2					2		13:00	117		113					230	
01:15 01:30	5 0		პ ე					8 2		13:15 13:30	117 88		99 101					216 189	
01:45	1	6	2	9				3	15	13:45	89	411	95	408				184	819
02:00	1		1					2	13	14:00	85	111	103	100				188	013
02:15	2		3					5		14:15	78		102					180	
02:30	1		1					2		14:30	89		91					180	
02:45	1	5	0	5				1	10	14:45	70	322	124	420				194	742
03:00	2		4					6		15:00	88		117					205	
03:15	2		3					5		15:15 15:30	79 83		125					204	
03:30 03:45	2	7	5	13				2 7	20	15:45	81	331	123 146	511				206 227	842
04:00	4		2	13				6	20	16:00	101	331	138	311				239	072
04:15	1		4					5		16:15	108		154					262	
04:30	5		5					10		16:30	99		187					286	
04:45	3	13	11	22				14	35	16:45	94	402	171	650				265	1052
05:00	7		3					10		17:00	99		242					341	
05:15	24		7					31		17:15	96		183					279	
05:30 05:45	17 40	88	12 19	41				29 59	129	17:30 17:45	85 82	362	203 178	806				288 260	1168
06:00	34	- 00	21	41				55	123	18:00	83	302	190	800				273	1108
06:15	38		28					66		18:15	74		113					187	
06:30	75		54					129		18:30	64		103					167	
06:45	58	205	63	166					371	18:45	61	282	115	521				176	803
07:00	64		67					131		19:00	72		80					152	
07:15	98		74 72					172		19:15	74		86					160	
07:30 07:45	114 171	447	72 95	308				186 266	755	19:30 19:45	66 55	267	55 65	286				121 120	553
08:00	154	447	<u>55</u>	306				204	/33	20:00	60	207	54	200				114	333
08:15	128		64					192		20:15	60		46					106	
08:30	119		76					195		20:30	49		33					82	
08:45	119	520	73	263					783	20:45	49	218	29	162				78	380
09:00	110		74					184		21:00	32		18					50	
09:15	64 67		66					130		21:15	23		18					41	
09:30 09:45	67 69	310	67 92	299				134 161	609	21:30 21:45	26 20	101	11 12	59				37 32	160
10:00	67	310	70	233				137	009	22:00	14	101	16	33				30	100
10:15	64		76					140		22:15	13		5					18	
10:30	73		91					164		22:30	7		8					15	
10:45	68	272	81	318					590	22:45	10	44	4	33				14	77
11:00	69		94					163		23:00	15		8					23	
11:15	82		91 05					173		23:15	6		4					10	
11:30 11:45	82 97	330	95 106	386				177 203	716	23:30 23:45	6 4	31	3 7	22				9 11	53
TOTALS	31	2218	100	1841					4059	TOTALS		3174		4321					7495
SPLIT %		54.6%		45.4%				3	85.1%	SPLIT %		42.3%		57.7%					64.9%
	_ D	AILY T		115		NB		SB		EB		WB						To	otal
	יוט	AILY I		(L)		5,392	6	5,162		0		0						11,	,554
AM Peak Hour		07:45		11:45					07:45	PM Peak Hour		12:30		17:00					16:45
AM Pk Volume		572		447					857	PM Pk Volume		483		806					1173
Pk Hr Factor		0.836		0.939					0.805	Pk Hr Factor		0.943		0.833					0.860
7 - 9 Volume		967		571	0		0		1538	4 - 6 Volume		764		1456	()	0		2220
7 - 9 Peak Hour		07:45		07:00					07:45	4 - 6 Peak Hour		16:00		17:00					16:45
7 - 9 Pk Volume		572		308					857	4 - 6 Pk Volume		402		806					1173
Pk Hr Factor		0.836		0.811	0.00	0	.000		0.805	Pk Hr Factor		0.931		0.833	0.0	000	0.000		0.860

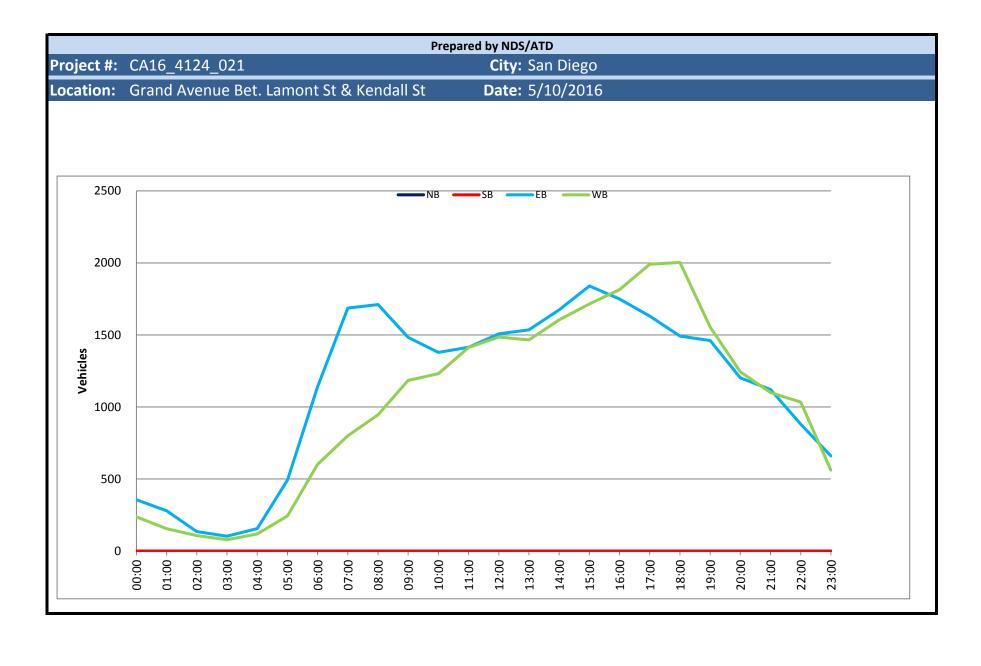


VOLUME

Grand Avenue Bet. Lamont St & Kendall St

Day: Tuesday **Date:** 5/10/2016

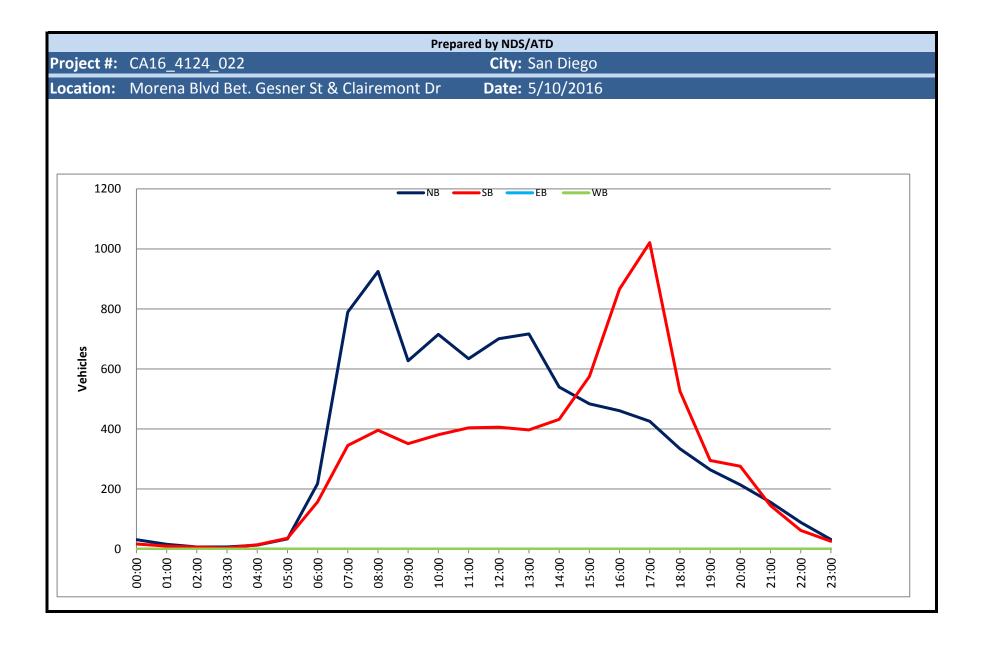
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILI TOTALS			0		0		27,091	24,687						51,	,778
AM Period	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		123		85		208		12:00			384		369		753	
00:15		89		49		138		12:15			366		365		731	
00:30		89		50		139	,	12:30			376		354		730	
00:45		55	356	53	237	108	593	12:45			382	1508	397	1485	779	2993
01:00		79		55 24		134		13:00			372		358		730	
01:15 01:30		51 74		34 30		85 104		13:15 13:30			412 361		370 354		782 715	
01:45		75	279	36	155	111	434	13:45			391	1536	383	1465	774	3001
02:00		41	273	40	133	81	15 1	14:00			415	1330	377	1 105	792	3001
02:15		41		36		77		14:15			468		410		878	
02:30		34		19		53		14:30			379		449		828	
02:45		19	135	12	107	31	242	14:45			412	1674	368	1604	780	3278
03:00		35		21		56		15:00			449		443		892	
03:15		29		13		42		15:15			445		426		871	
03:30 03:45		21 18	103	20 25	79	41 43	182	15:30 15:45			451 495	1840	349 497	1715	800 992	3555
04:00		31	103	12	73	43	102	16:00			437	1040	489	1/13	926	3333
04:15		26		13		39		16:15			426		419		845	
04:30		37		40		77		16:30			446		426		872	
04:45		62	156	53	118	115	274	16:45			441	1750	480	1814	921	3564
05:00		70		29		99		17:00			406		448		854	
05:15		93		45		138		17:15			393		468		861	
05:30		163		64		227		17:30			409		524		933	
05:45		167	493	106	244	273	737	17:45			423	1631	551	1991	974	3622
06:00		200		92		292		18:00			343		477		820	
06:15 06:30		273 344		148 161		421 505		18:15 18:30			375 390		490 535		865 925	
06:45		323	1140	200	601	523	1741	18:45			384	1492	501	2003	885	3495
07:00		443	1110	180	001	623	17 11	19:00			347	1132	428	2003	775	3 133
07:15		408		222		630		19:15			379		410		789	
07:30		422		219		641		19:30			367		376		743	
07:45		413	1686	179	800	592	2486	19:45			368	1461	340	1554	708	3015
08:00		454		213		667		20:00			320		318		638	
08:15		454		219		673		20:15			310		343		653	
08:30		434	1711	255	046	689	2657	20:30 20:45			269	1202	283	1244	552 603	2446
08:45 09:00		369 400	1711	259 299	946	628 699	2657	21:00			303 293	1202	300 259	1244	552	2446
09:15		366		240		606		21:15			271		261		532	
09:30		361		302		663		21:30			274		275		549	
09:45		356	1483	344	1185	700	2668	21:45			283	1121	305	1100	588	2221
10:00		321		310		631		22:00			232		287		519	
10:15		352		275		627		22:15			243		274		517	
10:30		370		315		685		22:30			198		227		425	
10:45		336	1379	331	1231	667	2610	22:45			207	880	246	1034	453	1914
11:00		324 327		327 316		651 643		23:00 23:15			205		171 145		376 304	
11:15 11:30		327 380		362		742		23:15			159 157		145 134		304 291	
11:45		384	1415	408	1413	792	2828	23:45			139	660	112	562	251	1222
TOTALS		301	10336	100	7116	732	17452	TOTALS			133	16755	112	17571	231	34326
SPLIT %			59.2%		40.8%		33.7%	SPLIT %				48.8%		51.2%		66.3%
	DAILY TOTALS			NB		SB		ЕВ	WB						To	otal
	DAILY TOTALS			0		0		27,091	24,687						51,	,778
AM Peak Hour			07:45		11:30		11:30	PM Peak Hour				15:00		17:45		15:45
AM Pk Volume			1755		1504		3018	PM Pk Volume				1840		2053		3635
Pk Hr Factor			0.966		0.922		0.953	Pk Hr Factor				0.929		0.931		0.916
7 - 9 Volume	0 0		3397		1746		5143	4 - 6 Volume	0	0		3381		3805		7186
7 - 9 Peak Hour			07:45		08:00			4 - 6 Peak Hour				16:00		17:00		17:00
7 - 9 Pk Volume			1755		946			4 - 6 Pk Volume				1750		1991		3622
Pk Hr Factor			0.966		0.913		0.964	Pk Hr Factor				0.981		0.903		0.930
. A III I detel			0.500		0.513		0.504		3.000	0.000		0.501		0.505		3.330



Morena Blvd Bet. Gesner St & Clairemont Dr

Day: Tuesday **Date:** 5/10/2016

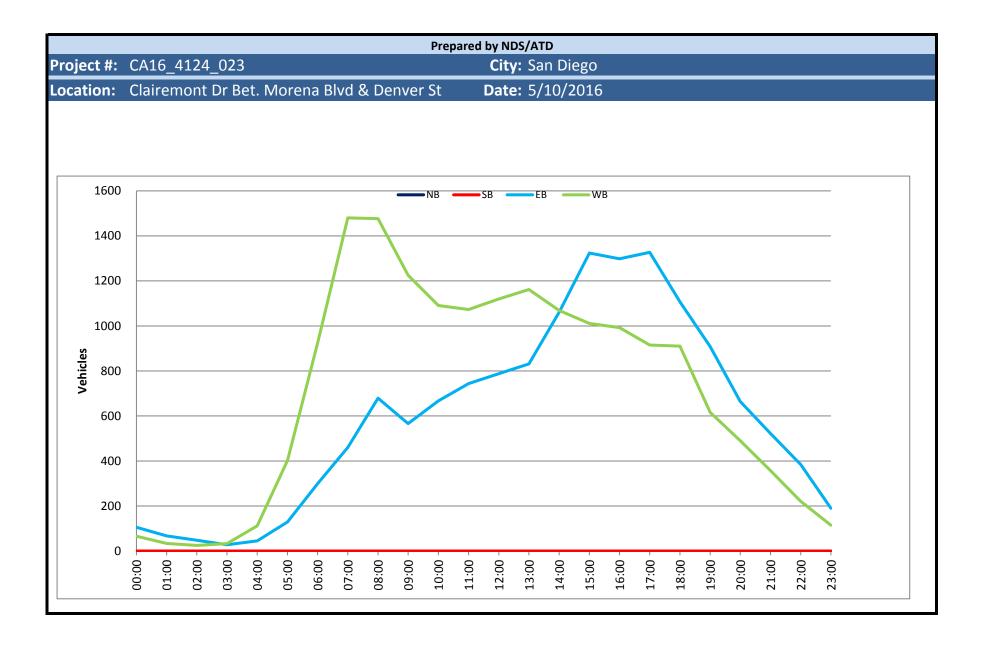
	D/	AILY T	OTA	15		NB		SB	EB		WB						To	otal
	- UF	AILT I	OTA	(E)		8,435	7,	149	0		0						15,	,584
AM Period	NB		SB		EB	WB		TOTAL	PM Period	NB		SB		EB	WB		ТО	TAL
00:00	13		4					17	12:00	185		88					273	
00:15	5		6				1	11	12:15	165		108					273	
00:30	7		3					10	12:30	179		106					285	
00:45	6	31	4	17				10 48	12:45	172	701	104	406				276	1107
01:00	3		1					4	13:00	145		107					252	
01:15 01:30	2 6		3 1					5 10	13:15 13:30	189 195		98 102					287 297	
01:45	5	16	2	10				7 26	13:45	188	717	90	397				278	1114
02:00	3	10	2	10				5	14:00	189	7 1 7	105	337				294	1114
02:15	1		5					6	14:15	149		112					261	
02:30	1		0					1	14:30	103		119					222	
02:45	2	7	0	7				2 14	14:45	99	540	96	432				195	972
03:00	0		2					2	15:00	120		111					231	
03:15	2		0					2	15:15 15:20	98		132					230	
03:30 03:45	3 2	7	2	4				3 4 11	15:30 15:45	142 124	484	154 178	575				296 302	1059
04:00	1		5	- 4				6	16:00	118	404	208	373				326	1033
04:15	3		0					3	16:15	114		188					302	
04:30	4		4					8	16:30	117		249					366	
04:45	5	13	5	14				10 27	16:45	112	461	221	866				333	1327
05:00	5		5					10	17:00	114		294					408	
05:15	7		5					12	17:15	113		248					361	
05:30	5	24	6	26				11	17:30	112	126	259	1021				371	1447
05:45 06:00	17 21	34	20 30	36				37 70 51	17:45 18:00	87 88	426	220 174	1021				307 262	1447
06:15	27		27					54	18:15	77		141					218	
06:30	60		48					.08	18:30	73		110					183	
06:45	110	218	52	157				.62 375	18:45	96	334	101	526				197	860
07:00	143		60					.03	19:00	68		77					145	
07:15	173		72					45	19:15	69		64					133	
07:30	218	700	83	2.45				01	19:30	71	264	61	205				132	550
07:45 08:00	256 251	790	130 84	345				86 1135 35	19:45 20:00	56 63	264	93 81	295				149 144	559
08:00 08:15	231		91					30	20:15	51		73					124	
08:30	224		108					32	20:30	56		65					121	
08:45	211	925	113	396				24 1321	20:45	44	214	57	276				101	490
09:00	134		97					31	21:00	53		55					108	
09:15	105		88					.93	21:15	38		37					75	
09:30	161	6 9	85	0=4				46	21:30	41	4=6	32					73	221
09:45	227	627	81	351				08 978	21:45	24	156	21	145				45	301
10:00 10:15	213 188		96 104					09 92	22:00 22:15	22 35		22 13					44 48	
10:30	158		104					.92 .61	22:30	33 17		15 15					32	
10:45	156	715	78	381				34 1096	22:45	15	89	12	62				27	151
11:00	152		109					61	23:00	15		8					23	
11:15	153		88				2	41	23:15	6		4					10	
11:30	176	<u>.</u>	97					73	23:30	6	. -	7	- -				13	
11:45	153	634	110	404			2	63 1038	23:45	5	32	7	26				12	58
TOTALS		4017		2122				6139	TOTALS		4418		5027					9445
SPLIT %		65.4%		34.6%				39.4%	SPLIT %		46.8%		53.2%					60.6%
						NB		SB	ЕВ		WB						To	otal
	D/	AILY T	OTA	ilS		8,435		149	0		0							,584
AM Peak Hour		07:45		07:45				07:45	PM Peak Hour		13:15		16:45					16:45
AM Pk Volume		970		413				1383	PM Pk Volume		761		1022					1473
Pk Hr Factor		0.947		0.794				0.896	Pk Hr Factor		0.976		0.869					0.903
7 - 9 Volume		1715		741	0		0	2456	4 - 6 Volume		887		1887	0		0		2774
7 - 9 Peak Hour		07:45		07:45					4 - 6 Peak Hour		16:00		16:45					16:45
7 - 9 Pk Volume		970		413					4 - 6 Pk Volume		461		1022					1473
Pk Hr Factor		0.947		0.794	0.000	0.	.000	0.896	Pk Hr Factor		0.977		0.869	0.00)0	0.000		0.903
									<u> </u>									



Clairemont Dr Bet. Morena Blvd & Denver St

Day: Tuesday **Date:** 5/10/2016

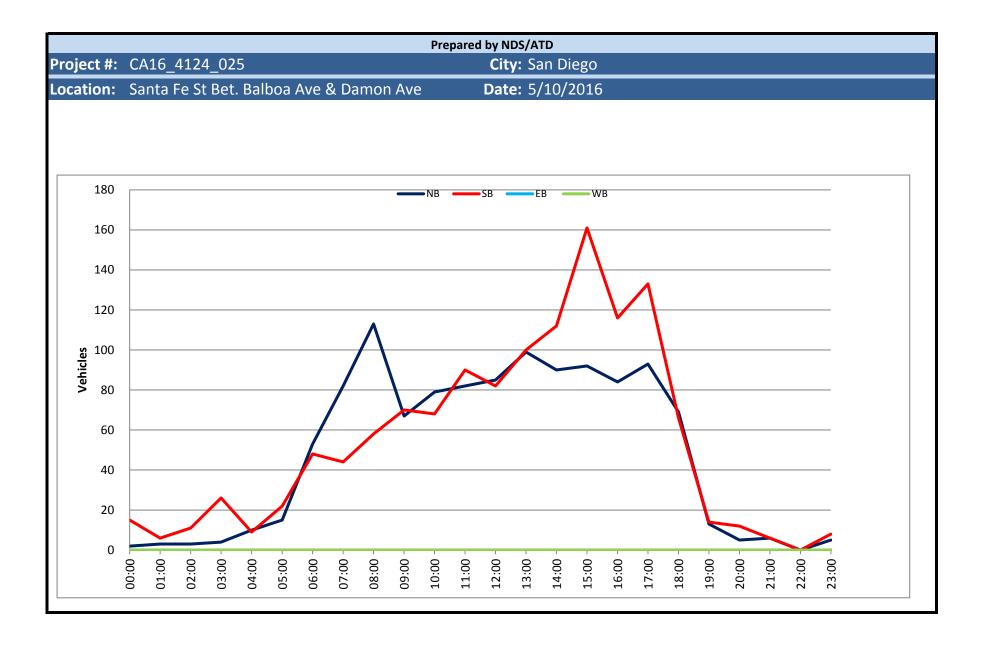
D	AILY TOTALS			NB		SB		EB	WB						To	tal
	AILT TOTALS			0		0		14,242	16,920						31,	162
AM Period NB	SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		TO	TAL
00:00		37		14		51		12:00			207		276		483	
00:15		27		24		51		12:15			176		295		471	
00:30		24		17		41		12:30			183		282		465	
00:45		18	106	11	66	29	172	12:45			222	788	267	1120	489	1908
01:00		16		9		25 33		13:00 13:15			223		285		508 481	
01:15 01:30		20 13		13 6		33 19		13:30			197 176		284 303		479	
01:45		18	67	6	34	24	101	13:45			235	831	290	1162	525	1993
02:00		14	<u> </u>	3	<u> </u>	17		14:00			162	001	280		442	2333
02:15		13		7		20		14:15			279		278		557	
02:30		11		7		18		14:30			298		279		577	
02:45		10	48	8	25	18	73	14:45			322	1061	232	1069	554	2130
03:00		6		8		14		15:00			314		242		556	
03:15		9		7		16		15:15			343		216		559	
03:30 03:45		9	28	8 10	33	12 19	61	15:30 15:45			336 331	1324	249 304	1011	585 635	2335
04:00		3	20	11	- 33	14	01	16:00			314	1324	258	1011	572	2333
04:15		13		20		33		16:15			324		267		591	
04:30		13		38		51		16:30			343		230		573	
04:45		16	45	43	112	59	157	16:45			317	1298	238	993	555	2291
05:00		23		58		81		17:00			362		220		582	
05:15		23		76		99		17:15			342		204		546	
05:30		32	120	124	402	156	F24	17:30			320	4227	239	045	559	22.42
05:45		51 60	129	144	402	195	531	17:45 18:00			303	1327	252	915	555	2242
06:00 06:15		71		134 193		194 264		18:15			277 282		234 252		511 534	
06:30		85		285		370		18:30			286		237		523	
06:45		83	299	311	923	394	1222	18:45			262	1107	187	910	449	2017
07:00		101		344		445		19:00			239		189		428	
07:15		104		373		477		19:15			250		127		377	
07:30		128		403		531		19:30			218		156		374	
07:45		127	460	360	1480	487	1940	19:45			201	908	144	616	345	1524
08:00		130		397		527		20:00			180		124		304	
08:15 08:30		156 192		343 377		499 569		20:15 20:30			162 174		126 121		288 295	
08:45		201	679	360	1477	561	2156	20:45			148	664	119	490	267	1154
09:00		176	075	327	14//	503	2130	21:00			137	004	110	430	247	1154
09:15		146		271		417		21:15			133		91		224	
09:30		141		317		458		21:30			131		87		218	
09:45		103	566	310	1225	413	1791	21:45			121	522	69	357	190	879
10:00		178		245		423		22:00			111		63		174	
10:15		155		297		452		22:15			98		63		161	
10:30		134	667	284	1001	418	1750	22:30 22:45			109	201	51	221	160	60E
10:45 11:00		200 163	667	265 272	1091	465 435	1758	23:00			66 47	384	44 41	221	110 88	605
11:15		175		264		439		23:15			59		24		83	
11:30		201		277		478		23:30			43		27		70	
11:45		205	744	260	1073	465	1817	23:45			41	190	23	115	64	305
TOTALS			3838		7941		11779	TOTALS				10404		8979		19383
SPLIT %			32.6%		67.4%		37.8%	SPLIT %				53.7%		46.3%		62.2%
				NIP		SB		EB	WB						To	tal
D	AILY TOTALS			NB 0		<u>эв</u> 0		14,242	16,920							162
4445 1			44.00		07.15		00.00					400		40.00		
AM Peak Hour			11:30		07:15		08:00	PM Peak Hour				16:30		13:00		15:30
AM Pk Volume			789		1533		2156	PM Pk Volume				1364		1162		2383
Pk Hr Factor	0		0.953		0.951		0.947	Pk Hr Factor				0.942		0.959		0.938
7 - 9 Volume			1139		2957		4096	4 - 6 Volume				2625		1908		4533
7 - 9 Peak Hour			08:00		07:15			4 - 6 Peak Hour 4 - 6 Pk Volume				16:30		16:00		16:15
7 - 9 Pk Volume Pk Hr Factor			679 0.845		1533		2156 0.947	Pk Hr Factor				1364		993		2301
FK HI FACLUI	3.000		0.845		0.951		0.947	FR TII FACTOI	0.000	0.00		0.942		0.930		0.973



Santa Fe St Bet. Balboa Ave & Damon Ave

Day: Tuesday **Date:** 5/10/2016

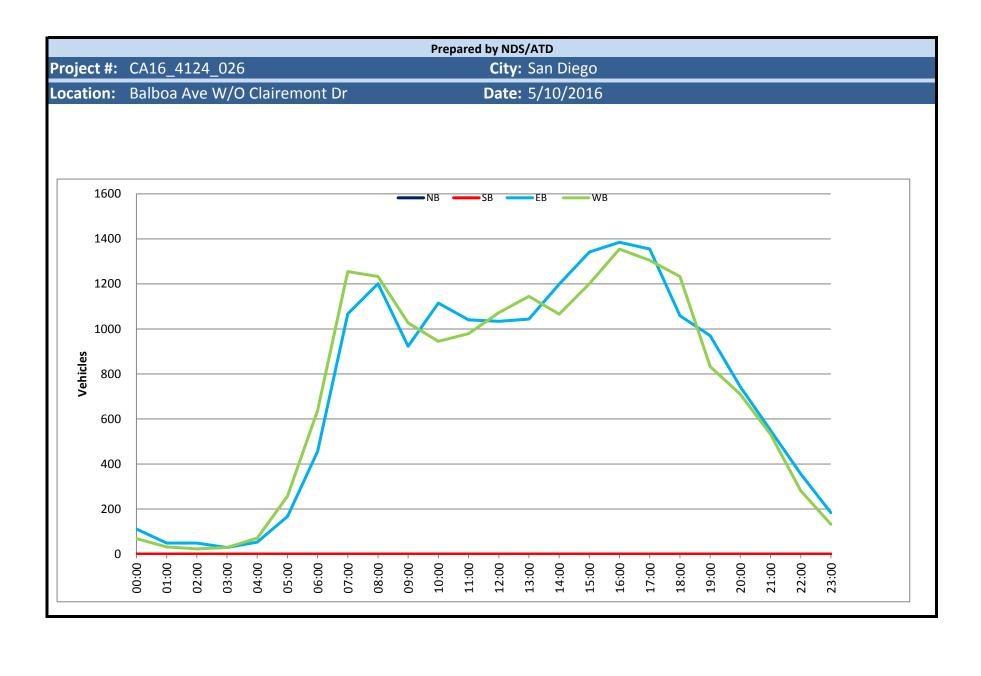
	D	AILY 1	TOT <i>A</i>	ALS		NB 1,154		SB 1,277	,	EB 0		WB 0								otal 431
ANA Daviad	NID		CD		ED.		•		TAL	PM Period	NID	U	CD		ED.		A/D			TAL
AM Period 00:00	NB 0		SB 4		EB	WB		4	TAL	12:00	NB		SB 18		EB	V	VB		33	IAL
00:15	1		3					4		12:15	22		20						42	
00:30 00:45	0 1	2	4 4	15				4 5	17	12:30 12:45	20 28	85	29 15	82					49 43	167
01:00	1		3	15				4	17	13:00	21		20	02					41	107
01:15	1		1					2		13:15	20		28						48	
01:30 01:45	1 0	3	0	6				3	9	13:30 13:45	30 28	99	23 29	100					53 57	199
02:00	1		2					3		14:00	22		27						49	
02:15 02:30	0 0		1 0					1 0		14:15 14:30	23 24		21 39						44 63	
02:30	2	3	8	11				10	14	14.30 14:45	24	90	25	112					46	202
03:00	0		12					12		15:00	18		46						64	
03:15 03:30	3 1		6 7					9 8		15:15 15:30	34 19		41 43						75 62	
03:45	0	4	1	26				1	30	15:45	21	92	31	161					52	253
04:00	0		0					0		16:00	16		37						53	
04:15 04:30	2 3		1					3 4		16:15 16:30	18 22		24 26						42 48	
04:45	5	10	7	9				12	19	16:45	28	84	29	116					57	200
05:00	0		0					0		17:00	20		42						62	
05:15 05:30	3 6		<i>/</i>					10 12		17:15 17:30	27 21		46 32						73 53	
05:45	6	15	9	22				15	37	17:45	25	93	13	133					38	226
06:00	12		3					15		18:00	19		21						40	
06:15 06:30	13 12		6 31					19 43		18:15 18:30	29 20		24 17						53 37	
06:45	16	53	8	48				24	101	18:45	1	69	4	66					5	135
07:00 07:15	18 14		13					31 24		19:00 19:15	4		5						9	
07:13	26		10 9					35		19:30	6 0		3						11 3	
07:45	24	82	12	44				36	126	19:45	3	13	1	14					4	27
08:00 08:15	35 17		8 11					43 28		20:00 20:15	4 1		8						12 2	
08:30	33		18					51		20:30	1 0		3						3	
08:45	28	113	21	58				49	171	20:45	0	5	0	12					0	17
09:00 09:15	30 17		26 19					56 36		21:00 21:15	2 2		3						5 4	
09:30	11		9					20		21:30	1		1						2	
09:45	9	67	16	70				25	137	21:45	1	6	0	6					1	12
10:00 10:15	20 27		13 23					33 50		22:00 22:15	0 0		0 0						0	
10:30	15		13					28		22:30	0		0						0	
10:45	17	79	19	68				36	147	22:45	0		0						0	
11:00 11:15	22 15		21 30					43 45		23:00 23:15	4 0		2 1						6 1	
11:30	23		24					47		23:30	0		0						0	
11:45	22	82	15	90				37	172	23:45	1	5	5	8					6	13
TOTALS		513		467					980	TOTALS		641		810						1451
SPLIT %		52.3%		47.7%					40.3%	SPLIT %		44.2%		55.8%						59.7%
	D	A II V I		\I \$		NB		SB		EB		WB							To	otal
	D	AILY 1	TOTA	4LO		1,154		1,277	,	0		0							2,4	431
AM Peak Hour		08:00		10:45					08:30	PM Peak Hour		13:30		15:00						15:00
AM Pk Volume		113		94					192	PM Pk Volume		103		161						253
Pk Hr Factor		0.807		0.783					0.857	Pk Hr Factor		0.858		0.875						0.843
7 - 9 Volume 7 - 9 Peak Hour		195 08:00		102 08:00					297 08:00	4 - 6 Volume 4 - 6 Peak Hour		177 16:30		249 16:45						426 16:45
7 - 9 Peak Hour 7 - 9 Pk Volume		08:00 113		08:00 58						4 - 6 Peak Hour 4 - 6 Pk Volume		16:30 97		16:45 149						16:45 245
Pk Hr Factor		0.807		0.690		000	0.000		0.838	Pk Hr Factor		0.866		0.810		0.000		.000		0.839
I ii i detoi		5.507		3.030	0.		3.300		3.330			5.555		0.010						3.333



Balboa Ave W/O Clairemont Dr

Day: Tuesday **Date:** 5/10/2016

	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILI TOTALS			0		0		17,480	17,423						34,	,903
AM Period	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		TO	TAL
00:00		47		21		68		12:00			249		245		494	
00:15		33		18		51		12:15			284		277		561	
00:30		17	444	11	60	28	400	12:30			241	4024	269	4072	510	2406
00:45 01:00		14 14	111	19 10	69	33 24	180	12:45 13:00			260 237	1034	281 276	1072	541 513	2106
01:00		13		10 5		18		13:15			237		262		539	
01:30		10		10		20		13:30			268		312		580	
01:45		12	49	7	32	19	81	13:45			262	1044	295	1145	557	2189
02:00		14		5		19		14:00			245		245		490	
02:15		17		6		23		14:15			292		270		562	
02:30		11	40	4	22	15	70	14:30			350	4400	253	1055	603	2265
02:45		7	49	8	23	15	72	14:45			312	1199	298	1066	610	2265
03:00 03:15		10 2		6 7		16 9		15:00 15:15			299 367		298 321		597 688	
03:30		7		8		15		15:30			328		288		616	
03:45		10	29	8	29	18	58	15:45			348	1342	294	1201	642	2543
04:00		10		8		18		16:00			335		310		645	
04:15		11		16		27		16:15			358		339		697	
04:30		9		21		30		16:30			362		387		749	
04:45		23	53	26	71	49	124	16:45			330	1385	319	1355	649	2740
05:00 05:15		29 25		41 55		70 90		17:00 17:15			321		305		626	
05:30		35 39		55 84		123		17:15 17:30			351 336		350 323		701 659	
05:45		64	167	77	257	141	424	17:45			347	1355	323	1305	674	2660
06:00		72	107	89	237	161	121	18:00			258	1333	322	1303	580	2000
06:15		91		141		232		18:15			254		300		554	
06:30		141		192		333		18:30			266		330		596	
06:45		151	455	215	637	366	1092	18:45			281	1059	281	1233	562	2292
07:00		205		258		463		19:00			240		248		488	
07:15		263		337		600		19:15			249		208		457	
07:30 07:45		289 310	1067	322 338	1255	611 648	2322	19:30 19:45			246 235	970	208 169	833	454 404	1803
08:00		295	1007	288	1233	583	2322	20:00			225	370	214	633	439	1603
08:15		325		285		610		20:15			197		183		380	
08:30		275		322		597		20:30			177		141		318	
08:45		306	1201	338	1233	644	2434	20:45			144	743	172	710	316	1453
09:00		251		260		511		21:00			130		164		294	
09:15		221		231		452		21:15			143		123		266	
09:30		224	923	280	1027	504	1050	21:30 21:45			157	EEO	134	E22	291	1002
09:45 10:00		227 253	923	256 247	1027	483 500	1950	22:00			120 95	550	111 115	532	231 210	1082
10:15		309		238		547		22:15			108		61		169	
10:30		256		231		487		22:30			97		56		153	
10:45		297	1115	229	945	526	2060	22:45			56	356	49	281	105	637
11:00		265		230		495		23:00			66		42		108	
11:15		257		262		519		23:15			41		30		71	
11:30		275	1040	219	070	494	2010	23:30 22:45			37 40	101	40 21	122	77 61	217
11:45		243	1040	268	979	511	2019	23:45			40	184	21	133	61	317
TOTALS			6259		6557		12816	TOTALS				11221		10866		22087
SPLIT %			48.8%		51.2%		36.7%	SPLIT %				50.8%		49.2%		63.3%
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		17,480	17,423						34,	903
AM Peak Hour			07:30		07:15		07:30	PM Peak Hour				15:45		16:30		16:00
AM Pk Volume			1219		1285		2452	PM Pk Volume				1403		1361		2740
Pk Hr Factor			0.938		0.950		0.946	Pk Hr Factor				0.969		0.879		0.915
7 - 9 Volume	0 0		2268		2488		4756	4 - 6 Volume	0	0		2740		2660		5400
7 - 9 Peak Hour			07:30		07:15		07:30	4 - 6 Peak Hour				16:00		16:30		16:00
7 - 9 Pk Volume			1219		1285		2452	4 - 6 Pk Volume				1385		1361		2740
Pk Hr Factor	0.000 0.000		0.938		0.950		0.946	Pk Hr Factor	0.000	0.000)	0.956		0.879		0.915

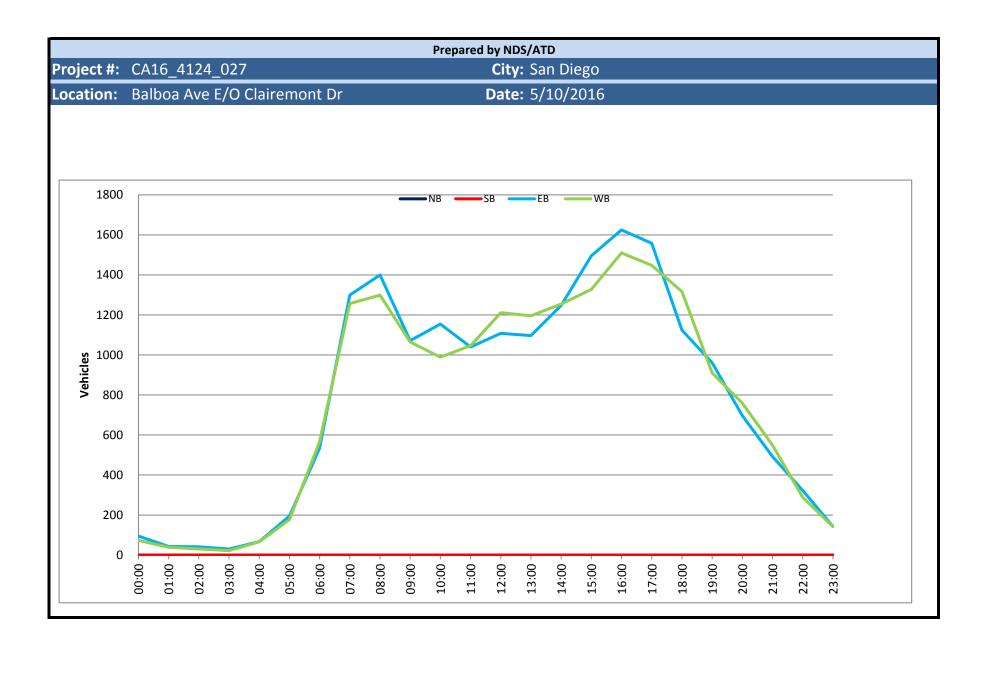


VOLUME

Balboa Ave E/O Clairemont Dr

Day: Tuesday **Date:** 5/10/2016

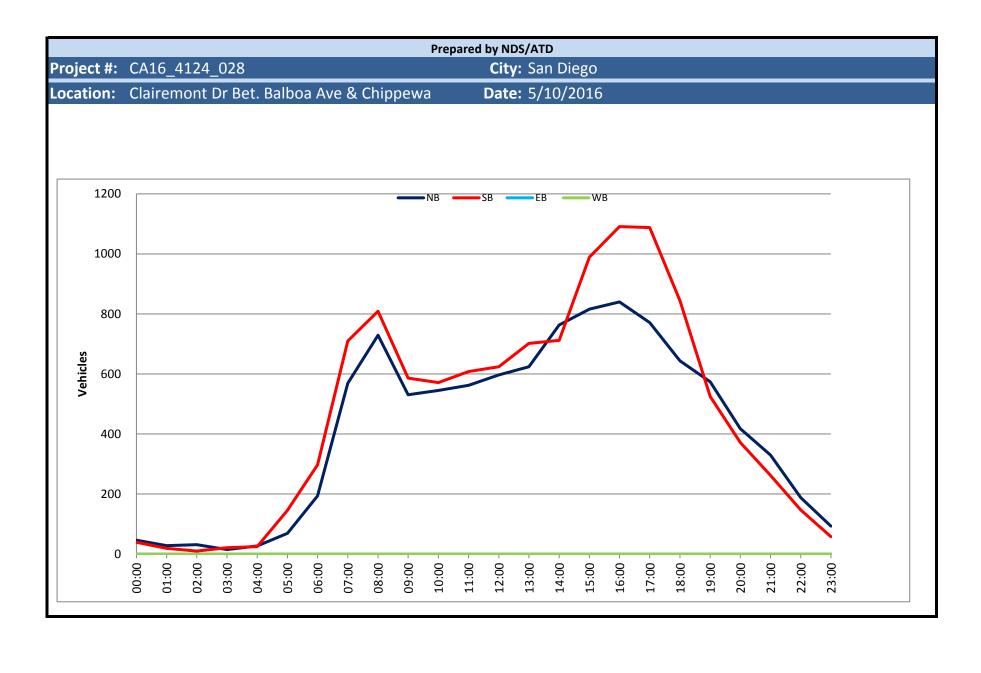
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		18,841	18,542						37,	,383
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		33		27		60		12:00			266		260		526	
00:15		27		20		47	'	12:15			275		313		588	
00:30		20		9		29	1	12:30			274		309		583	
00:45		15	95	17	73	32	168	12:45			293	1108	329	1211	622	2319
01:00		16		12		28		13:00			269		286		555	
01:15		10		7		17		13:15			269		312		581	
01:30		8	42	12	20	20	ດາ	13:30 13:45			280	1007	288	1106	568	2202
01:45 02:00		9 14	43	<u>8</u> 6	39	17 20	82	14:00			279 273	1097	310 299	1196	589 572	2293
02:00		11		8		19		14:15			333		303		636	
02:30		9		6		15		14:30			338		331		669	
02:45		7	41	11	31	18	72	14:45			304	1248	321	1254	625	2502
03:00		7		4		11		15:00			337		334		671	
03:15		3		4		7		15:15			362		329		691	
03:30		6		6		12		15:30			359		337		696	
03:45		14	30	8	22	22	52	15:45			438	1496	328	1328	766	2824
04:00		10		7		17		16:00			407		337		744	
04:15		11		15		26		16:15			398		364		762	
04:30		18	C 7	16		34	122	16:30 16:45			407	1625	435	1510	842	2125
04:45 05:00		28 34	67	28 35	66	56 69	133	17:00			413 372	1625	374 363	1510	787 735	3135
05:00 05:15		34 46		35 39		85		17:00 17:15			402		382		735 784	
05:30		48		56		104		17:30			391		366		757	
05:45		67	195	47	177	114	372	17:45			393	1558	337	1448	730	3006
06:00		76		82		158		18:00			329		344		673	
06:15		103		129		232		18:15			264		332		596	
06:30		156		152		308		18:30			281		369		650	
06:45		199	534	203	566	402	1100	18:45			250	1124	272	1317	522	2441
07:00		244		306		550		19:00			247		228		475	
07:15		326		305		631		19:15			245		271		516	
07:30		363	1200	305	4257	668	2556	19:30			242	0.64	206	040	448	4074
07:45 08:00		366 337	1299	341 316	1257	707 653	2556	19:45 20:00			227 208	961	205 220	910	432 428	1871
08:00 08:15		350		310		660		20:15			194		179		373	
08:30		345		335		680		20:30			142		175		317	
08:45		368	1400	338	1299	706	2699	20:45			153	697	185	759	338	1456
09:00		319	1.00	275	1233	594		21:00			140		150	700	290	2 100
09:15		252		262		514		21:15			119		132		251	
09:30		255		288		543		21:30			121		150		271	
09:45		245	1071	240	1065	485	2136	21:45			112	492	117	549	229	1041
10:00		250		266		516		22:00			100		100		200	
10:15		304		233		537		22:15			94		74		168	
10:30		277	4454	243	000	520	24.42	22:30			83	222	74	200	157	C11
10:45		323	1154	247	989	570	2143	22:45 23:00			46 48	323	40 45	288	86 93	611
11:00 11:15		261 264		239 283		500 547		23:00 23:15			48 34		45 31		93 65	
11:15		270		265		535		23:15			32		31 37		69	
11:45		245	1040	259	1046	504	2086	23:45			29	143	29	142	58	285
TOTALS		5	6969		6630		13599	TOTALS				11872		11912		23784
SPLIT %					48.8%		36.4%							50.1%		63.6%
JFLII /0			51.2%		40.0%		30.4%	JELII /0				49.9%		30.1%		03.0%
	DAILY TOTALS			NB		SB		EB	WB							otal
				0		0		18,841	18,542						37,	,383
AM Peak Hour			07:30		07:45		07:45	PM Peak Hour				15:45		16:30		16:30
AM Pk Volume			1416		1302		2700	PM Pk Volume				1650		1554		3148
Pk Hr Factor			0.967		0.955		0.955	Pk Hr Factor				0.942		0.893		0.935
7 - 9 Volume	0 0		2699		2556		5255	4 - 6 Volume	0	0		3183		2958		6141
7 - 9 Peak Hour			07:30		07:45		07:45	4 - 6 Peak Hour				16:00		16:30		16:30
7 - 9 Pk Volume			1416		1302		2700	4 - 6 Pk Volume				1625		1554		3148
Pk Hr Factor	0.000 0.000		0.967		0.955		0.955	Pk Hr Factor	0.000	0.000		0.984		0.893		0.935
								- 								



Clairemont Dr Bet. Balboa Ave & Chippewa Ct

Day: Tuesday **Date:** 5/10/2016

	ם ו	AILY T	ГΩТΛ	15		NB	SB		EB		WB						To	otal
	U,	~ILI I	OIA	ILJ		10,004	11,255		0		0						21,	,259
AM Period	NB		SB		EB	WB	TO	TAL	PM Period	NB		SB		EB	WE	3	TO	TAL
00:00	19		12				31		12:00	136		158					294	
00:15	12		6				18	!	12:15	154		157					311	
00:30	8		14				22		12:30	155		157					312	
00:45 01:00	<u>7</u> 5	46	/ 	39			14	85	12:45 13:00	152 146	597	152 184	624				304 330	1221
01:00	8		3				11		13:15	173		185					358	
01:30	9		7				16		13:30	144		172					316	
01:45	6	28	4	19			10	47	13:45	161	624	161	702				322	1326
02:00	10		5				15		14:00	141		165					306	
02:15 02:30	7 11		2				9		14:15 14:30	184 248		170 170					354 418	
02:45	3	31	1	10			4	41	14:45	190	763	207	712				397	1475
03:00	5		6	-			11		15:00	194		221					415	
03:15	1		5				6		15:15	191		262					453	
03:30 03:45	7	1 -	5	21			12	26	15:30 15:45	179	016	272	000				451	1005
04:00	<u>2</u> 4	15	<u>5</u> 3	21			7	36	16:00	252 245	816	234 244	989				486 489	1805
04:15	10		7				17		16:15	211		272					483	
04:30	2		9				11		16:30	190		273					463	
04:45	11	27	6	25			17	52	16:45	194	840	302	1091				496	1931
05:00 05:15	7 14		22 27				29 41		17:00 17:15	224 176		258 268					482 444	
05:30	22		46				68		17:30	197		296					493	
05:45	26	69	51	146			77	215	17:45	174	771	266	1088				440	1859
06:00	38		38				76		18:00	164		239					403	
06:15	39		58 97				97		18:15	151		218					369	
06:30 06:45	50 67	194	87 114	297			137 181	491	18:30 18:45	178 151	644	196 191	844				374 342	1488
07:00	115		161	237			276	.51	19:00	163	011	144	011				307	1100
07:15	142		193				335		19:15	137		147					284	
07:30	151	F.CO	197	710			348	1270	19:30	144	574	120	F2F				264	1000
07:45 08:00	161 173	569	159 167	710			320 340	1279	19:45 20:00	130 123	574	114 109	525				244 232	1099
08:15	172		197				369		20:15	116		96					212	
08:30	178		231				409		20:30	98		89					187	
08:45	206	729	214	809			420	1538	20:45	81	418	78	372				159	790
09:00 09:15	153 138		158 126				311 264		21:00 21:15	69 98		74 67					143 165	
09:30	127		160				287		21:30	103		57					160	
09:45	113	531	142	586			255	1117	21:45	60	330	64	262				124	592
10:00	134		123				257		22:00	57		53					110	
10:15 10:30	146		145 165				291 303		22:15 22:30	59 44		37 29					96 73	
10:30	138 127	545	165 138	571			265	1116	22:30 22:45	44 28	188	29 28	147				73 56	335
11:00	114	<u> </u>	127				241		23:00	29		12	,				41	233
11:15	163		155				318		23:15	26		18					44	
11:30	136	F.C.2	152	C00			288	1170	23:30	19	02	19	F.O.				38	151
11:45	149	562	174	608			323	1170	23:45	19	93	9	58 7414				28	151
TOTALS		3346		3841				7187	TOTALS		6658		7414					14072
SPLIT %		46.6%		53.4%				33.8%	SPLIT %		47.3%		52.7%					66.2%
	D	AILY T	ΌΤΑ	ıs		NB	SB		EB		WB						To	otal
	— Di	-11L I	OTA			10,004	11,255	;	0		0						21,	,259
AM Peak Hour		08:00		08:00				08:00	PM Peak Hour		15:45		16:45					16:00
AM Pk Volume		729		809				1538	PM Pk Volume		898		1124					1931
Pk Hr Factor		0.885		0.876				0.915	Pk Hr Factor		0.891		0.930					0.973
7 - 9 Volume		1298		1519				2817	4 - 6 Volume		1611		2179					3790
7 - 9 Peak Hour		08:00		08:00					4 - 6 Peak Hour 4 - 6 Pk Volume		16:00		16:45					16:00
7 - 9 Pk Volume Pk Hr Factor		729 0.885		809 0.876				1538 0.915	Pk Hr Factor		840 0.857		1124 0.930					1931 0.973
. K III I detoi		3.003		5.070	0.00	0.0		0.013			0.037		3.330	0.00		3.300		5.575

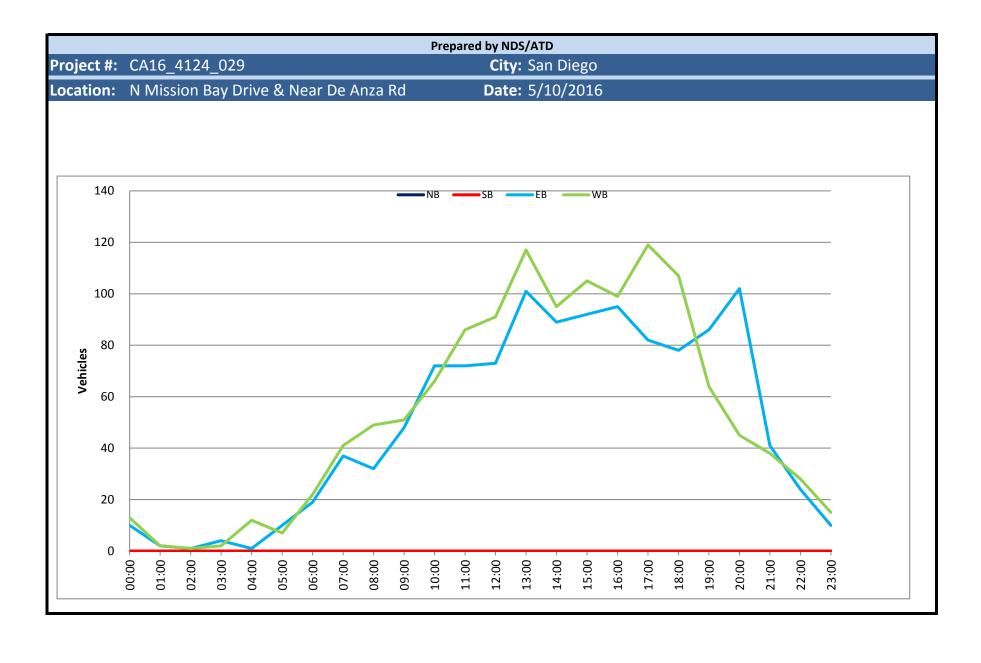


VOLUME

N Mission Bay Drive & Near De Anza Rd

Day: Tuesday **Date:** 5/10/2016

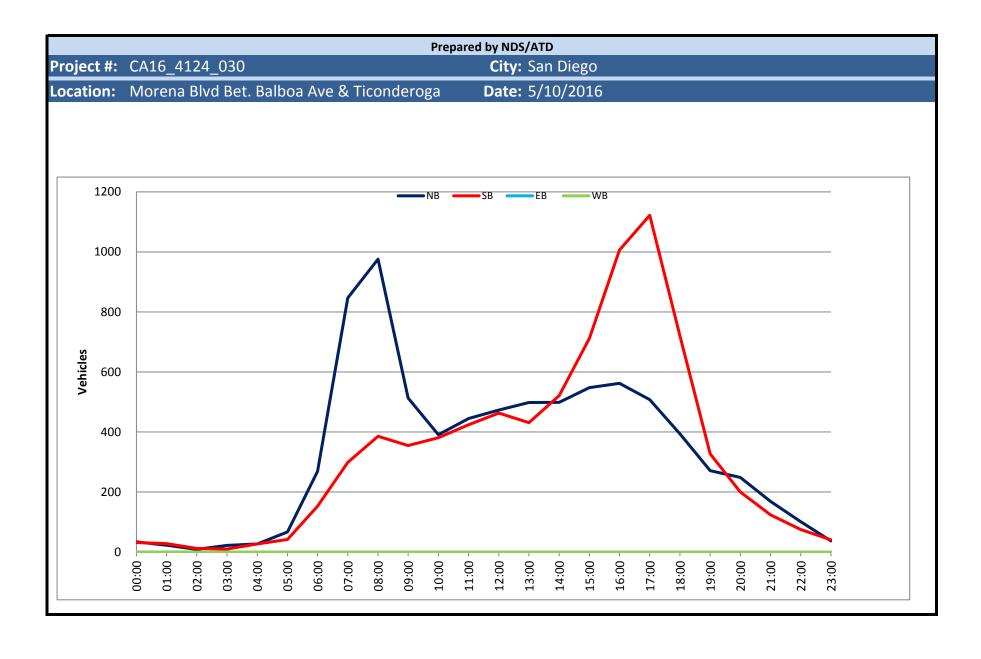
	DAIIV	TOTALS			NB		SB		EB	W	В					To	otal
	DAILI	IOIALS			0		0		1,181	1,27	75					2,4	456
AM Period	NB	SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		TO	TAL
00:00			0		1		1		12:00			18		30		48	
00:15			1		2		3		12:15			25		24		49	
00:30 00:45			δ 1	10	9	13	17 2	23	12:30 12:45			15 15	73	21 16	91	36 31	164
01:00			<u>+</u> 1	10	<u>+</u>	13	2	23	13:00			24	/3	31	91	55	104
01:15			0		1		1		13:15			28		23		51	
01:30			0		0		0		13:30			14		33		47	
01:45			1	2	0	2	1	4	13:45			35	101	30	117	65	218
02:00			0		0		0		14:00			18		26		44	
02:15			0		0		0		14:15			24		21		45	
02:30 02:45			1	1	0	1	0 2	2	14:30 14:45			30 17	89	24 24	95	54 41	184
03:00			2		0		2		15:00			22	63	19	33	41	104
03:15			2		1		3		15:15			19		35		54	
03:30			0		1		1		15:30			25		20		45	
03:45			0	4	0	2	0	6	15:45			26	92	31	105	57	197
04:00			0		1		1		16:00			30		27		57	
04:15			0		2		2		16:15			18		26		44	
04:30			0	1	2	12	2	12	16:30 16:45			23	05	24	00	47 46	104
04:45 05:00			2		0	12	8 2	13	17:00			24 24	95	22 29	99	46 53	194
05:15			3		2		5		17:15			19		25		44	
05:30			0		2		2		17:30			20		24		44	
05:45			5	10	3	7	8	17	17:45			19	82	41	119	60	201
06:00			5		5		10		18:00			25		39		64	
06:15			2		5		7		18:15			24		26		50	
06:30			9	40	5	22	14	44	18:30			15	70	22	407	37	405
06:45			3	19		22	10	41	18:45			14	78	20	107	34	185
07:00 07:15			6 7		/ 5		13 12		19:00 19:15			18 23		18 17		36 40	
07:30			, 11		13		24		19:30			28		11		39	
07:45			13	37	16	41	29	78	19:45			17	86	18	64	35	150
08:00			8		13		21		20:00			39		14		53	
08:15			7		11		18		20:15			21		11		32	
08:30			12		14		26		20:30			23		7		30	
08:45			5	32	11	49	16	81	20:45			19	102	13	45	32	147
09:00 09:15			8 13		13 13		21 26		21:00 21:15			14 12		11 9		25 21	
09:30			14		13		27		21:30			6		3		9	
09:45			13	48	12	51	25	99	21:45			9	41	15	38	24	79
10:00			15		14		29		22:00			7		9		16	
10:15			17		16		33		22:15			1		8		9	
10:30			21		19		40		22:30			9		4		13	
10:45			19	72	17	66	36	138	22:45			7	24	7	28	14	52
11:00			20 27		21		41 40		23:00			2		6		8	
11:15 11:30			27 15		21 21		48 36		23:15 23:30			3 N		4 2		2	
11:45			10	72	23	86	33	158	23:45			5	10	3	15	8	25
TOTALS				308		352		660	TOTALS				873		923		1796
SPLIT %				46.7%		53.3%		26.9%	SPLIT %				48.6%		51.4%		73.1%
					AUD.					***							
	DAILY	TOTALS			NB		SB		EB	1 2							otal 456
					0		0		1,181	1,27	ro						456
AM Peak Hour				10:30		11:30		11:30	PM Peak Hour				13:45		17:30		13:00
AM Pk Volume				87		98		166	PM Pk Volume				107		130		218
Pk Hr Factor				0.806		0.817		0.847	Pk Hr Factor				0.764		0.793		0.838
7 - 9 Volume				69		90		159	4 - 6 Volume				177		218		395
7 - 9 Peak Hour				07:45		07:45			4 - 6 Peak Hour				16:00		17:00		17:00
7 - 9 Pk Volume				40		54			4 - 6 Pk Volume				95		119		201
Pk Hr Factor	0.000	0.000		0.769		0.844		0.810	Pk Hr Factor	0.00	00	0.000	0.792		0.726		0.838



Morena Blvd Bet. Balboa Ave & Ticonderoga St

Day: Tuesday **Date:** 5/10/2016

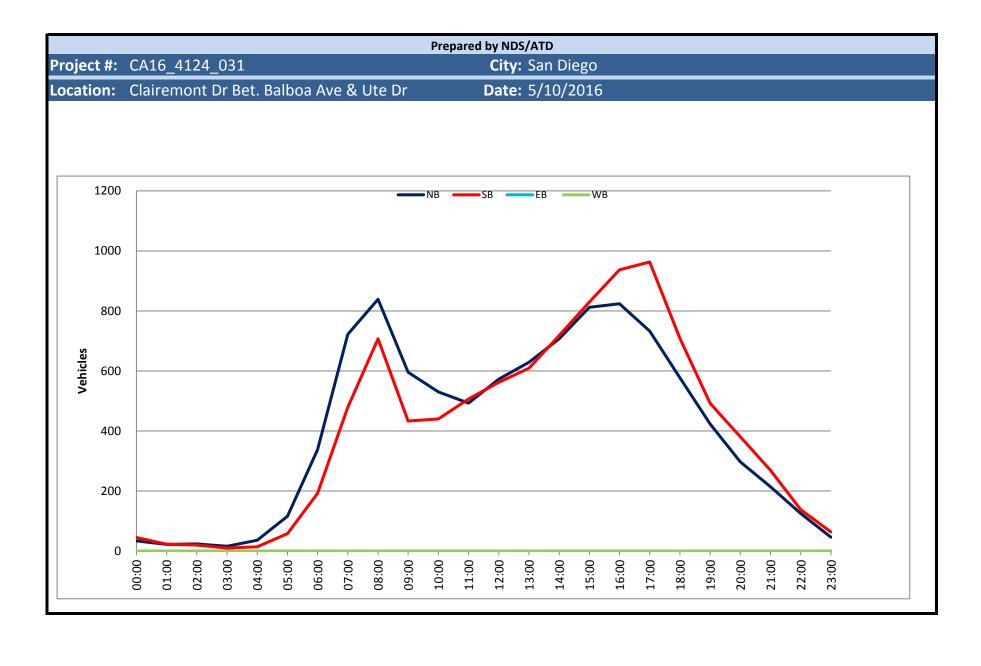
	ח	AILY 1	ΓΩΤΔ	AIS		NB	SB		EB		WB					To	tal
		AILI		(L)		7,932	7,891		0		0					15,	823
AM Period	NB		SB		EB	WB	ТО	TAL	PM Period	NB		SB		EB	WB	TO	TAL
00:00	8		6				14		12:00	113		121				234	
00:15 00:30	12 8		12 11				24 19		12:15 12:30	133 116		111 114				244 230	
00:45	6	34	3	32			9	66	12:45	111	473	117	463			228	936
01:00	5		8				13		13:00	119		116				235	
01:15 01:30	10 2		9 3				19 5		13:15 13:30	127 125		96 120				223245	
01:45	6	23	8	28			14	51	13:45	127	498	99	431			226	929
02:00	1		2				3		14:00	130		109				239	
02:15 02:30	3 2		3				6 3		14:15 14:30	130 127		139 156				269 283	
02:30	3	9	6	12			9	21	14:45	112	499	117	521			229	1020
03:00	3		2				5		15:00	147		146				293	
03:15 03:30	6		2				8		15:15 15:30	117 133		157 190				274 323	
03:45	4 9	22	4	10			6 13	32	15:45	151	548	219	712			370	1260
04:00	3		4				7		16:00	143		209				352	
04:15	2		8				10		16:15	135		254				389	
04:30 04:45	15 7	27	9 6	27			24 13	54	16:30 16:45	153 131	562	284 259	1006			437 390	1568
05:00	10		11				21	<u> </u>	17:00	143	302	294	1000			437	1300
05:15	19		9				28		17:15	121		298				419	
05:30 05:45	13 25	67	10 12	42			23 37	109	17:30 17:45	118 126	508	265265	1122			383 391	1630
06:00	27	- 07	32	72			59	103	18:00	127	300	211	1122			338	1030
06:15	51		31				82		18:15	89		195				284	
06:30 06:45	64 127	269	41 49	153			105 176	422	18:30 18:45	90 88	394	174 140	720			264 228	1114
07:00	151	203	53	133			204	722	19:00	81	334	107	720			188	1114
07:15	188		66				254		19:15	64		89				153	
07:30 07:45	248 260	847	83 97	299			331 357	1146	19:30 19:45	72 54	271	69 62	327			141 116	598
08:00	304	047	78	233			382	1140	20:00	59	2/1	56	327			115	336
08:15	240		89				329		20:15	72		60				132	
08:30 08:45	224 208	976	92 127	386			316 335	1362	20:30 20:45	61 57	249	43 41	200			104 98	449
09:00	168	970	95	360			263	1302	21:00	43	243	40	200			83	445
09:15	115		85				200		21:15	49		31				80	
09:30	107	513	93 82	355			200	868	21:30	48 29	160	19 34	124			67 63	202
09:45 10:00	123 113	213	93	333			205 206	000	21:45 22:00	36	169	19	124			55	293
10:15	98		91				189		22:15	31		26				57	
10:30	93	201	107	201			200	772	22:30	16	101	17	75			33	170
10:45 11:00	87 113	391	90 94	381			177 207	772	22:45 23:00	18 14	101	13 14	75			31 28	176
11:15	102		119				221		23:15	4		11				15	
11:30	113	<i>A A</i> F	107	424			220	900	23:30	12 7	27	7	41			19 16	70
11:45 TOTALS	117	3623	104	424 2149			221	869 5772	23:45 TOTALS	/	37 4309	9	41 5742			16	78 10051
SPLIT %		62.8%		37.2%				36.5%	SPLIT %		42.9%		57.1%				63.5%
	D	AILY 1	ΓΩΤΔ	VIS		NB	SB		EB		WB						tal
	<i>D</i>			KES -		7,932	7,891		0		0					15,	823
AM Peak Hour		07:30		11:15				07:30	PM Peak Hour		15:45		16:30				16:30
AM Pk Volume		1052		451				1399	PM Pk Volume		582		1135				1683
Pk Hr Factor		0.865		0.932				0.916	Pk Hr Factor		0.951		0.952				0.963
7 - 9 Volume		1823		685				2508	4 - 6 Volume		1070		2128				3198
7 - 9 Peak Hour 7 - 9 Pk Volume		07:30 1052		08:00 386					4 - 6 Peak Hour 4 - 6 Pk Volume		16:00 562		16:30 1135				16:30 1683
Pk Hr Factor		0.865		0.760				0.916	Pk Hr Factor		0.918		0.952				0.963



Clairemont Dr Bet. Balboa Ave & Ute Dr

Day: Tuesday **Date:** 5/10/2016

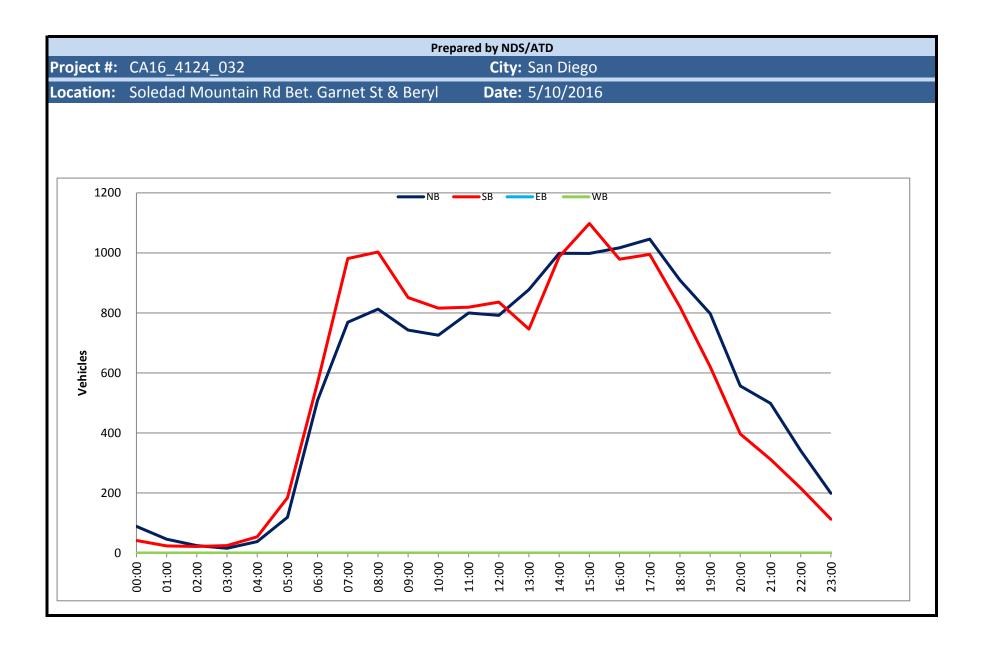
	D	AILY 1	ΓΩΤΔ	ıs		NB		SB		EB		WB							То	tal
		\IL!				9,726		9,599		0		0							19,	325
AM Period	NB		SB		ЕВ	WB		TO	TAL	PM Period	NB		SB		EB	\	VB		TO	TAL
00:00 00:15	5 11		18 9					23 20		12:00 12:15	147 117		135 139						282 256	
00:30	10		11					21		12:30	141		146						287	
00:45	8	34	7	45				15	79	12:45	168	573	142	562					310	1135
01:00 01:15	5 7		6 5					11 12		13:00 13:15	169 141		139 183						308 324	
01:30	5	22	8	20				13	1	13:30	156	620	135	500					291	1220
01:45 02:00	5 9	22	<u>4</u> 6	23				9 15	45	13:45 14:00	163 144	629	152 156	609					315 300	1238
02:15	6		6					12		14:15	219		192					4	411	
02:30 02:45	5 4	24	3 5	20				8 9	44	14:30 14:45	172 172	707	163 207	718					335 379	1425
03:00	1		2	20				3		15:00	190	707	172	710				3	362	1123
03:15 03:30	2 5		2 2					4		15:15 15:30	159 180		216 248						375 428	
03:45	8	16	4	10				12	26	15.30 15:45	283	812	248 194	830					420 477	1642
04:00	4		3					7		16:00	229		199					4	428	
04:15 04:30	9 10		3 2					12 12		16:15 16:30	185 212		251 231						436 443	
04:45	13	36	6	14				19	50	16:45	198	824	256	937				4	454	1761
05:00 05:15	16 31		15 9					31 40		17:00 17:15	180 200		238 245						418 445	
05:30	31		16					47		17:30	186		245						432	
05:45	38	116	18	58				56	174	17:45	167	733	234	963					401	1696
06:00 06:15	54 52		26 37					80 89		18:00 18:15	159 139		202 192						361 331	
06:30	103		44					147		18:30	146		186					3	332	
06:45 07:00	129 165	338	85 147	192				214 312	530	18:45 19:00	133 105	577	128 112	708					261 217	1285
07:00	197		118					315		19:15	105		143						248	
07:30	176	700	115	470				291	1201	19:30	115	422	125	402					240	045
07:45 08:00	184 180	722	99 126	479				283 306	1201	19:45 20:00	98 86	423	112 113	492					210 199	915
08:15	189		173					362		20:15	86		79					:	165	
08:30 08:45	244 226	839	215 193	707				459 419	1546	20:30 20:45	64 61	297	105 84	381					169 145	678
09:00	180	033	107	707				287	1340	21:00	65	231	78	301					143	070
09:15	155		109					264		21:15	63		64						127	
09:30 09:45	135 126	596	113 104	433				248 230	1029	21:30 21:45	46 40	214	63 64	269					109 104	483
10:00	124		104					228		22:00	50		41						91	
10:15 10:30	136 134		116 116					252 250		22:15 22:30	32 24		46 27						78 51	
10:45	136	530	104	440				240	970	22:45	19	125	24	138					43	263
11:00	121		111					232		23:00	10		14						24	
11:15 11:30	143 108		116 140					259 248		23:15 23:30	12 16		18 17						30 33	
11:45	121	493	140	507				261	1000	23:45	8	46	15	64					23	110
TOTALS		3766		2928					6694	TOTALS		5960		6671						12631
SPLIT %		56.3%		43.7%					34.6%	SPLIT %		47.2%		52.8%						65.4%
	_ D.	AILY 1	[OTA	15		NB		SB		ЕВ		WB							То	tal
	VI		TOTA			9,726		9,599		0		0							19,	325
AM Peak Hour		08:00		08:00					08:00	PM Peak Hour		15:45		16:45						15:45
AM Pk Volume		839		707					1546	PM Pk Volume		909		985						1784
Pk Hr Factor 7 - 9 Volume		0.860		0.822	0		0		0.842	Pk Hr Factor 4 - 6 Volume		0.803		0.962		0		0		0.935
7 - 9 Volume 7 - 9 Peak Hour		1561 08:00		1186 08:00					2747 08:00	4 - 6 Volume 4 - 6 Peak Hour		1557 16:00		1900 16:45						3457 16:00
7 - 9 Pk Volume		839		707						4 - 6 Pk Volume		824		985						1761
Pk Hr Factor		0.860		0.822	0.00	0	0.000		0.842	Pk Hr Factor		0.900		0.962	0	.000	0.	000		0.970



Soledad Mountain Rd Bet. Garnet St & Beryl St

Day: Tuesday **Date:** 5/10/2016

	ח	AILY 1	ΓΩΤΔ	ıs		NB		SB		EB		WB						Т	otal
		~!L! !		LJ		13,726		13,509		0		0						27	,235
AM Period	NB		SB		ЕВ	WB		TO	ΓAL	PM Period	NB		SB		EB	W	В	TC	DTAL
00:00	23		9					32		12:00	193		203					396	
00:15 00:30	31 23		8 15					39 38		12:15 12:30	202 211		233 208					435 419	
00:35	12	89	10	42				22	131	12:45	186	792	192	836				378	1628
01:00	15		4					19		13:00	199		200					399	
01:15	11		4					15		13:15	218		186					404	
01:30 01:45	14 6	46	/ 9	24				21 15	70	13:30 13:45	205 256	878	196 164	746				401 420	1624
02:00	9	40	6	24				15	70	14:00	237	676	213	740				450	1024
02:15	7		8					15		14:15	255		290					545	
02:30	4	25	2	22				6	47	14:30	270	000	231	007				501	4006
02:45 03:00	5 3	25	<u>6</u> 3	22				11 6	47	14:45 15:00	237 247	999	253 271	987				490 518	1986
03:15	8		11					19		15:15	257		265					522	
03:30	1		5					6		15:30	250		292					542	
03:45	4	16	6	25				10	41	15:45	244	998	270	1098				514	2096
04:00 04:15	4 2		5 10					9 12		16:00 16:15	245 268		261 240					506 508	
04:30	14		12					26		16:30	263		235					498	
04:45	18	38	27	54				45	92	16:45	241	1017	243	979				484	1996
05:00	13		28					41		17:00	267		255					522	
05:15 05:30	18 33		35 55					53 88		17:15 17:30	267 259		239 250					506 509	
05:45	55	119	66	184				121	303	17:45	253	1046	251	995				504	2041
06:00	58		106					164		18:00	254		269					523	
06:15	109		91					200		18:15	188		161					349	
06:30 06:45	154 188	509	178	568				332 381	1077	18:30 18:45	246 221	909	195	820				441 416	1729
07:00	198	309	193 230	308				428	10//	19:00	248	909	195 194	820				442	1/29
07:15	173		244					417		19:15	184		136					320	
07:30	186		268					454		19:30	166		164					330	
07:45 08:00	212 194	769	239 250	981				451 444	1750	19:45 20:00	200 161	798	127 125	621				327 286	1419
08:00	233		250					483		20:15	147		109					256	
08:30	184		273					457		20:30	126		77					203	
08:45	202	813	230	1003				432	1816	20:45	123	557	86	397				209	954
09:00 09:15	215 180		186 224					401 404		21:00 21:15	130 133		78 90					208 223	
09:30	161		219					380		21:30	117		90 82					199	
09:45	187	743	222	851				409	1594	21:45	119	499	62	312				181	811
10:00	161		190					351		22:00	108		51					159	
10:15 10:30	173		201					374 406		22:15 22:30	81 85		66 53					147	
10:30 10:45	198 194	726	208 217	816				406 411	1542	22:30 22:45	85 67	341	53 46	216				138 113	557
11:00	191	. =0	179					370		23:00	60	<u> </u>	45					105	
11:15	198		207					405		23:15	47		22					69	
11:30	213	900	225	010				438	1610	23:30	40 52	100	27	112				67	212
11:45 TOTALS	198	800 4693	208	819 5389				406	1619 10082	23:45 TOTALS	52	199 9033	19	113 8120				71	312 17153
SPLIT %		46.5%		53.5%					37.0%	SPLIT %		52.7%		47.3%					63.0%
	ם	AILY 1	ΓΩΤΔ	IS		NB		SB		EB		WB						Т	otal
	<i>Di</i>	TIL I				13,726		13,509		0		0						27	,235
AM Peak Hour		08:15		07:45					07:45	PM Peak Hour		17:00		15:00					15:00
AM Pk Volume		834		1012					1835	PM Pk Volume		1046		1098					2096
Pk Hr Factor		0.895		0.927					0.950	Pk Hr Factor		0.979		0.940					0.967
7 - 9 Volume		1582		1984	0		0		3566	4 - 6 Volume		2063		1974		0	0		4037
7 - 9 Peak Hour		07:30		07:45						4 - 6 Peak Hour		17:00		17:00					17:00
7 - 9 Pk Volume		825		1012						4 - 6 Pk Volume		1046		995					2041
Pk Hr Factor		0.885		0.927	0.000	J	0.000		0.950	Pk Hr Factor		0.979		0.975	U.	000	0.00	U	0.977

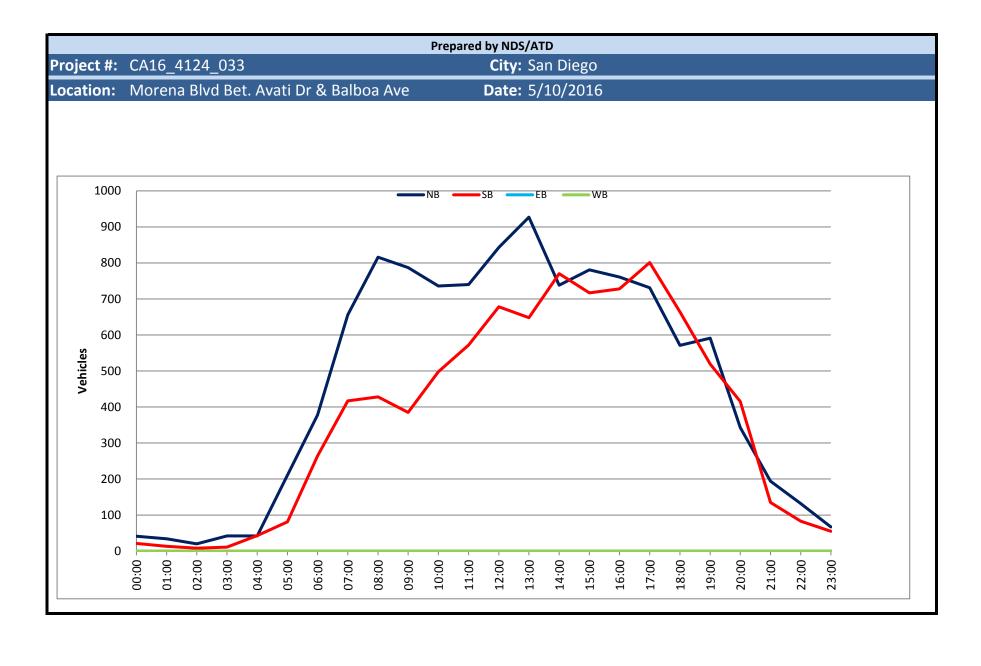


VOLUME

Morena Blvd Bet. Avati Dr & Balboa Ave Ramps

Day: Tuesday **Date:** 5/10/2016

	D	AILY 1		15		NB	SB		EB		WB						To	otal
	וט	AILY I	IUIA	(L)		11,182	8,954	ļ	0		0						20,	,136
AM Period	NB		SB		EB	WB	ТО	TAL	PM Period	NB		SB		EB	WB		TO	TAL
00:00	7		7				14		12:00	207		172					379	
00:15	12		2				14		12:15	214		180					394	
00:30 00:45	12 10	41	9 3	21			21 13	62	12:30 12:45	218 204	843	158 168	678				376 372	1521
01:00	7	<u> </u>	2				9	- 02	13:00	234	043	169	070				403	1321
01:15	9		3				12		13:15	222		166					388	
01:30	9	0.4	4	10			13	4-	13:30	236	00=	150	640				386	4
01:45 02:00	9	34	<u>4</u> 1	13			13 4	47	13:45 14:00	235 188	927	163 177	648				398 365	1575
02:00	3 4		3				7		14:00 14:15	205		185					390	
02:30	6		2				8		14:30	163		238					401	
02:45	7	20	2	8			9	28	14:45	182	738	170	770				352	1508
03:00	8		6				14		15:00	195		177					372	
03:15 03:30	3 5		0				5 5		15:15 15:30	177 199		182 183					359 382	
03:45	26	42	3	11			29	53	15:45	210	781	175	717				385	1498
04:00	4		3				7		16:00	195	, 01	183	, _,				378	2130
04:15	10		10				20		16:15	196		164					360	
04:30	12		13				25		16:30	195		179					374	
04:45 05:00	16 21	42	17 14	43			33 35	85	16:45 17:00	175 199	761	202	728				377	1489
05:00	42		13				55		17:00 17:15	189		236 204					435 393	
05:30	56		27				83		17:30	186		187					373	
05:45	92	211	27	81			119	292	17:45	157	731	174	801				331	1532
06:00	73		43				116		18:00	161		192					353	
06:15	88		62				150		18:15	129		165					294	
06:30 06:45	108 109	378	74 85	264			182 194	642	18:30 18:45	130 151	571	157 150	664				287 301	1235
07:00	107	370	94	204			201	042	19:00	174	3/1	149	004				323	1233
07:15	135		98				233		19:15	145		125					270	
07:30	186		107				293		19:30	146		120					266	
07:45	228	656	118	417			346	1073	19:45	126	591	125	519				251	1110
08:00 08:15	238 191		94 113				332 304		20:00 20:15	108 100		104 130					212 230	
08:30	196		105				301		20:30	72		104					176	
08:45	191	816	116	428			307	1244	20:45	63	343	77	415				140	758
09:00	211		99				310		21:00	44		47					91	
09:15	152		89				241		21:15	48		35					83	
09:30	178	707	96 101	205			274	1172	21:30	50	104	22	125				72	220
09:45 10:00	246 185	787	101 95	385			347 280	1172	21:45 22:00	52 37	194	31 31	135				83 68	329
10:15	179		130				309		22:15	36		24					60	
10:30	170		136				306		22:30	32		17					49	
10:45	202	736	137	498			339	1234	22:45	27	132	11	83				38	215
11:00	196		141				337		23:00	24		25 11					49	
11:15 11:30	163 184		147 159				310 343		23:15 23:30	18 18		11 10					29 28	
11:45	197	740	125	572			322	1312	23:45	7	67	9	55				16	122
TOTALS		4503		2741				7244	TOTALS		6679		6213					12892
SPLIT %		62.2%		37.8%				36.0%	JELII /0		51.8%		48.2%					64.0%
	D	AILY 1	ΓΩΤΔ	\IS		NB	SB		EB		WB						To	otal
		1151		(L)		11,182	8,954		0		0						20,	,136
AM Peak Hour		07:45		11:30				11:45	PM Peak Hour		13:00		16:45					16:30
AM Pk Volume		853		636				1471	PM Pk Volume		927		829					1579
Pk Hr Factor		0.896		0.883				0.933	Pk Hr Factor		0.982		0.878					0.907
7 - 9 Volume		1472		845	0	0		2317	4 - 6 Volume		1492		1529	()	0		3021
7 - 9 Peak Hour		07:45		07:30					4 - 6 Peak Hour		16:15		16:45					16:30
7 - 9 Pk Volume		853		432					4 - 6 Pk Volume		765		829					1579
Pk Hr Factor		0.896		0.915	0.000	0.000		0.927	Pk Hr Factor		0.961		0.878	0.0	000	0.000		0.907
			_ 															

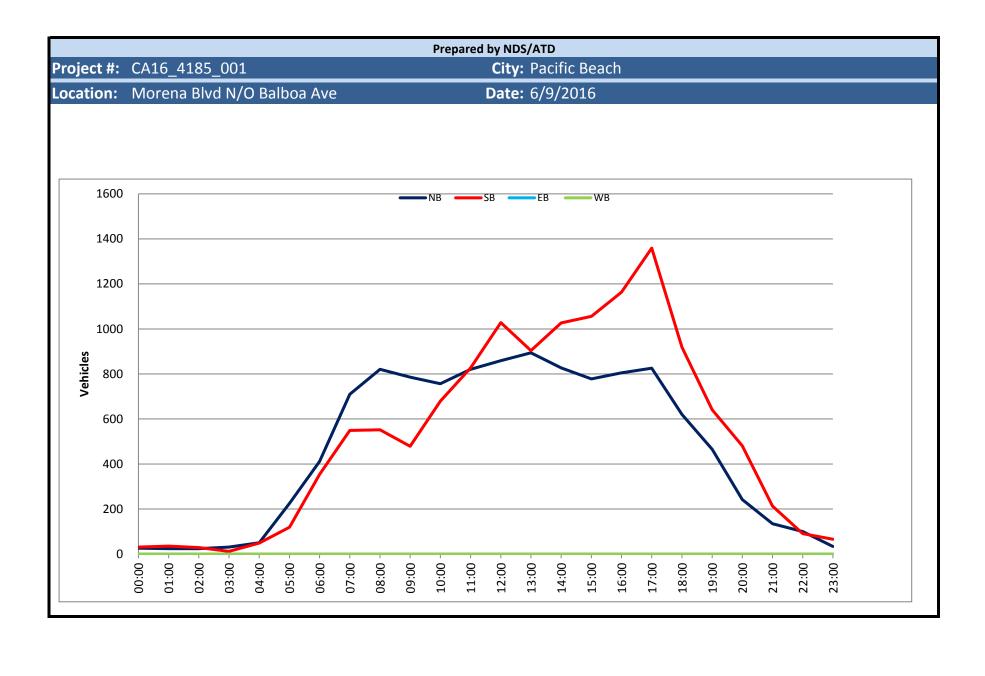


Morena Blvd N/O Balboa Ave

City: Pacific Beach

Project #: CA16_4185_001

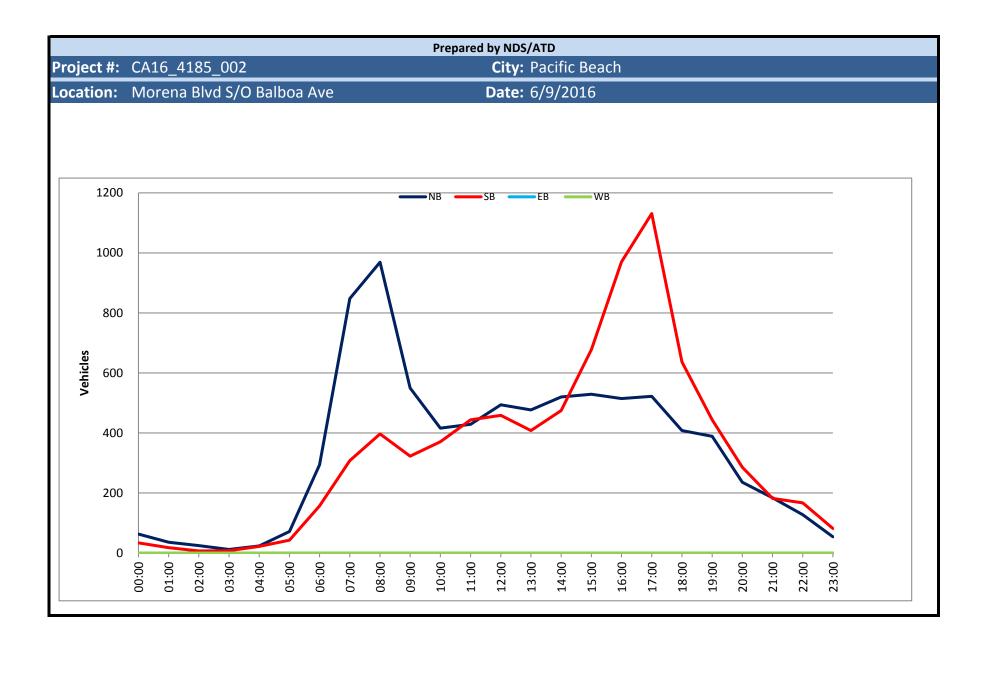
Day: Thursday **Date:** 6/9/2016



Morena Blvd S/O Balboa Ave

Day: Thursday Date: 6/9/2016

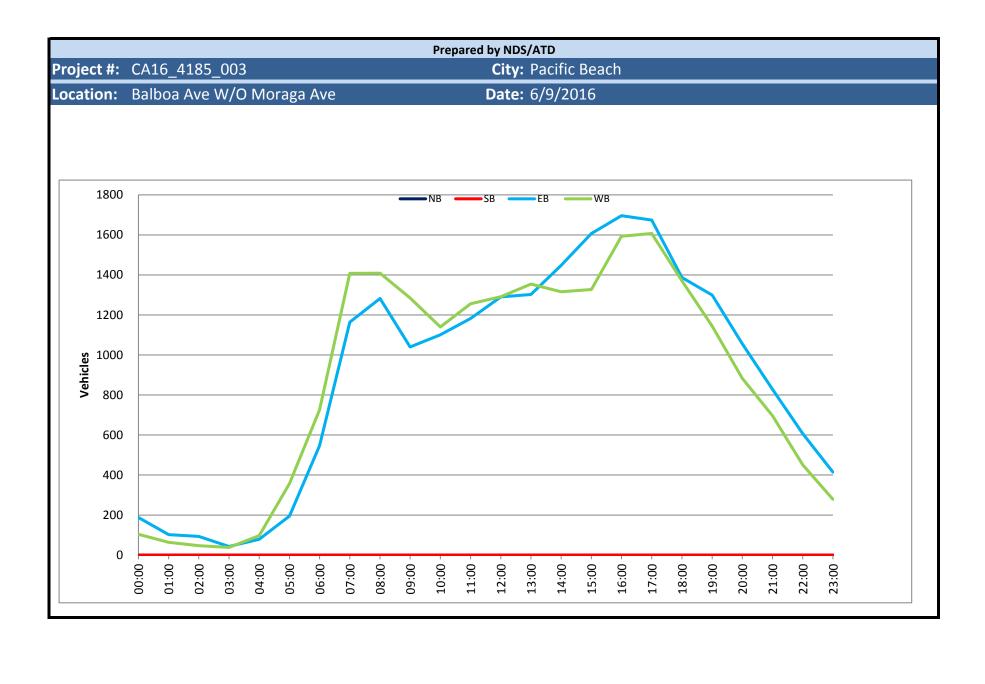
	D	AILY 1	ΓΩΤΔ	AIS		NB		SB		EB		WB						To	otal
				(L)		8,194		8,051		0		0						16	,245
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB	W	3	TO	TAL
00:00	17		16					33		12:00	119		109					228	
00:15 00:30	20 16		5 6					25 22		12:15 12:30	142 118		102 117					244 235	
00:45	10	63	7	34				17	97	12:45	115	494	131	459				246	953
01:00	15		1					16		13:00	116		94					210	
01:15 01:30	11 6		8 1					19 7		13:15 13:30	111 120		87 104					198 224	
01:45	4	36	8	18				12	54	13:45	130	477	123	408				253	885
02:00	11		2					13		14:00	129		117					246	
02:15 02:30	6 3		1					7 5		14:15 14:30	149 131		127 97					276 228	
02:45	5	25	2	7				7	32	14:45	111	520	134	475				245	995
03:00	4		3					7		15:00	108		129					237	
03:15 03:30	2 3		2					4		15:15 15:30	124 152		159 199					283 351	
03:45	3	12	2	8				5	20	15:45	145	529	191	678				336	1207
04:00	3		1					4		16:00	125		253					378	
04:15	8		5					13		16:15	137		224					361	
04:30 04:45	8 5	24	8 8	22				16 13	46	16:30 16:45	121 132	515	237 256	970				358 388	1485
05:00	10	<u> </u>	9					19		17:00	118		320					438	
05:15	21		7					28		17:15 17:20	152		293					445	
05:30 05:45	17 24	72	10 17	43				27 41	115	17:30 17:45	109 143	522	253 265	1131				362 408	1653
06:00	41	, <u>-</u>	27					68	115	18:00	104	322	192					296	1033
06:15	44		30					74		18:15	113		175					288	
06:30 06:45	80 129	294	43 57	157				123 186	451	18:30 18:45	98 93	408	140 130	637				238 223	1045
07:00	138	234	43	137				181	731	19:00	102	400	123	037				225	1043
07:15	218		65					283		19:15	108		102					210	
07:30 07:45	210 282	848	93 107	308				303 389	1156	19:30 19:45	100 79	389	104 115	444				204 194	833
08:00	270	040	78	306				348	1130	20:00	68	363	75	444				143	633
08:15	226		98					324		20:15	65		80					145	
08:30 08:45	230 243	969	99 122	397				329 365	1366	20:30 20:45	52 51	236	62 69	286				114 120	522
09:00	190	909	82	397				272	1300	21:00	66	230	71	200				137	322
09:15	129		83					212		21:15	38		51					89	
09:30	108	FF0	75 02	222				183	072	21:30	36	104	33	100				69	266
09:45 10:00	123 94	550	83 87	323				206 181	873	21:45 22:00	44 39	184	27 47	182				71 86	366
10:15	111		104					215		22:15	35		51					86	
10:30	105	440	92	274				197	70-	22:30	27	433	38	467				65	20-
10:45 11:00	106 92	416	88 76	371			-	194 168	787	22:45 23:00	27 19	128	31 38	167				58 57	295
11:15	98		107					205		23:15	20		21					41	
11:30	119	400	134					253	070	23:30	8	= -	13	00				21	400
11:45	120	429	127	444				247	873	23:45	7	54	10	82				17	136
TOTALS		3738		2132					5870	TOTALS		4456		5919					10375
SPLIT %		63.7%		36.3%					36.1%	SPLIT %		42.9%		57.1%					63.9%
	D	AILY 1		\I S		NB		SB		EB		WB						T	otal
		AILT	IOTA	(L)		8,194		8,051		0		0						16	,245
AM Peak Hour		07:45		11:15					07:45	PM Peak Hour		15:30		17:00					17:00
AM Pk Volume		1008		477					1390	PM Pk Volume		559		1131					1653
Pk Hr Factor		0.894		0.890					0.893	Pk Hr Factor		0.919		0.884					0.929
7 - 9 Volume		1817		705					2522	4 - 6 Volume		1037		2101					3138
7 - 9 Peak Hour 7 - 9 Pk Volume		07:45 1008		08:00 397						4 - 6 Peak Hour 4 - 6 Pk Volume		16:30 523		17:00 1131					17:00 1653
Pk Hr Factor		0.894		0.814					0.893	Pk Hr Factor		0.860		0.884					0.929
		3.334		3.31 T	0.000				1.555			3.300		0.001	0.0		5.000		3.323



Balboa Ave W/O Moraga Ave

Day: Thursday Date: 6/9/2016

	DAILY TO	OTALS			NB 0		SB 0		EB 21,625	W 21,2	_						otal .867
AM Period	NB	SB	EB		WB			TAL	PM Period	NB	SB	ЕВ		WB			TAL
00:00	140	<u> </u>	50		33		83		12:00	IVD	35	317		309		626	
00:15			61		29		90		12:15			330		344		674	
00:30			40	400	20	101	60	202	12:30			306	1200	291	1201	597	2504
00:45 01:00			37 36	188	22 18	104	59 54	292	12:45 13:00			337 333	1290	347 335	1291	684 668	2581
01:00			21		17		38		13:15			283		326		609	
01:30			23		16		39		13:30			336		344		680	
01:45			22	102	13	64	35	166	13:45			350	1302	349	1354	699	2656
02:00			28		9		37		14:00			327		342		669	
02:15 02:30			30 24		14 13		44 37		14:15 14:30			334 411		311 342		645 753	
02:45			11	93	11	47	22	140	14:45			376	1448	321	1316	697	2764
03:00			14		8		22		15:00			406		304		710	
03:15			12		3		15		15:15			367		350		717	
03:30 03:45			10 7	43	12 15	38	22 22	81	15:30 15:45			423 411	1607	357 316	1327	780 727	2934
04:00			16	43	19	30	35	01	16:00			412	1007	361	1327	773	2334
04:15			17		17		34		16:15			421		393		814	
04:30			20		29		49		16:30			423		410		833	
04:45 05:00			26 29	79	32 52	97	58 81	176	16:45 17:00			440 399	1696	429 402	1593	869 801	3289
05:00			52		72		124		17:00 17:15			421		413		834	
05:30			54		112		166		17:30			440		393		833	
05:45			60	195	121	357	181	552	17:45			414	1674	399	1607	813	3281
06:00			95		128		223		18:00			342		382		724	
06:15 06:30			103 177		148 194		251 371		18:15 18:30			350 342		381 314		731 656	
06:45			177	547	256	726	428	1273	18:45			353	1387	293	1370	646	2757
07:00			214	<u> </u>	299	, _ 0	513	12/0	19:00			364	1007	332	1070	696	2737
07:15			275		344		619		19:15			345		296		641	
07:30			341	4464	395	4.400	736	2572	19:30			327	4200	277	4444	604	2442
07:45 08:00			334 329	1164	370 355	1408	704 684	2572	19:45 20:00			263 273	1299	239 256	1144	502 529	2443
08:15			295		342		637		20:15			251		247		498	
08:30			321		338		659		20:30			278		191		469	
08:45			337	1282	374	1409	711	2691	20:45			254	1056	189	883	443	1939
09:00			283		346		629		21:00 21:15			254		203		457	
09:15 09:30			251 229		317 315		568 544		21:30			211 179		197 158		408 337	
09:45			277	1040	307	1285	584	2325	21:45			184	828	138	696	322	1524
10:00			281		260		541		22:00			179		167		346	
10:15			252		324		576		22:15			155		109		264	
10:30 10:45			276 292	1101	273283	1140	549 575	2241	22:30 22:45			152 121	607	98 77	451	250 198	1058
11:00			289	1101	285	1140	574	2241	23:00			119	007	77 79	401	198	1038
11:15			298		305		603		23:15			97		79		176	
11:30			296		317	45	613	0	23:30			111		71	2==	182	
11:45			299	1182	349	1256	648	2438	23:45			88	415	50	279	138	694
TOTALS				7016		7931		14947	TOTALS				14609		13311		27920
SPLIT %				46.9%		53.1%		34.9%	SPLIT %				52.3%		47.7%		65.1%
	DAILVI	TALC -			NB		SB		EB	W	В					To	otal
	DAILY TO	JIALS			0		0		21,625	21,2							.867
AM Peak Hour				07:30		07:15		07:30	PM Peak Hour				16:45		16:30		16:30
AM Pk Volume				1299		1464		2761	PM Pk Volume				1700		1654		3337
Pk Hr Factor				0.952		0.927		0.938	Pk Hr Factor				0.966		0.964		0.960
7 - 9 Volume	0	0		2446		2817		5263	4 - 6 Volume	0		0	3370		3200		6570
7 - 9 Peak Hour				07:30		07:15			4 - 6 Peak Hour				16:45		16:30		16:30
7 - 9 Pk Volume				1299		1464			4 - 6 Pk Volume				1700		1654		3337
Pk Hr Factor	0.000	0.000		0.952		0.927		0.938	Pk Hr Factor	0.00	0.	000	0.966		0.964		0.960



Garnet Ave W/O Mission Bay Dr

EB

SB

NB

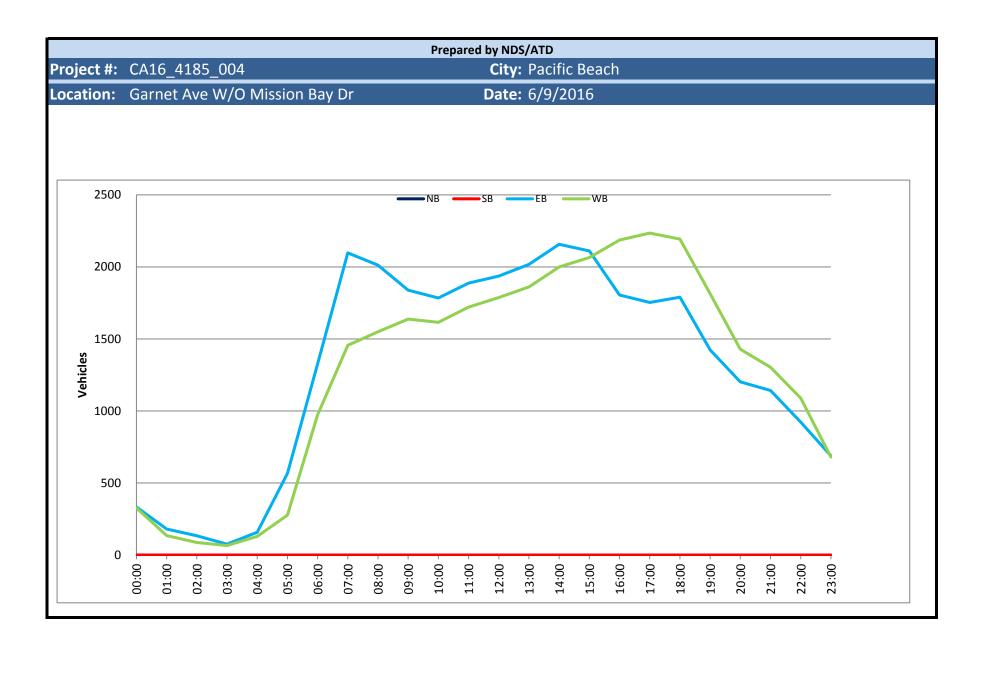
Day: Thursday Date: 6/9/2016

City: Pacific Beach
Project #: CA16_4185_004

Total

WB

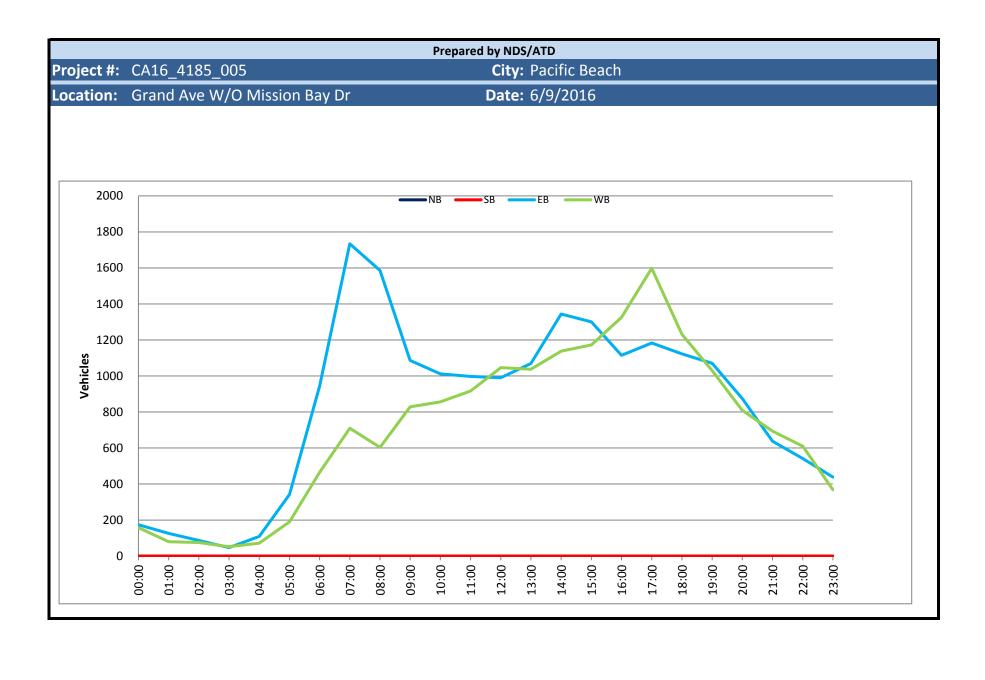
	DAILY TOTA	LS		0		<u>зв</u> 0		31,342	30,61	_						,958
				U		U		31,342	30,0.						01,	936
AM Period	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		142		127		269		12:00			450		406		856	
00:15		100		122		222		12:15			509		472		981	
00:30		44	224	29 40	227	73	661	12:30 12:45			516	1026	443	1700	959	2724
00:45 01:00		48 61	334	49 43	327	97 104	661	12:45 13:00			461 514	1936	467 476	1788	928 990	3724
01:00		42		45 45		87		13:15			481		474		955	
01:30		39		22		61		13:30			519		451		970	
01:45		39	181	25	135	64	316	13:45			503	2017	460	1861	963	3878
02:00		44		29		73		14:00			545		516		1061	
02:15		36		15		51		14:15			534		490		1024	
02:30		34	424	15	07	49	224	14:30			567	2457	510	2000	1077	4457
02:45 03:00		20 19	134	28 13	87	48 32	221	14:45 15:00			511 544	2157	484 514	2000	995 1058	4157
03:00		20		19		39		15:15			532		514		1036	
03:30		21		15		36		15:30			493		514		1007	
03:45		16	76	19	66	35	142	15:45			542	2111	523	2065	1065	4176
04:00		26		22		48		16:00			490		528		1018	
04:15		43		23		66		16:15			435		566		1001	
04:30		42	450	34	400	76	200	16:30			460	400-	565	2405	1025	2021
04:45		47	158	51	130	98	288	16:45 17:00			420	1805	527	2186	947	3991
05:00 05:15		67 115		40 51		107 166		17:00 17:15			451 440		552 577		1003 1017	
05:30		183		76		259		17:30			438		550		988	
05:45		202	567	110	277	312	844	17:45			424	1753	556	2235	980	3988
06:00		251		128		379		18:00			465		570		1035	
06:15		271		182		453		18:15			439		522		961	
06:30		410	1006	306	0=0	716	2222	18:30			472	4=00	558	2400	1030	2222
06:45		394 468	1326	356	972	750	2298	18:45 19:00			414 399	1790	543 504	2193	957 903	3983
07:00 07:15		524		383 362		851 886		19:15			385		444		829	
07:30		545		359		904		19:30			340		437		777	
07:45		560	2097	352	1456	912	3553	19:45			299	1423	428	1813	727	3236
08:00		481		376		857		20:00			269		374		643	
08:15		498		369		867		20:15			308		384		692	
08:30		526	2012	403	4550	929	2562	20:30			331	4202	352	1.120	683	2624
08:45 09:00		507 490	2012	402 413	1550	909	3562	20:45 21:00			294 313	1202	319 319	1429	613 632	2631
09:15		404		412		816		21:15			305		371		676	
09:30		461		393		854		21:30			274		316		590	
09:45		484	1839	420	1638	904	3477	21:45			250	1142	297	1303	547	2445
10:00		479		379		858		22:00			269		319		588	
10:15		410		371		781		22:15			232		310		542	
10:30		433	1704	428	1615	861	2200	22:30			216	022	231	1000	447	2011
10:45 11:00		462 427	1784	437 399	1615	899 826	3399	22:45 23:00			205 183	922	229 213	1089	434 396	2011
11:15		481		402		883		23:15			187		189		376	
11:30		477		443		920		23:30			175		150		325	
11:45		502	1887	477	1721	979	3608	23:45			144	689	128	680	272	1369
TOTALS			12395		9974		22369	TOTALS				18947		20642		39589
SPLIT %			55.4%		44.6%		36.1%	SPLIT %				47.9%		52.1%		63.9%
	DAUNTOTA	16		NB		SB		EB	WE	3					To	otal
	DAILY TOTA	ils		0		0		31,342	30,62	_						,958
AM Peak Hour			07:15		11:30		11:45	PM Peak Hour				14:00		17:15		14:30
AM Pk Volume			2110		1798		3775	PM Pk Volume				2157		2253		4176
Pk Hr Factor			0.942		0.942		0.962	Pk Hr Factor				0.951		0.976		0.969
7 - 9 Volume	0	0	4109		3006		7115	4 - 6 Volume	0	0		3558		4421		7979
7 - 9 Peak Hour			07:15		08:00			4 - 6 Peak Hour				16:00		17:00		16:30
7 - 9 Pk Volume			2110		1550			4 - 6 Pk Volume				1805		2235		3992
Pk Hr Factor	0.000	0.000	0.942		0.962		0.959	Pk Hr Factor	0.00	0.000		0.921		0.968		0.974



Grand Ave W/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

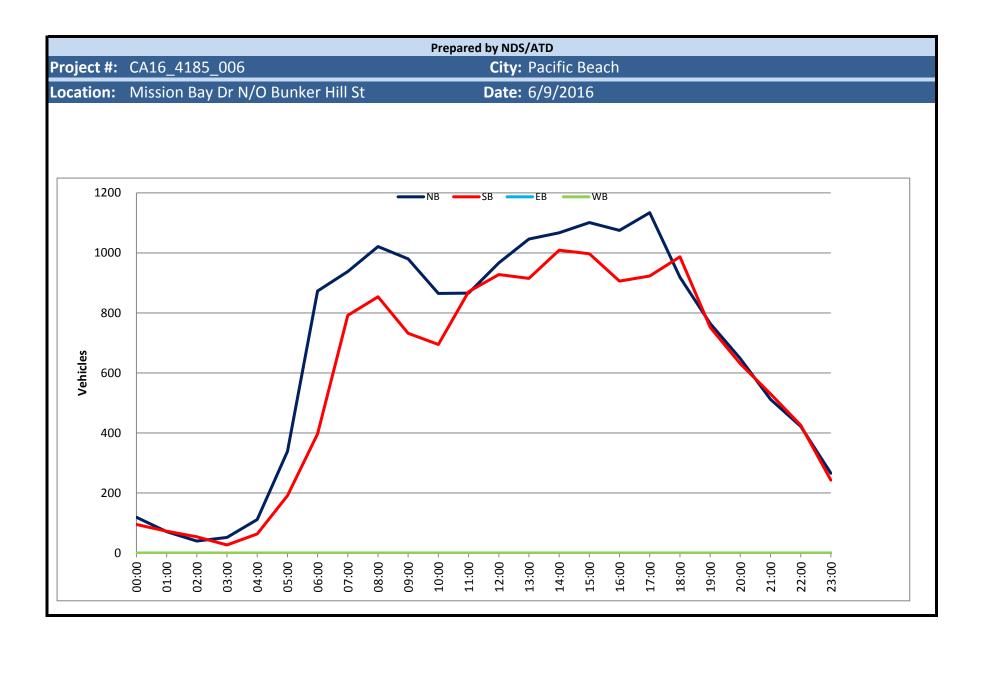
	DAIIV	TOTALS			NB		SB		EB	WB						To	otal
	DAILI	IOIALS			0		0		19,930	17,064						36,	,994
AM Period	NB	SB	ЕВ		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00			92		68		160		12:00			245		272		517	
00:15			11		13		24		12:15			226		260		486	
00:30			33	4-4	44	4.50	77	222	12:30			262		283	1016	545	2006
00:45			38	174	33	158	71	332	12:45			257	990	231	1046	488	2036
01:00 01:15			37 34		25 24		62 58		13:00 13:15			282 274		245 251		527 525	
01:30			24		15		39		13:30			256		261		517	
01:45			31	126	16	80	47	206	13:45			257	1069	280	1037	537	2106
02:00			34		26		60		14:00			267		328		595	
02:15			24		20		44		14:15			388		251		639	
02:30			16		11		27		14:30			396		295		691	
02:45			13	87	18	75	31	162	14:45			293	1344	264	1138	557	2482
03:00			14		11		25		15:00			298		249		547	
03:15 03:30			10 9		17 8		27 17		15:15 15:30			340 323		320 287		660 610	
03:45			14	47	16	52	30	99	15:45			339	1300	316	1172	655	2472
04:00			22	117	11	<i>52</i>	33	33	16:00			290	1300	289	16	579	_ 1,7_
04:15			16		11		27		16:15			280		319		599	
04:30			23		23		46		16:30			279		358		637	
04:45			48	109	27	72	75	181	16:45			266	1115	359	1325	625	2440
05:00			37		27		64		17:00			328		382		710	
05:15			80		34		114		17:15 17:20			289		416		705	
05:30 05:45			114 111	342	42 87	190	156 198	532	17:30 17:45			303 263	1183	391 409	1598	694 672	2781
06:00			159	342	89	190	248	332	18:00			288	1103	339	1396	627	2/01
06:15			201		110		311		18:15			276		313		589	
06:30			275		127		402		18:30			273		289		562	
06:45			307	942	138	464	445	1406	18:45			286	1123	290	1231	576	2354
07:00			350		202		552		19:00			262		296		558	
07:15			431		200		631		19:15			288		220		508	
07:30			472	4724	146	740	618	2444	19:30			271	4070	261	4020	532	2000
07:45 08:00			481 414	1734	162 141	710	643 555	2444	19:45 20:00			249 229	1070	252 214	1029	501 443	2099
08:00 08:15			395		138		533		20:15			241		194		435	
08:30			417		150		567		20:30			204		185		389	
08:45			360	1586	175	604	535	2190	20:45			201	875	216	809	417	1684
09:00			279		226		505		21:00			169		164		333	
09:15			282		187		469		21:15			194		188		382	
09:30			259		196		455		21:30			144		180		324	1000
09:45			266	1086	220	829	486	1915	21:45			131	638	162	694	293	1332
10:00 10:15			259 243		182 221		441 464		22:00 22:15			142 150		161 176		303 326	
10:30			263		221		484		22:30			132		150		282	
10:45			247	1012	232	856	479	1868	22:45			118	542	123	610	241	1152
11:00			237	v 	173	-233	410		23:00			122	- · -	107		229	
11:15			255		243		498		23:15			114		104		218	
11:30			257		235		492		23:30			122		72		194	
11:45			248	997	266	917	514	1914	23:45			81	439	85	368	166	807
TOTALS				8242		5007		13249	TOTALS				11688		12057		23745
SPLIT %				62.2%		37.8%		35.8%	SPLIT %				49.2%		50.8%		64.2%
					ALD		CD		F.D.	WD						-	tal
	DAILY	TOTALS			NB 0		SB		19 930	WB							otal
					U		0		19,930	17,064						30 ,	,994
AM Peak Hour				07:15		11:45		07:15	PM Peak Hour				14:15		17:00		17:00
AM Pk Volume				1798		1081		2447	PM Pk Volume				1375		1598		2781
Pk Hr Factor				0.935		0.955		0.951	Pk Hr Factor				0.868		0.960		0.979
7 - 9 Volume	0	0		3320		1314		4634	4 - 6 Volume	0	0		2298		2923		5221
7 - 9 Peak Hour				07:15		07:00		07:15	4 - 6 Peak Hour				16:45		17:00		17:00
7 - 9 Pk Volume				1798		710		2447	4 - 6 Pk Volume				1186		1598		2781
Pk Hr Factor	0.000	0.000		0.935		0.879		0.951	Pk Hr Factor	0.000	0.000		0.904		0.960		0.979



Mission Bay Dr N/O Bunker Hill St

Day: Thursday Date: 6/9/2016

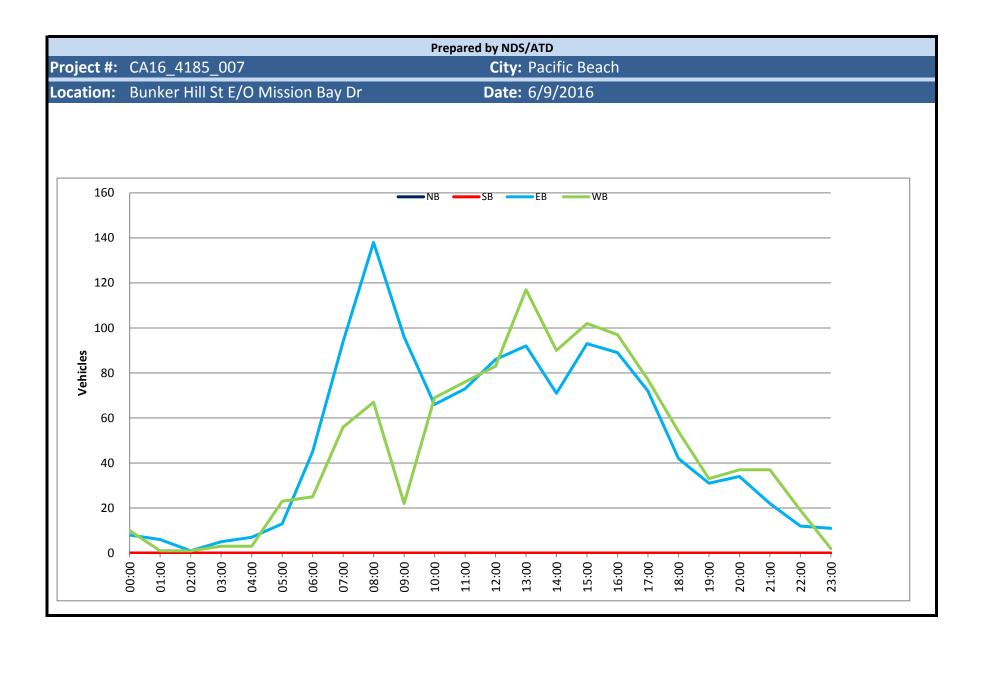
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				iLJ		16,198		14,092		0		0						30	,290
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB	W	В	TC	TAL
00:00	38		17					55		12:00	233		209					442	
00:15 00:30	34 27		35 22					69 49		12:15 12:30	226 252		252 232					478 484	
00:45	20	119	21	95				41	214	12:45	256	967	235	928				491	1895
01:00	18		20					38		13:00	267		217					484	
01:15	20 19		15 24					35		13:15 13:30	254 261		224 237					478 498	
01:30 01:45	14	71	24 14	73				43 28	144	13:45	264	1046	237	915				501	1961
02:00	8		14					22		14:00	253		276					529	
02:15	14		19					33		14:15	295		221					516	
02:30 02:45	10 8	40	12 9	54				22 17	94	14:30 14:45	288 231	1067	256 256	1009				544 487	2076
03:00	18		8					26		15:00	291		245					536	
03:15	7		7					14		15:15	249		259					508	
03:30 03:45	12 15	52	6 6	27				18 21	79	15:30 15:45	279 282	1101	248 245	997				527 527	2098
04:00	18		9					27	73	16:00	251	1101	243	337				494	2030
04:15	24		20					44		16:15	263		228					491	
04:30 04:45	24 46	112	20 15	64				44 61	176	16:30 16:45	279 282	1075	219 216	906				498 498	1981
05:00	46	112	40	04				83	1/0	17:00	301	10/2	216	900				528	1901
05:15	52		43					95		17:15	274		228					502	
05:30	118	220	52	101				170	F20	17:30	285	1121	231	022				516	2057
05:45 06:00	126 142	339	56 70	191				182 212	530	17:45 18:00	274 250	1134	237 256	923				511 506	2057
06:15	196		87					283		18:15	250		246					496	
06:30	274		116					390		18:30	212		252					464	
06:45 07:00	261 228	873	124 161	397				385 389	1270	18:45 19:00	207 183	919	233	987				440 391	1906
07:15	250		209					459		19:15	191		193					384	
07:30	223		194					417		19:30	217		192					409	
07:45 08:00	237 261	938	228	792				465 461	1730	19:45 20:00	174 171	765	159 169	752				333 340	1517
08:00	235		206					441		20:15	171		167					338	
08:30	249		206					455		20:30	146		168					314	
08:45	276	1021	242	854				518	1875	20:45	160	648	127	631				287	1279
09:00 09:15	252 268		203 175					455 443		21:00 21:15	123 146		140 142					263 288	
09:30	223		188					411		21:30	131		125					256	
09:45	237	980	166	732				403	1712	21:45	112	512	123	530				235	1042
10:00 10:15	227 195		194 164					421 359		22:00 22:15	133 110		123 114					256 224	
10:15	230		158					388		22:30	94		104					198	
10:45	213	865	179	695				392	1560	22:45	85	422	85	426				170	848
11:00	201		193					394		23:00	94 62		64 52					158	
11:15 11:30	212 236		216 226					428 462		23:15 23:30	63 52		52 72					115 124	
11:45	217	866	236	871				453	1737	23:45	57	266	55	243				112	509
TOTALS		6276		4845					11121	TOTALS		9922		9247					19169
SPLIT %		56.4%		43.6%					36.7%	SPLIT %		51.8%		48.2%					63.3%
		A 11. V.		1.6		NB		SB		EB		WB						I	otal
	D	AILY 1	OTA	ILS		16,198		14,092		0		0							,290
AM Peak Hour		08:30		11:45					08:00	PM Peak Hour		16:45		14:30					15:00
AM Pk Volume		1045		929					1875	PM Pk Volume		1142		1016					2098
Pk Hr Factor		0.947		0.922					0.905	Pk Hr Factor		0.949		0.981					0.979
7 - 9 Volume		1959		1646	0		0		3605	4 - 6 Volume		2209		1829	()	0		4038
7 - 9 Peak Hour		08:00		08:00						4 - 6 Peak Hour		16:45		17:00					17:00
7 - 9 Pk Volume		1021		854						4 - 6 Pk Volume		1142		923					2057
Pk Hr Factor		0.925		0.882	0.00	U	0.000		0.905	Pk Hr Factor		0.949		0.974	0.0	000	0.000	J	0.974



Bunker Hill St E/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

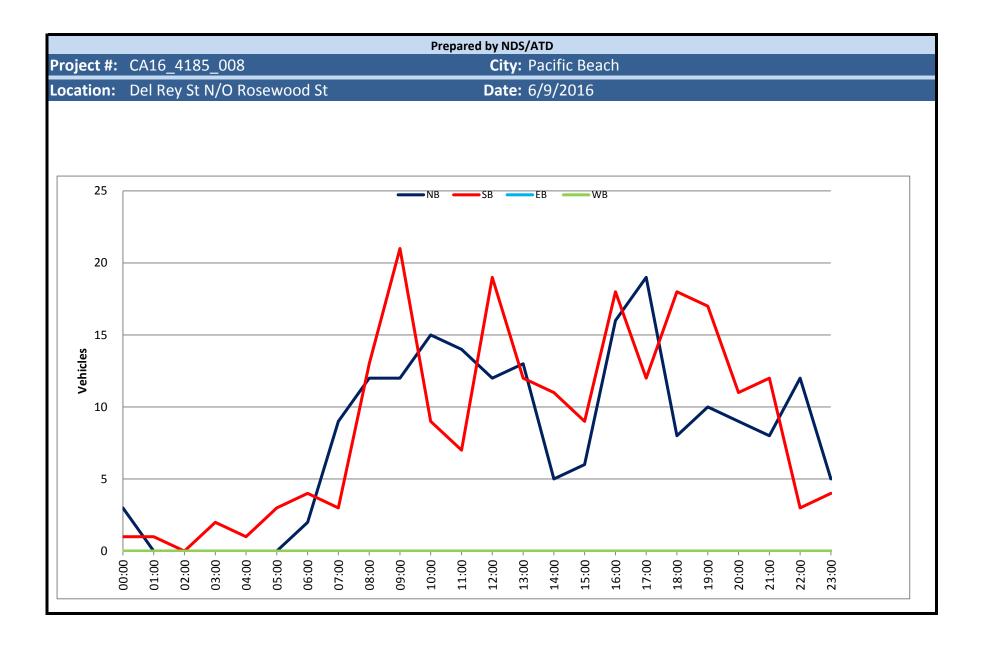
	DAILY TO	TAIC			NB		SB		EB	WB						To	otal
	DAILT TO	IALS			0		0		1,207	1,104						2,3	311
AM Period	NB S	SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00			2		4		6		12:00			19		21		40	
00:15			3		4		7		12:15			23		24		47	
00:30			3	0	1	4.0	4	40	12:30			22	0.0	22	00	44	160
00:45 01:00			0	8	0	10	1	18	12:45 13:00			22 20	86	16	83	38 41	169
01:00			4 1		0		4		13:15			21		21 35		56	
01:30			1		1		2		13:30			30		38		68	
01:45			0	6	0	1	0	7	13:45			21	92	23	117	44	209
02:00			0		1		1		14:00			12		28		40	
02:15			0		0		0		14:15			21		22		43	
02:30			1	_	0	_	1		14:30			18		19		37	
02:45			0	1	0	1	0	2	14:45			20	71	21	90	41	161
03:00 03:15			2		0		2		15:00 15:15			15 17		16 22		31 39	
03:30			1		1		2		15:30			24		31		55	
03:45			1	5	1	3	2	8	15:45			37	93	33	102	70	195
04:00			1		0		1		16:00			26		13		39	
04:15			0		0		0		16:15			26		23		49	
04:30			2		2		4		16:30			18		35		53	
04:45			4	7	1	3	5	10	16:45			19	89	26	97	45	186
05:00			2		4		6		17:00			22		21		43	
05:15			3		2		5 1E		17:15 17:30			18 17		22 13		40 20	
05:30 05:45			4	13	11 6	23	15 10	36	17:30 17:45			17	72	13 21	77	30 36	149
06:00				13	0	23	5	30	18:00			10	12	25	//	35	149
06:15			5 16		2		18		18:15			9		12		21	
06:30			13		11		24		18:30			16		10		26	
06:45			11	45	12	25	23	70	18:45			7	42	7	54	14	96
07:00			19		13		32		19:00			16		9		25	
07:15			19		12		31		19:15			6		4		10	
07:30			23	0.4	15	5 .0	38	450	19:30			2	24	9	22	11	C 4
07:45 08:00			33 29	94	16 21	56	49 50	150	19:45 20:00			7 11	31	<u>11</u> 7	33	18 18	64
08:00			29		16		45		20:15			6		13		19	
08:30			33		14		47		20:30			8		14		22	
08:45			47	138	16	67	63	205	20:45			9	34	3	37	12	71
09:00			40		21		61		21:00			2		12		14	
09:15			21		1		22		21:15			7		7		14	
09:30			21		0		21		21:30			6		13		19	
09:45			14	96	0	22	14	118	21:45			7	22	5	37	12	59
10:00 10:15			16 20		11 23		27 43		22:00 22:15			1		8		9	
10:15			20 18		23 17		35		22:30			1		0		5 4	
10:45			12	66	18	69	30	135	22:45			6	12	7	19	13	31
11:00			21		15		36		23:00			5		2		7	
11:15			17		25		42		23:15			3		0		3	
11:30			20		16		36		23:30			3		0		3	
11:45			15	73	20	76	35	149	23:45			0	11	0	2	0	13
TOTALS				552		356		908	TOTALS				655		748		1403
SPLIT %				60.8%		39.2%		39.3%	SPLIT %				46.7%		53.3%		60.7%
	DAILY TO	TAIS			NB		SB		EB	WB							otal
					0		0		1,207	1,104						2,3	311
AM Peak Hour				08:15		11:45		08:15	PM Peak Hour				15:30		13:15		15:30
AM Pk Volume				149		87		216	PM Pk Volume				113		124		213
Pk Hr Factor				0.793		0.906		0.857	Pk Hr Factor				0.764		0.816		0.761
7 - 9 Volume	0	0		232		123		355	4 - 6 Volume	0	0		161		174		335
7 - 9 Peak Hour				08:00		07:30		08:00	4 - 6 Peak Hour				16:00		16:15		16:15
7 - 9 Pk Volume				138		68		205	4 - 6 Pk Volume				89		105		190
Pk Hr Factor	0.000	0.000		0.734		0.810		0.813	Pk Hr Factor	0.000	0.00	0	0.856		0.750		0.896
																	



Del Rey St N/O Rosewood St

Day: Thursday Date: 6/9/2016

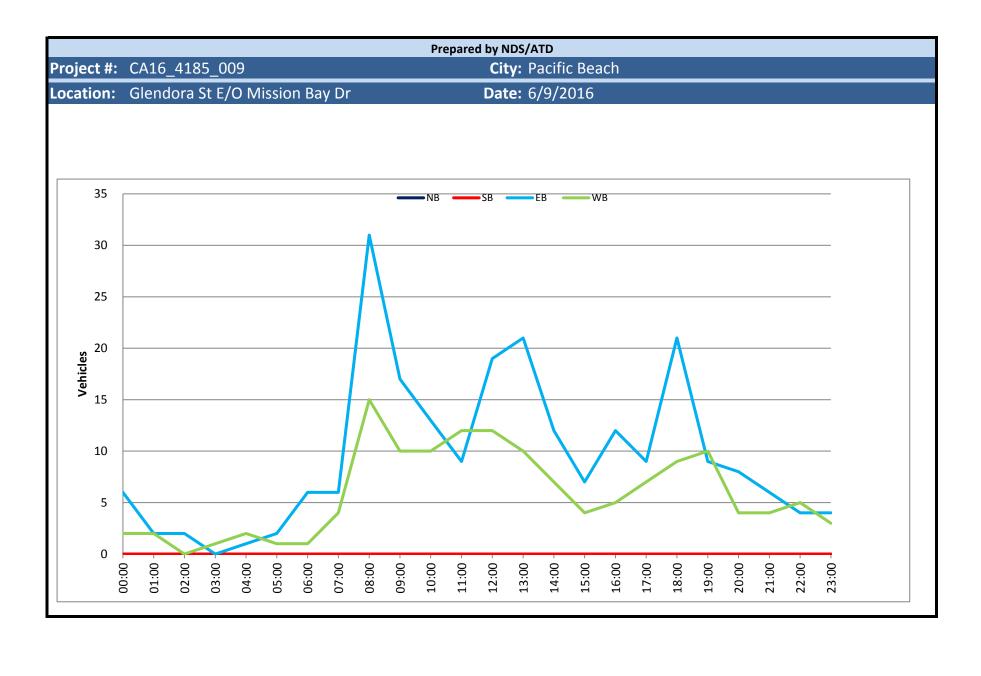
	D/	AILY T	OTALS		NB 190	SB 211		EB 0		WB 0							tal)1
AM Period	NB		SB	EB	WB	TOTAL	L	PM Period	NB		SB		B	WB		TO	
00:00	0		0			0		12:00	3		5					8	
00:15	1		0			1		12:15	4		5					9	
00:30	1	2	1			2	4	12:30	1	12	5	10				6	24
00:45 01:00	0	3	0 1			1	4	12:45 13:00	0	12	2	19			-	2	31
01:15	0		0			0		13:15	6		4					10	
01:30	0		0			0		13:30	7		4					11	
01:45	0		0 1			_	1	13:45	0	13		12				2	25
02:00 02:15	0 0		0			0		14:00 14:15	3		3 3					3 6	
02:30	0		0			0		14:30	1		1					2	
02:45	0		0			0		14:45	1	5		11				5	16
03:00	0		0			0		15:00	3		5					8	
03:15 03:30	0 0		0			0		15:15 15:30	0		2					2 1	
03:45	0		1 2				2	15:45	2	6	2	9				4	15
04:00	0		0			0		16:00	4		5					9	
04:15	0		1			1		16:15	7		8					15	
04:30 04:45	0		0 1			0	1	16:30 16:45	1	16	3 2	10				4 6	24
05:00	0		0 1			0 1	1	17:00	3	16	 1	18			_	4	34
05:15	0		1			1		17:15	5		4					9	
05:30	0		0			0		17:30	4		1					5	
05:45	0		1 3				3	17:45	7	19		12				13	31
06:00 06:15	0 1		2			2		18:00 18:15	1 0		3					4 3	
06:30	0		1			1		18:30	4		3 4					8	
06:45	1	2	0 4			1 6	6	18:45	3	8	8	18				11	26
07:00	0		2			2		19:00	3		4					7	
07:15	2		1			3		19:15	4		3					7	
07:30 07:45	2 5	9	0 3			2 5 1	2	19:30 19:45	2 1	10	4 6	17				6 7	27
08:00	2	9	4			6		20:00	2	10	3	17				5	21
08:15	2		3			5		20:15	2		0					2	
08:30	5		1			6		20:30	2		7					9	
08:45	3	12	5 13				25	20:45	3	9		11				4	20
09:00 09:15	6 1		9 5			15 6		21:00 21:15	2 2		3					5 4	
09:30	3		4			7		21:30	3		4					7	
09:45	2	12	3 21				33	21:45	1	8	3	12				4	20
10:00	4		1			5		22:00	0		0					0	
10:15	4		3			7		22:15	2		1					3	
10:30 10:45	5 2	15	3 2 9			8 4 2	24	22:30 22:45	4 6	12	1 1	3				5 7	15
11:00	2		3			5		23:00	0		0	-				0	
11:15	4		4			8		23:15	2		1					3	
11:30	3	4.4	0			3	1	23:30	0	F	2	4				2	0
11:45 TOTALS	5	14 67	0 7 65				21 32	23:45 TOTALS	3	5 123	1	4 L46				4	9 269
SPLIT %		50.8%	49.2%			32	.9%	SPLIT %		45.7%	54	4.3%					67.1%
	D	AILY T	OTALS		NB	SB		EB		WB							tal
					190	211		0		0						4(01
AM Peak Hour		08:15	08:45					PM Peak Hour		17:00		2:00					16:00
AM Pk Volume		16	23					PM Pk Volume		19		19					34
Pk Hr Factor		0.667	0.639				600	Pk Hr Factor		0.679		.950					0.567
7 - 9 Volume		21	16				37	4 - 6 Volume		35		30					65
7 - 9 Peak Hour 7 - 9 Pk Volume		07:45 14	08:00 13					4 - 6 Peak Hour 4 - 6 Pk Volume		17:00 19		6:00 18					16:00 34
Pk Hr Factor		0.700	0.650				781 781	Pk Hr Factor		0.679		.563					0.567
. KTA TUCCOI		3.700	0.030	3.000	0.000					3.073	0	.555			2.300		3.307



Glendora St E/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

	DAILY TOTALS			NB		SB	EB	WB						То	otal
	DAILT TOTALS			0		0	227	140						30	67
AM Period	NB SB	EB		WB		TOTAL	PM Period	NB	SB	ЕВ		WB		TO	TAL
00:00		0		0		0	12:00			3		2		5	
00:15		2		0		2	12:15			6		6		12	
00:30 00:45		3 1	6	0 2	2	3 3 8	12:30 12:45			3 7	19	0 4	12	3 11	31
01:00		1		1		2	13:00				13	1	12	8	31
01:15		0		1		1	13:15			6		4		10	
01:30		1		0		1	13:30			5		2		7	
01:45		0	2	0	2	0 4	13:45			3	21	3	10	6	31
02:00		0		0		0	14:00			2		1		3	
02:15 02:30		1		0 0		0 1	14:15 14:30			1 5		4 1		5 6	
02:30		1	2	0		1 2	14:45			4	12	1	7	5	19
03:00		0		1		1	15:00			3		2		5	
03:15		0		0		0	15:15			1		1		2	
03:30		0		0		0	15:30			1		0		1	
03:45		0		0	1	0 1	15:45			2	7	1	4	3	11
04:00		0		0		0	16:00 16:15			4		0		4	
04:15 04:30		U		U		2 0	16:15			ک 1		∠ 1		4 2	
04:45		0	1	1	2	1 3	16:45			5	12	2	5	7	17
05:00		1		0	-	1	17:00			1	16	1		2	
05:15		0		0		0	17:15			2		1		3	
05:30		0		1		1	17:30			3		3		6	
05:45		1	2	0	1	1 3	17:45			3	9	2	7	5	16
06:00		1		0		1	18:00			3		3		6	
06:15		2		0		2	18:15 18:30			2		2		4	
06:30 06:45		2	6	0	1	2 2 7	18:45			9	21	2	9	9 11	30
07:00		0		0		0	19:00			<u>5</u>	21	1	9	6	30
07:15		2		2		4	19:15			2		2		4	
07:30		1		1		2	19:30			1		4		5	
07:45		3	6	1	4	4 10	19:45			1	9	3	10	4	19
08:00		6		2		8	20:00			3		2		5	
08:15		7		1		8	20:15			1		1		2	
08:30 08:45		11	31	6 6	15	13 17 46	20:30 20:45			2	8	0	1	2 3	12
09:00		<u>11</u> 7	21	3	13	10 40	21:00			<u>Z</u>	0	0	4	<u> </u>	12
09:15		0		0		0	21:15			1		1		2	
09:30		4		3		7	21:30			1		1		2	
09:45		6	17	4	10	10 27	21:45			0	6	2	4	2	10
10:00		2		3		5	22:00			0		1		1	
10:15		2		1		3	22:15			2		2		4	
10:30		5	12	4	10	9	22:30			1	А	2	_	3	0
10:45 11:00		3	13	2	10	6 <u>23</u> 5	22:45 23:00			<u> </u>	4	<u>0</u> 1	5	1	9
11:15		3 1		1		2	23:15			0		0		0	
11:30		2		7		9	23:30			2		2		4	
11:45		3	9	2	12	5 21	23:45			2	4	0	3	2	7
TOTALS			95		60	155	TOTALS				132		80		212
SPLIT %			61.3%		38.7%	42.2%	SPLIT %				62.3%		37.7%		57.8%
	DAILY TOTALS		_	NB		SB	EB	WB	_						otal
				0		0	227	140						3	67
AM Peak Hour			08:15		11:30	08:15	PM Peak Hour				12:45		12:00		12:45
AM Pk Volume			32		17	48	PM Pk Volume				25		12		36
Pk Hr Factor			0.727		0.607	0.706	Pk Hr Factor				0.893		0.500		0.818
7 - 9 Volume	0 (0	37		19	56	4 - 6 Volume	0		0	21		12		33
7 - 9 Peak Hour			08:00		08:00	08:00	4 - 6 Peak Hour				16:00		16:45		16:45
7 - 9 Pk Volume			31		15	46	4 - 6 Pk Volume				12		7		18
Pk Hr Factor	0.000 0.0	000	0.705		0.625	0.676	Pk Hr Factor	0.000	0.	000	0.600		0.583		0.643
				_ 											



Day: Thursday **Project ID:** 16-4184-001

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW	/ Streets:	M	lorena Blv	d	M	lorena Blvd	I		Jutland D	r	j	Jutland Dr						
	•	N	ORTHBOU	IND	S	OUTHBOU	ND		EASTBOUI	ND	W	/ESTBOUN	ND			UTI	JRNS	
LANES:	:	NL 0	NT 1	NR 1	SL 0.5	ST 1.5	SR 0	EL 0	ET 0	ER 0	WL 1	WT 0	WR 1	TOTAL	NB	SB	ЕВ	WB
	7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM	0 0 0 0 0 0	21 16 35 72 53 35 42	39 78 77 107 105 89 67	0 1 0 3 1 0	24 17 35 48 31 15 20	0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	46 37 43 45 35 39 47	0 0 0 0 0 0	1 4 8 6 8 6	131 153 198 281 233 184 183	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
TOTAL VO	8:45 AM OLUMES : ACH %'s :	0 NL 0 0.00%	72 NT 346 34.95%	NR 644 65.05%	3 SL 9 3.80%	38 ST 228 96.20%	SR 0 0.00%	0 EL 0 #DIV/0!	0 ET 0 #DIV/0!	0 ER 0 #DIV/0!	42 WL 334 86.30%	0 WT 0 0.00%	14 WR 53 13.70%	251 TOTAL 1614	NB 0	SB 0	EB 0	WB 0
PEAK HR STAF	RT TIME :	730	AM 195	378	4	129	0	0	0	0	162	0	28	TOTAL 896				
PEAK HR	FACTOR:		0.800			0.652			0.000			0.931		0.797				

CONTROL: 3-Way Stop (NB/SB/WB)

Day: Thursday **Project ID:** 16-4184-001

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	М	orena Blv	d	М	orena Blvd			Jutland Dr		J	utland Dr						
	N	ORTHBOU	ND	SC	OUTHBOUN	ND	E	ASTBOUN	ID	W	'ESTBOUN	D			UT	URNS	
LANES:	NL 0	NT 1	NR 1	SL 0.5	ST 1.5	SR 0	EL 0	ET 0	ER 0	WL 1	WT 0	WR 1	TOTAL	NB	SB	ЕВ	WB
4:00 PM 4:15 PM	0	45 36	56 50	4	64 33	0	0	0	0	119 118	0	3 9	291 250	0	0	0	0
4:30 PM 4:45 PM	0	33 45	74 62	6 10	61 55	0	0	0	0	103 126	0	3 10	280 308	0	0	0	0
5:00 PM 5:15 PM	0	25 37	57 55	8	66 40	0	0	0	0	170 113	0	3	329 259	0	0	0	0
5:30 PM 5:45 PM	1 0	28 37	68 58	8	72 41	0	0	0	0	130 129	0	7 5	314 273	1	0	0	0
J. 73 FIVI		NT	NR NR		ST	SR			ER	WL	WT	WR	TOTAL	ND	SB	T ED	T WB
TOTAL VOLUMES : APPROACH %'s :	NL 2 0.26%	286 37.24%	480	SL 52 10.74%	432 89.26%	0	EL 0 #DIV/0!	ET 0 #DIV/0!	0 #DIV/0!	1008 95.82%	0 0.00%	44 4.18%	2304	NB 2	0	EB 0	0
PEAK HR START TIME :	445	PM											TOTAL				
PEAK HR VOL:	2	135	242	35	233	0	0	0	0	539	0	24	1210				
PEAK HR FACTOR:		0.886			0.838			0.000			0.814		0.919				

CONTROL: 3-Way Stop (NB/SB/WB)

Day: Thursday **Project ID:** 16-4184-002

City: Pacific Beach

Date: 6/9/2016

City	raciiic be	acri				A	M				Date.	0/9/2010					
NS/EW Streets:	M	lorena Blv	d	M	lorena Blvo	i	(Costco Dw	У	C	Costco Dw	у					
	N	ORTHBOU	ND	S	OUTHBOUI	ND		EASTBOU	ND	V	VESTBOUI	ND			U	TURNS	
LANES:	NL 0	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 1.5	WT 0	WR 0.5	TOTAL	NB	SB	EB	WB
7:00 AM	0	63	23	4	56	0	0	0	0	19	0	7	172				
7:15 AM 7:30 AM	0	108	31 31	8	38	0	0	0	0	25 20	0	13 9	223 251				
7:30 AM 7:45 AM	0	119 179	29	6	66 80	0 0	0	0	0	21	0 0	9 12	327				
8:00 AM	0	147	27	10	58	0	0	0	0	31	0	11	284				
8:15 AM	0	117	28	8	46	0	0	0	0	30	0	11	240				
8:30 AM	0	110	44	8	57	0	0	0	0	22	0	12	253				
8:45 AM	0	142	25	11	58	0	0	0	0	29	0	16	281				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES : APPROACH %'s :	0 0.00%	985 80.54%	238 19.46%	61 11.73%	459 88.27%	0 0.00%	0 #DIV/0!	0 #DIV/0!	0 #DIV/0!	197 68.40%	0 0.00%	91 31.60%	2031	0	0	0	0
PEAK HR START TIME :	745	AM											TOTAL				
PEAK HR VOL:	0	553	128	32	241	0	0	0	0	104	0	46	1104				
PEAK HR FACTOR:		0.819			0.794			0.000			0.893		0.844				

Day: Thursday **Project ID:** 16-4184-002

City: Pacific Beach

Date: 6/9/2016

City	racine bea	acii				Р	М				Date.	0/9/2010							
NS/EW Streets:	M	orena Blv	d	M	lorena Blvo		(Costco Dw	у	C	Costco Dwy	У							
	N	ORTHBOU	ND	S	OUTHBOU	ND	F	EASTBOU	ND	V	VESTBOU	ND				UTURI	NS		_
LANES:	NL 0	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 1.5	WT 0	WR 0.5	TOTAL	NB	SB		EB	WB	
4:00 PM	0	74	83	18	167	0	0	0	0	80	0	16	438						_
4:15 PM	0	66	98	18	129	0	0	0	0	82	0	14	407						
4:30 PM	0	81	77	17	164	0	0	0	0	72	0	14	425						
4:45 PM	0	69	83	12	178	0	0	0	0	98	0	14	454						
5:00 PM	0	64	87	17	227	0	0	0	0	98	0	12	505						
5:15 PM	0	66	104	18	148	0	0	0	0	95	0	20	451						
5:30 PM	0	60	87	4	192	0	0	0	0	80	0	24	447						
5:45 PM	0	70	84	22	132	0	0	Ü	0	80	0	13	401						
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB		EB	WB	
TOTAL VOLUMES:	0	550	703	126	1337	0	0	0	0	685	0	127	3528	0	0		0	0	
APPROACH %'s:	0.00%	43.89%	56.11%	8.61%	91.39%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	84.36%	0.00%	15.64%		l	l	ı		ı	
PEAK HR START TIME:	445	PM											TOTAL						
PEAK HR VOL :	0	259	361	51	745	0	0	0	0	371	0	70	1857						
PEAK HR FACTOR:		0.912			0.816			0.000			0.959		0.919						

Project ID: 16-4184-003 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

EB

EB 0

WB

WB 0

NS/EW Streets:	М	orena Blv	rd	M	lorena Blvc	l		Avati Dr			Avati Dr					
	NO	ORTHBOU	IND	SC	OUTHBOU	ND		EASTBOU	VD	W	/ESTBOUN	ND .			UTI	URNS
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 2	WT 0	WR 1	TOTAL	NB	SB	EE
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	0 0 0 0 0 0	86 138 152 188 180 175 171 166	14 33 20 31 35 28 25 22	3 6 3 5 5 4 3 3	67 67 80 90 74 78 70 62	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	53 44 56 60 58 55 50 48	0 0 0 0 0 0	5 8 9 9 8 9 7 6	228 296 320 383 360 349 326 307	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
TOTAL VOLUMES : APPROACH %'s :			NR 208 14.21%	SL 32 5.16%	ST 588 94.84%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 424 87.42%	WT 0 0.00%	WR 61 12.58%	•	NB 0	SB 0	EE 0
PEAK HR START TIME : PEAK HR VOL : PEAK HR FACTOR :	745 0	714 0.951	119	17	312 0.866	0	0	0 0.000	0	223	0 0.928	33	TOTAL 1418 0.926			

Date: 6/9/2016

Day: Thursday **Project ID:** 16-4184-003

City: Pacific Beach

	r deline bee					P	M				Date	0, 5, 2010	
NS/EW Streets:	М	orena Blvo	t	М	orena Blvd			Avati Dr			Avati Dr		
	NO	ORTHBOU	ND	SC	OUTHBOUN	ND	-	EASTBOUN	ID	W	ESTBOUN	ID	
LANGO	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	0	0	0	0	2	0	1	
4:00 PM	1	155	44	12	215	0	0	0	0	29	0	8	464
4:15 PM	0	167	47	17	228	0	0	0	0	40	0	8	507
4:30 PM	1	149	53	11	243	0	0	0	0	50	0	13	520
4:45 PM	0	168	44	12	261	0	0	0	0	44	0	18	547
5:00 PM	1	139	44	16	325	0	0	0	0	46	0	12	583
5:15 PM	0	147	58	15	244	0	0	0	0	49	0	5	518
5:30 PM	0	126	48	12	292	0	0	0	0	53	0	9	540
5:45 PM	0	140	55	14	234	0	0	0	0	50	0	16	509
TOTAL VOLUMES :	NL 3	NT 1191	NR 393	SL 109	ST 2042	SR 0	EL	ET 0	ER 0	WL 361	WT 0	WR 89	TOTAL 4188
APPROACH %'s :	0.19%	75.05%	24.76%		94.93%	_	#DIV/0!	#DIV/0!	#DIV/0!	80.22%	0.00%	19.78%	

	UTU	RNS	
NB	SB	EB	WB
1	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB 3	SB 0	EB 0	WB 0

PEAK HR START TIME:	44	5 PM											TOTAL
PEAK HR VOL:	1	580	194	55	1122	0	0	0	0	192	0	44	2188
PEAK HR FACTOR:		0.914			0.863			0.000			0.952		0.938

Project ID: 16-4184-004 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	M	lorena Blvo	d	M	lorena Blvo	d	Balboa	Ave WB I	Ramps	Balbo	a Ave WB	Ramps					
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	I D	'	WESTBOU	ND			UTL	RNS	
LANES:	NL 0	NT 2	NR 1	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	TOTAL	NB	SB	EB	WB
7:00 AM 7:15 AM	0	97 171	67 83	0	29 36	93 79	11 8	0	6 15	0	0	0 0 0	303 392	0	0	0	0
7:30 AM 7:45 AM 8:00 AM	0 0 0	161 220 189	81 89 66	0 0 0	50 55 40	99 101 107	24 27 16	0 0 0	22 28 20	0	0	0	437 520 438	0	0	0 0	0 0
8:15 AM 8:30 AM	0	175 200	65 70	0	51 58	82 87	18 12	0	21 25	0	0	0	412 452	0	0	0	0
8:45 AM	0 NL	195 NT	71 NR	SL	48 ST	77 SR	29 EL	ET	36 ER	0 WL	WT	0 WR	456	0 NB	0 SB	U EB	0 WB
TOTAL VOLUMES : APPROACH %'s :	0	1408	592	0	367	725	145 45.60%	0 0.00%	173	0 #DIV/0!	0	0	3410	0	0	0	0
PEAK HR START TIME :	745												TOTAL				
PEAK HR VOL: PEAK HR FACTOR:	0	784 0.869	290	0	204 0.931	377	73	0.759	94	0	0.000	0	1822 0.876				
LAKTIKTACIOKT		31003			0.001			017.00			01000		01070				

Day: Thursday

0.000

0.877

Project ID: 16-4184-004

0.826

City: Pacific Beach **Date:** 6/9/2016 PM

	_							I-1						-					
	NS/EW Streets:	M	orena Blv	d	M	lorena Blvo	d	Balboa	Ave WB F	Ramps	Balboa	Ave WB I	Ramps						
-		N	ORTHBOU	ND	S	OUTHBOU	ND	E.	ASTBOUN	ID	· \	VESTBOU	ND		•		UTL	JRNS	
	LANES:	NL 0	NT 2	NR 1	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	TOTAL		NB	SB	ЕВ	WB
-	4:00 PM 4:15 PM	0	174 177	50 30	0	124 124	158 124	33 33	0	46 45	0	0	0	585 533	•	0	0	0	0
	4:30 PM	0	177	52	0	151	170	28	0	42	0	0	0	614		0	0	0	0
	4:45 PM 5:00 PM	0	159 180	50 53	0	150 213	160 196	24 33	0	55 65	0	0	0 0	598 740		0	0	0	0
	5:15 PM	1	197	49	0	157	132	27	0	51	0	0	0	614		1	0	0	0
	5:30 PM 5:45 PM	0	173 181	45 50	0	198 154	161 140	24 27	0	38 51	0	0	0 0	639 603		0 0	0	0 0	0
	J. 73 FM	U	101	30	U	134	140	27	U	31	U	U	U		_	0	0	U	U
_	TOTAL VOLUMES: APPROACH %'s:	NL 1 0.06%	NT 1412 78.79%	NR 379 21.15%	SL 0 0.00%	ST 1271 50.60%	SR 1241 49.40%	EL 229 36.82%	ET 0 0.00%	ER 393 63.18%	WL 0 #DIV/0!	WT 0 #DIV/0!	WR 0 #DIV/0!	TOTAL 4926		NB 1	SB 0	EB 0	WB 0
ļ	PEAK HR START TIME :	500	PM											TOTAL					
	PEAK HR VOL:	1	731	197	0	722	629	111	0	205	0	0	0	2596					

0.806

CONTROL: Signalized

0.940

PEAK HR FACTOR:

Day: Thursday **Project ID:** 16-4184-005

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	M	lorena Blv	d	M	lorena Blvd	l	Balboa	Ave EB F	Ramps	Balboa	Ave EB	Ramps						
	N	ORTHBOU	ND	SC	OUTHBOU	ND	E	ASTBOUN	ND	V	/ESTBOU	IND				UTURNS		
LANES:	NL 0	NT 1	NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 1	WL 0	WT 0	WR 1	TOTAL	NB	SB	E	3	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM	0 0 0 0	114 167 182 226 206	21 37 34 55 69	11 10 11 10 15	26 42 56 76 46	0 0 0 0	0 0 0 0	0 0 0 0	20 27 34 30 33	0 0 0 0	0 0 0 0	55 77 59 78 58	247 360 376 475 427					
8:15 AM 8:30 AM 8:45 AM	0 0 0	184 183 196	42 53 48	9 16 13	55 63 79	0 0 0	0 0 0	0 0 0	40 38 45	0 0 0	0 0 0	54 72 79	384 425 460					
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 1458 80.24%	NR 359 19.76%	SL 95 17.66%	ST 443 82.34%	SR 0 0.00%	EL 0 0.00%	ET 0 0.00%	ER 267 100.00%	WL 0 0.00%	WT 0 0.00%	WR 532 100.00%	TOTAL 3154	NB 0	SB 0	EI C		WB 0
PEAK HR START TIME:	745	AM											TOTAL					
PEAK HR VOL:	0	799	219	50	240	0	0	0	141	0	0	262	1711					
PEAK HR FACTOR:		0.906			0.843			0.881			0.840		0.901					

CONTROL: No Control

Day: Thursday **Project ID:** 16-4184-005

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	M	lorena Blv	d	M	lorena Blvd	I	Balboa	Ave EB I	Ramps	Balboa	Ave EB	Ramps							
	N	ORTHBOU	ND	S	OUTHBOUN	ND	E	ASTBOU	VD	W	/ESTBOU	ND				UTURI	NS		
LANES:	NL 0	NT 1	NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 1	WL 0	WT 0	WR 1	TOTAL	NB	SB		ЕВ	,	WB
4:00 PM 4:15 PM	0	90	32	23	154 135	0	0	0	93 94	0	0	126 114	518 513						
4:30 PM	0	101 96	34 23	35 28	167	0	0	0	66	0	0	108	488						
4:45 PM 5:00 PM	0 0	100 90	34 31	26 39	170 232	0 0	0 0	0 0	80 86	0 0	0 0	122 125	532 603						
5:15 PM 5:30 PM	0	119 82	34 29	18 55	198 187	0	0	0	98 57	0	0 0	130 139	597 549						
5:45 PM	0	113	25	26	183	0	0	0	82	0	0	120	549						
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 791 76.57%	NR 242 23.43%	SL 250 14.92%	ST 1426 85.08%	SR 0 0.00%	EL 0 0.00%	ET 0 0.00%	ER 656 100.00%	WL 0 0.00%	WT 0 0.00%	WR 984 100.00%	TOTAL 4349	NB 0	SB 0		EB 0		WB 0
PEAK HR START TIME :	500	PM											TOTAL						
PEAK HR VOL:	0	404	119	138	800	0	0	0	323	0	0	514	2298						
PEAK HR FACTOR :		0.855			0.865			0.824			0.924		0.953						

CONTROL: No Control

Day: Thursday **Project ID:** 16-4184-006

AM

City: Pacific Beach

Date: 6/9/2016

EB

EB 0

WB

WB 2

	NS/EW Streets:	М	orena Blvo	t	М	orena Blvd			Baker St			Baker St						
_		NO	ORTHBOU	ND	SC	OUTHBOUN	ND		EASTBOU	ND	٧	/ESTBOUN	ND				UTI	URNS
	LANES:	NL 0	NT 1	NR 1	SL 1	ST 1	SR 0	EL 0	ET 0	ER 0	WL 0	WT 1	WR 0	TOTAL	NB	}	SB	EE
_	7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	0 0 0 0 0 0	130 190 188 269 239 231 207 220	1 1 2 8 3 2 6 7	2 5 6 5 3 3 6 11	43 75 83 105 71 94 84 106	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	3 2 6 4 3 3 13 3	0 0 0 0 0 0	6 10 9 5 10 5 9	185 283 294 396 329 338 325 372	0 0 0 0 0 0		0 0 0 0 0 0	0 0 0 0 0 0
	TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%		NR 30 1.76%	SL 41 5.84%	ST 661 94.16%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 37 31.90%	WT 0 0.00%	WR 79 68.10%		NB 0		SB 1	EE 0
	PEAK HR START TIME : PEAK HR VOL : PEAK HR FACTOR :	745 0	946 0.871	19	17	354 0.843	0	0	0.000	0	23	0 0.591	29	TOTAL 1388 0.876				

CONTROL: 1-Way Stop (WB)

Project ID: 16-4184-006 Day: Thursday

0.886

PM

City: Pacific Beach

Date: 6/9/2016

0.938

0.875

WB

WB 0

NS/EW Streets:	M	lorena Blvd		M	orena Blvd	I		Baker St			Baker St						
	N	ORTHBOUN	ND	SO	OUTHBOUN	ND	ĺ	EASTBOUN	ND	W	ESTBOUN	ID			UTU	JRNS	
LANES:	NL 0	NT 1	NR 1	SL 1	ST 1	SR 0	EL 0	ET 0	ER 0	WL 0	WT 1	WR 0	TOTAL	NB	SB	EB	
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	1 0 1 0 1 1 0 0	115 101 113 118 107 137 109 112	6 3 4 4 2 6 3 3	11 6 8 6 13 11 5	213 206 218 228 285 256 231 240	0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0	5 7 4 2 1 1 6 4	0 0 0 0 0 0 0	9 4 4 9 7 7 4 5	360 327 352 367 416 419 358 379	1 0 1 0 1 1 0 0	0 1 1 0 0 0 0	0 0 0 0 0 0	
 OTAL VOLUMES : APPROACH %'s : HR START TIME :	NL 4 0.42%		NR 31 3.27%	SL 75 3.84%	ST 1877 96.16%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 30 37.97%	WT 0 0.00%	WR 49 62.03%	TOTAL 2978 TOTAL	NB 4	SB 3	EB 0	
PEAK HR VOL:	2	465	14	44	1012	0	0	0	0	12	0	23	1572				

0.000

CONTROL: 1-Way Stop (WB)

0.835

PEAK HR FACTOR:

Day: Thursday **Project ID:** 16-4184-007

City: Pacific Beach **Date:** 6/9/2016 AM

_	0 2 1 0 126 14 0 171 9 0 177 6 0 250 8 0 229 13 0 211 4 0 205 15 0 217 14 NL NT NR 0 1586 83																			
NS/EW Streets:		lorena Blvo	1	M	lorena Blvo			Gesner St			Gesner St									
	N	ORTHBOU	ND	S	OUTHBOU	ND		EASTBOUI	VD	W	/ESTBOUN	ND				U	ITURNS			
LANES:			NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 0	WT 1	WR 0	TOTAL	N	ΝB	SB		EB	WB	
7:00 AM 7:15 AM				8 16	47 59	0	0	0	0	1	0	9 14	205 275							_
7:30 AM			_	19	68	0	0	0	0	5	0	12	287							
7:45 AM	0	250	8	16	109	0	0	0	0	16	0	18	417							
8:00 AM	0	229	13	11	68	0	0	0	0	3	0	7	331							
8:15 AM	0	211	4	6	90	0	0	0	0	8	0	9	328							
8:30 AM	0	205		13	84	0	0	0	0	5	0	13	335							
8:45 AM	0	217	14	12	104	0	0	0	0	7	0	22	376							
TOTAL VOLUMES : APPROACH %'s :	0	1586		SL 101 13.84%	ST 629 86.16%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 51 32.90%	WT 0 0.00%	WR 104 67.10%	TOTAL 2554	N	NB O	SB 0	$\overline{\mathbf{I}}$	EB 0	WB 0	
PEAK HR START TIME:	745	AM											TOTAL							
PEAK HR VOL:	0	895	40	46	351	0	0	0	0	32	0	47	1411							
PEAK HR FACTOR:		0.906			0.794			0.000			0.581		0.846							

Project ID: 16-4184-007 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	M	lorena Blvo	ı	M	lorena Blvd			Gesner St	:		Gesner St								
	N	ORTHBOU	ND	S	DUTHBOUN	ND	F	EASTBOU	ND	W	/ESTBOUN	ND			l	JTURNS	•		
LANES:	NL 0	NT 2	NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 0	WT 1	WR 0	TOTAL	NB	SB		EB	WB	
4:00 PM 4:15 PM	0	93 100	9	25 22	191 201	0	0	0	0	5 8	0	19 16	342 357						
4:30 PM 4:45 PM 5:00 PM	0 0 0	99 107 97	10 7 9	26 28 25	189 206 256	0 0 0	0 0 0	0 0 0	0 0 0	3 10	0 0 0	20 13 20	349 364 417						
5:15 PM 5:30 PM 5:45 PM	0 0 0	127 94 98	12 13 9	26 27 23	241 216 215	0 0 0	0 0 0	0 0	0 0 0	11 8 7	0 0 0	19 22 23	436 380 375						
TOTAL VOLUMES :	NL 0	NT 815	NR 79	SL 202	ST 1715	SR 0	EL 0	ET 0	ER 0	WL 57	WT 0	WR 152	TOTAL 3020	NB 0	SB 0		EB 0	WB 0	
APPROACH %'s:	0.00%	91.16%		10.54%	89.46%	_	#DIV/0!	#DIV/0!	#DIV/0!		0.00%							1	l
PEAK HR START TIME : PEAK HR VOL :	500 0	PM 416	43 	101	928	0	l 0	0	0	36	0	84	TOTAL						
PEAK HR FACTOR:	J	0.826	15	101	0.915	J	J	0.000	J	30	1.000	01	0.922						

Project ID: 16-4184-008 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Street	s: C	lairemont I	Or	Cla	airemont [)r	Е	Balboa Ave		E	Balboa Ave						
	N	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				UTU	JRNS	
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 0	EL 2	ET 2	ER 0	WL 2	WT 2	WR 0	TOTAL	NB	SB	ЕВ	WB
7:00 AM 7:15 AM 7:30 AM	33	67 79 65	62 74 71	38 22 28	77 59 43	59 80 99	27 49 46	136 174 266	8 11 13	119 62 57	158 177 185	13 20 30	790 840 927	3 3	1 0	1 5	0
7:45 AM 8:00 AM	31 27	75 73	69 66	43 43	42 40	91 71	46 52	185 205	6 11	48 50	215 205	31 28	882 871	6	0	1 0	0
8:15 AM 8:30 AM 8:45 AM	47	67 83 99	66 90 110	35 30 44	54 92 85	80 84 75	64 41 51	195 163 252	14 24 20	85 108 94	185 172 206	23 18 21	890 952 1100	5 6 4	0 0 0	3 3 1	0 1 0
TOTAL VOLUMES APPROACH %'s		NT 608 41.39%	NR 608 41.39%	SL 283 20.01%	ST 492 34.79%	SR 639 45.19%	EL 376 18.26%	ET 1576 76.54%	ER 107 5.20%	WL 623 26.97%	WT 1503 65.06%	WR 184 7.97%	TOTAL 7252	NB 33	SB 3	EB 14	WB 2
PEAK HR START TIME PEAK HR VOL		AM 322	332	152	271	310	208	815	69	337	768	90	TOTAL 3813				
PEAK HR FACTOR	:	0.787			0.890			0.845			0.931		0.867				

Project ID: 16-4184-008 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

	NS/EW Streets:	Clairemont Dr			Cla	airemont [Or	Е	Balboa Ave		E	Balboa Ave						
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND					UTU	JRNS	
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 0	EL 2	ET 2	ER 0	WL 2	WT 2	WR 0	TOTAL	NB	SB	ЕВ	WB
	4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	38 17 45 24 26 16 18	87 55 85 86 63 92 66	96 84 77 86 80 81	63 49 64 58 60 71 65	113 94 122 140 130 128 130	61 65 61 73 69 73 80	82 85 112 92 107 83 91	239 285 258 231 275 289 266	17 29 15 19 15 15	87 78 86 94 92 104 97	218 262 212 227 231 271 263	23 25 25 23 15 31 29	1124 1128 1162 1153 1163 1254 1206	5 5 5 2 2 3 3	1 0 1 0 0 0	3 1 6 6 0 2 2	2 0 1 0 1 0
_	5:45 PM TOTAL VOLUMES: APPROACH %'s:	NL 207 13.75%	85 NT 619 41.13%	85 NR 679 45.12%	54 SL 484 24.10%	ST 973 48.46%	69 SR 551 27.44%	98 EL 750 25.14%	ET 2096 70.26%	ER 137 4.59%	117 WL 755 26.09%	WT 1939 67.00%	WR 200 6.91%	1200 TOTAL 9390	3 NB 28	SB 5	1 EB 21	3 WB 7
PI	PEAK HR START TIME: PEAK HR VOL: PEAK HR FACTOR:	83	306 0.939	336	250	504 0.950	291	379	1083 0.957	57	410	1020 0.945	104	TOTAL 4823 0.962				

Project ID: 16-4184-009 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

WB

WB 0

NS/EW Streets	s:	Moraga Av	re	M	oraga Ave	2	Е	Balboa Ave		Е	Balboa Ave						
	N	ORTHBOL	JND	SO	UTHBOU	ND	Е	ASTBOUN	D	٧	VESTBOUN	ID		•		UTU	JRNS
LANES:	NL 0	NT 0	NR 0	SL 1	ST 0	SR 1	EL 2	ET 3	ER 0	WL 0	WT 2	WR 1	TOTAL		NB	SB	EB
7:00 AM 7:15 AM	0	0	0	19 14	0	48 53	44 61	158 212	0	0	224 305	7 12	500 657	•	0	0	17 10
7:30 AM 7:45 AM	0 0	0 0	0 0	26 22	0 0	63 62	72 83	279 260	0 0	0 0	299 322	10 16	749 765		0 0	0 0	14 15
8:00 AM 8:15 AM	0	0	0	16 32	0	57 58	81 70	231 242	0	0	287 257	22 25	694 684		0	0	16 13
8:30 AM 8:45 AM	0	0	0	29 37	0	90 46	90 73	257 262	0	0	275 289	18 29	759 736		0	0	13 17
TOTAL VOLUMES APPROACH %'s		NT 0 #DIV/0!	NR 0 #DIV/0!	SL 195 29.02%	ST 0 0.00%	SR 477 70.98%	EL 574 23.19%	ET 1901 76.81%	ER 0 0.00%	WL 0 0.00%	WT 2258 94.20%	WR 139 5.80%	TOTAL 5544		NB 0	SB 0	EB 115
PEAK HR START TIME	745	AM											TOTAL				
PEAK HR VOL	: 0	0	0	99	0	267	324	990	0	0	1141	81	2902				
PEAK HR FACTOR	:	0.000			0.769			0.947			0.904		0.948				

Day: Thursday **Project ID:** 16-4184-009

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:		Moraga Av	e	М	oraga Ave	2	Balboa Ave			Balboa Ave							
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND					UTU	JRNS	
LANES:	NL 0	NT 0	NR 0	SL 1	ST 0	SR 1	EL 2	ET 3	ER 0	WL 0	WT 2	WR 1	TOTAL	NB	SB	ЕВ	WB
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0 0	17 19 19 28 32 22 21 25	0 0 0 0 0 0	60 69 64 85 94 61 80 64	91 87 76 84 76 87 94 99	333 361 346 322 343 350 361 318	0 0 0 0 0 0	0 0 0 0 0 0	316 288 292 305 302 324 306 347	23 25 29 26 24 18 26 23	840 849 826 850 871 862 888 876	0 0 0 0 0 0	0 0 0 0 0 0	26 25 19 23 19 18 28 25	0 0 0 0 0 0
TOTAL VOLUMES : APPROACH %'s : PEAK HR START TIME :	-	NT 0 #DIV/0!	NR 0 #DIV/0!	SL 183 24.08%	ST 0 0.00%	SR 577 75.92%	EL 694 20.25%	ET 2734 79.75%	ER 0 0.00%	WL 0 0.00%	WT 2480 92.74%	WR 194 7.26%	TOTAL 6862	NB 0	SB 0	EB 183	WB 0
PEAK HR VOL : PEAK HR FACTOR :	0	0.000	0	100	0 0.792	299	356	1372 0.949	0	0	1279 0.926	91	3497 0.985				

Day: Thursday **Project ID:** 16-4184-010

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	S	anta Fe S	St	S	anta Fe S	t		Garnet Ave		(Garnet Ave								
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				UTURNS					
LANES:	NL 0	NT 0	NR 1	SL 0	ST 1	SR 0	EL 0	ET 2	ER 0	WL 0	WT 2.5	WR 0.5	TOTAL	NB	SB	ЕВ	WB		
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	0 0 0 0 0 0	0 0 0 0 0	64 38 35 48 48 64 76 86	0 0 0 0 0 0	0 0 0 0 0 0	8 7 8 10 13 15 14	0 0 0 0 0	206 276 340 351 297 293 322 315	0 0 0 0 0 0	0 0 0 0 0	427 466 497 502 480 404 487 423	15 16 24 45 35 19 27 27	720 803 904 956 873 795 926 864						
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%		NR 459 100.00%	SL 0 0.00%	ST 0	SR 88 100.00%	EL 0 0.00%	ET 2400 100.00%	ER 0 0.00%	WL 0 0.00%	WT 3686 94.66%	WR 208 5.34%	TOTAL 6841	NB 0	SB 0	EB 0	WB 0		
PEAK HR START TIME : PEAK HR VOL : PEAK HR FACTOR :	745 <i>i</i> 0	0 0 0.776	236	0	0 0.867	52	0	1263 0.900	0	0	1873 0.914	126	3550 0.928						

CONTROL: 1-Way Stop (SB)

Day: Thursday **Project ID:** 16-4184-010

City: Pacific Beach

Date: 6/9/2016

City	racine bea	Jenie Beden				PN	1				Date.	0/9/2010							
NS/EW Streets:	S	anta Fe S	t	S	anta Fe S	St		Garnet Ave		(Garnet Ave								
	NC	ORTHBOL	IND	SC	OUTHBOL	IND		EASTBOUN	D	V	VESTBOUN	D				UTU	RNS		_
LANES:	NL 0	NT 0	NR 1	SL 0	ST 1	SR 0	EL 0	ET 2	ER 0	WL 0	WT 2.5	WR 0.5	TOTAL	NB	S	SB	EB	WB	
4:00 PM	0	0	227	0	0	37	0	385	0	0	490	18	1157						-
4:15 PM 4:30 PM	0 0	0	224 218	0	0	27 27	0	350 296	0	0	515 476	11 10	1127 1027						
4:45 PM	0	0	215	0	0	32	0	344	0	0	518	16	1125						
5:00 PM	0	0	232	0	0	40	0	346	0	0	548	9	1175						
5:15 PM	0	0	234	0	0	31	0	341	0	0	551	19	1176						
5:30 PM	0	0	224	0	0	32	0	338	0	0	522	16	1132						
5:45 PM	0	0	206	0	0	23	0	322	0	0	515	19	1085						
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB		SB	EB	WB	٦
TOTAL VOLUMES : APPROACH %'s :	0 0.00%	0 0.00%	1780 100.00%	0 0.00%	0.00%	249 100.00%	0 0.00%	2722 100.00%	0 0.00%	0 0.00%	4135 97.23%	118 2.77%	9004	0		0	0	0	
PEAK HR START TIME:	445	PM											TOTAL						
PEAK HR VOL:	0	0	905	0	0	135	0	1369	0	0	2139	60	4608						
PEAK HR FACTOR:		0.967			0.844			0.989			0.964		0.980						

CONTROL: 1-Way Stop (SB)

Day: Thursday **Project ID:** 16-4184-011

City: Pacific Beach

Date: 6/9/2016

City	raciiic be					A	M				Date.	0/9/2010					
NS/EW Streets	S: Mi	ssion Bay	Dr	Mis	ssion Bay I	Dr	(Sarnet Ave	:	(Garnet Ave	2					
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	ID	V	VESTBOU	ND			UTU	JRNS	
LANES:	NL 2	NT 2	NR 1	SL 2	ST 1	SR 2	EL 2	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL	NB	SB	ЕВ	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM	138 92 95 78 103 102 115	114 98 97 89 86 98	32 43 63 62 57 41 49	38 44 47 56 60 53 65	63 46 34 53 52 49 54	110 91 97 110 101 99 94	220 211 174 202 169 195 176	127 189 242 255 189 201 217	95 109 111 132 100 109 126	34 68 38 33 48 47 37	150 182 159 160 178 185 170	48 60 43 61 57 43 67	1169 1233 1200 1291 1200 1222 1259	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 1 0 0 2 0 3
8:45 AM TOTAL VOLUMES	104 NL	93 NT 764	55 NR 402	73 SL 436	54 ST 405	117 SR 819	156 EL 1503	213 ET 1633	107 ER 889	40 WL 345	196 WT 1380	56 WR 435	1264 TOTAL 9838	NB	SB 0	0 EB 0	0 WB 6
APPROACH %'s							37.34%			15.97%				1			
PEAK HR START TIME	745	AM											TOTAL				
PEAK HR VOL	: 398	362	209	234	208	404	742	862	467	165	693	228	4972				
PEAK HR FACTOR	:	0.958			0.966			0.879			0.959		0.963				

Project ID: 16-4184-011 Day: Thursday

0.916

PM

City: Pacific Beach

Date: 6/9/2016

0.986

0.934

	NS/EW Streets:	Mis	ssion Bay l	Dr	Mis	ssion Bay l	Dr	C	Sarnet Ave		C	Sarnet Ave							
		NO	ORTHBOU	ND	SC	OUTHBOU	ND	E	ASTBOUN	D	V	/ESTBOUN	ND		•		UTL	IRNS	
	LANES:	NL 2	NT 2	NR 1	SL 2	ST 1	SR 2	EL 2	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL		NB	SB	EB	WB
_	4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	133 142 127 116 154 122 143 154	68 82 79 79 92 89 65 73	54 76 54 52 80 67 59 58	102 89 58 68 67 62 49 78	78 53 80 92 60 91 77 69	210 196 227 189 193 217 212 180	132 128 156 90 119 123 137 120	215 196 197 222 202 203 234 196	145 104 101 120 101 98 101 90	45 47 62 66 52 56 77 64	176 209 207 246 216 213 232 248	67 76 83 78 95 90 69	1425 1398 1431 1418 1431 1431 1455 1420		0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0	0 2 1 0 0 0 0
	TOTAL VOLUMES : APPROACH %'s :		NT 627 28.27%	NR 500 22.54%	SL 573 20.49%	ST 600 21.45%	SR 1624 58.06%	EL 1005 28.47%	ET 1665 47.17%	ER 860 24.36%	WL 469 16.38%	WT 1747 61.00%	WR 648 22.63%	TOTAL 11409		NB 0	SB 1	EB 0	WB 3
	PEAK HR VOL :	573	319	264	256	297	802	499	835	390	249	909	344	5737					

0.913

CONTROL: Signalized

0.887

PEAK HR FACTOR:

Project ID: 16-4184-012 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

EB

EB 1

WB

WB 0

NS/EW Streets:		Bond St			Bond St		C	Sarnet Ave		C	Sarnet Ave					
	NC	RTHBOU	JND	SC	UTHBOU	ND	E	ASTBOUN)	V	VESTBOUN	D			UT	URNS
LANES:	NL 0	NT 0	NR 1	SL 0	ST 1	SR 0	EL 0	ET 2	ER 0	WL 0	WT 2	WR 0	TOTAL	NB	SB	
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	0 0 0 0 0 0	0 0 0 0 0 0	9 5 2 7 4 3 10 8	0 0 0 0 0 1	0 0 0 0 0 0	1 0 5 5 1 3 0 6	0 0 0 1 0 2 0	439 528 552 558 448 490 533 479	3 6 11 5 5 7 6 4	0 0 0 0 0 0	388 356 346 339 392 379 401 403	2 3 4 1 2 2 1 6	842 898 920 916 852 887 951 908	0 0 0 0 0 0	0 0 0 0 0 0	
TOTAL VOLUMES : APPROACH %'s : PEAK HR START TIME :	NL 0 0.00%		NR 48 100.00%	SL 2 8.70%	ST 0 0.00%	SR 21 91.30%	EL 4 0.10%	ET 4027 98.75%	ER 47 1.15%	WL 0 0.00%	WT 3004 99.31%	WR 21 0.69%	TOTAL 7174	NB 0	SB 0	
PEAK HR VOL: PEAK HR FACTOR:	0	0 0.600	24	1	0 0.500	9	3	2029 0.911	23	0	1511 0.943	6	3606 0.948			

Project ID: 16-4184-012 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:		Bond St			Bond St		C	Sarnet Ave		C	Garnet Ave						
	NC	ORTHBOL	JND	SC	OUTHBOU	ND	E	ASTBOUN	D	٧	VESTBOUN	D			UTL	JRNS	
LANES:	NL 0	NT 0	NR 1	SL 0	ST 1	SR 0	EL 0	ET 2	ER 0	WL 0	WT 2	WR 0	TOTAL	NB	SB	ЕВ	WB
4:00 PM 4:15 PM	0	0	13	0	0	3 4	0 2	486 423	15 8	1 0	541 574	5	1064 1022	0	0	0	0
4:30 PM 4:45 PM 5:00 PM	0 0 0	0 0 0	6 6 7	2 0 1	0 0 0	5 5 5	0 4 2	443 403 457	11 14 15	0 0 0	560 505 575	7 3 6	1034 940 1068	0 0 0	0 0 0	0 0 0	0 0 0
5:15 PM 5:30 PM	0	0	5	1 0	0	7	0	419 433	19 11	0	575 552	6 7	1032 1017	0	0	0	0
5:45 PM	0 NL	0 NT	9 NR	SL	0 ST	9 SR	EL	390 ET	8 ER	WL	541 WT	WR	960 TOTAL	NB	0 SB	U EB	0 WB
TOTAL VOLUMES : APPROACH %'s :	0 0.00%	0	62 100.00%	5	0 0.00%	42 89.36%	10	3454 96.89%	101 2.83%	2 0.04%	4423	38 0.85%	8137	0	0	0	0
PEAK HR START TIME :	500	PM											TOTAL				
PEAK HR VOL:	0	0	29	3	0	25	4	1699	53	1	2243	20	4077				
PEAK HR FACTOR:		0.806			0.700			0.926			0.974		0.954				

Project ID: 16-4184-013 Day: Thursday

City: Pacific Beach

Date: 6/9/2016

City	racine be	acri				Al	М				Date.	0/9/2010					
NS/EW Streets:	Soled	ad Mounta	ain Rd	Soleda	d Mountai	n Rd	C	Garnet Ave		(Garnet Ave						
<u> </u>	N	ORTHBOU	IND	SO	UTHBOUN	ID	E	ASTBOUN	D	V	VESTBOUN	ND			UTL	JRNS	
LANES:	NL 0	NT 0	NR 0	SL 2	ST 0	SR 1	EL 2	ET 2	ER 0	WL 0	WT 2	WR 1	TOTAL	NB	SB	EB	WB
7:00 AM 7:15 AM	0	0	0	115 130	0	7 14	12 33	346 388	0	0	225 218	168 138	873 921	0	0	0	0
7:30 AM 7:45 AM 8:00 AM	0 0 0	0 0 0	0 0 0	167 159 163	0 0 0	11 16 11	33 34 22	391 393 285	0 0 0	0 0 0	208 196 210	146 155 179	956 953 870	0 0 0	0 0 0	1 0	0 0 0
8:15 AM 8:30 AM	0	0	0	149 184	0	13 12	19 20	348 333	0	0	214 224	168 156	911 929	0	0	1 0	0
8:45 AM	0 NL	0 NT	0 NR	161 SL	ST	15 SR	17 EL	348 ET	0 ER	WL	253 WT	173 WR	967 TOTAL	0 NB	SB	EB	WB
TOTAL VOLUMES : APPROACH %'s :	0 #DIV/0!	0 #DIV/0!	0 #DIV/0!	1228 92.54%	0 0.00%	99 7.46%	190 6.29%	2832 93.71%	0 0.00%	0 0.00%	1748 57.67%	1283 42.33%	7380	0	0	2	0
PEAK HR START TIME:	700	AM											TOTAL				
PEAK HR VOL: PEAK HR FACTOR:	0	0.000	0	571	0.869	48	112	1518 0.954	0	0	847 0.925	607	3703 0.968				

Project ID: 16-4184-013 Day: Thursday

0.856

PM

City: Pacific Beach

Date: 6/9/2016

0.965

0.958

WB

WB 0

	NS/EW Streets:	Soled	ad Mounta	ain Rd	Soleda	d Mounta	in Rd	C	Sarnet Ave		G	Sarnet Ave	2					
-		N	ORTHBOL	IND	SO	UTHBOUI	ND	E	ASTBOUN)	V	VESTBOUN	ND			UTU	JRNS	
	LANES:	NL 0	NT 0	NR 0	SL 2	ST 0	SR 1	EL 2	ET 2	ER 0	WL 0	WT 2	WR 1	TOTAL	NB	SB	ЕВ	١
-	4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	169 148 167 168 136 126 161 130	0 0 0 0 0 0 0	15 18 16 19 22 20 28 24	20 14 18 10 21 17 20 16	324 271 272 273 330 278 309 282	0 0 0 0 0 0	0 0 0 0 0 0 0	427 426 397 416 450 423 425 468	142 160 156 130 162 150 150	1097 1037 1026 1016 1121 1014 1093 1067	0 0 0 0 0 0	0 0 0 0 1 0 0	0 0 1 0 1 0 1	
-	TOTAL VOLUMES : APPROACH %'s :	NL 0 #DIV/0!	NT 0 #DIV/0!	NR 0 #DIV/0!	SL 1205 88.15%	ST 0 0.00%	SR 162 11.85%	EL 136 5.49%	ET 2339 94.51%	ER 0 0.00%	WL 0 0.00%	WT 3432 74.14%	WR 1197 25.86%	TOTAL 8471	NB 0	SB 1	EB 3	\
	PEAK HR START TIME : PEAK HR VOL :	500 0	PM 0	0	553	0	94	74	1199	0	0	1766	609	TOTAL 4295				

0.907

CONTROL: Signalized

0.000

PEAK HR FACTOR:

Intersection Turning Movement Prepared by:

National Data & Surveying Services

Project ID: 16-4184-014 Day: Thursday City: Pacific Beach **Date:** 6/9/2016

AM NS/EW Streets: Garnet Ave Garnet Ave Balboa Ave Balboa Ave NORTHBOUND EASTBOUND SOUTHBOUND WESTBOUND ER 0 NR 0 ST 2 SR 0 EL 0 ET 2 WL 0 WT 1 WR NLNT 0 SL 0 TOTAL LANES: 0 594 641 557 7:00 AM 7:15 AM 166 126 122 224 160 262 192 60 51 0 0 0 0 0 0 0 1 1 0 0 7:30 AM 216 167 122 139 7:45 AM 0 194 208 0 134 137 61 511 0 0 0 8:00 AM 76 560 0 8:15 AM 8:30 AM 8:45 AM

8:15 AM	0	0	0	193	0	0	1	161	0	0	75	141	571					
8:30 AM	0	0	0	214	0	0	0	165	0	0	83	157	619					
8:45 AM	0	0	0	218	0	0	0	113	0	0	89	153	573					
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	
TOTAL VOLUMES :		NT 0	NR 0	SL 1729	ST 0	SR 2	EL 1	ET 1229	ER 0	WL 0	WT 539	WR 1126	TOTAL 4626	NB 0	SB 0	EB 0	WB 0	
TOTAL VOLUMES : APPROACH %'s :	0	NT 0 #DIV/0!	0		ST 0 0.00%	SR 2 0.12%	1		_	WL 0 0.00%	539		4626	NB 0	SB 0	EB 0	WB 0	

UTURNS

SB

NB

EB

WB

PEAK HR START TIME:	80	0 AM											TOTAL
PEAK HR VOL:	0	0	0	833	0	0	1	576	0	0	323	590	2323
PEAK HR FACTOR:		0.000			0.955			0.874			0.943		0.938

CONTROL: Signalized

Day: Thursday **Project ID:** 16-4184-014

City: Pacific Beach

Date: 6/9/2016

City	r acine be	ionic Bedei.				PN	1				Date.	0/ 3/ 2010						
NS/EW Streets:		Garnet Ave	e	G	arnet Ave			Balboa Ave		E	Balboa Ave							
	N	IORTHBOU	IND	SC	OUTHBOUN	ID		EASTBOUN	D	V	VESTBOUN	ID				UTURN	IS	
LANES:	NL 0	NT 0	NR 0	SL 0	ST 2	SR 0	EL 0	ET 2	ER 0	WL 0	WT 1	WR 1	TOTAL	NB	SB		EB	WB
4:00 PM 4:15 PM	0	0	0	187 188	0	2	0	109 109	0	0	162 166	256 249	716 712					
4:30 PM	0	0	0	195	0	3	0	108	0	0	152	230	688					
4:45 PM 5:00 PM	0	0 0	0	190 186	0	3	0	106 127	0	0	162 146	263 263	723 725					
5:15 PM 5:30 PM	0 0	0	0 0	195 219	0 0	1 1	0 0	103 97	0 0	0 0	181 168	244 263	724 748					
5:45 PM	0	0	0	153	0	1	0	114	0	0	179	264	711					
TOTAL VOLUMES : APPROACH %'s :	NL 0 #DIV/0!	NT 0 #DIV/0!	NR 0 #DIV/0!	SL 1513 99.15%	ST 0 0.00%	SR 13 0.85%	EL 0 0.00%	ET 873 100.00%	ER 0 0.00%	WL 0 0.00%	WT 1316 39.31%	WR 2032 60.69%	TOTAL 5747	NB 0	SB 0		EB 0	WB 0
PEAK HR START TIME:	445	PM											TOTAL					
PEAK HR VOL:	0	0	0	790	0	7	0	433	0	0	657	1033	2920					
PEAK HR FACTOR:		0.000			0.906			0.852			0.980		0.976					

Day: Thursday **Project ID:** 16-4184-015

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:		Olney St			Olney St		C	Garnet Ave		(Garnet Ave							
	N	ORTHBOU	ND	SC	OUTHBOUN	ND .	E	ASTBOUN	D	V	VESTBOUN	D				UTUR	RNS	
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 1	ER 0	WL 1	WT 2	WR 0	TOTAL	NB	SE	3	EB	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM	12 7 2 7 8 5	6 12 28 9 7 9	7 2 5 3 6 4	21 34 18 23 24 24	14 30 17 21 20 22	2 1 3 1 0 2	0 0 2 3 4 1	196 200 208 180 158 177	6 10 11 8 11 11	0 1 2 1 2	150 124 107 122 132 128	5 3 1 7 1 7	419 424 404 385 373 391					
8:30 AM 8:45 AM	7	5	2	22 26	11 12	3 4	3	192 173	8 10	1	139 139	14 6	414 388					
TOTAL VOLUMES : APPROACH %'s :	NL 55 31.98%	NT 83 48.26%	NR 34 19.77%	SL 192 54.08%	ST 147 41.41%	SR 16 4.51%	EL 14 0.89%	ET 1484 94.34%	ER 75 4.77%	WL 13 1.18%	WT 1041 94.81%	WR 44 4.01%	TOTAL 3198	NB 0	SE 0		EB 0	WB 0
PEAK HR START TIME:	700	AM											TOTAL					
PEAK HR VOL:	28	55	17	96	82	7	5	784	35	4	503	16	1632					
PEAK HR FACTOR:		0.714			0.712			0.932			0.844		0.962					

Day: Thursday **Project ID:** 16-4184-015

City: Pacific Beach

Date: 6/9/2016

City	racine bec	The Beach				PN	1				Date.	0/9/2010							
NS/EW Streets:		Olney St			Olney St		C	Garnet Ave		(Garnet Ave								
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	D	V	VESTBOUN	D				UTUR	.NS		
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 1	ER 0	WL 1	WT 2	WR 0	TOTAL	NB	SB		EB	WB	
4:00 PM	15	18	6	11	16	3	2	187	19	2	214	18	511						_
4:15 PM	13	11	7	11	15	4	2	169	6	2	242	12	494						
4:30 PM	27	18	7	23	11	1	4	165	7	2	240	5	510						
4:45 PM	11	15 25	5	17	17	3 11	3	169	4	4	228	11	483						
5:00 PM 5:15 PM	25 23	25 24	5 4	21 24	9	11	2	174 173	6 11	2	230 265	11 8	522 551						
5:30 PM	29	18	5	16	16	2	1	173	13	6	252	6	543						
5:45 PM	28	16	7	10	12	4	4	161	13	7	242	9	513						
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	\top	EB	WB	\neg
TOTAL VOLUMES: APPROACH %'s:	171 47.24%	145 40.06%	46 12.71%	133 49.44%	103 38.29%	33 12.27%	23 1.56%	1377 93.10%	79 5.34%	28 1.39%	1913 94.84%	76 3.77%	4127	0	0		0	0	
PEAK HR START TIME:	500	PM											TOTAL						
PEAK HR VOL:	105	83	21	71	44	22	12	687	43	18	989	34	2129						
PEAK HR FACTOR:		0.950			0.878			0.961			0.943		0.966						

Project ID: 16-4184-016 Day: Thursday

City: Pacific Beach **Date:** 6/9/2016 AM

	NS/EW Streets:		Olney St			Olney St		E	Balboa Ave		E	Balboa Ave						
-		N	ORTHBOU	ND	S	OUTHBOUN	ND	E	EASTBOUN	D	V	VESTBOUN	ID			UTL	JRNS	
	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	SB	EB	WB
-	7:00 AM 7:15 AM 7:30 AM	5 1 4	24 24 28	12 21 27	0 0 1	28 38 30	0 1 2	29 0 3	126 164 132	5 4 2	8 10 9	32 55 43	2 0 3	271 318 284	0 0 0	0 0 0	0 0 1	0 1 0
	7:45 AM 8:00 AM 8:15 AM	4 4 1	16 15 19	15 8 24	2 1 0	26 29 28	2 2 2	2 1 1	124 116 159	6 8 2	15 13 7	49 61 68	2 4 0	263 262 311	0 0 0	0 0 0	1 1 0	1 0 0
_	8:30 AM 8:45 AM	1 6	15 20	22 13	1 2	23 18	2	1	122 121	9	14 7	69 80	1 2	280 276	0	0	0	0 1
	TOTAL VOLUMES : APPROACH %'s :	NL 26 7.90%	NT 161 48.94%	NR 142 43.16%	SL 7 2.92%	ST 220 91.67%	SR 13 5.42%	EL 38 3.33%	ET 1064 93.17%	ER 40 3.50%	WL 83 14.98%	WT 457 82.49%	WR 14 2.53%	TOTAL 2265	NB 0	SB 0	EB 3	WB 3
I	PEAK HR START TIME:	700	AM											TOTAL				
	PEAK HR VOL:	14	92	75	3	122	5	34	546	17	42	179	7	1136				
	PEAK HR FACTOR:		0.767			0.833			0.888			0.864		0.893				

Project ID: 16-4184-016 City: Pacific Beach

Date: 6/9/2016

Day: Thursday

City:	deline bee	2011				PN	1				Dutci	9, 9, 2010	
NS/EW Streets:		Olney St			Olney St		В	Balboa Ave		E	Balboa Ave		
-	NO	ORTHBOU	ND	SC	DUTHBOUI	ND	E	ASTBOUNI)	V	VESTBOUN	D	
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
4:00 PM	2	29	9	1	25	7	6	98	3	23	136	3	342
4:15 PM	5	29	10	1	12	4	3	110	2	15	153	3	347
4:30 PM	6	38	11	3	26	4	2	80	6	29	127	1	333
4:45 PM	8	41	9	3	23	3	3	109	2	20	144	2	367
5:00 PM	3	47	10	2	19	6	0	115	4	28	113	3	350
5:15 PM	4	41	13	0	26	4	5	77	10	29	150	6	365
5:30 PM	2	46	12	3	30	5	5	89	8	26	143	0	369
5:45 PM	7	43	9	4	24	7	6	92	6	27	151	1	377
TOTAL VOLUMES :	NL 37	NT 314	NR 83	SL 17	ST 185	SR 40	EL 30	ET 770	ER 41	WL 197	WT 1117	WR 19	TOTAL 2850
APPROACH %'s :	8.53%	72.35%	19.12%	7.02%	76.45%	16.53%	3.57%	91.56%	4.88%		83.80%	1.43%	

	UTU	IRNS	
NB	SB	EB	WB
0	0	2	1
0	0	0	0
0	0	0	0
0	0	1	1
0	0	0	0
0	0	3	1
0	0	1	1
0	0	4	0
NB	SB	EB	WB
0	0 0	11	4

PEAK HR START TIME:	500) PM											TOTAL
PEAK HR VOL:	16	177	44	9	99	22	16	373	28	110	557	10	1461
PEAK HR FACTOR:		0.988			0.855			0.876			0.915		0.969

Day: Thursday **Project ID:** 16-4184-017

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:		Olney St			Olney St			Grand Ave		(Grand Ave						
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	D	V	VESTBOUN	D			UT	URNS	
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	SB	ЕВ	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	2 3 2 2 3 1 1 3	16 20 38 15 13 15 21	75 81 86 81 57 64 58 53	19 42 26 25 35 23 35 19	7 10 16 13 12 7 16 7	0 0 0 2 2 2 5	2 4 0 3 5 6 5 4	248 317 336 373 304 337 267 288	1 2 3 3 3 4 3 1	12 13 17 11 12 16 14 7	116 147 124 130 96 112 134 149	12 14 16 13 14 7 15	510 653 664 671 556 594 574 558	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 2 0 1 1	2 0 1 0 1 3 3
TOTAL VOLUMES : APPROACH %'s :		NT 152 20.99%	NR 555	SL 224	ST 88 27.16%	SR 12 3.70%	EL 29 1.15%	ET 2470	ER 20 0.79%	WL 102 8.41%	WT 1008	WR 103 8.49%	TOTAL 4780	NB 0	SB 0	EB 4	WB 11
PEAK HR START TIME : PEAK HR VOL : PEAK HR FACTOR :	715 10	86 0.796	305	128	51 0.880	4	12	1330 0.892	11	53	497 0.872	57	TOTAL 2544 0.948				

Project ID: 16-4184-017 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:		Olney St			Olney St		(Grand Ave		(Grand Ave						
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	D	V	VESTBOUN	ND			UTI	JRNS	
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	SB	ЕВ	WB
4:00 PM 4:15 PM	8 1	11 10	28 32	24 13	17 18	6 9	6 7	239 211	2 4	30 23	264 216	32 26	667 570	0	0	0	2 1
4:30 PM 4:45 PM 5:00 PM	2 3 5	14 18 15	28 29 35	18 23 24	17 19 20	4 5 6	4 3 3	233 230 244	8 8 5	35 33 30	259 289 311	41 32 52	663 692 750	0 0 0	0 0 0	1 2 0	3 2 1
5:15 PM 5:30 PM 5:45 PM	3 3 2	12 21 22	27 23 40	22 22 21	25 26 31	5 5 8	2 6 4	266 233 238	8 7 8	29 44 35	301 282 318	40 38 46	740 710 773	0 0 0	0 0 0	1 0 1	1 3 0
TOTAL VOLUMES : APPROACH %'s :	NL 27 6.89%	NT 123	NR 242	SL 167 43.04%	ST 173	SR 48	EL 35 1.77%	ET 1894 95.70%	ER 50 2.53%	WL 259	WT 2240	WR 307	TOTAL 5565	NB 0	SB 0	EB 6	WB 13
PEAK HR START TIME :	500					•							TOTAL		•	•	•
PEAK HR VOL:	13	70	125	89	102	24	15	981	28	138	1212	176	2973				
PEAK HR FACTOR:		0.813			0.896			0.928			0.956		0.962				

Date: 6/9/2016

Day: Thursday **Project ID:** 16-4184-018

City: Pacific Beach AM

NS/EW Streets:	Culver St NORTHBOUND			(Culver St		(Grand Ave		(Grand Ave		
	N	ORTHBOU	ND	SO	UTHBOU	ND	E	ASTBOUN	D	V	VESTBOUN	ND	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	19	0	6	11	339	0	0	157	10	542
7:15 AM	0	0	0	42	0	9	10	375	0	0	146	37	619
7:30 AM	0	0	0	42	0	14	25	472	0	1	134	48	736
7:45 AM	0	0	0	45	0	16	10	422	0	0	123	15	631
8:00 AM	0	0	0	20	0	0	3	414	0	1	120	10	568
8:15 AM	0	0	0	18	0	3	3	417	0	0	132	15	588
8:30 AM	0	0	0	12	0	1	5	369	0	1	142	5	535
8:45 AM	0	0	0	13	0	3	3	332	0	0	154	4	509
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES:	0	0	0	211	0	52	70	3140	0	3	1108	144	4728
APPROACH %'s:	#DIV/0!	#DIV/0!	#DIV/0!	80.23%	0.00%	19.77%	2.18%	97.82%	0.00%	0.24%	88.29%	11.47%	

1		UTU	IRNS	
	NB	SB	EB	WB
	0	0	1	0
	0	0	5 3	0
	0	0	3	1
	0	0	4	0
	0	0	1	1
	0	0	1	0
	0	0	5	1
	0	0	2	0
	NB 0	SB 0	EB 22	WB 3

PEAK HR START TIME:	71!	5 AM											TOTAL
PEAK HR VOL:	0	0	0	149	0	39	48	1683	0	2	523	110	2554
PEAK HR FACTOR:		0.000			0.770			0.871			0.867		0.868

Day: Thursday **Project ID:** 16-4184-018

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:		Culver St NORTHBOUND		(Culver St		(Grand Ave		(Grand Ave		
	N	ORTHBOU	ND	SO	UTHBOU	ND	E	ASTBOUN)	V	/ESTBOUN	D	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	23	0	4	5	284	0	0	297	12	625
4:15 PM	0	0	0	10	0	6	4	262	0	0	313	10	605
4:30 PM	0	0	0	15	0	5	1	268	0	0	311	17	617
4:45 PM	0	0	0	22	0	4	5	299	0	0	401	23	754
5:00 PM	0	0	0	13	0	6	2	329	0	0	355	13	718
5:15 PM	0	0	0	16	0	6	6	293	0	1	397	11	730
5:30 PM	0	0	0	17	0	8	3	288	0	0	371	15	702
5:45 PM	0	0	0	7	0	4	5	278	0	0	354	12	660
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES:	0	0	0	123	0	43	31	2301	0	1	2799	113	5411
APPROACH %'s:	#DIV/0!	#DIV/0!	#DIV/0!	74.10%	0.00%	25.90%	1.33%	98.67%	0.00%	0.03%	96.09%	3.88%	

	UTU	IRNS	
NB	SB	EB	WB
0	0	4	0
0	0	0	0
0	0	0	0
0	0	3	0
0	0	1	0
0	0	1	1
0	0	0	0
0	0	2	0
NB	SB	EB	WB
0	0	11	1

PEAK HR START TIME:	44	5 PM											TOTAL
PEAK HR VOL:	0	0	0	68	0	24	16	1209	0	1	1524	62	2904
PEAK HR FACTOR:		0.000			0.885			0.925			0.936		0.963

Day: Thursday **Project ID:** 16-4184-019

Date: 6/9/2016 City: Pacific Beach AM

NS/EW Streets:		Lee St			Lee St	7.1		Grand Ave			Grand Ave						
	NC	ORTHBOU	ND	S	OUTHBOU	IND	E	ASTBOUN	D	V	VESTBOUN	ID			UT	URNS	
LANES:	NL 0	NT 1	NR 0	SL 0	ST 0	SR 0	EL 0	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB	SB	EB	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM	14 29 2	0 0 0	15 16 4 7	0 0 0	0 0 0	0 0 0	0 0 0	347 408 529 452	14 12 3 5	46 55 11 11	155 159 180 141	0 0 0	591 679 729 617				
8:00 AM 8:15 AM 8:30 AM 8:45 AM	2 5 1 3	0 0 0 0	3 4 0 2	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	423 435 385 324	5 4 3 9	12 11 9 3	107 149 164 150	0 0 0 0	552 608 562 491				
TOTAL VOLUMES : APPROACH %'s :	NL 57 52.78%	NT 0 0.00%	NR 51 47.22%	SL 0 #DIV/0!	ST 0 #DIV/0!	SR 0 #DIV/0!	EL 0 0.00%	ET 3303 98.36%	ER 55 1.64%	WL 158 11.59%	WT 1205 88.41%	WR 0 0.00%	TOTAL 4829	NB 0	SB 0	EB 0	WB 0
PEAK HR START TIME : PEAK HR VOL :	700 <i>i</i>	AM 0	42	0	0	0	0	1736	34	123	635	0	TOTAL 2616				
PEAK HR FACTOR:		0.489			0.000			0.832			0.886		0.897				

Date: 6/9/2016

0.964

Project ID: 16-4184-019 Day: Thursday

City: Pacific Beach

0.603

0.000

City.	racine bea	CII				PM	1				Date.	0/9/2010						
NS/EW Streets:		Lee St			Lee St		(Grand Ave			Grand Ave							
	NC	RTHBOU	ND	S	OUTHBOU	IND	E	ASTBOUN	D	V	VESTBOUN	ID				UT	JRNS	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
LANES:	0	1	0	0	0	0	0	2	0	1	2	0						
4:00 PM	10	0	33	0	0	0	0	323	2	7	285	0	660	•				
4:15 PM	3	0	5	0	0	0	0	264	4	7	336	0	619					
4:30 PM	2	0	3	0	0	0	0	285	2	9	319	0	620					
4:45 PM	1	0	1	0	0	0	0	309	3	21	431	0	766					
5:00 PM	7	0	7	0	0	0	0	324	8	25	344	0	715					
5:15 PM	5	0	12	0	0	0	0	291	6	20	400	0	734					
5:30 PM	3	0	5	0	0	0	0	301	11	22	398	0	740					
5:45 PM	2	0	4	0	0	0	0	280	10	46	374	0	716					
	N.I.	NIT.	ND	CI	CT.	CD			ED. I	14//	\A/T	WD	TOTAL	İ	ND	CD.	T 50	I WD
TOTAL WOLLINGS	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
TOTAL VOLUMES :	33	0	70	// DTV//OI	0	0	0	2377	46	157	2887	0	5570		0	0	U	0
APPROACH %'s:	32.04%	0.00%	67.96%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	98.10%	1.90%	5.16%	94.84%	0.00%				I	I	
PEAK HR START TIME:	445 F	PM											TOTAL					
PEAK HR VOL:	16	0	25	0	0	0	0	1225	28	88	1573	0	2955					

0.944

0.919

CONTROL: Signalized

PEAK HR FACTOR:

Project ID: 16-4184-020 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Figueroa Blvd NORTHBOUND		Fi	igueroa Bl	vd	(Grand Ave		(Grand Ave							
	N	ORTHBOU	IND	S	OUTHBOL	IND	Е	ASTBOUN	D	V	VESTBOUN	D			UT	JRNS	
LANES:	NL 0	NT 0	NR 0	SL 0	ST 0	SR 0	EL 1	ET 1	ER 0	WL 0	WT 2	WR 0	TOTAL	NB	SB	ЕВ	WB
7:00 AM 7:15 AM	0	0	0	0	0	0	11 24	360 426	0	0	206 192	5 4	582 646	0	0	8 14	0
7:30 AM 7:45 AM 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	21 9 9	490 489 428	0 0 0	0	144 147 125	3 10 11	658 655 573	0 0 0	0 0 0	10 1 1	0 0 0
8:15 AM 8:30 AM	0 0 0	0	0 0 0	0 0 0	0	0 0 0	4 10 9	407 401 336	0	0	137 157 152	7 11	555 579	0	0 0 0	1 2	0
8:45 AM	NL	NT	NR	SL	ST	SR	EL	ET	0 ER	0 WL	WT	14 WR	511 TOTAL	NB	SB	EB	WB
TOTAL VOLUMES : APPROACH %'s :		0 #DIV/0!	0 #DIV/0!	0 #DIV/0!	0 #DIV/0!	0 #DIV/0!	97 2.82%	3337 97.18%	0 0.00%	0 0.00%	1260 95.09%	65 4.91%	4759	0	0	38	0
PEAK HR START TIME:	700	AM											TOTAL				
PEAK HR VOL:	0	0	0	0	0	0	65	1765	0	0	689	22	2541				
PEAK HR FACTOR:		0.000			0.000			0.895			0.842		0.965				

Day: Thursday **Project ID:** 16-4184-020

City: Pacific Beach

Date: 6/9/2016

City.	- delile be	acii				PN	1				Date. (5/ 5/2010	
NS/EW Streets:	Fi	igueroa Bl	vd .	Fi	gueroa Bl	vd	(Grand Ave		(Grand Ave		
	N	ORTHBOU	IND	S	OUTHBOU	IND	E	ASTBOUN	D	V	/ESTBOUN	D	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	1	1	0	0	2	0	
4:00 PM	0	0	0	0	0	0	24	304	0	0	291	8	627
4:15 PM	0	0	0	0	0	0	16	263	0	0	319	7	605
4:30 PM	0	0	0	0	0	0	13	282	0	0	322	4	621
4:45 PM	0	0	0	0	0	0	20	275	0	0	382	9	686
5:00 PM	0	0	0	0	0	0	12	326	0	0	402	11	751
5:15 PM	0	0	0	0	0	0	13	281	0	0	388	11	693
5:30 PM	0	0	0	0	0	0	17	295	0	0	369	3	684
5:45 PM	0	0	0	0	0	0	19	281	0	0	414	5	719
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES:	0	0	0	0	0	0	134	2307	0	0	2887	58	5386
APPROACH %'s:	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5.49%	94.51%	0.00%	0.00%	98.03%	1.97%	
	=00	DM											TOTAL

	UTU	IRNS	
NB	SB	EB	WB
0	0	11	0
0	0	10	0
0	Ö	6	0
0	0	10	0
0	0	2	0
0	0	6	0
0	0	7	0
0	0	9	0
NB	SB	EB	WB
0	0	61	0

PEAK HR START TIME:	5	00 PM											TOTAL
PEAK HR VOL:	0	0	0	0	0	0	61	1183	0	0	1573	30	2847
PEAK HR FACTOR:		0.000			0.000			0.920			0.956		0.948

Day: Thursday

AM

City: Pacific Beach

Project ID: 16-4184-021

Date: 6/9/2016

NS/EW Streets:	Mission Bay Dr NORTHBOUND		Or	Mis	ssion Bay	Dr	C	Grand Ave	:	(Grand Ave	e					
	NO	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	1D	V	VESTBOU	ND	•		UTL	JRNS	
LANES:	NL 2	NT 2	NR 0	SL 1	ST 1.5	SR 0.5	EL 1	ET 0	ER 1	WL 0	WT 1	WR 0	TOTAL	NB	SB	ЕВ	WB
7:00 AM 7:15 AM 7:30 AM	166 159 125	142 135 151	5 3 4	0 1	132 147 158	49 41 28	71 83 91	0	256 337 393	0 0 0	0	2 1 0	823 907 950	1 3	0 1	0	0
7:45 AM 8:00 AM	128 105	171 163	6 7	0	174 146	28 28	90 75	0	441 360	0	0	2 3	1040 887	1 0	0	0	0
8:15 AM 8:30 AM 8:45 AM	121 145 145	172 199 193	9 11 10	1 0	157 188 162	28 21 27	70 72 63	0	346 316 301	0	0	5 4 3	908 957 904	0	1 0	0	0
TOTAL VOLUMES : APPROACH %'s :	NL 1094 44.20%	NT 1326 53.58%	NR 55 2.22%	SL 2 0.13%	ST 1264 83.38%	SR 250 16.49%	EL 615 18.28%	ET 0 0.00%	ER 2750 81.72%	WL 0 0.00%	WT 0 0.00%	WR 20 100.00%	TOTAL 7376	NB 5	SB 2	EB 0	WB 0
PEAK HR START TIME:	745	AM											TOTAL				
PEAK HR VOL:	499	705	33	1	665	105	307	0	1463	0	0	14	3792				
PEAK HR FACTOR:		0.871			0.918			0.833			0.700		0.912				

Day: Thursday **Project ID:** 16-4184-021

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Mission Bay Dr NORTHBOUND		Mis	ssion Bay l	Dr	(Grand Ave		C	Grand Ave							
	N	ORTHBOUN	ND	S	OUTHBOU	ND	E	ASTBOUN	D	W	ESTBOUN	ID			UT	URNS	
LANES:	NL 2	NT 2	NR 0	SL 1	ST 1.5	SR 0.5	EL 1	ET 0	ER 1	WL 0	WT 1	WR 0	TOTAL	NB	SB	ЕВ	WB
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	243 288 267 308 372 337 276 355	217 197 220 237 214 252 224 219	5 9 4 5 3 5 6 3	0 0 0 0 2 0 0	238 158 165 193 184 184 179 136	48 44 68 75 49 70 92 61	24 34 23 24 34 34 19 33	0 0 0 0 0 0	284 246 268 252 276 277 244 256	0 0 0 0 0 0	0 0 0 2 0 0 0	3 4 2 0 2 6 2 3	1062 980 1017 1096 1136 1165 1042 1066	2 1 0 0 2 0 0 0	0 0 0 0 2 0 0	0 0 0 0 0 0	0 0 0 0 0 0
TOTAL VOLUMES : APPROACH %'s : PEAK HR START TIME :			NR 40 0.94%	SL 2 0.10%	ST 1437 73.84%	SR 507 26.05%	EL 225 9.66%	ET 0 0.00%	ER 2103 90.34%	WL 0 0.00%	WT 2 8.33%	WR 22 91.67%	TOTAL 8564	NB 5	SB 2	EB 0	WB 0
PEAK HR VOL : PEAK HR FACTOR :	1293	927 0.942	19	2	740 0.948	286	111	0 0.932	1049	0	2 0.500	10	4439 0.953				

Day: Thursday **Project ID:** 16-4184-022

City: Pacific Beach

Date: 6/9/2016

	City.	acine be	Jenie Beden				A	M				Date.	0/ 3/ 2010					
	NS/EW Streets:	Mi	ssion Bay [Or	Mi	ssion Bay [Or	R	Rosewood	St	R	osewood S	St					
		N	ORTHBOU	ND	S	OUTHBOUN	ND		EASTBOUI	ND	V	VESTBOU	ND			UTL	JRNS	
	LANES:	NL 0	NT 3	NR 0	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 0	WT 1	WR 0	TOTAL	NB	SB	ЕВ	WB
-	7:00 AM 7:15 AM	0	328 279	0	0	384 480	0	0	0	0	0	0	3	715 764	0	0	0	0
	7:30 AM	0	285	0	1	541	0	0	0	0	0	0	1	828	0	0	0	0
	7:45 AM 8:00 AM	0 0	295 284	1 3	3 0	613 499	0 0	0 0	0 0	0 0	0 0	0 0	2 3	914 789	0 0	2 0	0 0	0 0
	8:15 AM	0	295	1	2	496	0	0	0	0	1	0	3	798	0	0	0	0
	8:30 AM 8:45 AM	0	337 350	5	1	499 467	0	0	0	0	1	0	1	844 825	0	1	0	0
-	TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 2453 99.35%	NR 16 0.65%	SL 10 0.25%	ST 3979 99.75%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 4 21.05%	WT 0 0.00%	WR 15 78.95%	TOTAL 6477	NB 0	SB 5	EB 0	WB 0
	PEAK HR START TIME:	745	AM											TOTAL				
	PEAK HR VOL:	0	1211	10	7	2107	0	0	0	0	2	0	8	3345				
	PEAK HR FACTOR:		0.893			0.858			0.000			0.625		0.915				

CONTROL: 1-Way Stop (WB)

Project ID: 16-4184-022 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

UTURNS

EB

EB 0

WB

WB 0

SB

SB 1

NB

NB 2

NS/EW Streets:	Mis	ssion Bay D)r	Mis	ssion Bay D)r	R	osewood S	St	Ro	sewood S	St	
	N	ORTHBOU	ND .	SC	DUTHBOUN	ID	E	EASTBOUN	ND	W	ESTBOUN	ND .	
LANES:	NL 0	NT 3	NR 0	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 0	WT	WR 0	TOTAL
LAINLS.	U	3	U	1	2	U	U	U	U	U	1	U	
4:00 PM	0	461	4	2	506	0	0	0	0	1	0	2	976
4:15 PM	1	453	2	4	409	0	0	0	0	0	0	1	870
4:30 PM	0	499	2	1	437	0	0	0	0	1	0	2	942
4:45 PM	0	565	3	1	427	0	0	0	0	0	0	5	1001
5:00 PM	0	562	1	0	460	0	0	0	0	0	0	1	1024
5:15 PM	1	567	6	0	450	0	0	0	0	1	0	2	1027
5:30 PM	0	522	3	1	432	0	0	0	0	1	0	3	962
5:45 PM	0	582	1	0	397	0	0	0	0	1	0	1	982
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	4211	22	9	3518	0	0	0	0	5	0	17	7784
APPROACH %'s:	0.05%	99.43%	0.52%	0.26%	99.74%	•	#DIV/0!	#DIV/0!	#DIV/0!	22.73%	0.00%	77.27%	

AITROACII 700 I	0.00	7,0 33.1370	0.52 70	0.2070	3317 170	0.0070	<i>" DIV O</i> .	<i>" DIV JO.</i>	<i>" DIV 0</i> .	22.7570	0.00 70	7712770	1 1
PEAK HR START TIME:	4	45 PM											TOTAL
PEAK HR VOL:	1	2216	13	2	1769	0	0	0	0	2	0	11	4014
PEAK HR FACTOR:		0.971			0.963			0.000			0.650		0.977

CONTROL: 1-Way Stop (WB)

Project ID: 16-4184-023 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Mission Bay Dr NORTHBOUND		Mis	ssion Bay D)r	Bu	nker Hill S	St	Bu	ınker Hill S	St						
	N	ORTHBOU	ND	SC	OUTHBOUN	ND	E	ASTBOUN	1D	W	/ESTBOUN	ND	<u>. </u>		UTU	JRNS	
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	SB	EB	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM	1 2 2 4 2 7 2	200 202 207 221 209 214 230	18 15 25 26 15 20 22	22 24 20 19 31 24 30	179 168 180 180 163 177 201	0 0 0 0 0	0 0 0 1 0 0	0 0 0 0 0 0	0 0 0 0 1 0	9 16 16 10 9 6 8	1 0 0 0 0 0	10 8 4 6 14 7	440 435 454 467 444 455 500	1 2 2 3 2 7 2	1 5 3 1 6 3 5	0 0 0 0 0 0	0 0 0 0 0 0
8:45 AM TOTAL VOLUMES : APPROACH %'s :	0 NL 20 1.05%	NT 1713 89.83%	NR 174 9.12%	34 SL 204 12.47%	ST 1431 87.47%	SR 1 0.06%	0 EL 1 50.00%	0 ET 0 0.00%	0 ER 1 50.00%	13 WL 87 57.62%	0 WT 1 0.66%	7 WR 63 41.72%	501 TOTAL 3696	0 NB 19	5 SB 29	EB 0	WB 0
PEAK HR START TIME : PEAK HR VOL : PEAK HR FACTOR :	800 11	883 0.935	90	119	724 0.913	1	0	0 0.250	1	36	0 0.772	35	1900 0.948				

Project ID: 16-4184-023 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Mis	ssion Bay D)r	Mi	ssion Bay D)r	Bu	nker Hill S	St	Ви	ınker Hill S	St					
	N	ORTHBOUN	ND .	S	OUTHBOUN	ND	E	ASTBOUN	ID	W	/ESTBOUN	ND			UT	URNS	
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	SB	ЕВ	WB
4:00 PM 4:15 PM 4:30 PM 4:45 PM	2 5 4 7	243 213 221 245	5 11 13 12	12 18 14 12	229 189 207 216	2 4 4 6	0 1 0 2	1 0 0 0	2 0 1 1	24 21 27 37	0 1 1 1	7 21 13 3	527 484 505 542	1 1 4 6	0 4 3 4	0 0 0 0	0 0 0
5:00 PM 5:15 PM 5:30 PM 5:45 PM	8 11 7 4	251 252 236 256	9 16 6 8	19 28 26 17	192 211 241 174	6 6 4 11	2 3 1	0 0 0	2 1 1	26 35 20 19	1 1 0	17 11 7 11	536 575 552 502	7 3 2	3 9 4	0 0 0	0 0 0
TOTAL VOLUMES : APPROACH %'s :	NL 48 2.35%	NT 1917 93.74%	NR 80 3.91%	SL 146 7.90%	ST 1659 89.77%	SR 43 2.33%	EL 12 46.15%	ET 1 3.85%	ER 13 50.00%	WL 209 68.75%	WT 5 1.64%	WR 90 29.61%	TOTAL 4223	NB 29	SB 29	ЕВ 0	WB 0
PEAK HR START TIME :	445	PM											TOTAL				
PEAK HR VOL:	33	984	43	85	860	22	10	0	9	118	3	38	2205				
PEAK HR FACTOR:		0.950			0.892			0.594			0.846		0.959				

Project ID: 16-4184-024 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

WB

WB 0

	NS/EW Streets:	Mission Bay Dr NORTHBOUND		Mis	ssion Bay D	Or	Ma	gnolia Av	re	Ma	agnolia Av	⁄e						
		NO	ORTHBOU	ND	SC	OUTHBOUN	ND	E	ASTBOUN	ID	٧	VESTBOU	ND		•		UTI	JRNS
	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	SB	ЕВ
	7:00 AM 7:15 AM	5	250 213	1 0	5 4	165 193	12 16	23 21	0	9	1 0	0	1 1	472 464		2 2	3 2	0
	7:30 AM 7:45 AM 8:00 AM	2 0 6	212 223 224	0 0 0	7 9 11	169 191 171	8 9 22	25 17 23	0	21 21 18	2 0 0	0 1	1 0	447 471 477		1 0	5 7	0
	8:15 AM 8:30 AM	8 6	226 230	0 3	7 8	180 199	14 8	17 16	1 1	19 23	4 3	1 0	1 3	478 500		7 2	6 3 5	0
	8:45 AM	11	232	4	11	171	13	18	2	29	2	0	1	494		6	8	0
	TOTAL VOLUMES: APPROACH %'s:	NL 44 2.36%	NT 1810 97.21%	NR 8 0.43%	SL 62 3.87%	ST 1439 89.77%	SR 102 6.36%	EL 160 50.79%	ET 6 1.90%	ER 149 47.30%	WL 12 52.17%	WT 3 13.04%	WR 8 34.78%	TOTAL 3803		NB 23	SB 41	EB 0
PEA	K HR START TIME:	800	AM											TOTAL				
	PEAK HR VOL:	31	912	7	37	721	57	74	6	89	9	1	5	1949				
	PEAK HR FACTOR:		0.962			0.948			0.862			0.625		0.975				

Project ID: 16-4184-024 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Mis	ssion Bay [Or	Mi	ssion Bay	Dr	Ma	agnolia Av	re	М	agnolia Av	re					
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	ID	V	VESTBOU	ND			UTU	JRNS	
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	SB	ЕВ	WB
4:00 PM 4:15 PM 4:30 PM	10 12 9	263 245 256	1 0 1	11 6	226 180 194	22 25 27	13 20 16	2 0	33 25 22	1 0 1	0 1	1 2 3	583 516 539	5 6	9 5	0	0
4:45 PM 5:00 PM	14 17	259 276	1 1	9	216 170	30 27	17 15	0	16 32	1 2	0	2	565 553	3	7	0	0
5:15 PM 5:30 PM 5:45 PM	12 10 6	284 253 271	1 0 0	10 8 3	204 203 188	22 34 27	10 11 10	0	36 31 18	1 3 1	0 0 0	1 0	585 554 524	6 7 4	8 5 3	0 0 0	0 0 0
TOTAL VOLUMES : APPROACH %'s :	NL 90 4.09%	NT 2107 95.69%	NR 5 0.23%	SL 66 3.55%	ST 1581 84.95%	SR 214 11.50%	EL 112 33.94%	ET 5 1.52%	ER 213 64.55%	WL 10 38.46%	WT 3 11.54%	WR 13 50.00%	TOTAL 4419	NB 40	SB 50	EB 0	WB 0
PEAK HR START TIME:	445	PM											TOTAL				
PEAK HR VOL:	53	1072	3	37	793	113	53	3	115	7	1	7	2257				
PEAK HR FACTOR:		0.949			0.925			0.891			0.938		0.965				

Project ID: 16-4184-025 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Mis	ssion Bay [Or	Mis	ssion Bay [Or		Damon Av	re	С	Damon Av	e					
	N	ORTHBOUI	ND	S	OUTHBOU	ND		EASTBOU	ND	V	VESTBOU	ND			UTU	JRNS	
LANES:	NL 0	NT 2	NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 1	WT 0	WR 1	TOTAL	NB	SB	ЕВ	WB
7:00 AM 7:15 AM 7:30 AM	0 0 0	342 346 308	29 26 17	12 13 14	188 149 182	0 0 0	0 0 0	0 0 0	0 0 0	8 22 22	0 0 0	10 11 13	589 567 556	0 0 2	0 0 0	0 0 0	0 0 0
7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	0 0 0 0	301 328 297 299 282	24 25 29 36 23	18 14 6 12 17	195 175 177 207 207	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	12 22 17 22 22	0 0 0 0	11 12 18 10 8	561 576 544 586 559	3 2 0 0	0 0 0 0	0 0 0 0	0 0 0 0
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 2503 92.29%	NR 209 7.71%	SL 106 6.68%	ST 1480 93.32%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 147 61.25%	WT 0 0.00%	WR 93 38.75%	TOTAL 4538	NB 8	SB 0	EB 0	WB 0
PEAK HR START TIME :	700	AM											TOTAL				
PEAK HR VOL:	0	1297	96	57	714	0	0	0	0	64	0	45	2273				
PEAK HR FACTOR:		0.936			0.905			0.000			0.779		0.965				

Project ID: 16-4184-025 Day: Thursday

0.993

City: Pacific Beach **Date:** 6/9/2016 PM

NS/EW Streets:	Mis	ssion Bay I	Or	Mi	ssion Bay [Or	Ι	Damon Av	e	D	amon Ave	2					
	N	ORTHBOUI	ND	S	OUTHBOU	ND		EASTBOUI	ND	W	/ESTBOUN	ND			UTI	JRNS	
LANES:	NL 0	NT 2	NR 1	SL 1	ST 2	SR 0	EL 0	ET 0	ER 0	WL 1	WT 0	WR 1	TOTAL	NB	SB	ЕВ	WB
4:00 PM 4:15 PM	0	293 236	34 38	20 25	356 340	0	0	0	0	31 33	0	26 26	760 698	0	0	0	0
4:30 PM 4:45 PM 5:00 PM	0 0 0	255 270 316	36 40 53	12 21 20	322 305 314	0	0 0	0	0 0	30 37 35	0	23 31 56	678 704 794	0	0	0	0
5:15 PM 5:30 PM 5:45 PM	0 0 0	276 239 264	41 31 29	22 16 14	310 284 315	0	0 0 0	0 0 0	0 0 0	39 44 38	0 0 0	36 33 26	724 647 686	0 0 0	0 0 0	0 0 0	0 0 0
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 2149 87.68%	NR 302 12.32%	SL 150 5.56%	ST 2546 94.44%	SR 0 0.00%	EL 0 #DIV/0!	ET 0 #DIV/0!	ER 0 #DIV/0!	WL 287 52.76%	WT 0 0.00%	WR 257 47.24%	TOTAL 5691	NB 0	SB 0	EB 0	WB 0
PEAK HR START TIME:	430	PM											TOTAL				
PEAK HR VOL:	0	1117	170	75	1251	0	0	0	0	141	0	146	2900				

0.000

0.913

0.788

CONTROL: Signalized

0.872

PEAK HR FACTOR:

Project ID: 16-4184-026 Day: Thursday

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	Mis	ssion Bay [)r	Mis	ssion Bay	Dr	Blu	uffside Av	re	Е	Bluffside Av	⁄e					
	N	ORTHBOU	ND	SC	OUTHBOU	ND	E	ASTBOUN	ID	•	WESTBOU	ND			UTI	JRNS	
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1.5	ET 0	ER 0.5	WL 0	WT 0	WR 0	TOTAL	NB	SB	ЕВ	WB
7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM	18 13 16 18 22 22 19 14	327 328 308 296 340 306 302 281	0 0 0 0 0 0	0 0 0 0 0 0	173 145 179 176 165 162 202 194	45 46 43 48 58 41 53 50	155 148 154 156 120 142 158 123	0 0 0 0 0 0	24 21 22 34 22 18 31 25	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	742 701 722 728 727 691 765 687	0 1 1 2 1 4 1	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
TOTAL VOLUMES : APPROACH %'s :	NL 142 5.40%	NT 2488 94.60%	NR 0 0.00%	SL 0 0.00%	ST 1396 78.43%	SR 384 21.57%	EL 1156 85.44%	ET 0 0.00%	ER 197 14.56%	WL 0 #DIV/0!	WT 0 #DIV/0!	WR 0 #DIV/0!	TOTAL 5763	NB 10	SB 0	EB 0	WB 0
PEAK HR START TIME :	745	AM											TOTAL				
PEAK HR VOL:	81	1244	0	0	705	200	576	0	105	0	0	0	2911				
PEAK HR FACTOR:		0.915			0.887			0.896			0.000		0.951				

City: Pacific Beach

Project ID: 16-4184-026

Date: 6/9/2016

Day: Thursday

	City.	City: Facilic Beach					Р	M				Date.	0/3/2010					
	NS/EW Streets:	Mis	ssion Bay [Or	Mis	sion Bay	Dr	Blu	uffside Av	е	В	Bluffside Av	/e					
-		N	ORTHBOU	ND	SC	OUTHBOU	ND	E	ASTBOUN	ID	\	WESTBOU	ND			UTL	JRNS	
	LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1.5	ET 0	ER 0.5	WL 0	WT 0	WR 0	TOTAL	NB	SB	EB	WB
-	4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	41 47 56 59 93 69 71	275 202 236 240 273 233 213	0 0 0 0 0	0 0 0 0 0	348 298 317 296 278 288 255	116 101 125 119 133 126 111	77 78 64 72 55 56 63	0 0 0 0 0	44 40 24 30 33 40 23	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	901 766 822 816 865 812 736	4 1 3 2 3 2 1	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0
_	5:45 PM TOTAL VOLUMES: APPROACH %'s:	72 NL 508 21.22%	NT 1886 78.78%	0 NR 0 0.00%	0 SL 0 0.00%	307 ST 2387 70.85%	SR 982 29.15%	67 EL 532 67.09%	0 ET 0 0.00%	ER 261 32.91%	0 WL 0 #DIV/0!	0 WT 0 #DIV/0!	0 WR 0 #DIV/0!	838 TOTAL 6556	1 NB 17	SB 0	EB 0	WB 0
	PEAK HR START TIME : PEAK HR VOL : PEAK HR FACTOR :	277	982 0.860	0	0	1179 0.951	503	247	0 0.917	127	0	0.000	0	TOTAL 3315 0.958				

Day: Thursday **Project ID:** 16-4184-027

AM

City: Pacific Beach

Date: 6/9/2016

NS/EW Streets:	S	Santa Fe St		S	Santa Fe Si	t	D	amon Av	е		Damon Av	е					
	N	ORTHBOU	ND	S	OUTHBOU	ND	E	ASTBOUN	ND	'	WESTBOU	ND	•		UTU	JRNS	
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 1	WL 0	WT 0	WR 0	TOTAL	NB	SB	EB	WB
7:00 AM 7:15 AM	5 2	10 7	0	0	5 8	12 17	17 14	0	3 9	0	0	0	52 57	0	0	0	0
7:30 AM 7:45 AM 8:00 AM	8 3 7	18 30 20	0 0 0	0 0	6 8	20 18 18	16 21 27	0	10 12 7	0 0 0	0	0	75 90 87	0 0 0	0 0 0	0 1	0 0 0
8:15 AM 8:30 AM 8:45 AM	3 6 3	20 20 19	0 0 0	0 0 0	8 7 3	14 18 14	20 31 21	0 0 0	9 3 3	0 0 0	0 0 0	0 0 0	74 85 63	0 0 0	0 0 0	0 0 0	0 0 0
TOTAL VOLUMES : APPROACH %'s :	NL 37	NT 144	NR 0 0.00%	SL 0	ST 48 26.82%	SR 131	EL 167 74.89%	ET 0 0.00%	ER 56	WL 0 6 #DIV/0!	WT 0 #DIV/0!	WR 0 #DIV/0!	TOTAL 583	NB 0	SB 0	EB 2	WB 0
PEAK HR START TIME :													TOTAL				
PEAK HR VOL: PEAK HR FACTOR:	19	90 0.826	0	0	29 0.933	68	99	0 0.956	31	0	0.000	0	336 0.933				

CONTROL: 3-Way Stop (NB/SB/EB)

Project ID: 16-4184-027 Day: Thursday

PM

City: Pacific Beach

Date: 6/9/2016

UTURNS

EB

WB

WB 0

SB

SB 1

NS/EW Streets:	S	Santa Fe St NORTHBOUND		9	Santa Fe St	t	D	amon Ave	9	[Damon Ave	e e	
	NO	ORTHBOU	ND	S	OUTHBOU	ND	Е	ASTBOUN	ID	V	VESTBOUI	ND	
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 1	WL 0	WT 0	WR 0	TOTAL
4:00 PM	7	3	0	0	22	29	21	0	12	0	0	0	94
4:15 PM	2	9	0	0	11	31	21	0	8	0	0	0	82
4:30 PM	7	6	0	1	15	23	12	0	8	0	0	0	72
4:45 PM	15	17	0	0	11	19	23	0	8	0	0	0	93
5:00 PM	24	6	0	0	21	36	21	0	23	0	0	0	131
5:15 PM	20	5	0	0	15	30	22	0	15	0	0	0	107
5:30 PM	7	11	0	0	14	35	18	0	9	0	0	0	94
5:45 PM	5	8	0	0	9	20	17	0	10	0	0	0	69
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES: APPROACH %'s:		65 42.76%	0 0.00%	1 0.29%	118 34.50%	223 65.20%	155 62.50%	0 0.00%	93 37,50%	0 #DIV/0!	0 #DIV/0!	0 #DIV/0!	742

APPROACH %'s:	57.24%	42.76%	0.00%	0.29%	34.50%	65.20%	62.50%	0.00%	37.50%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME:	445	PM											TOTAL
PEAK HR VOL:	66	39	0	0	61	120	84	0	55	0	0	0	425
PEAK HR FACTOR:		0.820			0.794			0.790			0.000		0.811

CONTROL: 3-Way Stop (NB/SB/EB)

Dist I	Route	County	Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
11	005	SD	2.312	SAN DIEGO, DAIRY MART ROAD	5100	62000	57000	6300	77000	76000
11	005	SD	3.1	SAN DIEGO, JCT. RTE. 905	6300	77000	76000	8900	115000	114000
11	005	SD	4.042	SAN DIEGO, CORONADO AVENUE	9400	122000	121000	10300	136000	135000
11	005	SD	4.632	JCT. RTE. 75 WEST	10300	136000	135000	12700	166000	160000
_11	005	SD	5.404	SAN DIEGO, MAIN STREET	12700	166000	160000	13800	164000	162000
_11	005	SD	6.056	CHULA VISTA, PALOMAR STREET	13800	164000	162000	13500	160000	158000
11	005	SD	6.807	CHULA VISTA, L STREET	13500	160000	158000	14600	172000	171000
11	005	SD	7.3	CHULA VISTA, J STREET	14600	172000	171000	14600	176000	175000
11	005	SD	7.812	CHULA VISTA, H STREET	14600	176000	175000	13800	185000	170000
11	005	SD	8.562	E STREET	13800	185000	170000	11300	138000	132000
11	005	SD	9.396	JCT. RTE. 54	11300	138000	132000	16100	197000	190000
11	005		R 10.042	NATIONAL CITY, 24TH STREET	16100	197000	190000	16000	195000	189000
11	005		R 10.749	NATIONAL CITY, 9TH STREET	16000	195000	189000	15100	188000	180000
11	005		R 11.129	8TH STREET	15100	188000	180000	15400	212000	196000
11	005		R 11.66	SAN DIEGO, DIVISION/MAIN STREETS	15400	212000	196000	16500	204000	203000
11	005		R 12.647	JCT. RTE. 15 NORTH	16500	204000	203000	13300	177000	167000
11	005		R 13.386	SAN DIEGO, 28TH STREET	13300	177000	167000	13300	177000	171000
11	005		R 14.077	SAN DIEGO, JCT. RTE. 75 SOUTH	13300	177000	171000	13500	180000	173000
11	005		R 14.74	J STREET	13500	180000	173000	13800	189000	178000
11	005		R 15.036	SAN DIEGO, JCT. RTE. 94	13800	189000	178000	17700	245000	229000
11	005		R 15.405	SAN DIEGO, PERSHING DRIVE	17700	245000	229000	17700	245000	229000
11	005		R 16.069	SAN DIEGO, JCT. RTE. 163	17700	245000	229000	17100	237000	219000
11	005		R 16.311	SAN DIEGO, SIXTH AVENUE	17100	237000	219000	17100	237000	219000
11	005		R 16.589	SAN DIEGO, FIRST AVENUE	17100	237000	219000	13200	186000	174000
11	005		R 16.912	SAN DIEGO, HAWTHORN STREET	13200	186000	174000	16300	226000	207000
11	005		R 17.25	SAN DIEGO, INDIA/SASSAFRAS STREETS	16300	226000	207000	15800	218000	201000
11	005		R 17.53	PACIFIC HIGHWAY VIADUCT	15800	218000	201000	13900	166000	158000
11	005		R 17.77	SAN DIEGO, SASSAFRAS STREET	13900	166000	158000	12400	164000	154000
11	005		R 18.283	SAN DIEGO, WASHINGTON STREET	12400	164000	154000	16300	218000	203000
11	005		R 19.033	SAN DIEGO, OLD TOWN AVENUE	16300	218000	203000	16200	238000	205000
11	005		R 20.056	JCT. RTE. 8/CAMINO DEL RIO	16200	238000	205000	16300	237000	207000
<u>11</u>	005		R 20.818	SAN DIEGO, MISSION BAY DRIVE/SEA WORLD DRIVE	16300	237000	207000	17500	237000	222000
<u>11</u>	005		R 22.262	CLAIREMONT DRIVE	17500	237000	222000	17000	210000	205000
<mark>11</mark>	005		22.872	SAN DIEGO, DE ANZA ROAD	17000	210000	205000	13700	168000	163000
11	005		R 23.476	SAN DIEGO, BALBOA AVENUE	13700	168000	163000	12600	153000	147000
<u>11</u>	005		R 23.93	SAN DIEGO, MISSION BAY DRIVE	12600	153000	147000	15900	208000	201000
<u>11</u>	005	SD F	25.947	JCT. RTE. 52 EAST	15900	208000	201000	13800	192000	187000

11:17:51

LATEST TRAFFIC YEAR SELECTED

PEAK HOUR VOLUME DATA

	• + / • 5 +									I Life	at HOOK	VOLIDIA	ים ינו	1111							
										AM	PEAK						PM	PEAK			
									1 WAY	%	%	%				1 WAY	%	%	%		
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	PHV	K	D	KD	HR :	DAY	MNTH Dir	PHV	K	D	KD	HR DA	Y MNTH
04	004	CC		12.67	24	А	15	W	3859	8.46	53.73	4.54	7 '	TUE	DEC E	3666	7.31	59.04	4.32	15 TH	U DEC
04	004	CC	R	20.10	416	A	15	W	6375	5.24	84.4	4.43	5 '	TUE	JUN E	6028	6.77	61.85	4.18	17 TU	E MAR
04	004	CC	R	41.96	486	В	15	E	772	8.25	65.37	5.39	11	WED	JUN E	502	6.36	55.17	3.51	13 WE	D JUN
10	004	SJ		4.421	12	0	14	W	499	7.66	74.48	5.71	5	MON	JUN E	595	10.64	63.91	6.8	16 TH	U JUN
10	004	SJ	T	14.05	54	A	16	W	832	7.53	75.29	5.67	6 1	MON	APR E	1340	12.21	74.82	9.14	17 FR	I OCT
10	004	SJ		15.91	113	В	15	W	907	7.09	69.4	4.92	6 '	TUE	OCT E	1398	10.43	72.7	7.59	16 FR	I JUL
10	004	SJ	T	15.32	116	A	14	W	912	9.13	56.93	5.2	7 '	THU	AUG E	1266	9.93	72.68	7.22	16 WE	D MAY
10	004	SJ	R	16.06	58	В	14	W	920	7.76	67.6	5.24	6 '	THU	AUG E	1266	9.93	72.68	7.21	16 WE	D MAY
10	004	SJ	R	16.06	59	A	16	E	3306	8.01	52.59	4.21	7	WED	SEP E	3182	7.75	52.3	4.05	14 FR	I APR
10	004	SJ		24.87	313	A	16	E	425	9.88	75.49	7.46	11	SAT	FEB W	481	11.69	72.22	8.44	13 MO	N FEB
10	004	SJ		24.87	336	В	16	W	375	10.56	60.98	6.44	11	SUN	JUL W	438	10.75	69.97	7.52	16 SU	N AUG
11	005	SD	R	.878	501	А	16	S	1670	6.31	61.51	3.88	10	SAT	FEB S	2892	9.14	73.48	6.72	15 WE	D DEC
11	005	SD		4.632	901	А	16	N	5840	4.9	74.38	3.64	6 '	TUE	OCT S	7635	7.79	61.18	4.76	17 WE	D MAY
11	005	SD	R	11.13	952	А	16	N	8503	6.19	70.12	4.34	6	MON	NOV S	9144	7.84	59.56	4.67	14 FR	I MAR
11	005	SD	R	12.65	903	А	16	N	8527	6.55	77.97	5.11	6	WED	DEC S	7990	7.86	60.91	4.79	14 TH	U MAY
11	005	SD	R	14.74	956	А	16	N	8302	7.72	60.38	4.66	7 '	THU	SEP S	7364	7.04	58.76	4.14	17 TU	E MAY
11	005	SD	R	17.53	896	А	16	N	8435	8.91	59.89	5.34	7 '	THU	OCT N	6302	6.9	57.81	3.99	17 TH	U AUG
11	005	SD	R	22.26	801	В	16	N	8835	7.05	56.49	3.98	7 '	TUE	JUL S	9410	7.79	54.42	4.24	15 TH	U MAR
11	005	SD	R	25.95	802	В	16	N	9647	7.6	63.25	4.81	7 '	TUE	SEP S	9350	7.72	60.35	4.66	15 TH	U SEP
11	005	SD	R	30.68	502	А	16	N	8164	7.02	55.2	3.87	11	FRI	JUL N	7816	6.98	53.13	3.71	13 FR	I SEP
11	005	SD	R	30.68	803	В	16	S	5910	7.44	54.59	4.06	8	WED	JUL N	6197	7.9	53.91	4.26	15 TH	U NOV
11	005	SD	R	36.27	898	А	16	S	9066	6.99	55.07	3.85	8 '	THU	APR N	9269	7.33	53.72	3.94	15 WE	D DEC
11	005	SD	R	49.28	904	В	16	S	7367	5.61	65.43	3.67	6	WED	MAR N	7623	6.71	56.55	3.8	16 TU	E MAR
11	005	SD	R	51.20	905	А	16	N	7496	6.82	53.21	3.63	12	SUN	FEB N	7560	6.89	53.1	3.66	13 SU	N MAR
11	005	SD	R	53.93	906	В	16	N	6677	7.53	51.86	3.91	11	SUN	AUG S	6616	7.07	54.71	3.87	15 FR	I APR
12	005	ORA		.483	401	0	16	S	5886	7.63	54.8	4.18	12	SAT	FEB N	5619	6.68	59.8	3.99	21 SU	N OCT
12	005	ORA		4.995	901	А	14	N	10025	7.97	56.57	4.51	9	SAT	JUN N	9973	7.88	56.88	4.48	16 FR	I JUN
12	005	ORA	R	25.00	900	0	16	S	10647	7.1	55.33	3.93	7 '	THU	JUN S	10820	6.64	60.07	3.99	17 MO	N APR
12	005	ORA		30.26	904	В	16	N	11223	6.93	57.74	4	7	WED	OCT S	9871	5.7	61.78	3.52	17 TH	U APR
12	005	ORA		30.26	905	А	16	N	12681	6.72	55.61	3.74	7 '	TUE	MAY S	11391	6.07	55.32	3.36	16 MO	N MAY
12	005	ORA		33.09	906	A	16	N	12558	5.81	58	3.37	7 '	THU	OCT N	12093	6.05	53.64	3.25	16 MO	N JAN
07	005	LA		.7	475	А	15	S	5444	5.92	53.78	3.18	6	WED	NOV S	5304	5.61	55.31	3.1	17 MO	N OCT
07	005	LA		15.33	27		16	N	7932		57.01	3.18				7937	5.84	54.46			
I																					

Balboa Ave to 5 SB

meter ID	ML	Ramp	veh /cyc	SOV Lane	HOV Lane
16205	4	2	2	2	0

(PM)

		(1 111)		
RATE	Cyc/Min	Sec/Cyc	cyc/Hr	Veh/Hr
1	8.3	7.2	498	996
2	8.03	7.5	482	964
3	7.76	7.7	466	931
4	7.49	8.0	449	899
5	7.22	8.3	433	866
6	6.95	8.6	417	834
7	6.68	9.0	401	802
8	6.41	9.4	385	769
9	6.14	9.8	368	737
10	5.87	10.2	352	704
11	5.6	10.7	336	672
12	5.33	11.3	320	640
13	5.06	11.9	304	607
14	4.79	12.5	287	575
15	4.52	13.3	271	542

Mission Bay Dr to 5 NB

meter ID	ML	Ramp	veh /cyc	SOV Lane	HOV Lane
215	4	2	2	1	1

(AM)

RATE	Cyc/Min	Sec/Cyc	cyc/Hr	Veh/Hr
1	8.3	7.2	498	996
2	8.19	7.3	491	982.8
3	8.08	7.4	485	969.6
4	7.97	7.5	478	956.4
5	7.86	7.6	472	943.2
6	7.75	7.7	465	930
7	7.64	7.9	458	916.8
8	7.53	8.0	452	903.6
9	7.42	8.1	445	890.4
10	7.31	8.2	439	877.2
11	7.2	8.3	432	864
12	7.09	8.5	425	850.8
13	6.98	8.6	419	837.6
14	6.87	8.7	412	824.4
15	6.76	8.9	406	811.2

Mission Bay Dr/Grand Ave to 5 SB

meter ID	ML	Ramp	veh /cyc	SOV Lane	HOV Lane
16203	4	3	2	2	0
		(PM)			

		(1.11.)		
RATE	Cyc/Min	Sec/Cyc	cyc/Hr	Veh/Hr
1	8.3	7.2	498	996
2	7.99	7.5	479	959
3	7.68	7.8	461	922
4	7.37	8.1	442	884
5	7.06	8.5	424	847
6	6.75	8.9	405	810
7	6.44	9.3	386	773
8	6.13	9.8	368	736
9	5.82	10.3	349	698
10	5.51	10.9	331	661
11	5.2	11.5	312	624
12	4.89	12.3	293	587
13	4.58	13.1	275	550
14	4.27	14.1	256	512
15	3.96	15.2	238	475

APPENDIX B

EXISTING CONDITIONS ANALYSIS SUPPORTING INFORMATION

Balboa Transit Station 1: Olney St & Garnet Ave

Existing Conditions Timing Plan: AM Peak Period SBT 192 0.79 63.8 0.0 63.8 125 191 333 0 0 0 0.58 0.0 37.8 0.0 37.8 57 101 379 0 0 0 0.27 541 0.21 6.9 0.0 6.9 66 105 899 0.01 8.0 0.0 8.0 50 351 0 0 0 0.01 m3 853 0.63 10.3 0.0 10.3 242 242 453 374 1364 50 614 0 0 0 0 5.2 0.0 0.0 5.2 Lane Group

Lane Group Flow (vph)

Vic Railo

Control Delay

Queue Delay

Total Delay

Queue Length 55th (ft)

Mueue Length 55th (ft)

Irum Bay Length (ft)

Base Capacity (vph)

Starvallon Cap Reducth

Storage Cap Reducth

Storage Cap Reducth

Rouge Cap Reducth

Storage Cap Reducth

Storage Cap Reducth

Storage Cap Reducth

Intersection Summary

— Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 1: Olney St & Garnet Ave

Existing Conditions Timing Plan: AM Peak Period

	•	†	/	\	ţ	√	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je-	ţ		F	4₽			4			4	
Traffic Volume (vph)	2	784	32	4	503	16	28	22	17	96	82	7
Future Volume (vph)	2	784	32	4	203	16	28	22	17	96	82	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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
표	1.00	0.99		1.00	1:00			0.98			1.00	
Fit Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1770	1851		1770	3523			1794			1807	
Flt Permitted	0.45	1.00		0.26	1:00			0.86			92.0	
Satd. Flow (perm)	832	1851		476	3523			1573			1402	
Peak-hour factor, PHF	96:0	96.0	96:0	96.0	96:0	96:0	96:0	96:0	96.0	96:0	96:0	96.0
Adj. Flow (vph)	2	817	36	4	524	17	53	22	18	100	82	7
RTOR Reduction (vph)	0	_	0	0	7	0	0	7	0	0	7	0
Lane Group Flow (vph)	2	852	0	4	539	0	0	4	0	0	190	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	¥	
Protected Phases		2			9			œ			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)	78.0	78.0		78.0	78.0			18.2			18.2	
Effective Green, g (s)	78.0	78.0		78.0	78.0			18.2			18.2	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.17			0.17	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	614	1362		320	2592			270			240	
v/s Ratio Prot		c0.46			0.15							
v/s Ratio Perm	0.01			0.01				90:0			c0.14	
v/c Ratio	0.01	0.63		0.01	0.21			0.36			0.79	
Uniform Delay, d1	3.7	6.9		3.7	4.4			38.7			42.1	
Progression Factor	1.00	1.00		1.47	1.39			9.			1.00	
Incremental Delay, d2	0.0	2.2		0.1	0.2			0.3			15.3	
Delay (s)	3.7	0.6		2.5	6.2			39.0			57.4	
Level of Service	⋖	⋖		V	V			Ω			ш	
Approach Delay (s)		0.6			6.2			39.0			57.4	
Approach LOS		⋖			⋖			٥			ш	
Intersection Summary												
HCM 2000 Control Delay			15.4	오	M 2000	HCM 2000 Level of Service	ervice		В			
HCM 2000 Volume to Capacity ratio	y ratio		99.0									
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization	Ľ		68.3%	⊇	J Level o	ICU Level of Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 1

KHA Queues

Existing Conditions
Timing Plan: AM Peak Period Balboa Transit Station
2. Balboa Ave & Garnet Ave

2: Balboa Ave & Garnet Ave	arnet A\	e e			liming Plan: AM Peak Period
	†	ţ	4	٤	
Lane Group	EBT	WBT	WBR	SBL	
Lane Group Flow (vph)	614	959	314	988	
v/c Ratio	1.03	0.48	0.22	0.59	
Control Delay	67.1	9.7	0.3	12.3	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	67.1	9.7	0.3	12.3	
Queue Length 50th (ft)	~104	40	0	66	
Queue Length 95th (ft)	#200	72	0	183	
Internal Link Dist (ft)	936	284		668	
Turn Bay Length (ft)					
Base Capacity (vph)	294	1382	1441	1496	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	1.03	0.48	0.22	0.59	
:					
Intersection Summary					

intersection summary

- Volume exceeds capacity, queue is theoretically infinite.

- Outuee shown is maximum after two cydes.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cydes.

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Existing Conditions Timing Plan: AM Peak Period

SBR		0	0	1900							0.94	0	0	0																				HCM 2000 Level of Service B		ne (s) 9.9	Service
SBL	N.	833		1900		0.97		. ,		Ì	0.94	988		988	Prot	4		23.1			4.9	5.2	1496	c0.26					4		12.2	В		HCM 2000 Lev		Sum of lost time (s)	ICU Level of Service
WBR		290		_		0.91		ľ		Ì		628		314	Free		Free	53.0		1.00			1441							0.3							
WBT		323		_		0.91		. ,		3148				462	N			20.0				6.1	,	0.15					0.0		000			11.1	0.54	53.0	48.6%
EBT	**	576	576	1900	2.0	0.95	100	3539	0.95	3377	0.94	613	0	614	A	2		20.0	20.0	0.38	5.0	6.1	1274		c0.18	0.48	12.6	1.00	9.0	13.4 R	13.4	В					
EBI			-	1900							= 0.94			0 (د				_																ylay	Capacity ratio	h (s)	Utilization
Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	-ane Grp Cap (vph)	//s Ratio Prot	//s Ratio Perm	//c Ratio	Jniform Delay, d1	Progression Factor	ncremental Delay, dZ	Delay (S)	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 3

KHA Oueues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Existing Conditions Timing Plan: AM Peak Period

Existing Conditions Timing Plan: AM Peak Period																	
	*	SBR	49	0.13	11.6	0.0	11.6	0	35		225	372	0	0	0	0.13	
	٠	SB	289	0.81	65.5	0.0	65.5	786	334	594	225	1249	0	0	0	0.47	
	4	WBR	626	0.47	1.4	0.1	1.5	13	15		200	1330	106	0	0	0.51	
	ţ	WBT	873	0.41	0.9	0.0	0.9	136	234	908		2112	0	0	0	0.41	
Itn Rd	†	EBT	1565	0.62	12.8	0.0	12.8	375	525	770		2534	0	0	0	0.62	
ion ledad N	1	EBL	115	0.36	67.1	0.0	67.1	22	88		200	322	0	0	0	0.36	
Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd		Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Turn Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Grant (γμπ) Prof. (γμπ)	Marromond	Ē	Ę	FOW	00/41	5		
112 1518 847 607 571 48 112 1518 847 607 571 48 1900 1900 1900 1900 1900 1900 1900 1900	Movement	EBL	EBI	WBI	WBK	SBL	SBK	
112 1518 847 607 571 48 1900 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	-	‡	‡	*_	F	₩_	
112 1518 847 667 571 48 1900 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	112	1518	847	607	571	48	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	112	1518	847	607	571	48	
44 5.5 4.9 5.4 5.4 5.4 097 095 095 100 097 100 100 100 100 095 1.00 085 3433 3539 3539 1683 343 1583 095 100 100 095 1.00 097 097 097 097 097 115 1565 873 626 589 19 100 0 0 0 39 115 1565 873 626 589 10 Prol NA NA pm+ov Prol 49 115 1565 873 626 589 10 141 1074 895 1212 317 317 141 1074 895 1212 317 317 141 1074 895 1212 317 317 44 5.5 4.9	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 0.95 0.95 1.00 0.97 1.00 0.97 1.00 0.90 0.05 0.05 0.05 0.05 0.05 0.05 0	Total Lost time (s)	4.4	5.5	4.9	5.4	5.4	5.4	
100 100 100 085 100 085 095 100 095 10	Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00	
995 100 100 0.95 100 3433 3539 1583 3433 1583 096 100 100 0.95 100 3433 3539 1583 3433 1583 097 097 097 097 097 097 115 1565 873 626 589 19 116 1656 873 626 589 10 117 1074 895 1212 317 317 14.1 1074 895 1212 317 31.7 14.1 1074 895 1212 317 31.7 14.4 5.5 4.9 5.4 5.4 5.4 5.4 20 5.6 80 2.0 2.0 3.0 322 2533 2111 1336 725 334 0.03 0.04 0.05 0.01 0.01 0.36 0.62 0.41 0.47 0.81 0.03 0.37 0.44 5.5 4.9 5.4 5.4 5.4 1.00 0.00 0.32 0.00 1.00 1.00 0.3 0.64 0.55 0.10 0.10 0.3 0.64 0.5 0.00 1.00 1.00 0.3 1.0 0.5 0.0 1.00 1.00 0.3 1.0 0.5 0.0 1.00 1.00 0.3 186 A A B A E 15.5 3.6 6.17 8.18 18.6 ACM 2000 Level of Service 2.1 0.5 0.00 0.00 2.2 0.00 0.00 2.3 0.00 0.00 2.3 0.00 0.00 2.3 0.00 0.00 2.4 1 0.5 0.00 0.00 2.5 0.00 2	E	1.00	1.00	1.00	0.85	1.00	0.85	
3433 3539 3539 1583 3433 1583 995 100 100 0.95 1.00 997 0.97 0.97 0.97 0.97 0.97 115 1566 873 626 589 10 116 1566 873 626 589 10 117 1676 873 626 589 10 Prot NA NA pm+ov Prot custom 5 2 6 7 7 7 4 14.1 107.4 895 1212 31.7 31.7 0.09 0.72 6.0 0.81 0.21 4.4 5.5 4.9 5.4 5.4 5.4 2.0 5.6 8.0 2.0 2.0 3.0 0.3 0.04 0.25 0.10 0.01 0.03 0.04 0.25 0.10 0.01 0.03 0.04 0.25 0.10 0.10 0.0 0.2 1.1 0.5 0.1 6.6 0.0 6.3 16 A A E A E D E B A A E D 186 A HOM 2000 Level of Service 2.0 5.0 Sum of tost time (s) 1.81 186 A HOM 2000 Level of Service 2.0 5.0 Sum of tost time (s) 1.82 186 A HOM 2000 Level of Service 2.0 5.0 Sum of tost time (s) 1.82 1.5 3.6 HOM 2000 Level of Service 2.0 5.3 Sum of tost time (s) 1.82 1.5 3.6 HOM 2000 Level of Service 2.0 5.3 Sum of tost time (s) 1.82 1.5 3.6 HOM 2000 Level of Service	Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
0.95 1.00 1.00 0.95 1.00 3.433 3.539 3.539 1.583 3.433 1.583 0.97 0.97 0.97 0.97 0.97 0.97 1.15 1.565 8.73 6.26 5.89 4.9 1.16 1.565 8.73 6.26 5.89 1.0 Prot NA NA pm+ov Pot custom 5 2 6 7 7 4 1.4.1 107.4 89.5 1.212 3.1.7 3.1.7 0.09 0.72 0.60 0.81 0.21 0.21 2.0 5.8 0.2 0.2 0.2 0.2 3.2 25.3 2.11 13.8 5.4 2.0 3.0 0.30 0.36 0.02 0.4 0.25 0.10 0.01 0.03 0.04 0.25 0.10 0.01 0.0 0.32 0.04 0.26 0.03 0.34 0.05 0.35 0.05 0.04 0.00 0.36 0.07 0.00 0.37 0.00 0.00 0.38 A A B A B B A B B B A B B B A B B B A B B B A B B B B A B	Satd. Flow (prot)	3433	3539	3539	1583	3433	1583	
3433 3539 3539 1583 3433 1583 197 097 097 097 097 097 097 1 15 1565 873 626 589 10 Prol NA NA pm+ov Prol cusion Frol NA 1074 895 1212 31.7 31.7 14.1 1074 895 1212 31.7 31.7 0.09 0.81 20 0.81 0.21 4.4 5.5 4.9 5.4 5.4 5.4 5.4 2.0 5.6 80 2.0 2.0 3.0 322 2533 2111 1336 725 334 0.3 0.4 0.25 0.10 0.10 0.3 0.4 0.5 0.10 0.10 0.3 0.4 0.5 0.10 0.10 0.5 0.5 0.5 0.5 0.5 0.5 1.0 0.10 0.3 0.9 1.00 1.00 0.2 1.1 0.5 0.5 0.5 0.5 0.5 8.3 A A A E B A A E B 15.5 3.6 6.17 0.1 18.6 A CM 2000 Level of Service 2.0 5.0 Sum of lost time (s) 1.0 150.0 Sum of lost time (s) 1.0 150.0 Sum of lost time (s) 1.0 1.3 0.7 0.10 1.0 1.0 0.7 0.10 1.0 0.0 0.1 0.10 1.0 0.0 0.1 0.10 1.0 0.0 0.1 0.10 1.0 0.0 0.1 0.10 1.0 0.0 0.1 0	Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Satd. Flow (perm)	3433	3539	3539	1583	3433	1583	
115 1565 873 626 589 49 60 60 60 60 60 60 60 6	Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	
115 1566 873 626 589 10	Adj. Flow (vph)	115	1565	873	626	289	49	
115 1565 873 626 589 10	RTOR Reduction (vph)	0	0	0	0	0	39	
Prot NA NA pm+ov Prot custom 5	Lane Group Flow (vph)	115	1565	873	626	589	10	
5 2 6 7 7 4 4 14.1 107.4 895. 121.2 31.7 31.7 14.1 107.4 895. 121.2 31.7 31.7 0.09 0.72 0.60 0.81 0.21 0.21 4.4 5.5 4.9 5.4 5.4 5.4 5.4 2.0 6.8 0. 2.0 3.0 322 2533 2111 1336 725 334 0.03 c.0.44 0.25 0.10 c.0.17 0.01 0.0 0.00 0.32 0.04 1.00 1.00 0.2 1.1 0.5 0.1 6.6 0.0 6.39 12.0 5.8 0.5 6.2 47.0 E B A A E D E B A A G B B A G B B B B A B B B B B B B	Tum Type	Prot	NA	NA	vo+mq		custom	
14.1 107.4 895 1212 31.7 31.7 14.1 107.4 895 1212 31.7 31.7 14.1 107.4 895 1212 31.7 31.7 10.0 10.0 10.2 10.2 12.0 12.0 12.0 12.0	Protected Phases	2	2	9	7	7	4	
14.1 1074 895 1212 317 317 009 0.09 0.09 0.01 1.00 0.09 0.01 0.021 0.00 0.01 0.021 0.00 0.00 0.	Permitted Phases		2		9		7	
14.1 107.4 895 1212 317 317 4.4 5.5 4.9 5.4 5.4 5.4 2.0 5.6 8.0 2.0 2.0 3.0 3.2 2533 2111 1335 725 334 0.33 0.62 0.41 0.27 0.01 0.36 0.62 0.41 0.47 0.81 0.03 0.37 1.08 16.2 4.4 56.3 47.0 0.0 0.2 1.1 0.5 0.1 6.6 0.0 0.2 1.1 0.5 0.1 6.6 0.0 0.2 1.1 0.5 0.1 6.6 0.0 0.2 1.1 0.5 0.1 0.0 1.00 0.2 1.1 0.5 0.1 0.0 1.00 0.2 1.1 0.5 0.1 0.6 0.0 0.2 1.1 0.5 0.0 0.9 4.0 0.0 0.2 1.1 0.5 0.0 0.0 1.00 0.2 1.1 0.5 0.0 0.0 1.00 0.2 1.1 0.5 0.0 0.0 1.00 0.2 1.1 0.5 0.0 0.0 1.00 0.2 1.1 0.5 0.0 0.0 1.00 0.2 1.1 0.5 0.0 0.0 1.00 0.2 1.1 0.5 0.0 0.0 0.0 0.0 0.2 1.1 0.5 0.0 0.0 0.0 0.0 0.2 1.1 0.5 0.0 0.0 0.0 0.0 0.2 1.1 0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Actuated Green, G (s)	14.1	107.4	89.5	121.2	31.7	31.7	
0.09 0.72 0.60 0.81 0.21 0.21 2.0 5.4 4.9 5.4 5.4 5.4 5.4 2.0 8.4 2.0 3.0 3.22 25.33 2111 1336 7.25 3.34 0.03 c.0.44 0.25 0.10 c.0.17 0.01 0.36 0.62 0.41 0.47 0.61 0.03 6.37 108 16.2 4.4 56.3 47.0 1.00 1.00 0.32 0.09 1.00 1.00 0.2 1.1 0.5 0.1 6.6 0.0 6.39 12.0 5.8 0.5 6.2 47.0 E B A A E D E B A A E D E B A A E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I E D E B A A I I I I I I I I I I I I I I I I I	Effective Green, g (s)	14.1	107.4	89.5	121.2	31.7	31.7	
14 5 5 49 54 54 54 54 2.0 5.6 8.0 2.0 2.0 3.0 3.2 2.3 2.11 33.4 0.03 6.04 0.25 0.10 6.017 0.01 0.36 0.62 0.41 0.47 0.81 0.03 6.37 10.8 16.2 4.4 56.3 47.0 1.00 1.00 0.32 0.09 1.00 1.00 0.2 1.1 0.5 0.9 6.0 0.00 6.3.9 12.0 5.8 0.5 6.2 9 47.0 E B A A E D E B A A E D E 15.5 3.6 6.17 B A A E D E 15.5 3.6 6.17 C 1.18 0.00 0.00 C 1.19 0.50 0.00 0.00 C 2 1.19 0.50 0.00 0.00 C 2 1.19 0.50 0.00 0.00 C 3.19 0.00 0.00 0.00 C 3.19 0.00 0.00 0.00 0.00 C 3.19 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Actuated g/C Ratio	0.09	0.72	09:0	0.81	0.21	0.21	
2.0 5.6 8.0 2.0 3.0 3.0 3.2 3.2 3.3 2.1 13.8 7.25 3.34 3.4 3.2 3.3 2.1 13.8 7.25 3.34 3.4 3.2 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Clearance Time (s)	4.4	5.5	4.9	5.4	5.4	5.4	
322 2533 2111 1336 725 334 0.03	Vehicle Extension (s)	2.0	9.9	8.0	2.0	2.0	3.0	
0.03	Lane Grp Cap (vph)	322	2533	2111	1336	725	334	
0.36 0.62 0.41 0.47 0.81 0.03 6.37 10.8 16.2 4.4 56.3 47.0 1.00 1.00 0.32 0.09 1.00 1.00 0.2 1.1 0.5 0.1 6.6 0.0 6.39 120 5.8 0.5 6.29 47.0 E B A A E D 1.55 3.6 6.17 B A C E D 1.60 0.70 1.86 HCM 2000 Level of Service 0.73% ICU	v/s Ratio Prot	0.03	c0.44	0.25	0.10	c0.17	0.01	
0.36 0.62 0.41 0.47 0.81 0.03 0.37 10.8 16.2 4.4 56.3 47.0 0.2 1.1 0.5 0.1 6.6 0.0 6.39 120 5.8 0.5 6.29 47.0 E B A A E D 1.55 3.6 6.17 B A HCM 2000 Level of Service of 5.8 0.73 8.10 15.0 Sum of lost time (\$) 1.8 1.8 1.00 1.50 Sum of lost time (\$) 1.8 1.8 1.00 1.50 Sum of lost time (\$) 1.8 1.8 1.00 1.50 Sum of lost time (\$) 1.8 1.8 1.00	v/s Ratio Perm				0.30			
63.7 10.8 16.2 4.4 56.3 47.0 1.00 1.00 0.32 0.09 1.00 1.00 0.2 1.1 0.5 0.1 6.6 0.0 63.9 12.0 5.8 0.5 6.29 47.0 E B A E D E 15.5 3.6 61.7 B A E D E H A E D E H A E D E H A E D E H B A E D E B A E D E D E B A E D E D E D E D E D E D E D E D E D E D	v/c Ratio	0.36	0.62	0.41	0.47	0.81	0.03	
1.00 1.00 0.32 0.09 1.00 1.00 0.02 1.1 0.5 0.1 6.6 0.00 0.00 0.00 0.00 0.00 0.00 0	Uniform Delay, d1	63.7	10.8	16.2	4.4	56.3	47.0	
0.2 1.1 0.5 0.1 6.6 0.0 63.9 12.0 5.8 0.5 6.2 9 47.0 E B A A E D E B A A E D B A A E T 15.5 3.6 61.7 B A HCM 2000 Level of Service 2 2 2 1.1 0.5 0.0 Sum of lost time (s) 18.0 callon 6.7 3% ICU Level of Service 0.7 3% ICU Level	Progression Factor	1:00	1:00	0.32	0.09	1:00	1.00	
639 120 5.8 62.9 47.0 E B A A E D 15.5 3.6 61.7 B A HCM 2000 Level of Service 2acity ratio 0.70 Sum of lost time (s) 18. ration 6.7.3% ICU Level of Service 0.7.3% IC	Incremental Delay, d2	0.2		0.5	0.1	9.9	0.0	
E B A A E D	Delay (s)	63.6	12.0	2.8	0.5	65.9	47.0	
15.5 3.6 61.7 B A E 18.6 HCM 2000 Level of Service 20dly ratio 0.70 Sum of lost time (s) 18. 2ration 67.3% ICU Level of Service 15.00 Sum of 10.00	Level of Service	ш	В	⋖	⋖	ш	۵	
B A E 18.6 HCM 2000 Level of Service 18.0 Sum of lost time (s) 18. zation 67.3% ICU Level of Service 0.73% ICU Level of Servic	Approach Delay (s)		15.5	3.6		61.7		
18.6 HCM 2000 Level of Service 18.0 Sum of lost time (s) 18. 72 zation 6.7.3% ICU Level of Service	Approach LOS		В	⋖		ш		
18.6 HCM 2000 Level of Service 0.70 Sum of lost time (s) 18. zation 6.7.3% ICU Level of Service 15.3% ICU Level of Service 15.3% ICU Level of Service 15.3% ICU Level of Service 15.	Intersection Summary							
20dby ratio 0.70 Sum of lost time (s)	HCM 2000 Control Delay			18.6	Н	:M 2000	Level of Service	В
150.0 Sum of lost time (s) zation 67.3% ICU Level of Service	HCM 2000 Volume to Capac	city ratio		0.70				
Utilization 67.3% ICU Level of Service	Actuated Cycle Length (s)			150.0	ઝ	m of lost	time (s)	18.7
	Intersection Capacity Utilizal	lion		67.3%	2	U Level o	of Service	U
	Anotheric Derived (min.)			1				

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Balboa Transit Station 4: Bond St & Garnet Ave	ion t Ave			Existing Conditions Timing Plan: AM Peak Period
		,		
	†	ļ	ų.	
Lane Group	EBT	WBT	NBR	
Lane Group Flow (vph)	2160	1591	25	
v/c Ratio	0.61	0.45	0.02	
Control Delay	0.8	0.8	0:0	
Queue Delay	0.0	0.0	0:0	
Total Delay	0.8	0.8	0.0	
Queue Length 50th (ft)	_	œ	0	
Queue Length 95th (ft)	0	က	0	
Internal Link Dist (ft)	908	574		
Turn Bay Length (ft)				
Base Capacity (vph)	3532	3539	1611	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	37	0	17	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.62	0.45	0.02	
Intersection Summary				
100000000000000000000000000000000000000				

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KHA Oueues

Movement EBI EBI EBI WBI WBI WBR NBL NBT NBR SBL SBT SBT SBL SBT	+. Doing of a Gaillet Ave	2									6		١
EBT WEI WEI NBI NBI NBI NBI SBI SBI <th></th> <th>1</th> <th>†</th> <th>/</th> <th>/</th> <th>ţ</th> <th>✓</th> <th>•</th> <th>•</th> <th>•</th> <th>٠</th> <th>-</th> <th>•</th>		1	†	/	/	ţ	✓	•	•	•	٠	-	•
↑↑↑	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2022 23 0 1511 0 0 0 24 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations		₩			‡				*			~
1 20029 23 0 1511 0 0 24 0 0 4 49 4.9	Traffic Volume (vph)	0	2029	23	0	1511	0	0	0	24	0	0	0
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	0	2029	23	0	1511	0	0	0	24	0	0	0
1,9	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 100	Total Lost time (s)		4.9			4.9				4.9			
100	Lane Util. Factor		0.95			0.95				1.00			
3533 1539 1611 100 1.00 1.00 100 3533 3539 1611 100 1.00 1.00 1.00 100 0.05 0.95 0.95 0.95 0.95 0.95 10136 24 0 1591 0 0 0 25 0 0 0 10 0 0 0 0 0 0 0 0 0 0 1500 0 0 0 0 0 0 0 0 1500 0 0 0 0 0 0 0 1500 0 0 0 0 0 1500 0 0 0 0 1500 0 0 0 0 1500 0 0 0 0 1500 0 0 0 0 100 0 0 0 0 0 100 0 0 0 0 0 100 0 0 0	Frt		1.00			1.00				98.0			
3533 3539 1611 100 100 100 100 100 100 100 100 100	Fit Protected		1.00			1.00				1.00			
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (prot)		3533			3539				1611			
3533 3539 1611 1 005 095 095 095 095 095 095 095 095 095	Flt Permitted		1.00			1.00				1.00			
150 150	Satd. Flow (perm)		3533			3539				1611			
2136 24 0 1591 0 0 0 25 0 0 0 0 1 2160 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	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
150.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	0	2136	24	0	1591	0	0	0	25	0	0	Ī
NA	RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
NA NA Perm 2 6 6 150.0 150.0 150.0 150.0 150.0 150.0 14.9 14.9 17.3 23.53 3.53.9 1611 20.61 0.45 0.02 0.01 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 1.00 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lane Group Flow (vph)	0	2160	0	0	1591	0	0	0	25	0	0	
2 6 6 2 150.0 150.0 150.0 150.0 150.0 150.0 1000 1000 150.0 1000 1	Tum Type		NA			NA				Perm			Perm
150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 1.00	Protected Phases		2			9							
150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0 1.00 1.0	Permitted Phases									2			
150.0 150.0	Actuated Green, G (s)		150.0			150.0				150.0			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Effective Green, g (s)		150.0			150.0				150.0			
4.9 4.9 7.3 7.3 35.33 35.9 6.61 0.45 0.02 0.01 0.045 0.02 0.01 0.0 0.0 0.07 0.3 0.0 0.7 0.3 0.0 A A A A A A 0.5 HCM 2000 Level of Service A 0.5 HCM 2000 Level of Service A 0.65 Sum of lost time (s) 7.9 150 Sum of lost time (s) 7.9 15 ICU Level of Service D	Actuated g/C Ratio		1.00			1.00				1.00			
7.3 7.3 3533 3539 7.3 5.061 0.45 0.02 0.61 0.45 0.02 0.0 0.0 0.0 1.00 0.0 0.0 0.7 0.3 0.0 A A A A A A 0.7 0.3 0.0 A A A B A A B	Clearance Time (s)		4.9			4.9				4.9			
3533 3539 1611 0.651 0.45 0.02 0.61 0.45 0.02 0.00 0.00 0.7 0.3 0.00 0.7 0.3 0.00 0.7 0.3 0.00 A A A A A 0.5 HCM 2000 Level of Service A 0.65 Charles Service A 150.0 Sum of lost time (s) 150.0 Sum of lost time (s) 150.1 150 Sum of lost time (s) 150.2 150 Sum of lost time (s) 150.3 150 Sum of lost time (Vehicle Extension (s)		7.3			7.3				7.3			
0.051 0.45 0.02 0.061 0.45 0.02 0.0 0.0 0.00 0.0 0.0 0.0 0.0 0.7 0.3 0.0 0.7 0.3 0.0 0.7 A A A A A A 0.5 HCM 2000 Level of Service A 0.65 Sum of lost time (\$\$) 7.9 1.5% ICU Level of Service D 1.5	Lane Grp Cap (vph)		3533			3539				1611			
0.61 0.45 0.002 0.0 0.0 0.002 0.0 0.0 0.0 0.002 0.7 0.3 0.0 0.0 0.7 0.3 0.0 0.7 0.3 0.0 0.7 A A A A A 0.7 A A A A 0.7 A A A A 0.7 A A A 0.8 HCM 2000 Level of Service A 0.65 Sum of lost time (s) 7.9 15.00 Sum of lost time (s) 7.9 15.5% ICU Level of Service D	v/s Ratio Prot		c0.61			0.45							
0.61 0.45 0.02 0.02 0.00 0.00 0.00 0.00 0.00 0.0	v/s Ratio Perm									0.05			
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio		0.61			0.45				0.05			
100 1.00 1.00 0.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay, d1		0.0			0.0				0.0			
0.7 0.3 0.0 0.7 0.3 0.0 0.7 0.3 0.0 A A A A 0.7 0.3 0.0 A A A 0.5 HCM 2000 Level of Service A 0.5 HCM 2000 Level of Service A 150 Sum of lost time (s) 7.9 155% ICU Level of Service D	Progression Factor		1.00			1.00				1.00			
0.7 0.3 0.0 A A A A 0.7 0.3 0.0 A A A A A A A 0.5 HCM 2000 Level of Service A 150.0 Sum of lost time (s) 7.9 77.5% ICU Level of Service D 15 15 15 15 15 15 15 15 15 15 15 15 15 1	Incremental Delay, d2		0.7			0.3				0.0			
A A A A A A A A A A A A A A A A A A A	Delay (s)		0.7			0.3				0.0			
0.7 0.3 0.0 A A A A A A A O.5 HCM 2000 Level of Service A 0.65 Sum of lost time (s) 7.9 77.5% ICU Level of Service D 15	Level of Service		A			⋖				V			
A A A A 0.5 HCM 2000 Level of Service A 0.65 150.0 Sum of lost time (s) 7.59 15 15 15 1CU Level of Service D 15 15 15 1CU Level of Service D	Approach Delay (s)		0.7			0.3			0.0			0.0	
0.5 HCM 2000 Level of Service 0.65 150.0 Sum of lost time (s) 77.5% ICU Level of Service 15	Approach LOS		A			⋖			A			A	
0.5 HCM 2000 Level of Service 0.65 150.0 Sum of lost time (s) 77.5% ICU Level of Service 15 15 15 15 15 15 15 15 15 15 15 15 15 1	Intersection Summary												
0.65 150.0 Sum of lost time (s) 77.5% ICU Level of Service 15	HCM 2000 Control Delay			0.5	H	:M 2000	Level of S	ervice		⋖			
150.0 Sum of lost time (s) 77.5% ICU Level of Service 15	HCM 2000 Volume to Capacit	ty ratio		0.65									
77.5% ICU Level of Service 15	Actuated Cycle Length (s)			150.0	S	m of lost	time (s)			7.9			
	Intersection Capacity Utilizatic	uo		77.5%	☲	U Level o	f Service			Ω			
	Analysis Dariod (min)												

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 5: Mission Bay Dr & Gamet Ave

Existing Conditions Timing Plan: AM Peak Period

	^	†	<i>></i>	/	ţ	✓	•	←	•	۶	-	•
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	773	868	486	172	722	238	415	377	218	244	217	421
v/c Ratio	0.94	0.75	0.51	0.82	0.93	0.39	0.80	0.34	0.28	0.71	0.44	0.28
Control Delay	72.0	57.8	16.1	92.4	75.6	24.7	81.2	32.2	22.1	91.5	42.9	11.5
Queue Delay	0.0	9.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	58.4	16.4	92.4	75.6	24.7	81.2	32.2	22.1	91.5	42.9	11.5
Queue Length 50th (ft)	393	442	169	166	366	112	182	135	80	130	135	34
Queue Length 95th (ft)	#203	533	281	#250	#478	181	245	153	139	177	215	66
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	299		120	410		325	265		100	200		265
Base Capacity (vph)	839	1202	1008	248	792	722	999	1120	816	265	491	1542
Starvation Cap Reductn	0	79	120	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.80	0.57	69.0	0.91	0.33	0.62	0.34	0.27	0.41	0.44	0.27

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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KHA Oueues

Existing Conditions Timing Plan: AM Peak Period Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

	4	†	~	>	ţ	4	•	-	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£	‡	₩	F	‡	₩.	F	‡	*-	ķ.	*	K.
Traffic Volume (vph)	742	862	467	165	693	228	398	362	500	234	208	404
Future Volume (vph)	742	862	467	165	663	228	398	362	500	234	208	404
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	76.0	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
Ft	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
	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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	96.0	96.0	96:0	96:0	96:0	96:0	96.0	96.0	96.0	96:0	96:0	96.0
Adj. Flow (vph)	773	868	486	172	722	238	415	377	218	244	217	421
RTOR Reduction (vph)	0	0	132	0	0	22	0	0	46	0	0	30
Lane Group Flow (vph)	773	868	354	172	722	183	415	377	172	244	217	391
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq
Protected Phases	r	∞	_	7	4	2	_	9	7	2	2	m
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	35.8	51.0	73.6	17.9	33.1	48.1	22.6	47.5	65.4	15.0	39.5	75.3
Effective Green, g (s)	35.8	51.0	73.6	17.9	33.1	48.1	22.6	47.5	65.4	15.0	39.5	75.3
Actuated g/C Ratio	0.24	0.34	0.49	0.12	0.22	0.32	0.15	0.32	0.44	0.10	0.26	0.50
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	819	1203	776	211	780	202	517	1120	069	343	490	1399
	c0.23	0.25	0.07	0.10	c0.20	0.04	c0.12	0.11	0.03	0.07	c0.12	0.07
v/s Ratio Perm			0.15			0.08			0.08			0.07
v/c Ratio	0.94	0.75	0.46	0.82	0.93	0.36	0.80	0.34	0.25	0.71	0.44	0.28
Uniform Delay, d1	56.1	43.8	25.1	64.4	57.2	39.1	61.5	39.2	26.8	65.4	46.1	21.6
Progression Factor	0.97	1.22	1.51	1.00	1.00	1.00	1.13	0.78	1.39	1.23	0.83	99.0
Incremental Delay, d2	16.1	2.2	0.1	20.0	17.1	0.5	7.9	0.8	0.1	9.6	2.8	0.0
Delay (s)	9.07	22.8	37.9	84.4	74.3	39.3	77.7	31.2	37.2	86.1	41.0	14.4
Level of Service	ш	ш	۵	ш	ш	۵	ш	O	٥	ш	۵	В
Approach Delay (s)		57.1			68.5			91.6			40.8	
Approach LOS		ш			ш			D			Ω	
Intersection Summary												
HCM 2000 Control Delay			55.7	H	CM 2000	HCM 2000 Level of Service	Service		Е			
HCM 2000 Volume to Capacity ratio	ratio		97.0									
Actuated Cycle Length (s)			150.0	S	im of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization			78.5%	೨	U Level	ICU Level of Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Existing Conditions Timing Plan: AM Peak Period

Movement EBI EBI EBI WBI WBI WBI NBI NBI NBI SBI			l										
Particulations		1	†	<u> </u>	/	ţ	4	•	—	•	۶	→	•
Ovirigurations	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (verhit) 0 1263 0 0 1873 126 0 0 236 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations		‡			4413				*-			*-
Volume (Verlith) 0 1843 0 1873 126 0 236 0 0 Control Free Free Yeld 236 0 0 201 Control G93 0.93	Traffic Volume (veh/h)	0	1263	0	0	1873	126	0	0	236	0	0	52
Ontrol Free Free Yield Stop Fount Factor 0.98 0.93	Future Volume (Veh/h)	0	1263	0	0	1873	126	0	0	236	0	0	52
Heart Factor 193 093 093 093 093 093 093 093 093 093 0	Sign Control		Free			Free			Yield			Stop	
Hour Factor 093 093 093 093 093 093 093 093 093 093	Grade		%0			%0			%0			%0	
ribon rale (riph) 0 1358 0 2014 135 0 254 0 0 stants rish and strates rish inth (i) (ii) (iii) (Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
width (f) None None None Addition (action) Addit	Hourly flow rate (vph)	0	1358	0	0	2014	135	0	0	254	0	0	26
Witch (II) Witch (III) None None <td>Pedestrians</td> <td></td>	Pedestrians												
In Bockage In Italy In Ital	Lane Width (ft)												
In Blockage furnifiere (eth) In Once In Storage veh) In Storage veh In Storage ve	Walking Speed (ft/s)												
fund flare (veh) None	Percent Blockage												
In type In State with In State	Right turn flare (veh)												
na storage veh) am signate (h) am signate (h) am signate (h) am signate (h) atgat conf vol a	Median type		None			None							
lange (i) 1231 0,77 0,77 0,77 0,77 0,77 0,77 0,77 0,7	Median storage veh)												
Annotation of the property o	Upstream signal (ft)		1231										
Annicling yolume 2149 1358 2085 3507 679 2760 3440 atgge 5 conf vol atgge 1 conf vol atgge 1 conf vol atgge 2 conf vol atgge 2 conf vol atgge 2 conf vol atgge 3 conf vol atgge 4 at 3 at	pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
lage 1 conf vol sige 2 conf vol stage 1 conf vol stage 1 conf vol stage 2 conf vol stage 3	vC, conflicting volume	2149			1358			2085	3507	619	2760	3440	739
stage 2 cont vol stage 2 cont vol stage 2 cont vol stage 2 cont vol stage 3 soft 3 sof	vC1, stage 1 conf vol												
March Marc	vC2, stage 2 conf vol												
type (s) 4.1 4.1 7.5 6.5 6.9 7.5 6.5 stage (s) 2.2 2.2 3.5 4.0 3.3 3.5 4.0 100 <t< td=""><td>vCu, unblocked vol</td><td>2149</td><td></td><td></td><td>880</td><td></td><td></td><td>1819</td><td>3655</td><td>က</td><td>2691</td><td>3568</td><td>739</td></t<>	vCu, unblocked vol	2149			880			1819	3655	က	2691	3568	739
stage (s) 2.2 2.2 2.2 2.2 2.2 3.5 4.0 3.3 3.5 4.0 9 acity (ve/h') 2.47 9 acit Lens # EB 1 EB 2 WB 1 WB 2 WB 3 NB 1 SB 1 For Land # For	tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
22 22 3.5 4.0 3.3 3.5 4.0	tC, 2 stage (s)												
100	tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
EB1 EB2 WB1 WB2 WB3 NB1 SB1 679 679 806 806 538 254 56 0 0 0 0 135 254 56 1700 1700 1700 1700 1700 836 360 0 0 0 0 0 13 254 56 (tt) 0 0 0 0 0 13 2 14 0 0 0 0 0 0 112 168 10 0 0 0 0 0 112 168 10 0 0 0 0 0 112 168 10 0 0 0 0 0 112 168 10 0 0 0 0 0 112 168 10 0 0 0 0 0 0 112 168 10 0 0 0 0 0 0 112 168 10 0 0 0 0 0 0 112 168 10 0 0 0 0 0 0 112 168 10 0 0 0 0 0 0 0 112 168 10 0 0 0 0 0 0 0 0 112 168 10 0 0 0 0 0 0 0 0 112 168 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	b0 dueue free %	100			100			100	100	70	100	100	8
EB 1 EB 2 WB1 WB 2 WB 1 SB 1	cM capacity (veh/h)	247			265			32	4	836	9	4	390
(f) 679 806 806 538 254 56 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
(f) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Total	619	619	908	908	538	254	26					
(f) 0 0 0 135 254 56 1700 1700 1700 1700 1300 836 386 (f) 0 40 0 40 1700 1700 130 031 0.16 (f) 0 0 0 0 0 0 32 14 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 0.0 11.2 16.8	Volume Left	0	0	0	0	0	0	0					
1700 1700 1700 1700 836 360 (ff) 0.40 0.47 0.47 0.32 0.30 0.16 (ff) 0.0 0.0 0.0 0.0 0.112 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 0.0 11.2 168 0.0 0.0 0.0 0.0 0.0 0.0 11.2 168	Volume Right	0	0	0	0	135	254	26					
(ff) 0.40 0.47 0.47 0.32 0.30 0.16 (ff) 0.0 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 11.2 16.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	cSH	1700	1700	1700	1700	1700	836	360					
(f) 0 0 0 0 0 32 14 14 14 15 16 15 16 15 16 15 16 15 16 15 16 15 16 16 16 16 16 16 16 16 16 16 16 16 16	Volume to Capacity	0.40	0.40	0.47	0.47	0.32	0.30	0.16					
0.0 0.0 0.0 0.0 11.2 16.8 B C	Onene Length 95th (ft)	0	0	0	0	0	32	14					
0.0 0.0 11.2 16.8 B C B C Int 1.0 1.0 I C Level of Service	Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.2	16.8					
0.0 0.0 11.2 16.8 B C B C y Utilization 56.2% ICU Level of Service	Lane LOS						В	ပ					
B C mmary	Approach Delay (s)	0.0		0.0			11.2	16.8					
1.0 56.2% ICU Level of Service	Approach LOS						В	ပ					
1.0 56.2% ICU Level of Service	Intersection Summary												
56.2% ICU Level of Service	Average Delay			1.0						4			
	Intersection Capacity Utiliza	ation		26.2%	೨	U Level c	1 Service			m			

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station 7: Balboa EB Ramps & Balboa Ave

Existing Conditions Timing Plan: AM Peak Period

	1	†	<i>></i>	\	ļ	✓	•	•	•	ၨ	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ	æ		‡				æ			ĸ
Traffic Volume (veh/h)	0	1096	262	0	1408	0	0	0	269	0	0	290
Future Volume (Veh/h)	0	1096	262	0	1408	0	0	0	569	0	0	290
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1191	285	0	1530	0	0	0	292	0	0	315
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					634							
pX, platoon unblocked	0.70						0.70	0.70		0.70	0.70	0.70
vC, conflicting volume	1530			1191			1956	2721	269	2126	2721	765
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	910			1191			1516	2603	269	1757	2603	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
po dueue free %	10			100			100	100	32	100	100	26
cM capacity (veh/h)	523			582			34	11	447	13	11	763
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	269	269	285	765	765	292	315					
Volume Left	0	0	0	0	0	0	0					
Volume Right	0	0	285	0	0	292	315					
cSH	1700	1700	1700	1700	1700	447	763					
Volume to Capacity	0.35	0.35	0.17	0.45	0.45	0.65	0.41					
Queue Length 95th (ft)	0	0	0	0	0	114	21					
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	27.0	13.0					
Lane LOS						٥	В					
Approach Delay (s)	0.0			0.0		27.0	13.0					
Approach LOS						۵	В					
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization	tion		63.5%	⊴	J Level o	ICU Level of Service			В			
Analysis Period (min)			15									

KHA HCM Unsignalized Intersection Capacity Analysis

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Existing Conditions Balboa Transit Station

8: Balboa Ave & Moraga Ave	oraga A	\ V					Timing Plan: AM Peak Period
	1	1	ţ	√	•	•	
21.02	Ē	. E		COM	. 5		
Lane Group	EBL	EBI	WBI	WBK	SBL	SBK	
Lane Group Flow (vph)	341	1042	1201	82	104	281	
v/c Ratio	0.53	0.42	0.78	0.12	0.42	09.0	
Control Delay	31.8	5.3	22.0	0.9	37.5	10.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.8	5.3	22.0	0.9	37.5	10.8	
Queue Length 50th (ft)	69	85	226	9	42	0	
Queue Length 95th (ft)	141	141	376	32	109	71	
Internal Link Dist (ft)		554	3203		201		
Turn Bay Length (ft)	215			250	155		
Base Capacity (vph)	1469	3526	2947	1328	1010	1024	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.23	0.30	0.41	90.0	0.10	0.27	
Intersection Summary							

Synchro 9 Report Page 13

KHA Oueues

Balboa Transit Station 8: Balboa Ave & Moraga Ave

Existing Conditions Timing Plan: AM Peak Period

10.3 10.3 0.14 5.6 2.0 224 0.03 0.18 27.4 1.00 0.1 27.5 C 99 99 1900 5.6 1.00 0.95 1770 0.95 104 0 10.3 10.3 0.14 5.6 2.0 251 c0.06 0.41 28.4 1.00 0.4 28.8 C C C C 81 81 81 1900 6.5 1.00 1.00 1.00 1.00 1.00 1.00 35 85 85 32.0 32.0 0.44 6.5 3.9 698 0.03 0.07 11.7 1.00 0.1 11.7 32.0 32.0 0.44 6.5 3.9 1562 c0.34 0.77 1.00 2.5 2.5 19.6 B 41141 1141 1141 1900 6.5 0.95 1.00 1.00 3539 1.00 3539 0.95 ΑĀ 1201 1042 Ϋ́ 50.9 50.9 0.70 5.7 4.8 2484 0.29 0.42 4.6 1.00 0.2 4.8 A A A B EBL 324 324 324 1900 4.4 0.97 1.00 0.95 3433 0.95 3413 0.53 26.5 1.00 0.4 26.8 Prot 5 13.7 13.7 0.19 4.4 2.0 648 co.10 341 Lane Configurations
Traffic Volume (vph)
feater Volume (vph)
feater Volume (vph)
feater (vph)
Total Lost time (s)
Lane Util Fador
Fit Protected
Sald: Flow (prh)
Peak-hour factor, PHF
Adj. Flow (prh)
Lane Group Flow (vph) Turn Type
Protected Phases
Protected Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Railo
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
vs Railo Prot
vs Railo Prot
vc Railo Prot
vc Railo Progression Factor Incremental Delay, d2 Delay (s) Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1

KHA HCM Signalized Intersection Capacity Analysis

16.5 B

Sum of lost time (s) ICU Level of Service

16.2 0.64 72.5 60.4%

HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cyde Length (s)
Intersection Capacity Utilization
Analysis Period (inn)
c Critical Lane Group

ntersection Summary

HCM 2000 Level of Service

Balboa Transit Station 9: Clairemont Dr & Balboa Ave

Existing Conditions Timing Plan: AM Peak Period

50.0 667 0.82 50.0 0.0 50.0 234 368 860

175 0.70 74.8 0.0 74.8 149

382 382 0.54 26.0 0.0 26.0 181

370 370 0.51 52.9 0.0 52.9 152 248 1350

160 0.68 75.8 0.0 75.8 136 252

986 0.74 41.0 0.0 41.0 384 571 630

387 0.72 65.4 0.0 65.4 169 271

1016 0.85 50.7 0.0 50.7 430 639 3203

239 0.63 69.5 0.0 69.5 105 181

11114 0 0 0.60

0 0 0.59

0 0 0.48

200 413 0 0 0 0 0

120

100

1101

1671

220 801

1654

Lane Group

Lane Group Flow (vph)

vv (Ratio
Control Delay
Control Delay
Couteue Delay
Total Delay
Oueue Length 50th (ft)
Internal Link Dist (ft)
Internal Link Dist (ft)
Base Capacity (vph)
Stanvation Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

240 801 0 0 0 0

Intersection Summary

Balboa Transit Station 9: Clairemont Dr & Balboa Ave

Existing Conditions Timing Plan: AM Peak Period

Movement EBI API AP													
10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
100 208 815 649 337 768 940 139 322 332 152 271 1900	Lane Configurations	**	4₽		1	4₽		F	₩	K	F	4₩	
1906 1906 1906 1906 1909	Traffic Volume (vph)	208	815	69	337	168	06	139	322	332	152	271	310
1900 1900	Future Volume (vph)	208	815	69	337	168	06	139	322	332	152	271	31(
44 57 44 64 44 53 44 44 53 100 0.95 0.97 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 1.00 100 0.95 1.00 0.95 1.00 0.95 1.00 100 0.95 1.00 0.95 1.00 0.95 1.00 100 0.95 1.00 0.95 1.00 0.95 1.00 100 0.95 1.00 0.95 1.00 0.95 1.00 100 0.95 1.00 0.95 1.00 0.95 1.00 100 0.95 0.95 0.95 1.00 0.95 1.00 100 0.95 0.95 0.95 1.00 0.95 1.00 100 0.95 0.95 0.95 1.00 0.95 1.00 100 0.95 0.95 0.95 1.00 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 0.95 0.95 100 0.95 0.95 0.95 100 0.95 0.95 0.95 100 0.95 0.95 0.95 100 0.95	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 100	Total Lost time (s)	4.4	5.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
100 099	Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1:00	1.00	0.95	
0.95 1.00 0.95 0.95 1.00 0.95	Ft	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.92	
1343 3498 3433 3484 1770 3539 1583 1770 3256 1343 3498 3433 3484 1770 3539 1583 1770 3256 1343 3498 3433 3484 1770 3539 1583 1770 3256 145 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1:00	0.95	1.00	
0.95 1.00 1.00 1.00	Satd. Flow (prot)	3433	3498		3433	3484		1770	3539	1583	1770	3256	
He 087 087 087 087 087 087 087 087 087 087	Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
HF 087 087 087 087 087 087 087 087 087 087	Satd. Flow (perm)	3433	3498		3433	3484		1770	3539	1583	1770	3256	
Prof. NA Prof. NA	Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
ph) 29 1013 0 87 982 0 6 90 175 175 175 175 175 175 175 175 175 175	Adj. Flow (vph)	239	937	79	387	883	103	160	370	382	175	311	320
ph) 239 1013 0 387 982 0 160 370 313 175 Fot NA Prof NA Prof NA Prof Prof Fot NA Prof NA Prof NA Prof Prof Fot 46.3 21.3 51.9 180 280 49.3 19.2 S) 15.0 46.3 21.3 51.9 180 280 49.3 19.2 S) 15.0 46.3 21.3 51.9 180 280 49.3 19.2 S) 15.0 46.3 21.3 51.9 180 280 49.3 19.2 S) 1.1 0.1 0.19 0.13 0.13 0.13 0.14 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 <t< td=""><td>RTOR Reduction (vph)</td><td>0</td><td>က</td><td>0</td><td>0</td><td>4</td><td>0</td><td>0</td><td>0</td><td>69</td><td>0</td><td>115</td><td>_</td></t<>	RTOR Reduction (vph)	0	က	0	0	4	0	0	0	69	0	115	_
(s) 150 46.3 21.3 51.9 180 280 49.3 19.2 8 1 7 8 8 1 7 8 8 1 7 8 8 1 7 8 8 1 7 8 8 1 7 8 8 1 8 8 1 7 8 8 1 8 8 1 8 1	Lane Group Flow (vph)	239	1013	0	387	982	0	160	370	313	175	552	
5	Tum Type	Prot	NA		Prot	NA		Prot	NA	vo+mq	Prot	¥	
(s) 150 46.3 21.3 51.9 180 280 49.3 19.2 (s) 15.0 46.3 21.3 51.9 180 280 49.3 19.2 (s) 15.0 46.3 21.3 51.9 180 280 49.3 19.2 (s) 15.0 46.3 21.3 51.9 180 280 49.3 19.2 (s) 15.0 4.4 5.7 4.4 6.4 6.4 4.4 5.3 4.4 4.4 5.3 4.4 4.4 5.3 4.4 4.4 5.3 4.4 4.4 5.3 4.4 4.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Protected Phases	2	2		-	9		3	∞	_	7	4	
(s) 15.0 46.3 21.3 51.9 18.0 28.0 49.3 19.2 21.3 51.9 18.0 28.0 49.3 19.2 21.3 51.9 18.0 28.0 49.3 19.2 21.3 51.9 18.0 28.0 49.3 19.2 21.3 51.9 18.0 28.0 49.3 19.2 21.3 51.9 18.0 28.0 49.3 19.2 21.3 51.9 18.0 28.0 49.3 19.2 21.3 52.0 3.0 2.1 0.37 0.14 4.4 5.7 4.4 6.4 4.4 5.3 4.4 4.4 5.1 3.2 2.0 3.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Permitted Phases									∞			
s) 150 463 21.3 51.9 180 280 49.3 19.2 10.1 10.3 10.1 10.3 10.1 10.3 10.1 10.1	Actuated Green, G (s)	15.0	46.3		21.3	51.9		18.0	28.0	49.3	19.2	29.5	
0.11 0.34 0.16 0.39 0.13 0.21 0.37 0.14 2 0 2.0 3.24 5.7 4.4 6.4 6.4 5.3 4.4 4.4 3 2.0 2.0 2.0 2.0 2.0 2.0 3 82 1203 5.43 1343 2.85 736 5.79 252 0 0.07 0.29 0.011 0.28 0.09 0.10 0.09 0.10 0 0.43 0.84 0.71 0.73 0.68 0.50 0.54 0.69 5 7.1 40.8 53.7 35.4 55.5 47.1 33.7 54.9 5 7.1 40.8 53.7 35.4 55.5 47.1 33.7 54.9 1 0 0 100 100 100 100 100 1.00 1.00 1.	Effective Green, g (s)	15.0	46.3		21.3	51.9		18.0	28.0	49.3	19.2	29.5	
14 57 44 64 44 5.3 44 44 44 44 44 44 44	Actuated g/C Ratio	0.11	0.34		0.16	0.39		0.13	0.21	0.37	0.14	0.22	
3.5 2.0 3.0 2.0 2.4 2.0	Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
1203 543 1343 236 736 579 252 (0.2.2)	Vehicle Extension (s)	2.0	3.5		2.0	3.0		2.0	2.4	2.0	2.0	2.6	
C0.29 C0.11 0.28 0.09 0.10 c0.10 c 10.84 0.71 0.73 0.68 0.50 0.54 0.71 40.8 53.7 35.4 55.5 47.1 33.7 54.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 4.5 4.3 2.1 6.0 0.4 0.6 6.5 6.5 4.8 5.4 3.7 2.1 6.0 0.4 0.6 6.5 6.5 4.8 5.4 5.7 4.3 6.1 6.5	Lane Grp Cap (vph)	382	1203		543	1343		236	736	579	252	706	
0.84 0.71 0.73 0.68 0.50 0.54 0.69 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.50 0.54 0.69 0.54 0.50 0.74 0.6 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.55	v/s Ratio Prot	0.07	c0.29		c0.11	0.28		0.09	0.10	0.09	c0.10	c0.17	
1 084 071 073 0.68 0.59 0.54 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69	v/s Ratio Perm									0.11			
408 537 35.4 55.5 47.1 33.7 54.9 1 100 1.00 1.00 1.00 1.00 1.00 1.00 1 46.4 57.4 37.5 61.5 47.5 34.3 61.4 2	v/c Ratio	0.63	0.84		0.71	0.73		0.68	0.50	0.54	69.0	0.78	
100 100 100 100 100 100 100 100 100 100	Uniform Delay, d1	57.1	40.8		53.7	35.4		55.5	47.1	33.7	54.9	49.7	
5.6 3.7 2.1 6.0 0.4 0.6 6.5 46.4 57.4 37.5 61.5 47.5 34.3 61.4 48.9 E 43.1 44.4 D C E 48.9 43.1 44.4 D C E 7.0 5.7	Progression Factor	1.00	1.00		1.00	1.00		1.00	1:00	1.00	1.00	1.00	
46.4 57.4 37.5 61.5 47.5 34.3 61.4 48.9 E D E D C E 48.9 D D D 47.6 HCM 2000 Level of Service D 76.0% ICU Level of Service D	Incremental Delay, d2	2.3	2.6		3.7	2.1		0.9	0.4	9.0	6.5	2.5	
48.9 E D E D C E 48.9 43.1 44.4 C E D D D D D 47.6 HCM 2000 Level of Service D 0.79 Sum of lost time (s) 20.5 15.0% ICU Level of Service D 15.15	Delay (s)	59.4	46.4		57.4	37.5		61.5	47.5	34.3	61.4	22	
48.9 43.1 44.4 D	Level of Service	ш	٥		ш	٥		ш	٥	ပ	ш	ш	
D D D 47.6 HCM 2000 Level of Service 0.79 134.6 Sum of lost time (s) 76.0% ICU Level of Service 15	Approach Delay (s)		48.9			43.1			44.4			29.2	
47.6 HCM 2000 Level of Service 0.79 134.6 Sum of lost time (s) 76.0% ICU Level of Service 15	Approach LOS		٥			٥			٥			ш	
47.6 HCM 2000 Level of Service 0.79 0.79 134.6 Sum of lost time (s) 76.0% ICU Level of Service 15	Intersection Summary												
0.79 134.6 Sum of lost time (s) 76.0% ICU Level of Service 15	HCM 2000 Control Delay			47.6	H	SM 2000	Level of 9	Service		D			
134.6 Sum of lost time (s) 76.0% ICU Level of Service 15	HCM 2000 Volume to Cap;	acity ratio		0.79									
76.0% ICU Level of Service 15	Actuated Cycle Length (s)			134.6	ร	um of lost	time (s)			20.5			
Analysis Period (min) 15	Intersection Capacity Utiliz	ation		%0.97	೨	U Level o	of Service			۵			
	Analysis Doring (min)			L									

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KHA HCM Signalized Intersection Capacity Analysis

Existing Conditions
Timing Plan: AM Peak Period Balboa Transit Station 10: Olney St & Balboa Ave

10: Olney St & Balboa Ave	ooa Ave						liming Plan: AM Peak Period
	1	†	/	ļ	←	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	38	632	47	500	203	146	
v/c Ratio	0.15	0.50	0.18	0.15	0.46	0.32	
Control Delay	21.9	13.8	21.6	6.6	17.8	17.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.9	13.8	21.6	6.6	17.8	17.5	
Queue Length 50th (ft)	6	89	=	Ξ	40	31	
Queue Length 95th (ft)	34	132	40	44	102	81	
Internal Link Dist (ft)		1172		936	328	244	
Turn Bay Length (ft)	120		120				
Base Capacity (vph)	1326	3522	1326	3518	1527	1647	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.18	0.04	90:0	0.13	60.0	
Intersection Summary							

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KHA Queues

Balboa Transit Station 10: Olney St & Balboa Ave

Existing Conditions Timing Plan: AM Peak Period

Movement EBL EBT EBR WBL WB			t	•	-		,	_	_	_	L.	•	,
(chick) 7 4 4 5 1 7 4 1 4 9 2 75 3 3 (chick) 3 4 546 17 4 2 179 7 14 92 75 3 3 (chick) 3 4 546 17 42 179 7 14 92 75 3 3 (chick) 3 4 546 17 42 179 7 14 92 75 3 3 (chick) 3 4 4 51 900 1900 1900 1900 1900 1900 1900 19	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(vph) 34 546 17 42 179 7 14 92 75 3 (vph) 1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	r	₩		F	₩			4			4	
(v(ph)) 34 546 17 42 179 7 14 92 75 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Traffic Volume (vph)	34	546	17	42	179	7	14	92	75	က	122	2
pl) 1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	34	546	17	42	179	7	14	92	75	m	122	2
(\$) 44 5.1 44 5.0 4.9 (\$) 100 0.95 0.09 0.09 0.09 0.09 0.09 0.09 0.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 095 100	Total Lost time (s)	4.4	5.1		4.4	2.0			4.9			4.9	
100 100 100 0.99 0.94 1770 3523 1.00 0.95 1.00 1.00 1770 3523 1.770 3519 1.750 1.00 1770 3523 1.770 3519 1.750 1.00 1770 3523 1.770 3519 1.00 0.97 1770 3523 1.770 3519 1.00 0.97 1770 3523 1.770 3519 1.00 0.97 1770 3523 1.770 3519 1.00 0.97 18	Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
1,00 1,00	표	1.00	1.00		1.00	0.99			0.94			0.99	
1770 3523 1770 3519 1752 1770 3519 1775 1770 3523 1770 3519 1770 3	Fit Protected	0.95	1.00		0.95	1.00			1.00			1.00	
m) 095 100 095 100 097 m) 1770 3523 170 3519 1700 m, (vph) 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Satd. Flow (prot)	1770	3523		1770	3519			1752			1851	
m) 1770 3523 1770 3519 1700 9710 1770 3529 1870 1870 1870 1870 1870 1870 1870 1870	Fit Permitted	0.95	1.00		0.95	1.00			0.97			0.99	
γγ PHF 0.89	Satd. Flow (perm)	1770	3523		1770	3519			1700			1837	
National State 14	Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
γρή) 0 2 0 0 18 0 0 ww (γρή) 38 630 0 1 9 0 18 0 0 es Fot NA Pot NA Potm NA Potm es 1 0 1 0 1 0 0 es 3 1 2 1 6 8 4 es 3.5 17.2 10.5 9 0 2 alo 0.05 0.36 0.08 0.39 0.24 9 alo 0.05 0.36 0.08 0.39 0.24 4 alo 0.05 0.36 0.08 0.39 0.24 4 alo 0.05 0.34 1.40 1.40 1.40 1.40 (sp) 1 1 1.00 1.00 1.00 1.00 1.00 1.00 (sp) 1 1	Adj. Flow (vph)	38	613	19	47	201	œ	16	103	84	က	137	9
Prof. NA Prof. NA Perm NA Pe	RTOR Reduction (vph)	0	2	0	0	7	0	0	9	0	0	-	0
es Frot NA Prot NA Perm NA Perm es 5 2 1 6 8 4 es 1, G(s) 2.2 15.8 3.5 17.2 10.5 8 4 1, G(s) 2.2 15.8 3.5 17.2 10.5 10.5 4	Lane Group Flow (vph)	38	630	0	47	207	0	0	185	0	0	145	0
es 5 2 1 6 6 8 8 4 1, G(s) 2.2 15.8 3.5 17.2 10.5 1, g(s) 2.0 2.8 2.0 2.5 1, g(s) 2.0 2.8 2.0 2.0 1, g(s) 2.0 3.4 0.15 0.46 1, g(s) 1.1 1, g(s) 1.00 1, g(s) 1.2 0.3 0.5 0.0 0.3 1, g(s) 1.3 10.8 8.8 14.7 1, g(s) 1.4 10.8 10.8 1, g(s) 1.4 10.8 10.8 1, g(s) 1.4	Turn Type	Prot	NA		Prot	NA		Perm	N		Perm	¥	
es best of the control of the contro	Protected Phases	2	2		-	9			8			4	
1,0 (\$) 2.2 15.8 3.5 17.2 10.5 10.5 1.0 (\$) 2.2 15.8 3.5 17.2 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	Permitted Phases							∞			4		
10, 2, 15, 3, 5, 17, 10, 1	Actuated Green, G (s)	2.2	15.8		3.5	17.2			10.5			10.5	
alio 0.05 0.36 0.08 0.39 0.24 a(s) 4.4 5.1 4.4 5.0 4.9 a(s) 2.0 2.8 2.0 2.0 2.0 (whi) 88 1259 140 1369 403 (whi) 0.02 c0.18 c0.03 0.06 d.1 20.4 11.1 19.3 8.8 14.4 clor 1.00 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.5 0.0 0.3 a C B B A B A b A B A co C B B A B co C B B B	Effective Green, g (s)	2.2	15.8		3.5	17.2			10.5			10.5	
(kg) 4.4 5.1 4.4 5.0 4.9 on (s) 2.0 2.8 2.0 2.5 (kph) 88 1259 1.0 2.5 0.02 c0.18 c0.03 0.06 0.03 c0.04 d1 20.4 11.1 19.3 8.8 14.4 ctor 1.00 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.5 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.0 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 ctor 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.0 0.3 lay, d2 1.3 0.3 0.3 0.3 lay, d3 0.3 0.3 lay, d4	Actuated g/C Ratio	0.05	0.36		0.08	0.39			0.24			0.24	
No. Street Control	Clearance Time (s)	4.4	5.1		4.4	2.0			4.9			4.9	
(ph) 88 1259 140 1369 403 (ph) 0.02 c0.18 c.003 0.06 c.011 (ph) 0.43 0.50 0.34 0.15 0.46 (ph) 1.00 1.00 1.00 1.00 (ph) 1.00 1.00 1.00 1.00 (ph) 1.1 1.93 8.8 1.44 (ph) 1.0 1.00 1.00 0.3 (ph) 1.1 1.98 8.8 1.47 (ph) 1.2 1.1 1.08 8 (ph) 1.2 1.08 8 14.7 (ph) 1.2 1.08 8 8 (ph) 1.2 1.0 1.0 14.7 (ph) 1.2 1.0 1.4 1.4 (ph) 1.2 1.0 1.4 1.4 (ph) 1.2 1.4 1.4 1.4 (ph) 1.4 1.4	Vehicle Extension (s)	2.0	2.8		2.0	2.5			2.0			2.0	
0.02	Lane Grp Cap (vph)	88	1259		140	1369			403			436	
d1 20.4 11.1 19.3 8.8 14.4 ctor 1.00 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.5 0.0 0.3 2.1 0.3 0.5 0.0 0.3 2.1 0.3 0.5 0.0 0.3 y (s) C 12.0 1.0 1.0 1.0 1.0 1.0 mmany mmany mmany 12.4 HCM 2000 Level of Service B mmany 12.4 Sum of lost time (s) 14.4 Fig. 12.4 Sum of lost time (s) 14.4 MA 2 Sum of lost time (s) 14.4 Fig. 12.4 Sum of lost time (s) 14.4 MA 2 Sum of lost time (s) 14.4 MA 2 Sum of lost time (s) 14.4 A 1.9% 1.0 Level of Service A A 1.9% 1.0 Level of Service A A 1.9%	v/s Ratio Prot	0.02	c0.18		c0.03	90:0							
d1 20,4 11,1 19,3 8.8 14,7 14,4 14,4 14,4 15,4 14,4 15,4 14,4 10,4 10,4 10,4 10,4 10,4 10,4 10	v/s Ratio Perm								c0.11			80.0	
d1 20.4 11.1 19.3 8.8 14.4 ctor 1.00 1.00 1.00 1.00 1.00 lay, d2 1.2 0.3 0.5 0.0 0.3 e C B B A B y (s) 12.0 10.8 14.7 mmary Intro Delay 12.4 HCM 2000 Level of Service B Intro Capacidy ratio 0.47 Sum of lost time (s) 14.4 Intro Delay 12.4 HCM 2000 Level of Service B Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro O.47 Sum of lost time (s) 14.4 Intro Octobro Octobro O.47 Sum of lost time (s) 14.4	v/c Ratio	0.43	0.50		0.34	0.15			0.46			0.33	
ctor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	20.4	11.1		19.3	8.8			14.4			14.0	
lay, d2 1,2 0,3 0,5 0,0 0,3 (1,4 1,4 1,4 1,4 1,4 1,4 1,4 1,4 1,4 1,4	Progression Factor	1.00	1.00		1.00	1.00			9.1			1.00	
114 198 88 147	Incremental Delay, d2	1.2	0.3		0.5	0.0			0.3			0.2	
S	Delay (s)	21.6	11.4		19.8	8.8			14.7			14.1	
Y(s) 12.0 10.8 14.7 Inmany B B B Into Delay 12.4 HCM 2000 Level of Service B Into Delay 0.47 Sum of lost time (s) 14.4 Length (s) 4.2 Sum of lost time (s) 14.4 Apacity Utilization 4.7 CU Level of Service A Apacity Utilization 4.7 CU Level of Service A	Level of Service	ပ	В		В	V			B			B	
B B B B B B B B B B B B B B B B B B B	Approach Delay (s)		12.0			10.8			14.7			14.1	
12.4 HCM 2000 Level of Service 0.47 44.2 Sum of lost time (s) 47.9% ICU Level of Service 1.5	Approach LOS		В			Ω			Ω			B	
12.4 HCM 2000 Level of Service 0.47 44.2 Sum of lost time (s) 47.9% ICU Level of Service	Intersection Summary												
0.47 44.2 Sum of lost time (s) 47.9% ICU Level of Service	HCM 2000 Control Delay			12.4	¥	SM 2000	Level of S	Service		В			
) 44.2 Sum of lost time (s) zation 47.9% ICU Level of Service	HCM 2000 Volume to Capaci	ity ratio		0.47									
Utilization 47.9% ICU Level of Service	Actuated Cycle Length (s)			44.2	S	ım of lost	time (s)			14.4			
Analysis Dorind (min)	Intersection Capacity Utilizati	lon		47.9%	⊇	U Level o	f Service			V			
Alidysis Pellou (IIIII)	Analysis Period (min)			75									

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station

Existing Conditions

Existing Conditions Timing Plan: AM Peak Period

†

Balboa Transit Station 11: Olney St & Grand Ave

11: Olney St & Grand Ave	nd Ave					□ Iii	EXISTING CONDITIONS Timing Plan: AM Peak Period
	•	†	/	ţ	←	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	13	1412	26	583	423	193	1
v/c Ratio	0.14	0.77	0.43	0.28	0.72	1.11	
Control Delay	51.1	25.4	51.6	12.7	29.0	137.6	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0:0	
Total Delay	51.1	25.4	51.6	12.7	29.0	137.6	
Queue Length 50th (ft)	6	403	38	75	167	~150	
Oueue Length 95th (ft)	53	534	m80	173	285	#294	
Internal Link Dist (ft)		276		1076	315	328	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	185	1826	235	2080	230	174	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.77	0.24	0.28	0.72	1.11	
Intersection Summary							

- Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

Queue shown is maximum after two cycles.

Oueue shown is maximum after two cycles.

The cycles are the percentile queue is metered by upstream signal.

Marcheller												F	0
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBI	SBR
12 1330	Lane Configurations	<u>"</u>	#		F	₩			4			4	
12 1330	Traffic Volume (vph)	12	1330	Ξ	53	497	22	10	98	302	128	21	4
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	12	1330	Ξ	23	497	22	10	98	302	128	21	4
14 51 44 4.9 4	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0,95 1,00 0,95 1,00	Total Lost time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
100 100 0.08 0.99 1.00 1.	Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
1,00 1,00	Ft	1.00	1.00		1.00	0.98			0.00			1.00	
1770 3535 1770 3485 1670 1670 1770 3535 1770 3485 1677 1677 1770 3535 1770 3485 1677 1677 1770 3535 1770 3485 1677 1770 3535 1770 3485 1677 1770 3535 1770 3485 1677 1770 3535 1770	Fit Protected	0.95	1.00		0.95	1.00			1.00			0.97	
1770 3535 100 0.99 1.07 1.05 1	Satd. Flow (prot)	1770	3535		1770	3485			1670			1795	
1770 3535 1770 3485 1667 195 095 095 095 095 095 095 19	Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.32	
13 1412 0.95 0.	Satd. Flow (perm)	1770	3535		1770	3485			1657			265	
13 1400 12 56 523 60 11 91 321 135 13 1400 12 56 574 60 107 0 0 13 1400 12 56 576 0 0 107 0 0 14 14 14 14 1539 6.8 595 309 14 539 6.8 595 309 4.9 14 539 6.8 595 309 4.9 15 14 539 6.8 595 309 16 17 13 1956 149 149 17 13 1956 100 100 18 17 113 1956 100 19 100 100 100 100 17 13 195 122 32.9 100 100 100 115 100 17 13 144 35.3 17 18 19 12 18 19 12 19 10 10 10 10 10 10 10 10 10	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
1	Adj. Flow (vph)	13	1400	12	26	523	09	Ξ	91	321	135	24	4
13 1412 0 56 576 0 0 316 0 0	RTOR Reduction (vph)	0	0	0	0	7	0	0	107	0	0	-	0
Prof NA Prof NA Perm NA Perm 5 2 1 6 8 4 1.4 53.9 6.8 59.5 30.9 4 1.4 53.9 6.8 59.5 30.9 4 1.4 53.9 6.8 59.5 30.9 6 4.4 53.9 6.8 59.5 30.9 6 4.4 5.1 0.6 0.56 0.29 0.29 0.29 2.0 5.4 2.0 5.5 2.0 2.0 2.0 2.0 5.4 2.0 5.5 2.0 2.0 2.0 2.0 5.4 2.0 5.5 2.0 2.0 2.0 5.2 0.7 0.13 0.17 0.19 0.65 2.0 5.2 0.7 0.5 0.20 0.29 0.65 2.0 1.0 0.65 2.0 1.0 0.65 2.0 1.0 0.	Lane Group Flow (vph)	13	1412	0	26	576	0	0	316	0	0	192	0
5 2 1 6 8 4 14 539 6.8 59.5 30.9 4 14 53.9 6.8 59.5 30.9 6.8 30.9 14 53.9 6.8 59.5 30.9 6.29 6.29 20 1.1 4.4 4.9 4.9 4.9 4.9 2.0 5.1 4.4 4.9 4.9 4.9 4.9 4.9 2.0 5.2 5.0 5.5 2.0 5.4 4.9 </td <td>Tum Type</td> <td>Prot</td> <td>NA</td> <td></td> <td>Prot</td> <td>NA</td> <td></td> <td>Perm</td> <td>NA</td> <td></td> <td>Perm</td> <td>M</td> <td></td>	Tum Type	Prot	NA		Prot	NA		Perm	NA		Perm	M	
1.4 53.9 6.8 59.5 30.9 1.4 53.9 6.8 59.5 30.9 1.4 53.9 6.8 59.5 30.9 4.4 5.1 4.4 4.9 0.29 4.4 5.1 4.4 4.9 4.9 4.4 5.1 4.4 4.9 4.9 2.3 1797 113 1956 483 0.01 c.040 c.03 0.17 0.19 0.5 0.7 1.2 0.2 0.65 5.0 2.3 47.9 1.2.2 32.9 1.00 1.00 0.90 1.15 1.00 1.00 1.00 0.90 1.15 1.00 1.00 1.00 0.90 1.15 0.0 6.95 2.4 35.3 1.1 6.95 3.5 1.70 35.3 1.1 action 1.00 1.00 1.00 1.00 action 2.3 1.70 35.3 1.1 action 2.3 1.70 35.3 1.1 action 2.0 2.0 2.4 1.00 action 3.2 4.4 3.1 4.4	Protected Phases	2	2		-	9			80			4	
14 53.9 6.8 59.5 30.9 0.01 63.9 6.8 59.5 30.9 0.01 0.05 0.6 0.6 0.29 4.4 5.1 4.4 4.9 4.9 4.9 2.0 5.4 2.0 5.5 2.0 2.1 1797 113 1956 483 0.01 0.040 0.03 0.17 0.19 0.57 0.79 0.50 0.29 0.65 52.0 21.3 47.9 12.2 32.9 1.00 1.00 0.90 1.15 1.00 1.16 0.90 1.15 1.00 2.4 4.3 14.4 35.3 1.10 2.5 2.4 4.3 14.4 35.3 1.10 2.6 B B D D 2.7 4.3 14.4 35.3 1.10 2.8 HCM 2000 Level of Service C 2.9 Sum of lost time (s) 14.4 2.2 2.1 1.00 2.3 1.00 1.00 0.87 1.10 0.40 2.4 4.3 1.4 35.3 1.4 2.5 3 1.00 1.00 0.90 1.15 1.00 2.5 3 1.00 1.00 0.90 1.15 1.00 2.5 3 1.00 1.15 1.00 2.6 B B D D 2.7 A 1.00 1.00 1.10 1.10 1.10 1.10 1.10 1.	Permitted Phases							∞			4		
1.4 53.9 6.8 59.5 30.9 0.01 051 0.06 0.56 0.29 0.20 1.20 0.26 0.29 0.20 5.4 2.0 5.5 2.0 0.21 1.3 1956 483 0.01 0.03 0.17 0.19 0.05 0.79 0.50 0.29 0.65 0.05 0.13 47.9 1.2 32.9 0.10 0.100 0.100 0.15 0.04 0.5 24.9 44.3 14.4 35.3 1 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.65 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	Actuated Green, G (s)	1.4	53.9		8.9	59.5			30.9			30.9	
0.01 0.51 0.06 0.56 0.29 4.4 5.1 4.4 4.9 4.9 2.0 5.1 4.4 4.9 2.1 1797 113 1956 483 0.01 0.040 0.03 0.17 0.19 0.57 0.79 0.50 0.29 0.65 5.20 21.3 47.9 12.2 32.9 1.00 1.00 0.90 1.15 1.00 1.00 0.90 1.15 1.00 1.00 0.90 1.15 1.00 2.4 4.3 14.4 35.3 1 E C B B B D C B Sum of lost time (s) 14.4 2.24 2.32.9 HCM 2000 Level of Service C 2.25.3 10.00 2.27 0.87 17.0 85.3 2.29 HCM 2000 Level of Service C 2.25.3 10.00 2.27 0.87 17.0 10.0 2.28 17.0 10.0 2.29 17.0 10.0 2.20 17.0 10.0 10.0 2.20 17.0 10.0 10.0 2.20 17.0 10.0 10.0 2.20 17.0 10.0 10.0 2.20 17.0 10.0 10.0 2.20 17.0 10.0 10.0 2.20 17.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	Effective Green, g (s)	1.4	53.9		8.9	59.5			30.9			30.9	
4.4 5.1 4.4 4.9 4.9 2.0 5.4 5.5 2.0 2.3 179 2.0 5.5 2.0 2.3 179 1.3 1956 483 0.01 0.04 0.03 0.17 0.19 0.0 0.57 0.79 0.50 0.29 0.65 0.65 5.20 2.13 47.9 1.2 3.2.9 1.00 1.00 1.00 0.90 1.15 1.00 1.00 1.76 3.5 44.3 1.4 35.3 1.1 6.95 2.6 B B D 1.00 6.75 2.5 B HCM 2000 Level of Service C C 2.5.3 1.70 35.3 1.1 A A 1.1 2.5.3 1.06 0.87 ICU Level of Service C C C 2.5.3 1.06 0.87 ICU Level of Service E E E </td <td>Actuated g/C Ratio</td> <td>0.01</td> <td>0.51</td> <td></td> <td>90:0</td> <td>0.56</td> <td></td> <td></td> <td>0.29</td> <td></td> <td></td> <td>0.29</td> <td></td>	Actuated g/C Ratio	0.01	0.51		90:0	0.56			0.29			0.29	
2.0 5.4 2.0 5.5 2.0 2.3 1797 113 1956 483 0.01 c.0.40 c.0.03 0.17 0.19 0.57 0.79 0.50 0.29 0.65 5.20 21.3 47.9 12.2 32.9 1.00 0.90 1.15 1.00 1.16 3.5 1.12 0.4 2.4 6.9.5 24.9 44.3 14.4 35.3 E C D B B D D C Sadty ratio 0.87 22.3 HCM 2000 Level of Service C sadty ratio 0.87 calty ratio 0.87	Clearance Time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
23 1797 113 1956 483 001 c0.40 c0.03 0.17 0.19 057 079 050 0.29 0.65 520 21.3 479 12.2 32.9 1.00 1.00 90 1.15 1.00 1.76 3.5 14 2 2.4 69.5 24.9 44.3 14.4 35.3 E C D B B D D C C D B D D C C B C D B C D C C D C D C D C C D C D C D C C C D C D	Vehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
0.01 c.0.40 c.0.03 0.17 0.19 0.57 0.79 0.50 0.29 0.65 52.0 21.3 47.9 12.2 32.9 1.00 1.00 0.90 1.15 1.00 1.10 1.00 1.00 1.15 1.00 1.10 1.00 1.15 1.00 1.10 1.00 1.15 1.00 1.10 1.10 1.10 1.25.3 1.14 3.5.3 1.20 B B D D 1.20 B D 2.25.3 1.10 1.20 B D 2.20 B	Lane Grp Cap (vph)	23	1797		113	1956			483			174	
0.57 0.79 0.50 0.29 0.19 5.20 21.3 47.9 12.2 32.9 0.65 5.20 21.3 47.9 12.2 32.9 1.00 1.00 0.90 1.15 1.00 1.76 3.5 1.2 0.4 2.4 6.5. 2.4 4.3 14.4 35.3 E C D B D D E C D B D D C D D D D D D D D D D D D D D D D D D D	v/s Ratio Prot	0.01	c0.40		c0.03	0.17							
0.57 0.79 0.50 0.29 0.65 52.0 21.3 47.9 12.2 32.9 1.00 0.90 11.5 1.00 17.6 3.5 1.2 0.4 2.4 69.5 24.9 44.3 14.4 35.3 E C D B B D C D B D D C ABOUT NOTING (S) 35.3 22.9 HCM 2000 Level of Service C 22.4 32.9 C C B B D D C C C C C C C C C C C C C C C C C C	v/s Ratio Perm								0.19			c0.32	
520 21.3 47.9 12.2 32.9 32.9 17.0 10.0 10.0 10.0 1.15 1.00 1.10 1.00 1.15 1.00 1.00 1.2 1.2 1.00 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.4 1.2 1.3 1.4 1.2 1.3 1.4 1.2 1.3	v/c Ratio	0.57	0.79		0.50	0.29			0.65			1.1	
1.00 1.00 0.90 1.15 1.00 1.00 1.15 1.00 1.00 1.15 1.00 1.00	Uniform Delay, d1	52.0	21.3		47.9	12.2			32.9			37.6	
17.6 3.5 1.2 0.4 2.4 69.5 24.9 44.3 14.4 35.3 E C D B D D C D B D D C B B D	Progression Factor	1.00	1.00		06:0	1.15			1.00			1.00	
69.5 24.9 44.3 14.4 35.3 E C D B B D C D C D B D C D C D C D C C C C C C C C C C C C C	Incremental Delay, d2	17.6	3.5		1.2	0.4			2.4			99.2	
E C D B B D S S S S S S S S S	Delay (s)	69.5	24.9		44.3	14.4			35.3			136.7	
25.3 17.0 35.3 C B D D 32.9 HCM 2000 Level of Service C acity ratio 0.87 Sum of lost time (s) 14.4 zation 90.2% ICU Level of Service E	Level of Service	ш	ပ		٥	В			۵			ш	
2.29 HCM 2000 Level of Service 3.2.9 HCM 2000 Level of Service 0.87 2 and fost time (s) 2.2 (c) 2.2 (c	Approach Delay (s)		25.3			17.0			35.3			136.7	
32.9 HCM 2000 Level of Service 0.87 0.87 106.0 Sum of lost time (s) 2.29 10.1 Level of Service 1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	Approach LOS		S			В			Ω			ш	
32.9 HCM 2000 Level of Service 0.87 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Intersection Summary												
20dity ratio 0.87 106.0 Sum of lost time (s) zation 90.2% ICU Level of Service 15	HCM 2000 Control Delay			32.9	土	CM 2000	Level of :	Service		C			
106.0 Sum of lost time (s) zation 90.2% ICU Level of Service 15	HCM 2000 Volume to Capa	icity ratio		0.87									
Utilization 90.2% ICU Level of Service 15	Actuated Cycle Length (s)			106.0		um of lost	time (s)			14.4			
Analysis Period (min) 15	Intersection Capacity Utiliza	ation		90.2%	2	:U Level o	of Service			ш			
	Analysis Period (min)			15									

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 19

KHA Queues

Synchro 9 Report Page 20

Balboa Transit Station

Balboa Transit Station 12: Grand Ave & Culver St	n ⁄er St				Existing Conditions Timing Plan: AM Peak Period
	4	†	ţ	بر	
Lane Group	EBL	EBT	WBT	SBL	
Lane Group Flow (vph)	22	1934	727	216	
v/c Ratio	0.43	0.73	0.32	0.75	
Control Delay	0.09	9.6	8.8	56.0	
Queue Delay	0.0	0.4	0.2	0:0	
Total Delay	0.09	0.9	0.6	56.0	
Queue Length 50th (ft)	36	156	112	134	
Queue Length 95th (ft)	m52	m181	179	193	
Internal Link Dist (ft)		1076	211	186	
Turn Bay Length (ft)	22				
Base Capacity (vph)	185	2642	2256	434	
Starvation Cap Reductn	0	0	789	0	
Spillback Cap Reductn	0	273	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.30	0.82	0.50	0.50	
Intersection Summary					

m Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 12: Grand Ave & Culver St

Existing Conditions Timing Plan: AM Peak Period

																																				В		14.4	ပ		
`	SBR		39	39	1900								0.87	45	0	0																				Service					
٠	SBL	>	149	149	1900	4.9	1.00	0.97	96:0	1741	96:0	1741	0.87	171	10	206	Prot	4		16.9	16.9	0.16	4.9	2.0	277	c0.12		0.74	42.5	00.1	7.1		51.6	O		evel of S		time (s)	f Service		
1	WBR		110	110	1900								0.87	126	0	0																				HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	₩.	523	523	1900	4.9	0.95	0.97	1.00	3447	1.00	3447	0.87	601	12	715	NA	9		68.1	68.1	0.64	4.9	4.1	2214	0.21		0.32	8.5	16.0	4.0 7.0	A	8.2	۷		Н		S	⊇		
L	WBU	4	0	0	1900								0.92	0	0	0	Prot	_																		10.2	7.0	106.0	92.5%	15	
†	EBT	ŧ	1683	1683	1900	5.1	0.95	1.00	1.00	3539	1.00	3539	0.87	1934	0	1934	NA	2		79.1	79.1	0.75	5.1	4.2	2640	c0.55		0.73	7.5	0.50	- Y	A	6.4	۷							
•	EBL	r	48	48	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.87	22	0	22	Prot	2		8.9	8.9	90.0	4.4	2.0	113	0.03		0.49	47.9	3.15	5.0 5.0 5.0 5.0	ш					y ratio		Ę		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	감	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Inclemental Delay, uz Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 21

KHA Oueues

Balboa Transit Station 13: Lee St & Grand Ave

Existing Conditions

Balboa Transit Station 13: Lee St & Grand Ave

Existing Conditions Timing Plan: AM Peak Period

13: Lee St & Grand Ave	Ave				Timing Plan: AM Peak Period
	†	>	ţ	•	
Lane Group	EBT	WBL	WBT	NBL	
Lane Group Flow (vph)	1967	137	706	86	
v/c Ratio	0.81	99.0	0.23	0.57	
Control Delay	0.6	59.1	2.2	39.9	
Queue Delay	0.3	0.0	0.0	0.0	
Total Delay	9.4	59.1	2.2	39.9	
Queue Length 50th (ft)	103	8	88	35	
Queue Length 95th (ft)	#828	147	71	92	
Internal Link Dist (ft)	211		1401	337	
Turn Bay Length (ft)		400			
Base Capacity (vph)	2433	273	3023	545	
Starvation Cap Reductn	105	0	0	0	
Spillback Cap Reductn	0	0	40	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.84	0.50	0.24	0.18	

Intersection Summary
95th percentile volume exceeds capacity, queue may be bruger.

Queue shown is maximum after two cycles.

																																					æ A		14.2	U	
•	NBR		42	42	1900								0.00	47	0 0	O																					HCM 2000 Level of Service		time (s)	of Service	
•	NBL	>	46	46	1900	4.9	1.00	0.94	0.97	1698	0.97	1698	0.00	21	42	20	Prot	∞		7.2	7.2	0.07	4.9	2.0	115	c0.03		0.49	47.6	1:00	1.2	48.8	٥	48.8	O		ICM 2000		Sum of lost time (s)	CU Level of Service	
ţ	WBT	*	635	635	1900	5.4	0.95	1.00	1.00	3539	1.00	3539	0.00	90/	0 /02	90/	A	9		88.5	88.5	0.83	5.4	4.4	2954	0.20		0.24	1.8	1:00	0.2	2.0	V	6.6	A		Н		S	_	
/	WBL	je-	123	123	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.00	137	127	13/	Prot			12.5	12.5	0.12	4.4	2.0	208	c0.08		99.0	44.7	1:00	2.6	50.3					9.5	0.77	106.0	72.8%	-
*	EBR		34		1900								0.00	38	0 0	0																									
†	EBT	₩	1736	1736	1900	4.9	0.95	1.00	1.00	3529	1.00	3529	06.0	1929	- 70,	1,000	A	2		72.1	72.1	0.68	4.9	4.0	2400	00.56		0.82	12.2	0.42	2.3	7.4	A	7.4	A		٨	apacity ratio	S)	ilization	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	KIOK Reduction (vph)	Lane Group Flow (vpn)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Calculate Desired

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

8 7

Balboa Transit Station 14: Grand Ave & Figueroa Blvd

Existing Conditions Timing Plan: AM Peak Period

Balboa Transit Station	tion			Existing Conditions
14: Grand Ave & Figueroa Blvd	igueroa	Blvd		Timing Plan: AM Peak Period
	1	Ť	ļ	
Lane Group	BE	EBT	WBT	
Lane Group Flow (vph)	89	1839	741	
v/c Ratio	0.57	0.99	0.24	
Control Delay	85.1	20.2	1.6	
Queue Delay	0.0	0.0	0.0	
Total Delay	85.1	20.2	1.6	
Queue Length 50th (ft)	99	0	22	
Queue Length 95th (ft)	117	#211	19	
Internal Link Dist (ft)		909	773	
Turn Bay Length (ft)	06			
Base Capacity (vph)	259	1863	3129	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.26	0.99	0.24	
:				

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

																																					В		12.7	Ь		
•	SBR		0	0	1900								96.0	0	0	0																					HCM 2000 Level of Service		time (s)	if Service		
٠	SBL		0		1900								96:0		0																			0.0	A		HCM 2000		Sum of lost time (s)	ICU Level of Service		
4	WBR				1900								0		0			_																								
ļ.	WBT				_							3523		718	0	741	AN	9		131.3	_	_	5.3			0.21			1.5			_		-	⋖		14.9	1.08	150.0	97.3%	15	
Ť	EBT	•		`	_							1863		1839		1839	I N			150.0	_			4.4		c0.99						ω		20.2	O							
^	EBL	*	99	99	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0	89	0	89 (Prot	2		0.6	0.6	90.0	4.4	2.0	106	0.04		0.64	68.9	1.00	9.5	78.4	П				lay	Capacity ratio	(s)	Jtilization		0
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ē	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 25

KHA Oueues

Balboa Transit Station 15: Mission Bay Dr & Grand Ave

Existing Conditions Timing Plan: AM Peak Period 846 0.63 19.7 0.0 19.7 152 271 478 1338 0 0 0 0.63 NBT 775 0.33 5.9 0.0 5.9 69 95 526 2349 548 0.74 33.3 0.0 33.3 123 285 1034 EBR 1608 1.02 20.7 0.0 20.7 ~51 m#105 1583 0 0 0 1.02 EBL 337 0.95 49.6 0.0 49.6 156 773 225 356 0 0 0 vic Ratio
Control Delay
Oueue Delay
Oueue Length 50th (f)
Internal Link Dist (f)
Tur Bay Length (f)
Base Capacity (vph)
Starvation Cap Reducin
Storage Cap Reducin
Rotage Cap Reducin
Rotage Cap Reducin
Rotage Cap Reducin Lane Group Lane Group Flow (vph)

- Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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Balboa Transit Station 15: Mission Bay Dr & Grand Ave

Existing Conditions Timing Plan: AM Peak Period

																																					O		15.0	O		
•	SBR		105	105	1900								0.91	115	0	0																					Service					
→	SBT	∜	999	999	1900	4.9	0.95	0.98	1.00	3467	1.00	3467	0.91	731	15	831	Ϋ́	2		28.6	28.6	0.38	4.9	3.6	1322	0.24		0.63	18.9	0.92	2.2	19.6	В	19.6	В		evel of !		time (s)	Service		
ቌ	SBU	4	0	0	1900								0.92	0	0	0	Prot	2																			HCM 2000 Level of Service		Sum of lost time (s)	CU Level of Service		
←	NBT	++	705	705	1900	2.7	0.95	1.00	1.00	3539	1.00	3539	0.91	775	0	775	NA	9		49.8	49.8	99:0	2.7	4.6	2349	0.22		0.33	5.4	1.00	0.4	2.8	⋖	16.1	В		¥		S	⊇		
•	NBL	1	466	466	1900	2.7	0.97	1.00	0.95	3433	0.95	3433	0.91	548	0	548	Prot	_		16.3	16.3	0.22	2.7	2.0	746	0.16		0.73	27.3	1.00	3.3	30.6	ပ				34.5	1.27	75.0	65.5%	15	
<i>></i>	EBR	W.	1463	1463	1900	4.0	1.00	0.85	1.00	1583	1.00	1583	0.91	1608	0	1608	Free		Free	75.0	75.0	1.00			1583		c1.02	1.02	37.5	1.00	17.6	22.1	ш									
•	EBL	*	307	307	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.91	337	0	337	Prot	4		15.1	15.1	0.20	4.4	2.0	356	0.19		0.95	29.6	1.00	16.7	46.3	Ω	53.6	٥			ity ratio	,	lon		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

KHA Oueues

Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Existing Conditions Timing Plan: AM Peak Period

16: Mission Bay Dr & Bluffside Av	& BIUII	side A				IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	1	•	←	→	`	
Lane Group	EBL	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	717	82	1309	742	211	
v/c Ratio	0.92	0.45	0.57	0.42	0.24	
Control Delay	47.1	27.7	15.4	13.8	2.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	47.1	27.7	15.4	13.8	5.0	
Queue Length 50th (ft)	162	24	340	114	14	
Queue Length 95th (ft)	#263	8	368	174	54	
Internal Link Dist (ft)	261		749	743		
Turn Bay Length (ft)	270	202			70	
Base Capacity (vph)	788	401	2305	1776	870	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.91	0.21	0.57	0.42	0.24	
:						

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Movement	EBR 105 105 1000 1011 1000 0 0 0 0 0 0 0 0	NBL 81 81 1900 4.4 1.00 1.00 0.95 1770 0.95 1770 0.95	NBT 1244 1244 1244 1900 5.0 0.95 1.00 1.00 3539 0.95 1300 0.95 130	SBT 705 705 705 1900 9.5 1.00 3.539 0.95 742 0.95 742	SBR 200 200 200 1900 1900 100 100 1100 1153 1100 113 113 113	
h) h		NBL 81 81 81 1100 4.4 11.00 0.95 1770 0.95 1770 0.95	NBT 1244 1244 1244 1900 5.0 0.95 1.00 1.00 3539 3539 0.95 1300 0.95 13000 0.95 1300 0.95 1300 0.95 1300 0.95 1300 0.95 1300 0.95 1300 0.	SBT 705 705 705 705 705 705 705 705 705 705	SBR 2000 2000 2000 2000 2000 2000 2000 20	
h) h) h) h) PHF (vph)		81 81 1900 4.4 1.00 1.00 0.95 1770 0.95 85	↑↑ 1244 1244 1900 5.0 0.95 1.00 3539 1.00 3539 0.95 1309	705 705 705 1900 5.6 0.95 1.00 3539 1.00 3539 742 0.95	200 200 200 1900 5.6 1.00 1.00 1.583 2.11 7.8 2.11 7.8	
h) h) h) hy hHF kyph kyph		81 81 1900 4.4 1.00 1.00 0.95 1770 0.95 1770 0.95	1244 1244 1900 5.0 0.95 1.00 3539 1.00 3539 0.95 1309	705 705 1900 5.6 0.95 1.00 3539 1.00 3539 0.95 742 0	200 200 5.6 11,00 0.08 11,00 10 10 10 10 10 10 10 10 10 10 10 10 1	
h) PHF (Vph)		81 1900 4.4 1.00 1.00 0.95 1770 0.95 85	1244 1900 5.0 0.95 1.00 1.00 3539 1.00 0.95 1309	705 1900 5.6 0.95 1.00 1.00 3539 1.00 3539 0.95 742 0	200 1900 15.6 1.00 0.85 0.85 1.60 1.10 1.10 1.10 2.11 7.8 2.11 7.8	
PHF (vph)		1900 4.4 1.00 1.00 0.95 1770 0.95 85	1900 5.0 0.95 1.00 3539 1.00 3539 0.95 1309	1900 5.6 0.95 1.00 3539 1.00 3539 0.95 742	1900 5.6 5.6 0.08 11.00 11.83 11.00 11.83 0.95 2.71 7.8	
(vph)		4.4 1.00 1.00 0.95 1770 0.95 85	5.0 0.95 1.00 1.00 3539 1.00 3539 0.95 1309	5.6 0.95 1.00 1.00 3539 1.00 3539 0.95 742	5.6 11.00 10.05 11.00 11	
PHF (vph)		1.00 1.00 0.95 1770 0.95 1770 85	0.95 1.00 1.00 3539 1.00 3539 0.95 1309 0	0.95 1.00 1.00 3539 1.00 3539 0.95 742 0	1,00 0.085 1,000 1,583 1,100 2,11 7,8 1,133 1,133 1,133	
PHF (vph)		1.00 0.95 1770 0.95 1770 85	1.00 1.00 3539 1.00 3539 0.95 1309 0	1.00 1.00 3539 1.00 3539 0.95 742 0	0.85 1.00 1.00 1.100 1.583 0.95 2.11 7.8 1.33	
PHF (vph)	0.95	0.95 1770 0.95 1770 0.95 85	1.00 3539 1.00 3539 0.95 1309 0	1.00 3539 1.00 3539 0.95 742 0	1.00 1583 1583 0.95 211 78 78	
PHF (vph)	0.95 111 0	1770 0.95 1770 0.95 85	3539 1.00 3539 0.95 1309 0	3539 1.00 3539 0.95 742 0	1583 1.00 1.00 0.95 211 78 133	
PHF (vph)	0.95 111 0	0.95 1770 0.95 85	1.00 3539 0.95 1309 0	1.00 3539 0.95 742 0 742	1.00 1583 0.95 211 78 133	
PHF (vph)	0.95 111 0	1770 0.95 85	3539 0.95 1309 0	3539 0.95 742 0 742	1583 0.95 211 78 133	
PHF (vph)	0.95 111 0	0.95	0.95	0.95 742 0 742	0.95 211 78 133	
(vph)	0 0	82	1309	742 0 742	211 78 133	
(vph)	0 0		0 000	742	78 133	
(vph)	0	0	1200	742	133	
		82	1309		Dorm	
		Prot	NA	NA	Lelli	
Profected Pridaes		2	7	9		
					9	
_		7.1	48.9	36.8	36.8	
s)		7.1	48.9	36.8	36.8	
J		0.09	0.65	0.49	0.49	
		4.4	2.0	9.6	2.6	
Vehicle Extension (s) 2.0		2.0	4.0	4.8	4.8	
Lane Grp Cap (vph) 754		167	2307	1736	776	
D		0.05	c0.37	0.21		
v/s Ratio Perm					80:0	
		0.51	0.57	0.43	0.17	
Uniform Delay, d1 28.5		32.3	7.2	12.3	10.6	
		89.0	1.97	1.00	1.00	
Incremental Delay, d2 16.6		8.0	6.0	8.0	0.5	
Delay (s) 45.1		22.8	15.1	13.1	11.1	
Level of Service D		ပ	В	В	В	
Approach Delay (s) 45.1			15.6	12.6		
Approach LOS D			В	В		
Intersection Summary						
ICM 2000 Central Dalari		21.6	=	0000	المانين عوالمان	c
HCM 2000 Collinol Delay HCM 2000 Volume to Capacity ratio		0.12	Ę	INI 2000 L	ncivi 2000 Level di Selvice	٥
Actuated Cycle Leboth (c)		- 25	Ü	Sum of loct time (c)	limo (s)	74.4
Actuated Cycle Length (3)		7007	5 5	Suill Oriol of Sorvice	(s) (Conico	t: 0
Intersection capacity offization		01.770	3	n revel of	oel vice	۵

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Existing Conditions Timing Plan: AM Peak Period 744 0.24 5.0 0.0 5.0 144 m188 3074 0 0 0 0 0 185 224 0 0 0 0 0 SBL 59 0.31 81.6 0.0 81.6 60 m106 0.08 0.02 0.02 0.0 0.0 160 2637 619 0 0 0 0.67 NBT 1351 0.51 2.7 2.7 0.3 3.0 41 m66 376 47 0.31 21.9 0.0 21.9 0 360 0 0 0 0.19 67 0.56 85.1 0.0 85.1 65 116 361 Lane Group

Lane Group Flow (vph)

Vic Ratio
Control Delay
Queue Delay
Total Delay
Oueue Length 55th (ft)
Internal Link Dist (ft)
Turn Bay Length (ft)
Base Capacity (vph)
Starvation Cap Reducth
Storiage Cap Reducth
Soriage Cap Reducth
Rodage Cap Reducth
Soriage Cap Reducth
Rodage Cap Reducth
Rodage Cap Reducth

Intersection Summary

— Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Existing Conditions Timing Plan: AM Peak Period

Lane Configurations	*
1	SBL
64 45 1297 96 64 45 1297 96 64 45 1297 96 64 46 1297 96 64 47 1297 96 64 47 1297 96 64 48 1297 96 69 100 100 100 69 100 085 100 69 100 100 100 69 100 100 100 60 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 60 100 100 100 100 60 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 60 100 100 100 100 100 100 60 100 100 100 100 100 100 100 100 100 1	
64 45 1297 96 1900 1900 1900 1900 1900 1900 1900 1900	22
9900 1900 1900 1900 1900 1900 1900 1900	22
44 44 5.0 5.0 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.85 1.00 0.85 1.00 0.85 1.00 1.00 1.00 1.770 1.583 3539 1583 0.96 0.96 0.96 0.96 0.74 1351 100 0.77 1351 100 0.77 1351 100 0.77 101 110.9 110.9 1.01 10.1 110.9 110.9 1.01 10.1 110.9 110.9 1.02 2.0 3.8 3.8 1.03 0.05 0.05 0.04 0.00 0.05 0.03 0.05 0.05 0.03 0.05 0.05 0.01 0.00 0.05 0.01 0	1900
1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	4.4
100 085 100 085 100 100 100 100 100 100 100 100 100 10	1.00
0.055 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00
1770 1583 3539 1583 095 1500 1500 1500 1500 1500 1500 1500	0.95
0.055 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1770
1770 1583 3539 1583 0096 0096 0096 0096 0096 0096 0096 009	0.95
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	1770
67 47 1351 100 67 3 1351 100 15 7 3 1351 100 101 101 101 1109 1109 101 101 1109 1109 101 101 1109 1109 101 101 1109 1109 1007 007 007 007 2.0 2.0 3.8 3.8 2.0 3.8 3.8 2.0 3.8 3.8 2.0 3.8 3.8 2.0 4 2.5 0.0 0.6 2.0 1.0 0.6 0.1 2.0 2.0 0.6 0.1 2.0 2.0 0.6 0.1 2.0 3.0 0.0 0.6 0.1 2.0 3.0 0.0 0.0 0.1 2.0 4 2.5 0.2 2.0 5 4 2.5 0.2 2.0 6 0.1 2.0 6 0.1 2.0 6 0.1 2.0 6 0.1 2.0 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	96:0
9	26
1351 1851	0
Prot Perm NA Perm 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	59
10.1 10.1 110.9 11	Prot
10.1 10.1 10.9 10.9 10.0 10.0 10.0 10.0	1 6
10.1 10.1 10.9 10.9 10.0 10.0 10.0 10.0	2
1007 1007 0.74 4.76 5.007 0.74 4.4 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	15.2
0.07 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	15.2
44 44 50 50 210 2.0 3.8 3.8 210 2.0 3.8 3.8 210 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	0.10
20 20 38 38 08 000 000 000 000 000 000 000 0	4.4
0.04 0.03 0.05 0.00 0.05 0.00 0.00 0.00 0.00	2.0
0.004 0.03 0.05 0.05 0.05 0.05 0.05 0.05 0.05	179
000 000 000 000 005 007 008 654 82 54 82 54 100 100 023 002 114 654 2.5 0.2 E E A A E B A B A	c0.03
0.56 0.03 0.52 0.07 6.78 6.54 8.2 5.4 1.00 1.00 0.32 0.02 3.6 0.0 0.6 0.1 71.4 6.4 2.5 0.2 E	
654 82 54 100 100 023 002 136 00 0.5 0.1 14 E E A A A E B A A E B A A E B A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A B A A A A B A A A A B A	0.33
1.00 1.00 0.23 0.02 3.6 0.0 0.6 0.1 1.4 654 2.5 0.2 6.8.9 2.3 A E A 8.2 I 8.2 I 150.0 150	62.7
3.56 0.0 0.6 0.1.1 4 65.4 2.5 0.2 6.8.9 E E A A E E A A E E E A A E E E A A E E E E A A E	1.29
71.4 654 2.5 0.2 68.9 A A A B A A A B A A A A A A A A A A A	0.4
689 2.3 E E A A A E E B A A E E A A E A A E E B A E E E A E E E A E E E E	81.3
68.9 2.3 E. A B. C.	ш
82 1 82 1 150.0 15	10.3
8.2 1 8.2 1 0.50 150.0 1	В
8.2 ratio 0.50 150.0 54.2%	
ratio 0.50 150.0 : 54.2%	HCM 2000 Level of Service A
150.0 54.2%	
54.2%	Sum of lost time (s) 13.8
A control of the Cont	
Analysis Period (min)	
C. Critical Lane Group	

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 31

KHA Oueues

Existing Conditions	Timing Plan: AM Peak Period
Balboa Transit Station	18: Mission Bay Dr & Magnolia Ave

	†	ţ	•	—	٠	→	
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	174	15	32	947	38	802	
v/c Ratio	0.81	80.0	0.38	0.36	0.42	0.30	
Control Delay	16.9	41.6	94.2	4.3	80.1	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	
Total Delay	16.9	41.6	94.2	4.3	80.1	7.7	
Queue Length 50th (ft)	136	6	33	24	38	94	
Oueue Length 95th (ft)	211	30	73	204	m76	183	
Internal Link Dist (ft)	303	271		804		461	
Turn Bay Length (ft)			92		20		
Base Capacity (vph)	341	301	119	2614	11	2648	
Starvation Cap Reductn	0	0	0	0	0	606	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.51	0.02	0.27	0.36	0.34	0.46	
Interconding Commerce							
Intersection Summary							

m Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Existing Conditions Timing Plan: AM Peak Period

	4	†	~	/	ţ	4	•	←	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		×	₩.		¥	4₽	
Traffic Volume (vph)	74	9	89	6	-	2	31	912	7	37	721	57
Future Volume (vph)	74	9 0	83	9	- 500	2007	31	912	7000	37	721	57
Total Lost time (s)	0061	006	0061	0061	006	1900	1900	200	0061	900	200	1900
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
F		0.93			0.95		1.00	1.00		1.00	0.99	
Fit Protected		86.0			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1693			1727		1770	3535		1770	3200	
Flt Permitted		0.85			0.78		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1474			1393		1770	3535		1770	3500	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9/	9	92	6	-	2	32	940	7	38	743	26
RTOR Reduction (vph)	0	30	0	0	4	0	0	0	0	0	m	0
Lane Group Flow (vph)	0	144	0	0	=	0	32	947	0	38	799	0
Tum Type	Perm	Ν		Perm	N		Prot	NA		Prot	¥	
Protected Phases		∞			4		-	9		2	2	
Permitted Phases	∞			4				9				
Actuated Green, G (s)		18.9			18.9		2.1	110.0		9.9	111.7	
Effective Green, g (s)		18.9			18.9		5.1	110.0		8.9	111.7	
Actuated g/C Ratio		0.13			0.13		0.03	0.73		0.05	0.74	
Clearance Time (s)		4.9			4.9		4.4	2.0		4.4	2.0	
Vehicle Extension (s)		2.0			2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)		185			175		09	2592		80	2606	
v/s Ratio Prot							0.02	c0.27		c0.02	0.23	
v/s Ratio Perm		c0.10			0.01							
v/c Ratio		0.78			90:0		0.53	0.37		0.47	0.31	
Uniform Delay, d1		63.5			57.7		71.3	7.3		6.69	6.3	
Progression Factor		1.00			9.		1.20	0.48		0.1	1.02	
Incremental Delay, d2		17.1			0.1		4.2	0.4		7.	0.3	
Delay (s)		90.6			27.8		90.1	3.9		70.9	8.9	
Level of Service		_			ш		_	A		ш	⋖	
Approach Delay (s)		90.6			27.8			6.7			6.7	
Approach LOS		ш.			ш			∢			⋖	
Intersection Summary												
HCM 2000 Control Delay			14.7	ĭ	:M 2000	HCM 2000 Level of Service	ervice		В			
HCM 2000 Volume to Capacity ratio	y ratio		0.43									
Actuated Cycle Length (s)			150.0	જ	Sum of lost time (s)	time (s)			14.3			
Intersection Capacity Utilization	E.		49.8%	೨	U Level o	ICU Level of Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Existing Conditions Timing Plan: AM Peak Period 28T 762 0.25 1.5 0.0 1.5 55 14 28L 125 0.58 39.0 0.0 39.0 65 90 236 0 0 0 0 0 0 NBT 1024 0.42 4.6 0.0 4.6 4.6 4.6 4.6 4.8 4.8 2423 504 0 0 0 0 0.15 75 0.31 3.3 0.0 0 0 0 Lane Group

Lane Group Flow (vph)

Vic Railo

Control Delay

Queue Delay

Total Delay

Queue Length 55th (ft)

Mueue Length 55th (ft)

Irum Bay Length (ft)

Base Capacity (vph)

Starvallon Cap Reducth

Storage Cap Reducth

Storage Cap Reducth

Rouge Cap Reducth

Storage Cap Reducth

Storage Cap Reducth

Storage Cap Reducth

Intersection Summary

M. Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Existing Conditions Timing Plan: AM Peak Period

	4	†	<u>/~</u>	\	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		je-	4₽		¥	4₽	
Traffic Volume (vph)	0	0	0	36	0	32	0	883	06	119	724	0
Future Volume (vph)	0	0	0	36	0	32	0	883	06	119	724	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.9			2.0		4.4	2.0	
Lane Util. Factor					1.00			0.95		1.00	0.95	
귶					0.93			0.99		1.00	1.00	
Fit Protected					0.98			1.00		0.95	1.00	
Satd. Flow (prot)					1696			3490		1770	3539	
Flt Permitted					0.84			1.00		0.95	1.00	
Satd. Flow (perm)					1460			3490		1770	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	38	0	37	0	929	95	125	762	0
RTOR Reduction (vph)	0	0	0	0	71	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	4	0	0	1018	0	125	762	0
Tum Type				Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		_	9		2	2	
Permitted Phases	4			4								
Actuated Green, G (s)					3.6			49.1		8.0	61.5	
Effective Green, g (s)					3.6			49.1		8.0	61.5	
Actuated g/C Ratio					0.02			0.65		0.11	0.82	
Clearance Time (s)					4.9			2.0		4.4	2.0	
Vehicle Extension (s)					2.0			3.2		2.0	3.2	
Lane Grp Cap (vph)					70			2284		188	2901	
v/s Ratio Prot								c0.29		c0.07	0.22	
v/s Ratio Perm					c0.00							
v/c Ratio					0.05			0.45		99.0	0.26	
Uniform Delay, d1					34.1			6.3		32.2	1.5	
Progression Factor					1.00			0.63		0.91	0.86	
Incremental Delay, d2					0.1			0.5		6.5	0.5	
Delay (s)					34.2			4.5		35.8	1.5	
Level of Service					ပ			⋖		Ω	A	
Approach Delay (s)		0.0			34.2			4.5			6.4	
Approach LOS		A			ပ			V			∢	
Intersection Summary												
HCM 2000 Control Delay			6.5	H	:M 2000	HCM 2000 Level of Service	service		A			
HCM 2000 Volume to Capacity ratio	ity ratio		0.45									
Actuated Cycle Length (s)			75.0	S	Sum of lost time (s)	time (s)			14.3			
Intersection Capacity Utilization	ion		49.6%	⊇	J Level o	ICU Level of Service			∢			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Balboa Transit Station 20: Mission Bay Dr & Rosewood St

Balboa Transit Station 20: Mission Bay Dr & Rosewood St	n Rose	, poom	St				Existing Conditions Timing Plan: AM Peak Period	ω pl
	>	4	←	•	٠	→		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	>		##₽		r	‡		
Traffic Volume (veh/h)	2	∞	1211	9	7	2107		
Future Volume (Veh/h)	2	∞	1211	10	7	2107		
Sign Control	Stop		Free			Free		
Grade	%0		%0			%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	7	6	1316	Ξ	œ	2290		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None			None		
Median storage veh)								
Upstream signal (ft)						909		
pX, platoon unblocked	0.83							
vC, conflicting volume	2482	444			1327			
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	2376	444			1327			
tC, single (s)	8.9	6.9			4.1			
tC, 2 stage (s)								
tF (s)	3.5	3.3			2.2			
p0 queue free %	45	86			86			
cM capacity (veh/h)	24	261			216			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	11	526	526	274	8	1145	1145	ı
Volume Left	2	0	0	0	8	0	0	
Volume Right	6	0	0	=	0	0	0	
cSH	109	1700	1700	1700	516	1700	1700	
Volume to Capacity	0.10	0.31	0.31	0.16	0.02	19:0	0.67	
Oueue Length 95th (ft)	∞	0	0	0	,	0	0	
Control Delay (s)	41.7	0.0	0.0	0.0	12.1	0.0	0.0	ı
Lane LUS	ш !				В			
Approach Delay (s) Approach LOS	41./ E	0:0			0:0			
Intersection Summary								
Avorage Dolar			c					
Average Delay Intersection Capacity Utilization Apalysis Deriod (min)	c		0.2 68.2%	2	l Level of	ICU Level of Service	U	
Alidiysis rendu (illiii)			2					

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station 21: Santa Fe St & Damon Ave

Existing Conditions Timing Plan: AM Peak Period

	•	<u>/-</u>	•	←	→	•	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	×	¥L.		₩	¢		
Sign Control	Stop			Stop	Stop		
Traffic Volume (vph)	66	31	19	06	59	89	
Future Volume (vph)	66	31	19	06	56	89	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly flow rate (vph)	106	33	20	4	31	73	
Direction, Lane #	EB 1	EB 2	NB 1	SB 1			
Volume Total (vph)	106	33		104			
Volume Left (vph)	106	0	70	0			
Volume Right (vph)	0	33		73			
Hadj (s)	0.23	-0.57		-0.39			
Departure Headway (s)	4.6	3.2		3.9			
Degree Utilization, x	0.14	0.03	0.14	0.11			
Capacity (veh/h)	746	1121	802	891			
Control Delay (s)	8.3	6.3	8.0	7.4			
Approach Delay (s)	7.9		8.0	7.4			
Approach LOS	A		⋖	A			
Intersection Summary							
Delay			7.8				
Level of Service			A				
Intersection Capacity Utilization	E		24.6%	⊇	ICU Level of Service	Service	A
Analysis Period (min)			15				

KHA HCM Unsignalized Intersection Capacity Analysis

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Balboa Transit Station Existing Conditions 22: Morena Blvd & Jutland Dr Timing Plan: AM Peak Period

22. Moreria biva & Juliana Di	Juliario	5	ı	ı	ı		IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	/	4	←	•	۶	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	¥L	*	¥L.		₽₩	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	162	78	195	378	4	129	
Future Volume (vph)	162	78	195	378	4	129	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	
Hourly flow rate (vph)	203	32	244	473	2	161	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	203	32	244	473	26	107	
Volume Left (vph)	203	0	0	0	2	0	
Volume Right (vph)	0	32	0	473	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.08	0.03	
Departure Headway (s)	7.0	2.8	9.6	4.9	6.2	6.2	
Degree Utilization, x	0.39	90:0	0.38	0.64	0.10	0.18	
Capacity (veh/h)	486	575	625	720	545	551	
Control Delay (s)	13.2	7.9	10.8	15.1	8.8	9.4	
Approach Delay (s)	12.4		13.7		9.2		
Approach LOS	В		В		A		
Intersection Summary							
Delay			12.7				
Level of Service			В				
Intersection Capacity Utilization	tion		33.8%	⊇	ICU Level of Service	Service	A
Analysis Period (min)			15				

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HCM Unsignalized Intersection Capacity Analysis Page 39

 Balboa Transit Station

 Existing Conditions

 Z3: Morena Blvd & Costco Dwy
 T
 ↑
 ↑
 ↑
 Immin Plant AM Peak Period

 Lane Group
 WBL
 NBT
 SBL
 SBT
 Timing Plant AM Peak Period

 Lane Group Flow (vph)
 179
 810
 38
 287
 American Period

 Lane Group Flow (vph)
 129
 108
 184
 4.6
 American Period

 Outeue Delay
 129
 108
 184
 4.6
 American Period

 Outeue Length PSth (ft)
 3
 41
 6
 24
 American Period

 Outeue Length PSth (ft)
 3
 128
 24
 American Period
 American Period

 Internal Link DSt (ft)
 3
 128
 24
 American Period
 American Period

 Internal Link DSt (ft)
 3
 128
 24
 American Period
 American Period

 Internal Link DSt (ft)
 3
 3
 4
 4
 American Period

 Internal Link DSt (ft)
 3
 4
 4
 American Period

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Balboa Transit Station Existing Conditions 23: Morena Blvd & Costco Dwy Timing Plan: AM Peak Period

																																				⋖		14.8	⋖		
→	SBT	₩	241	1900	5.5	0.95	1.00	1.00	3539	1.00	3539	0.84	287	0	287	NA	9		21.9	21.9	0.56	5.5	2.8	1972	0.08		0.15	4.2	1.00	0.0	4.2	A	0.9	Α		HCM 2000 Level of Service		me (s)	Service		
٠	SBL	×	3 33	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.84	88	0	38	Prot	-		2.1	2.1	0.05	4.4	2.0	94	c0.02		0.40	18.0	1.00	1.0	19.0	В				:M 2000 L		Sum of lost time (s)	ICU Level of Service		
•	NBR		128	1900								0.84	152	0	0																					9		Su	ਹ		
←	NBT	4₽	553	1900	5.5	0.95	0.97	1.00	3440	1.00	3440	0.84	929	15	795	NA	2		15.4	15.4	0.39	5.5	2.8	1347	c0.23		0.59	9.5	1.00	0.7	10.1	В	10.1	В		9.6	0.47	39.3	39.5%	15	
✓	WBR		94 4	1900								0.84	22	0	0																										
-	WBL	N.	104	1900	4.9	0.97	0.95	0.97	3332	0.97	3332	0.84	124	45	137	Prot	8		7.0	7.0	0.18	4.9	2.0	593	c0.04		0.23	13.8	1.00	0.1	13.9	В	13.9	В			ity ratio		ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fit	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 24: Morena Blvd & Avati Dr

Existing Conditions Timing Plan: AM Peak Period

Lane Group WBL WBR NBT NBR SBL SBL Lane Group Flow (vph) 240 35 768 128 18 335 w Ratio 0.31 0.09 0.49 0.08 0.07 0.1 w Cation Delay 1.52 7.8 9.4 0.6 18 5.5 Queue Delay 1.52 7.8 9.4 0.6 18 5.5 Queue Length Schi (ft) 1.8 0.4 0.0	
240 35 768 128 18 0.31 0.09 0.49 0.08 0.07 15.2 7.8 9.4 0.6 18 0.0 0.0 0.0 0.0 0.0 15.2 7.8 9.4 0.6 18 18 0 0.0 0.0 0.0 19 138 9 21 41 19 138 9 21 317 2205 115 120 135 352 1569 1481 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3T
0.31 0.09 0.49 0.08 0.07 15.2 7.8 9.4 0.6 18.8 0.0 0.0 0.0 0.0 15.2 7.8 9.4 0.6 18.8 18 0 44 0 3 61 19 18 9 21 317 2205 156 1481 0 0 0 0 0 0 0 0 0	335
15.2 7.8 9.4 0.6 18.8 0.0 0.0 0.0 0.0 0.0 15.2 7.8 9.4 0.6 18.8 18 0 44 0 18.8 61 19 138 9 2.1 2205 115 120 317 2205 115 120 307 1397 3592 1569 1481 0	61
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	č.
15.2 7.8 9.4 0.6 18.8 18.9 18.	0.
18 0 44 0 3 61 19 138 9 21 317 2205 115 120 3017 1397 3592 1569 1481 0 0 0 0 0 0 0 0 0	Ŗ.
61 19 138 9 21 317 2205 135 115 120 3017 1397 3592 1569 1481 0 0 0 0 0 0 0 0 0	91
317 2205 135 135 115 120 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	34
135 115 120 3017 1397 3592 1569 1481 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0/
3017 1397 3592 1569 1481 0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	39
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0
0.08 0.03 0.21 0.08 0.01	0
0.08 0.03 0.21 0.08 0.01	0
	0.09
Intersection Summany	

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Balboa Transit Station Existing Conditions 24: Morena Blvd & Avati Dr Timing Plan: AM Peak Perlod

WISH WISH NI 273 33 223 33 1900 1900 19 1900 1900 19 100 1900 190 100 1900 190 100 28 100 28 100 38 100 38	WBI WBI NBI NBI NBI SBI SBI 223 33 0 714 119 17 312 223 33 0 714 119 17 312 1900 1900 1900 1900 1900 1900 1900 49 49 60 49 44 5.7 0.0% 100 100 100 100 1900 1900 1900 1900 995 100 0.95 1.00 0.95 1.00 0.95 1.00 995 100 0.95 1.00 1.00 0.95 1.00 995 100 0.95 1.00 0.95 1.00 1.00 995 100 1.00 1.00 1.00 1.00 1.00 903 0.92 0.93 0.93 0.93 0.93 0.93 40 28 0 7.68 1.28 1.8 3.5<		>	4	F	•	•	۶	→	
↑↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑	Novement	WBL	WBR	NBN	NBT	NBR	SBL	SBT	
223 33 0 714 119 17 312 1900 1900 1900 1900 1900 1900 1900 10% -3% -0 714 119 17 312 1900 1900 1900 1900 1900 1900 1900 10% -3% -0 60 4.9 4.4 5.7 0.95 1.00 0.95 1.00 0.95 0.95 1.00 0.05 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 0.95 0.95 1.00 1.00 0.95 0.95 1.00 0.95	223 33 0 714 119 17 312 1900 1900 1900 1900 1900 1900 1900 1-10% -3% -0 714 119 17 312 1900 1900 1900 1900 1900 1900 1900 1-10% -3% -0 79 44 5.7 0.95 1.00 0.95 1.00 0.95 0.95 1.00 0.95 1.00 0.95 0.95 1.00 0.95 1.00 0.95 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.92 1.607 1770 3539 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.94 0.95 1.00 0.95 1.00 0.240	ane Configurations	¥.	W.	4	*	*	*	*	
1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	raffic Volume (vph)	223	8 8	0	714	119	17	312	
1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	uture volume (vpn)	7000	33	0 0	4 7	4 19	- 600	312	
4.9 4.9 6.0 4.9 4.4 5.7 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 3.605 1.662 3.892 1.00 1.00 0.95 3.605 1.602 1.00 0.95 1.00 0.95 1.00 3.605 1.662 3.892 1.607 1.770 35.39 0.93	4,9 4,9 4,4 5,7 1,9 4,9 4,9 4,4 5,7 1,00 1,00 1,00 1,00 0.95 1,00 1,00 1,00 1,00 0.95 3,605 1,62 3,592 1,60 1,00 3,605 1,62 3,592 1,60 1,00 3,605 1,62 3,592 1,60 1,00 3,605 1,62 3,592 1,60 1,00 3,605 1,62 3,592 1,60 1,00 3,605 1,62 3,592 1,60 1,00 3,605 1,62 3,592 1,60 1,70 3,605 1,62 3,592 1,60 1,70 4,0 3,5 0,93 0,93 0,93 4,0 1,0 1,0 1,0 1,0 4,0 1,0 1,0 1,0 1,0 5,0 1,0 1,0 1,0 1,0	real Flow (vpripi)	-10%	200	2	3%	98	200	0%0	
0.97 1.00 0.95 1.00 1.00 0.95 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	0.97 1.00 0.95 1.00 1.00 0.95 0.95 0.96 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	otal Lost time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
100 085 100 085 100 100 095 100 095 100 095 100 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 095 093 093 093 093 093 093 093 093 093 093	1,00 0.85	ane Util. Factor	0.97	1.00		0.95	1.00	1.00	0.95	
095 100 100 100 095 100 3605 1662 3592 1607 1770 3539 093 100 100 100 095 100 3605 1662 3592 1607 1770 3539 093 093 093 093 093 093 240 35 0 51 0 0 240 35 0 51 0 0 240 36 0 51 0 0 240 36 0 51 0 0 0 240 36 128 18 335 0 0 0 51 0	995 100 100 095 100 3605 1662 3592 1607 1770 3539 093 093 093 093 093 093 093 093 093 093 093 093 093 093 093 093 240 28 0 0 8 11 0 0 095 Prof Prof Prof NA pm-tov Prof NA 7 1 8 335 81 81 81 165 246 09 221 81 81 165 246 09 221 81 81 165 246 09 221 81 81 165 246 09 221 820 020 040 060 062 054 49 49 60 49 44 57 715 020 020 040 060 002 054 716 020 020 040 060 002 054 717 000 020 040 060 002 054 718 329 1916 003 020 020 040 060 001 000 1140 132 92 34 197 47 140 132 92 34 197 47 91 HCM 2000 Level of Service 200 047 000 3.1 0.1 141 132 99 34 228 48 B B A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A B A A C A A C A A C A A C A A C A A C A A C A A C A A C C A A C C A A C C A A C C C C	æ	1.00	0.85		1.00	0.85	1.00	1.00	
3605 1662 3592 1607 1770 3559 3605 1662 3592 1607 1770 3559 3605 1662 3592 1607 1770 3559 093 093 092 093 093 093 093 093 240 35 0 0 0 51 0 0 0 240 7 0 768 128 18 335 Prot Prot Prot NA pm+ov Prot NA	3605 1662 3592 1607 1770 3559 3605 1662 3592 1607 1770 3559 3605 1662 3592 1607 1770 3559 093 093 092 093 093 093 093 240 35 0 768 128 18 335 0 240 7 0 768 128 18 335 Prot Prot Prot NA pm-ov Prot NA 7 1 6 7 5 5 2 8.1 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 2.0 2.0 0.40 0.60 0.02 0.54 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 2.0 5.0 7.15 329 1452 968 39 1916 0.07 0.00 0.02 0.03 0.03 0.34 0.02 0.02 0.03 0.03 0.34 0.02 0.02 0.03 0.03 0.10 0.00 0.0 0.00 0.1 0.00 0.0 0.00 0.1 0.00 0.00	It Protected	0.95	1.00		1.00	1.00	0.95	1.00	
0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	0.95 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	atd. Flow (prot)	3605	1662		3592	1607	1770	3539	
240 353 1092 1093 1093 1093 1093 1093 1093 1093 1093	Section 100, 100, 100, 100, 100, 100, 100, 10	It Permitted	0.95	1.00		1.00	1.00	0.95	1.00	
0.93 0.94 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	0.93 0.92 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	atu. riow (pellit)	cooc	7007		2466	/001	0//1	3339	
240 35 0 768 128 18 350 240 7 0 768 17 18 350 Prot Prot Prot NA pm-ov Prot NA 7 7 1 6 7 5 5 2 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 2.0 20 0.40 0.40 0.60 0.02 0.54 4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 2.0 5.2 2.0 2.0 5.0 715 329 1452 96 39 1916 c.0.07 0.00 0.02 0.03 0.03 0.34 0.02 0.03 0.03 0.1 0.0 1.00 1.00 1.00 1.00 0.1 0.0 0.7 0.0 3.1 0.1 14.0 1.2 9.9 3.4 22.8 4.8 B B A A C A A 14.0 9.0 3.1 0.1 14.0 9.0 3.1 0.1 14.0 9.0 3.1 0.1 14.0 9.0 3.1 0.1 14.0 9.0 3.1 0.1 14.0 1.0 0.0 7 0.0 3.1 14.0 9.0 3.1 0.1 14.0 1.0 0.0 7 0.0 3.1 14.0 9.0 3.1 0.1 25.0 2.0 5.0 26.0 3.1 0.1 27.0 2.0 3.1 0.1 28.0 3.1 0.1 29.0 3.1 0.1 20.1 0.0 0.0 0.0 0.0 20.1 0.0 0.0 0.0 0.0 20.1 0.0 0.0 0.0 0.0 20.1 0.0 0.0 0.0 0.0 20.1 0.0 0.0 0.0 0.0 20.2 0.0 0.0 0.0 20.3 0.0 0.0 20.3 0.0 0.0 20.4 0.0 0.0 20.4 0.0 0.0 20.5 0.0 0.0	240 38 0 708 128 18 339 240 7 0 768 17 18 335 Prot Prot Prot NA pm+ov Prot NA 7 7 1 6 7 5 5 2 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 6.0 0.0 0.0 0.0 0.54 7.15 329 1916 6.0 4.9 4.4 5.7 2.0 2.0 5.2 0.0 0.54 7.15 329 1916 6.0 4.9 4.4 5.7 7.1 329 1916 6.0 4.9 6.0 4.9 6.0 7.1 329 1916 6.0 1.0 0.0 0.0 7.1 0.0 0.0 0.1 0.0 0.0 7.1 0.0 0.0 0.1 0.0 0.0 7.1 0.0 0.0 0.1 0.0 0.0 7.2 0.0 3.4 0.0 1.0 0.0 7.3 0.0 0.1 0.0 0.0 7.4 0.0 0.1 0.0 0.0 7.5 0.0 0.1 0.0 0.0 7.7 0.0 0.1 0.0 0.0 8 B A A C A A 14.0 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 8 A A C A A 14.0 0.0 0.7 0.0 3.1 0.1 9.1 HCM 2000 Level of Service 2.0 2.0 2.0 0.40 2.0 3.4 0.0 0.0 0.7 2.0 3.4 0.0 0.0 0.7 2.0 3.4 0.0 0.0 0.0 0.0 2.0 0.1 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.2 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 0.0 0.0 0.0 0.	eak-hour factor, PHF	0.93	0.93	0.92	0.93	0.93	0.93	0.93	
240 28 0 0 51 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	240 28 0 51 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	aj. Flow (vpn)	740	સ્ સ	0	90/	27	<u> </u>	335	
Prot Prot NA Prot Pr	240	IOK Keduction (vpn)	0 9	27 1	0 (0 9	ا م	0 ;	0 100	
Prot Prot NA pm+ov Prot NA Prot NA 7 1 6 7 5 5 2 2 6 5 5 5 2 6 6 6 9 1 2 1 6 5 5 6 6 9 1 2 1 6 6 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6	Prot Prot Prot NA pm+ov Prot NA 7 7 7 1 6 7 5 5 2 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 8.2 0.20 0.20 0.40 0.60 0.02 0.54 4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 0.0 0.0 0.54 6.0 4.9 4.4 5.7 2.0 2.0 0.20 0.02 0.54 6.0 4.9 4.4 5.7 7.15 329 1945 6.0 1.0 0.0 0.0 7.15 329 1945 6.0 2.0 2.0 2.0 5.0 7.15 329 1945 6.0 3.2 0.0 0.0 0.0 7.1 0.0 0.0 0.0 0.0 7.1 0.0 0.0 0.1 0.0 0.0 7.1 0.0 0.7 0.0 3.4 0.1 14.1 13.2 9.9 3.4 2.28 4.8 8 B A A C A A 14.0 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 14.0 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 8 A A C A A A A C A A A A A A C A A A A A A	ane Group Flow (vph)	240	7	0	168	11	18	335	
National Properties National Properties	National Property of the control o	urn Type	Prot	Prot	Prot	Ϋ́	vo+mq	Prot	NA	
8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 0.20 0.20 0.40 0.60 0.02 0.54 2.0 2.0 2.0 2.0 5.0 2.0 2.0 2.0 2.0 5.0 2.0 2.0 2.0 2.0 5.0 2.1 45.2 2.0 5.0 2.1 0.0 0.0 0.0 0.0 0.0 2.1 0.0 0.0 0.0 0.0 0.0 2.1 0.0 0.0 0.0 0.0 0.0 2.1 0.0 0.0 0.0 0.0 0.0 2.1 0.0 0.0 0.0 0.0 0.0 2.1 0.0 0.0 0.0 0.0 0.0 2.2 1 2.2 2.1 0.0 0.0 2.2 1 0.0 0.0 0.0 2.	8.1 8.1 16.5 26 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 8.1 8.1 16.5 24.6 0.9 22.1 0.20 0.20 0.40 0.60 0.02 0.54 2.0 2.0 5.2 2.0 2.0 5.0 2.0 3.20 5.2 2.0 2.0 5.0 2.0 3.4 0.02 0.21 0.02 0.01 0.09 0.34 0.02 0.21 0.02 0.01 0.09 0.34 0.02 0.21 0.02 0.01 0.09 0.10 1.00 1.00 1.00 1.00 0.10 1.00 0.7 0.0 3.1 0.1 14.0 13.2 9.9 3.4 22.8 4.8 B B A A C A A 14.0 0.07 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 B B A A C A A 14.0 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.07 0.0 3.1 0.1 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08	rotected Phases	7	7	-	9	7	2	2	
81 81 165 24.6 0.9 22.1 0.20 0.20 0.40 0.60 0.62 0.54 4.9 4.9 6.0 4.9 22.1 2.0 2.0 2.0 0.60 0.62 0.54 2.0 2.0 2.0 2.0 2.0 715 329 1452 968 39 1916 0.03 0.00 0.021 0.03 0.03 0.00 0.02 0.03 0.03 0.14 0.02 0.53 0.08 0.46 0.17 14.0 1.00 1.00 1.00 1.00 1.00 0.1 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 B B A A C A A 14.0 9.0 0.7 0.0 3.1 0.1 14.0 1.0 0.0 7 0.0 3.1 0.1 14.0 4.0 8 C A 14.0 5.0 8 C A 14.0 5.0 8 C A 14.0 5.0 8 C A 14.0 7 0.0 8 C A 14.0 8 A A C 14.	81 81 165 246 0.9 221 020 020 040 060 062 054 4.9 4.9 6.0 4.9 221 2.0 2.0 55.2 2.0 5.0 715 2.0 2.0 2.0 2.0 5.0 715 0.00 0.021 0.02 0.34 145.2 9.8 39 1916 0.034 0.00 0.21 0.02 0.01 0.09 0.34 0.13 0.03 0.03 0.01 1.00 1.00 1.00 1.00 1.00 1.00 1.11 13.2 9.2 3.4 19.7 4.7 1.00 1.00 0.07 0.0 3.1 0.1 1.11 13.2 9.9 3.4 228 4.8 1.10 1.10 1.00 1.00 1.00 1.10 0.0 3.1 0.1 1.10 1.20 9.0 3.1 0.1 1.10 0.07 0.0 3.1 0.1 1.10 0.07 0.0 3.1 0.1 1.10 0.07 0.0 3.1 0.1 1.10 0.00 0.07 0.0 3.1 0.1 1.10 0.00 0.00 0.00 0.00 1.10 0.00 0.0	ermitted Phases					9		2	
81 81 165 246 0.9 221 4.9 4.9 6.0 440 0.00 0.54 4.9 4.9 6.0 4.9 6.0 4.9 5.7 2.0 2.0 5.2 2.0 2.0 5.4 2.0 2.0 6.0 1.452 9.68 39 1916 2.0 3.4 0.02 0.21 0.02 0.01 0.09 0.34 0.02 0.53 0.08 0.46 0.17 1.00 1.00 1.00 1.00 1.00 1.00 0.1 0.00 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 B B A A C A A 14.0 9.0 3.1 0.1 B B A A C A 14.0 9.0 3.1 0.1 B A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A A A C A B A A C A A A C A A A C A A A C A A A C A A A C A A A C A B A A C A B A A C A A A C A A A C A B A C A B A C	81 81 165 246 0.9 221 920 0.20 0.40 0.60 0.02 0.54 49 49 60 47 0.50 20 2.0 5.2 2.0 2.0 5.4 52 2.0 2.0 5.0 715 329 1945 968 39 1916 6.0,07 0.00 6.2 1 0.03 0.34 0.02 6.53 0.08 0.46 0.17 140 13.2 9.2 3.4 19.7 4.7 140 13.2 9.9 3.4 2.28 4.8 B B A A C A A 14.0 0.0 0.7 0.0 3.0 15.1 0.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B B A A C A A 14.0 A A A C A 14.0 A A A C A 14.0 A A A C A 15.1 A A A C A 16.0 A A A A C A 17.1 A A A C A 18.1 A A A C A 18.2 A A A A C A 19.3 A A A A A 19.4 5.7 19.5 A A A A A 19.5 A A A 19.5 A A A 19.5 A A A 19.5 A A	ctuated Green, G (s)	8.1	8.1		16.5	24.6	6.0	22.1	
020 020 040 060 002 054 4/9 4/9 6.0 400 002 054 20 20 52 2.0 5.0 5.0 715 329 1452 968 39 1916 0.07 0.00 0.021 0.02 0.01 0.09 0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 10.0 1.00 1.00 1.00 1.00 1.00 0.1 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B B A A A C A A 14.0 B B A A A C A 14.0 B B A A A 14.0 B B B A B A 14.0 B B B B A B A 14.0 B B B B B B B B B B B B B B B B B B B	020 020 040 060 002 054 20 2.0 52 2.0 5.0 5.0 5.0 715 329 1452 968 39 1916 0.07 0.00 0.021 0.02 0.01 0.09 0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 14.1 13.2 9.9 3.4 12.8 4.8 B B A A C A A 14.0 0.07 0.0 0.0 9.1 HCM 2000 Level of Service 20 2.0 5.0 5.0 10 0.1 0.0 0.1 0.0 10 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 B B A A C A A 14.0 0.07 0.0 3.1 0.1 9.1 HCM 2000 Level of Service 20 2.0 5.0 20 3.4 10.7 20 3.4 10.7 20 3.4 10.7 20 3.4 10.7 20 3.4 10.7 20 4.0 3.4 10.7 20 3.4 10.7 20 4.0 3.4 10.7 20 4.0 3.4 10.7 20 5.7 20 5.7 20 5.7 20 6.7 20 7 20 8.7 20 8.7 20 8.7 20 8.7 20 8.7 20 8.7 20 9.7	ffective Green, g (s)	8.1	8.1		16.5	24.6	6.0	22.1	
49 49 60 49 44 57 20 2.0 5.0 2.0 5.0 715 3.29 1452 9.68 39 1916 c0.07 0.00 c0.21 0.02 0.01 c0.09 0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 1.00 1.00 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B B A A C A A 14.0 9.0 9.0 3.1 0.1 B B A A C A 14.0 9.0 3.4 2.28 4.8 B B A A C A 14.0 9.0 3.4 2.28 4.8 B B A A C A 14.0 9.0 3.4 2.28 4.8 B A A C A 14.0 9.0 3.4 2.28 4.8 B A A C A 14.0 9.0 3.4 2.28 4.8 B A A C A 14.0 9.0 3.4 2.28 4.8 B A A C A 14.0 9.0 3.3 3.4 2.8 B A A C A 14.0 9.0 3.3 3.4 2.8 B A A C A 14.0 9.0 3.3 3.4 2.8 B A A C A 14.0 3.3 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	49 49 60 49 44 57 20 2.0 5.2 2.0 5.0 715 3.29 1452 968 39 1916 c0.07 0.00 c0.21 0.02 0.01 c0.09 0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 10.0 1.00 1.00 1.00 1.00 1.00 114.1 13.2 9.9 3.4 2.28 4.8 B B A A C A A 14.0 B B A A C A 14.0 A A A 14.0 A A A C A 14.0 A A A A	ctuated g/C Ratio	0.20	0.20		0.40	09.0	0.02	0.54	
20 20 55 20 50 50 715 329 1452 968 39 1916 c007 0.00 c0.21 0.02 0.03 0.34 0.02 0.53 0.08 0.46 0.17 14.0 1.00 1.00 1.00 1.00 1.00 1.01 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B B A A C A A 14.0 9.0 3.0 0.0 5.7 B A A C A 14.0 9.0 A A A A A A A A A In the secondary axion of the control	20 20 55 20 50 50 715 329 1452 968 39 1916 0007 0000 0.0.21 0.02 001 0.09 034 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 1.00 1.00 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 14.0 8 A A C A 14.0 9.0 5.7 8 B A A C A 14.0 9.0 5.7 8 B A A C A 14.0 9.0 5.7 8 A A C A 15.7 9 O A A 16.8 9 O A A 17.8 9 O A 18.8 9 O A	learance Time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
715 329 1452 968 39 1916 C0.07 0.00	715 329 1452 968 39 1916 0.007 0.000 0.0.21 0.0.29 0.01 0.0.09 0.34 0.02 0.53 0.08 0.46 0.17 140 132 92 34 19,7 4,7 140 0.0 0,7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B B A A C A A 14.0 9,0 3.4 0.0 5.7 14.0 0.0 0.1 0.0 0.1 0.0 14.0 0.0 0.1 0.0 0.1 0.0 15.1 0.1 0.1 0.0 16.1 0.0 0.1 0.0 0.1 0.0 17.1 0.0 0.0 0.1 0.0 0.1 0.0 18.1 0.0 0.0 0.1 0.0 0.1 0.0 19.2 0.0 0.1 0.0 0.1 0.0 19.3 A A A C A 19.4 A A C A 10.5 A A 10.5	ehicle Extension (s)	2.0	2.0		5.2	2.0	2.0	5.0	
0.07 0.00	0.007 0.000	ane Grp Cap (vph)	715	329		1452	896	39	1916	
0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 1.00 1.00 1.00 1.00 1.00 1.00 0.1 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B A A C A A 14.0 9.0 9.0 5.7 B A A C A 14.0 9.0 8.00 Evel of Service 9.1 HCM 2000 Level of Service 2.24 0.04 Sum of lost time (s) 2.25 Service 2.26 Sum of lost time (s) 2.27 Service	0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 1.00 1.00 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 14.0 8 A A C A 14.0 9.0 A A C A 14.0 9.1 HCM 2000 Level of Service 20actly ratio 0.047 201	's Ratio Prot	c0.07	0.00		c0.21	0.02	0.01	60.00	
0.34 0.02 0.53 0.08 0.46 0.17 1.40 13.2 9.2 3.4 19.7 4.7 1.00 1.00 0.7 0.0 3.1 0.1 1.4.1 13.2 9.9 3.4 22.8 4.8 B	0.34 0.02 0.53 0.08 0.46 0.17 14.0 13.2 9.2 3.4 19.7 4.7 1.00 1.00 1.00 1.00 1.00 1.00 0.1 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 14.0 A A C A 14.0 9.0 5.7 9.1 HCM 2000 Level of Service backly ratio 0.47 Zation 35.2% ICU Level of Service 1.5	's Ratio Perm					0.03			
14.0 13.2 9.2 3.4 19.7 4.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	140 132 92 34 19,7 4,7 100 100 1,00 1,00 1,00 1,00 0.1 0.0 0,7 0.0 3,4 0,18 B B A A C A A 14.0 9,0 3,4 22,8 4,8 B A A C A 14.0 9,0 3,4 22,8 4,8 A A C A 14.0 9,0 3,4 22,8 4,8 A A C A 14.0 9,0 3,4 22,8 4,8 A A C A 14.0 9,0 3,4 22,8 4,8 A A C A 14.0 9,0 3,4 22,8 4,8 A A A C A 14.0 9,0 3,4 22,8 4,8 A A A C A 14.0 9,0 3,4 22,8 4,8 A A A A A A A A A A A A A A A A A A A	c Ratio	0.34	0.02		0.53	0.08	0.46	0.17	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.1 1.00 0.1 1.00 0.1 1.00 0.1 1.00 1.00 1.00 1.00 1.00 0.1 1.00 1.00 0.1 1.	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	niform Delay, d1	14.0	13.2		9.2	3.4	19.7	4.7	
0.1 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 22.8 4.8 B A A C A A 14.0 5.7 B A A C A A C A A C	0.1 0.0 0.7 0.0 3.1 0.1 14.1 13.2 9.9 3.4 2.28 4.8 B A A C A 14.0 9.0 5.7 B A A C A A A A A A A A A A A A A A A A A	rogression Factor	1.00	1.00		1.00	1.00	1.00	1.00	
14,1 13,2 9,9 3,4 22,8 4,8 B A A C A 14,0 9,0 5,7 B A A C A 5,7 A A A A A A A A A A A A A A A A A B Sum of lost time (s) A23,2% ICU Level of Service 15,7 A A A A A A A A A A A A A A A A A A A	14.1 13.2 9.9 3.4 22.8 4.8 B A A C A 14.0 9.0 5.7 B A A C A A A A C A A A A A A A A A A A A	cremental Delay, d2	0.1	0.0		0.7	0.0	3.1	0.1	
B B A A C A A C A A C A A B A A C A A B A A B A A A B A A A A	B B A A C A A B B A A C A A B B A A B B A A B B A A B B A A B A A B A A B B A A B B A A B B A A B B A A B B A A B B B B B B A A B	elay (s)	14.1	13.2		6.6	3.4	22.8	4.8	
14,0 9,0 5,7 B A A A A A 9,1 HCM 2000 Level of Service acity ratio 0,47 Sum of lost time (s) 23,2% ICU Level of Service 1,5	14.0 9.0 5.7 B A A A A A addy ratio 0.47 Tation 35.2% (CU Level of Service 15.7) 15.7	evel of Service	В	В		⋖	A	ပ	Α	
B A A A A A A A A A A A A A A A A B A A A A A 2000 Level of Service A A A B S Um of lost time (s) Cation 35.2% I CU Level of Service C C C C C C C C C C C C C C C C C C C	9.1 HCM 2000 Level of Service 9.1 HCM 2000 Level of Service 0.47 Sum of lost time (s) 7.2 Sum of 10 Service 7.3 Sum of 10 Service 7.4 Sum of 10 Service 7.5 Sum of 10 Service	pproach Delay (s)	14.0			0.6			5.7	
9.1 HCM 2000 Level of Service 0.47 0.047 Sum of lost time (s) zation 35.2% ICU Level of Service	9.1 HCM 2000 Level of Service acity ratio 0.47 Sum of lost time (s) 22ation 35.2% ICU Level of Service 15	pproach LOS	В			A			Α	
9.1 HCM 2000 Level of Service 0.47 0.047 40.8 Sum of lost time (s) zation 35.2% ICU Level of Service	9.1 HCM 2000 Level of Service 0.47 0.47 Sum of lost time (s) zation 35.2% ICU Level of Service 15	Itersection Summary								
bacity ratio 0.47 Sum of lost time (s) 40.8 Sum of lost time (s) 35.2% ICU Level of Service	andity ratio 0.47 Sum of lost time (s) 22 ation 35.2% ICU Level of Service 15	CM 2000 Control Delay			9.1	Ξ	CM 2000	Level of S	service	A
40.8 Sum of lost time (s) zation 35.2% ICU Level of Service	40.8 Sum of lost time (s) zation 35.2% ICU Level of Service 15	CM 2000 Volume to Capaci	ity ratio		0.47					
Utilization 35.2% ICU Level of Service	Utilization 35.2% ICU Level of Service 15	ctuated Cycle Length (s)			40.8	S	um of lost	time (s)		15.3
		tersection Capacity Utilization	on		35.2%	⊇	CU Level o	of Service		Α
		nalysis Period (min)			15					
C CHICAL Earlie CHOUP										

KHA
HCM Signalized Intersection Capacity Analysis Page 43

KHA Queues

25: Morena Blvd & Balboa WB Ramps	3alboa	WB R	amps				Timing Plan: AM Peak Period
	•	*	+	•	→	*	
Lane Group	EBL	EBR	NBT	NBR	SBT	SBR	
Lane Group Flow (vph)	83	107	891	330	232	428	
v/c Ratio	0.22	0.25	0.39	0.21	0.10	0.27	
Control Delay	11.8	4.5	5.1	0.3	4.0	0.4	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.8	4.5	5.1	0.3	4.0	0.4	
Queue Length 50th (ft)	13	0	36	0	00	0	
Queue Length 95th (ft)	28	18	70	0	18	0	
Intemal Link Dist (ft)			933		2205		
Tum Bay Length (ft)		20		120		100	
Base Capacity (vph)	878	839	2257	1583	2257	1583	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	60.0	0.13	0.39	0.21	0.10	0.27	

Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Existing Conditions Timing Plan: AM Peak Period

Movement EB1 EB1 EB1 MB1	EBL EBT EBR WBILL T	WBL 0 1900	WBR 0	_		SBL	SBT	SBR
No. 100 No.	100 100	1900		**	١			;
130 94 0 0 0 784 290 0 130 1	73 0 94 0 1900 1900 1900 1900 1900 4.0 4.0 4.0 1.00 100 100 1900 1900 1.00 100 100 1900 1900 1.00 100 100 100 1900 1.00 1770 1583 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.	1900		ŧ	K.		‡	*-
1900 1900	1900 1900	1900				0	204	377
100	4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	3	1900	•		1900	1900	1900
1,00	100 100 100 100 100 100 100 100 100 100	1.00 0.85 1.00					4.0	4.0
1,00	100 085 1700 186 1700 1700 1770 1583 095 100 1770 188 088 088 088 09 0 108 0 08 0 0 89 0 0 0 0 89 0 0 0 0 89 0 0 0 0 89 0 0 0 0 0 89 0 0 18 0 0 18 0 0 18 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0 0 0 0 18 0	0.85		0.95	_		0.95	1.00
100 100	(1770 1583 100 1770 1583 1095 100 1583 0.95 100 1583 0.88 0.88 0.88 0.88 0.88 0.88 0.89 0.89	1.00		1.00			1.00	0.85
1770 1583 3539 1583 1533	1770 1583 1770 1683 1770 1688 088 088 088 1770 1688 088 088 088 1770 0 89 0 0 1770 0 89 0 0 1770 107 0 107 1770 177 0 177 1770 177 0 177 1770 177 0 177 1770 177 0 177 1770 177 0 177 1770 177 0 177 1770 177 0 177 1770 177 1770 177 1770 177 1770 177 1770 177 1770 177 1770 177 1770 177 1770 177 1771 177 1772 177 1773 177 1774 177 1775 177 1777 177			1.00			1.00	1.00
100 100	100 100	1583		3539			3539	1583
1770 1583 3539 1583 588 688	1770 1583 1883 1883 1884 1885	1.00		1.00			1.00	1.00
F	F 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.	1583		3539			3539	1583
83	h) 83 0 107 0 0 89 0 0 89 0 0 89 0 0 89 0 0 89 0 0 89 0 0 89 0 0 80 0 0 0	0.88	0.88		0	0.88	0.88	0.88
h) 0 0 89 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(h) 0 0 89 0 0 18 0 0 18 0 0 18 0 0 18 0 0 18 0 0 0 18 0 0 0 0					0	232	428
h) 83 0 18 0 0 0 0 891 330 0 Perm Perm NA Free 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	(a) Perm Perm Perm Perm Perm Perm Perm Perm					0	0	0
Perm Perm NA Free 4 4 4 4 5.7 5.7 19.9 33.6 0.17 0.17 19.9 33.6 0.17 0.17 19.9 33.6 1.0 0.17 19.9 33.6 1.0 0.17 19.9 33.6 1.0 2.68 2.096 1583 2.0 0.05 0.01 4.0 3.0 2.0 0.28 0.07 0.043 0.21 0.0 1.00 1.00 0.0 1.00 0.0 2 0.0 1.00 0.1 0.0 2 0.1 0.1 0.1 0.3 4 A A A A 8 A A A A 1.01 0.0 2.9 A A 1.02 0.43 0.0 2.9 A 1.02 0.43 0.0 <td< td=""><td>Perm Perm Perm A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td><td></td><td></td><td></td><td>330</td><td>0</td><td>232</td><td>428</td></td<>	Perm Perm Perm A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				330	0	232	428
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 1999 33.6 33.6 33.6 100 33.6 100 4.0 6.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3.0 3.3 4 A <td>4 4 4 4 4 4 4 4 4 4 6 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7</td> <td>erm</td> <td></td> <td>NA</td> <td></td> <td></td> <td>NA</td> <td>Free</td>	4 4 4 4 4 4 4 4 4 4 6 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7	erm		NA			NA	Free
1	9) 5.7 5.7 5.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6			2			9	
5.7 5.7 19.9 33.6 5.1 5.7 19.9 33.6 6.1 6.1 6.1 6.1 7.0 7.0 7.0 7.	5,7 5,7 6,7 6,7 6,7 6,7 6,7 6,7 6,7 6,7 6,7 6	4						Free
5.7 5.7 19,9 33.6 0.17 0.17 0.19 33.6 0.18 0.17 0.19 33.6 0.19 0.10 0.10 0.28 0.07 0.043 0.21 0.28 0.07 0.043 0.21 0.29 0.07 0.043 0.21 0.20 0.07 0.043 0.21 0.20 0.07 0.043 0.21 0.20 0.07 0.07 0.00 0.20 0.10 0.01 0.20 0.20 0.3 0.20 0.3 0.3 0.	5.7 5.7 5.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6	5.7		19.9			19.9	33.6
0.17 0.17 0.17 0.15 0.59 1.00 4.0 4.0 4.0 4.0 3.0 3.0 3.0 0.05 0.01 2.00 1.00 0.28 0.07 0.43 0.21 1.2.2 11.7 3.7 0.0 1.00 1.00 1.00 2 0.5 0.1 1.8 0.0 1.2.7 11.8 0.0 1.2.9 A	0.17 0.17 0.17 0.17 0.17 0.17 0.17 0.17	5.7		19.9			19.9	33.6
4.0 4.0	40 40 30 30 30 268 005 001 005 001 028 007 122 11,7 120 100 2 0,3 122 B 122 B 122 B 123 B 124 B 125 B 127 118 B 127 118 B 128 B 129 B 120 B 121 A 122 B 123 B 124 B 125 B 126 B 127 A 128 B 129 B 120 B 120 B 121 B 122 B 123 B 124 B 125 B 126 B 127 B 128 B 128 B 129 B 120	0.17		0.59			0.59	1.00
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.08 2.096 1583 0.05 0.01 0.025 0.01 0.28 0.07 0.43 0.01 1.00 1.00 1.00 1.00 1.00 1.01 1.02 0.1 0.3 1.27 11.8 3.9 0.3 8 12.2 0.0 2.9 9 1.2 0.0 2.9 9 1.2 0.0 2.9 1 1.2 0.0 2.9 1 2 0.0 2.9 1 3.3 HCM 2000 Level of Service A 1 4 A A 1 5 3.3 CM 2000 Level of Service A 1 5 1.0 1.0 1.0 1 5 1.0 1.0	30 30 30 30 30 30 30 30 30 30 268 30 30 268 30 30 30 30 30 30 30 30 30 30 30 30 30	4.0		4.0			4.0	
300 268 2096 1583 2000 20	300 268 005 001 028 007 122 117 1100 1.00 2 0.5 0.1 127 11.8 8 12.2 8 2 0.5 0.43 11 (16) 12.2 8 3.3 (17) 11 (18) 12 (18) 12 (18) 12 (18) 12 (18) 12 (18) 12 (18) 12 (18) 13 (18) 14 (18) 15 (18) 16 (18) 17 (18) 18 (1	3.0		3.0			3.0	
0.05 0.01 0.028 0.07 0.028 0.07 0.028 0.07 0.028 0.07 0.043 0.21 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.05 0.01 0.28 0.07 12.2 11.7 1.00 1.00 2 0.5 0.1 1.2.7 11.8 B 12.2 B 12.2 B 2 3.3 1.3 1 1.4 3.3 1.5 1.1 8 1.5 1.1 8 1.6 1.2 8 1.7 1.1 8 1.8 1 8 1.8 1 8 1.9 1 9.0 9.3 1.0 1 9.0 9.3 1	268		2096	_		2096	1583
0.05 0.01 0.021 0.021 0.021 0.028 0.07 0.07 0.43 0.21 0.021 0.028 0.07 0.07 0.43 0.21 0.022 0.02	0.05 0.01 0.28 0.07 1.22 11.7 1.00 0.07 1.00 0.07 1.00 0.07 1.01 1.00 8 1.22 B 1.22 B 1.22 B 1.22 B 1.24 A 8 3.3 1 1.25 B 1.27 A 1.8 A			c0.25			0.07	
122 11.7 0.43 0.21 0.7 0.43 0.21 0.2 0.0 1.00	0.28 0.07 12.2 11.7 12.0 10.0 2 0.5 0.1 12.7 11.8 B 12.2 B B 2 B 3.3 1 y y y y y y h (\$\frac{1}{2}\$	0.01			0.21			c0.27
122 11.7 3.7 0.0 1.00 1.00 1.00 1.00 1.00 1.27 0.1 0.3 3.9 0.3 12.2 B A A A 12.2 B A A A	12.2 11.7 11.0 1.00 0.00 0.00 0.00 0.00 0.00	0.07		0.43			0.11	0.27
100 100 100 100 100 100 100 100 100 100	2 0.5 1.00 2 0.5 1.00 2 0.5 0.1 2 12.7 11.8 2 12.2 3 8 1.00 4 2 1.00 4 3.3 1.00 5 0.5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11.7		3.7			3.0	0.0
2 0.5 0.1 0.3 12.7 11.8 3.9 0.3 12.2 0.0 2.9 A	2 0.5 0.1 12.7 11.8 B 12.2 B 12.2 B 3.3 14	1.00		1.00			1.00	1.00
127 11.8 3.9 0.3 B 12	12.7 11.8 B B B B C C C C C C C C C C C C C C C C	0.1		0.1			0.0	0.4
B B A A A A A A A A A A A A A A A A A	y 12.2 B 12.2 B B 12.2 B B B B 13.3 C C C C C C C C C C C C C C C C C C	11.8		3.9			3.0	0.4
12.2 0.0 2.9 1 9 A A A y y elay 3.3 HCM 2000 Level of Service A o Capacity ratio 0.43 Sum of lost time (s) 8.0 in (s) 33.4% ICU Level of Service A 15 IS	12.2 B B S S S S S S S S S S S S S S S S S	В		⋖	⋖		¥	A
y y y HCM 2000 Level of Service A Capacity ratio (0,43 Int (s) 33.6 Cultiration 15 15 A A A A A A A A A A A A A A A A A	y y y slant a slant		0.0	2.9			1.3	
3.3 HCM 2000 Level of Service 0.43 33.6 Sum of lost time (s) 32.4% ICU Level of Service 15	3.3 0.43 33.6 32.4%		А	A			A	
3.3 HCM 2000 Level of Service 0.43 3.6 Sum of lost time (s) 3.2.4% ICU Level of Service 1.5	3.3 0.43 33.6 32.4%							
0.43 33.6 Sum of lost time (s) 32.4% ICU Level of Service 15	0.43 33.6 32.4%		2000 Level of Serv	ice	A			
33.6 Sum of lost time (s) 32.4% ICU Level of Service 15	33.6							
Utilization 32.4% ICU Level of Service 15	32 4%		f lost time (s)		8.0			
15	072.770		evel of Service		×			
	15	15						

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 26: Morena Blvd & Balboa EB Ramps

Existing Conditions Timing Plan: AM Peak Period

1013 None SBT 240 240 240 0% 0.90 267 0.90 2.2 93 758 20 20 888 4.1 219 219 0.90 799 799 799 0% 0.90 888 None 0.90 SB 3 134 0 0.08 0.08 0.00 267 2.2 100 294 267 ICU Level of Service 3.3 SB 2 134 0 0 0.08 0.08 0.90 888 6.9 262 262 0 Vield 0% 0.90 100 155 56 56 0 758 0.07 6 6 10.1 B 1267 0.90 7.5 3.5 NB 2 243 0 243 243 1700 0.14 0.0 1134 15.9 64.9% 15 888 0 0 1700 0.52 0.90 3.3 82 891 0.0 134 134 6.9 4 4 0 Vield 0% 0.90 1267 6.5 4.0 100 155 VB1 291 0 291 287 1.01 268 96.7 F **†** 1267 0.90 7.5 157 157 157 0.0 891 0.18 16 9.9 A 1267 Average Delay Intersection Capacity Utilization Analysis Period (min) Traffic Volume (verhit)
Traffic Volume (verhit)
Sign Control
Grade
Grade
Hour Factor
Houry flow rate (vph)
Pedestrians
Lane Wurth (fl)
Pedestrians
Lane Wurth (fl)
Making Speed (fl(s)
Percent Blockage
Right tum flare (veh)
Median storage veh)
Median storage veh
Median storage veh
C, confiction volume
C, conficting volume
C, conficting volume
C, stage 2 conf vol
C, unblocked vol
C, stage 1 conf vol
C, stage 2 conf vol
C, stage 2 conf vol
C, stage 5 conf vol
C, stage 6 (s)
F (s)
F (s) Direction, Lane #
Volume Total
Volume Left
CSH
Volume Right
CSH
Volume to Capacity
Oueve Length 95th (t)
Lane LOS
Lane LOS Approach Delay (s) Approach LOS

KHA HCM Unsignalized Intersection Capacity Analysis

Č Transit Statio

Balboa Transit Station 27: Morena Blvd & Baker St	n aker S	+					Existing Conditions Timing Plan: AM Peak Period
	\	4	←	•	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	¥		+	R	r	₩	
Traffic Volume (veh/h)	23	53	946	19	17	354	
Future Volume (Veh/h)	23	53	946	19	17	354	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	
Hourly flow rate (vph)	79	33	1075	77	19	402	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	1314	1075			1097		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1314	1075			1097		
tC, single (s)	8.9	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	87	82			4		
cM capacity (veh/h)	145	215			632		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	26	1075	22	19	201	201	
Volume Left	56	0	0	19	0	0	
Volume Right	33	0	22	0	0	0	
cSH	177	1700	1700	632	1700	1700	
Volume to Capacity	0.33	0.63	0.01	0.03	0.12	0.12	
Queue Length 95th (ft)	34	0	0	7	0	0	
Control Delay (s)	35.1	0.0	0.0	10.9	0:0	0.0	
Lane LOS	ш			В			
Approach Delay (s)	35.1	0.0		0.5			
Approach LOS	ш						
Intersection Summary							
Average Delay			1.4				
Intersection Capacity Utilization	_		29.8%	ರ	ICU Level of Service	Service	В
Analysis Period (min)			12				

KHA HOM Unsignalized Intersection Capacity Analysis

Synchro 9 Report Page 47

Balboa Transit Station 28: Morena Blvd & Gesner St

Existing Conditions Timing Plan: AM Peak Period

•	>	-	•	٠	→ ¦	
ane Group	WBL	NBT	NBR	SBL	SBT	
ane Group Flow (vph)	93	1053	47	24	413	
//c Ratio	0.29	0.51	0.05	0.18	0.16	
Control Delay	15.4	10.8	8.9	23.5	3.5	
tueue Delay	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	15.4	10.8	8.9	23.5	3.5	
Queue Length 50th (ft)	=	118	2	14	18	
Dueue Length 95th (ft)	47	197	20	45	36	
ntemal Link Dist (ft)	1333	298			3361	
rum Bay Length (ft)			95	95		
Sase Capacity (vph)	1403	3485	1559	1233	3539	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.30	0.03	0.04	0.12	
C						
Itersection Summary						

Synchro 9 Report Page 48 KHA Queues

Balboa Transit Station Existing Conditions 28: Morena Blvd & Gesner St

rations e (vph) e (vph) re (s) ctor ctor ctor ctor ctor ctor ctor ctor	WBL	4	+	4	٠		
Suc (hq. (hq. (t)	WBL		-	-		-	
Suc (hq (hq (tq (tq	ŀ	WBR	NBT	NBR	SBL	SBT	
(hq)	-		#	*	F	**	
(hqq (s	32	47	895	4	46	351	
	32	47	895	40	46	351	
0 0 0 1.1	0061	1900	1900	1900	1900	1900	
Ì	4.4		5.9	5.9	4.4	0.9	
	1.00		0.95	1.00	1.00	0.95	
	0.92		1.00	0.85	1.00	1.00	
	86.0		1.00	1.00	0.95	1.00	
	089		3539	1583	1770	3539	
Flt Permitted 0	86.0		1.00	1.00	0.95	1.00	
Satd. Flow (perm) 16	089		3539	1583	1770	3539	
Peak-hour factor, PHF 0	382	0.85	0.85	0.85	0.85	0.85	
	88	22	1053	47	24	413	
	4	0	0	6	0	0	
Lane Group Flow (vph)	49	0	1053	38	54	413	
	Prot		¥	Perm	Prot	NA	
	œ		2		-	9	
Permitted Phases				7			
	5.2		22.9	22.9	3.7	30.9	
S)	5.2		22.9	22.9	3.7	30.9	
	0.11		0.49	0.49	0.08	99:0	
	4.4		5.9	5.9	4.4	0.9	
(9)	50		4.4	4.4	2.0	4.2	
(vph)	187		1742	779	140	2351	
	c0.03		c0.30		c0.03	0.12	
Perm				0.02			
	0.26		09:0	0.05	0.39	0.18	
	18.9		8.5	6.1	20.3	3.0	
	1.00		1:00	1.00	1.00	1.00	
Incremental Delay, d2	0.3		0.8	0.0	9.0	0.1	
	19.2		9.3	6.2	21.0	3.0	
	В		⋖	⋖	ပ	A	
(s)	19.2		9.2			5.1	
Approach LOS	В		A			А	
Intersection Summary							
HCM 2000 Control Delay			9.8	H	M 2000 L	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	atio		0.52				
Actuated Cycle Length (s)			46.5	Sul	Sum of lost time (s)	time (s)	14.7
Intersection Capacity Utilization			45.0%	ರ	ICU Level of Service	Service	A
Analysis Period (min)			2				

KHA HOM Signalized Intersection Capacity Analysis

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Balboa Transit Station 29: Balboa EB Ramps/Balboa WB Ramps & Garnet Ave

Existing Conditions Timing Plan: AM Peak Period

Intersection Sign configuration not allowed in HCM analysis.

KHA HCM Unsignalized Intersection Capacity Analysis

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Existing Conditions

Balboa Transit Station 1: Olney St & Garnet Ave

Existing Conditions Timing Plan: PM Peak Period

25.9 0.0 25.9 0.0 25.9 46 85

216 0.71 35.5 0.0 35.5 79 130 244

1055 0.46 10.2 0.0 10.2 140 241 899

WBL 19 0.06 8.4 0.0 8.4 4 4

752 0.63 11.2 0.0 11.2 11.2 154 338

12 0.04 6.6 0.0 6.6

Lane Group Lane Group Flow (vph) v/c Ratio

423 0 0 0 0.33

0.06

Intersection Summary Molume for 95th percentile queue is metered by upstream signal.

463

50 331

1197

Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (f)
Oueue Length 95th (f)
Internal Link Dist (f)
Tun Bay Length (f)
Base Capacity (typh)
Slarvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Storage Cap Reducth
Reduced v/c Ratio

50 284 0 0 0 0 0

baiboa Iransii Station	Station					Timing	Existing Conditions Timing Plan: AM Peak Period	ak Period
Arterial Level of Service: EB Garnet Ave	f Service: EB	Garnet Ave	4					
	Arterial	Flow	Running	Signal	Travel	Diet	Artoria	Artorial
Cross Street	Class	Speed	Time	Delay	Time (s)	<u> </u>	Speed	FOS
Olney St	=	30	12.1	10.3	22.4	0.09	13.8	ш
Balboa Ave	=	30	23.5	12.3	35.8	0.19	18.6	Ω
Soledad Mtn Rd	=	32	27.4	12.8	40.2	0.23	20.6	
Bond St	=	32	21.0	0.8	21.8	0.17	27.7	O
Mission Bay Dr	=	35	15.5	27.8	73.3	0.12	6.1	ш
Moraga Ave	=	45	44.2	5.3	49.5	0.50	36.5	V
Clairemont Dr	=	45	49.7	20.7	100.4	0.62	22.3	ပ
Total	=		193.4	150.0	343.4	1.92	20.1	D

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(iii)	Speed	COS
Clairemont Dr	=	45	14.7	41.0	55.7	0.13	8.7	ш
Moraga Ave	=	45		22.0	71.7	0.62	31.2	ω
Mission Bay Dr	=	45		75.6	119.8	0.50	15.1	ш
Bond St	=	32		0.8	16.3	0.12	27.4	ပ
Soledad Mtn Rd	=	32		0.9	27.0	0.17	22.4	ပ
Garnet Ave	=	32		0.3	27.7	0.23	29.9	В
Olney St	II	30		6.9	30.4	0.19	22.0	D
Total	=		196.0	152.6	348.6	1.97	20.3	Ω

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	FOS
Grand Ave	=	32	37.4	5.9	43.3	0.31	25.9	В
Bunker Hill St	=	32		4.6	18.9	0.11	20.1	O
Magnolia Ave	=	32		4.3	25.7	0.17	23.5	O
Garnet Ave	=	32		32.2	46.0	0.10	8.0	ш
Damon Ave	=	32		2.7	14.4	0.09	21.6	O
Bluffside Av	III	35		15.4	35.5	0.16	15.9	О
Total	=		118.7	65.1	183.8	0.93	18.2	O

Arterial Level of Service:

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	LOS
Bluffside Av	=	32	20.0	13.8	33.8	0.16	16.6	
Damon Ave	=	32		5.0	25.1	0.16	22.5	O
Garnet Ave	=	32		45.9	54.6	0.09	2.6	ш
Magnolia Ave	=	32		7.5	21.3	0.10	17.3	Ω
Bunker Hill St	=	32		1.5	22.9	0.17	26.3	В
Grand Ave		35		19.7	34.0	0.11	11.2	Ш
Total	=		101.3	90.4	191.7	0.77	14.6	D

	KHA	0.9	Arterial Level of Service

	21.6 C	15.9 D	18.2 C			peed LOS	16.6 D	22.5 C	5./ F	17.3 D	26.3 B	11.2 E	
	60.0						0.16						
	14.4	35.5	183.8		Travel	Time (s)	33.8	25.1	54.6	21.3	22.9	34.0	
	2.7	15.4	65.1		Signal	Delay	13.8	5.0	42.9	7.5	1.5	19.7	
	11.7	20.1	118.7	ےً	Running	Time	20:0	20.1	11.7	13.8	21.4	14.3	
:	35	35		: SB Mission Bay Dr	Flow	Speed	32	35	32	32	32	35	
				: SB M									

Synchro 9 Report	Page 1
KHA	Onenes

Balboa Transit Station

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	1	†	<i>></i>	>	ţ	✓	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	ţ		F	4₽			\$			(
Traffic Volume (vph)	12	687	43	18	686	34	105	83	21	71	44	22
Future Volume (vph)	12	687	43	18	686	34	105	83	21	71	44	22
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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.99			0.98	
Fit Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	1846		1770	3522			1792			1776	
FIt Permitted	0.24	1.00		0.27	1.00			0.79			0.72	
Satd. Flow (perm)	440	1846		512	3522			1453			1314	
Peak-hour factor, PHF	0.97	76.0	0.97	0.97	76:0	0.97	76:0	0.97	0.97	76:0	0.97	0.97
Adj. Flow (vph)	12	708	44	19	1020	32	108	98	22	73	45	23
RTOR Reduction (vph)	0	2	0	0	c	0	0	7	0	0	12	0
Lane Group Flow (vph)	12	750	0	19	1052	0	0	500	0	0	129	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			9			∞			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)	43.4	43.4		43.4	43.4			13.8			13.8	
Effective Green, g (s)	43.4	43.4		43.4	43.4			13.8			13.8	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.21			0.21	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	285	1195		331	2281			299			270	
v/s Ratio Prot		c0.41			0.30							
v/s Ratio Perm	0.03			0.04				c0.14			0.10	
v/c Ratio	0.04	0.63		90.0	0.46			0.70			0.48	
Uniform Delay, d1	4.3	7.0		4.3	5.9			24.7			23.4	
Progression Factor	1.00	1.00		1.30	1.41			1.00			1.00	
Incremental Delay, d2	0.3	2.5		0.3	9.0			5.7			0.5	
Delay (s)	4.6	9.5		5.9	8.9			30.3			23.9	
Level of Service	⋖	¥		A	A			ပ			ပ	
Approach Delay (s)		9.4			8.9			30.3			23.9	
Approach LOS		A			A			ပ			ပ	
Intersection Summary												
HCM 2000 Control Delay			12.1	H	HCM 2000 Level of Service	Level of S	ervice		В			
HCM 2000 Volume to Capacity ratio	ity ratio		0.64									
Actuated Cycle Length (s)			0.79	S	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization	on		61.0%	⊇	ICU Level of Service	f Service			В			
Analysis Period (min)												

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 2

Existing Conditions Timing Plan: PM Peak Period Balboa Transit Station 2: Balboa Ave & Garnet Ave

Lane Group EBT WBT Lane Group Flow (vph) 442 1186 w Ratio 0.23 0.62 Control Delay 8.8 8.3 Queue Delay 6.0 0.0 Queue Delay 8.8 8.3 Queue Length 50th (ft) 47 104 Queue Length 55th (ft) 72 167 Time Basi conth (ft) 936 329 Time Basi conth (ft) 10 329	538 538 0.37 0.0 0.0 0.7	SBL 813 0.76 3.3.8 0.0 3.3.8 3.3.8 3.3.8 3.3.8
Tow (vph) 442 1 0.23 1 0.0 0.0 8.8 8.8 0.0 0.0 8.8 8.8 0.50th (ft) 47 72 95th (ft) 72 0.0st (ft) 936	538 0.37 0.7 0.0 0.7	813 0.76 0.0 0.0 33.8 33.8 189
0.23 8.8 8.8 0.0 8.8 8.8 8.8 9.5th (ft) 47 72 95th (ft) 936th	0.37 0.0 0.0 0.7	0.76 3.38 3.00 3.38 1.89
8.8 0.0 0.0 8.8 8.8 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	0.0	33.8 0.0 33.8
0.0 8.8 8.8 8.8 0.0 50th (ft) 47 72 72 73 74 74 74 74 74 74	0.0	0.0 33.8 2.1 189
8.8 0.50th (ft) 4.7 1.95th (ft) 7.2 Dist (ft) 936	0.7	33.8 1189
n 50th (ft) 47 n 95th (ft) 72 Dist (ft) 936	0	189
72 936	c	
936	0	744
Tim Bay Landth (#)		868
Idili Day Edilgili (il)		
Base Capacity (vph) 1914 1910	1441	1135
Starvation Cap Reducth 0 0	0	0
Spillback Cap Reductn 0 0	0	0
Storage Cap Reductn 0 0	0	0
Reduced v/c Ratio 0.23 0.62	0.37	0.72
Intersection Summary		

Synchro 9 Report Page 3 KHA Queues

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Balboa Transit Station 2: Balboa Ave & Garnet Ave	n net Ave	ø.					Existing Conditions Timing Plan: PM Peak Period
	•	†	ţ	4	٠	*	
Movement	EBE	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		₩	4₽	¥C	M		
Traffic Volume (vph)	0	433	657	1033	790	7	
Future Volume (vph)	0	433	657	1033	790	7	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		2.0	2.0	4.0	4.9		
Lane Util. Factor		0.95	0.91	0.91	0.97		
Frt		1.00	0.93	0.85	1.00		
FIt Protected		1.00	1.00	1.00	0.95		
Satd. Flow (prot)		3539	3169	1441	3439		
Flt Permitted		1.00	1.00	1.00	0.95		
Satd. Flow (perm)		3539	3169	1441	3439		
Peak-hour factor, PHF	86:0	86.0	86.0	86:0	86:0	86:0	
Adj. Flow (vph)	0	442	670	1054	908	7	
RTOR Reduction (vph)	0	0	1%	0	-	0	
Lane Group Flow (vph)	0	442	066	538	812	0	
Turn Type		M	NA	Free	Prot		
Protected Phases		2	2		4		
Permitted Phases				Free			
Actuated Green, G (s)		36.2	36.2	0.79	20.9		
Effective Green, g (s)		36.2	36.2	0.79	20.9		
Actuated g/C Ratio		0.54	0.54	1:00	0.31		
Clearance Time (s)		2.0	2.0		4.9		
Vehicle Extension (s)		6.1	6.1		5.2		
Lane Grp Cap (vph)		1912	1712	1441	1072		
v/s Ratio Prot		0.12	c0.31		c0.24		
v/s Ratio Perm				0.37			
v/c Ratio		0.23	0.58	0.37	97.0		
Uniform Delay, d1		8.1	10.3	0.0	20.8		
Progression Factor		1.00	1.00	1.00	1.42		
Incremental Delay, d2		0.3	1.4	0.7	3.1		
Delay (s)		8.4	11.7	0.7	32.7		
Level of Service		V	В	Þ	ပ		
Approach Delay (s)		8.4	8.3		32.7		
Approach LOS		⋖	A		ပ		
Intersection Summary							
HCM 2000 Control Delay			15.0	H	M 2000 L	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	ratio		0.64				
Actuated Cycle Length (s)			0.79	Sul	Sum of lost time (s)		6.6
Intersection Capacity Utilization	_		60.2%	ರ	ICU Level of Service	Service	В
Analysis Period (min)			15				
c Critical Lane Group							

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 4

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Existing Conditions Timing Plan: PM Peak Period

	^	†	ļ	1	٠	•	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	77	1249	1840	634	576	86	
v/c Ratio	0.27	0.48	0.82	0.47	0.84	0.25	
Control Delay	75.8	10.3	34.5	5.5	77.3	10.1	
Queue Delay	0.0	0.0	1.	0.3	0.0	0.0	
Total Delay	75.8	10.3	35.7	2.8	77.3	10.1	
Queue Length 50th (ft)	42	274	1033	225	322	0	
Queue Length 95th (ft)	72	375	1170	321	373	51	
Internal Link Dist (ft)		724	908		294		
Tum Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	784	2608	2236	1352	98	392	
Starvation Cap Reductn	0	0	188	264	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.27	0.48	06.0	0.58	0.67	0.25	
Internation Community							

Synchro 9 Report Page 5 KHA Queues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Existing Conditions Timing Plan: PM Peak Period

Balboa Transit Station 4: Bond St & Garnet Ave

Existing Conditions Timing Plan: PM Peak Period

Movement EBL EBT WBT Lane Configurations FN 1199 1786 Future Volume (vph) 74 1199 1786 Future Util: Factor 100 100 100 Salt Flow (vptp) 190 100 Salt Flow (vptp) 3433 3539 3539 FIT Permitted Oppose 100 100 RIOR (vptp) 3433 3539 3539 Future Group Flow (vptp) 77 1249 1840 RIOR Reduction (vpt) 77 1249 1840 Future Group Flow (vptp) 77 1249 1840 Future Group Green G (s) 141 125.3 1074 Future Group Flow (vptp) 284 268 2235 Vehicle Extension (s) 20 5.5 80 Lane Group Form (vptp) 284 2608 2235 Vehicle Extension (s) 20 6.35 6.235 Ver Ratio Permitted Flow (vptp) 60.235 Ver Ratio Permitted Group Flow (vptp) 60.235 Ver Ratio Permitted Group Flow (vptp) 60.235	MBI WBRI WBRI WBRI WBRI WBRI WBRI WBRI WB	SBL 1900 5.43 1000 1.00 1.00 1.00 1.00 1.00 1.00 1.0	SBR 94 94 94 1900 5-4 1.00 0.85 1.00 1883 1.00 1883 0.96 98 1996 98 1996 98
EBL EBT V 74 1199 74 1199 74 1199 75 1190 76 1900 77 1249 77 1		SBL 553 553 553 1900 5,4 1,00 0,95 3,433 0,95 3,433 0,96 5,76 0,96 5,76 0,96 5,76 0,96 5,76 1,00 1,0	SBR 94 94 94 1900 5.4 1.00 1.00 1.153 0.96 98 98 19 19
1199 144 1199 144 155 1500 190		553 553 1900 5.4 0.97 1.00 0.95 3.433 0.096 5.76 0.96 5.76 7 7	94 94 94 94 94 94 94 94 94 94 94 94 94 9
74 1199 1 74 1199 1 74 1199 1 4.4 5.5 0.97 0.95 0 1.00 0.95 1.00 0.95 1.00 0.96 0.96 0 77 1249 1 77 1 77 1249 1 77 1 77 1249 1 77 1 77 1249 1 77 1249 1 77 1249 1 77 1249 1 77 1249 1 77 1249		553 553 1900 5.4 0.97 3433 3433 0.95 0.95 576 0.96 576 7 7	94 94 1900 5.4 100 0.85 1.00 1.883 1.00 96 96 98 19 19
1900 1900 1900 1900 1900 1900 1900 1900		553 1900 5.4 0.97 1.00 0.95 3433 3433 0.95 576 0.96 576 77 7	94 1900 5.4 5.4 1.00 0.85 1.00 1.583 1.00 9.6 98 79 79 19
1900 1900 1 74 5.5 0,44 6.5 1.00 1.00 0,95 1.00 3,433 3539 3 3,433 3539 3 0,96 0,96 0 0,96 0,96 0 0,07 1249 1 17 1249 1 17 1249 1 17 1249 1 17 1249 1 17 1249 1 17 1249 1 18 2 2 14.1 125.3 10 14.1 125.3 10 14.1 125.3 10 14.1 125.3 10 5 2 2 14.1 125.3 10 14.1 125.3 10		1900 5.4 0.97 1.00 0.95 3.433 0.95 3.433 0.96 5.76 5.76 Prot 1	1900 5.4 0.85 11.00 11.60 98 98 98 19 19
44 5.5 0.97 0.05 1.00 1.00 0.95 1.00 3.433 3339 33 0.96 0.96 0 77 1249 1 77 1249 1 77 1249 1 77 1249 1 141 125.3 10 141 125.3 10 141 125.3 10 141 125.3 10 141 125.3 10 141 125.3 10 141 125.3 10 142 125.3 10 143 125.3 10 144 125.3 10 145 125.3 10 146 125.3 10 147 125.3 10 148 125.3 10 149 125.3 10 140 125.3 10 141 125.3 10 141 125.3 10 142 125.3 10 143 125.3 10 144 125.3 10 145 125.3 10 146 125.3 10 147 125.3 10 148 125.3 10 149 125.3 10 1		5.4 0.97 1.00 0.95 3.433 0.96 5.76 5.76 Prot 1	5.4 1.00 1.00 1.00 1.158 1.158 0.96 98 98 1.7 1.9 1.9
0.97 0.95 0 0.95 1.00 0.95 1.00 0.95 1.00 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0		0.97 1.00 0.95 3433 3433 0.96 576 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100 085 150 150 150 1583 1583 19 19 19 4 4 4
0.00 100 100 100 100 100 100 100 100 100		1.00 0.95 3433 3433 3433 0.96 576 0 0 0 576 Prot 7	0.85 1.00 1.00 1.583 0.96 98 79 79 19 19
0.95 100 393 3539 3 3539 3 3539 3 3539 3 3433 3539 3 3433 3539 3 3433 3539 3 3433 3539 3 3433 3539 3 3433 3539 3 3433 3 3433 343		0.95 3433 0.95 3433 0.96 576 576 576 7	1100 11583 11583 096 98 98 19 19 19
3433 3539 3 3433 3539 3 3433 5539 3 096 0,96 0 77 1249 1 77 1249 1 77 1249 1 77 1249 1 141 125.3 10 141 125.3 10 008 0,74 0 44 4 55 20 56 20 56 20 56		3433 0.95 3433 0.96 576 576 Prot 7	11883 1100 11833 1096 98 79 119 119 44 4
0.95 100 0.95 100 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.		0.95 3433 0.96 576 576 Prot 7	1,00 1583 98 98 79 19 19 4 4
3433 3539 3 0.96 0.96 0 0 0 0 0 0 0 77 1249 1 5 2 14.1 125.3 11 14.1 125.3 11 14.1 125.3 11 0.08 2 2.0 5.6 2.0 5.6 2.0 5.6 2.0 5.6 2.0 5.6 2.0 0.35 of		3433 0.96 576 576 Prot 7	1583 0.96 98 79 19 10 ustom 4
096 0.96 (0.		0.96 576 0 576 Prot 7	0.96 98 79 19 ustom 4 4
77 1249 1 0 0 0 0 1 77 1249 1 Prot NA 5 2 5 2 2 14.1 125.3 10 14.1 125.3 11 14.1 125.3 14 4 4 5.5 2.0 5.6 2.0 5.6 2.0 5.6 2.0 5.6 2.0 5.6		576 0 576 Prot 7 7	98 79 19 ustom 4 7
) 0 0 0) 77 1249 1 Prot NA 5 5 2 14.1 125.3 10 14.1 125.3 10 14.4 5.5 2.0 5.6 2.0 5.6 2.0 5.6 2.0 5.6		576 Frot 7	79 19 ustom 4 7
Prot NA For 1249 1 1 1249 1 1 125.3 11 14.1 125.3 11 0.08 2.0 5.6 2.0 5.6 2.0 5.6 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		576 Prot 7 33.8	19 ustom 4 7
Prot NA 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		Prot 7 33.8	ustom 4 7
5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		33.8	7
14.1 125.3 14.1 125.3 14.1 125.3 0.08 0.74 4.4 5.5 2.0 5.6 2.0 5.6 2.84 2.608 0.02 0.35			7
14.1 125.3 14.1 125.3 0.08 0.74 4.4 5.5 2.0 5.6 284 2608 0.02 0.35			220
14.1 125.3 0.08 0.74 4.4 5.5 2.0 5.6 2.84 2608 0.02 c0.35			23.0
0.08 0.74 4.4 5.5 5) 2.0 5.6 7 284 2608 0.02 0.35			33.8
4.4 5.5 s) 2.0 5.6 l 284 2608 0.02 c0.35		_	0.20
2.0 5.6 284 2608 0.02 c0.35	4.9 5.4	5.4	5.4
284 2608 0.02 c0.35			3.0
0.02 c0.35	2235 1365	682	314
v/s Ratio Perm		0	0.01
	0.31		
0.48	0.82 0.46		90:0
	24.0 4.0		55.2
1.00 1.00	_	-	1.00
ital Delay, d2 0.2 0.6			0.1
73.3 9.7	32.9 6.4	74	55.3
E A	C	ш	ш
y (s) 13.4	26.1	71.8	
Approach LOS B	ပ	ш	
Intersection Summary			
lay	29.5	HCM 2000	HCM 2000 Level of Service
pacity ratio	0.82		
		Sum of lost time (s)	time (s)
Utilization	73.2%	ICU Level of Service	Service
Analysis Period (min)	15		

KHA Synchro 9 Report Oueues Page 7

Synchro 9 Report Page 6

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 4: Bond St & Garnet Ave

Existing Conditions
Timing Plan: PM Peak Period

Movement	WBT WBR ↑↑ 100 2243 0 2243 0 2243 0 90.95 100 100 100 100 100 100 100 100 100 10	NBL NBT 0 0 0 0 1900 1900 0 0 0 0 0 0	NBR SBL 29 0 0 29 0 0 29 0 0 1900 1900 1900 1900 1900 0 1611 100 1611 100 1611 100 1611 100 1611 100 100	24 SBT	SBR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
figurations (4th home (pth) 0 1699 53 0 1699 153 0 1699	0 0 0 0 0 0 0				1900 0 0 0 0 0 0 0 0 0 0
tume (vph) 0 1699 53 0 0 10me (vph) 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 1699 53 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000				0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
lume (vph) 0 1699 53 0 1400 1400 1900 1900 1900 1900 1900 19	000000000000000000000000000000000000000				1900 0.095 0 0 0 0 0 0
time (s) 1900 1900 1900 1900 1100 1100 1100 19	0000				1900 0 0 0 Perm
Fador 100 ted 100 ted 100 w (por) 3523 w (por) 100 tractor, PHF 0.95 0.95 0.95 (wh) 0 1788 56 0	0.9			0:0	0.95 0 0 Perm
ted 100 ted 100 v (prot) 3523 v (prot) 3523 ted 100 v (prot) 3523 v (pem) 3523 v (pem) 3523 v (pem) 3523 v (pem) 0 1788 56 0 0 v (prot) 0 0 1788 56 0 0 v (prot) 0 0 1788 56 0 0 v (vph) 0 1788 56 0 v (vph) 0 1780 0 v (vph) 0 17	0.9			0.9	0.95 0 0 0 Perm
ted 100 w (pord) 3523 ted 1000 w (pord) 3523 ted 1000 w (pord) 3523 tractor, PHF 0.95 0.95 0.95 (yph) up Flow (vph) 0 1788 56 0 up Flow (vph) 0 1844 0 0 up Flow (vph) 0 1844 0 0 0 up Flow (vph) 0 1844 0 0	0:0			0.9	0.95 0 0 0 Perm
ted 100 1523 1523 1524 1524 1525	0:0			0.9	0.95 0 0 0 Perm
w (prot) 3523 rited 1.00 w (prot) 3523 reductor, PHF 0.95 0.95 0.95 (vph) 0 1788 56 0 dediction (vph) 0 178 56 0 a choice (vph) 0 170 0 0 a Phases 2 1700 0 0 a Feren (sph) 1700 7 3 Green (sph) 3523 7 3 Cap (vph) 3523 9 Prof 0.52 0.0 0 a few 0.52 0.0 0 a few 0.0 0.0 0.0 0 b civit 0.0 0.0 0.0 0.0 a few 0.0 0.0 0.0 0.0 0.0 a few 0.0 0.0 0.0 0.0 0.0 0.0 0.0 a few 0.0 0.0 0.0 0.0	0.9			0:0	0.95 0 0 0 Perm
tied 100 w (pem) 3523 w (pem) 3523 (wh) 0 1788 56 0.95 (wh) 0 1788 56 0 0.00 uduction (wph) 0 1844 0 0 0 up Flow (wph) 0 1852 Flow (wph) 0 100 up Flow (wp Fl	0.9			0.9	0.95 0 0 0 Perm
Marcian Marc	6:0			0.0	0.95 0 0 0 0 Perm
rfactor, PHF 0.95 0.95 0.95 0.95 (wht) 0 1788 56 0 0 0 up. Flow (wht) 0 1788 56 0 0 0 up. Flow (wht) 0 1844 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.9			6:0	0.95 0 0 0 0 Perm
(vph) 0 1788 56 0 0 eduction (vph) 0 1788 56 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			31 0 31 Perm 2 170.0		Derm 6
ordiction (vph) 0 0 0 0 0 0 0 1944 0 0 0 0 0 0 1944 0 0 0 0 0 1948 0 0 0 0 1948 0 0 0 0 1948 0 0 0 0 1948 0 0 0 0 0 0 1948 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0 31 Perm 2 170.0		Perm 6
up Flow (vgh) 0 1844 0 0 0 Same of the color of the co			31 Perm 2 170.0		Perm 6
Phases NA Phases 2 Phases 2 Phases 2 Phases 2 Phases 2 Phases 1700 Green, G (s) 1700 Green, G (s) 1700 Time (s) 4.9 Adension (s) 7.3 Adension (s) 7.5 Adens	NA 6 170.0 170.0 1.00 4.9 7.3		Perm 2 170.0		Perm 6
Phases 2 Phases 2 Phases (5) (100 Green, G (5) (1700 Green, G (6) (170	6 170.0 1.00 4.9 7.3		2 170.0		9
Phases 1700	170.0 170.0 1.00 4.9		2 170.0		9
Green, G (s) 1700 Tool Marsion (s) 7.3 Marsion (s) 7.3 Marsion (s) 7.3 Marsion (s) 7.3 Front 0.52 Perm 0.52 Perm 0.52 Perm 0.52 Perm 0.52 Perm 0.52 Perm 0.55 Perm 0	170.0 170.0 1.00 4.9 7.3		170.0		
Geen, g (s) 170.0 Green, g (c) 170.0 3 C Ralio 1.00 3 Time (s) 4.9 Arension (s) 7.3 Cap (vph) 352.3 Prof 0.52 Prof 0.52 Perm 0.52 Perm 0.52 Perm 0.52 A A A A A A A A A A A A A A A A A A A	170.0 1.00 4.9 7.3				
g/c Ratio 1.00 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	1.00 4.9 7.3		170.0		
a Time (s) 4.9 Adersion (s) 7.3 Adersion (s) 7.3 3.523 3.3 Prof. 0.52 Perm 0.52 CC Perm 0.52 CC CC CC CC CC CC CC CC CC	4.9		1.00		
Alension (s) 7.3 7.3 Cap (vph) 35.23 3 Prof 0.52 α Perm 0.52 α Perm 0.52 α Perm 0.52 α On Factor 0.0 In Delay, d2 0.5 Envice A Delay (s) 0.5 On Factor A On Factor	7.3		4.9		
Cap (vph) 3523 3 3 3 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			7.3		
Prof. 052 CC Colored Cd	3539		1611		
Perm 0.52 C C C 2.22 C C C 2.22 C C C 2.22 C C C C	20.67				
0.52 C on Factor 1.00 1 lat Delay, d2 0.5 ervice A Delay (s) 0.5 A LOS A O.5 A D.5 A			0.02		
d2 1.00 0.5 0.5 A A A A A A A A A A A A A A A A A A A	29.0		0.02		
100 0.5 0.5 A A A A A A	0:0		0.0		
d2 0.55 0.5 A A	1.00		1.00		
0.5 0.5 A	0.7		0.0		
0.5 A	0.7		0.0		
0.5 A	Α		⋖		
	0.7	0.0		0.0	
	A	V		⋖	
Intersection Summary					
9:0	HCM 2000 Level of Service	rvice	A		
acity ratio 0.70					
170.0	Sum of lost time (s)		7.9		
Utilization 69.3%	ICU Level of Service		ပ		
Analysis Period (min)					

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KHA HCM Signalized Intersection Capacity Analysis

KHA Queues

Synchro 9 Report Page 9

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Existing Conditions Timing Plan: PM Peak Period

	I	I	I	I	I		I		I	I	I	I
	1	†	<i>></i>	/	ţ	1	•	•	•	٠	-	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	504	843	394	252	918	347	579	322	267	259	300	810
v/c Ratio	0.85	99.0	0.40	0.89	0.75	0.43	0.00	0.34	0.35	0.75	0.88	0.73
Control Delay	65.1	52.9	24.1	101.6	55.5	23.0	76.2	8.09	13.0	6.68	73.9	53.8
Queue Delay	0.0	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	4.6	1.2
Total Delay	65.1	53.3	24.4	101.6	55.5	23.0	76.2	8.09	13.4	89.9	78.5	55.0
Queue Length 50th (ft)	280	470	246	275	496	182	329	179	108	151	301	519
Queue Length 95th (ft)	315	222	344	#411	#651	282	361	240	184	200	#472	572
Internal Link Dist (ft)		574			1151			461			376	
Tum Bay Length (ft)	292		120	410		325	265		100	200		265
Base Capacity (vph)	700	1270	1004	313	1218	927	708	626	798	628	368	1186
Starvation Cap Reductn	0	107	201	0	0	0	0	0	221	0	31	182
Spillback Cap Reductn	0	0	0	0	0	0	0	31	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.72	0.49	0.81	0.75	0.37	0.82	0.35	0.46	0.41	0.89	0.81

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

802 802 802 1900 4.4 0.88 0.85 1.00 2787 1.00 2787 0.99 810 60.6 60.6 60.6 0.36 4.4 2.0 993 0.14 0.79 49.0 1.20 3.6 62.1 Existing Conditions Timing Plan: PM Peak Period 5.3 3.3 339 c0.16 0.88 67.8 0.72 21.4 70.3 E 297 297 290 900 1.00 1.00 1.00 863 863 300 300 300 ¥ 256 256 256 900 4.4 0.97 1.00 0.95 8433 0.99 259 74.3 1.05 6.8 84.7 19.0 E 264 264 1900 4.4 4.4 1.00 0.85 1.00 1.00 1.00 1.583 267 270 pm+ov 73.2 73.2 0.43 4.4 2.0 681 0.05 0.05 0.32 0.32 0.63 0.63 Ϋ́ 0.34 49.7 1.21 0.3 60.6 E E E 319 319 319 1900 1900 1.00 1.00 1.00 3539 3539 3539 3539 46.1 0.27 4.9 4.5 959 0.09 0.19 4.4 2.0 644 0.17 573 573 17900 4.4 0.97 1.00 0.95 3433 0.95 0.95 579 0.90 67.5 0.88 14.1 73.8 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service pm+ov 344 344 344 1900 1.00 1.00 1.00 1.00 1.00 347 58 289 4.4 2.0 704 0.04 0.14 0.41 32.0 1.00 0.1 909 909 1900 4.9 0.95 1.00 1.00 1.00 3539 918 ¥ 58.5 58.5 0.34 4.9 4.3 12.17 co.26 0.75 1.00 4.4 4.4 53.8 D D 249 249 1900 4.4 1.00 1.00 0.95 0.95 0.95 252 27.1 27.1 0.16 4.4 2.0 282 0.14 0.89 70.0 1.00 27.4 97.4 58.0 0.83 170.0 87.2% 92.9 92.9 0.55 4.4 2.0 865 0.07 0.07 0.37 22.0 1.88 0.1 390 390 1900 1.00 0.85 1.00 1.00 1.583 394 394 323 Dm+ov 0.66 45.9 1.05 2.4 50.7 D D D D 835 835 835 11900 4.9 0.95 1.00 3539 1.00 3539 0.99 ₹ 61.0 61.0 0.36 4.9 4.1 1269 0.24 0843 Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
C Critical Lane Group 499 499 499 1900 4.4 0.97 1.00 0.95 3433 0.95 0.95 504 29.6 29.6 0.17 4.4 2.0 597 co.15 0.84 68.0 0.78 9.0 62.2 504 Prot Fit Fit Protected Sart. Flow (prol) Fit Permitted Sart Flow (perm) Adj. Flow (vph) RTOR Reduction (vph) Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor Clearance Time (s) Vehicle Extension (s) Lane Group Flow (vph Actuated Green, G (s) Effective Green, g (s) Delay (s) Level of Service Approach Delay (s) Approach LOS Turn Type Protected Phases Permitted Phases Lane Grp Cap (vph) v/s Ratio Prot Actuated g/C Ratio

v/s Ratio Perm v/c Ratio KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Existing Conditions Timing Plan: PM Peak Period

	•	†	<i>></i>	•	ţ	4	•	←	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ			4413				*			*-
Traffic Volume (veh/h)	0	1369	0	0	2139	09	0	0	905	0	0	135
Future Volume (Veh/h)	0	1369	0	0	2139	09	0	0	902	0	0	135
Sign Control		Free			Free			Yield			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	86.0	0.98
Hourly flow rate (vph)	0	1397	0	0	2183	61	0	0	923	0	0	138
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1231										
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	
vC, conflicting volume	2244			1397			2263	3641	869	2912	3610	758
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2244			994			2077	3802	120	2890	3764	758
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
fF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
po dueue free %	100			100			100	100	0	0	100	61
cM capacity (veh/h)	227			223			12	33	726	0	m	349
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	869	869	873	873	498	923	138					
Volume Left	0	0	0	0	0	0	0					
Volume Right	0	0	0	0	61	923	138					
cSH	1700	1700	1700	1700	1700	726	349					
Volume to Capacity	0.41	0.41	0.51	0.51	0.29	1.27	0.39					
Queue Length 95th (ft)	0	0	0	0	0	865	46					
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	151.9	21.9					
Lane LOS						ш	O					
Approach Delay (s)	0.0		0.0			151.9	21.9					
Approach LOS						Œ.	ပ					
Intersection Summary												
Average Delay			30.5									
Intersection Capacity Utilization	uo		100.5%	2	U Level o	ICU Level of Service			G			
Analysis Period (min)			15									

KHA HCM Unsignalized Intersection Capacity Analysis

Synchro 9 Report

Balboa Transit Station
7: Balboa EB Ramps & Balboa Ave Timing Plan: PM Peak Period

Movement EBI		1	†	~	/	ţ	4	•	-	•	٠	-	•
Mone	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
None 1437 514 0 1578 0 0 0 257 0 0 0 0 0 0 0 0 0	Lane Configurations		‡	¥L.		*				K			K.
1437 514 0 1578 0 0 0 0 0 257 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	0	1437	514	0	1578	0	0	0	257	0	0	197
Free Free Stop	Future Volume (Veh/h)	0	1437	514	0	1578	0	0	0	257	0	0	197
0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	Sign Control		Free			Free			Stop			Stop	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Grade		%0			%0			%0			%0	
None None None 634 0.68 0.69 0	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
None None S34 0.68 0	Hourly flow rate (vph)	0	1562	226	0	1715	0	0	0	279	0	0	214
None None S34 0.68 0.69 0	Pedestrians												
None None 634 0.68 0.69 0	Lane Width (ft)												
None None S34 0.68 0	Walking Speed (ft/s)												
None None 634 0.68 0.69 0	Percent Blockage												
None None Above	Right turn flare (veh)												
1775 1562 2420 3277 781 2496 3277 781 7496 3277 781 7496 3277 781 7496 3277 781 7496 3277 781 7496 3277 781 7496 745 645 7496 74	Median type		None			None							
1107 1562 2420 3277 781 2496 3277 311 3496 3277 3496 34	Median storage veh)												
1/15	Upstream signal (ft)					634							
1715 1562 2420 3277 781 2496 3277 781 781 2496 3277 781 2496 3277 781 2496 3277 781 2496 3277 781 2496 3277 781 2496 3277 781 2496 7.5 6.5	pX, platoon unblocked	0.68						89.0	89.0		89.0	89.0	0.68
1107 1562 2145 3408 781 2257 3408 4.1 4.1 4.1 7.5 6.5 6.9 7.5 6.5	vC, conflicting volume	1715			1562			2420	3277	781	2496	3277	828
1107 1562 2145 3408 781 2257 3408 4.1 4.1 4.1 7.5 6.5 6.9 7.5 6.5 6.5 4.0 7.5 6.5	vC1, stage 1 conf vol												
1107 1562 2145 3408 781 2257 3408 4.1 4.1 4.1 7.5 6.5 6.9 7.5 6.5	vC2, stage 2 conf vol												
4.1 4.1 7.5 6.5 6.9 7.5 6.5 6.9 100 100 100 100 100 100 100 100 100 10	vCu, unblocked vol	1107			1562			2145	3408	781	2257	3408	0
22 22 3.5 4.0 3.3 3.5 4.0 100 100 100 100 100 100 100 100 100 1	tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
22 22 3.5 4.0 3.3 3.5 4.0 100 100 100 100 100 100 100 100 100 1	tC, 2 stage (s)												
100 100 100 100 100 100 100 100 100 100	tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
Hear	p0 queue free %	100			100			100	100	17	100	100	71
# EB 1 EB 2 EB 3 WB 1 WB 2 NB 1 SB 1 781 781 559 858 858 279 214 0 0 0 559 0 0 279 214 1700 1700 1700 1700 1700 338 736 scity 0.46 0.46 0.43 0.50 0.50 0.83 0.29 95h (fi) 0 0 0 0 0 0 180 30 5) 0 0 0 0 0 0 180 30 7 (s) 0 0 0 0 0 0 0 50.7 11.9 F B mmary 3.39 mmary 3.50 1.01 Level of Service (min) 15	cM capacity (veh/h)	425			419			13	2	338	3	2	736
781 781 559 858 858 279 214 0 0 0 0 0 0 0 0 0 0 0 559 0 0 0 0 0 20 179 214 1700 1700 1700 1700 1700 138 738 55h 0 0 0 0 0 0 0 180 30 55h 0 0 0 0 0 0 180 30 7(s) 0 0 0 0 0 0 0 0 57.7 11.9 F B 7(s) 0 0 0 0 0 0 0 0 57.7 11.9 7(s) 0 0 0 0 0 0 0 57.7 11.9 7(s) 0 0 0 0 0 0 0 50.7 11.9 89	Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
city 0.6 559 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Total	781	781	226	828	828	279	214					
City 1700 1700 1700 1700 1700 1700 1700 170	Volume Left	0	0	0	0	0	0	0					
ceity 0.46 0.46 0.33 0.50 0.83 0.29 95th (11) 0 0 0 0 0 180 30 9) 5) 0.0 0.0 0.0 0.0 0.0 50.7 11.9 7 (s) 0.0 0.0 0.0 0.0 50.7 11.9 7 (s) 0.0 0.0 0.0 0.0 50.7 11.9 7 (s) 0.0 0.0 0.0 50.7 11.9 7 (s) 0.0 50.7	Volume Right	0	0	226	0	0	279	214					
city 0.46 0.46 0.33 0.50 0.50 0.83 0.29 Seth (1) 0 0 0 0 0 180 30 Sy 0.0 0.0 0.0 0.0 0.57 11.9 F B F B Inmary 3.9 ICU Level of Service (min) 15	SSH	1700	1700	1700	1700	1700	338	736					
95th (ff) 0 0 0 0 0 180 30 5) 0.0 0.0 0.0 0.0 0.5 6.7 11.9 7 (s) 0.0 0.0 0.0 50.7 11.9 F B 7 Innary 3 pacity Utilization 6.25% ICU Level of Service (min) 15	Volume to Capacity	0.46	0.46	0.33	0.50	0.50	0.83	0.29					
s) 0.0 0.0 0.0 0.0 50.7 11.9 F B F B F B F B F B F B F B F B F B F	Quene Length 95th (ft)	0	0	0	0	0	180	30					
(s) 0.0 0.0 50.7 11.9 mmary 3.9 ICU Level of Service (min) 15	Control Delay (s)	0.0	0.0	0.0	0.0	0.0	50.7	11.9					
/ (s) 0.0 0.0 50.7 11.9 F B mmary 3.9 ICU Level of Service (min) 15	Lane LOS						ш	В					
F B Tunary 3.9 Bacity Utilization 6.25% ICU Level of Service (min) 15	Approach Delay (s)	0.0			0.0		50.7	11.9					
mmary 3.9 3 ICU Level of Service (finit) 15	Approach LOS						ш	В					
3.9 pacity Utilization 62.5% ICU Level of Service (finity)	Intersection Summary												
pacity Utilization 62.5% ICU Level of Service (min) 15	Average Delay			3.0									
	Intersection Capacity Utilizar	tion		62.5%	2	III evel o	Service			æ			
	Analysis Period (min)			15									

KHA HCM Unsignalized Intersection Capacity Analysis

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Balboa Transit Station Existing Conditions 8: Balboa Ave & Moraga Ave Timing Plan: PM Peak Period

•	SBR	305	0.64	11.8	0.0	11.8	0	79			973	0	0	0	0.31		
٠	SBL	102	0.44	41.9	0.0	41.9	46	115	201	155	925	0	0	0	0.11		
4	WBR	63	0.12	6.1	0.0	6.1	∞	36		250	1246	0	0	0	0.07		
ţ	WBT	1305	0.79	22.4	0.0	22.4	272	429	3203		2756	0	0	0	0.47		
†	EBT	1400	0.55	0.9	0.0	0.9	133	214	554		3480	0	0	0	0.40		
•	EBL	363	0.57	35.2	0.0	35.2	82	160		215	1346	0	0	0	0.27		
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	Intersection community

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Balboa Transit Station 8: Balboa Ave & Moraga Ave

Existing Conditions Timing Plan: PM Peak Period

																																				В		16.5	U	
•	SBR	ĸ.	299	299	1900	2.6	1.00	0.85	1.00	1583	1.00	1583	86:0	305	265	40	Perm		4	10.5	10.5	0.13	5.6	2.0	210		0.03	0.19	30.5	0.50	30.7	O				HCM 2000 Level of Service		time (s)	Service	
او د	WBR SBL	r K	91 100		_		1.00 1.00			`		Ì	86:0 86:0	=		60 102	Perm Prot	4			37.3 10.5			3.9 2.0	746 234	90:00			11.5 31.6		,		31.0	O		HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
↓	WBT W	**	1279		_		0.95			Ì				1305		1305	NA Pe	9			37.3 3	0	6.5		1668				17.5				19.5	В		16.3	89.0	79.1	65.1%	15
†	EBT		\vdash	_	_		7 0.95						3 0.98	3 1400		3 1400	t M				3 57.3			4.8		00.40		0	2 5.0				10.4	В						
•	Movement EBL	Lane Configurations	Traffic Volume (vph) 356	jų.	1	· ·	Lane Util. Factor 0.97		Flt Protected 0.95	rot)	Flt Permitted 0.95	Satd. Flow (perm) 3433	Peak-hour factor, PHF 0.98	ñ		Lane Group Flow (vph) 363		Protected Phases 5	Permitted Phases	_	(S	J		Vehicle Extension (s) 2.0	Lane Grp Cap (vph) 642		Perm		Uniform Delay, d1 29.2	6		Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

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KHA HCM Signalized Intersection Capacity Analysis

KHA Queues

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Balboa Transit Station 9: Clairemont Dr & Balboa Ave

Existing Conditions Timing Plan: PM Peak Period

	^	†	/	ļ	•	—	•	٠	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	395	1187	427	1171	98	319	350	260	828	
v/c Ratio	08.0	0.87	0.82	98.0	0.63	0.57	09.0	0.85	0.93	
Control Delay	77.0	52.5	77.0	50.9	9.68	9:59	40.2	86.0	9.89	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	77.0	52.5	77.0	50.9	9.68	9:59	40.2	86.0	9.89	
Queue Length 50th (ft)	201	276	218	261	98	162	256	252	406	
Queue Length 95th (ft)	270	#194	290	#754	152	226	369	#417	#601	
Internal Link Dist (ft)		3203		930		1350			098	
Tum Bay Length (ft)	240		220		200		100	120		
Base Capacity (vph)	672	1395	672	1383	347	925	648	347	917	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.85	0.64	0.85	0.25	0.34	0.54	0.75	0.00	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station	9: Clairemont Dr & Balboa Ave

Movement EBL EBT ↑↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	EBR 57 57 57 1900 0.96 59 59 59 60 0	WWBI W WBI W 1100 11900	MWBT W ↑↑↑ ↑↑↑ 11020 1100 1100 3490 1100 3490 1100	104 1104 1104 1104 1100 1104 1108 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBI	NBT 100 3306 3306 3306 3306 3306 3309 3539 319 0096 319 319 0096 319 319 0096 319	NBR 336 336 1900 4.4 11.00 0.85 11.00	SBI 250 250 1900 4.4 1.00	SBT	SBR 291
FBL EBT Ins 17 (16) In) 379 (1083 In) 379 (1083 In) 1900 (1900 In) 1900 (57 57 57 1900 0.96 59 0 0				3 1 3 1 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3	MBT 306 306 306 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00	336 336 336 1900 4.4 1.00 0.85 1.00	SBL 250 250 1900 4.4 1.00	\$BT + \$504	291 291
hh) 379 1083 hh) 379 1083 h) 379 1083 1080 1083 4.4 5.7 0.97 0.95 1.00 0.99 0.95 1.00 0.95	57 57 1900 0.96 0 0					↑↑↑ 306 306 306 900 100 100 100 853 1100 853 1100 096 096	336 336 336 1900 4.4 1.00 0.85 1.00	250 250 1900 4.4 1.00	♣1 204	291
hh) 379 1083 hh) 379 1083 h) 970 1900 1900 0.99 100 0.99	57 57 1900 0.96 0 0 0					306 306 900 5.3 0.95 11.00 11.00 8539 8539 0.96 0.96	336 336 1900 4.4 1.00 0.85 1.00	250 250 1900 4.4 1.00	504	291
h) 379 1083 1900 1900 1900 1900 1900 1900 100 100 100	1900 1900 0 0 0				1 0 1 2 8 1 8	306 900 5.3 0.95 1.00 11.00 8539 8539 8539 0.96 0.96	336 1900 4.4 1.00 0.85 1.00	250 1900 4.4 1.00		291
1900 1900 1900 1900 1900 1900 1900 1900	1900 0.96 0 0					900 5.3 7.95 7.95 7.00 1.00 8539 1.00 8539 0.96 0.96	1900 4.4 1.00 0.85 1.00	1900 4.4 1.00	204	
(vph) 22.1 59.3 (s) 6.5 (s) 6.	96.0 0 0 0					5.3 2.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	4.4 1.00 0.85 1.00 1583	1.00	1900	1900
(vph) 0.97 0.95 0.99 0.99 0.99 0.99 0.99 0.99 0.99	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					2.95 1.00 1.00 1.00 8539 1.00 8539 0.96 319	1.00 0.85 1.00 1583	1.00	5.3	
(vph) 22.1 59.3 (s) 2.5 (s) 2.	0.96 0 0 0					1.00 3539 1.00 1.00 3539 0.96 319 0.96	0.85 1.00 1583		0.95	
(vph) 395 100 2 (vph) 395 118 2 2 1 5 (s) 2 (s) 3 (s)	0.96 0 0 0				· · · · · ·	1.00 1539 1.00 3539 0.96 319 0	1.00	1.00	0.95	
3433 3513 3433 3513 995 100 3433 3513 PHF 0.96 0.96 (vph) 395 1128 (vph) 395 1186 Prot NA 5 2 2 1 593 (s) 22.1 593	0.96 59 0					1539 1.00 3539 0.96 319 0	1583	0.95	1.00	
(vph) 3433 3513 PHF 0.96 100 (vph) 395 1128 (vph) 90 2 (vph) 395 1185 Phot NA 5 5 (s) 22.1 59.3 (s) 22.1 59.3 (s)	0.96 59 0					1.00 1539 0.96 319 0		1770	3345	
3433 3513 PHF 0.96 0.96 (vph) 0 2 (vph) 395 1128 (vph) 395 1185 5 2 5 2 5 (\$ 22.1 59.3 (\$ 5.3 (\$ 2.21 59.3 (\$ 5.8 (\$ 2.21 59.3 (\$ 2.21 59.3 (\$ 5.8 (\$ 2.21 59.3	0.96				, , , , , , , , , , , , , , , , , , ,	319 0.96 319 0	1.00	0.95	1.00	
w. (vph) 395 1128 2 100 100 100 100 100 100 100 100 100 1	0.96					3.96 3.19 0 3.10	1583	1770	3345	
395 1128 w (vph) 395 1185 w (vph) 395 1185 es 5 2 es 5 2 2 i, G(s) 22.1 59.3 i, q(s) 22.1 59.3	0 0		1062 4 1167 NA			319	96:0	96:0	96:0	0.96
395 1 Prot 5 5 22.1	0 0		4 1167 NA	00		210	320	260	525	303
995 1 Prot 5 5 22.1 22.1	0		1167 NA	C		210	37	0	43	0
Prot 5 22.1 22.1			NA 4	>		212	313	260	785	0
5 22.1 22.1		Prot	9	_	Prot	NA	vo+mq	Prot	A	
22.1		_	0		3	œ	-	7	4	
22.1							∞			
22.1			59.8	_		24.4	47.7	26.7	39.1	
			59.8	_	12.0 2	24.4	47.7	26.7	39.1	
0.14			0.39	0		0.16	0.31	0.17	0.25	
		4.4	6.4			5.3	4.4	4.4	5.3	
/ehicle Extension (s) 2.0 3.5		2.0	3.0		2.0	2.4	2.0	2.0	5.6	
-ane Grp Cap (vph) 494 1357		521 1	1359	·		562	491	307	852	
0.12			0.33	0	0.05 0	60.0	0.10	00.15	c0.23	
//s Ratio Perm							0.10			
//c Ratio 0.80 0.87		0.82	98.0	0	0.62 0	0.57	0.64	0.85	0.92	
Jniform Delay, d1 63.6 43.6		63.1	43.0	9	68.6 5	59.7	45.5	61.4	22.7	
r 1.00			1.00	_		1.00	1.00	1.00	1.00	
ncremental Delay, d2 8.3 6.7		9.3	9.6		6.2	1.0	2.0	18.3	15.1	
Delay (s) 71.8 50.3		72.3	48.6	7	74.7 6	60.7	47.5	7.67	70.8	
evel of Service E D		ш	۵		ш	ш	Ω	ш	ш	
Approach Delay (s) 55.7			55.0		(1)	56.2			72.9	
Approach LOS			O			ш			ш	
Intersection Summary										
HCM 2000 Control Delay	59.2	HCM	1 2000 Lev	HCM 2000 Level of Service	vice		ш			
pacity ratio	0.89									
	153.5	Sum	Sum of lost time (s)	ne (s)			20.5			
ntersection Capacity Utilization 87	87.8%	<u></u>	ICU Level of Service	ervice			ш			
Analysis Period (min)	15									

KHA HCM Signalized Intersection Capacity Analysis

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Existing Conditions	Timing Plan: PM Peak Period
Balboa Transit Station	10: Olney St & Balboa Ave

	\	Ť	•	,	_	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	16	414	113	584	243	134	
v/c Ratio	0.08	0.42	0.34	0.35	0.52	0.29	
Control Delay	23.5	16.3	22.0	9.4	20.0	16.6	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.5	16.3	22.0	9.4	20.0	16.6	
Queue Length 50th (ft)	4	47	27	39	54	27	
Queue Length 95th (ft)	21	100	9/	121	130	74	
Internal Link Dist (ft)		1172		936	328	244	
Tum Bay Length (ft)	120		120				
Base Capacity (vph)	1222	3490	1222	3520	1512	1508	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.12	60.0	0.17	0.16	0.09	
Intersection Summary							

Synchro 9 Report Page 17 KHA Queues

Balboa Transit Station 10: Olney St & Balboa Ave

Existing Conditions Timing Plan: PM Peak Period

•	SBR		22	22	1900								0.97	23	0	0																										
→	SBT	4	66	66	1900	4.9	1.00	0.98	1.00	1813	16.0	1764	16.0	102	2	129	NA	4		11.9	11.9	0.25	4.9	2.0	433		0.07	0.30	14.8	1.00	0.1	15.0	В	15.0	В							
٠	SBL		6	6	1900								16.0	6	0	0	Perm		4																							
•	NBR		44	44	1900								16:0	45	0	0																					В		14.4	¥		
•	NBT	4	171	177	1900	4.9	1.00	0.97	1.00	1810	16.0	1770	16.0	182	9	237	NA	∞		11.9	11.9	0.25	4.9	2.0	435		c0.13	0.54	15.9	1.00	0.7	16.6	В	16.6	В							
•	NBL		16	16	1900								0.97	16	0	0	Perm		∞																		Service			a		
✓	WBR		10	9	1900								0.97	10	0	0																					HCM 2000 Level of Service		Sum of lost time (s)	CU Level of Service		
ţ	WBT	₩	222	227	1900	2.0	0.95	1.00	1.00	3530	1.00	3530	16.0	574	_	583	NA	9		21.3	21.3	0.44	2.0	2.5	1553	c0.17		0.38	9.1	1.00	0.1	9.2	V	10.9	В		1CM 2000		on of los	CU Level		
/	WBL	F	110	110	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	16.0		0	113	Prot	-		6.7	6.7	0.14	4.4	2.0	245	00.00		0.46	19.2	1.00	0.5	19.7	В				_		0)	_		
<i>></i>	EBR		28	78	1900									29		0																					12.9	0.48	48.4	47.6%	15	
†	EBT	₩	373	373	_		0.95		1.00		1.00		16.0			409	N	2		15.4				2.8	-	0.12					0.2		В	13.5	В							
1	EBL	*	16	92	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.97	16	0	16	Prot	2		0.0	0.0	0.02	4.4	2.0	32	0.01		0.50	23.5	1.00	4.4	27.9	S					city ratio	,	tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	 Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

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Balboa Transit Station 11: Olney St & Grand Ave

Existing Conditions Timing Plan: PM Peak Period

→	SBT	224	0.98	105.8	0.0	105.8	191	#361	328		234	0	0	0	96:0	
←	NBT	217	0.54	40.2	0.0	40.2	127	212	315		412	0	0	0	0.53	
ļ	WBT	1446	0.62	13.3	0.0	13.3	292	370	1076		2349	0	0	0	0.62	
/	WBL	144	0.72	68.5	0.0	68.5	123	193		20	278	0	0	0	0.52	
†	EBT	1051	0.53	20.3	0.0	20.3	292	391	276		1980	0	0	0	0.53	
4	EBL	16	0.21	9.79	0.0	9.79	14	39		20	146	0	0	0	0.11	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station 11: Olney St & Grand Av

ii. Oiiray ot & Glai	Glalld Ave									200		2015
	4	†	<u> </u>	>	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥	4₽		F	41			\$			4	
raffic Volume (vph)	15	981	78	138	1212	176	13	70	125	88	102	24
Future Volume (vph)	15	981	78	138	1212	176	13	70	125	86	102	24
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	4.4	2.1		4.4	4.9			4.9			4.9	
-ane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Ŧ	1.00	1.00		1.00	86.0			0.92			86.0	
Fit Protected	0.95	1.00		0.95	1.00			1.00			86.0	
Satd. Flow (prot)	1770	3525		1770	3472			1707			1797	
Fit Permitted	0.95	1.00		0.95	1.00			86.0			0.56	
Satd. Flow (perm)	1770	3525		1770	3472			1670			1036	
Peak-hour factor, PHF	96:0	96.0	96:0	96:0	96.0	96:0	96.0	96.0	96:0	96:0	96.0	0.96
Adj. Flow (vph)	16	1022	53	144	1262	183	14	73	130	93	106	25
RTOR Reduction (vph)	0		0	0	7	0	0	41	0	0	3	0
Lane Group Flow (vph)	16	1050	0	144	1439	0	0	176	0	0	221	0
urn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	2	7			9			∞			4	
Permitted Phases							∞			4		
Actuated Green, G (s)	5.8	75.2		15.2	87.8			29.5			29.2	
Effective Green, g (s)	2.8	75.2		15.2	87.8			29.2			29.5	
Actuated g/C Ratio	0.02	0.56		0.11	99.0			0.22			0.22	
Clearance Time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
Lane Grp Cap (vph)	36	1978		200	2274			363			225	
//s Ratio Prot	0.01	0.30		c0.08	c0.41							
//s Ratio Perm								0.11			c0.21	
v/c Ratio	0.44	0.53		0.72	0.63			0.49			86.0	
Uniform Delay, d1	64.8	18.4		57.3	13.6			45.8			52.1	
Progression Factor	1.00	1.00		0.92	0.94			1.00			1.00	
Incremental Delay, d2	3.2	1.0		8.2				0.4			54.4	
Delay (s)	0.89	19.4		60.7	13.9			46.2			106.5	
Level of Service	ш	В		ш	В			۵			ш	
Approach Delay (s)		20.1			18.2			46.2			106.5	
pproach LOS		S			В			٥			ш	
ntersection Summary												
HCM 2000 Control Delay			27.2	H	HCM 2000 Level of Service	Level of S	service		ပ			
HCM 2000 Volume to Capacity ratio	ity ratio		0.74									
Actuated Cycle Length (s)			134.0	Su	Sum of lost time (s)	time (s)			14.4			
Intersection Capacity Utilization	lon		82.2%	೨	ICU Level of Service	f Service			ш			

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 12: Grand Ave & Culver St

Existing Conditions Timing Plan: PM Peak Period

Lane Group EBL Lane Group Flow (vph) 17 v/c Ratio 0.22 Control Delay 79,4	EBT 1259 7 0.42 1.9 0.0	WBT 1653 0.58 5.0 0.0 5.0	SBL 96 0.63
rp Flow (vph)		1653 0.58 5.0 0.0 5.0	96 96
alay Jav		0.58 5.0 0.0 5.0	0.63
		5.0	
	0.0	0.0	9.69
	1.9	2.0	0.0
Fotal Delay 79.4			9.69
Queue Length 50th (ft) 15	22	99	72
Queue Length 95th (ft) m29	m81	435	128
ntemal Link Dist (ft)	1076	211	186
fum Bay Length (ft) 55			
Base Capacity (vph) 146	2986	2854	344
Starvation Cap Reductn 0	0	0	0
Spillback Cap Reductn 0	0	0	0
Storage Cap Reductn 0	0	0	0
Reduced v/c Ratio 0.12	0.42	0.58	0.28
ntersection Summary			

m Volume for 95th percentile queue is metered by upstream signal.

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Balboa Transit Station	12. Grand Ave & Culyer St

Balboa Transit Station 12: Grand Ave & Culver St	r S							Existing Conditions Timing Plan: PM Peak Period
•	•	†	L à	ţ	4	٠	*	
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR	
Lane Configurations	je-	#	t t	4₽		×		
Traffic Volume (vph)	16	1209	0	1524	62	89	24	
Future Volume (vph)	16	1209	0	1524	62	89	24	
Ideal Flow (vphpl)	006	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.1		4.9		4.9		
Lane Util. Factor	1.00	0.95		0.95		1.00		
	1.00	1.00		66.0		96:0		
Fit Protected	0.95	1.00		1.00		96.0		
Satd. Flow (prot) 1	1770	3539		3518		1733		
	0.95	1.00		1.00		96:0		
erm)	1770	3539		3518		1733		
Peak-hour factor, PHF	96.0	96.0	0.92	96:0	96.0	96:0	96:0	
	17	1259	0	1588	92	71	25	
RTOR Reduction (vph)	0	0	0	-	0	Ξ	0	
Lane Group Flow (vph)	17	1259	0	1652	0	82	0	
Turn Type	Prot	¥	Prot	NA		Prot		
Protected Phases	2	7		9		4		
Permitted Phases								
Actuated Green, G (s)	2.8	113.1		106.1		10.9		
S)	5.8	113.1		106.1		10.9		
	0.02	0.84		0.79		80:0		
Clearance Time (s)	4.4	5.1		4.9		4.9		
	5.0	4.2		4.1		5.0		
(vph)	36	2987		2785		140		
	0.01	c0.36		c0.47		c0.05		
Perm								
	0.47	0.42		0.59		0.61		
	64.9	2.5		5.5		59.5		
	1.20	0.54		0.72		1.00		
ıtal Delay, d2	3.0	0.4		0.8		2.0		
	80.9	1.7		4.8		64.5		
Level of Service	ш	∢		⋖		ш		
Approach Delay (s)		2.8		4.8		64.5		
Approach LOS		∢		V		ш		
Intersection Summary								
HCM 2000 Control Delay			5.8	유	HCM 2000 Level of Service	evel of Se	ervice	4
HCM 2000 Volume to Capacity ratio	atio		09:0					
Actuated Cycle Length (s)			134.0	Sur	Sum of lost time (s)	me (s)		14.4
Intersection Capacity Utilization			27.5%	ರ	ICU Level of Service	Service		В
Analysis Period (min)			15					
 c Critical Lane Group 								

KHA HCM Signalized Intersection Capacity Analysis

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Existing Conditions Timing Plan: PM Peak Period Balboa Transit Station 13: Lee St & Grand Ave

Lane Group	EBT	WBL	WBT	NBL	
Lane Group Flow (vph)	1305	92	1639	43	
v/c Ratio	0.48	0.61	0.52	0.42	
Control Delay	5.9	75.5	2.4	43.7	
Oueue Delay	0.1	0.0	0.0	0.0	
Total Delay	3.0	75.5	2.5	43.8	
Queue Length 50th (ft)	93	79	113	15	
Queue Length 95th (ft)	119	134	181	54	
Internal Link Dist (ft)	211		1401	337	
Tum Bay Length (ft)		400			
Base Capacity (vph)	2737	166	3178	421	
Starvation Cap Reductn	344	0	0	0	
Spillback Cap Reductn	0	0	123	32	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.55	0.55	0.54	0.11	
Intersection Summary					

Synchro 9 Report Page 23 KHA Queues

Balboa Transit Station 13: Lee St & Grand Ave

Existing Conditions Timing Plan: PM Peak Period 14.2 B HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 25 25 1900 0.96 26 0 5.4 0.04 4.9 2.0 67 c0.01 0.27 62.4 1.00 0.8 63.2 E 63.2 0.52 1.7 1.00 0.6 2.3 A 5.6 A ₩BT 1573 1573 1573 1573 1.00 5.4 0.95 1.00 3539 1.00 3539 1.00 0.96 1.639 118.3 0.88 5.4 4.4 31.24 co.46 5.2 0.53 134.0 55.4% 88 88 88 88 88 4.4 1.00 0.95 1770 0.95 0.95 0.96 11.4 11.4 0.09 4.4 2.0 150 0.05 0.61 59.2 1.00 5.1 64.3 0.96 1900 Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group 414 11225 11225 11225 11226 11200 11.00 11.00 11.00 11.00 11.00 11.00 11.00 1304 NA 0.48 5.7 0.37 0.6 2.7 A A 103.0 103.0 0.77 4.9 4.0 2711 0.37 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Future Volume (vph)
Future Lost time (s)
Fut Beat Line (s)
Fut Protected
Satt Flow (pro)
Peak-hour factor, PHF
Adi, Flow (ppn)
Adi, Flow (ppn)
Lane Group Flow (vph)
Lane Group Flow (vph)
Lane Group Flow (vph) Uniform Delay, d1 Progression Factor Incremental Delay, d2 Delay (s) Level of Service Approach Delay (s) Approach LOS Turn Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s) Actuated g/C Ratio Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) v/s Ratio Pern v/c Ratio Pern

KHA HCM Signalized Intersection Capacity Analysis

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14: Grand Ave & Figueroa Blvd	gueroa	Blvd		Timing Plan: PM Peak Period
	1	†	ţ	
Lane Group	EBL	EBT	WBT	
Lane Group Flow (vph)	64	1245	1688	
v/c Ratio	0.59	19:0	0.54	
Control Delay	7.76	1.9	8.0	
Oueue Delay	0.0	0.0	8.0	
Total Delay	7.76	1.9	1.6	
Queue Length 50th (ft)	11	0	24	
Queue Length 95th (ft)	125	0	76	
Internal Link Dist (ft)		909	773	
Tum Bay Length (ft)	06			
Base Capacity (vph)	249	1863	3109	
Starvation Cap Reductn	0	0	882	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.26	0.67	0.79	
Intersection Summary				

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Balboa Transit Station 14: Grand Ave & Figueroa Blvd	on jueroa	Blvd					Existing Conditions Timing Plan: PM Peak Period
	4	†	ţ	4	٠	~	
Movement	EBL	EBT	WBT	EBT WBT WBR SBL SBR	SBL	SBR	
Lane Configurations	×	*	₩				
Traffic Volume (vph)	19	1183	1573	30	0	0	
Future Volume (vph)	19	1183	1573	8	0	0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	je-	*	\$				
Traffic Volume (vph)	19	1183	1573	30	0	0	
Future Volume (vph)	19	1183	1573	30	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.3	5.3				
Lane Util. Factor	1.00	1.00	0.95				
Frt	1.00	1.00	1.00				
Fit Protected	0.95	1.00	1.00				
Satd. Flow (prot)	1770	1863	3529				
FIt Permitted	0.95	1.00	1.00				
Satd. Flow (perm)	1770	1863	3529				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	64	1245	1656	32	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	
Lane Group Flow (vph)	64	1245	1688	0	0	0	
Turn Type	Prot	M	M				
Protected Phases	2	2	9				
Permitted Phases							
Actuated Green, G (s)	10.5	170.0	149.8				
Effective Green, g (s)	10.5	170.0	149.8				
Actuated g/C Ratio	90.0	1.00	0.88				
Clearance Time (s)	4.4	5.3	5.3				
Vehicle Extension (s)	2.0	4.4	4.4				
Lane Grp Cap (vph)	109	1863	3109				
v/s Ratio Prot	0.04	29.00	0.48				
v/s Ratio Perm							
v/c Ratio	0.59	19:0	0.54				
Uniform Delay, d1	9.77	0.0	2.3				
Progression Factor	1.00	1.00	0.19				
Incremental Delay, d2	5.1	1.9	0.3				
Delay (s)	87.8	1.9	0.7				
Level of Service	ш	⋖	V				
Approach Delay (s)		5.9	0.7		0.0		
Approach LOS		A	⋖		∢		
Intersection Summary							
HCM 2000 Control Delay			3.0	H	I OUCC IVI	HCM 2000 Level of Service	٨
HOM 2000 Values to Carette	el fer		0.5	2	2007	2014 100 10 10 10 10 10 10 10 10 10 10 10 10	
Actuated Cycle Length (s)	ratio		170 0	Ī	Sum of lost time (s)	lime (c)	12.7
Interconting Consolity I Hillantion	I,		702.77	3 3	10000	Conico	
Intersection Capacity Utilization			00.7%	⊴	ICU Level of Service	Service	ر
Analysis Period (min)			15				
 c Critical Lane Group 							

KHA HCM Signalized Intersection Capacity Analysis

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13. Mission Day of a ciana Ave	5		I	ı		יייייייין אין ימירו כמירו כמירו
	•	<i>></i>	•	←	→	
Lane Group	EBL	EBR	NBL	NBT	SBT	
Lane Group Flow (vph)	117	1104	1361	926	1080	
v/c Ratio	0.72	0.70	0.94	0.33	0.79	
Control Delay	92.9	1.9	9.69	3.2	51.1	
Queue Delay	0.0	0.0	0.0	0.0	1.5	
Total Delay	92.9	1.9	9.69	3.2	52.6	
Queue Length 50th (ft)	129	0	735	46	540	
Queue Length 95th (ft)	m192	0	834	148	723	
Internal Link Dist (ft)	773			526	478	
Tum Bay Length (ft)	225		285			
Base Capacity (vph)	240	1583	1490	3003	1369	
Starvation Cap Reductn	0	0	0	0	136	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.49	0.70	0.91	0.33	0.88	
Intercontion Commons						

KHA Queues

Balboa Transit Station 15: Mission Bay Dr & Grand Ave

																																					၁		15.0	ш		
•	SBR		788	786	1900								0.95	301	0	0																					Service					
→	SBT	₽	740	740	1900	4.9	0.95	96:0	1.00	3391	1.00	3391	0.95	779	22	1058	NA	2		67.5	67.5	0.40	4.9	3.6	1346	c0.31		0.79	44.9	1.04	4.5	51.3	ם י	51.3	٥		evel of :		time (s)	Service		
₾	SBU	4	0	0	1900								0.92	0	0	0	Prot	2																			HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
•	NBT	‡	427	427	1900	2.7	0.95	1.00	1.00	3539	1.00	3539	0.95	976	0	976	NA	9		144.3	144.3	0.85	2.7	4.6	3003	0.28		0.33	2.7	1.00	0.3	3.0	V	35.3	٥		HC		Sur	ಶ		
•	NBL	ř.	1293	1293	1900	2.7	0.97	1.00	0.95	3433	0.95	3433	0.95	1361	0	1361	Prot	-		71.9	71.9	0.42	2.7	2.0	1451	c0.40		0.94	46.9	1.00	11.6	58.5	ш				32.3	0.87	170.0	85.1%	15	
>	EBR	ĸ.	1049	1049	1900	4.0	1.00	0.85	1.00	1583	1.00	1583	0.95	1104	0	1104	Free		Free	170.0	170.0	1.00			1583		c0.70	0.70	0.0	1.00	1.9	6.L	¥									
•	EBL	<u>,-</u>	111	11	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.95	117	0	117	Prot	4		15.6	15.6	0.09	4.4	2.0	162	0.07		0.72	75.1	1.00	9.5	84.6	- :	9.8	¥			y ratio		Ľ		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level or Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

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Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Existing Conditions Timing Plan: PM Peak Period

Existing Conditions Timing Plan: PM Peak Period

•	SBR		99.0							70	790	0	0	0	99.0
→	SBT		0.83					#396	743		1480	0	0	0	0.83
←	NBT	1023	0.38	1.4	0.0	1.4	20	70	749		2704	0	0	0	0.38
•	NBL	588	0.57	56.6	0.0	26.6	176	180		202	208	0	0	0	0.57
4	EBL	389	0.78	39.0	0.0	39.0	78	#128	261	270	534	0	0	0	0.73
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

																																				U		14.4	O		
•	SBR	R.	503	503 1900	5.6	1.00	0.85	1.00	1583	1.00	1583	96:0	524	128	396	Perm		9	35.6	35.6	0.42	5.6	4.8	662		0.25	09:0	19.2	1.00	4.0	23.1	د				HCM 2000 Level of Service		time (s)	f Service		
-	SBT	₩	1179	1000	5.6	0.95	1.00	1.00	3539	1.00	3539	96:0	1228	0	1228	A	9		35.6	35.6	0.42	9.9	4.8	1482	c0.35		0.83	22.0	1.00	5.5	27.5	ه ر	7.07	ပ		CM 2000		Sum of lost time (s)	CU Level of Service		
•	NBT	₩	982	1900	5.0	0.95	1.00	1.00	3539	1.00	3539	96:0	1023	0	1023	A	2		65.0	65.0	97.0	2.0	4.0	2706	0.29		0.38	3.3	0.31	0.3	4.	₹ (7.0	A		Ĭ		Š	2		
•	NBL	je-	277	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	96:0	289	0	289	Prot	2		24.4	24.4	0.29	4.4	2.0	208	c0.16		0.57	25.8	0.87	0.7	73.7	د				20.4	0.73	85.0	71.0%	15	
/	EBR		127	1900	3							96:0	132	0	0																										
1	EBF	**	247	1900	4.4	0.97	0.95	0.97	3320	0.97	3320	96.0	257	82	307	Prot	4		10.6	10.6	0.12	4.4	2.0	414	c0.09		0.74	35.9	1.00	6.1	47.0	0 0	42.0	D			city ratio	,	lion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (Vpn)	Total Lost time (s)	Lane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level 01 Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Existing Conditions Timing Plan: PM Peak Period

Existing Conditions Timing Plan: PM Peak Period

→	SBT	1375	0.47	0.7	0.3	1.1	10	25	749		2937	856	429	0	99.0	
٠	SBL				0.0		89	m85		185	322	0	0	0	0.25	
•	NBR	187	0.18	4.3	0.0	4.3	14	m41		160	1021	0	0	0	0.18	
←	NBT	1227	0.56	12.1	0.5	12.6	208	264	376		2204	479	0	0	0.71	
4	WBR	160	0.57	30.9	0.0	30.9	20	127		75	437	0	0	0	0.37	
\	WBL	155	0.78	97.1	0.0	97.1	171	245	1169		391	0	0	0	0.40	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summan

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

KHA Oueues

Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Existing Conditions Timing Plan: PM Peak Period

1117 170 75 1251 1117 170 75 1251 1117 170 75 1251 1117 170 75 1251 1117 170 75 1251 1125 120 100
1900 1900 1900 5.0 4.4 5.2 1.00 1.00 0.95 0.85 1.00 1.00 1.883 1.770 3539 1.00 0.95 1.00 1.883 1.770 3539 0.91 0.91 0.91 187 82 1375 35 0 0 0.9 1.52 82 1375 9erm Prot NA 1 6 2 3.10 141.1 0.65 3.10 141.1 0.65 3.10 141.1 0.65 3.10 141.1 0.65 0.18 0.83 5.0 4 5.2 3.8 3.2 2937 0.0 0.5 0.0 3.5 0.15 0.0 0.0 0.15 0.25 0.7 A D A A D A A HCM 2000 Level of Service Sum of lost time (s) 1.00 1.00 0.7 A D A A HCM 2000 Level of Service
100 100 095 085 100 100 100 095 100 1583 1770 3539 091 097 091 187 82 1375 35 82 1375 152 82 1375 153 82 1375 154 82 1375 062 018 083 065 018 083 065 018 083 065 018 083 07 4 5.2 38 2.0 3.5 986 322 2937 010 015 025 047 13.4 59.6 4.0 015 025 047 13.4 59.6 4.0 015 025 07 13.4 59.6 4.0 015 0.09 03 3.3 A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.91 0.91 0.91 0.91 0.91 0.91 0.91
1583 1770 3539 100 093 100 1583 1770 3539 091 091 091 38 0 0 0 152 82 1375 Perm Prof NA 105.9 31.0 141.1 105.9 31.0 141.1 105.0 141.1 105
1583 1770 3539 1971 0971 1987 1872 1375 35 0 091 152 82 1375 Perm Prof NA 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 3.3 17.7 46.6 0.7 17.7 46.6 0.7 18.4 0.03 17.7 46.6 0.7 18.4 0.3 18
091 091 091 187 82 1375 35 0 0 152 82 1375 Perm Prot NA 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 3.3 10.0 0.3 15.0 17 13.4 50.6 4.0 10.5 0.39 10.1 0.3 17.7 46.6 0.7 18.4 0.0 19.5 0.7 18.4 0.3
187 82 1375 35 0 0 0 152 82 1375 Perm Prof NA 2 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 134 59.6 4.0 155 0.25 0.47 13.4 59.6 4.0 15.5 0.25 0.29 15.5 0.25 0.29
Perm Prof NA NA Prof N
Perm Prof. NA Prof. 1979 Perm Prof. NA Prof. 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 1
105.9 110 1110 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 32.2 2937 10.0 0.5 0.3 3.5 10.1 0.3 1.5 10.
2 310 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 105.9 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10
105.9 31.0 141.1 105.9 31.0 141.1 105.9 31.0 141.1 106.5 31.0 14.1 10.6 2.1 10.8 1.8 1.8 1.2 10.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1
105.9 31.0 141.1 0.05.9 31.0 141.1 0.05.2 0.18 0.83 5.0 3.5 3.2 3.8 2.0 3.5 3.5 986 322 2.937 0.05 c0.39 0.05 c0.39 0.15 0.25 0.47 13.4 59.6 4.0 0.55 0.78 0.09 0.3 7.7 46.6 0.7 A D A A D A A D A A B A B A A D A A B A B
5.0 4.4 6.05 3.8 2.0 3.5 986 322 2937 0.05 c0.39 0.15 0.25 0.47 13.4 59.6 4.0 0.55 0.78 0.09 0.3 0.1 0.3 7.7 46.6 0.7 A D A HCM 2000 Level of Service
3.8 2.0 3.5 986 322 2937 0.05 0.39 0.15 0.25 0.47 134 59.6 4.0 0.5 0.7 0.09 0.3 0.1 0.3 7.7 46.6 0.7 A D A HCM 2000 Level of Service
986 322 2937 0.10 0.05 60.39 0.15 0.25 0.47 13.4 59.6 4.0 0.55 0.78 0.09 0.3 0.1 0.3 7.7 46.6 0.7 A D A A D A A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
0.05 c0.39 0.15 0.25 0.47 13.4 59.6 4.0 0.55 0.78 0.09 0.3 0.1 0.3 7.7 46.6 0.7 A D A A D A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.15
0.15 0.25 0.47 13.4 59.6 4.0 0.55 0.78 0.09 0.3 0.1 0.3 7.7 46.6 0.7 A D A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
0.55 0.78 0.09 0.3 0.1 0.3 7.7 46.6 0.7 A D A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
0.3 0.1 0.3 7.7 46.6 0.7 A D A A D A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
7.7 46.6 0.7 A D A 3.3 A 3.3 A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
A D A 3.3 3.3 A 3.3 A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
3.3 A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
A HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service
Sum of lost time (s) ICU Level of Service
Sum of lost time (s) ICU Level of Service
ICU Level of Service
15

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal.

KHA HCM Signalized Intersection Capacity Analysis

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Lane Group EBT WBT NBT NBT SBL SBT Lane Group Flow (vph) 178 15 55 1120 39 944 Lane Group Flow (vph) 178 15 55 1120 39 944 Lane Group Flow (vph) 178 15 55 1120 39 944 Lane Bollay 083 0.10 0.86 4.5 71.9 9.3 Course Delay 796 4.39 1086 4.5 71.9 9.6 Queue Delay 796 4.39 1086 4.5 71.9 9.6 Queue Delay 796 4.39 1086 4.5 71.9 9.6 Queue Length 50h (ft) 38 8 4.5 7.1 9.6 Queue Length 55h (ft) 220 32 109 288 m65 260 Queue Length 55h (ft) 303 271 804 461 461 Lum Bay Length (ft) 303 271 804	18: Mission Bay Dr & Magnolia Ave	& Magr	olia A	ve				Timing Plan: PM Peak Period
EBT WBT NBL NBT SBL 39 178 15 55 1120 39 178 15 51 1120 39 796 439 1086 45 719 0.0 0.0 0.1 0.1 0.0 796 439 1086 4.5 719 138 8 64 54 42 220 32 109 288 m65 303 271 804 56 65 137 2720 167 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< th=""><th></th><th>†</th><th>ţ</th><th>•</th><th>+</th><th>٠</th><th>→</th><th></th></t<>		†	ţ	•	+	٠	→	
178 15 55 1120 39 68 68 68 69 69 69 69 69 69 69 69 69 69 69 69 69	Lane Group	EBT	WBT	MBL	NBT	SBL	SBT	
083 010 055 041 046 (7) 796 439 1086 4.5 719 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Lane Group Flow (vph)	178	15	22	1120	39	944	
79.6 43.9 108.6 4.5 71.9 0.0 0.0 0.1 0.0 79.6 43.9 108.6 4.5 71.9 138 8 64 54 42 220 32 109 288 m65 303 271 65 50 345 265 137 2720 167 2 0	v/c Ratio	0.83	0.10	0.55	0.41	0.46	0.36	
79,6 43,9 1086 4,5 71,9 77,6 43,9 1086 4,5 71,9 77,6 43,9 1086 4,5 71,9 71,9 71,9 71,9 71,9 71,9 71,9 71,9	Control Delay	79.6	43.9	108.6	4.5	71.9	9.3	
79.6 43.9 108.6 4.5 71.9 138 8 64 54 42 220 32 109 288 m65 303 271 804 50 65 137 2720 167 2 0 0 0 10 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.1	0.0	0.3	
138 8 64 54 42 220 32 109 288 m65 303 271 804 65 50 345 265 137 2720 167 0 0 0 0 0 0 0 0 0 0 052 006 040 048 0.23	Total Delay	9.62	43.9	108.6	4.5	71.9	9.6	
220 32 109 288 m65 303 271 804 804 904 904 904 904 904 904 904 904 904 9	Queue Length 50th (ft)	138	00	64	24	42	165	
303 271 804 50 65 50 10 0 0 410 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (ft)	220	32	109	288	m65	260	
65 50 345 266 137 2720 167 0 0 0 410 0 0 0 0 0 0 0 0 0 0 0 0.52 0.06 0.40 0.48 0.23	Internal Link Dist (ft)	303	271		804		461	
345 265 137 2720 167 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Tum Bay Length (ft)			99		20		
0 0 0 410 0 0 0 0 0 0 0 0 0 0 0.5 0.06 0.40 0.48 0.23	Base Capacity (vph)	345	265	137	2720	167	2645	
0 0 0 0 0 0 0 0 0 0 0 0.52 0.06 0.40 0.48 0.23	Starvation Cap Reductn	0	0	0	410	0	982	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	
0.52 0.06 0.40 0.48 0.23	Storage Cap Reductn	0	0	0	0	0	0	
	Reduced v/c Ratio	0.52	90:0	0.40	0.48	0.23	0.57	

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Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Advement ane Configurations raffic Volume (vph) :uture Volume (vph) edeal Flow (vphp) o'dal Lost time (s)	EBL	FRT	בב						0	Ido		
e Configurations fic Volume (vph) re Volume (vph) In Flow (vphp) In Lost time (s)			EBK	WBL	WBT	WBR	NBL	NBT	NBR	SDL	SBT	SBR
fic Volume (vph) Ire Volume (vph) I Flow (vphpl) ILLost time (s)		4			4		F	₩		¥	₩	
ire Volume (vph) I Flow (vphpl) I Lost time (s)	23	က	115	7	_	7	53	1072	က	37	793	113
Il Flow (vphpl) Il Lost time (s)	23	က	115	7		7	23	1072	က	37	793	113
ILost time (s)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
J Hil Eactor		4.9			4.9		4.4	2.0		4.4	2.0	
UIII. FAUIOI		1.00			1.00		1.00	0.95		1.00	0.95	
		0.91			0.94		1.00	1.00		1.00	0.98	
It Protected		86.0			86:0		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1667			1706		1770	3538		1770	3473	
It Permitted		0.89			0.74		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1508			1300		1770	3538		1770	3473	
Peak-hour factor, PHF	96:0	96.0	96.0	96.0	96:0	96:0	96.0	96:0	96.0	96:0	96:0	96.0
Adj. Flow (vph)	22	m	120	7	—	7	22	1117	က	39	826	118
RTOR Reduction (vph)	0	46	0	0	9	0	0	0	0	0	4	0
ane Group Flow (vph)	0	129	0	0	6	0	55	1120	0	39	940	0
	Perm	¥		Perm	N		Prot	NA		Prot	NA	
Protected Phases		∞			4		-	9		2	2	
Permitted Phases	œ			4				9				
Actuated Green, G (s)		18.7			18.7		9.8	129.8		7.2	128.4	
Effective Green, g (s)		18.7			18.7		9.8	129.8		7.2	128.4	
Actuated g/C Ratio		0.11			0.11		0.05	97.0		0.04	97.0	
Clearance Time (s)		4.9			4.9		4.4	2.0		4.4	2.0	
/ehicle Extension (s)		2.0			2.0		2.0	3.7		2.0	3.7	
ane Grp Cap (vph)		165			143		88	2701		74	2623	
//s Ratio Prot							c0.03	c0.32		0.02	0.27	
/s Ratio Perm		c0.09			0.01							
//c Ratio		0.78			90.0		0.62	0.41		0.53	0.36	
Iniform Delay, d1		73.7			8.79		79.1	7.0		79.7	7.0	
Progression Factor		1.00			1.00		1.17	0.51		0.75	1.15	
ncremental Delay, d2		19.6			0.1		8.1	0.4		2.2	0.3	
Delay (s)		93.3			6.7.9		100.2	4.0		61.9	8.3	
evel of Service		ш			ш		ш	⋖		ш	V	
Approach Delay (s)		93.3			6.7.9			8.5			10.4	
Approach LOS		ш			ш			A			Ω	
ntersection Summary												
HCM 2000 Control Delay			16.1	H	3M 2000	HCM 2000 Level of Service	service		В			
HCM 2000 Volume to Capacity ratio	ratio		0.47									
Actuated Cycle Length (s)			170.0	Su	Sum of lost time (s)	time (s)			14.3			
ntersection Capacity Utilization			56.4%	Ō	U Level o	ICU Level of Service			В			
Analysis Period (min)			15									
Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Existing Conditions Timing Plan: PM Peak Period

Existing Conditions Timing Plan: PM Peak Period

	ţ	•	٠	→	
Lane Group	WBT	NBT	SBL	SBT	
Lane Group Flow (vph)	163	1070	68	968	
v/c Ratio	0.65	0.46	0.48	0.32	
Control Delay	21.0	7.4	36.9	2.3	
Queue Delay	0.7	0.0	0.0	0.1	
Total Delay	21.6	7.4	36.9	2.4	
Queue Length 50th (ft)	6	113	46	22	
Queue Length 95th (ft)	63	170	69	74	
Internal Link Dist (ft)	514	478		804	
Tum Bay Length (ft)			06		
Base Capacity (vph)	406	2337	208	2828	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	74	0	0	461	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.49	0.46	0.43	0.38	
Intersection Summary					

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Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Existing Conditions
Timing Plan: PM Peak Period

tions (v(ph) (v(ph) pl) (v(ph) pl) (s) or (mm) (pl) (pl) (pl) (pl) (pl) (pl) (pl) (pl	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
SI (hi) (hi) PHF	4 0 0 0										
(h) (h)	0 0			4		F	₩.		F	\	
en HA	0 1000	0	118	0	38	0	984	43	82	860	0
· 	1900	0	118	0	38	0	984	43	82	098	0
	200	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
岩				4.9			2.0		4.4	2.0	
批				1.00			0.95		1.00	0.95	
岩				16.0			66.0		1.00	1.00	
岩				96:0			1.00		0.95	1.00	
뚪				1736			3517		1770	3539	
岩				0.78			1.00		0.95	1.00	
ır, PHF				1403			3517		1770	3539	
	96:0	96:0	96:0	96:0	96:0	96:0	96:0	96.0	96.0	96.0	0.96
	0	0	123	0	40	0	1025	42	86	868	0
RTOR Reduction (vph) 0	0	0	0	134	0	0	2	0	0	0	0
ane Group Flow (vph) 0	0	0	0	29	0	0	1068	0	86	968	0
urn Type			Perm	NA		Prot	NA		Prot	NA	
Protected Phases	4			4		-	9		2	2	
Permitted Phases 4			4								
Actuated Green, G (s)				7.2			55.5		8.0	6.7.9	
Effective Green, g (s)				7.2			55.5		8.0	6.79	
Actuated g/C Ratio				80.0			0.65		60:0	0.80	
Clearance Time (s)				4.9			2.0		4.4	2.0	
/ehicle Extension (s)				2.0			3.2		2.0	3.2	
ane Grp Cap (vph)				118			2296		166	2827	
//s Ratio Prot							c0.30		c0.05	0.25	
//s Ratio Perm				c0.02							
//c Ratio				0.25			0.46		0.54	0.32	
Jniform Delay, d1				36.4			7.4		36.7	2.3	
Progression Factor				1.00			0.85		0.81	0.80	
ncremental Delay, d2				0.4			9.0		1.6	0.3	
Delay (s)				36.8			6.9		31.5	2.1	
evel of Service				٥			V		ပ	V	
Approach Delay (s)	0.0			36.8			6.9			4.8	
Approach LOS	¥			۵			A			A	
ntersection Summary											
HCM 2000 Control Delay		8.2	HC	HCM 2000 Level of Service	evel of S	service		A			
HCM 2000 Volume to Capacity ratio		0.45									
Actuated Cycle Length (s)		85.0	Su	Sum of lost time (s)	time (s)			14.3			
ntersection Capacity Utilization		54.1%	⊴	ICU Level of Service	f Service			⋖			
Analysis Period (min)		12									

KHA HCM Signalized Intersection Capacity Analysis

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Existing Conditions	Timing Plan: PM Peak Period
Balboa Transit Station	20: Mission Bay Dr & Rosewood St

-	SBT	**	692	1769	Free	%0	0.98	1805						None		909											SB 2 SB 3	902 902	0 0		1700 1700			0.0 0.0					norito D
غر	SBL	¥	2 1		L		0.98	ľ						Ž				2274			2274	4.1		2.2	66	221	SB 1 S	2 (2			0.01		21.5	ပ	0.0			Citro Polyton
•	NBR		13				0.98																				NB 3	465	0		1700			0.0					
•	NBT	444	1 2216	1 2216	Free		3 0.98							None				_			_	•		~	_	~	I NB 2	1 904	0 (•	ö		0.0					9.0
√	. WBR	Ĺ	2 1.	2 11	0		3 0.98										.0	1 760				9.9				5 348	l NB 1	3 904	2 0			0		0.0		0.0			
•	Movement WBI	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control Stop	Grade 0%	Peak Hour Factor 0.98	Hourly flow rate (vph)	Pedestrians	Lane Width (ft)	Walking Speed (ft/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)				vC1, stage 1 conf vol	vC2, stage 2 conf vol	ed vol 3	tC, single (s) 6.8	stage (s)		9	cM capacity (veh/h)	Direction, Lane # WB 1	Volume Total 13	Volume Left 2	ne Right		0	ith (ft)	Control Delay (s) 176.0		Approach Delay (s) 176.0	Approach LOS	Intersection Summary	Average Delay

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station
21: Santa Fe St & Damon Ave Timing Plan: PM Peak Period

																						Α	
•	SBR			120	120	0.81	148															ICU Level of Service	
-	SBT	4	S		19		75															CU Level of	
←	NBT	₩	Stop	39	36	0.81	48	SB 1	223	0	148	-0.36	4.0	0.24	874	8.2	8.2	A				=	
•	NBL			99	99	0.81	8	NB 1	129	8	0	0.16	4.6	0.16	160	8.4	8.4	V		8.1	A	30.9%	15
/	EBR	K		22	22	0.81	89	EB 2	89	0	89	-0.57	3.2	90:0	1121	6.4							
1	EBL	F	Stop	84	84	0.81	104	EB 1	104	104	0	0.23	4.9	0.14	683	8.7	7.8	A				on	
	Movement	Lane Configurations	Sign Control	Traffic Volume (vph)	Future Volume (vph)	Peak Hour Factor	Hourly flow rate (vph)	Direction, Lane #	Volume Total (vph)	Volume Left (vph)	Volume Right (vph)	Hadj (s)	Departure Headway (s)	Degree Utilization, x	Capacity (veh/h)	Control Delay (s)	Approach Delay (s)	Approach LOS	Intersection Summary	Delay	Level of Service	Intersection Capacity Utilization	Analysis Period (min)

Existing Conditions Timing Plan: PM Peak Period ⋖ ICU Level of Service SB 2 169 0 0.03 7.1 0.33 495 SBT 414 Stop 233 233 0.92 253 35 35 0.92 38 SB 1 122 38 0 0.0.19 7.3 0.25 483 11.5 12.1 242 242 0.92 263 NB 2 263 0 263 0.67 6.3 0.46 563 13.4 NB1 147 0 0 0.03 7.0 0.29 506 11.6 12.7 55.2 F 54.4% 15 Stop 135 135 0.92 26 26 0 26 -0.67 5.8 0.04 599 7.9 24 24 0.92 26 Balboa Transit Station 22: Morena Blvd & Jutland Dr 586 586 0 0 0.53 7.0 1.14 507 108.3 Stop 539 539 0.92 586 Delay Level of Service Intersection Capacity Utilization Analysis Perlod (min) Direction, Lane #
Volume Total (vph)
Volume Left (vph)
Volume Right (vph)
Had (s)
Departure Headway (s)
Degree Utilization, x
Capacity (ver/h)
Confor Delay (s)
Approach Delay (s)
Approach LOS Lane Configurations Sign Control Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Hourly flow rate (vph) Intersection Summary

KHA HCM Unsignalized Intersection Capacity Analysis

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KHA HCM Unsignalized Intersection Capacity Analysis

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Existing Conditions Balboa Transit Station

Existing Conditions Timing Plan: PM Peak Period

Dailton Harisit Station					Existing Conditions
23: Morena Blvd & Costco Dwy	Costco	Dwy			Timing Plan: PM Peak Period
	>	-	٠	→	
Lane Group	WBL	NBT	SBL	SBT	
Lane Group Flow (vph)	479	674	22	810	
v/c Ratio	0.51	0.53	0.21	0.49	
Control Delay	16.3	9.4	21.5	8.7	
Queue Delay	0.0	0.0	0.0	0:0	
Total Delay	16.3	9.4	21.5	8.7	
Queue Length 50th (ft)	25	41	13	61	
Queue Length 95th (ft)	107	%	44	114	
Internal Link Dist (ft)	195	3170		1658	
Turn Bay Length (ft)			110		
Base Capacity (vph)	2975	3231	1295	3539	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.16	0.21	0.04	0.23	
Intercoction Cummery					

51 51 1900 4.4 1.00 1.00 0.95 1770 0.92 55 0.37 19.4 1.00 0.6 20.0 B 0.92 392 0 361 14.4 0.32 5.5 2.8 1035 0.15 NBT 259 259 259 1900 5.5 0.91 1.00 3230 1.00 3230 1.00 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.83 0.46 12.1 1.00 0.3 12.4 B B 70 70 1900 Balboa Transit Station 23: Morena Blvd & Costco Dwy 11.9 0.27 4.9 2.0 897 c0.14 WBL 371 371 371 1900 4.9 0.97 0.96 3385 0.96 3385 0.96 403 403 Prot 8 0.52 1.00 0.3 14.3 B Traffic Volume (pth)
Future Volume (pth)
Future Volume (pth)
Geat Flow (pth)
Total Lost time (s)
Lane Util. Factor
Fit Portected
Sadt Flow (pcn)
Fit Permitted
Sadt Flow (pcm)
Feak-hour factor, PHF
Adt. Flow (pcm)
RTOR Reduction (pth)
RTOR Reduction (pth) Tum Type
Protected Phases
Protected Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated guC Ratio
Clearance Time (s)
Vehicle Extension (c)
Lane Grp Cap (vph)
w's Ratio Prot
w'r Ratio Prot
w'r Ratio Progression Factor Incremental Delay, d2 Delay (s) Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1

22.6 22.6 0.50 0.50 2.8 1781 c0.23

3.8 3.8 0.08 4.4 2.0 149 0.03

Prot

KHA HCM Signalized Intersection Capacity Analysis

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14.8 A

Sum of lost time (s) ICU Level of Service

11.0 0.55 44.9 47.2%

Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cyde Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group

HCM 2000 Level of Service

0.45 7.2 1.00 0.2 7.3 A 8.2 A

Balboa Transit Station Existing Conditions 24: Morena Blvd & Avati Dr Timing Plan: PM Peak Period

24: Morena Blvd & Avati Dr	Avati D	ŗ					Timing Plan: PM Peak Period
	•	4	←	•	٠	→	
Lane Group	WBL	WBR	NBT	NBR	SB	SBT	
Lane Group Flow (vph)	204	47	617	206	26	1194	
v/c Ratio	0.31	0.14	0.43	0.16	0.22	0.61	
Control Delay	18.4	8.0	12.5	1.0	20.9	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.4	8.0	12.5	1.0	20.9	7.9	
Queue Length 50th (ft)	24	0	99	0	14	85	
Queue Length 95th (ft)	24	22	123	15	45	149	
Internal Link Dist (ft)	317		2304			3170	
Turn Bay Length (ft)		135		115	120		
Base Capacity (vph)	2432	1135	3539	1564	1254	3539	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.08	0.04	0.17	0.13	0.05	0.34	
Intersection Summary							

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Balboa Transit Station 24: Morena Blvd & Avati Dr

Existing Conditions Timing Plan: PM Peak Period

Movement WER NBD NBT NBR SBI SBI Lane Configurations 17 7 4 0 560 194 55 1122 Lane Configurations 170 44 0 580 194 55 1122 Future Volume (ph) 192 44 0 580 194 55 1122 Future Volume (ph) 190 1900 1900 1900 1900 1900 Total Lost fine (ph) 4.9 4.9 4.9 4.4 5.0 100 0.95 Fire Fine Fine (ph) 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00				:	-	-		,	
17	Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT	
192	Lane Configurations	K.	¥.	4	*	*-	۴	#	
192 44 0 580 194 55 1122 1900 1900 1900 1900 1900 1900 4 9	Traffic Volume (vph)	192	44	0	280	194	22	1122	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	192	44	0	280	194	22	1122	
4,9 4,9 6,0 4,9 4,4 5,7 1,00 0.95 1.00 0.95 1.00 0.95 3,433 1.83 3.539 1.83 1.70 3.539 3,433 1.83 3.539 1.83 1.70 3.539 3,433 1.83 3.539 1.83 1.770 3.539 4,94 0.94 0.94 0.94 0.94 0.94 5,04 0.94 0.92 0.94 0.94 0.94 5,04 0.94 0.92 0.94 0.94 0.94 5,04 0.94 0.92 0.94 0.94 0.94 5,04 0.94 0.92 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 0.94 5,04 0.94 0.94 5,04 0.94 0.94 5,04 0.94 0.94 5	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
0.97 1.00 0.95 1.00 0.95 0.05 0.05 0.05 0.05 0.05 0.05 0	Total Lost time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
100 085 100 085 100 100 095 100 095 100 100 095 100 100 100 100 100 100 100 095 100 100 100 100 095 100 100 100 100 095 100 100 100 095 100 095 100 100 100 095 100 095 100 095 100 094 094 094 094 094 094 094 094 094 0	Lane Util. Factor	0.97	1.00		0.95	1.00	1.00	0.95	
995 100 100 095 100 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 095 000 094 094 094 094 094 094 094 094 094	走	1.00	0.85		1.00	0.85	1.00	1.00	
3433 1583 3539 1583 1770 3539 9 100 9 100 9 100 9 100 9 100 9 100 100	Fit Protected	0.95	1.00		1.00	1.00	0.95	1.00	
100 100	Satd. Flow (prot)	3433	1583		3539	1583	1770	3539	
1833 1583 3539 1583 1770 3539 1804 094 094 094 094 094 1904 094 094 094 094 094 1906 38 0 0 17 20 0 1906 90 0 17 119 59 1194 1907 900 901 900 901 1908 815 815 178 26.3 4.1 26.6 1908 919 919 919 5.0 1908 919 911 158 2059 1909 0.39 0.58 0.09 0.58 1909 0.39 0.49 4.4 5.7 1900 0.10 0.17 0.02 0.03 1900 0.18 0.19 0.05 1900 1.00 1.00 1.00 1.00 1900 1.00 1.00 1.00 1.00 1900 1.00 1.00 1.00 1.00 1900 100 1.00 1.00 1.00 1900 100 1.00 1.00 1900 100 1.00 1.00 1.00 1900 1.00 1.00 1.00 1.00 1900 1.00 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00 1900 1.00 1.00 1.00 1900 1.00 1.00	Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00	
F 0.94 0.94 0.92 0.94 0.94 0.94 0.94 0.97 0.94 0.97 0.96 4 0.97 0.96 4 0.97 0.96 4 0.94 0.94 0.99 0.96 4 0.97 0.96 5.9 1194 0.08 0.09 0.09 0.09 0.09 0.09 0.09 0.09	Satd. Flow (perm)	3433	1583		3539	1583	1770	3539	
1) 204 47 0 617 206 59 1194 204 38 0 0 0 0 17 204 3 0 617 119 59 1194 Proi Proi Proi NA pm-tov Proi NA 7 7 1 6 7 5 5 2 8.5 8.5 17.8 26.3 4.1 26.6 6.19 0.19 0.19 0.39 0.58 0.09 0.58 4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 5.0 5.0 6.38 294 1378 911 158 2059 6.006 0.01 0.01 0.02 0.03 6.04 1.00 1.00 1.00 1.00 1.00 1.00 2.0 0.1 0.01 0.01 0.0 0.5 0.6 1.01 15.2 10.3 4.5 19.6 6.0 2.0 0.1 0.0 0.0 0.5 0.6 2.0 0.1 0.0 0.0 0.5 0.6 2.0 0.1 0.0 0.0 0.5 0.6 2.0 0.1 0.0 0.0 0.5 0.6 2.0 0.1 0.0 0.0 0.5 0.6 2.0 0.1 0.0 0.0 0.5 0.6 2.0 0.1 0.0 0.0 0.0 0.5 0.6 2.0 0.0 0.0 0.0 0.0 0.0 2.0	Peak-hour factor, PHF	0.94	0.94	0.92	0.94	0.94	0.94	0.94	
1) 0 38 0 0 87 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	204	47	0	617	206	26	1194	
9) 204 9 0 617 119 59 1194 Prol Prot Prot Prot NA pm-ov Prot NA 7 7 1 6 7 5 2 7 7 1 6 6 5 8.5 8.5 17.8 26.3 4.1 26.6 0.19 0.19 0.39 0.58 0.09 0.58 4.9 4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 5.0 5.0 6.3 294 1378 911 158 26.9 6.0 4.9 4.9 6.0 4.9 6.0 6.0 1.0 0.17 0.02 0.03 6.03 6.0 6.0 1.0 0.05 6.0 1.0 0.0 0.05 6.0 1.0 0.0 0.05 6.0 1.0 0.0 0.0 0.05 6.0 1.0 0.0 0.0 0.0 0.0 6.0 1.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0	RTOR Reduction (vph)	0	38	0	0	87	0	0	
Prot Prot NA pm+ov Prot NA 7	Lane Group Flow (vph)	204	6	0	617	119	26	1194	
National Properties	Tum Type	Prot	Prot	Prot	NA	vo+mq	Prot	NA	
6 8.5 8.5 17.8 26.3 4.1 26.6 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9	Protected Phases	7	7	_	9	7	2	2	
8.5 8.5 17.8 26.3 4.1 26.6 8.5 8.5 17.8 26.3 4.1 26.6 0.19 0.19 0.39 0.58 0.09 0.58 4.9 4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 2.0 5.8 6.38 294 1378 91 158 2059 c0.06 0.01 0.07 0.02 0.03 c.034 16.1 15.2 10.3 0.37 0.58 16.1 15.2 10.3 13 0.37 0.58 16.2 15.2 10.3 4.5 19.6 6.0 1.00 1.00 1.00 1.00 1.00 1.00 1.01 0.0 0.5 0.0 0.5 0.6 1.62 15.2 10.8 4.5 20.1 6.7 8 8 8 8 4.5 20.1 6.7 9 2 A 7.3 16.0 8 9.2 A 7.3 16.0 8 9.2 A 7.3 16.0 9.2 A 7.3 16.0 8 9.2 A 7.3 16.0 9.3 A	Permitted Phases					9		2	
8.5 8.5 17.8 26.4 26.6 4.9 0.19 0.39 0.58 0.09 0.58 4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 2.0 5.0 6.38 294 1378 911 158 2059 6.39 2.94 1378 911 158 2059 6.31 0.01 0.07 0.02 0.03 6.32 0.03 0.45 0.13 0.37 0.58 6.32 0.03 0.45 0.13 0.37 0.58 6.32 0.03 0.04 0.10 0.00 7.3 10.0 10.0 1.00 8.3 8.4 5.20 6.7 6.7 9.2 7.3 9.2 7.3 16.0 9.2 7.3 16.1 9.2 7.3 16.2 9.2 7.3 16.3 45.7 Sum of lost time (\$) 16.3 45.7 Sum of lost time (\$) 16.3 45.7 Sum of lost time (\$) 16.3 45.3 Sum of lost time (\$)	Actuated Green, G (s)	8.5	8.5		17.8	26.3	4.1	26.6	
6.38 294 1.378 9.17 1.58 20.9 0.58 6.8 6.8 4.9 6.0 4.9 4.4 5.7 2.0 2.0 2.0 5.2 2.0 2.0 5.2 2.0 5.0 5.0 5.0 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 5.0 5.0 5.0 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Effective Green, g (s)	8.5	8.5		17.8	26.3	4.1	26.6	
4.9 4.9 6.0 4.9 4.4 5.7 2.0 2.0 5.2 2.0 5.0 6.88 294 1378 911 158 2059 6.0.06 0.01 0.17 0.02 0.03 0.034 0.32 0.03 0.45 0.13 0.05 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0.1 0.0 0.5 0.0 0.5 0.6 1.0.2 15.2 10.8 4.5 19.6 6.0 1.0.2 10.0 1.0 1.0 1.0 1.0 1.0.3 0.0 1.0 1.0 1.0 1.0.4 1.0 1.0 1.0 1.0 1.0.5 0.0 0.5 0.6 1.0.5 0.0 0.0 0.5 0.6 1.0.5 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.0 0.6 1.0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Actuated g/C Ratio	0.19	0.19		0.39	0.58	0.00	0.58	
2.0 2.0 5.2 2.0 5.0 5.0 6.0 6.8 6.8 294 1378 911 158 2059 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Clearance Time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
638 294 1378 911 158 2059 60.06 0.01 0.17 0.02 0.03 6.034 0.32 0.03 0.45 0.13 0.37 0.58 16.1 15.2 10.3 4.5 19.6 6.0 10.1 0.00 0.0 0.5 0.0 0.5 0.6 16.2 15.2 10.8 4.5 20.1 6.7 16.0 1.00 1.00 1.00 16.0 1.00 1.00 16.0 1.00 1.00 17.3 4.5 0.0 1.00 18.0 1.00 1.00 19.0 1.00 1.00 10.0 1.00 1.00 10.0 1.00 1.0	Vehicle Extension (s)	2.0	2.0		5.2	2.0	2.0	5.0	
60 06 001 0.17 0.02 0.03 c0.34 0.32 0.33 0.34 0.32 0.33 0.45 0.13 0.35 0.35 0.34 0.32 0.03 0.45 0.13 0.37 0.58 0.31 0.32 0.03 0.45 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13	Lane Grp Cap (vph)	638	294		1378	911	158	2059	
0.32 0.03 0.45 0.05 0.05 0.05 0.05 0.05 0.05 0.05	v/s Ratio Prot	c0.09	0.01		0.17	0.05	0.03	c0.34	
0.32 0.03 0.45 0.13 0.37 0.58 16.1 15.2 10.3 4.5 19.6 6.0 1.00 1.00 1.00 1.00 1.00 1.00 1.01 0.00 0.5 0.0 0.5 0.6 16.2 15.2 10.8 4.5 20.1 6.7 8 B A C A A A A A A A A A A A A A A A A A	v/s Ratio Perm					0.02			
16.1 15.2 10.3 4.5 19.6 6.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio	0.32	0.03		0.45	0.13	0.37	0.58	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	16.1	15.2		10.3	4.5	19.6	0.9	
2 0.1 0.0 0.5 0.0 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	
16.2 15.2 10.8 4.5 20.1 6.7 8 16.0 8 8 8 A C A A A A A A A A A A A A A A A	Incremental Delay, d2	0.1	0.0		0.5	0.0	0.5	9.0	
16.0 9.2 7.3 16.0 9.2 7.3 16.0 9.2 7.3 16.0 9.2 7.3 17.3 A A A A A A A A A A A A A A A A A A A	Delay (s)	16.2	15.2		8.0	4.5	70.1	6.7	
16.0 9.2 7.3 R A A A A A A A LA A B B HCM 2000 Level of Service Capacity ratio 0.60 Sum of lost time (s) Utilization 52.3% ICU Level of Service 15	Level of Service	2	Я		Э ,	∢	ی	∢ !	
A A A L Alay 8.9 HCM 2000 Level of Service Capacity ratio 0.60 h (s) 45.7 Sum of lost time (s) Utilization 52.3% ICU Level of Service 15	Approach Delay (s)	16.0			9.5			7.3	
/ 8.9 HCM 2000 Level of Service 8.9 HCM 2000 Level of Service Capacity ratio	Approach LOS	В			∢			¥	
slay 8.9 HCM 2000 Level of Service Capacity ratio 0.60 h (s) 45.7 Sum of lost time (s) Utilization 52.3% ICU Level of Service 15 15	Intersection Summary								
Capacity ratio 0.60 h (s) 45.7 Sum of lost time (s) Utilization 5.2.3% ICU Level of Service 15	HCM 2000 Control Delay			8.9	¥	SM 2000	Level of !	Service	А
h (s) 45.7 Sum of lost time (s) Utilization 52.3% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		09:0					
Utilization 52.3% ICU Level of Service 15	Actuated Cycle Length (s)			45.7	S	um of lost	time (s)		15.3
	Intersection Capacity Utiliza	tion		52.3%	೨	U Level o	f Service		A
	Analysis Period (min)			15					

KHA HCM Signalized Intersection Capacity Analysis

Existing Conditions Timing Plan: PM Peak Period Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

		l	l	l			
	^	~	•	•	-	•	
Lane Group	EBL	EBR	NBT	NBR	SBT	SBR	
Lane Group Flow (vph)	126	233	831	224	820	715	
v/c Ratio	0.26	0.48	0.41	0.22	0.40	0.45	
Control Delay	10.5	10.5	6.7	2.0	9.9	6.0	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.5	10.5	6.7	2.0	9.9	6.0	
Queue Length 50th (ft)	11	23	42	0	41	0	
Queue Length 95th (ft)	36	22	92	77	92	0	
Internal Link Dist (ft)			882		2304		
Turn Bay Length (ft)		20		120		100	
Base Capacity (vph)	890	831	2062	1016	2062	1583	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.28	0.40	0.22	0.40	0.45	
Intersection Summary							

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Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Existing Conditions Timing Plan: PM Peak Period

	4	†	*	>	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*		*					‡	*-		‡	*-
Traffic Volume (vph)	11	0	205	0	0	0	0	731	197	0	722	629
Future Volume (vph)	11	0	205	0	0	0	0	731	197	0	722	629
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					0.95	1.00		0.95	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Fit Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770		1583					3539	1583		3539	1583
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770		1583					3539	1583		3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	126	0	233	0	0	0	0	831	224	0	820	715
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	105	0	0	0
Lane Group Flow (vph)	126	0	178	0	0	0	0	831	119	0	820	715
Tum Type	Perm		Perm					NA	Perm		M	Free
Protected Phases								2			9	
Permitted Phases	4		4						2			Free
Actuated Green, G (s)	7.5		7.5					17.6	17.6		17.6	33.1
Effective Green, g (s)	7.5		7.5					17.6	17.6		17.6	33.1
Actuated g/C Ratio	0.23		0.23					0.53	0.53		0.53	1.00
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)	401		358					1881	841		1881	1583
v/s Ratio Prot								0.23			0.23	
v/s Ratio Perm	0.07		0.11						0.08			c0.45
v/c Ratio	0.31		0.50					0.44	0.14		0.44	0.45
Uniform Delay, d1	10.7		11.2					4.7	3.9		4.7	0.0
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5		-:					0.5	0.1		0.5	0.0
Delay (s)	11.1		12.2					4.9	4.0		4.9	0.9
Level of Service	В		В					V	V		V	Ø
Approach Delay (s)		11.8			0.0			4.7			3.0	
Approach LOS		В			∢			⋖			A	
Intersection Summary												
HCM 2000 Control Delay			4.7	모	:M 2000	HCM 2000 Level of Service	service		۷			
HCM 2000 Volume to Capacity ratio	ity ratio		09.0									
Actuated Cycle Length (s)			33.1	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization	on		39.3%	⊇	J Level o	ICU Level of Service			⋖			
Analysis Period (min)			12									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Existing Conditions Timing Plan: PM Peak Period Balboa Transit Station 26: Morena Blvd & Balboa EB Ramps

Movement Lane Configurations												
Lane Configurations	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
,			₩			₩		*	*-	×	‡	
Traffic Volume (veh/h)	0	0	323	0	0	514	0	404	119	138	800	0
Future Volume (Veh/h)	0	0	323	0	0	514	0	404	119	138	800	0
Sign Control		Yield			Yield			Free			Free	
Grade		%0			%0			%0			%0	
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)	0	0	340	0	0	241	0	425	125	145	842	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											962	
pX, platoon unblocked												
vC, conflicting volume	1557	1557	421	1136	1557	425	842			425		
VC1, stage 1 conf vol												
vCii imblicked vol	1557	1557	421	1136	1557	425	842			425		
tC. single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	41	100	100	9	100			87		
cM capacity (veh/h)	4	45	581	26	16	218	789			1131		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB3					
Volume Total	340	541	425	125	145	421	421					
Volume Left	0	0	0	0	145	0	0					
Volume Right	340	541	0	125	0	0	0					
HS3	581	578	1700	1700	1131	1700	1700					
Volume to Capacity	0.59	0.94	0.25	0.07	0.13	0.25	0.25					
Queue Length 95th (ft)	74	303	0 9	0 0	= ;	0 6	0 0					
Control Delay (s)	19.6	50.2	0:0	0.0	, ×	0.0	0.0					
Lane LOS	, ر	_ 0	0		₹ (
Approach Delay (s)	19.6	20.7	0:0		<u></u>							
Applicacii EOS	د	_										
Intersection Summary												
Average Delay			14.5									
Intersection Capacity Utilization	uo		29.8%	೨	U Level o	ICU Level of Service			Ф			
Analysis Period (min)			15									

KHA HCM Unsignalized Intersection Capacity Analysis

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Balboa Transit Station 27: Morena Blvd & Baker St

Existing Conditions Timing Plan: PM Peak Period

Movement WBI WBR NBI NBR SBI SBI								
Configurations	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Submire (vehrh) 12 23 465 14 44 1012 2 465 14 44 1012 2 50p Free 60% 6 0% 6 0% 6 0% 6 0% 7 12 23 465 14 44 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1012 8 1034 8 1034 8 1034 8 1034 8 1037 8 1037 8 1037 8 1037 8 1037 8 1038 8	Lane Configurations	À		+	¥.	r	₩	
e Volume (Vehh) 12 23 465 14 44 1012 Control Stop Free Free Free Control O% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Traffic Volume (veh/h)	12	23	465	14	44	1012	
Stop Free	Future Volume (Veh/h)	12	23	465	14	44	1012	
Hour factor 094 094 094 094 099 099 Hour factor 094 094 094 099 099 Hour factor 094 094 094 099 099 Hour factor 099 099 099 Hour factor 099 099 099 Hour factor 099 099 Hour factor 099 099 099 Hour factor 099 Hour factor 099 099 Hour factor 099 Hour	Sign Control	Stop		Free			Free	
Hour Factor 094 094 094 094 094 094 1094 1094 1094	Grade	%0		%0			%0	
Mone	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Walth (N) None None Muth (R) None None Int Blockage Int Blockage None Int with a control of the page (N) None None am signal (II) Apple (N) Apple (N) am signal (II) Apple (N) Apple (N) am signal (II) Apple (N) Apple (N) Asage I cord vol 1128 495 510 Asage I cord vol 1128 495 4.1 Asage I cord vol 1128 495 4.1 Asage I cord vol 1128 495 4.1 Asage (S) 3.5 3.3 2.2 Asage (S) 3.5 3.5 9.6 pacity (ver/n) 189 5.20 4.1 pacity (ver/n) 189 5.2 9.6 pacity (ver/n) 189 5.0 0 pacity (ver/n) 189 5.0 4.7 5.8 pacity (ver/n) 189 5.0 0 0 pacity (ver/n)	Hourly flow rate (vph)	13	24	495	15	47	1077	
Width (ft) Worldth (ft) Modity (ft) None None Int Blockage None None Int Blockage 1128 495 510 aton unblocked 1128 495 510 aton unblocked volunted (ft) 1128 495 510 atoge (s) 6.8 6.9 4.1 stage 2 cord vol 1128 495 510 atage (s) 6.8 6.9 4.1 stage (s) 6.8 6.9 4.1 stage (s) 3.5 3.3 2.2 eue free % 93 95 96 pacity (welly) 189 520 105 stage (s) 3.5 3.3 2.2 pacity (welly) 189 520 96 pacity (welly) 189 520 105 stell (s) 6.8 6.9 4.7 58 pacity (welly) 3.2 100 0 0 stell (s) 6.8 <td>Pedestrians</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Pedestrians							
ng Speed (ffks) In Blocksage Inn flater (veh) In type ans signal (it) and the children (veh) In type and tree % In the children (veh) In type In the children (veh) In the chil	Lane Width (ft)							
In Brockage urum flarer (veh) In Vive and Stage veh) In Stage veh) In Stage veh) In Stage sord vol Asage I conf vol Asage I c	Walking Speed (ft/s)							
Lum flare (veh) None None n sprage veh) None None am signal (ft) 1128 495 510 atagon unblocked 1128 495 510 stage 1 cord vol 1128 495 510 stage 2 cord vol 1128 495 4.1 stage 2 cord vol 1128 495 4.1 stage 2 cord vol 1128 495 4.1 stage 6 (s) 3.5 3.3 2.2 stage 6 (s) 3.5 3.3 2.2 stage 6 (s) 3.5 4.1 4.1 stage 7 (s) 3.5 3.3 2.2 pacity (veh/h) 189 5.20 1051 pacity (veh/h) 189 5.0 0 ne Left 3.2 1700 1700 ne Left 3.2 1700 1700 ne Right 3.2 1700 1700 ne Right 3.2 1700 1700 no Old Delay (s)	Percent Blockage							
In type and signal (f) and some and signal (f) atom without atom unbocked an signal (f) atom unbocked unbocked vol 1128 495 510 510 510 510 510 510 510 510 510 51	Right turn flare (veh)							
ana storage veh) ana storage veh) ana storage (ii) ana man signal (iii) atage 1 conf vol atage 2 conf vol atage 3 3 3 2 2 atage 5 3 3 3 2 2 atage 6 3 3 4 5 3 8 3 atage 6 3 3 4 5 3 8 5 8 atage 6 3 3 4 5 5 8 5 8 8 atage 6 3 4 5 5 8 5 8 atage 6 3 4 5 6 6 6 6 atage 6 3 4 6 6 7 6 6 atage 6 3 4 7 6 8 6 atage 6 3 6 6 6 6 6 atage 6 4 7 6 7 6 6 atage 6 4 7 6 7 6 atage 6 6 7 6 7 6 atage 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Median type			None			None	
am signal (II) sam signal (III) stage 1 cord vol stage 2 cord vol stage 3 6.9 4.1 stage 5 cord vol stage 6) 3.5 3.3 2.2 stage 8) 95 96 stage 1 cord vol stage 6) 3.5 3.3 2.2 stage 6) 1051 stage 6) 3.5 3.3 2.2 stage 6) 1051 stage 6) 3.5 3.3 2.2 stage 6) 1051 stage 6) 1052 stage 7)	Median storage veh)							
ation unblocked ation volume 1128 495 510 ating (s) 6.8 6.9 4.1 ating (s) 6.8 6.9 6.9 ating (s) 6.8 6.9 6.9 ating (s) 6.8 6.9 1051 ating (s) 6.8 6.9 0 ating (s) 6.8 6.9 0 ating (s) 6.8 6.9 0 ating (s) 6.8 6.0 0 ating (s) 6.9 6.0 0 ating (s) 6.0 0 ating (s	Upstream signal (ft)							
and titling volume 1128 495 510 Included (a) 465 510 Included (b) 6.8 6.9 41 Included (c) 6.8 6.9 69 Included (c) 6.9 69	pX, platoon unblocked							
stage 1 conf vol 495 510 randocked vol 1128 495 510 ruple (s) 6.8 6.9 4.1 ruple (s) 6.8 6.9 4.1 stage (s) 3.5 3.3 2.2 stage (s) 3.5 3.5 96 pacity (ver/h) 189 520 96 pacity (s) 170 170 170 pacity (s) 17 47 53 538 pacity (s) 17 0.0 0 0 0	vC, conflicting volume	1128	495			510		
Atage 2 conf vol 1128 495 510 Imblooked vol 6.8 6.9 4.1 Atage (s) 6.8 6.9 4.1 Atage (s) 3.5 3.3 2.2 Bere free % 9.3 95 96 pacity (verhr) 189 5.0 1051 pacity (verhr) 189 5.0 0 ne Total 3.7 495 15 0 ne Total 3.7 495 15 0 0 ne Right 3.2 1700 1700 1700 0 ne Right 3.2 1700 1700 1700 0 ne Left 10 0 4 0 0 ne Right 3.2 1700 1700 1700 0 ne Left 10 0 4 0 0 LOS 0 0 0 0 0 LOS 0 0 0 0	vC1, stage 1 conf vol							
rublocked vol 1128 495 510 ggle (s) 6.8 6.9 4.1 stage (s) 3.5 3.3 2.2 eue free % 93 95 96 pacity (verhr) 189 520 1051 en Erdal 37 495 15 47 58 538 en Lett 13 495 15 47 58 538 en Capacity (verhr) 24 10 15 0 0 0 en Right 24 0 15 0 0 0 en Right 24 0 15 0 0 0 en Capacity (sold 11 029 01 100 1004 0.32 0.32 en Length 95lh (t) 10 0 0 4 0 0 0 en Los (s) 17.6 0.0 0 86 0.0 0.0 ed LOS (c) 2 A 18 18 18 18 18 18 18 18 18 18 18 18 18	vC2, stage 2 conf vol							
typle (s) 6.8 6.9 4.1 stage (s) 3.5 3.3 2.2 eue free % 93 95 96 pacity (verkh) 189 520 96 98 pacity (verkh) 189 520 96 98 538 38 pacity (s) 24 0 47 50 0 0 0 re Right 24 0 176 0	vCu, unblocked vol	1128	495			510		
stage (s) 3.5 3.3 2.2 eue free % 93 95 96 pacity (vehfn) 189 520 1051 pacity (vehfn) 189 520 1051 ion. Lane # WB1 NB1 NB2 SB 1 SB 2 ie Left 13 0 0 0 0 ie Right 24 0 15 0 0 ie Right 322 1700 1700 100 0 ie Right 322 1700 1700 100 0 ie Right 322 1700 100 0 0 ic Belay 17.6 0.0 0 0 0 ic Belay 170 0 0 0 0 ic	tC, single (s)	8.9	6.9			4.1		
3.5 3.3 2.2 pacify (verlyh) 189 5.50 1054 pacify (verlyh) 189 5.50 1054 ion_Lane# WB 1 NB 2 SB 1 SB 2 SB 3 ie_Left 3.4 0.6 4.7 0.6 ie_Right 3.2 1700 1700 1700 ie_Right 3.2 1700 1701 1700 ie_Right 3.2 1700 1051 1700 1700 ie_Right 3.2 1700 0.0 ie_Right 3.3 1.3 1.3 ie_Right 3.3 1.3 ie_Right 3.3 1.3	tC, 2 stage (s)							
93 95 96 96 94 189 520 1051 WB 1 NB 1 NB 2 SB 1 SB 2 SB 3 13 495 15 47 538 538 13 495 15 47 538 538 13 495 15 0 0 0 322 1700 1700 1051 1700 1700 0.11 0.29 0.01 0.04 0.32 0.32 (ft) 10 0 0 4 0.0 17.6 0.0 0.0 86 0.0 0.0 C A A 17.6 0.0 0.0 86 0.0 0.0 17.6 0.0 0.4 0.0 A A 17.6 0.0 0.0 4 0.0 17.6 0.0 0.4 0.0 17.7 0.0 0.4 0.0 17.8 0.0 0.4 0.0 17.9 0.0 0.4 0.0 17.9 0.0 0.4 0.0 17.1 0.0 0.4 0.0 17.1 0.0 0.4 0.0 17.1 0.0 0.4 0.0 17.1 0.0 0.4 0.0	IF (S)	3.5	3.3			2.2		
WB1 NB1 SB1 SB2 SB3 WB1 NB1 NB2 SB1 SB2 SB3 13 495 15 47 538 538 13 405 15 0 0 0 24 0 15 0 0 0 0 332 1700 1700 1051 1700 1700 011 029 001 004 0.32 0.32 (f) 10 0 0 8.6 0.0 0.0 7.6 0.0 0.0 8.6 0.0 0.0 C A A 17.6 0.0 0.0 8.6 0.0 0.0 C C A A 17.6 0.0 0.0 8.6 0.0 0.0 C C A A 17.6 0.0 0.0 8.6 0.0 0.0 17.6 0.0 0.4 0.0 17.6 0.0 0.4 0.4 17.6 0.0 0.4 0.4	p0 queue free %	93	95			96		
WB1 NB1 NB2 SB1 SB2 SB3 37 495 15 47 538 538 38 496 15 47 538 538 24 0 15 0 0 0 0 322 1700 1700 1051 1700 1700 176 0.0 0.0 8.6 0.0 0.0 176 0.0 0.0 8.6 0.0 0.0 176 0.0 0.0 4 0.0 A A O.0 0.0 176 0.0 0.0 4 0.0 176 0.0 0.0 8.6 0.0 0.0 1776 0.0 0.0 8.6 0.0 0.0 1776 0.0 0.0 4 0.0 1776 0.0 0.1 8.6 0.0 0.0 1776 0.0 0.1 8.6 0.0 0.0 1777 0.0 0.1 8.6 0.0 0.0 1778 0.0 0.1 8.6 0.0 0.0 1779 0.0 0.1 8.6 0.0 0.0 1779 0.0 0.0 0.0 0.0 1779 0.0 0.0 0.0 0.0 1770 0.0 0.0 0.0 0.0 0.0 1770 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	cM capacity (veh/h)	189	520			1051		
37 495 15 47 538 538 13 0 0 47 0 0 24 0 15 0 0 322 1700 1700 1051 1700 1700 0.11 0.29 0.01 0.04 0.32 0.32 (f) 10 0 0 4 0 0 17.6 0.0 0.0 8.6 0.0 0.0 C A A 17.6 0.0 0.4 0.4 17.6 0.0 0.4 A 0.0 A 0	Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
13 0 0 47 0 0 0 2 2 4 0 15 0 0 0 0 0 32 4 0 0 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Total	37	495	15	47	538	538	
22	Volume Left	13	0	0	47	0	0	
332 1700 1700 1051 1700 1700 (f) 1710 1700 1700 1700 1700 1700 1700 170	Volume Right	24	0	15	0	0	0	
(f) 10 029 001 004 0.32 0.32 (f) 10 0 0 0 4 0 0 0 (f) 176 0.0 0.0 8.6 0.0 0.0 C A 176 0.0 0.4 C A C A A 0 0.4 C A A 0 0.4 C A C A A 0 0.4 C A 0.0 C A	cSH	322	1700	1700	1051	1700	1700	
(f) 10 0 0 4 0 0 17.6 0.0 0.0 8.6 0.0 0.0 C A A 0.0 0.0 17.6 0.0 0.4 C A A 0.0 0.0 A 0.0 A 0.0 A 1.7 A 0.0 A 1.7 O 0 17.7 O 0.4 O 0.4 O 0.4 O 0.4 O 0.4 O 0.4 O 0.4 O 0.4 O 0 0.4 O 0 0.4 O 0 0.4 O 0 0.4 O 0 0 0.4 O 0 0 0.4 O 0 0 0.4 O 0 0 0 0.4 O 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume to Capacity	0.11	0.29	0.01	0.04	0.32	0.32	
17.6 0.0 0.0 8.6 0.0 0.0 A 7.6 0.0 0.4 C 0.4 IN 0.6 IN 17.6 0.0 0.4 IN 17.6 ICU Level of Service 1.5	Queue Length 95th (ft)	10	0	0	4	0	0	
C A 17.6 0.0 0.4 Say Utilization 41.1% ICU Level of Service 1.5	Control Delay (s)	17.6	0.0	0.0	9.8	0.0	0.0	
17.6 0.0 0.4 C Suppose the control of Service of Servic	Lane LOS	ပ			A			
C 0.6 Utilization 41.1% ICU Level of Service 15.0	Approach Delay (s)	17.6	0.0		0.4			
7 0.6 Utilization 41.1% ICU Level of Service 15.	Approach LOS	ပ						
0.6 Utilization 41.1% ICU Level of Service 1.5	Intersection Summary							
Utilization 41.1% ICU Level of Service 15	Average Delay			9.0	3			4
	Intersection Capacity Utiliza Analysis Period (min)	ation		41.1%	<u> </u>	J Level o	l service	A

KHA HCM Unsignalized Intersection Capacity Analysis

Existing Conditions
Timing Plan: PM Peak Period ċ Balboa Transit Station 28: Morena Blvd & Gesn

28: Morena Blvd & Gesner St	Gesner	Sţ				Timing Plan: PM Peak Period
	•	+	•	٠	→	
Lane Group	WBL	NBT	NBR	SS	SBT	
Lane Group Flow (vph)	130	452	47	110	1009	
v/c Ratio	0.36	0.29	0.07	0.28	0.42	
Control Delay	11.8	12.3	6.1	18.1	5.2	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	11.8	12.3	6.1	18.1	5.2	
Queue Length 50th (ft)	10	43	_	22	55	
Queue Length 95th (ft)	22	6	19	64	108	
Internal Link Dist (ft)	1333	298			3362	
Turn Bay Length (ft)			95	95		
Base Capacity (vph)	1540	3539	1583	1332	3539	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.08	0.13	0.03	0.08	0.29	
:						
Intersection Summary						

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KHA Oueues

Balboa Transit Station 28: Morena Blvd & Gesner St

Existing Conditions Timing Plan: PM Peak Period

																																				A		14.7	А	
→	SBT	**	928	928	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	1009	0	1009	NA	9		25.0	25.0	0.62	0.9	4.2	2189	c0.29	: ,	0.46	1.00	0.0	4.3	۷	5.5	Α		HCM 2000 Level of Service		time (s)	f Service	
<u>ب</u> ب	NBR SBL	r K			_				1.00 0.95	`	1.00 0.95	1583 1770	0.92 0.92		26 0	21 110	Perm Prot	-	2	14.6 6.1		0.36 0.15	5.9 4.4	4.4 2.0	572 267				100 100		ľ					HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
←	NBT	*		416	1900				1.00			3539 1	0.92	452	0	452	NA Pe	2		14.6			5.9		1278				100		9.7		9.6	A		7.5	0.50	40.4	41.5%	15
√	WBL WBR	>	36 84		1900 1900	4.4	1.00	0.91	66:0	1662	66.0	1662	0.92 0.92	-	70 0	0 09	Prot	œ		5.0	2.0	0.12	4.4	2.0	205	0.04		0.29	16.1	03	16.4	В	16.4	Ω			ty ratio		on	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	F	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Tum Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Incremental Delay d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 29: Balboa EB Ramps/Balboa WB Ramps & Garnet Ave

Existing Conditions Timing Plan: PM Peak Period

Existing Conditions Timing Plan: PM Peak Period

Intersection Sign configuration not allowed in HCM analysis.

Balboa Transit Station	

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	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	FOS
Olney St	=	30	12.1	11.2	23.3	0.09	13.3	Ш
Balboa Ave	=	30		33.8	57.3	0.19	11.6	ш
Soledad Mtn Rd	=	32		10.3	37.6	0.23	22.0	Ω
Bond St	-	32		9.0	21.6	0.17	28.0	ပ
Mission Bay Dr	=	35		52.9	68.4	0.12	6.5	ш
Moraga Ave	=	45		0.9	50.2	0.50	36.0	٧
Clairemont Dr	1	45		52.5	102.2	0.62	21.9	D
Total	-		193.3	167.3	9:098	1.92	19.1	D

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	Running	Signal	Travel	Dist D	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	LOS
Clairemont Dr	=	45	14.7	50.9	929	0.13	7.4	Ш
Moraga Ave	=	45	49.7	22.4	72.1	0.62	31.0	Ω
Mission Bay Dr	=	42	44.2	55.5	99.7	0.50	18.1	Ω
Bond St	=	32	15.5	1.1	16.6	0.12	26.9	O
Soledad Mtn Rd	=	32	21.0	34.5	55.5	0.17	10.9	ш
Garnet Ave	=	32	27.3	0.7	28.0	0.23	29.5	В
Olney St	II	30	23.5	10.2	33.7	0.19	19.8	D
Total	-		195.9	175.3	371.2	1.97	19.1	D

Arterial Level of Service: NB Mission Bay Dr

	Allelial	#OL	לחווווו	o d d d	- I SAG	2	Alelia	Alella
	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	FOS
Grand Ave	=	32	37.4	3.2	40.6	0.31	27.6	В
	=	32	14.3	7.4	21.7	0.11	17.5	Ω
Magnolia Ave	=	33	21.4	4.5	25.9	0.17	23.3	O
Garnet Ave	=	32	13.8	8.09	74.6	0.10	4.9	ш
Damon Ave	=	32	11.7	12.1	23.8	0.09	13.1	ш
Bluffside Av	=	32	20.1	1.4	21.5	0.16	26.3	В
Total	=		118.7	89.4	208.1	0.93	16.1	D

Arterial Level of Service: SB Mission Bay Dr

	Arterial	Flow	∝	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	FOS
Bluffside Av	=	32	20:0	28.5	48.5	0.16	11.6	Ш
Damon Ave	=	32		0.7	20.8	0.16	27.2	В
Garnet Ave	=	32		73.9	929	0.09	3.6	ш
Magnolia Ave	=	32		9.3	23.1	0.10	16.0	
Bunker Hill St	=	32		2.3	23.7	0.17	25.4	В
Grand Ave		35		51.1	65.4	0.11	5.8	Н
Total	III		101.3	165.8	267.1	0.77	10.4	Ш

KHA Arterial Level of Service

Synchro 9 Report Page 50

KHA HCM Unsignalized Intersection Capacity Analysis

APPENDIX C

FUTURE YEAR MODEL INFORMATION

		EXISTING		AL	OOPTED MOD	EL	
ROADWAY SEGMENT	Existing Model Volume	Adjustment	Adjusted Existing Model Volume	Adopted Model Volume	Adjustment	Adjusted Adopted Model Volume	Change in Volume
Balboa Avenue							
Garnet Avenue to Grand Avenue	19,700	0	19,700	14,400	0	14,400	-5,300
Garnet Avenue							
Bond Street to Mission Bay Drive	58,600	0	58,600	63,200	0	63,200	4,600
Mission Bay Drive to I-5 SB On-Ramp	46,800	0	46,800	48,100	0	48,100	1,300
I-5 SB On-Ramp to I-5 NB Off-Ramp	63,000	0	63,000	66,600	0	66,600	3,600
Balboa Avenue (CA-274)							
I-5 NB Off-Ramp to Morena Boulevard SB Ramps	76,000	0	76,000	77,500	0	77,500	1,500
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	50,400	0	50,400	49,400	0	49,400	-1,000
Morena Boulevard NB Ramps to Moraga Avenue	49,700	-7,000	42,700	52,500	-7,000	45,500	2,800
Moraga Avenue to Clairemont Drive	42,400	-7,000	35,400	45,200	-7,000	38,200	2,800
East of Clairemont Drive	39,600	0	39,600	43,000	0	43,000	3,400
Grand Avenue							
Kendall Street to Lamont Street	29,900	0	29,900	24,500	0	24,500	-5,400
Lee Street to Bond Street (On Rose Creek Bridge)	32,800	5,000	37,800	30,700	5,000	35,700	-2,100
Figueroa Boulevard to Mission Bay Drive	33,700	5,000	38,700	31,500	5,000	36,500	-2,200
Mission Bay Drive							
Bluffside Avenue to Damon Avenue	28,400	7,000	35,400	32,600	7,000	39,600	4,200
Damon Avenue to Garnet Avenue	27,100	10,000	37,100	32,400	10,000	42,400	5,300
Garnet Avenue to Magnolia Avenue	18,900	10,000	28,900	23,800	10,000	33,800	4,900
Magnolia Avenue to Bunker Hill Street	15,000	15,000	30,000	19,800	15,000	34,800	4,800
Bunker Hill Street to Grand Avenue	18,300	12,000	30,300	22,100	12,000	34,100	3,800
Grand Avenue to I-5 Ramps	38,200	12,000	50,200	40,400	12,000	52,400	2,200
Morena Boulevard							
Jutland Drive to Avati Drive	15,200	0	15,200	17,200	0	17,200	2,000
Avati Drive to Balboa Avenue Ramps	22,500	-2,500	20,000	24,600	-2,500	22,100	2,100
Balboa Avenue Ramps to Ticonderoga Street	19,100	-2,500	16,600	19,400	-2,500	16,900	300
Gesner Street to Clairemont Drive	11,900	3,000	14,900	13,400	3,000	16,400	1,500
Clairemont Drive							
Cippewa Court to Balboa Avenue	22,000	0	22,000	25,800	0	25,800	3,800
Balboa Avenue to Ute Drive	18,500	0	18,500	26,700	0	26,700	8,200
Denver Street to Morena Boulevard	35,400	0	35,400	39,200	0	39,200	3,800
Damon Avenue							
Mission Bay Drive to Santa Fe Street	4,700	0	4,700	4,400	0	4,400	-300
Santa Fe Street							
Damon Avenue to Balboa Avenue	6,000	-2,000	4,000	6,900	-2,000	4,900	900
Soledad Mountain Road							
Beryl Street to Garnet Avenue	30,900	0	30,900	28,700	0	28,700	-2,200
N Mission Bay Drive							
De Anza Road to Mission Bay Drive	2,100	0	2,100	2,500	0	2,500	400

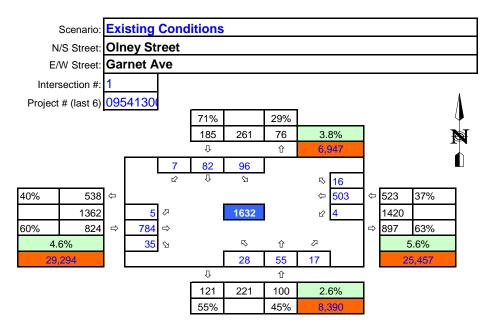
Existing Model Volume Adjustment Adjusted Model Volume Vol								
Charge in Model Volume Work W			EXISTING		PRI	FERRED MO	DEL	
Section Commit Avenue to Grand Avenue 19,700 0 19,700 13,200 0 13,200 -6,500	ROADWAY SEGMENT	Model	Adjustment	Existing Model	Model	Adjustment	Adopted Model	Change in Volume
Seriest Avenue Seriest Seriest	Balboa Avenue							
Bond Street to Mission Bay Drive S8,800 0 \$8,800 \$2,200 0 \$2,200 -6,400	Garnet Avenue to Grand Avenue	19,700	0	19,700	13,200	0	13,200	-6,500
Mission Bay Drive to I-5 SB On-Ramp	Garnet Avenue							
F. S.B. On-Ramp to I-S NB Off-Ramp	Bond Street to Mission Bay Drive	58,600	0	58,600	52,200	0	52,200	-6,400
Li-5 NB Off-Ramp to Morena Boulevard SB Ramps 76,000	Mission Bay Drive to I-5 SB On-Ramp	46,800	0	46,800	43,000	0	43,000	-3,800
F.S. NB Off-Ramp to Morena Boulevard SB Ramps	I-5 SB On-Ramp to I-5 NB Off-Ramp	63,000	0	63,000	60,500	0	60,500	-2,500
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps 50,400 0 50,400 45,700 0 45,700 -4,700	Balboa Avenue (CA-274)							
Morena Boulevard NB Ramps to Moraga Avenue 49,700 -7,000 42,700 46,800 -7,000 39,800 -2,900	I-5 NB Off-Ramp to Morena Boulevard SB Ramps	76,000	0	76,000	71,500	0	71,500	-4,500
Moraga Avenue to Clairemont Drive 42,400 -7,000 35,400 39,600 -7,000 32,600 -2,800 East of Clairemont Drive 39,600 0 39,600 42,500 0 42,500 2,900 Grand Avenue 29,900 0 29,900 24,000 0 24,000 -5,900 Lee Street to Bond Street (On Rose Creek Bridge) 32,800 5,000 37,800 32,200 5,000 37,200 -600 Figuersa Boulevard to Mission Bay Drive 33,700 5,000 38,700 32,900 5,000 37,900 -800 Mission Bay Drive 28,400 7,000 35,400 32,900 5,000 37,900 -800 Mission Bay Drive 28,400 7,000 35,400 32,900 7,000 39,000 3,600 Damon Avenue to Gamet Avenue 27,100 10,000 37,100 31,300 10,000 41,300 42,200 Gamet Avenue to Magnolia Avenue 18,900 10,000 28,900 28,300 10,000 38,300 9,400 Magnolia Avenue to Bunker Hill Street 15,000 15,000 30,000 23,700 15,000 38,700 8,700 Bunker Hill Street to Grand Avenue 18,900 12,000 50,200 44,600 12,000 56,600 Grand Avenue to Is Ramps 38,200 12,000 50,200 44,600 12,000 56,600 6,400 Morena Boulevard 15,200 0 15,200 17,200 0 17,200 2,000 Morena Boulevard 15,200 0 15,200 16,600 16,400 16,600	Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	50,400	0	50,400	45,700	0	45,700	-4,700
Moraga Avenue to Clairemont Drive 42,400 -7,000 35,400 39,600 -7,000 32,600 -2,800 East of Clairemont Drive 39,600 0 39,600 42,500 0 42,500 2,900 Grand Avenue 29,900 0 29,900 24,000 0 24,000 -5,900 Lee Street to Bond Street (On Rose Creek Bridge) 32,800 5,000 37,800 32,200 5,000 37,200 -600 Figuersa Boulevard to Mission Bay Drive 33,700 5,000 38,700 32,900 5,000 37,900 -800 Mission Bay Drive 28,400 7,000 35,400 32,900 5,000 37,900 -800 Mission Bay Drive 28,400 7,000 35,400 32,900 7,000 39,000 3,600 Damon Avenue to Gamet Avenue 27,100 10,000 37,100 31,300 10,000 41,300 42,200 Gamet Avenue to Magnolia Avenue 18,900 10,000 28,900 28,300 10,000 38,300 9,400 Magnolia Avenue to Bunker Hill Street 15,000 15,000 30,000 23,700 15,000 38,700 8,700 Bunker Hill Street to Grand Avenue 18,900 12,000 50,200 44,600 12,000 56,600 Grand Avenue to Is Ramps 38,200 12,000 50,200 44,600 12,000 56,600 6,400 Morena Boulevard 15,200 0 15,200 17,200 0 17,200 2,000 Morena Boulevard 15,200 0 15,200 16,600 16,400 16,600	Morena Boulevard NB Ramps to Moraga Avenue	49,700	-7,000	42,700	46,800	-7,000	39,800	-2,900
Grand Avenue Z9,900 0 29,900 24,000 0 24,000 -5,900 Lee Street to Bond Street (On Rose Creek Bridge) 32,800 5,000 37,800 32,200 5,000 37,200 -600 Figueroa Boulevard to Mission Bay Drive 33,700 5,000 38,700 32,900 5,000 37,900 -800 Mission Bay Drive 28,400 7,000 35,400 32,000 7,000 39,000 3,600 Damon Avenue to Damon Avenue 28,400 7,000 35,400 32,000 7,000 39,000 3,600 Grand Avenue to Garnet Avenue 27,100 10,000 37,100 31,300 10,000 41,300 4,200 Garnet Avenue to Magnolia Avenue 18,900 10,000 28,900 28,300 10,000 38,300 9,400 Magnolia Avenue to Bunker Hill Street 15,000 15,000 30,000 23,700 15,000 30,000 23,700 15,000 38,700 8,700 Burker Hill Street to Grand Avenue to Is Ramps 38,200 12,000<	Moraga Avenue to Clairemont Drive	42,400	-7,000	35,400	39,600	-7,000	32,600	-2,800
Exercit to Lamont Street 29,900 0 29,900 24,000 0 24,000 -5,900 -5	East of Clairemont Drive	39,600	0	39,600	42,500	0	42,500	2,900
Lee Street to Bond Street (On Rose Creek Bridge) 32,800 5,000 37,800 32,200 5,000 37,200 -600	Grand Avenue							
Figueroa Boulevard to Mission Bay Drive Say Drive	Kendall Street to Lamont Street	29,900	0	29,900	24,000	0	24,000	-5,900
Bluffside Avenue to Damon Avenue 28,400 7,000 35,400 32,000 7,000 39,000 3,600	Lee Street to Bond Street (On Rose Creek Bridge)	32,800	5,000	37,800	32,200	5,000	37,200	-600
Bluffside Avenue to Damon Avenue 28,400 7,000 35,400 32,000 7,000 39,000 3,600 Damon Avenue to Garnet Avenue 27,100 10,000 37,100 31,300 10,000 41,300 4,200 Garnet Avenue to Magnolia Avenue 18,900 10,000 28,900 28,300 10,000 38,300 9,400 30,000 23,700 15,000 38,300 8,700 30,000 23,700 15,000 36,900 5,600 36,900 5,600 36,900	Figueroa Boulevard to Mission Bay Drive	33,700	5,000	38,700	32,900	5,000	37,900	-800
Damon Avenue to Garnet Avenue 27,100	Mission Bay Drive							
Garnet Avenue to Magnolia Avenue 18,900 10,000 28,900 29,300 10,000 38,300 9,400	Bluffside Avenue to Damon Avenue	28,400	7,000	35,400	32,000	7,000	39,000	3,600
Magnolia Avenue to Bunker Hill Street 15,000 15,000 30,000 23,700 15,000 38,700 8,700 Bunker Hill Street to Grand Avenue 18,300 12,000 30,300 23,700 12,000 35,900 5,600 Grand Avenue to I-5 Ramps 38,200 12,000 50,200 44,600 12,000 56,600 6,400 Morena Boulevard Jutland Drive to Avati Drive 15,200 0 15,200 17,200 0 17,200 2,000 Avati Drive to Balboa Avenue Ramps 22,500 -2,500 20,000 24,300 -2,500 21,800 1,800 Balboa Avenue Ramps to Ticonderoga Street 19,100 -2,500 16,600 16,400 -2,500 13,900 -2,700 Gesner Street to Clairemont Drive 11,900 3,000 14,900 11,600 3,000 14,600 -300 Clairemont Drive Cipewa Court to Balboa Avenue 22,000 0 22,000 0 25,300 0 25,300 3,300 Balboa Avenue to Ute Drive 18,500 0 18,500 22,900 <td>Damon Avenue to Garnet Avenue</td> <td>27,100</td> <td>10,000</td> <td>37,100</td> <td>31,300</td> <td>10,000</td> <td>41,300</td> <td>4,200</td>	Damon Avenue to Garnet Avenue	27,100	10,000	37,100	31,300	10,000	41,300	4,200
Bunker Hill Street to Grand Avenue 18,300 12,000 30,300 23,900 12,000 35,900 5,600 Grand Avenue to I-5 Ramps 38,200 12,000 50,200 44,600 12,000 56,600 6,400 Morena Boulevard Jutland Drive to Avati Drive 15,200 0 15,200 17,200 0 17,200 2,000 Avati Drive to Balboa Avenue Ramps 22,500 -2,500 20,000 24,300 -2,500 21,800 1,800 Balboa Avenue Ramps 19,100 -2,500 16,600 16,400 -2,500 13,900 -2,700 Gener Street to Clairemont Drive 11,900 3,000 14,900 11,600 3,000 14,600 -300 Clairemont Drive 11,900 3,000 14,900 11,600 3,000 14,600 -300 Clairemont Drive 18,500 0 18,500 22,900 0 22,900 4,400 Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800 Damon Avenue Mission Bay Drive to Santa Fe Street A,700 0 4,700 5,900 0 5,900 1,200 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Garnet Avenue to Magnolia Avenue	18,900	10,000	28,900	28,300	10,000	38,300	9,400
Grand Avenue to I-5 Ramps 38,200 12,000 50,200 44,600 12,000 56,600 6,400	Magnolia Avenue to Bunker Hill Street	15,000	15,000	30,000	23,700	15,000	38,700	8,700
Morena Boulevard Jutland Drive to Avati Drive 15,200 0 15,200 17,200 0 17,200 2,000	Bunker Hill Street to Grand Avenue	18,300	12,000	30,300	23,900	12,000	35,900	5,600
Dutland Drive to Avati Drive 15,200 0 15,200 17,200 0 17,200 2,000	Grand Avenue to I-5 Ramps	38,200	12,000	50,200	44,600	12,000	56,600	6,400
Avati Drive to Balboa Avenue Ramps 22,500 -2,500 20,000 24,300 -2,500 21,800 1,800 Balboa Avenue Ramps to Ticonderoga Street 19,100 -2,500 16,600 16,400 -2,500 13,900 -2,700 Gesner Street to Clairemont Drive 11,900 3,000 14,900 11,600 3,000 14,600 -300 Clairemont Drive Cippewa Court to Balboa Avenue 22,000 0 22,000 25,300 0 25,300 0 25,300 3,300 Balboa Avenue to Ute Drive 18,500 0 18,500 22,900 0 22,900 4,400 Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800 Damon Avenue Mission Bay Drive to Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Morena Boulevard							
Balboa Avenue Ramps to Ticonderoga Street 19,100 -2,500 16,600 16,400 -2,500 13,900 -2,700 Gesner Street to Clairemont Drive 11,900 3,000 14,900 11,600 3,000 14,600 -300 Clairemont Drive Cippewa Court to Balboa Avenue 22,000 0 22,000 25,300 0 25,300 3,300 Balboa Avenue to Ute Drive 18,500 0 18,500 22,900 0 22,900 4,400 Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800 Damon Avenue Mission Bay Drive to Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Jutland Drive to Avati Drive	15,200	0	15,200	17,200	0	17,200	2,000
Clairemont Drive 11,900 3,000 14,900 11,600 3,000 14,600 -300	Avati Drive to Balboa Avenue Ramps	22,500	-2,500	20,000	24,300	-2,500	21,800	1,800
Clairemont Drive 22,000 0 22,000 25,300 0 25,300 3,300 Balboa Avenue to Ute Drive 18,500 0 18,500 22,900 0 22,900 0 22,900 4,400 Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800 Damon Avenue 4,700 0 4,700 5,900 0 5,900 0 5,900 1,200 Santa Fe Street 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Balboa Avenue Ramps to Ticonderoga Street	19,100	-2,500	16,600	16,400	-2,500	13,900	-2,700
Cippewa Court to Balboa Avenue 22,000 0 22,000 25,300 0 25,300 3,300 Balboa Avenue to Ute Drive 18,500 0 18,500 22,900 0 22,900 4,400 Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800 Damon Avenue 4,700 0 4,700 5,900 0 5,900 1,200 Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Gesner Street to Clairemont Drive	11,900	3,000	14,900	11,600	3,000	14,600	-300
Balboa Avenue to Ute Drive 18,500 0 18,500 22,900 0 22,900 4,400 Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800 Damon Avenue Mission Bay Drive to Santa Fe Street 4,700 0 4,700 5,900 0 5,900 1,200 Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Clairemont Drive							
Denver Street to Morena Boulevard 35,400 0 35,400 41,200 0 41,200 5,800	Cippewa Court to Balboa Avenue	22,000	0	22,000	25,300	0	25,300	3,300
Damon Avenue Mission Bay Drive to Santa Fe Street 4,700 0 4,700 5,900 0 5,900 1,200 Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive N Mission Bay Drive	Balboa Avenue to Ute Drive	18,500	0	18,500	22,900	0	22,900	4,400
Mission Bay Drive to Santa Fe Street 4,700 0 4,700 5,900 0 5,900 1,200 Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive N Mission Bay Drive	Denver Street to Morena Boulevard	35,400	0	35,400	41,200	0	41,200	5,800
Santa Fe Street Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Damon Avenue							
Damon Avenue to Balboa Avenue 6,000 -2,000 4,000 7,600 -2,000 5,600 1,600 Soledad Mountain Road Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive	Mission Bay Drive to Santa Fe Street	4,700	0	4,700	5,900	0	5,900	1,200
Soledad Mountain Road 30,900 30,900 27,900 27,900 -3,000 N Mission Bay Drive 30,900 27,900 27,900 -3,000	Santa Fe Street							
Beryl Street to Garnet Avenue 30,900 0 30,900 27,900 0 27,900 -3,000 N Mission Bay Drive -3,000 <td>Damon Avenue to Balboa Avenue</td> <td>6,000</td> <td>-2,000</td> <td>4,000</td> <td>7,600</td> <td>-2,000</td> <td>5,600</td> <td>1,600</td>	Damon Avenue to Balboa Avenue	6,000	-2,000	4,000	7,600	-2,000	5,600	1,600
N Mission Bay Drive	Soledad Mountain Road							
	Beryl Street to Garnet Avenue	30,900	0	30,900	27,900	0	27,900	-3,000
De Anza Road to Mission Bay Drive 2,100 0 2,100 2,500 0 2,500 400	N Mission Bay Drive							
	De Anza Road to Mission Bay Drive	2,100	0	2,100	2,500	0	2,500	400

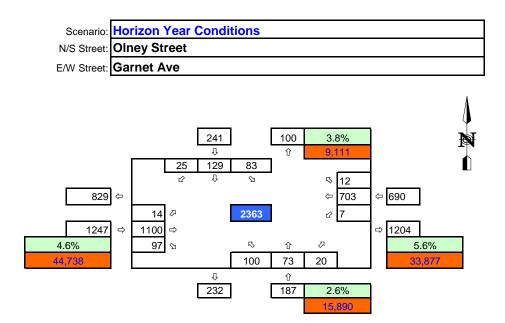
		EXISTING			REDUCED MODEL		
ROADWAY SEGMENT	Existing Model Volume	Adjustment	Adjusted Existing Model Volume	Reduced Model Volume	Adjustment	Adjusted Adopted Model Volume	Change in Volume
Balboa Avenue							
Garnet Avenue to Grand Avenue	19,700	0	19,700	13,200	0	13,200	-6,500
Garnet Avenue							
Bond Street to Mission Bay Drive	58,600	0	58,600	52,900	0	52,900	-5,700
Mission Bay Drive to I-5 SB On-Ramp	46,800	0	46,800	42,100	0	42,100	-4,700
I-5 SB On-Ramp to I-5 NB Off-Ramp	63,000	0	63,000	59,200	0	59,200	-3,800
Balboa Avenue (CA-274)							
I-5 NB Off-Ramp to Morena Boulevard SB Ramps	76,000	0	76,000	71,200	0	71,200	-4,800
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	50,400	0	50,400	45,300	0	45,300	-5,100
Morena Boulevard NB Ramps to Moraga Avenue	49,700	-7,000	42,700	46,400	-7,000	39,400	-3,300
Moraga Avenue to Clairemont Drive	42,400	-7,000	35,400	39,400	-7,000	32,400	-3,000
East of Clairemont Drive	39,600	0	39,600	42,200	0	42,200	2,600
Grand Avenue							
Kendall Street to Lamont Street	29,900	0	29,900	23,600	0	23,600	-6,300
Lee Street to Bond Street (On Rose Creek Bridge)	32,800	5,000	37,800	32,600	5,000	37,600	-200
Figueroa Boulevard to Mission Bay Drive	33,700	5,000	38,700	33,200	5,000	38,200	-500
Mission Bay Drive							
Bluffside Avenue to Damon Avenue	28,400	7,000	35,400	32,400	7,000	39,400	4,000
Damon Avenue to Garnet Avenue	27,100	10,000	37,100	31,600	10,000	41,600	4,500
Garnet Avenue to Magnolia Avenue	18,900	10,000	28,900	27,200	10,000	37,200	8,300
Magnolia Avenue to Bunker Hill Street	15,000	15,000	30,000	22,700	15,000	37,700	7,700
Bunker Hill Street to Grand Avenue	18,300	12,000	30,300	23,300	12,000	35,300	5,000
Grand Avenue to I-5 Ramps	38,200	12,000	50,200	44,300	12,000	56,300	6,100
Morena Boulevard							
Jutland Drive to Avati Drive	15,200	0	15,200	17,200	0	17,200	2,000
Avati Drive to Balboa Avenue Ramps	22,500	-2,500	20,000	24,400	-2,500	21,900	1,900
Balboa Avenue Ramps to Ticonderoga Street	19,100	-2,500	16,600	16,400	-2,500	13,900	-2,700
Gesner Street to Clairemont Drive	11,900	3,000	14,900	11,600	3,000	14,600	-300
Clairemont Drive							
Cippewa Court to Balboa Avenue	22,000	0	22,000	25,200	0	25,200	3,200
Balboa Avenue to Ute Drive	18,500	0	18,500	22,700	0	22,700	4,200
Denver Street to Morena Boulevard	35,400	0	35,400	40,500	0	40,500	5,100
Damon Avenue							
Mission Bay Drive to Santa Fe Street	4,700	0	4,700	5,900	0	5,900	1,200
Santa Fe Street							
Damon Avenue to Balboa Avenue	6,000	-2,000	4,000	7,600	-2,000	5,600	1,600
Soledad Mountain Road							
Beryl Street to Garnet Avenue	30,900	0	30,900	26,800	0	26,800	-4,100
N Mission Bay Drive							
De Anza Road to Mission Bay Drive	2,100	0	2,100	2,800	0	2,800	700

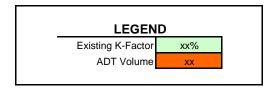
APPENDIX D

FUTURE YEAR VOLUME ESTIMATES

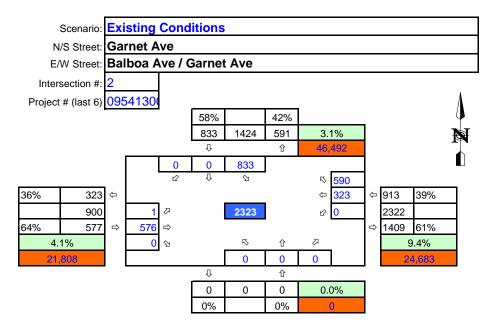
Int 1 AM Peak Volumes

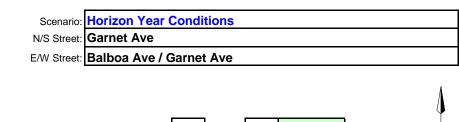


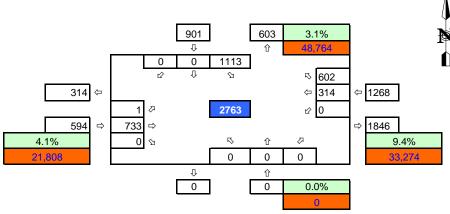


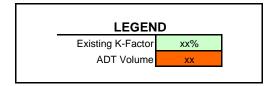


Int 2 AM Peak Volumes

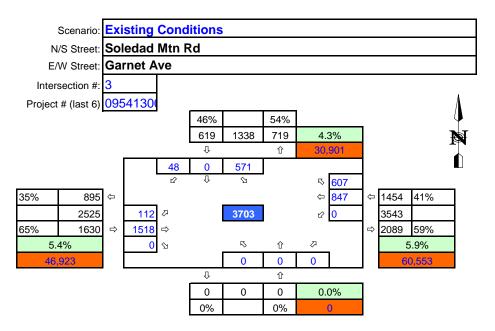


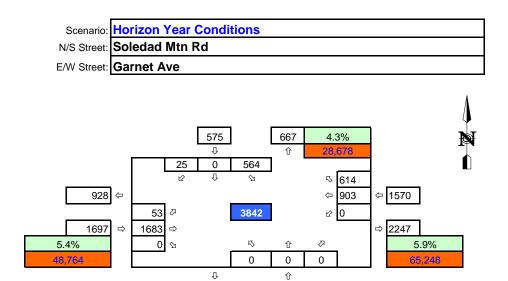






Int 3 AM Peak Volumes

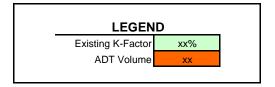




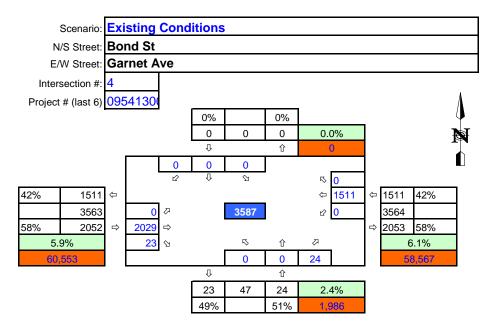
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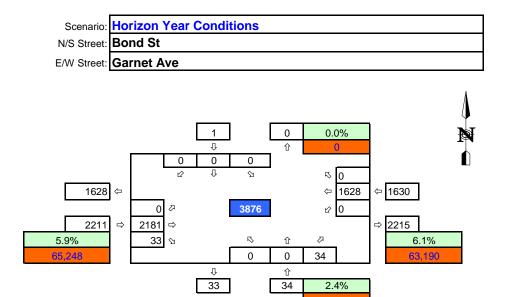
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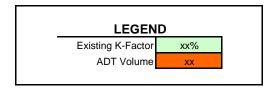
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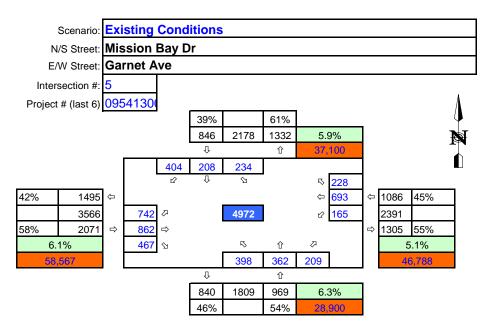
Int 4 AM Peak Volumes

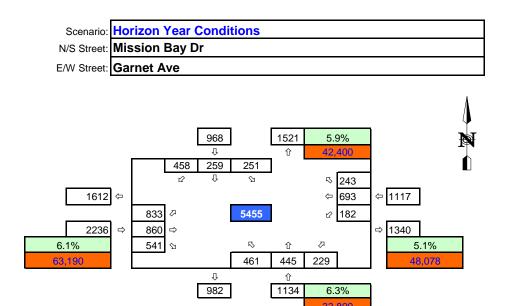


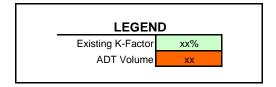




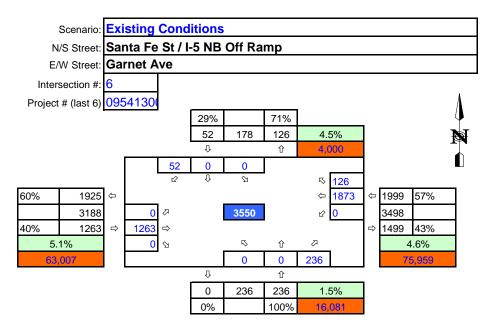
Int 5 AM Peak Volumes

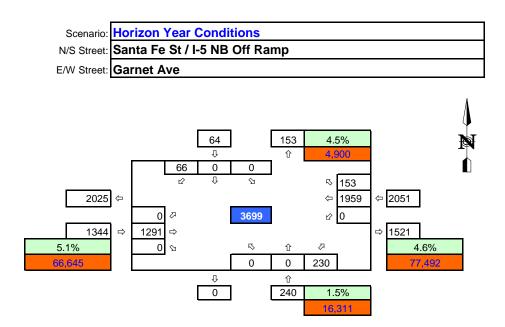


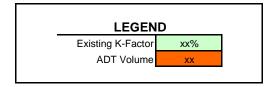




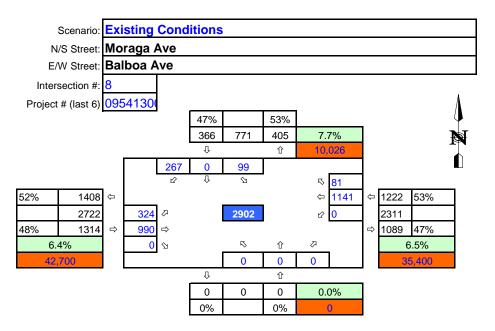
Int 6 AM Peak Volumes

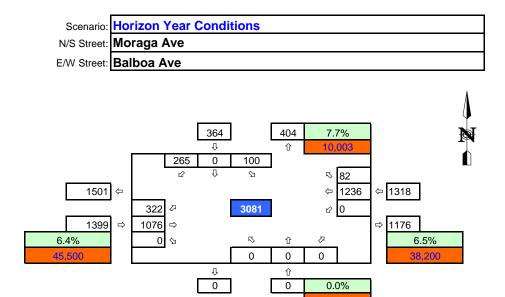


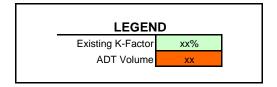




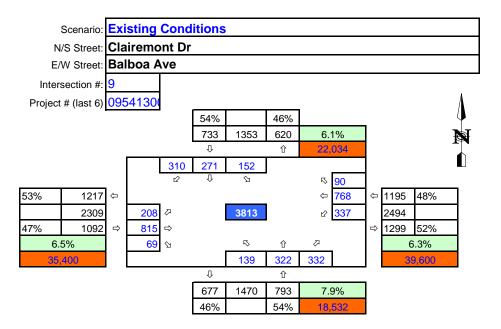
Int 8 AM Peak Volumes

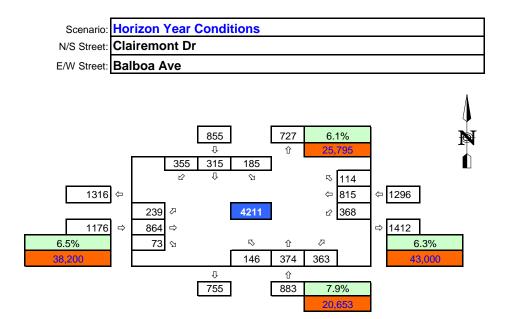


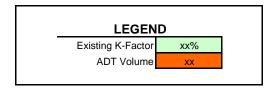




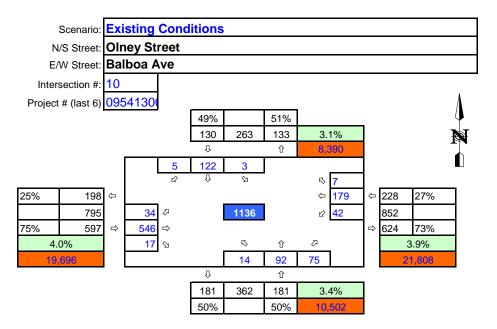
Int 9 AM Peak Volumes

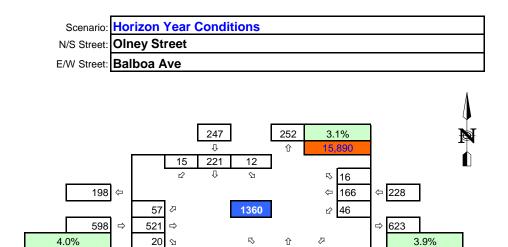






Int 10 AM Peak Volumes





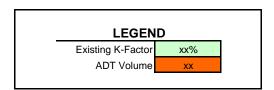
17

. ₽ 287 179

287

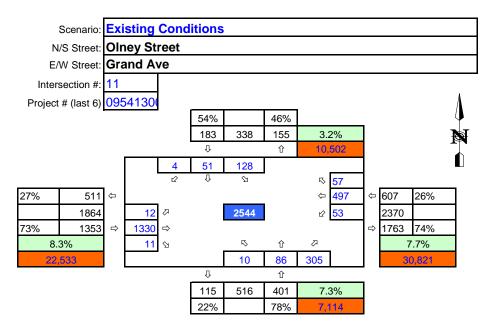
90

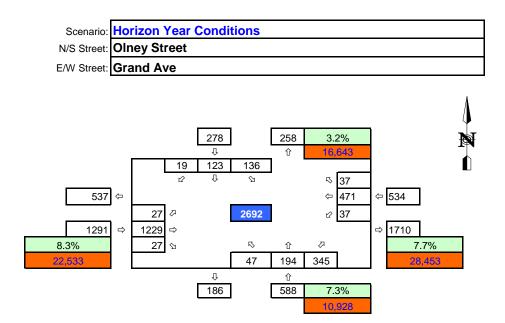
3.4%

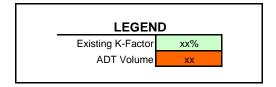


19,696

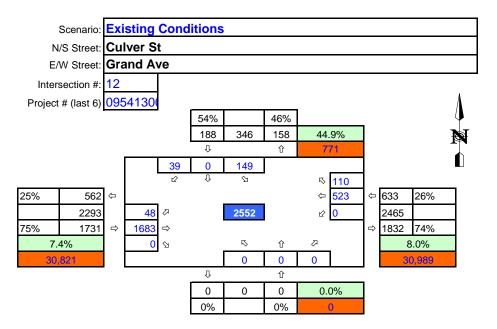
Int 11 AM Peak Volumes

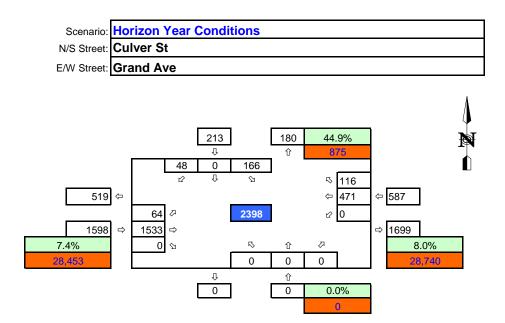


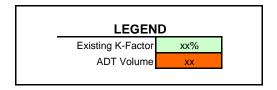




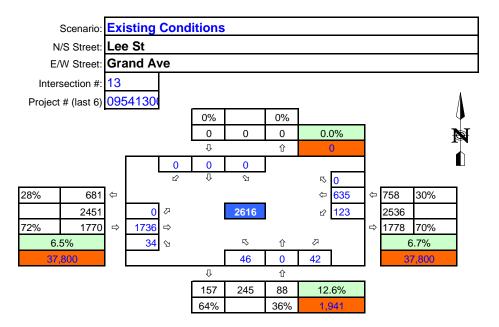
Int 12 AM Peak Volumes

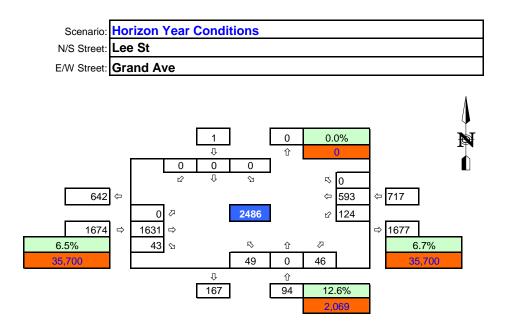


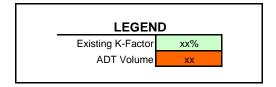




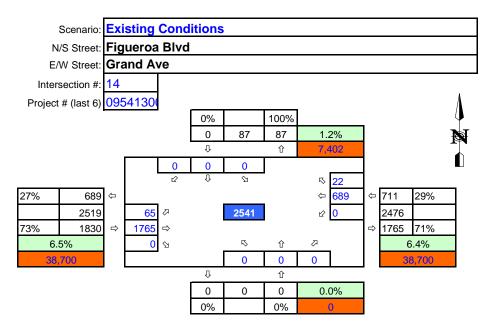
Int 13 AM Peak Volumes

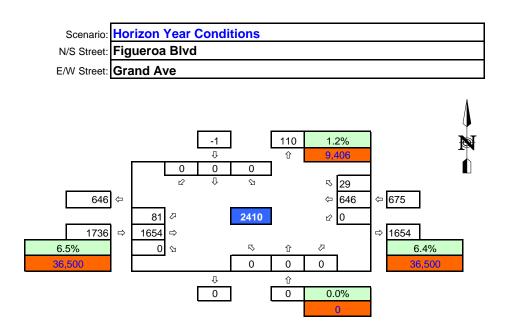


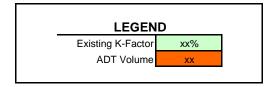




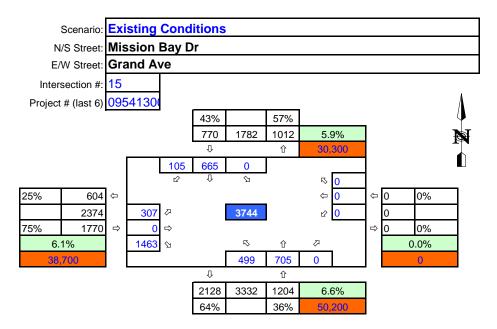
Int 14 AM Peak Volumes

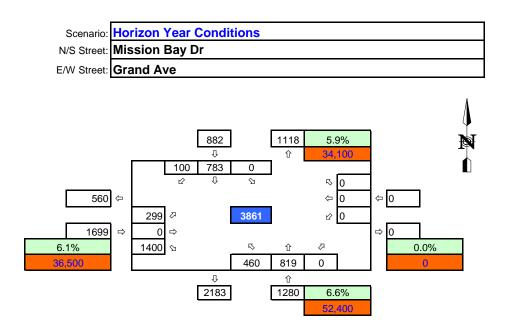


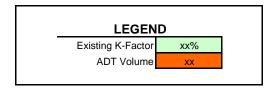




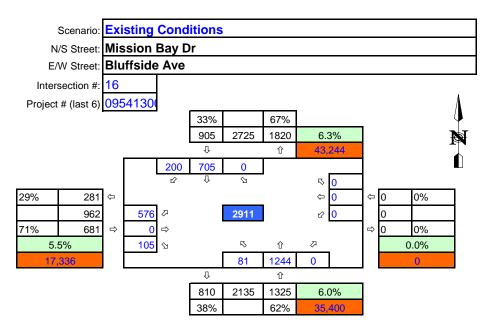
Int 15 AM Peak Volumes

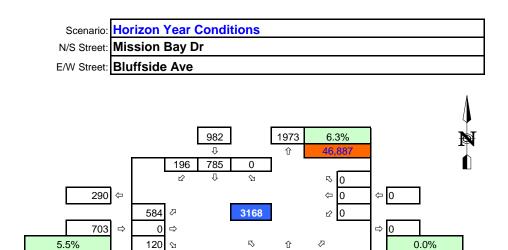






Int 16 AM Peak Volumes





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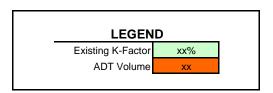
905

1389

1483

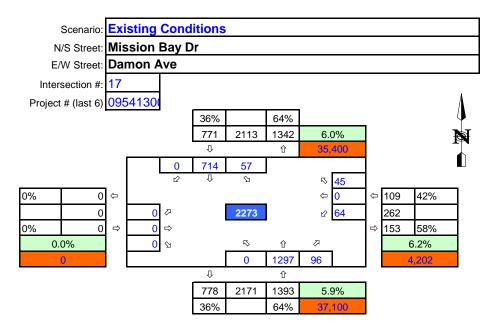
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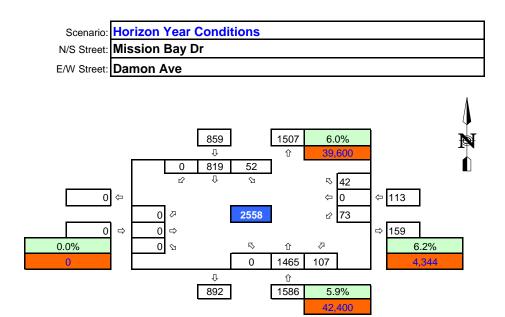
6.0%

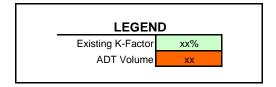


17,888

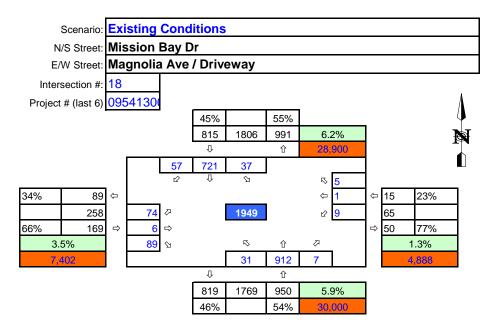
Int 17 AM Peak Volumes

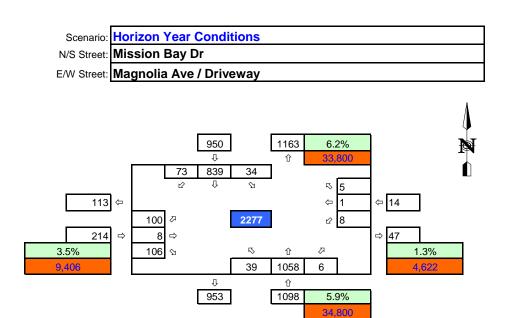


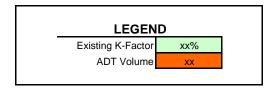




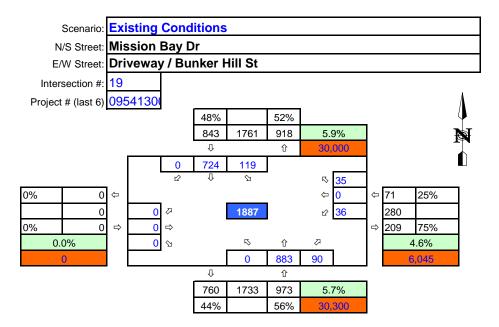
Int 18 AM Peak Volumes



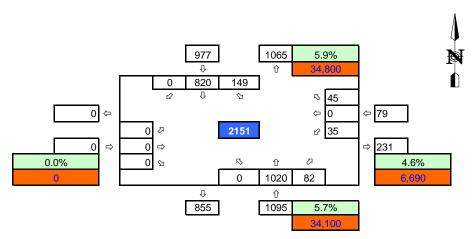


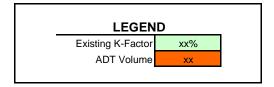


Int 19 AM Peak Volumes

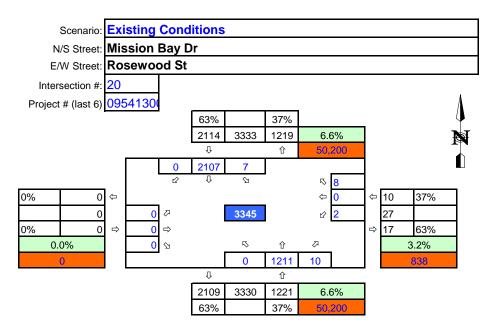


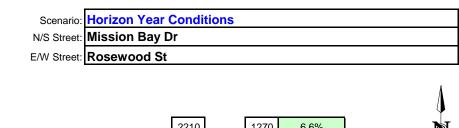


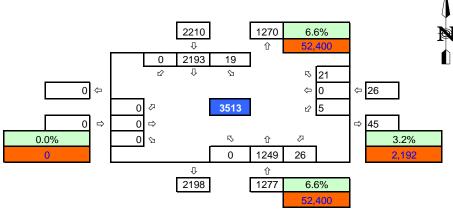


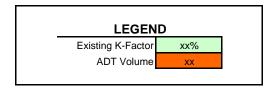


Int 20 AM Peak Volumes

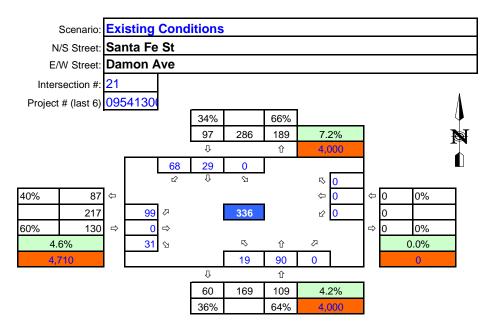


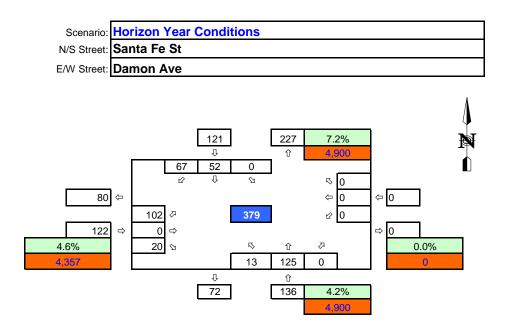


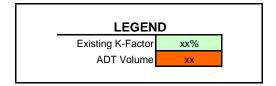




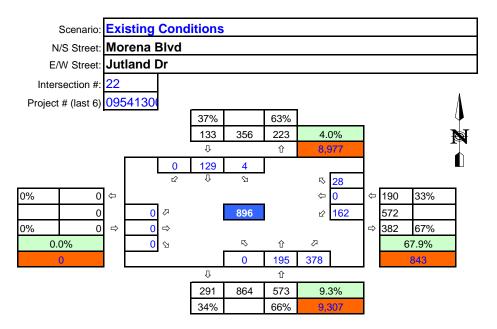
Int 21 AM Peak Volumes

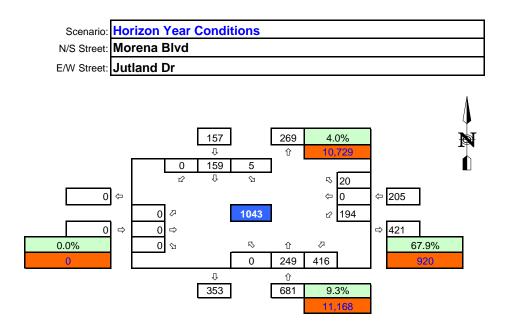


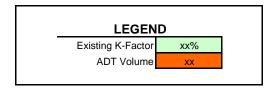




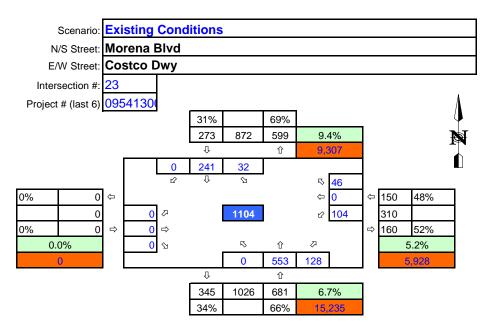
Int 22 AM Peak Volumes

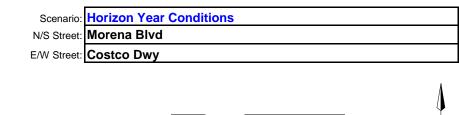


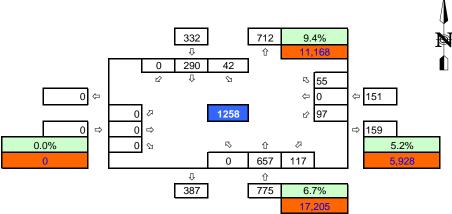


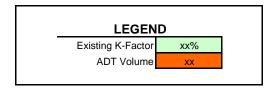


Int 23 AM Peak Volumes

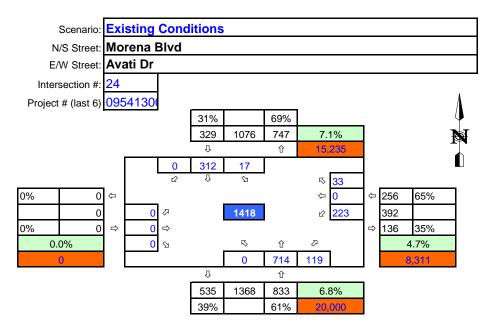


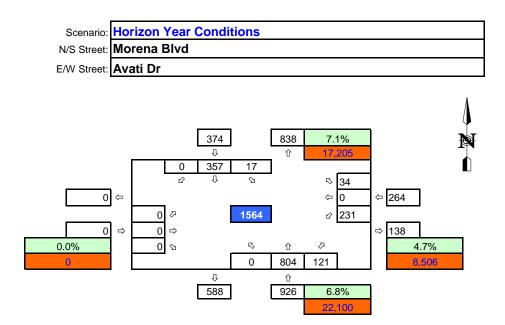


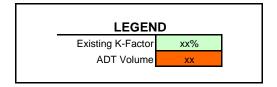




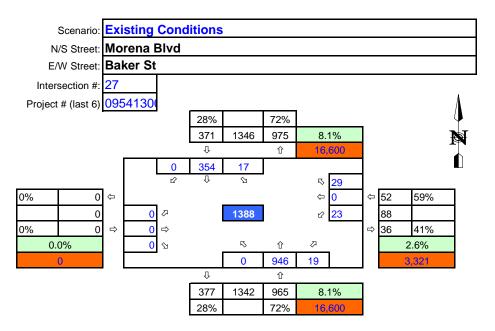
Int 24 AM Peak Volumes

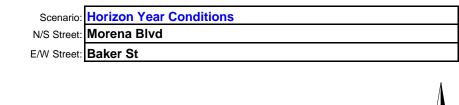


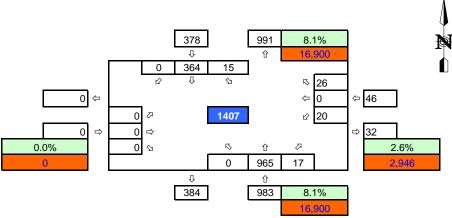


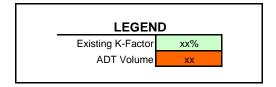


Int 27 AM Peak Volumes

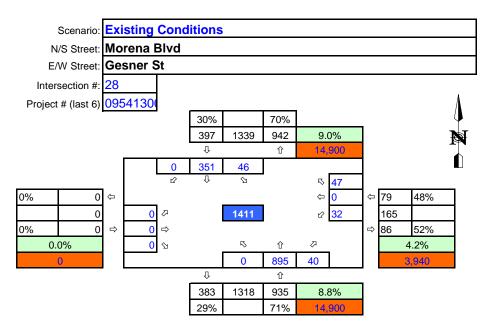


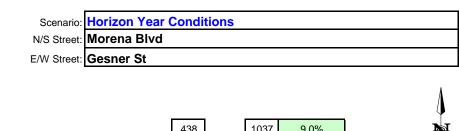


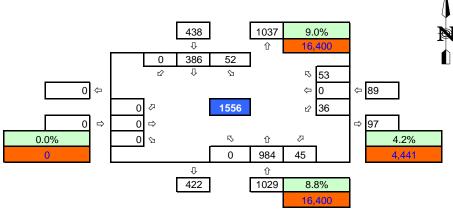


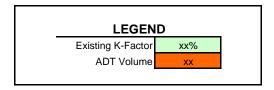


Int 28 AM Peak Volumes

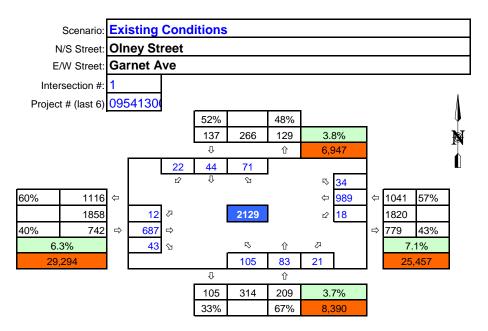


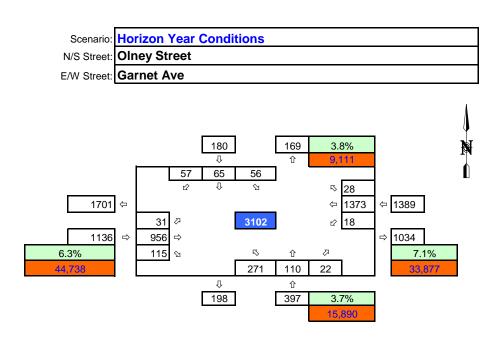


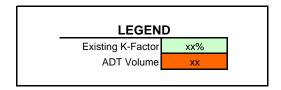




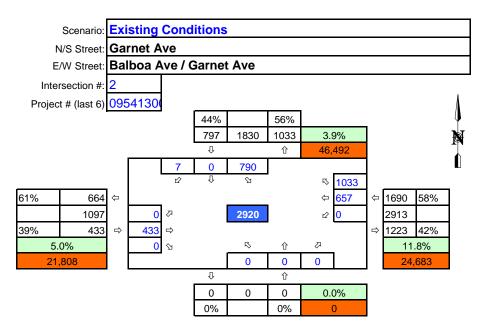
Int 1 PM Peak Volumes

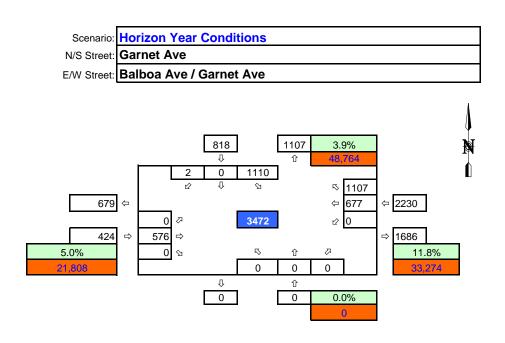


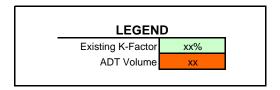




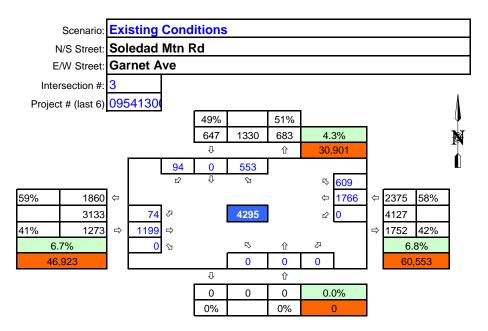
Int 2 PM Peak Volumes

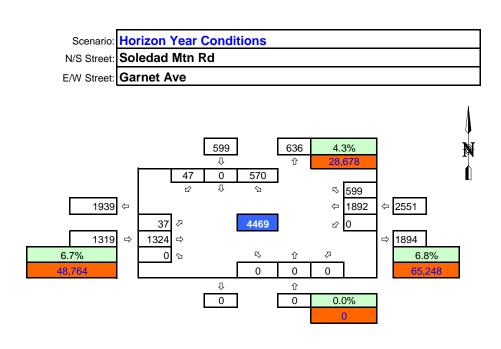




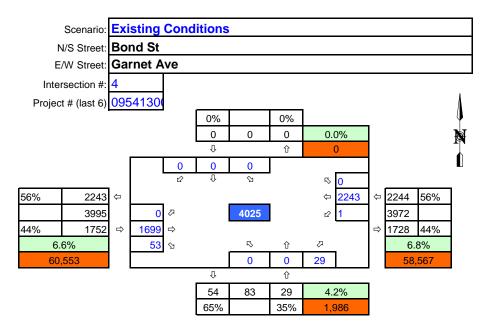


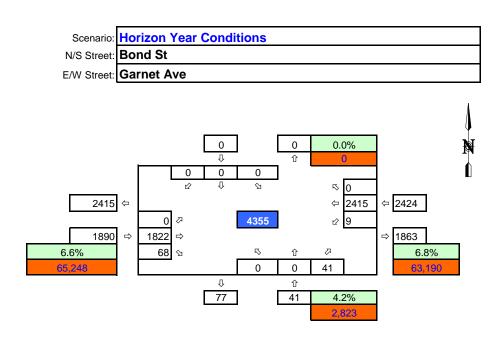
Int 3 PM Peak Volumes



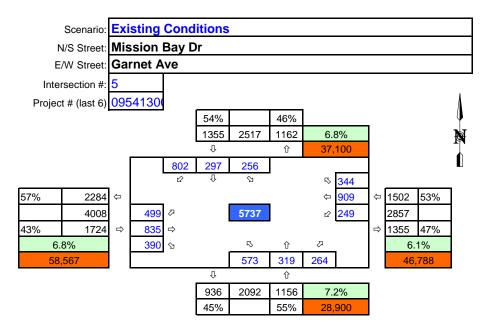


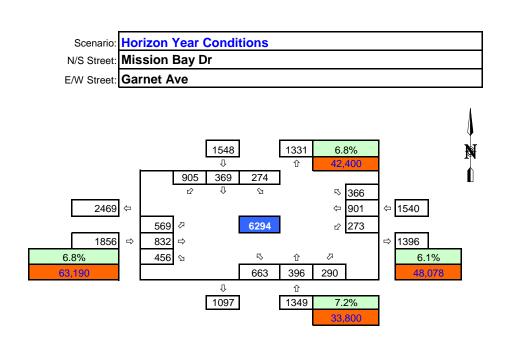
Int 4 PM Peak Volumes

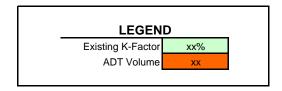




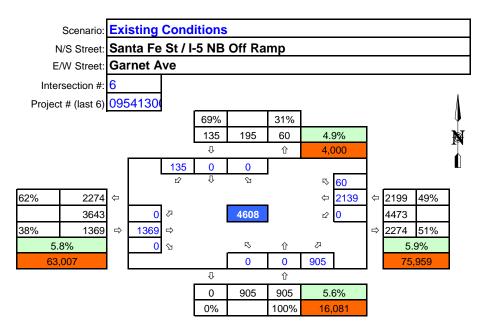
Int 5 PM Peak Volumes

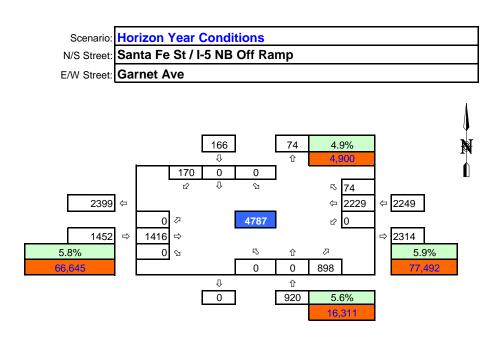


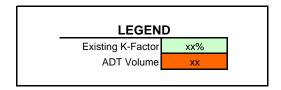




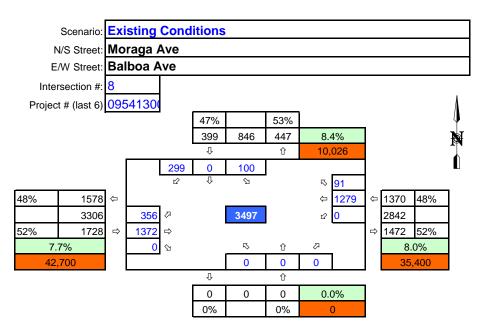
Int 6 PM Peak Volumes

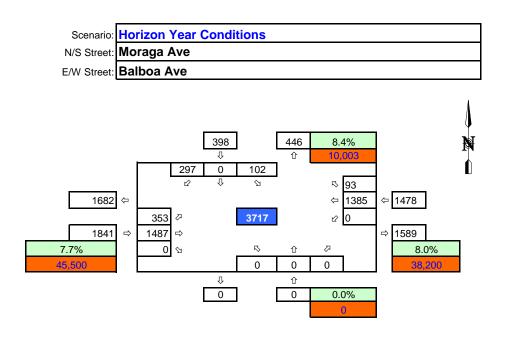


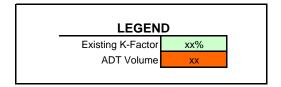




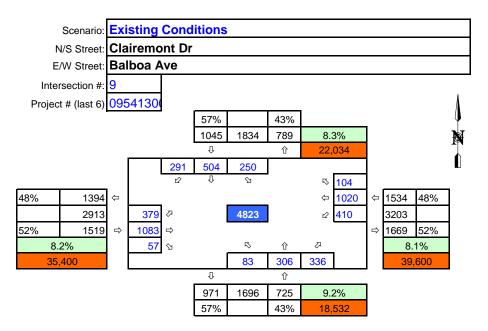
Int 8 PM Peak Volumes

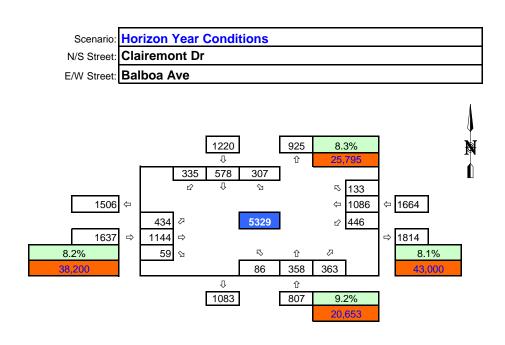


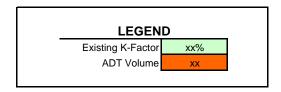




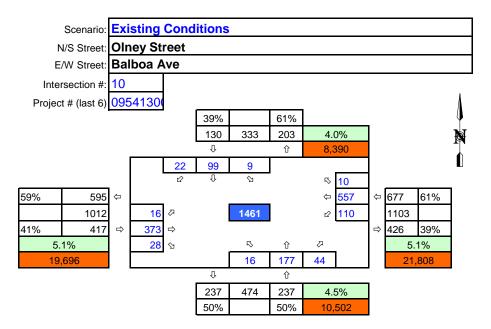
Int 9 PM Peak Volumes

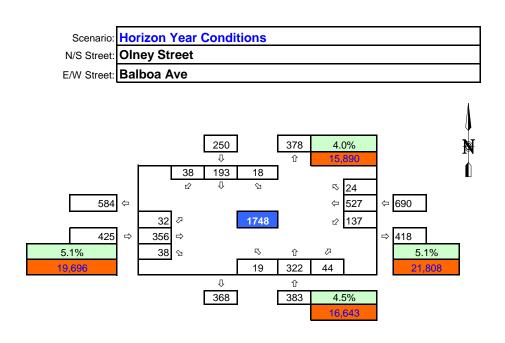


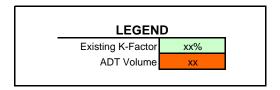




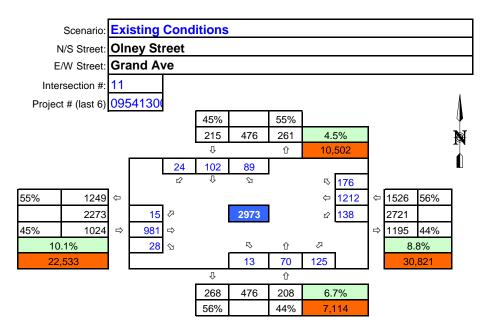
Int 10 PM Peak Volumes

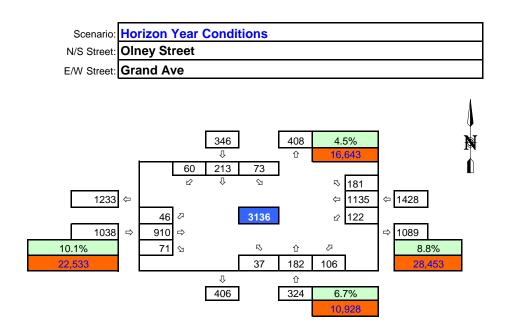


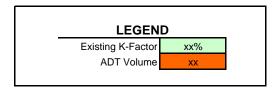




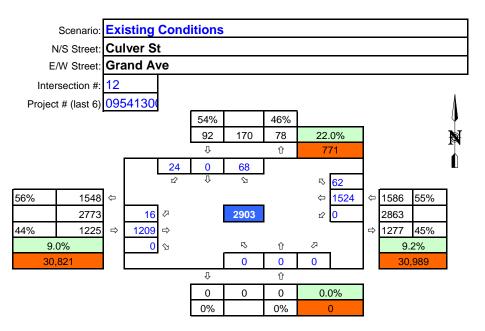
Int 11 PM Peak Volumes

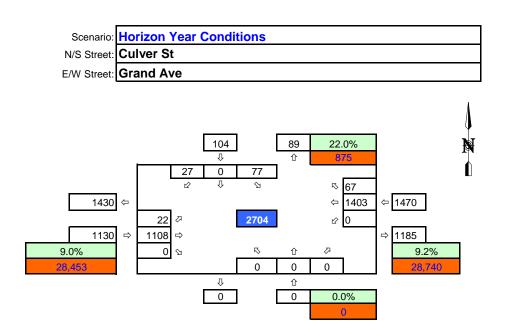


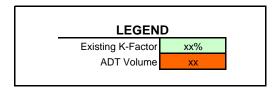




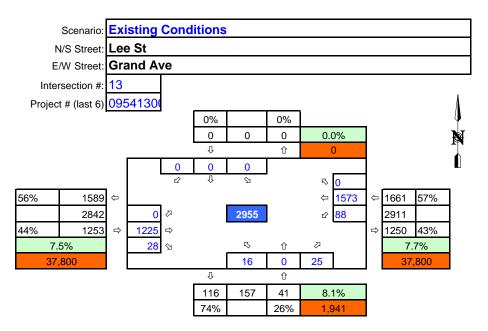
Int 12 PM Peak Volumes

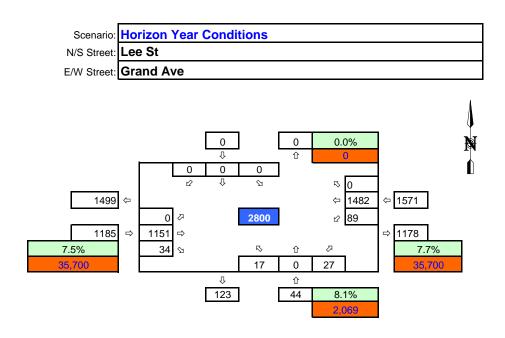


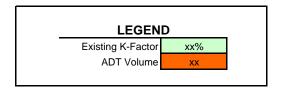




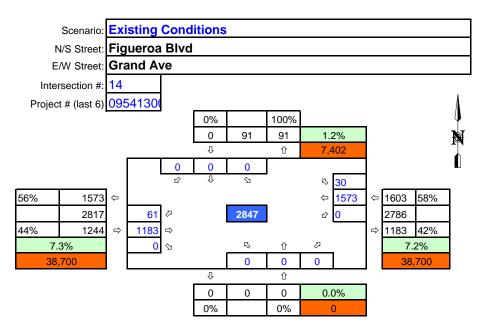
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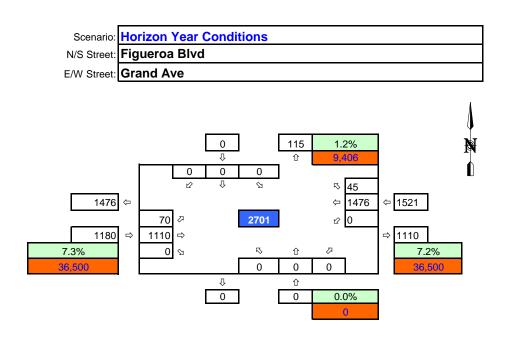




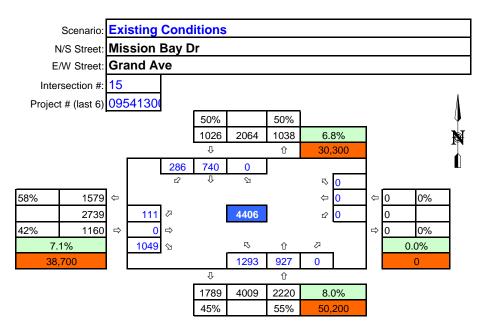


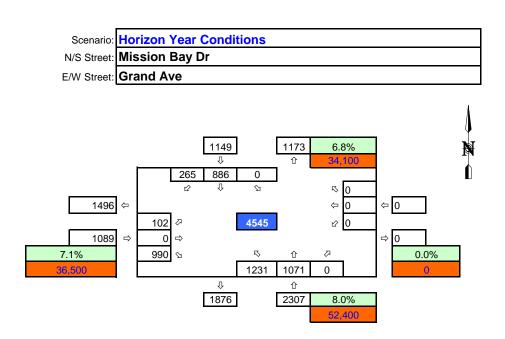
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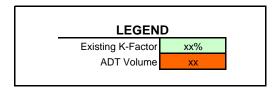




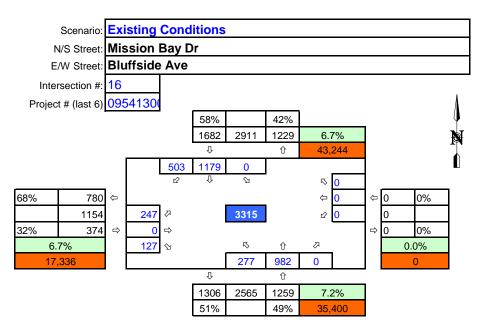
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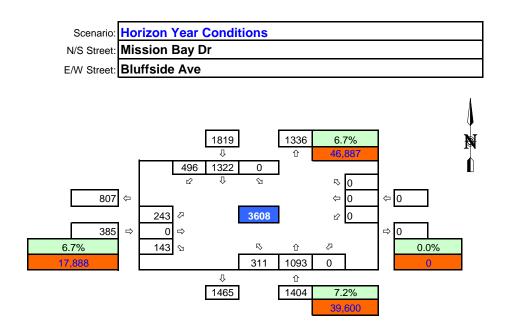




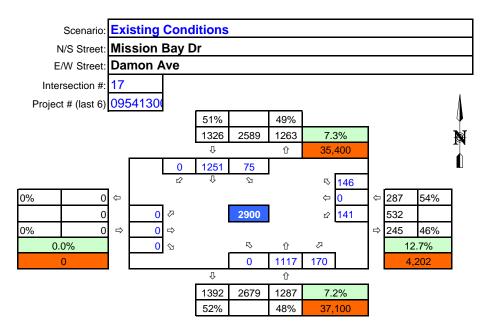


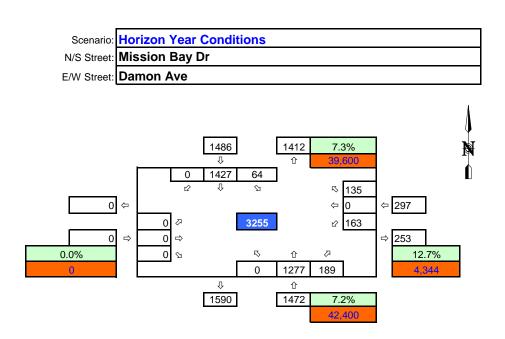
Int 16 PM Peak Volumes

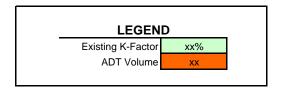




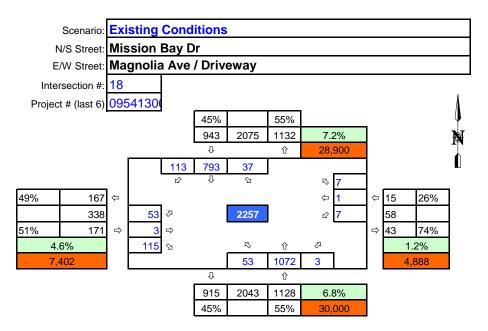
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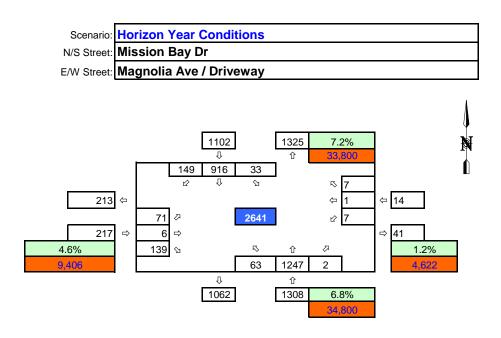


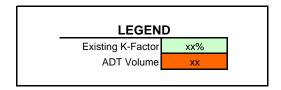




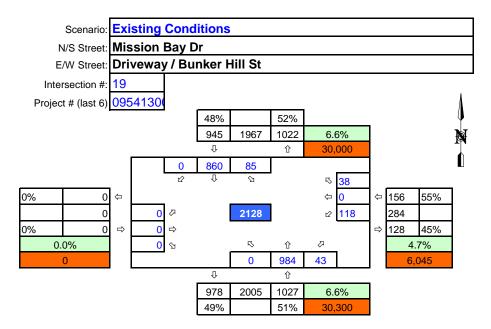
Int 18 PM Peak Volumes

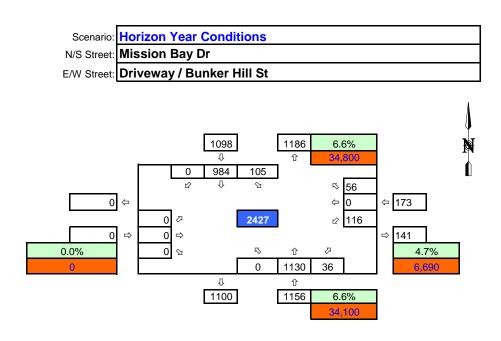




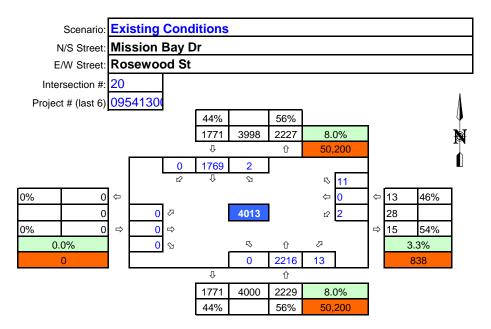


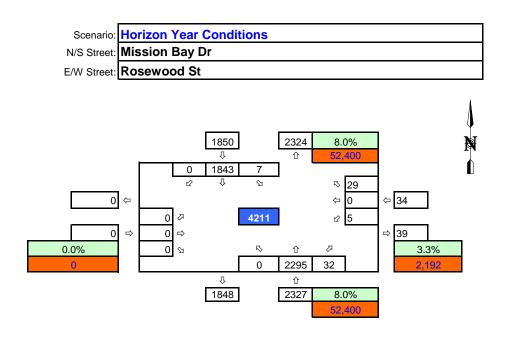
Int 19 PM Peak Volumes

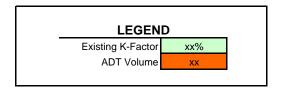




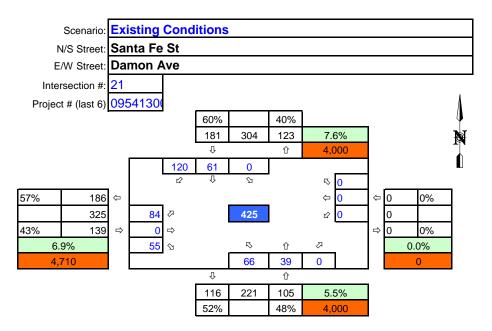
Int 20 PM Peak Volumes

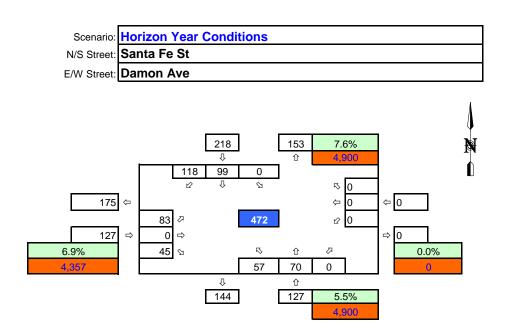


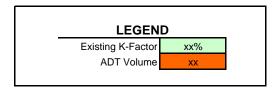




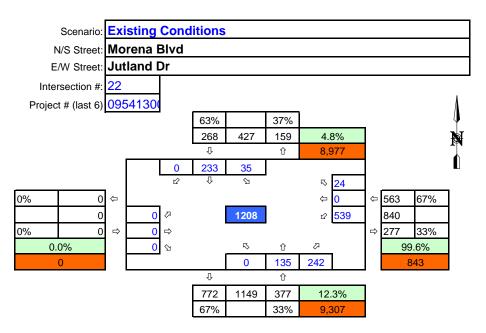
Int 21 PM Peak Volumes

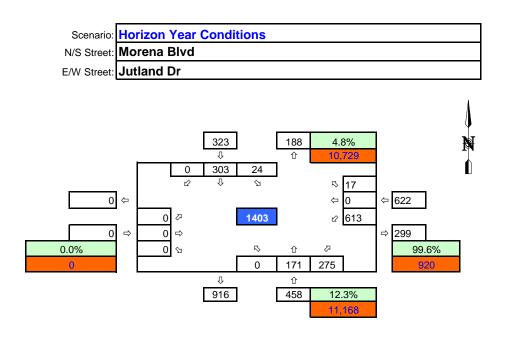


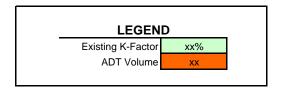




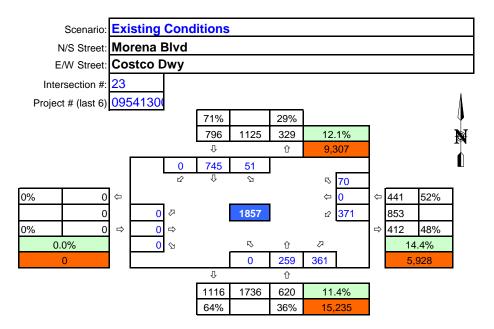
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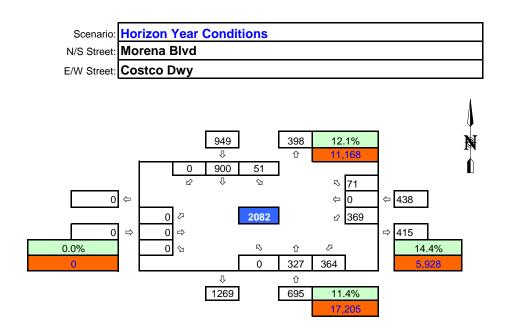


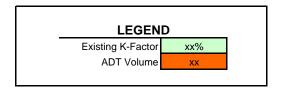




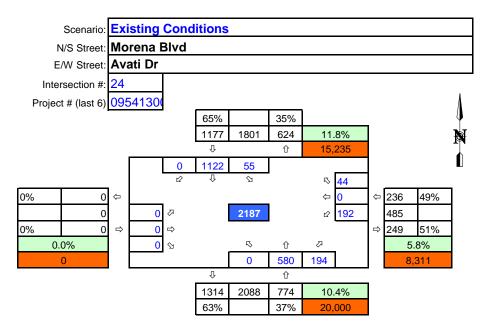
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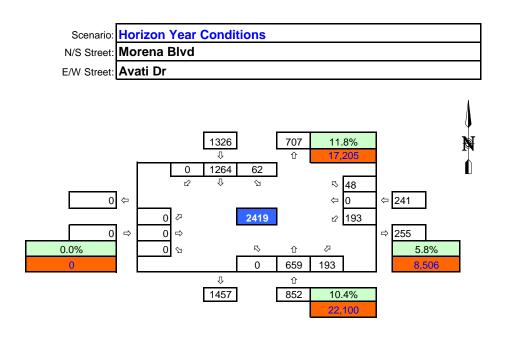


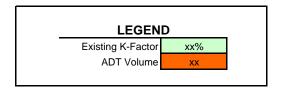




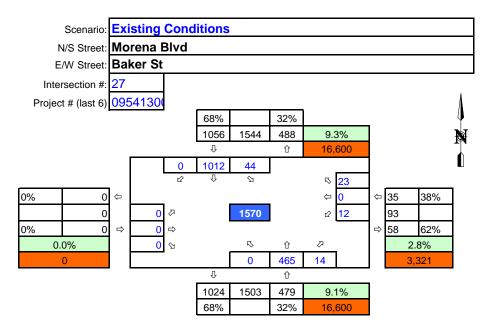
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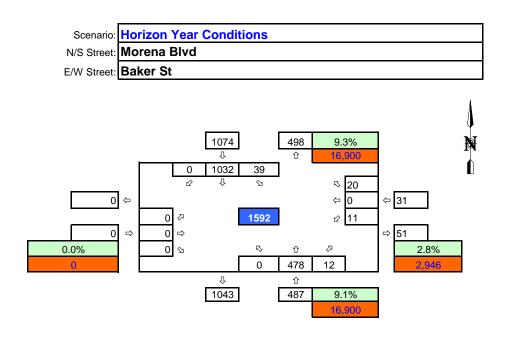


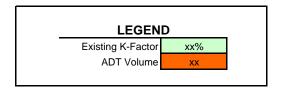




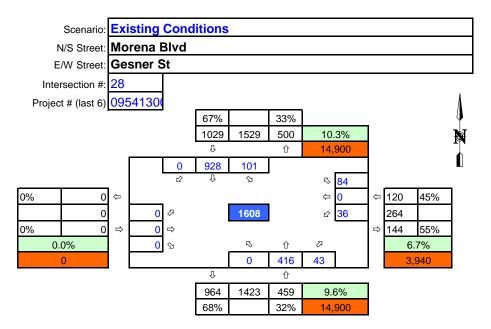
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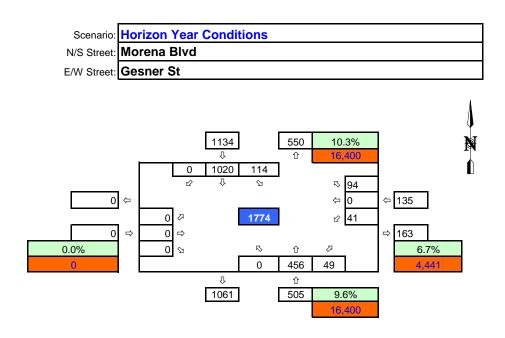


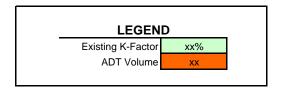




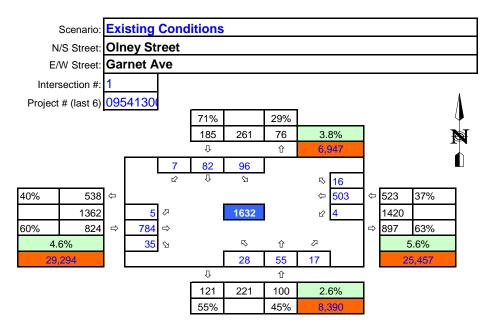
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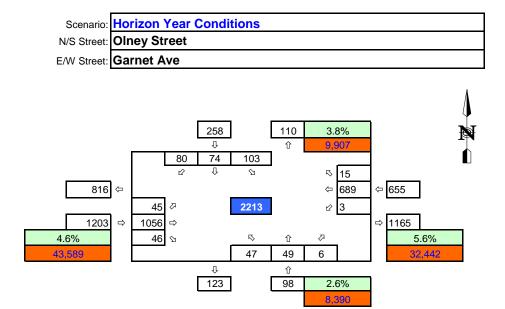


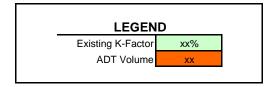




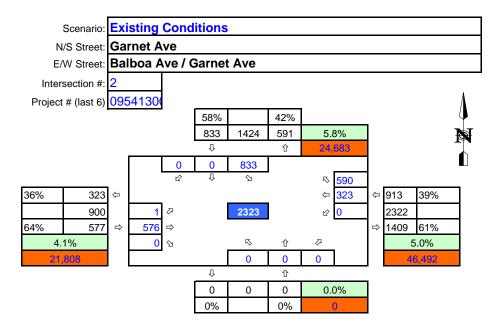
Int 1 AM Peak Volumes

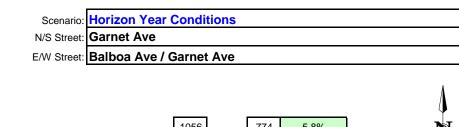


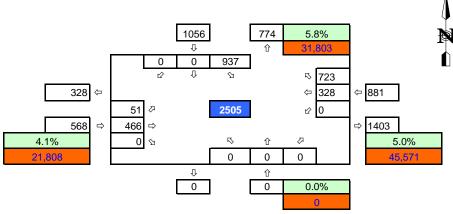


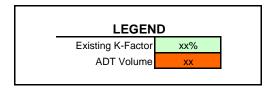


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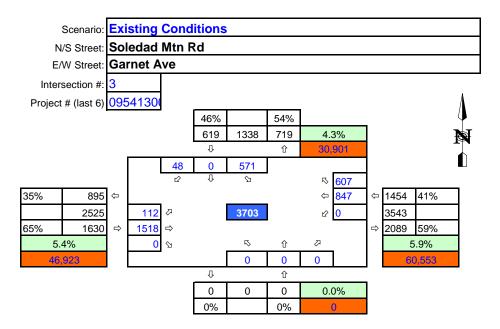


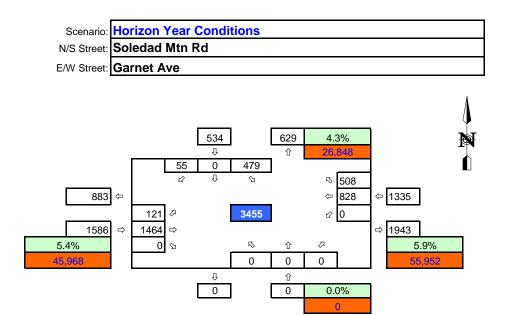


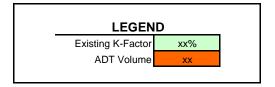




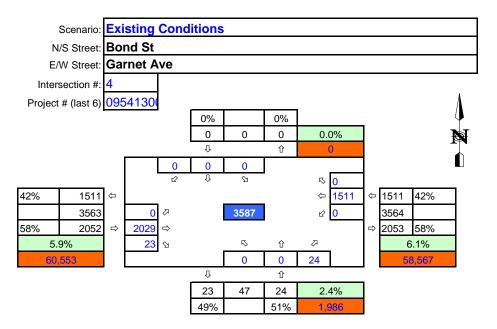
Int 3 AM Peak Volumes

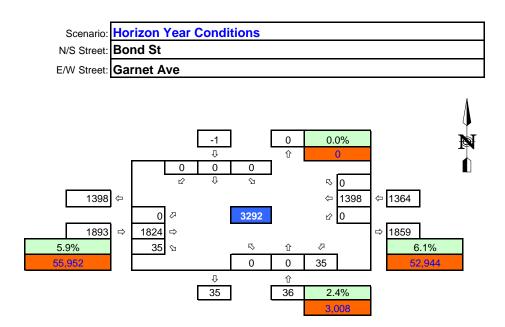


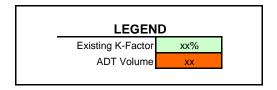




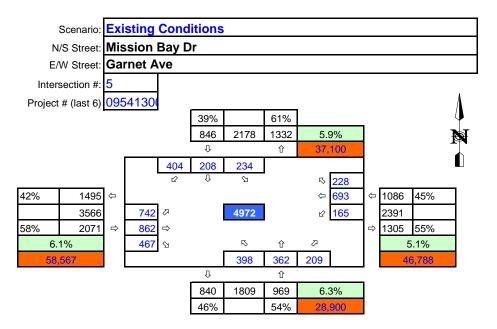
Int 4 AM Peak Volumes

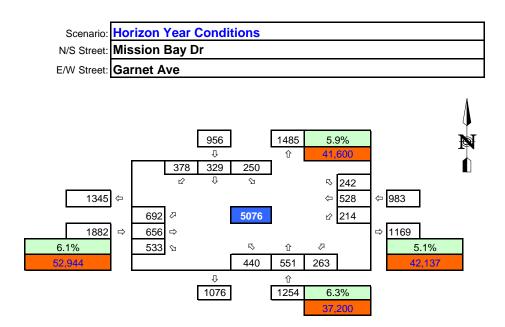


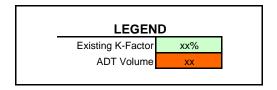




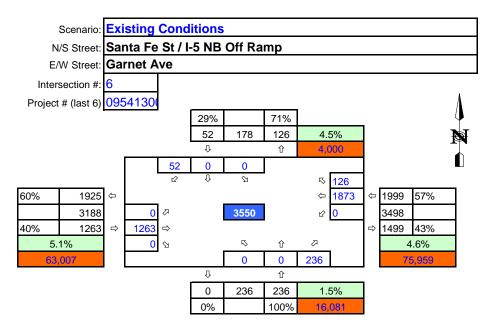
Int 5 AM Peak Volumes

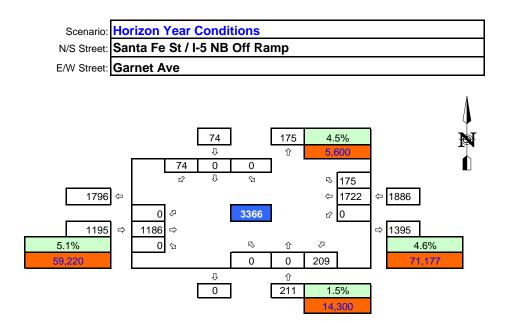


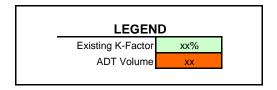




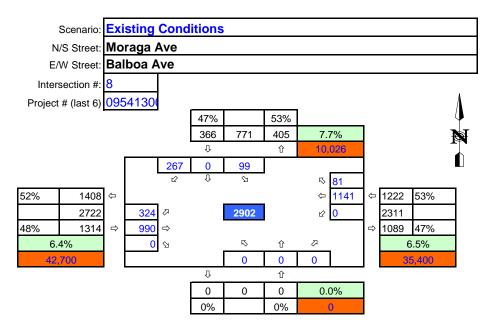
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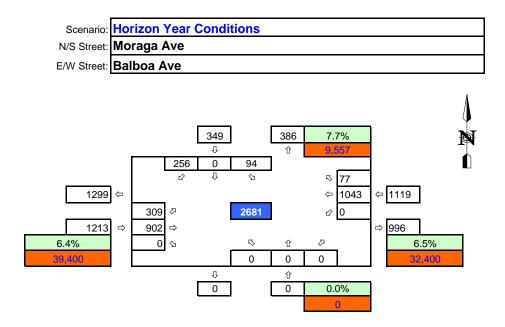


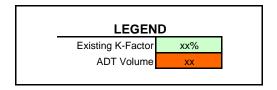




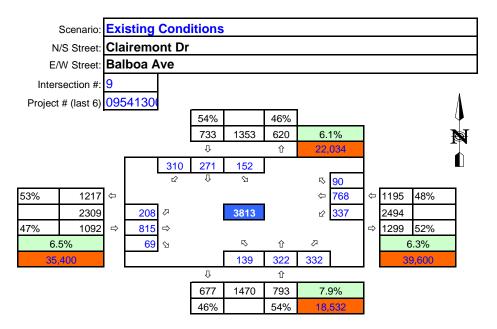
Int 8 AM Peak Volumes

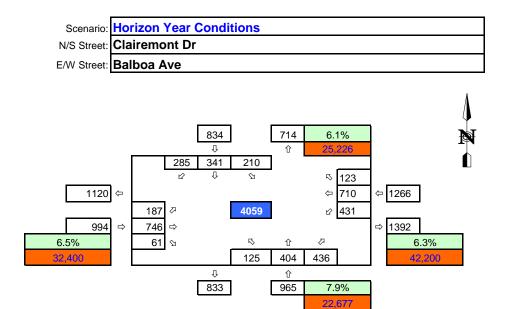


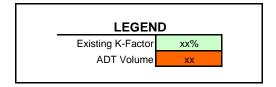




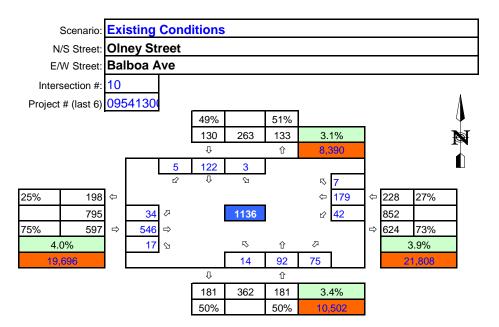
Int 9 AM Peak Volumes

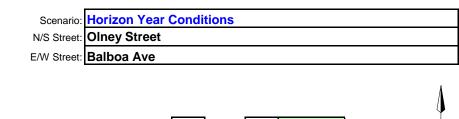


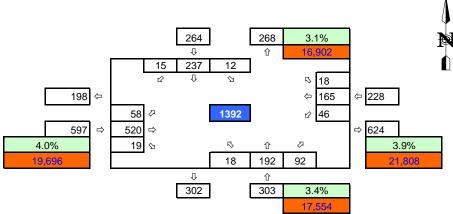


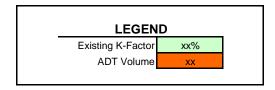


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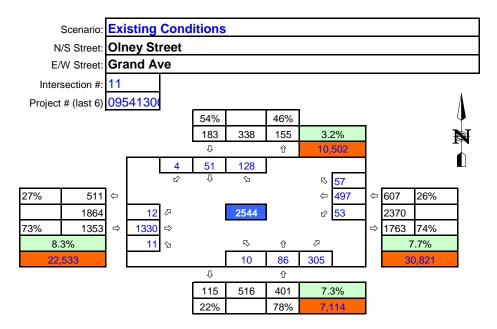


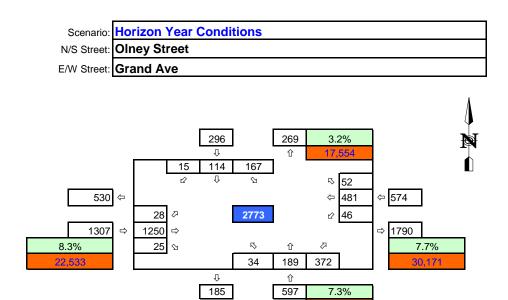


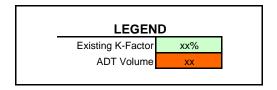




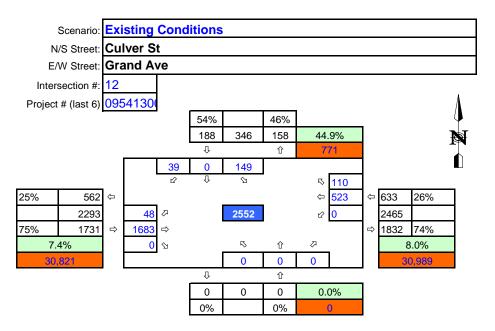
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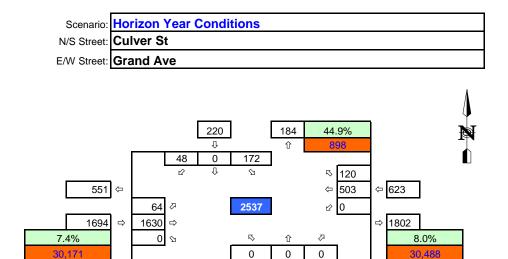






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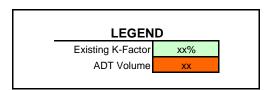




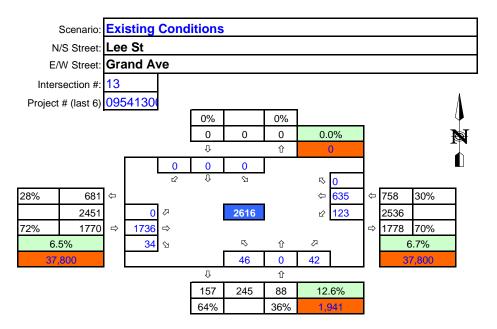
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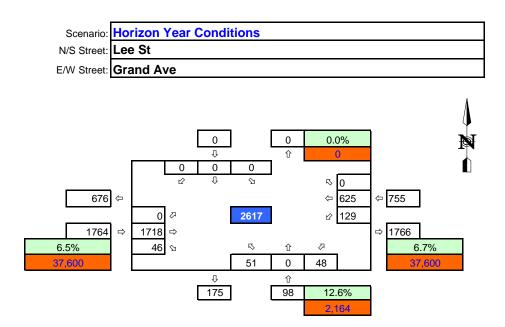
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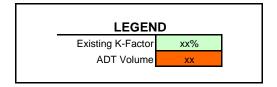
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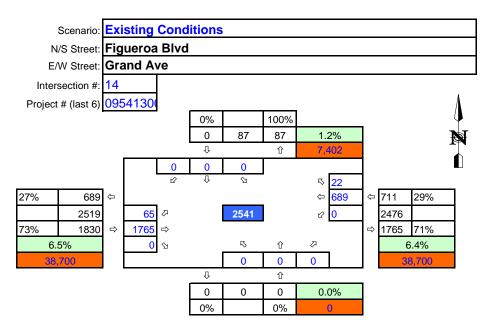
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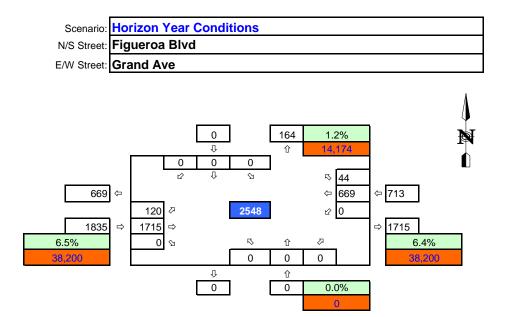


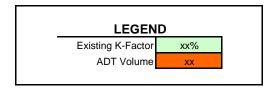




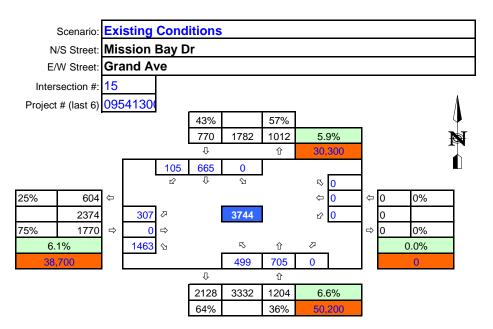
Int 14 AM Peak Volumes

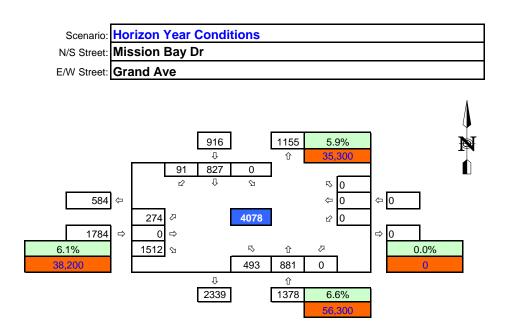


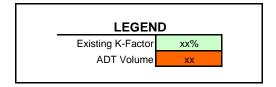




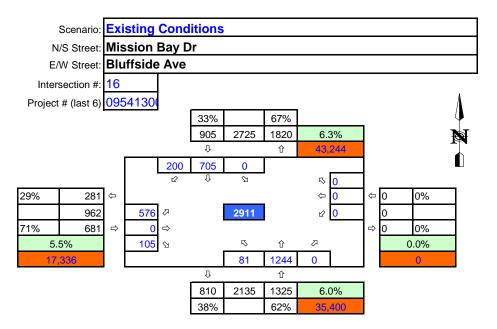
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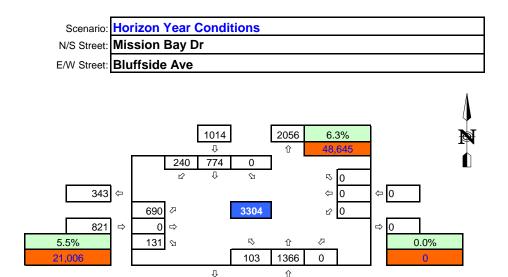






Int 16 AM Peak Volumes

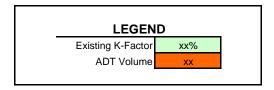




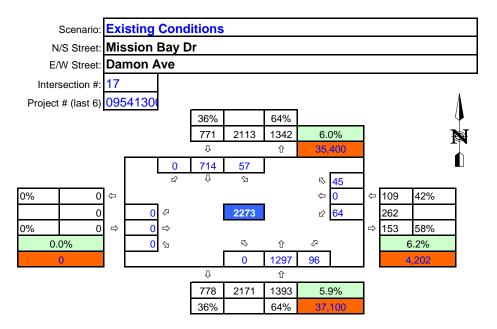
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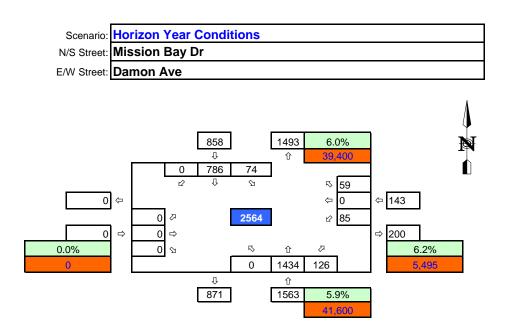
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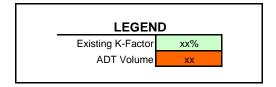
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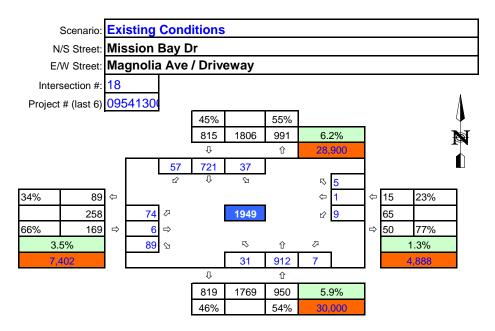
Int 17 AM Peak Volumes

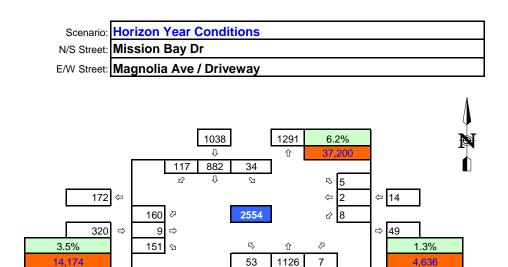






Int 18 AM Peak Volumes

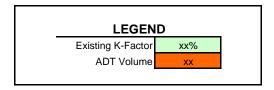




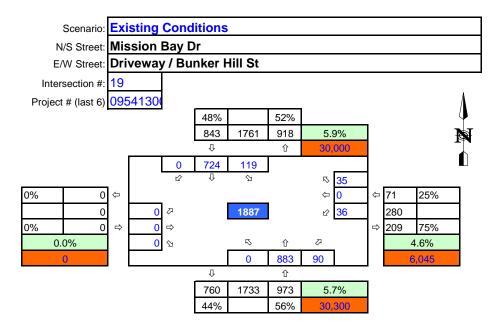
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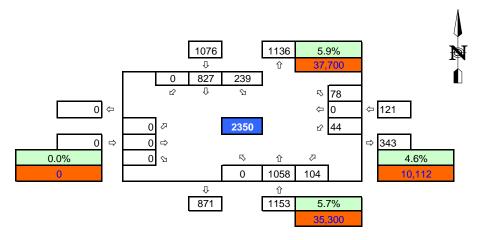
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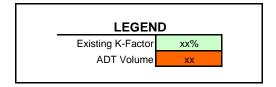


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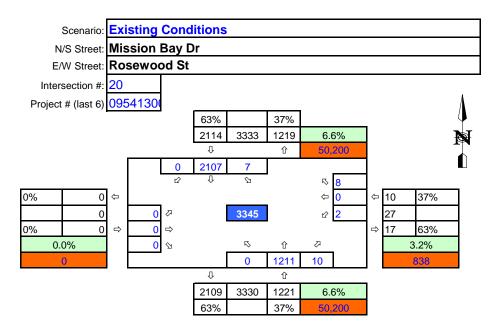


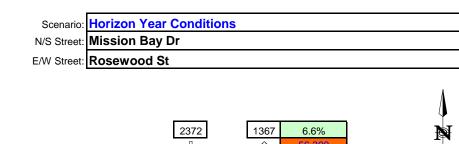


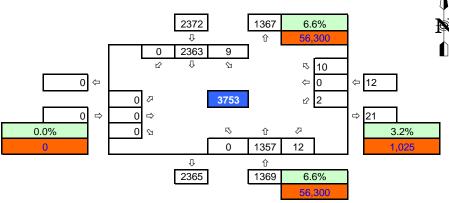


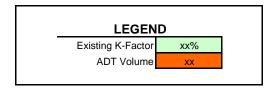


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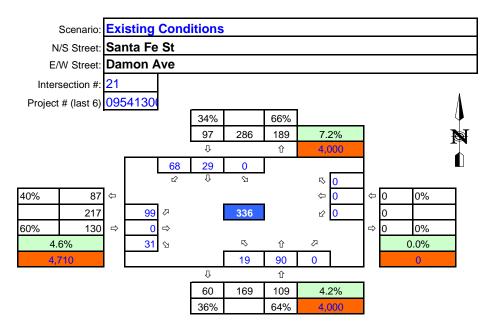


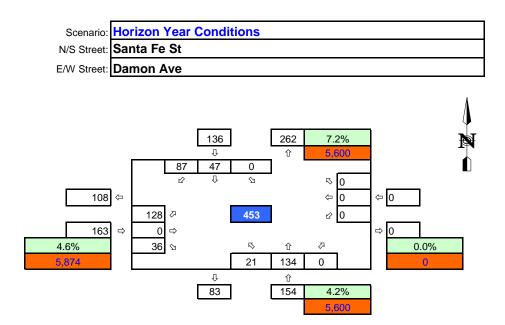


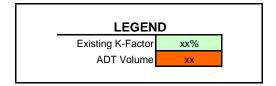




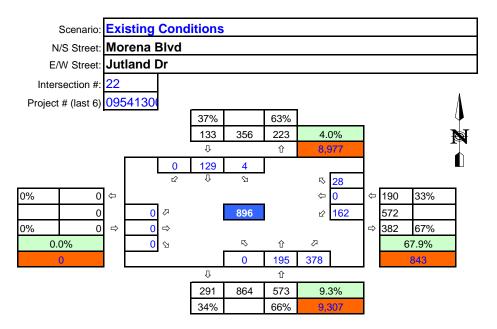
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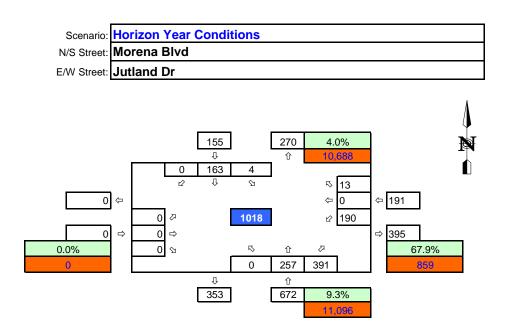


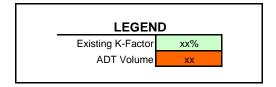




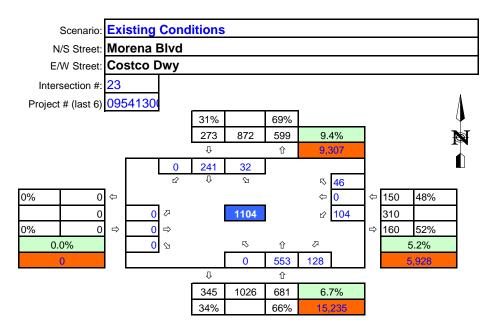
Int 22 AM Peak Volumes

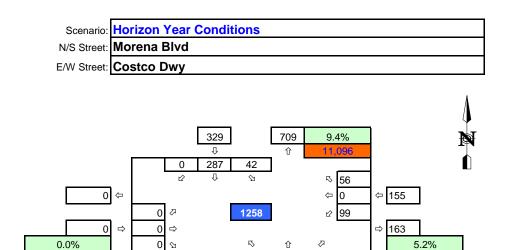






Int 23 AM Peak Volumes





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386

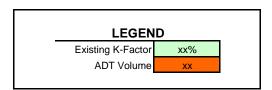
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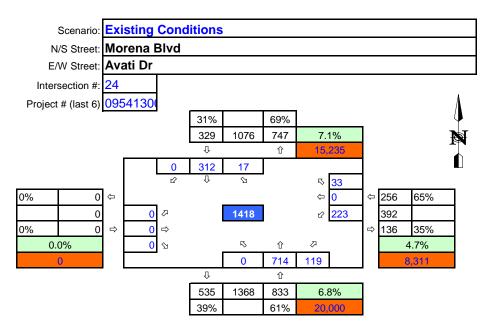
121

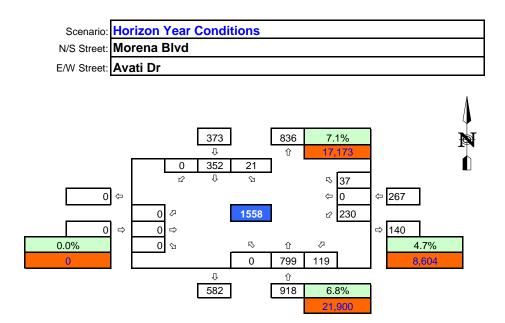
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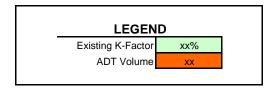
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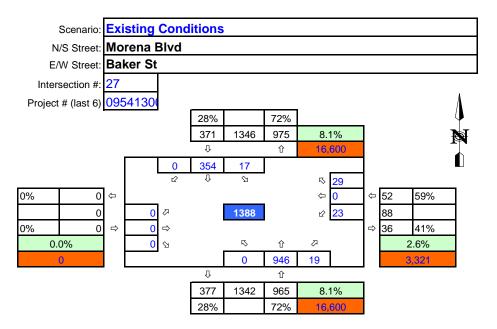
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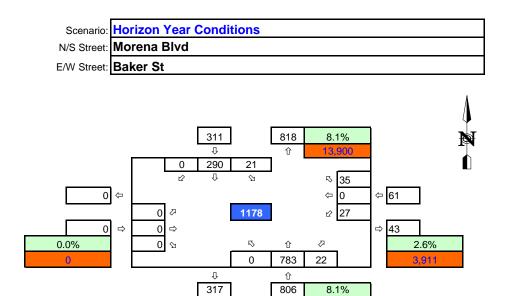


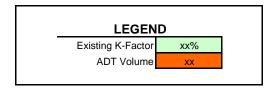




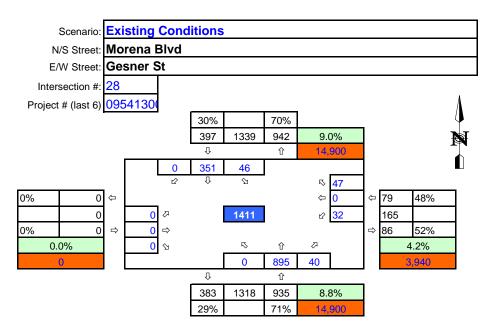
Int 27 AM Peak Volumes

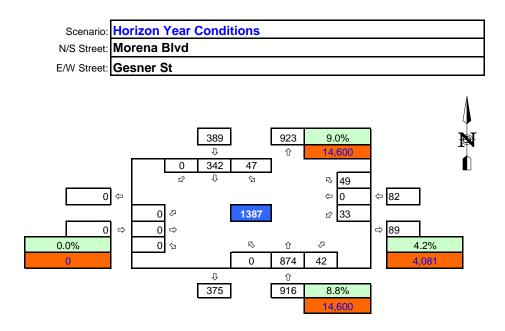


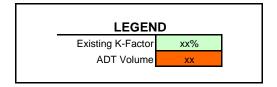




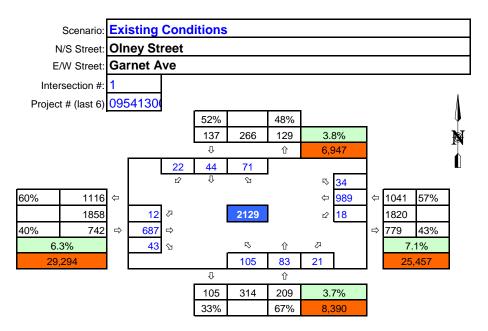
Int 28 AM Peak Volumes

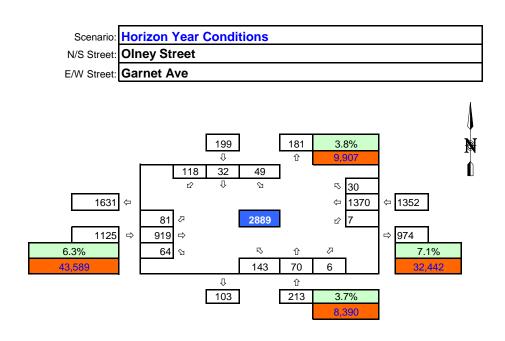




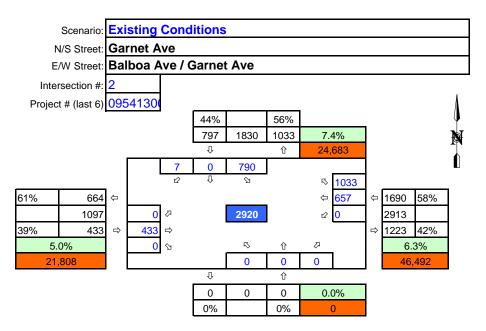


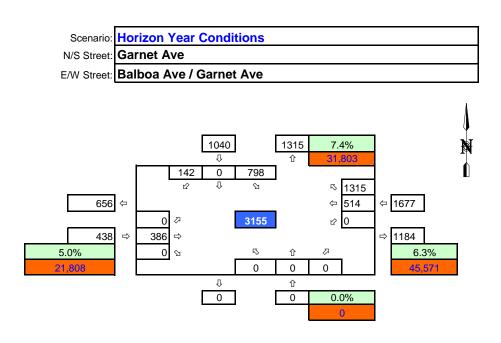
Int 1 PM Peak Volumes

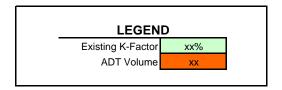




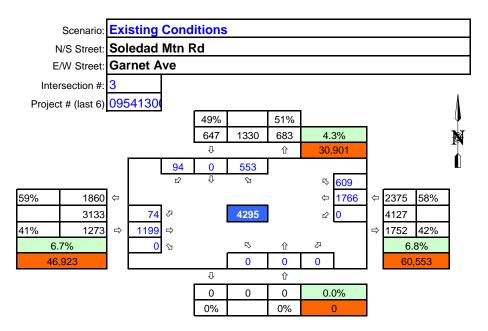
Int 2 PM Peak Volumes

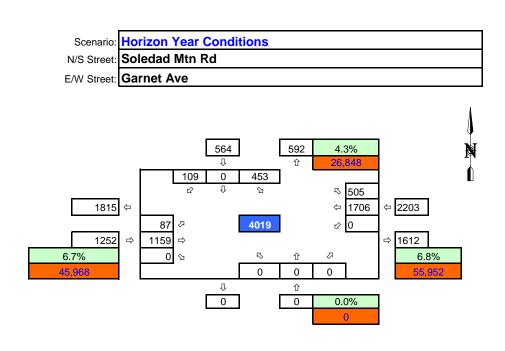


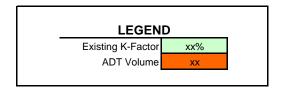




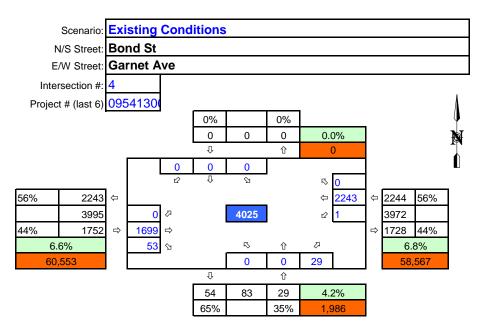
Int 3 PM Peak Volumes

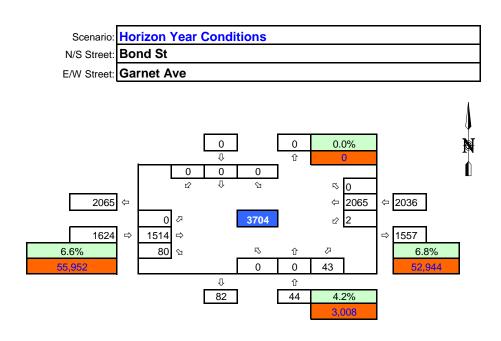




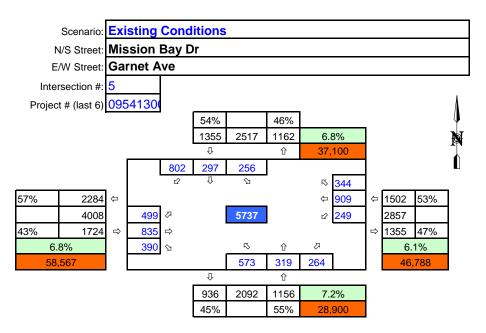


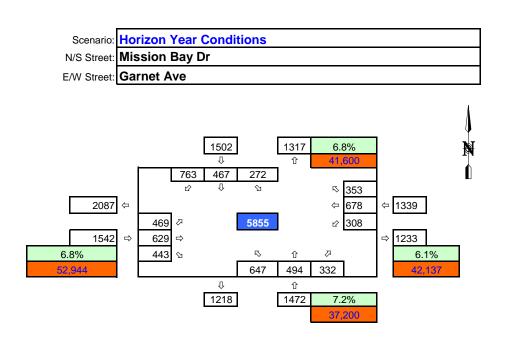
Int 4 PM Peak Volumes

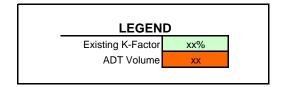




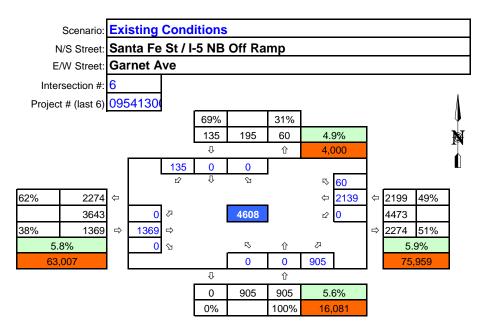
Int 5 PM Peak Volumes

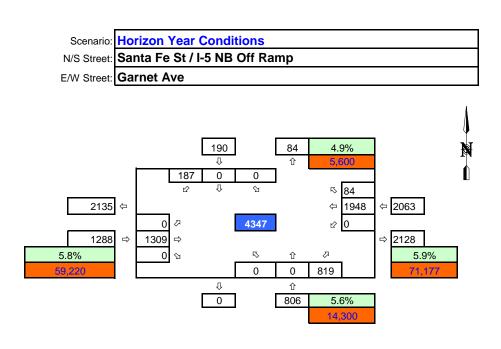


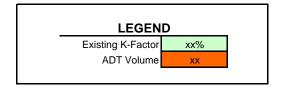




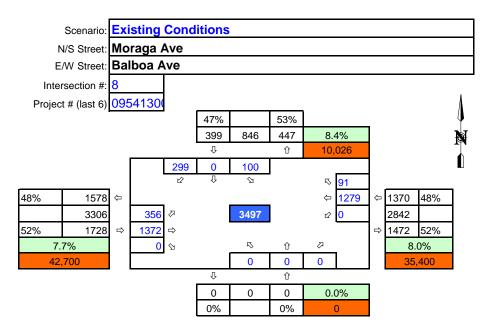
Int 6 PM Peak Volumes

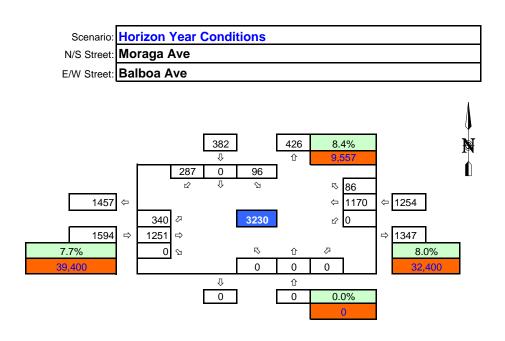


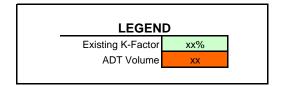




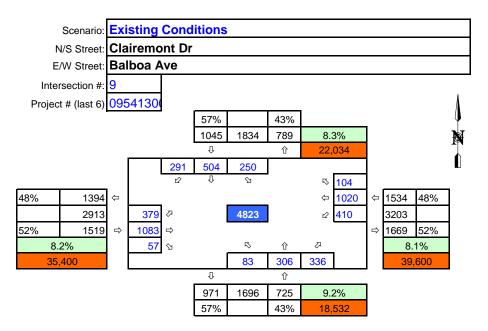
Int 8 PM Peak Volumes

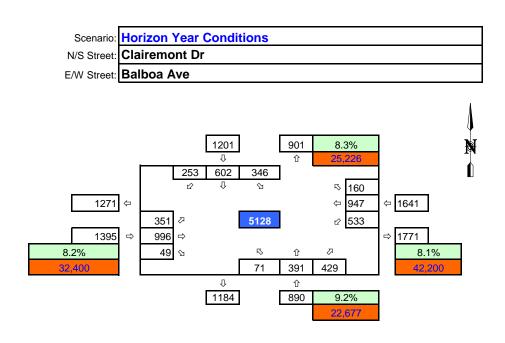


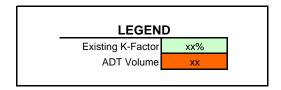




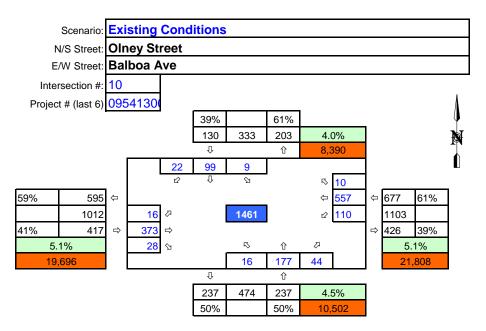
Int 9 PM Peak Volumes

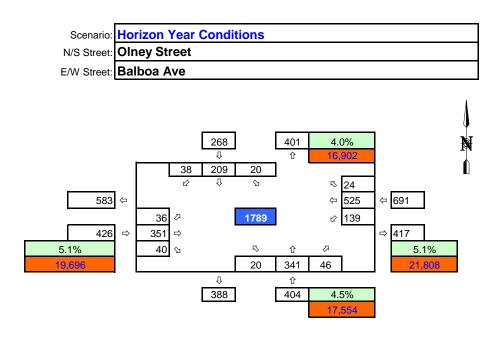


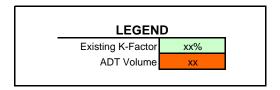




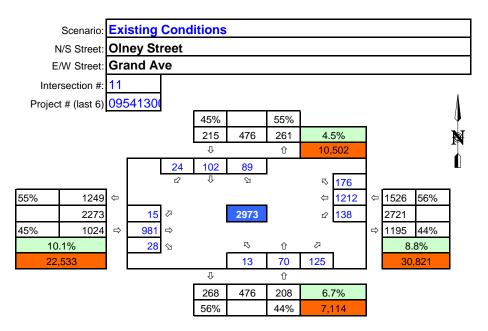
Int 10 PM Peak Volumes

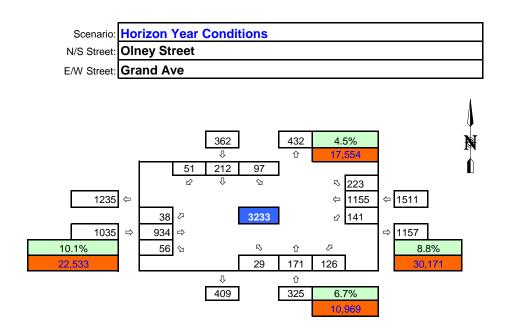


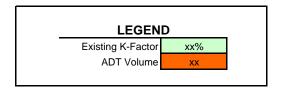




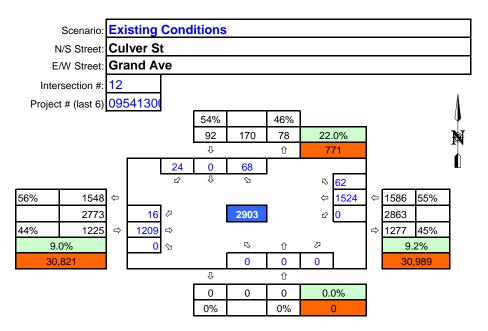
Int 11 PM Peak Volumes

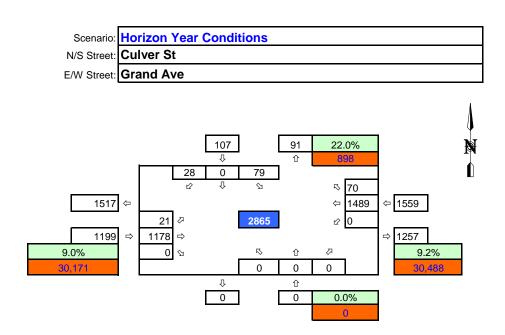


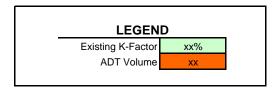




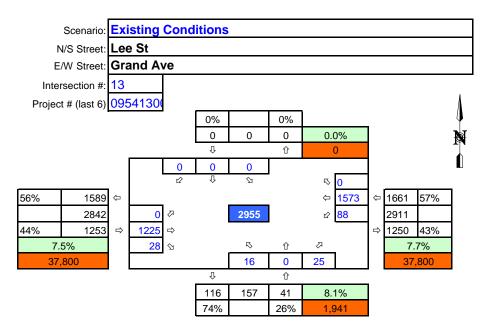
Int 12 PM Peak Volumes

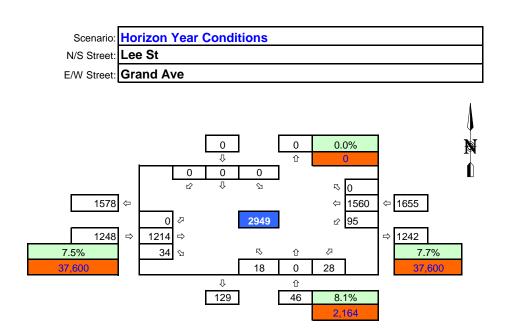


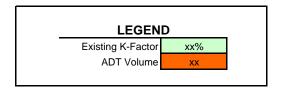




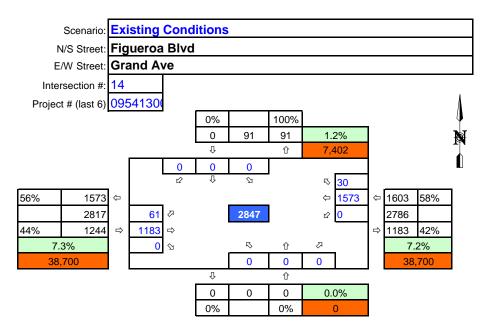
Int 13 PM Peak Volumes

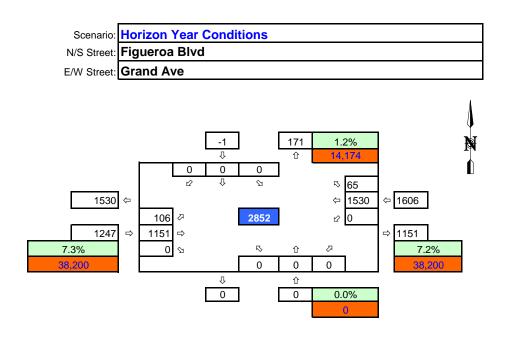


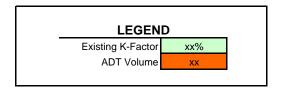




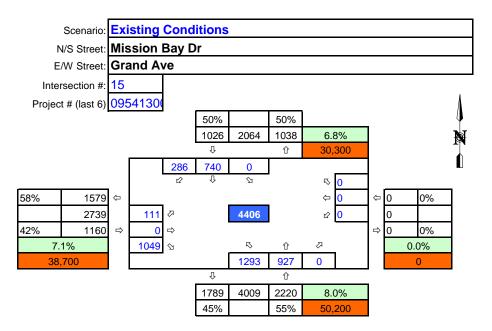
Int 14 PM Peak Volumes

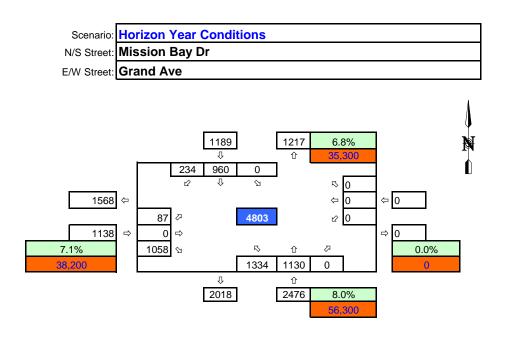


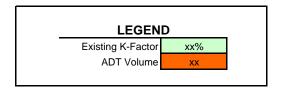




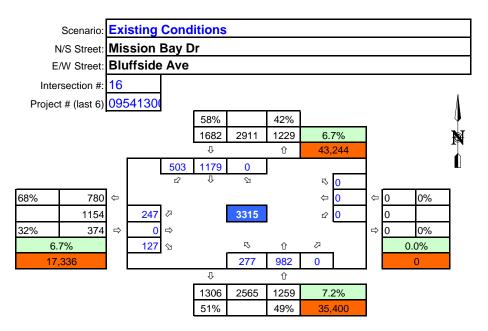
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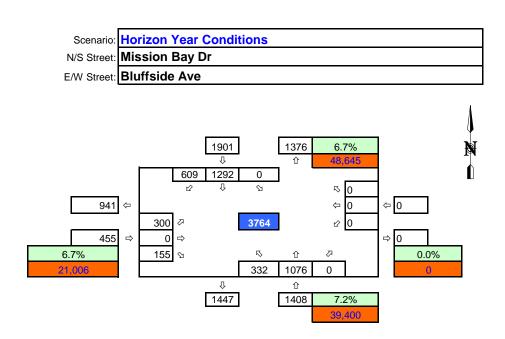


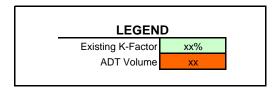




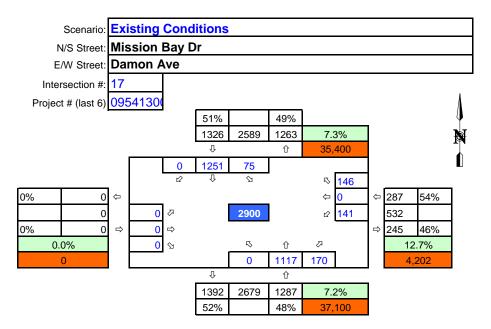
Int 16 PM Peak Volumes

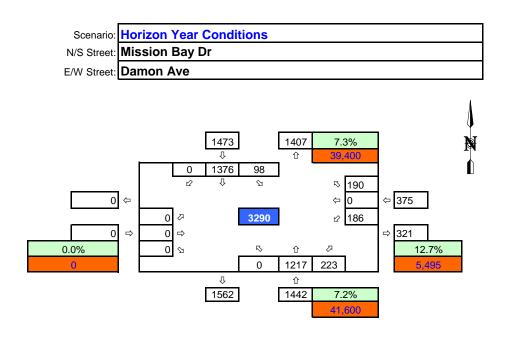


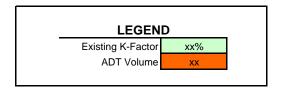




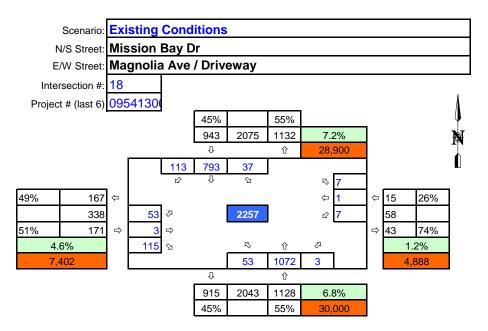
Int 17 PM Peak Volumes

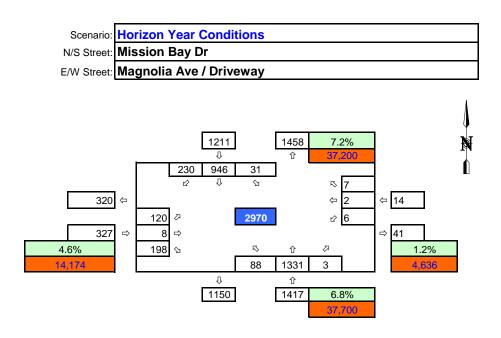


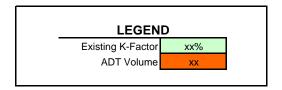




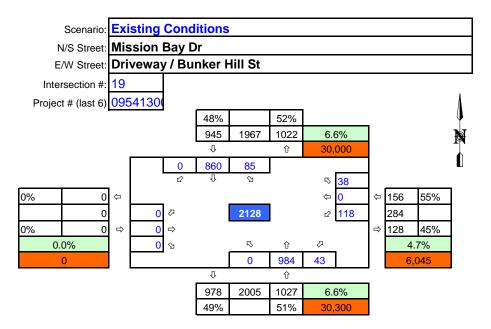
Int 18 PM Peak Volumes

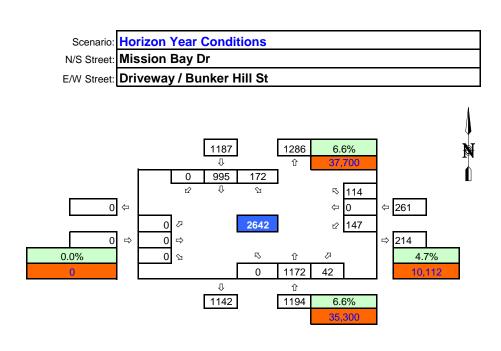




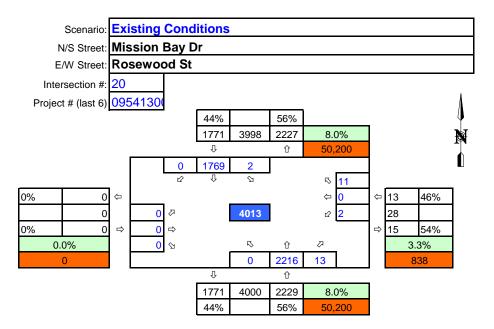


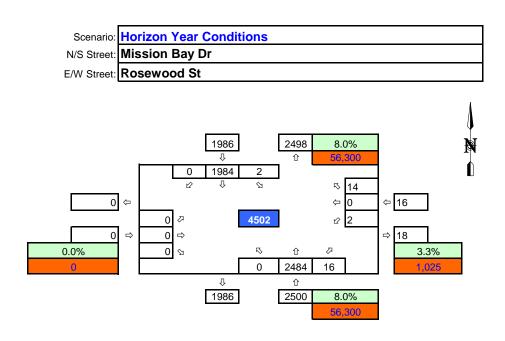
Int 19 PM Peak Volumes



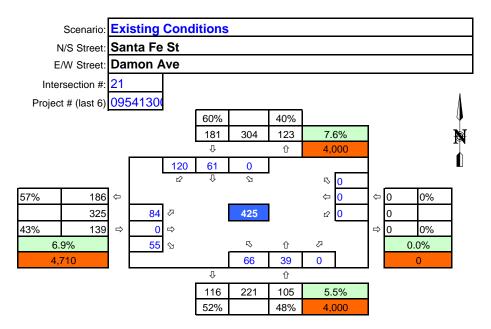


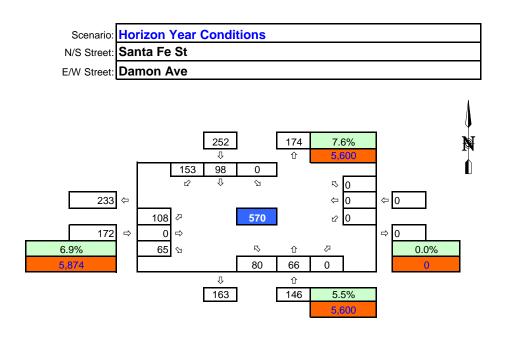
Int 20 PM Peak Volumes

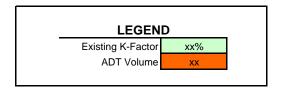




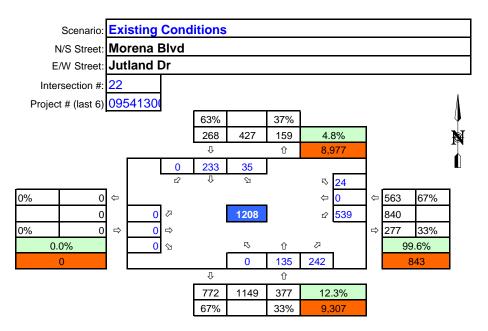
Int 21 PM Peak Volumes

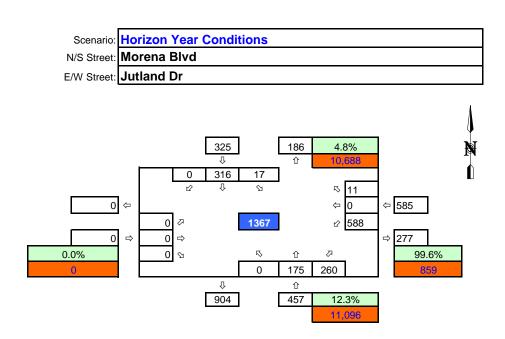


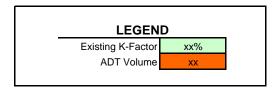




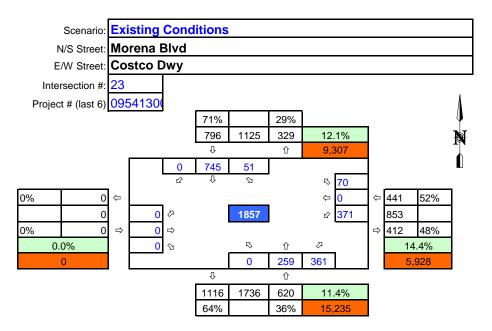
Int 22 PM Peak Volumes

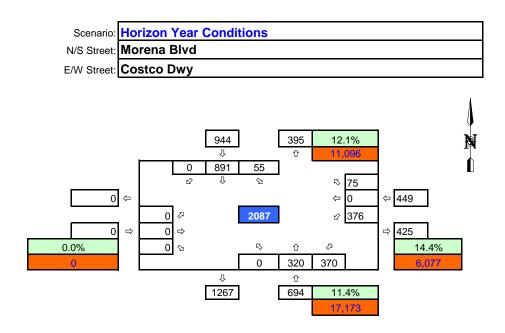




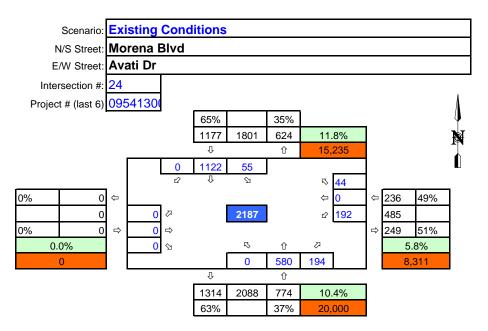


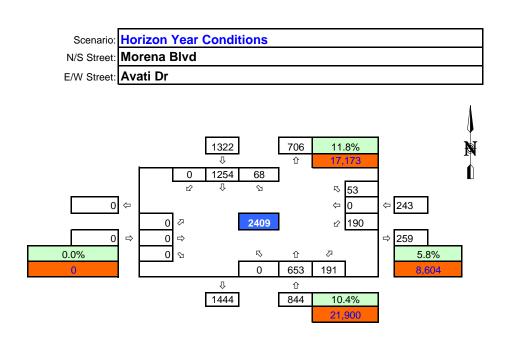
Int 23 PM Peak Volumes

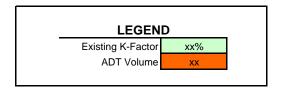




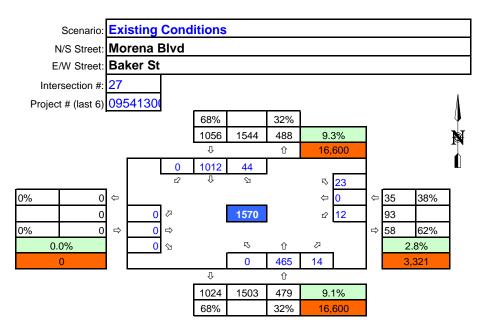
Int 24 PM Peak Volumes

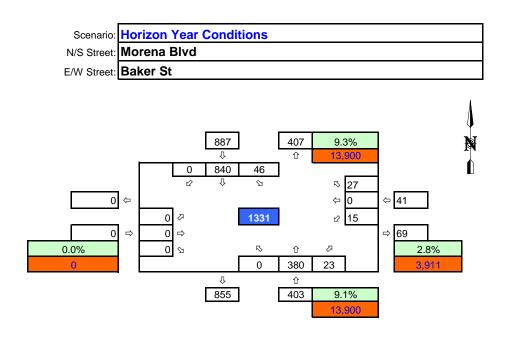


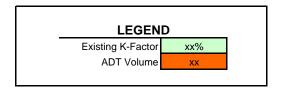




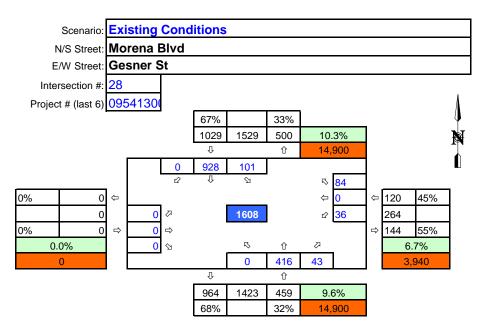
Int 27 PM Peak Volumes

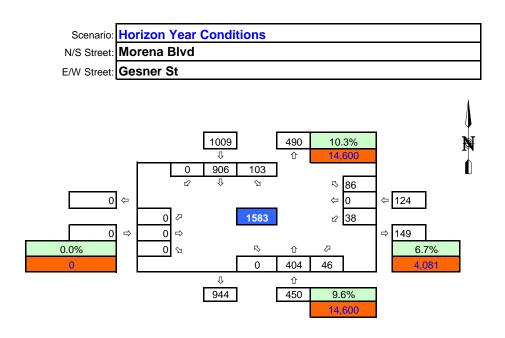


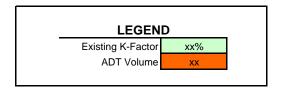




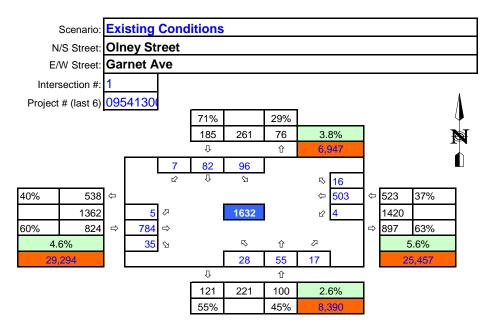
Int 28 PM Peak Volumes

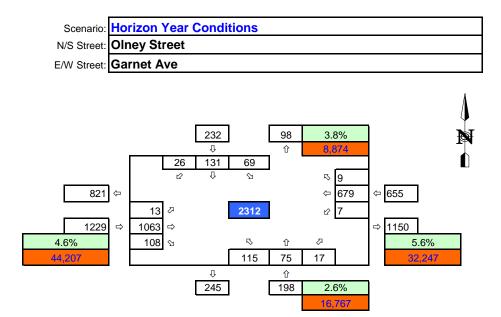


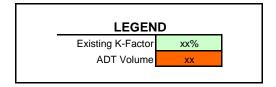




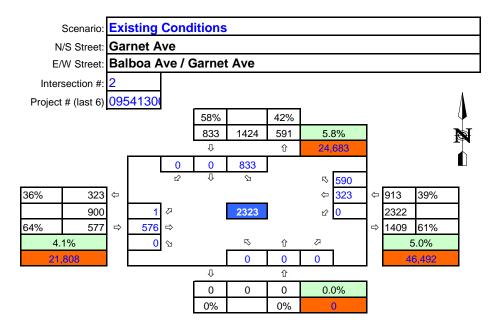
Int 1 AM Peak Volumes

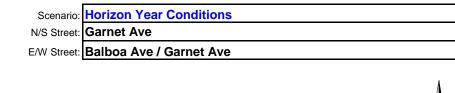


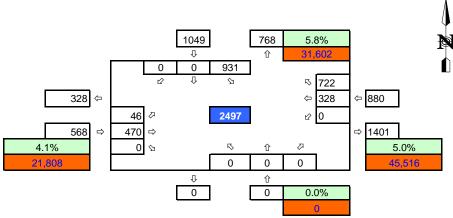


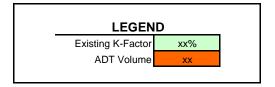


Int 2 AM Peak Volumes

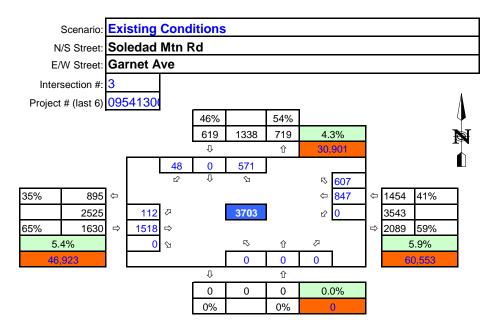


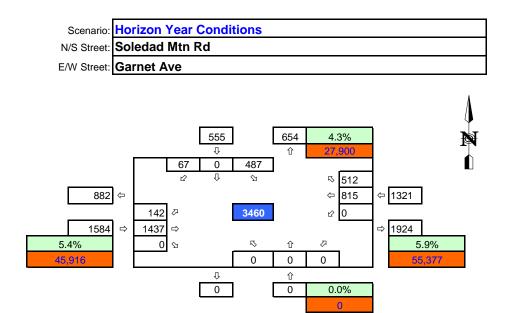


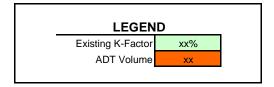




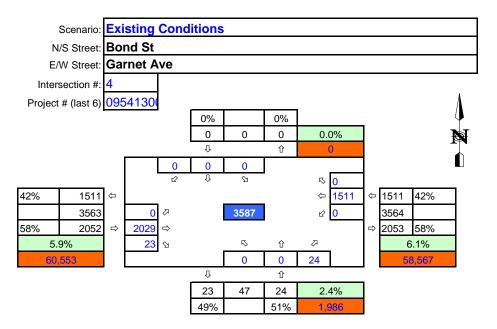
Int 3 AM Peak Volumes

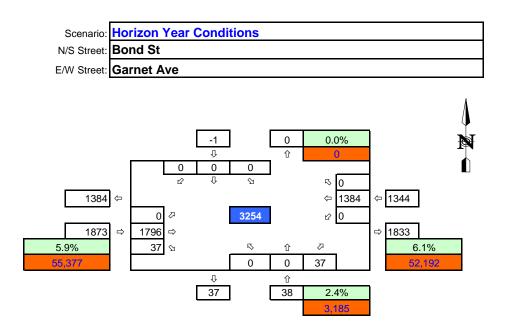


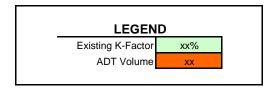




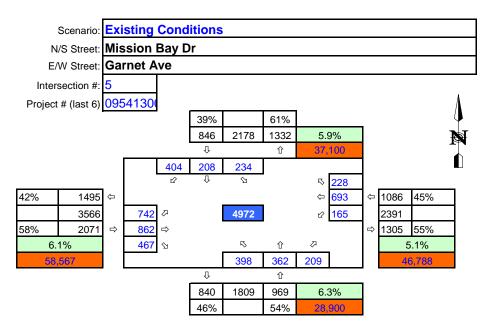
Int 4 AM Peak Volumes

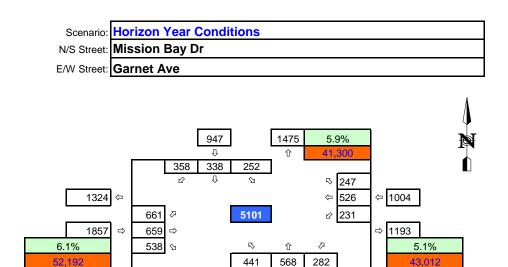






Int 5 AM Peak Volumes

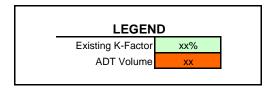




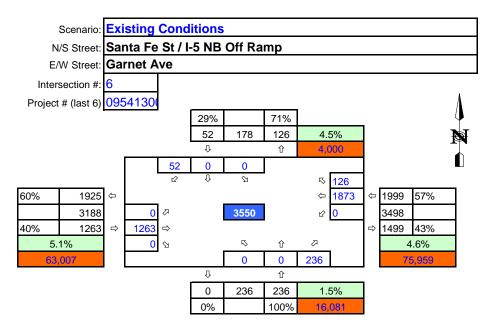
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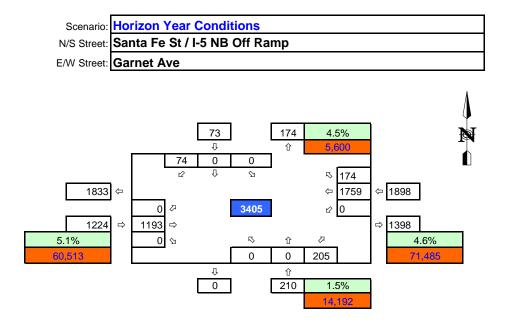
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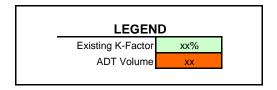
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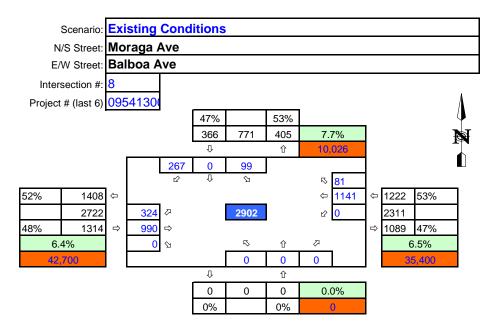
Int 6 AM Peak Volumes

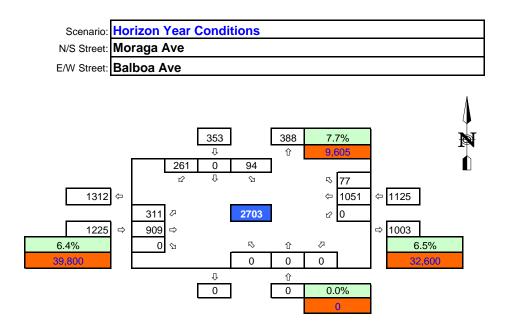


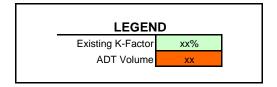




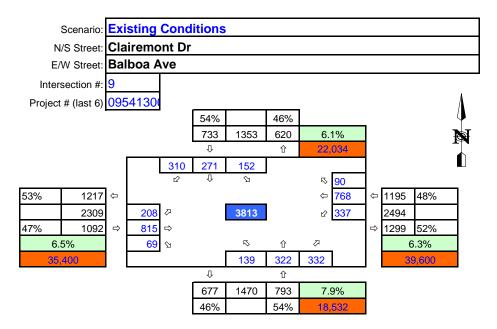
Int 8 AM Peak Volumes

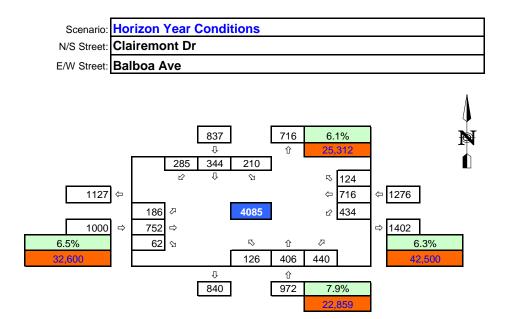


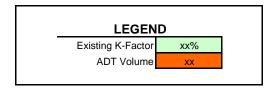




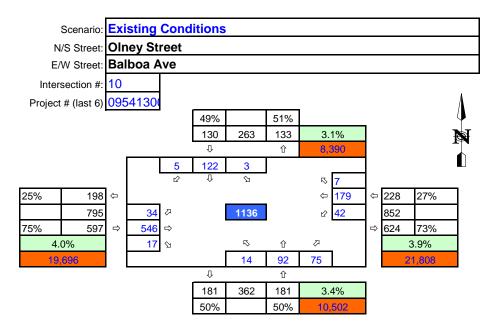
Int 9 AM Peak Volumes

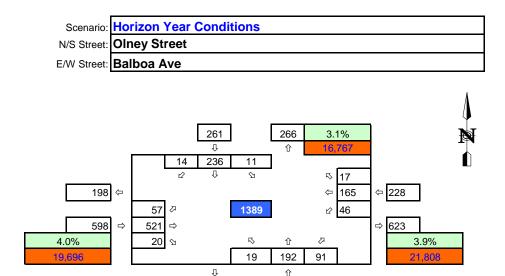






Int 10 AM Peak Volumes

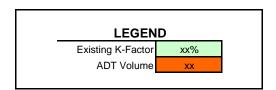




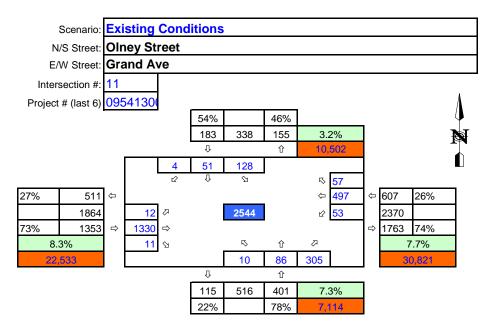
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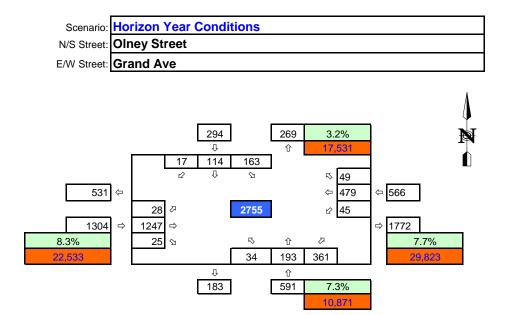
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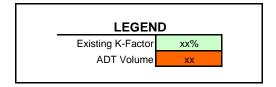
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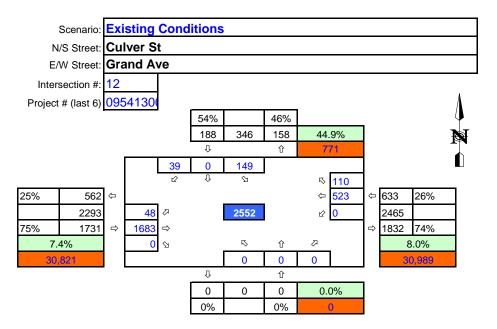
Int 11 AM Peak Volumes

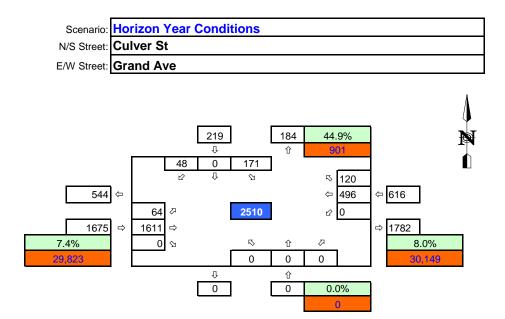


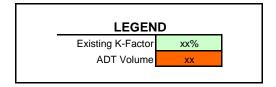




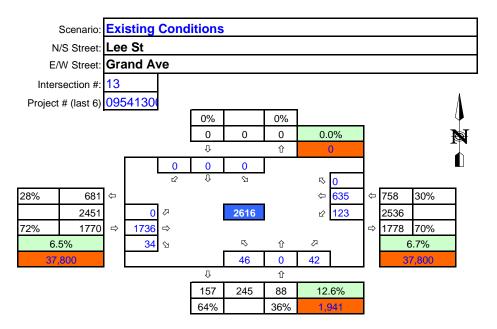
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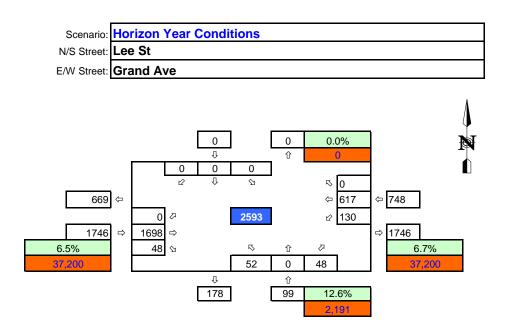


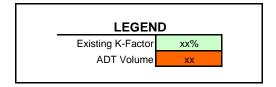




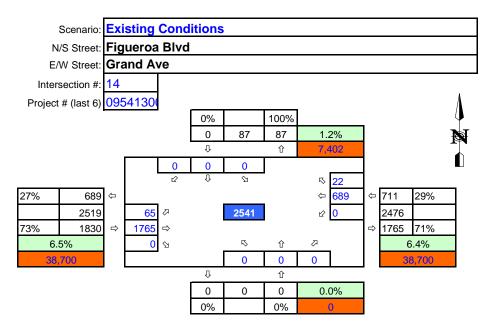
Int 13 AM Peak Volumes

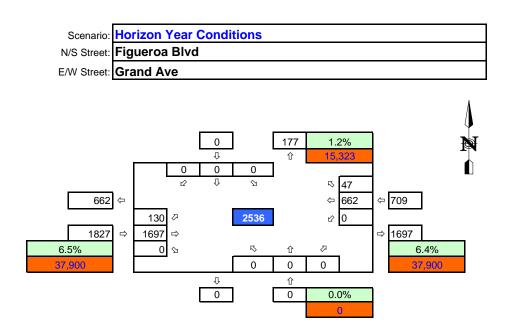


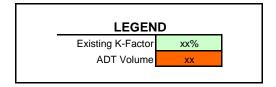




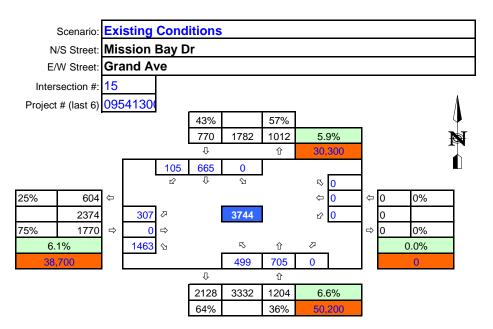
Int 14 AM Peak Volumes

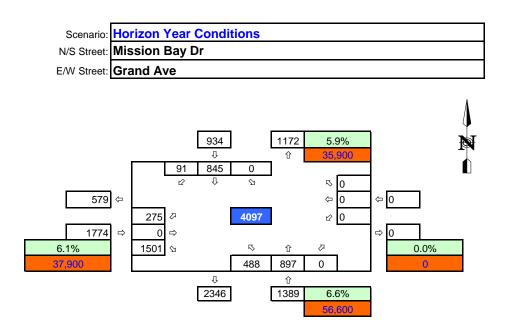


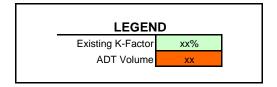




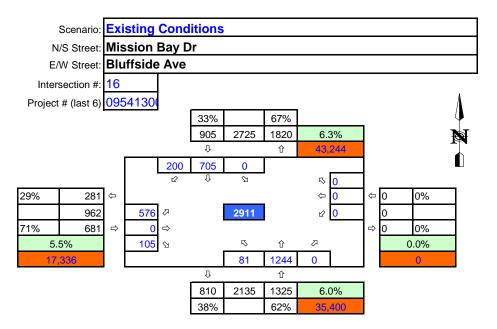
Int 15 AM Peak Volumes

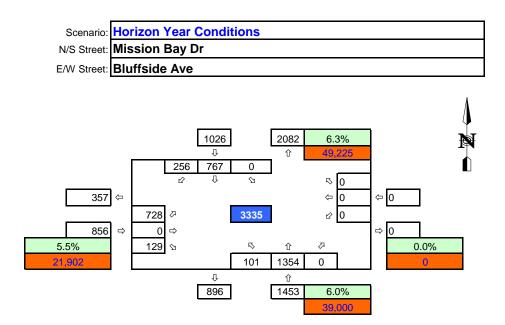


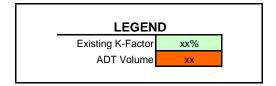




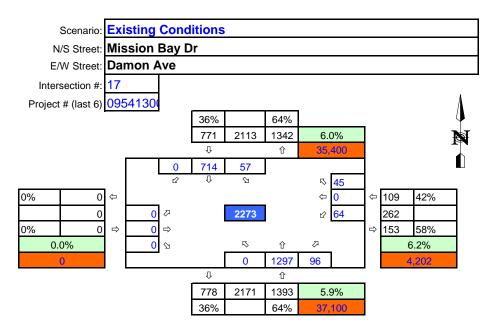
Int 16 AM Peak Volumes

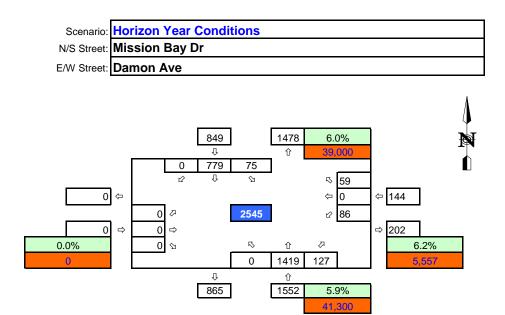


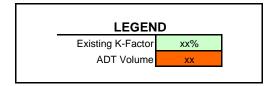




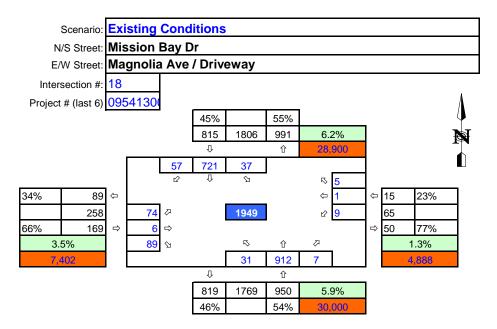
Int 17 AM Peak Volumes

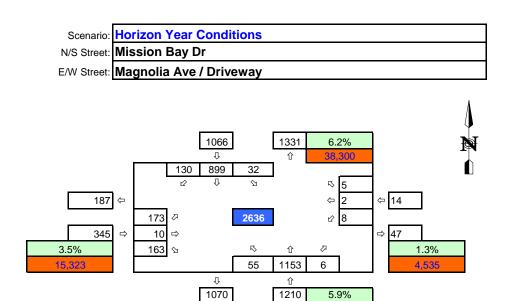


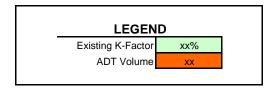




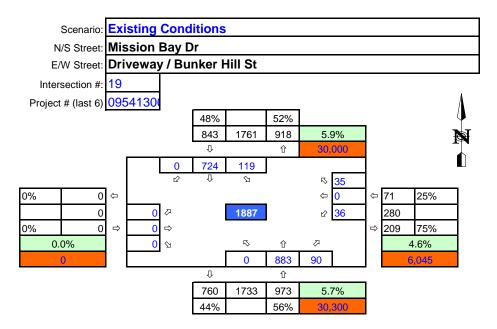
Int 18 AM Peak Volumes

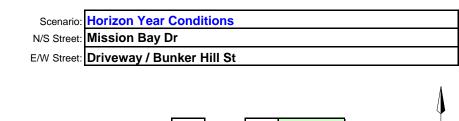


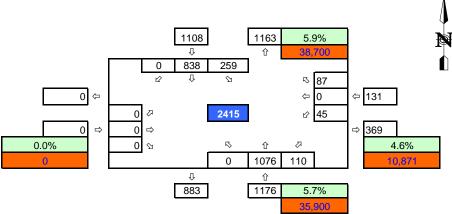


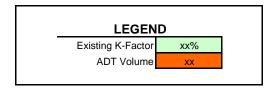


Int 19 AM Peak Volumes

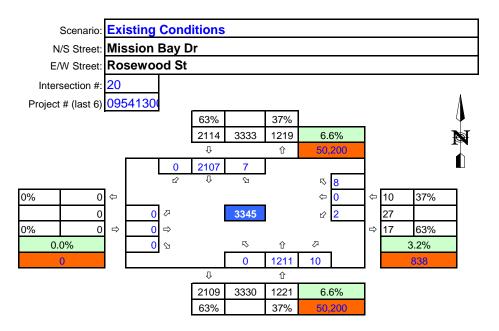


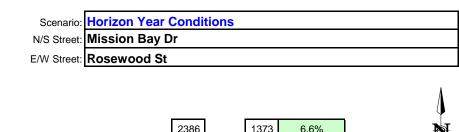


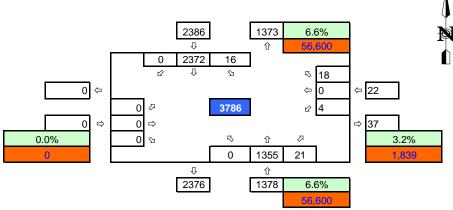


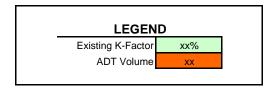


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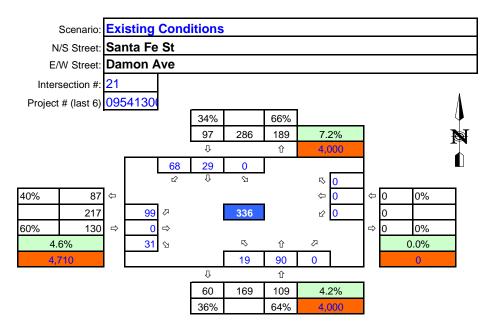


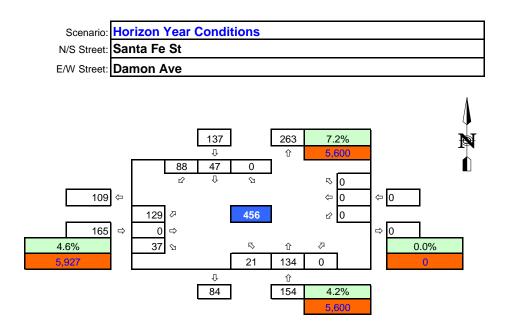


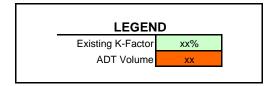




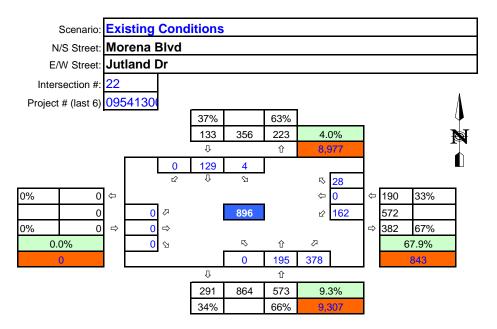
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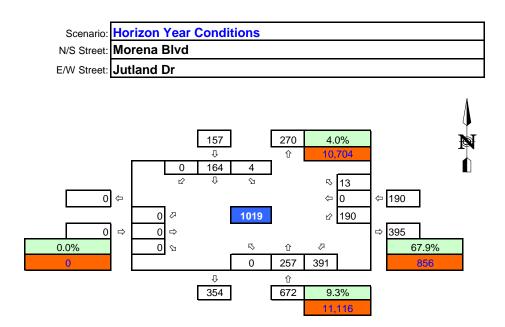


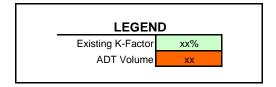




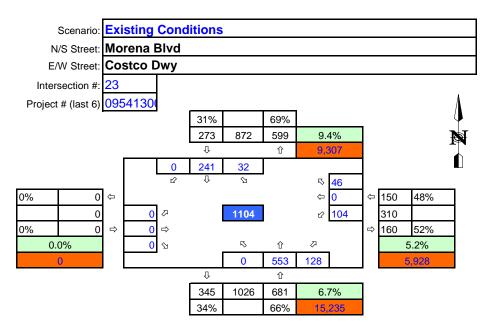
Int 22 AM Peak Volumes

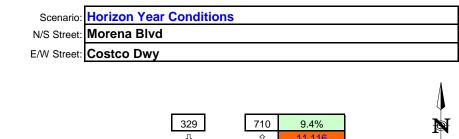


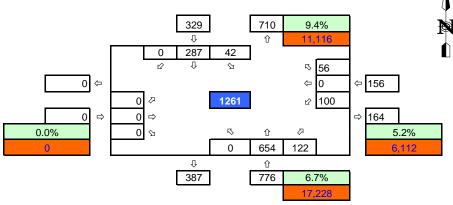


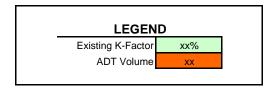


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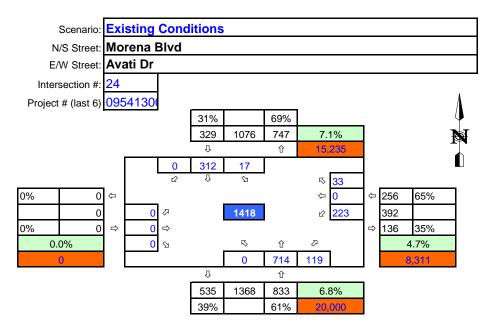


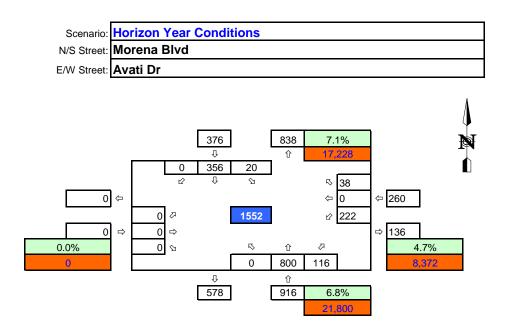


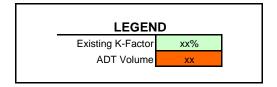




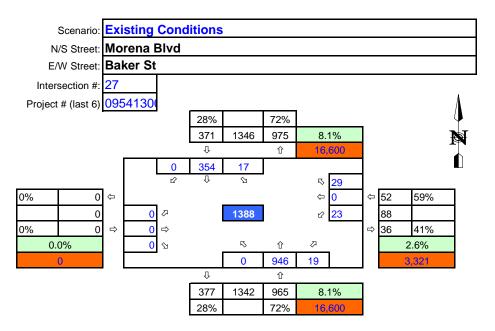
Int 24 AM Peak Volumes

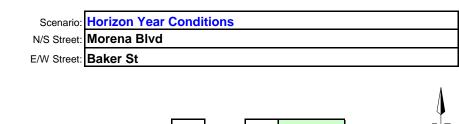


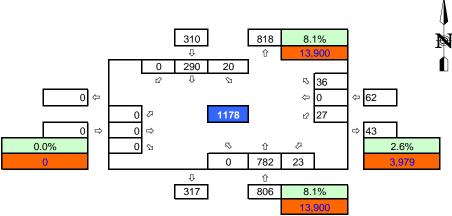


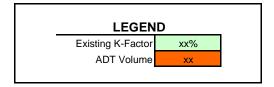


Int 27 AM Peak Volumes

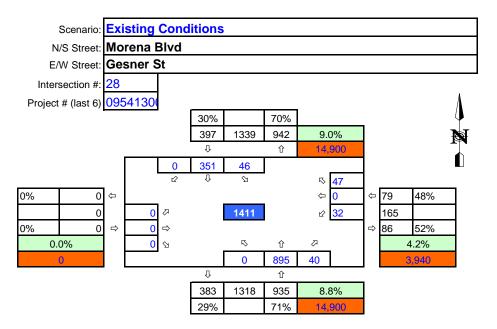


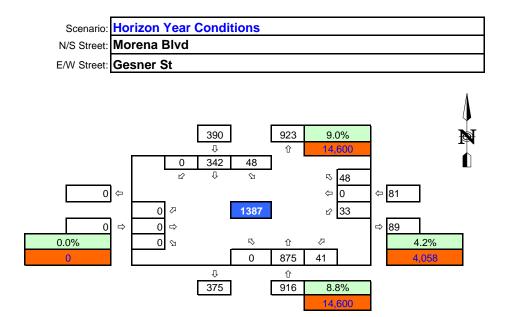


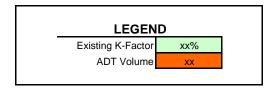




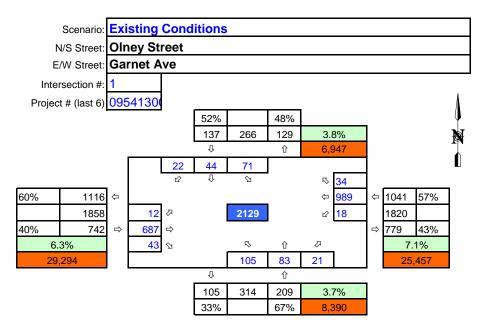
Int 28 AM Peak Volumes

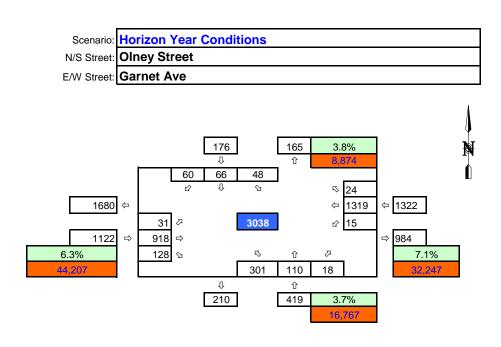




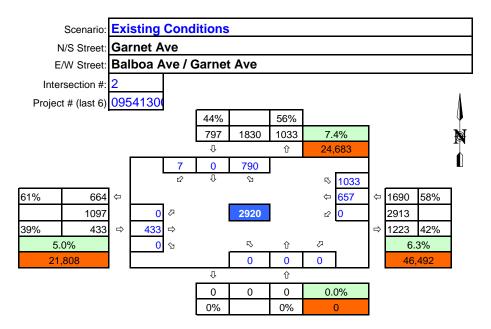


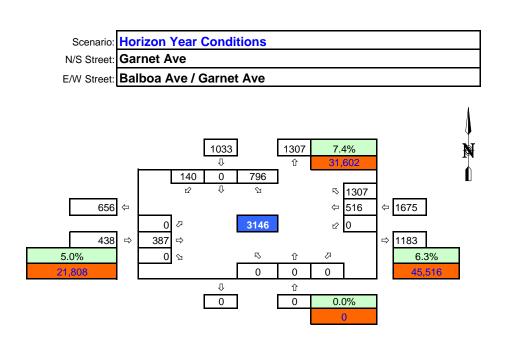
Int 1 PM Peak Volumes

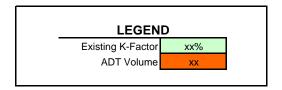




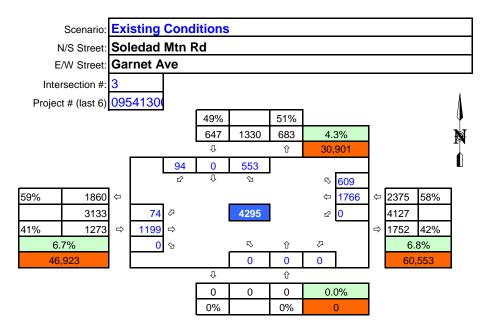
Int 2 PM Peak Volumes

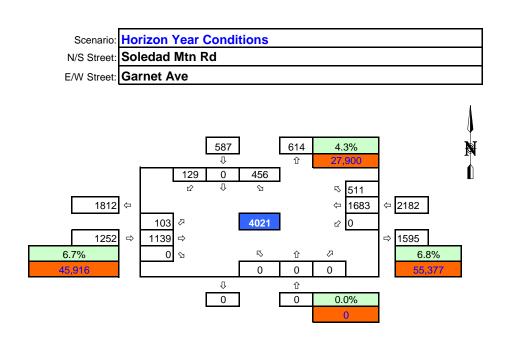




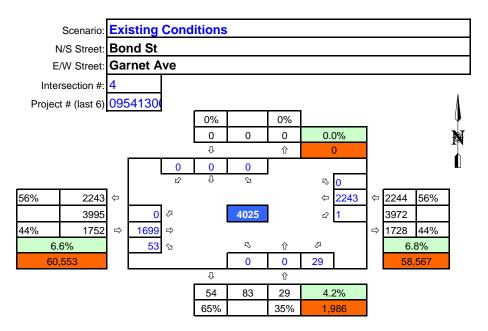


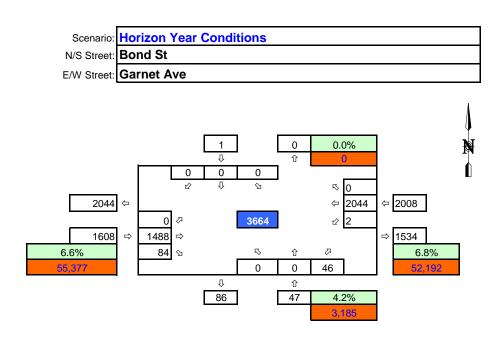
Int 3 PM Peak Volumes



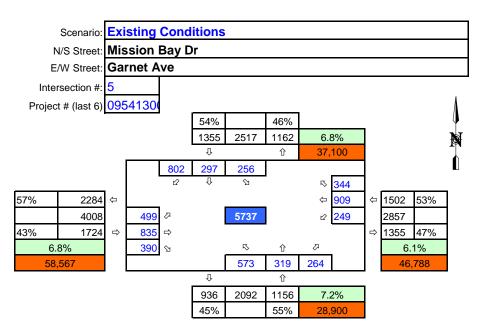


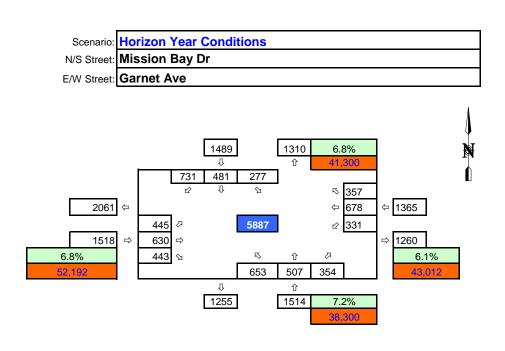
Int 4 PM Peak Volumes

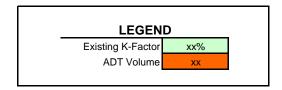




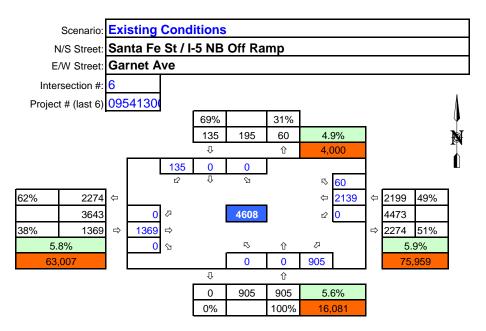
Int 5 PM Peak Volumes

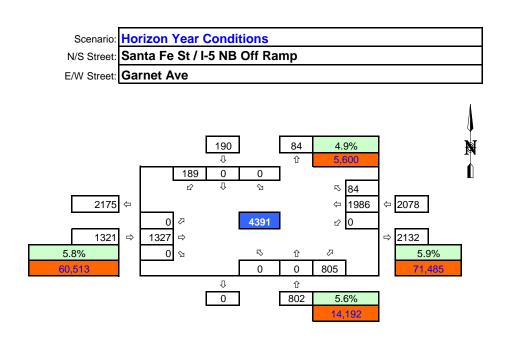


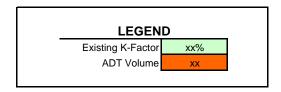




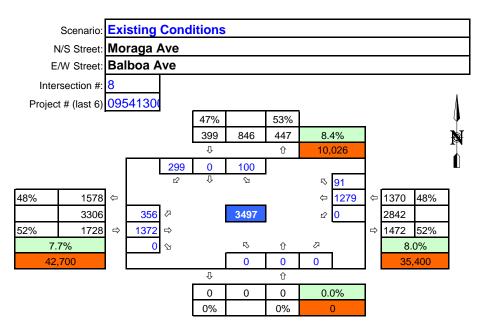
Int 6 PM Peak Volumes

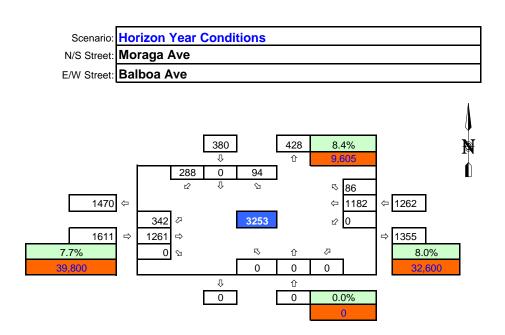


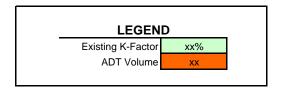




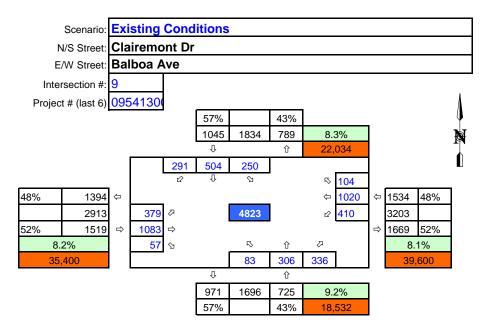
Int 8 PM Peak Volumes

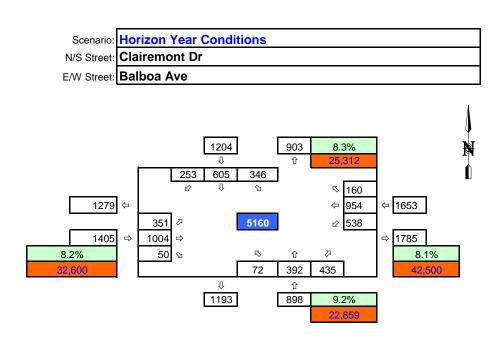




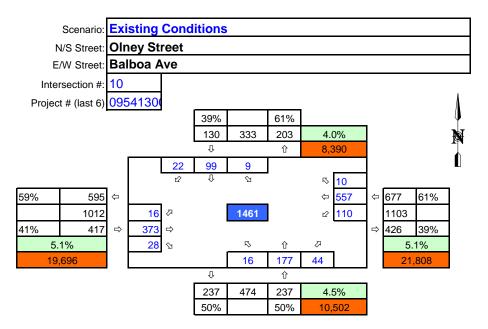


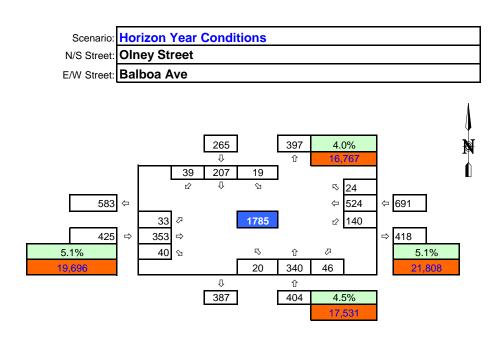
Int 9 PM Peak Volumes

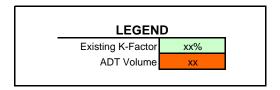




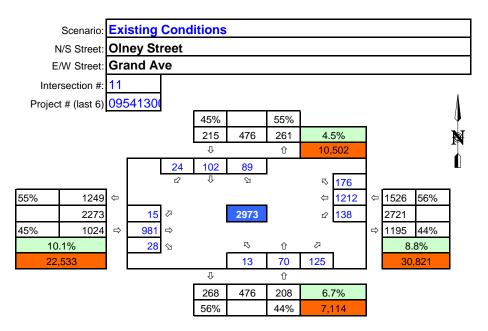
Int 10 PM Peak Volumes

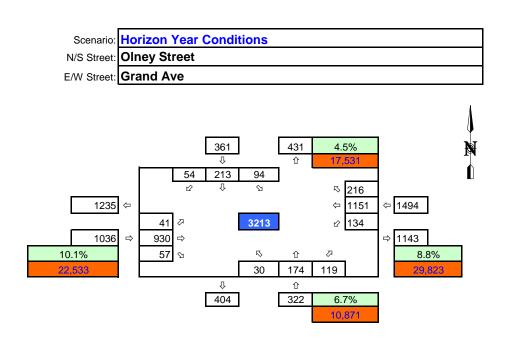


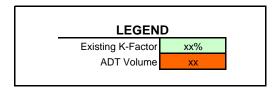




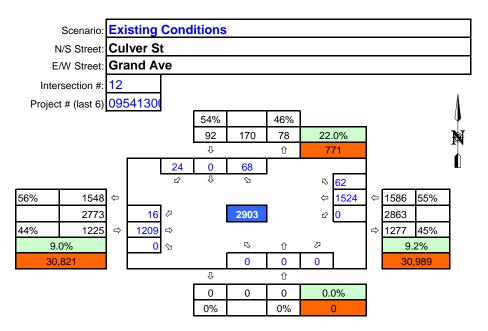
Int 11 PM Peak Volumes

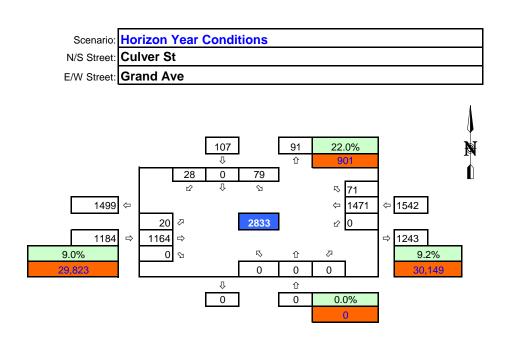


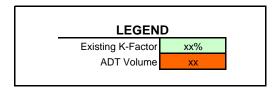




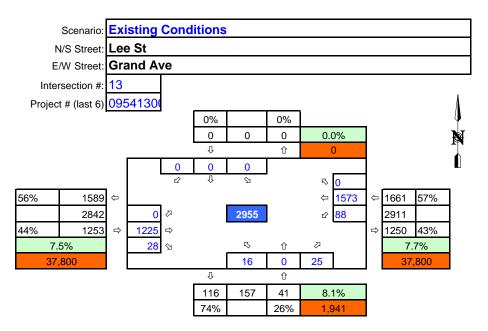
Int 12 PM Peak Volumes

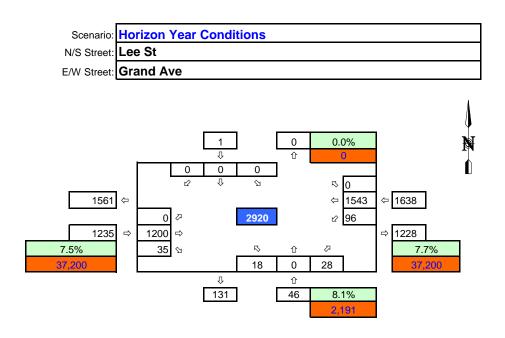


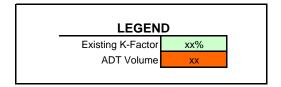




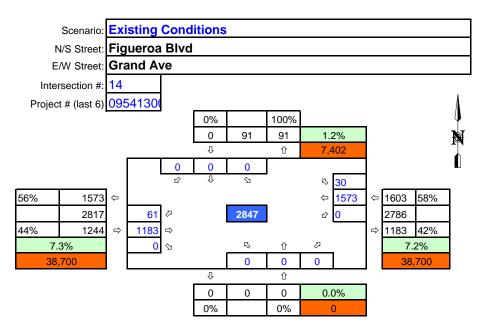
Int 13 PM Peak Volumes

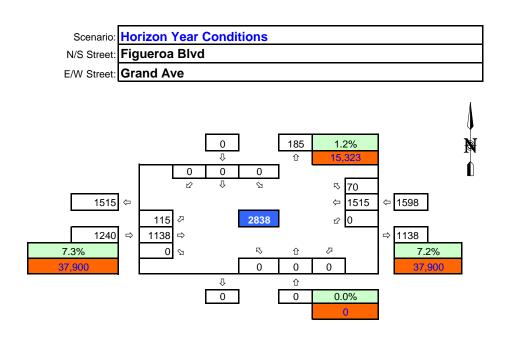




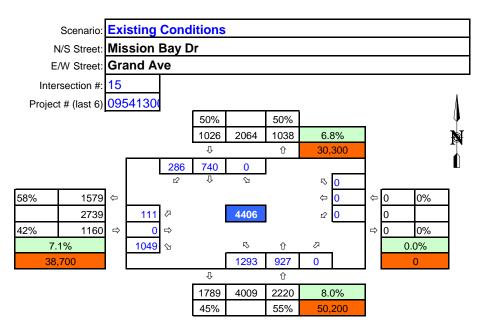


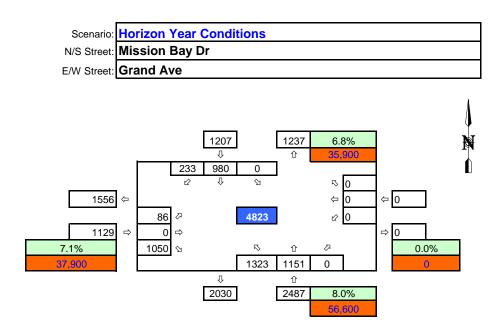
Int 14 PM Peak Volumes



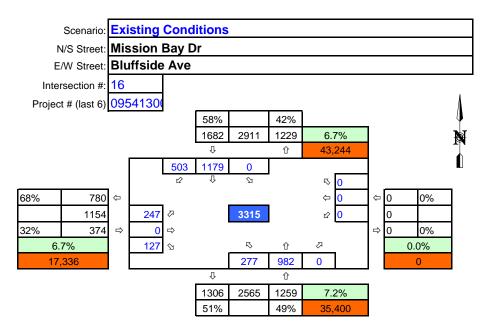


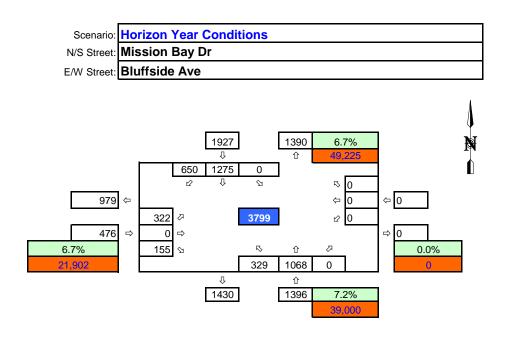
Int 15 PM Peak Volumes

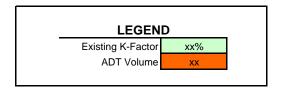




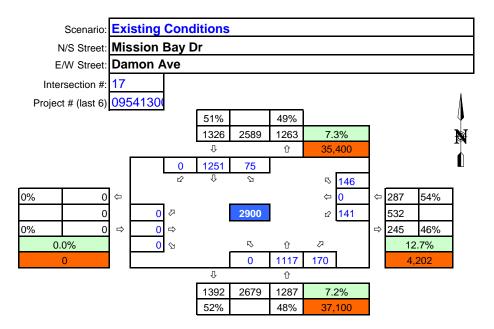
Int 16 PM Peak Volumes

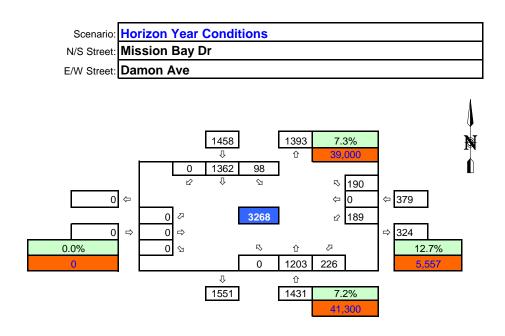


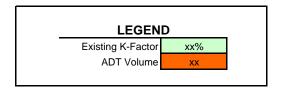




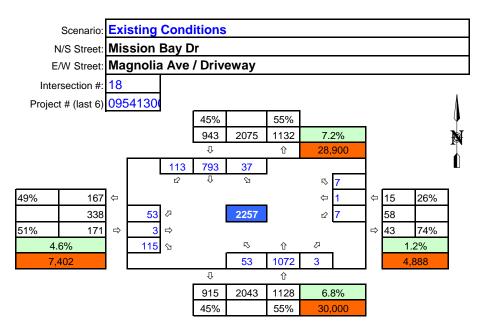
Int 17 PM Peak Volumes

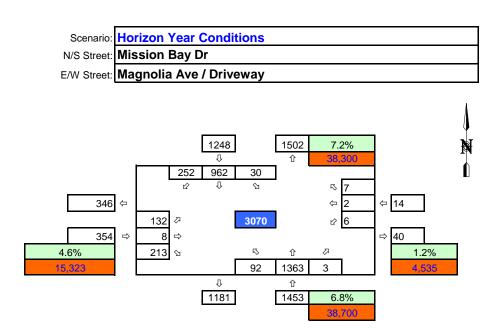


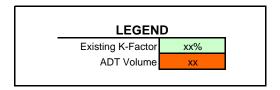




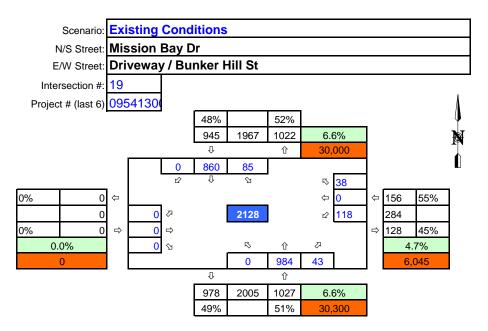
Int 18 PM Peak Volumes

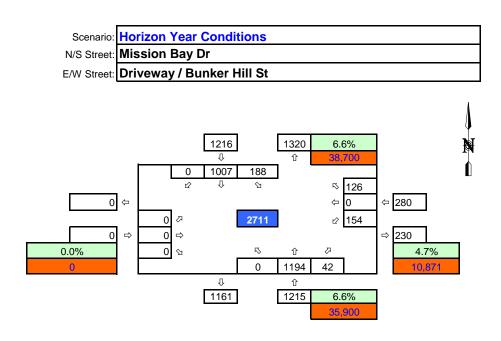




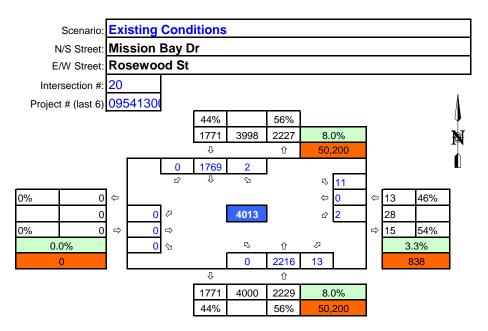


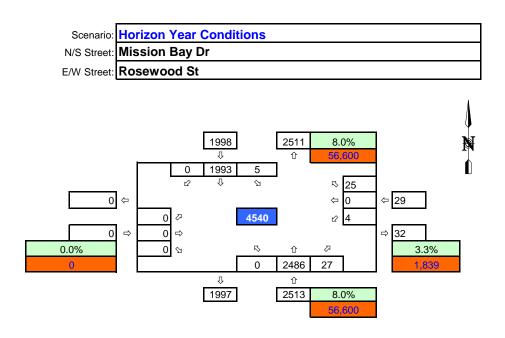
Int 19 PM Peak Volumes

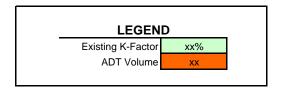




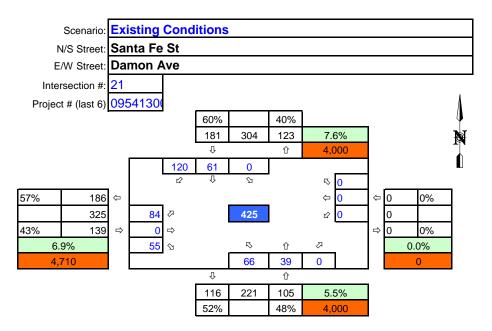
Int 20 PM Peak Volumes

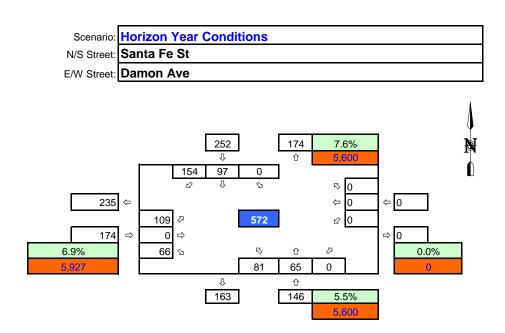


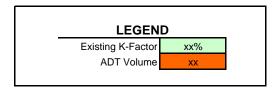




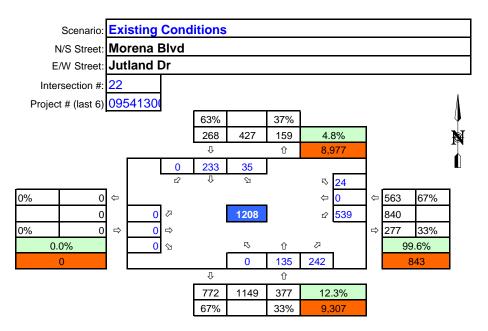
Int 21 PM Peak Volumes

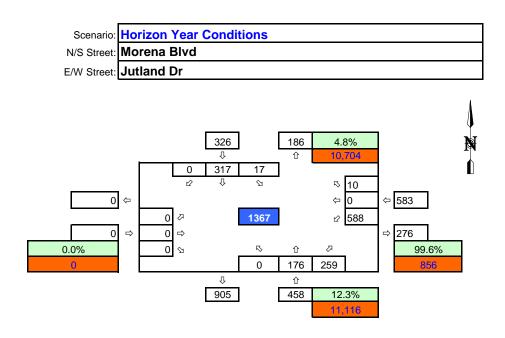


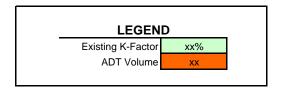




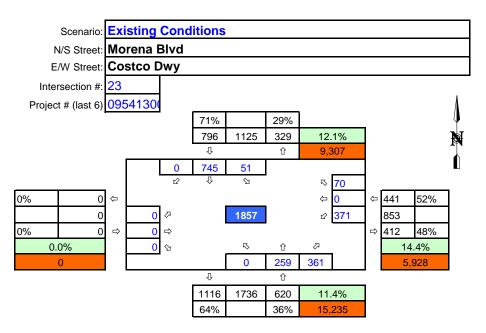
Int 22 PM Peak Volumes

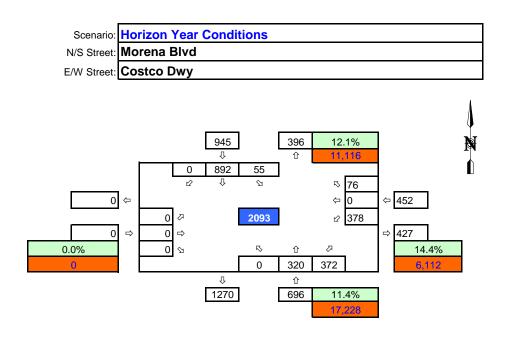




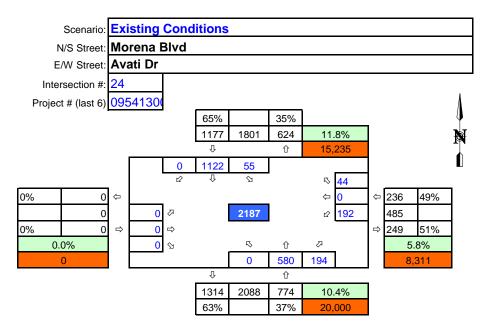


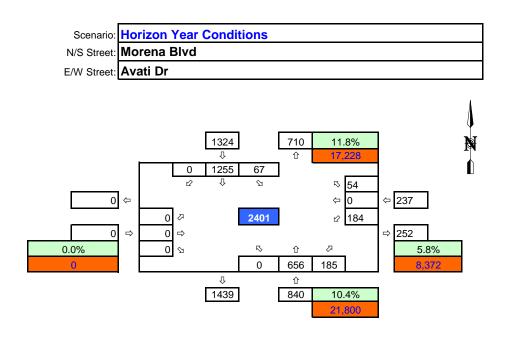
Int 23 PM Peak Volumes

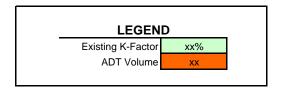




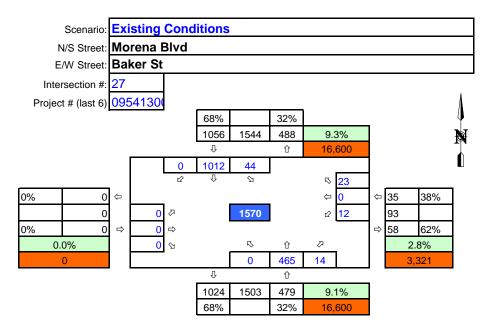
Int 24 PM Peak Volumes

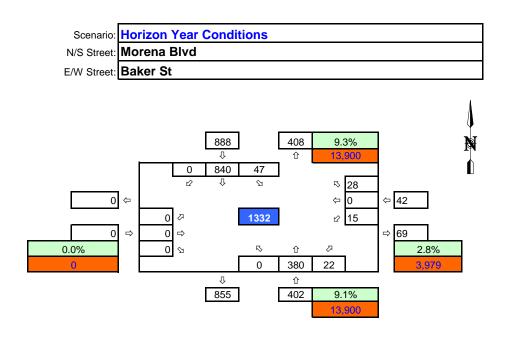


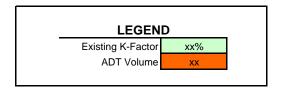




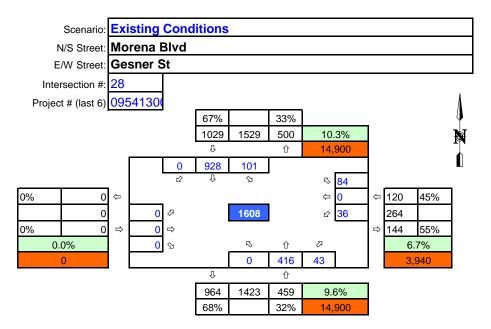
Int 27 PM Peak Volumes

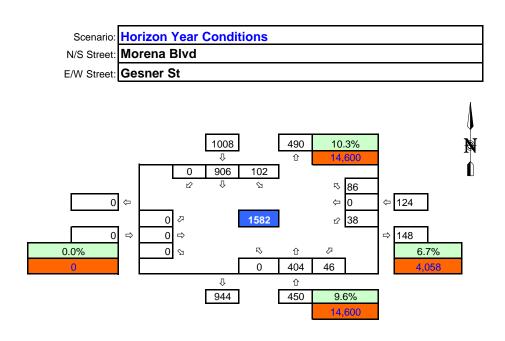






Int 28 PM Peak Volumes





APPENDIX E

ADOPTED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 1: Olney St & Garnet Ave

	•	†	•	ţ	←	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	15	1301	8	777	210	257	
v/c Ratio	0.03	1.01	0.11	0.31	0.91	98.0	
Control Delay	6.1	44.7	12.9	9.8	79.4	65.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.1	44.7	12.9	9.8	79.4	65.3	
Queue Length 50th (ft)	33	~957	2	114	133	161	
Queue Length 95th (ft)	10	#1228	m ₇	151	#255	#279	
Internal Link Dist (ft)		374		899	244	450	
Tum Bay Length (ft)	20		20				
Base Capacity (vph)	438	1292	0/	2475	265	343	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.03	1.01	0.11	0.31	0.79	0.75	

- Volume exceeds capacity, queue is theoretically infinite.
- Volume shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be broger.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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KHA Oueues

Balboa Transit Station 1: Olney St & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	4	†	~	>	ţ	4	•	-	•	٠	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	¢Ì		F	₩			4			4	
Traffic Volume (vph)	14	1100	46	7	703	12	100	73	20	83	129	25
Future Volume (vph)	14	1100	4	7	703	12	100	73	20	83	129	25
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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.99			0.99	
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1770	1840		1770	3530			1790			1805	
Flt Permitted	0.34	1.00		0.05	1.00			09.0			0.78	
Satd. Flow (perm)	626	1840		100	3530			1106			1436	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	1196	105	∞	764	13	109	79	22	06	140	27
RTOR Reduction (vph)	0	က	0	0	-	0	0	4	0	0	4	0
Lane Group Flow (vph)	15	1298	0	8	776	0	0	206	0	0	253	0
Tum Type	Perm	N		Perm	NA		Perm	NA		Perm	¥	
Protected Phases		2			9			∞			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)	74.3	74.3		74.3	74.3			21.9			21.9	
Effective Green, g (s)	74.3	74.3		74.3	74.3			21.9			21.9	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.21			0.21	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	438	1289		70	2474			228			736	
v/s Ratio Prot		c0.71			0.22							
v/s Ratio Perm	0.02			0.08				c0.19			0.18	
v/c Ratio	0.03	1.01		0.11	0.31			0.00			0.85	
Uniform Delay, d1	4.9	15.9		5.2	6.1			41.0			40.5	
Progression Factor	1.00	1.00		1.32	1.27			1.00			1.00	
Incremental Delay, d2	0.1	26.8		3.2	0.3			34.0			20.0	
Delay (s)	2.0	42.7		10.0	8.0			75.0			9.09	
Level of Service	∢	٥		A	A			ш			ш	
Approach Delay (s)		42.3			8.0			75.0			9.09	
Approach LOS		D			A			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			36.3	¥	:M 2000	HCM 2000 Level of Service	ervice		О			
HCM 2000 Volume to Capacity ratio	ratio		86:0									
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization	_		88.5%	⊇	J Level o	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 2: Balboa Ave & Garnet Ave

	†	,	/	•	
ane Group	EBT	WBT	WBR	SBL	
-ane Group Flow (vph)	798	899	327	1210	
//c Ratio	99.0	0.50	0.23	7.70	
Control Delay	17.3	7.7	0.4	14.2	
Sueue Delay	0.0	0.0	0.0	0:0	
Total Delay	17.3	7.7	0.4	14.2	
Queue Length 50th (ft)	103	36	0	265	
Jueue Length 95th (ft)	153	72	0	m274	
nternal Link Dist (ft)	936	284		866	
um Bay Length (ft)					
Base Capacity (vph)	1273	1389	1389 1441	1568	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.63	0.48	0.23	7.70	
ntersection Summary					

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KHA Oueues

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

																																				В		6.6	В		
`	SBR		0	0	1900								0.92	0	0	0																				HCM 2000 Level of Service		: time (s)	of Service		
بو ر	WBR SBL	A MA	602 1113	602 1113	_	4.0 4.9								654 1210		327 1210	Free Prot	4	Free			1.00 0.46	4.9	5.2	1441 1567	c0.35				Ì	0.4 1.0		13	В		HCM 2000		Sum of lost time (s)	ICU Level of Service		
ļ	WBT WI	₩.	314 6		1900 19		0.91 0.		1.00 1.			-	_			458 3	NA Fr	2	_				5.0	6.1		0.15		_		Ì	12.5		9.2	∢		13.0	0.72	53.0	61.0%	15	
†	EBT	*	733	733	_	2.0	0.95	1.00	1.00	3539	0.95	3377	_	7		798	z	2		18.9	18.9	0.36	2.0	6.1	1204		c0.24	99:0	14.4	1:00	7.7	20 82	16.6	В							
•	EBL			_	1900								IF 0.92		oh) 0		Perm		2	s)	œ.			(9	7				,	delay	o Capacity ratio	th (s)	/ Utilization	_	dh:
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, dZ	l evel of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Stat 3: Garnet Ave & Sc

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd	on edad №	1tn Rd					Horizon Year Adopted Conditions Timing Plan: AM Peak Period
	1	†	ţ	4	٠	*	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	28	1829	982	199	613	27	
v/c Ratio	0.21	0.73	0.45	0.48	0.82	0.07	
Control Delay	64.9	16.2	6.3	1.4	65.0	14.0	
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	
Total Delay	64.9	16.2	6.3	1.5	65.0	14.0	
Queue Length 50th (ft)	27	522	166	13	736	0	
Queue Length 95th (ft)	21	725	270	78	345	56	
Internal Link Dist (ft)		770	908		594		
Turn Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	322	2509	2174	1381	1249	399	
Starvation Cap Reductn	0	0	0	72	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.73	0.45	0.51	0.49	0.07	
Information Cummons							

Intersection Summary

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KHA Oueues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

																																				В		18.7	၁		
•	SBR	*	25	25	1900	5.4	1.00	0.85	1.00	1583	1.00	1583	0.92	27	21	9	custom	4	7	32.7	32.7	0.22	5.4	3.0	345	0.00		0.02	46.0	00.1	46.1	۵				HCM 2000 Level of Service		time (s)	f Service		
<u>ر</u>	SBL	*			_				0.95		0.95		0.92	613	0	613	Prot	7			32.7	_			748				25.8		_		61.8	ш		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
√	T WBR	*	903 614		_		5 1.00				00.1 00	·	ľ	982 667	0 0	982 667	NA pm+ov	9			_	0		8.0 2.0						0.33 0.11			3.7	⋖		4	6.	0.	%	15	
+	EBT WBT	* **			_		0.95 0.95		1.00 1.00		1.00 1.00	3539 353	ľ	1829 98	0	1829 98	NA N		2					5.6 8	.,					1.00			(+)	В		18.4	0.79	150.0	71.7%		
•	EBL	K.	23			4.4	0.97	1.00	0.95		0.95		0.92	28	0	28	Prot	2			11.3		4.4	2.0	258	_		0.22	65.2	00.1	65.4	ш					ity ratio		lon		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Delay (S)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year Adopted Conditions Balboa Transit Station 4: Bond St & Garnet Ave

	†	ţ	•	
Lane Group	EBT	WBT	NBR	
Lane Group Flow (vph)	2407	1770	37	
v/c Ratio	89.0	0.50	0.02	
Control Delay	0.0	0.8	0.0	
Queue Delay	0.0	0.0	0.0	
Total Delay	0.0	0.8	0.0	
Queue Length 50th (ft)	0	9	0	
Onene Length 95th (ft)	0	m10	0	
Internal Link Dist (ft)	806	574		
Turn Bay Length (ft)				
Base Capacity (vph)	3532	3539	1611	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	94	0	42	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.70	0.50	0.02	
Intersection Summary				

Balboa Transit Station 4: Bond St & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

<u> </u>		1	حر	\	Į.	✓	<	←	•	•	→	•
Movement FBI	~	FRT	FRR	WBI	WRT	WBR	NBI	NRT	NRR	SB	SBT	SRR
inirations	į	₩.	i	1	**		1		×	200	3	*
Traffic Volume (voh)	0	2181	33	0	1628	0	C	С	34	С	С	
Future Volume (vph)		2181	33	0	1628	0	0	0	34	0	0	0
•	0061	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9				4.9			
Lane Util. Factor		0.95			0.95				1.00			
Ft		1.00			1.00				98.0			
Fit Protected		1.00			1.00				1.00			
Satd. Flow (prot)		3531			3539				1611			
Fit Permitted		1.00			1.00				1.00			
Satd. Flow (perm)		3531			3539				1611			
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	0	2371	36	0	1770	0	0	0	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2407	0	0	1770	0	0	0	37	0	0	0
Tum Type		NA			NA				Perm			Perm
Protected Phases		2			9							
Permitted Phases									2			9
Actuated Green, G (s)		150.0			150.0				150.0			
Effective Green, g (s)		150.0			150.0				150.0			
Actuated g/C Ratio		1.00			1.00				1.00			
Clearance Time (s)		4.9			4.9				4.9			
Vehicle Extension (s)		7.3			7.3				7.3			
Lane Grp Cap (vph)		3531			3539				1611			
v/s Ratio Prot	Ŭ	c0.68			0.50							
√s Ratio Perm									0.02			
v/c Ratio		89.0			0.50				0.02			
Uniform Delay, d1		0.0			0.0				0.0			
Progression Factor		1.00			1.00				1.00			
Incremental Delay, d2		8.0			0.3				0.0			
Delay (s)		0.8			0.3				0.0			
Level of Service		V			A				⋖			
Approach Delay (s)		8.0			0.3			0.0			0.0	
Approach LOS		A			A			A			٧	
Intersection Summary												
HCM 2000 Control Delay			9.0	오 오	M 2000	HCM 2000 Level of Service	ervice		A			
HCM 2000 Volume to Capacity ratio	.0		0.72									
Actuated Cycle Length (s)			150.0	S	Sum of lost time (s)	time (s)			7.9			
Intersection Capacity Utilization			82.0%	⊴	J Level o	ICU Level of Service			ш			
Analysis Period (min)			12									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

	•	†	~	>	ţ	4	•	+	•	٠	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	902	935	288	198	753	264	501	484	249	273	282	498
v/c Ratio	1.08	0.78	0.62	0.87	0.95	0.50	0.85	0.46	0.32	0.73	0.65	0.34
Control Delay	100.2	56.2	23.0	97.4	79.2	12.8	85.0	30.7	19.5	89.3	51.5	15.6
Queue Delay	0.0	9.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0
Total Delay	100.2	26.7	23.7	97.4	79.2	12.8	85.0	30.7	19.5	89.3	52.4	15.6
Queue Length 50th (ft)	~510	472	321	190	382	29	219	173	106	145	211	73
Queue Length 95th (ft)	#639	290	457	#316	#513	116	307	146	80	194	311	135
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	292		120	410		325	265		100	200		265
Base Capacity (vph)	839	1201	974	248	792	530	999	1057	788	265	433	1451
Starvation Cap Reductn	0	62	145	0	0	0	0	0	0	0	33	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.82	0.71	0.80	0.95	0.50	0.75	0.46	0.32	0.46	0.70	0.34

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KHA Oueues

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	•	†	<i>></i>	>	ļ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	#	¥L.	F	*	X _	£	‡	*	¥.	*	K. K
Traffic Volume (vph)	833	098	541	182	693	243	461	445	229	251	259	458
Future Volume (vph)	833	860	541	182	693	243	461	445	229	251	259	458
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	4.9	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
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
Fit 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
FIt 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	902	935	288	198	753	264	201	484	249	273	282	498
RTOR Reduction (vph)	0	0	88	0	0	176	0	0	45	0	0	24
Lane Group Flow (vph)	905	935	200	198	753	88	501	484	204	273	282	474
Tum Type	Prot	NA	vo+mq	Prot	NA	Perm	Prot	NA	vo+mq	Prot	NA	vo+mq
Protected Phases	က	∞	-	7	4		-	9	7	2	2	3
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	36.7	51.0	76.8	19.3	33.6	33.6	25.8	44.8	64.1	16.3	34.9	71.6
Effective Green, g (s)	36.7	51.0	76.8	19.3	33.6	33.6	25.8	44.8	64.1	16.3	34.9	71.6
Actuated g/C Ratio	0.24	0.34	0.51	0.13	0.22	0.22	0.17	0.30	0.43	0.11	0.23	0.48
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.9	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	4.3	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	839	1203	810	227	792	354	200	1056	9/9	373	433	1330
v/s Ratio Prot	c0.26	0.26	0.11	0.11	c0.21		c0.15	0.14	0.04	0.08	c0.15	0.09
v/s Ratio Perm			0.21			90.0			0.09			0.08
v/c Ratio	1.08	0.78	0.62	0.87	0.95	0.25	0.85	0.46	0.30	0.73	0.65	0.36
Uniform Delay, d1	26.6	44.4	26.1	64.1	57.4	47.8	60.2	42.7	28.2	64.7	52.0	24.7
Progression Factor	0.94	1.16	1.33	1.00	00.	00 ;	1.20	0.67	1.06	1.20	0.83	0.75
Incremental Delay, dz	50.6	7.0	0.7	67.7	71.1	0.0	9.5	5. 5	0.0	. o	5.7	0.0
Delay (s)	103.9	0.4.0	35.4	72.1	78.4 L	48.4	87.0		30.0	84.	20.7	8.5
Approach Delay (c)	-	40 1	2	-	74.1	۵	-	2 0)	-	4	2
Approach LOS		- L			- +			21.5			P. C	
lot organical and a second a second and a second a second and a second a second and		1	ı		,		ı	,	ı	ı	1	ĺ
Illelsection Sulfilliary												
HCM 2000 Control Delay			61.5	Ĭ	HCM 2000 Level of Service	Level of 3	Service		ш			
HCM 2000 Volume to Capacity ratio	ratio		0.89			:						
Actuated Cycle Length (s)			150.0	ಪ :	Sum of lost time (s)	time (s)			19.0			
Intersection Capacity Utilization	_		85.5%	೨	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year Adopted Conditions Balboa Transit Station 6: I-5 Off-ramp/Santa Fε

balboa i ransit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave	on a Fe S	t & Gar	net A	e)	Horizon Year Adopted Conditions Timing Plan: AM Peak Period
	†	ţ	٠	*	
Lane Group	EBT	WBT	NBR	SBR	
Lane Group Flow (vph)	1403	2295	250	72	
v/c Ratio	0.99	0.46	0.22	0.11	
Control Delay	37.7	0.3	7.7	3.7	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	37.7	0.3	7.7	3.7	
Queue Length 50th (ft)	153	0	11	_	
Queue Length 95th (ft)	#284	0	32	16	
Internal Link Dist (ft)	1151	265			
Turn Bay Length (ft)					
Base Capacity (vph)	1415	5029	1131	682	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.99	0.46	0.22	0.11	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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KHA Oueues

Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	4	†	/	\	ļ	4	•	←	•	۶	-	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ			4413				N. N.			*-
Traffic Volume (vph)	0	1291	0	0	1959	153	0	0	230	0	0	99
Future Volume (vph)	0	1291	0	0	1959	153	0	0	230	0	0	99
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
Lane Util. Factor		0.95			0.91				0.88			1.00
Frt		1.00			0.99				0.85			0.86
Fit Protected		1.00			1.00				1.00			1.00
Satd. Flow (prot)		3539			2030				2787			1611
Flt Permitted		1.00			1.00				1.00			1.00
Satd. Flow (perm)		3539			5030				2787			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1403	0	0	2129	166	0	0	250	0	0	72
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	16	0	0	38
Lane Group Flow (vph)	0	1403	0	0	2295	0	0	0	234	0	0	34
Turn Type		NA			Ν				Prot			Perm
Protected Phases		∞			2.4				2			
Permitted Phases												9
Actuated Green, G (s)		16.0			40.0				16.0			16.0
Effective Green, g (s)		16.0			40.0				16.0			16.0
Actuated g/C Ratio		0.40			1.00				0.40			0.40
Clearance Time (s)		4.0							4.0			4.0
Vehicle Extension (s)		3.0							3.0			3.0
Lane Grp Cap (vph)		1415			5030				1114			644
v/s Ratio Prot		c0.40			c0.46				0.08			
v/s Ratio Perm												0.02
v/c Ratio		0.99			0.46				0.21			0.05
Uniform Delay, d1		11.9			0.0				7.9			7.4
Progression Factor		1.00			1:00				1.00			1:00
Incremental Delay, d2		21.8			0.1				0.1			0.0
Delay (s)		33.7			0.1				8.0			7.4
Level of Service		ပ			A				V			⋖
Approach Delay (s)		33.7			0.1			8.0			7.4	
Approach LOS		ပ			⋖			V			⋖	
Intersection Summary												
HCM 2000 Control Delay			12.4		HCM 2000 Level of Service	evel of S	ervice		В			
HCM 2000 Volume to Capacity ratio	ratio		0.78									
Actuated Cycle Length (s)			40.0	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization	_		25.0%	⊴	ICU Level of Service	f Service			⋖			
Analysis Period (min)			12									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station
7: Balboa EB Ramps & Garnet Avenue
Timing Plan: AM Peak Period

	•	†	>	•	ţ	4	•	+	•	٠	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ	₩.		*				*-			¥.
Traffic Volume (veh/h)	0	863	657	0	1501	0	0	0	210	0	0	280
Future Volume (Veh/h)	0	863	657	0	1501	0	0	0	210	0	0	280
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	938	714	0	1632	0	0	0	228	0	0	304
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right tum flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1632			938			1754	2570	469	2101	2570	816
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1632			938			1754	2570	469	2101	2570	816
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	28	100	100	2
cM capacity (veh/h)	394			726			3	76	541	11	26	320
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	469	469	714	816	816	228	304					
Volume Left	0	0	0	0	0	0	0					
Volume Right	0	0	714	0	0	228	304					
CSH	1700	1700	1700	1700	1700	541	320					
Volume to Capacity	0.28	0.28	0.42	0.48	0.48	0.42	0.95					
Queue Length 95th (ft)	0	0	0	0	0	25	243					
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	16.4	75.2					
Lane LOS						ပ	ш					
Approach Delay (s)	0.0			0.0		16.4	75.2					
Approach LOS						ပ	ı					
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization	rtion		92.5%	2	U Level o	ICU Level of Service			U			
Analysis Period (min)			15									

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Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Perbd

•	SBR	288	0.63	11.7	0.0	11.7	0	77			945	0	0	0	0.30	
٨	SBL	109			0.0		25	123	501	155		0	0	0	0.12	
4	WBR	68	0.11	6.1	0.0	6.1	∞	32		250	1219	0	0	0	0.07	
ţ	WBT	1343	0.79	22.1	0.0	22.1	284	447	3203		2692	0	0	0	0.50	
†	EBT	1170	0.46	5.3	0.0	5.3	103	167	554		3466	0	0	0	0.34	
4	EBL	350	0.57	36.9	0.0	36.9	83	159		215	1307	0	0	0	0.27	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Oueue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summan

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Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 8: Garnet Ave & Moraga Ave

Movement	IDI	LDT	HOISE		5		
	7	-	WBI	WBR	ZEF	SBR	
Lane Configurations	F	\$	‡	*	r	R.	
Traffic Volume (vph)	322	1076	1236	82	100	265	
Future Volume (vph)	322	1076	1236	85	100	265	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Fotal Lost time (s)	4.4	2.7	6.5	6.5	9.6	9.6	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	
	1.00	1.00	1.00	0.85	1.00	0.85	
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	3539	1583	1770	1583	
FIt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	320	1170	1343	68	109	288	
RTOR Reduction (vph)	0	0	0	30	0	250	
Lane Group Flow (vph)	350	1170	1343	26	109	38	
Turn Type	Prot	MA	MA	Perm	Prot	Perm	
Protected Phases	2	2	9		4		
Permitted Phases				9		4	
Actuated Green, G (s)	14.6	59.3	39.5	39.5	10.8	10.8	
Effective Green, g (s)	14.6	59.3	39.5	39.5	10.8	10.8	
Actuated g/C Ratio	0.18	0.73	0.49	0.49	0.13	0.13	
Clearance Time (s)	4.4	2.7	6.5	6.5	9.6	5.6	
Vehicle Extension (s)	2.0	4.8	3.9	3.9	2.0	2.0	
Lane Grp Cap (vph)	615	2578	1717	168	234	210	
v/s Ratio Prot	00.10	0.33	c0.38		90:00		
//s Ratio Perm				0.04		0.02	
	0.57	0.45	0.78	0.08	0.47	0.18	
Uniform Delay, d1	30.5	4.5	17.4	11.2	32.6	31.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
ncremental Delay, d2	0.7	0.2	2.5	0.1	0.5	0.2	
	31.2	4.7	19.9	11.3	33.2	31.5	
Level of Service	ပ	V	В	В	ပ	ပ	
Approach Delay (s)		10.8	19.4		32.0		
Approach LOS		В	В		ပ		
ntersection Summary							
HCM 2000 Control Delay			17.0	Н	M 2000 I	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	ity ratio		89.0				
Actuated Cycle Length (s)	,		81.4	Su	Sum of lost time (s)	time (s)	16.5
Intersection Capacity Utilization	lon		62.9%	⊴	ICU Level of Service	Service	В
Analysis Period (min)			15				
Critical Lane Group							

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Balboa Transit Station 9: Clairemont Dr & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

→ 	NBR SBL SBT	395 201	0.57 0.76	29.7 79.4	0.0 0.0 0.0	29.7 79.4	220 183	387 319		100 120	791 392 1065	0 0 0	0 0 0	0 0 0	0.50 0.51 0.68	
•	NBT				0.0						1046	0	0	0	0.39	
•	NBL				0.0					200	392	0	0	0	0.41	
ţ	WBT				0.0						1589	0	0	0	0.64	
/	WBL				0.0					220	761	0	0	0	0.53	
†	EBT	ì			0.0				.,		1572	0	0	0	0.65	
1	EBL	260	99.0	72.4	0.0	72.4	123	202		240	761	0	0	0	0.34	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

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Balboa Transit Station Horizon Year Adopted Conditions 9: Clairemont Dr & Garnet Ave

	4	†	>	\	ţ	4	•	-	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	₩		F	₩		r	\$	*	*	₽ ₽	
Traffic Volume (vph)	239	864	73	368	815	114	146	374	363	185	315	355
Future Volume (vph)	239	864	73	368	815	114	146	374	363	185	315	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Lane Util. Factor	76:0	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.92	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3498		3433	3474		1770	3539	1583	1770	3258	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3498		3433	3474		1770	3539	1583	1770	3258	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	636	79	400	988	124	159	407	395	201	342	386
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	28	0	1	0
Lane Group Flow (vph)	260	1015	0	400	1004	0	159	407	337	201	617	0
Turn Type	Prot	≨		Prot	NA		Prot	NA	vo+mq	Prot	A	
Protected Phases	2	2		_	9		m	∞	_	7	4	
Permitted Phases									8			
Actuated Green, G (s)	16.2	47.9		22.1	53.1		18.2	29.5	21.6	21.4	32.7	
Effective Green, g (s)	16.2	47.9		22.1	53.1		18.2	29.5	51.6	21.4	32.7	
Actuated g/C Ratio	0.12	0.34		0.16	0.38		0.13	0.21	0.37	0.15	0.23	
Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Vehicle Extension (s)	2.0	3.5		2.0	3.0		2.0	2.4	2.0	2.0	2.6	
Lane Grp Cap (vph)	395	1190		539	1311		228	742	280	569	757	
v/s Ratio Prot	0.08	c0.29		c0.12	0.29		0.09	0.11	0.09	00.11	c0.19	
v/s Ratio Perm									0.12			
v/c Ratio	99.0	0.85		0.74	0.77		0.70	0.55	0.58	0.75	0.81	
Uniform Delay, d1	9.69	43.1		9.99	38.4		58.6	49.7	35.9	57.1	51.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	6.2		4.8	2.7		7.3	9.0	1.0	9.5	9.9	
Delay (s)	62.6	49.4		61.4	41.1		62.9	50.3	36.8	9.99	57.7	
Level of Service	ш	۵		ш	۵		ш	Ω	٥	ш	ш	
Approach Delay (s)		52.1			46.9			47.3			9.69	
Approach LOS		D			D			Ο			ш	
Intersection Summary												
HCM 2000 Control Delay			51.0	Ĭ	CM 2000	HCM 2000 Level of Service	ervice		Ω			
HCM 2000 Volume to Capacity ratio	y ratio		0.82									
Actuated Cycle Length (s)			140.7	S	Sum of lost time (s)	time (s)			20.5			
Intersection Capacity Utilization	L.		81.4%	2	ICU Level of Service	f Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

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Balboa Transit Station Horizon Year Adopted Conditions
10: Olney St & Balboa Ave Timing Plan: AM Peak Period

		t	•		_	+	
Lane Group	EBF	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	62	588	20	197	311	269	
v/c Ratio	0.23	0.45	0.23	0.18	0.59	0.52	
Control Delay	21.2	12.5	23.3	12.7	16.6	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.2	12.5	23.3	12.7	16.6	16.5	
Queue Length 50th (ft)	13	39	7	18	24	52	
Queue Length 95th (ft)	48	122	43	45	129	120	
Internal Link Dist (ft)		1172		936	328	244	
Tum Bay Length (ft)	120		120				
Base Capacity (vph)	326	1944	224	1738	1379	1434	
Starvation Cap Reductn	0	0	0	0	0	2	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.30	0.22	0.11	0.23	0.19	
Intersection Summary							

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Balboa Transit Station 10: Olney St & Balboa Ave

Horizo

Conditions	Timing Plan: AM Peak Period
. Adopted	Timing Plan:
lorizon Year Adopted Conditions	

•	SBR		15	15	1900								0.92	16	0	0																									
→	SBT	4	221	221	1900	4.9	1.00	66:0	1.00	1843	86.0	1805	0.92	240	4	265	NA	4		11.3	11.3	0.27	4.9	2.0	490	0.15	0.54	12.9	1.00	0.7	13.6	В	13.6	В							
٠	SBL		12	12	1900								0.92	13	0	0	Perm		4																						
•	NBR		06	06	1900								0.92	86	0	0																				В		14.4	A		
•	NBT	4	179	179	1900	4.9	1.00	96:0	1.00	1778	0.97	1729	0.92	195	31	280	NA	00		11.3	11.3	0.27	4.9	2.0	469	c0.16	09:0	13.2	1.00	1.4	14.5	B	14.5	2							
•	NBL		17	11	1900								0.92	18	0	0	Perm		∞																	Service			a		
√	WBR		16	16	1900								0.92	17	0	0																				Level of		t time (s)	of Service		
ţ	WBT	4₽	166	166	1900	2.0	0.95	0.99	1.00	3493	1.00	3493	0.92	180	9	187	NA	9		12.8	12.8	0.31	2.0	2.5	1074	0.0	0.17	10.5	1.00	0.1	10.6	В	25.2	S		HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
-	WBL	<i>y</i> -	46	46	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	20	0	20	Prot	_		1.4	1.4	0.03	4.4	2.0	59	5	0.85	20.0	1.00	67.9	82.9	ı									
~	EBR		20		1900								0	•	0	0																				14.9	0.56	41.6	51.4%	15	
†	EBT	4₽	521		_		0.95						Ŭ	299	4	584	NA			14.5					1		0.48				2	В	11.6	В							
^	EBL	*	57	27	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	62	0	62	Prot	2		3.2	3.2	0.08	4.4	2.0	136	5.93	0.46	18.4	1.00	0.0	19.3	В					city ratio		tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	ĮĮ.	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

→	SBT	303	1.01	85.7	0.0	85.7	197	#385	328		308	0	0	0	0.98					
—	NBT	637	0.89	42.2	0.0	42.2	348	#572	315		726	0	0	0	0.88		٠,		al.	
ţ	WBT	552	0.36	21.6	0.0	21.6	103	193	1076		1549	0	0	0	0.36		be longer		eam sign	
/	WBL	40	0.56	78.0	0.0	78.0	28	m#78		20	72	0	0	0	0.56		eue may		by upstr	
†	EBT	1365	0.89	37.7	0.0	37.7	461	#618	276		1529	0	0	0	0.89		pacity, qu	cycles.	s metered	
١	EBL	56	0.31	57.1	0.0	57.1	19	20		20	101	0	0	0	0.29		ceeds ca	after two	e queue i	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	# 95th percentile volume exceeds capacity, queue may be longer	Queue shown is maximum after two cycles.	m Volume for 95th percentile queue is metered by upstream signal.	

KHA Queues

Balboa Transit Station 11: Olney St & Grand A

•	•	†	<i>></i>	/	ļ	4	•	←	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	<u>, </u>	\$		je-	₩			4			4	
raffic Volume (vph)	27	1229	27	37	471	37	47	194	345	136	123	19
-uture Volume (vph)	27	1229	27	37	471	37	47	194	345	136	123	19
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
ane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Ψ.	1.00	1.00		1.00	0.99			0.92			66.0	
It Protected	0.95	1.00		0.95	1.00			1.00			86.0	
Satd. Flow (prot)	1770	3528		1770	3501			1708			1801	
	0.95	1.00		0.95	1.00			0.95			0.40	
Satd. Flow (perm)	1770	3528		1770	3501			1629			736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	53	1336	53	40	512	40	21	211	375	148	134	21
RTOR Reduction (vph)	0	-	0	0	2	0	0	46	0	0	2	0
ane Group Flow (vph)	53	1364	0	40	547	0	0	288	0	0	301	0
urn Type	Prot	AN		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		-	9			∞			4	
Permitted Phases							∞			4		
Actuated Green, G (s)	3.7	45.1		3.4	45.0			43.1			43.1	
	3.7	45.1		3.4	45.0			43.1			43.1	
Actuated g/C Ratio	0.03	0.43		0.03	0.42			0.41			0.41	
Clearance Time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
/ehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
ane Grp Cap (vph)	19	1501		29	1486			662			299	
//s Ratio Prot	0.02	c0.39		c0.02	0.16							
//s Ratio Perm								0.36			c0.41	
	0.48	0.91		0.71	0.37			0.89			1.01	
Jniform Delay, d1	50.2	28.5		20.8	20.8			29.2			31.4	
	1.00	1.00		1.01	1.01			1.00			1.00	
ncremental Delay, d2	2.1	6.7		29.5	0.7			13.3			53.4	
	52.3	38.2		80.7	21.8			42.6			84.9	
evel of Service	۵	٥		ш	ပ			۵			ш	
Approach Delay (s)		38.5			25.8			42.6			84.9	
proach LOS		Ω			ပ			Ω			ı	
ntersection Summary												
HCM 2000 Control Delay			41.6	Ĭ	HCM 2000 Level of Service	Level of S	service		O			
HCM 2000 Volume to Capacity ratio	ratio		0.95									
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)			14.4			
ntersection Capacity Utilization			96.4%	೨	ICU Level of Service	f Service			ш			

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Balboa Transit Station 12: Grand Ave & Culver St

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

			•		0.3/ 0.72 0.4/		SBL 232 232 0.077 0.077 1144 212 1186 0 0 0	WBT 638 0.29 9.2 9.4 99 1169 2111 21195 837 0.0 0 0 0 0.4 0.47	EBT 1666 0.644 4.1 126 m170 1076 2612 0 295 0 0 0.72	EBL 70 70 0.49 53.5 6.00 53.5 48 m53 0 0 0 0 0 0 0 0 0 0 3.5 53.5 189 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Group Lane Group Flow (vph) WC Ralio Control Delay Courto Delay Oueue Delay Total Delay Total Delay Tun Bay, Length (ft) Inn Bay, Length (ft) Inn Bay, Length (ft) Signiback Cap Reducin Spillback Cap Reducin
0.37 0.72 0.47	0.37 0.72 0.47	0.37 0.72 0.47	0.37 0.72 0.47	0.37 0.72 0.47		Hell EBT WBT 1) 70 1666 638 635 4.1 9.2 9 63.5 4.1 9.2 19 63.5 4.1 9.2 19 70 0.2 0.3 70 48 126 99 70 m53 m170 169 71					
0.37 0.72 0.47	0.37 0.72 0.47	0.37 0.72 0.47	0.37 0.72 0.47	0.37 0.72 0.47	1100	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	0	0	0	0	Storage Cap Reductn
0 0 0 0 0 0 0 0 0.37 0.72 0.47	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$\begin{array}{cccc} 0 & 0 & 0 \\ 0.37 & 0.72 & 0.47 \end{array}$	$\begin{array}{cccc} 0 & 0 & 0 \\ 0.37 & 0.72 & 0.47 \end{array}$	0 0 0 0 0 0 0 0 0 0.37 0.37 0.72 0.47	0 0 0 0	HERI EBT WBT 1) 70 1666 638 635 4.1 9.2 9 63.5 4.1 9.2 19 63.5 4.1 9.2 19 10 48 126 99 1) m53 m170 169 1076 211 55 010 219 cm 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0	273	>	Spillback cap reducin
0 0 0 0 0 0 0.37 0.72 0.47 0.55	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.37 0.72 0.47 0.55	0 0 0 0 0 0 0 0.37 0.72 0.47 0.55	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0	(a) 100 (b) 100 (c) 10	_	c	295	_	Spillhack Can Beductn
0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 295 0	HERI EBT WBT 1) 70 1666 638 63.5 4.1 9.2 16 63.5 4.1 9.2 13 63.5 4.1 9.2 13 70 48 126 99 70 m53 m170 169 71 55 72 55 73 642 17 74 8 126 99 75 75 75 75 75 75 75 75 75 75 75 75 75 7	0	837	0	0	Starvation Cap Reductn
0 0 837 0 295 0 0 0 0 0 0 0 0 0 0	0 0 837 0 0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 837 0 0 0 837 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 837 0 0 295 0 0 0 0 0 0 0.37 0.72 0.47 0.55	0 0 837 0 0 295 0 0 0 0 0 0 0.37 0.72 0.47 0.55	0 0 837	(1) (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4					, , , , , , , , , , , , , , , , , , , ,
ctn 0 0 837 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ctn 0 0 837 (0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	th 0 0 837 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	ctn 0 837 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	th 0 0 837 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	th 0 0 837	Flow (vph) 70 1666 638 049 0.64 0.29 4 0.4 0.0 0.2 0.3 4.1 9.2 1.4 0.0 0.2 0.3 5.3.5 4.1 9.2 1.4 0.0 0.2 0.3 5.3.5 4.3 9.4 1.4 0.0 0.2 0.3 0.3 5.3.5 4.3 9.4 1.4 0.0 0.0 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	434	2195	2612	189	Base Capacity (vph)
189 2612 2195 433 In 0 0 837 0 0 0 837 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	th 0 242 2195 433 10 0 0 837 10 0 0 837 10 0 0 837 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	th 189 2612 2195 433 cin 0 0 837 0 in 0 295 0 0 i 0 0 0 0 0 i 0 0 0 0 0	189 2612 2195 433 cth 0 0 837 in 0 295 0 0 0 0 0 0 0 0	189 2612 2195 433 cth 0 0 837 1 n 0 295 0 0 1 0 0 0 0 0 0 0 0 0	th 0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flow (vph) 70 1666 638 638 641 9.29 19 19 19 19 19 19 19 19 19 19 19 19 19				22	Tum Bay Length (ft)
55 10 2612 2195 433 10 0 0 837 0 10 0 295 0 0 10 0 37 072 047 055	55 189 2612 2195 43. cin 0 0 837 (in 0 295 0 0 0 0 0 0 0 0 0 0 0 0	55 189 2612 2195 43. 210 0 0 837 0 10 0 295 0 0 10 0 0 0 0	55 189 2612 2195 43. ctn 0 0 837 0 1 0 295 0 0 1 0 0 0 0	55 189 2612 2195 43. clin 0 837 (1) in 0 295 0 0 0 0 0 0 0 0 37 0,72 0,47 0,55	55 189 2612 2195 43. cm 0 0 837 cm 0 295 0	Flow (vph) 70 1666 638 (0.29 v) 1666 638 (0.29 v) 1666 638 (0.29 v) 166 (0.29 v) 16	186	211	1076		Internal Link Dist (ft)
55 1076 211 55 1076 211 189 2612 2195 In 0 0 295 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	55 1076 211 55 class of the control	1076 211 55 1076 211 189 2612 2195 cin 0 0 837 in 0 295 0 0 1 0.37 0.72 0.47 (1076 211 55 189 2612 2195 cin 0 0 837 11 0 295 0 1 0 0 0	55 1076 211 55 189 2612 2195 3 51 0 0 837 51 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1076 211 55 189 2612 2195 cm 0 0 837 m 0 295 0	Flow (vph) 70 1666 638 70 1666 638 70 1666 638 70 169 70 1	212	169	m170	m53	Queue Length 95th (ft)
th m53 m170 169 169 167 168 167 168 169 211 2195 169 169 169 169 169 169 169 169 169 169	(1) m53 m170 169 1076 211 55 1076 211 189 2612 2195 ctn 0 0 837 in 0 295 0 1 0 0 0	(1) m53 m170 169 1076 211 55 1076 211 189 2612 2195 10 0 295 0 10 0.37 0.72 0.47	(1) m53 m170 169 1076 211 55 1076 211 189 2612 2195 cm 0 0 837 in 0 295 0 0 0 0	(1) m53 m170 169 1076 211 55 1076 211 189 2612 2195 ctn 0 0 837 in 0 295 0 1 0 0 0	1) m53 m170 169 1076 211 55 189 2612 2195 cm 0 0 837 nn 0 295 0	EBL EBT WBT Flow (vph) 70 1666 638 9 0.49 0.64 0.29 4 y 53.5 4.1 9.2 1 6 0.0 0.2 0.3 7 53.5 4.3 9.4 1	144	66	126	48	Queue Length 50th (ft)
(1) 48 126 99 (2) m53 m170 169 1076 211 55 1076 211 189 2612 2195 110 0 0 837 11 0 295 0 11 0 37 0.72 0.47 (1)	1) 48 126 99 1) m53 m170 169 1076 211 55 107 2195 cm 0 0 837 n 0 295 0 n 0 0 0	(1) 48 126 99 (2) m53 m170 169 1076 211 55 1076 211 55 2612 2195 Cin 0 295 0 10 0.37 0.72 0.47 (1)	1) 48 126 99 1) m53 m170 169 1076 211 55 cm 0 0 837 n 0 295 0 n 0 37 0.72 0.47 0	1) 48 126 99 1) m53 m170 169 1076 211 55 107 219 110 0 0 0 110 0 0 0 110 0 0 0	1) 48 126 99 1) m53 m170 169 1076 211 55 212 189 2612 2195 10 0 0 0	Flow (vph) 70 1666 638 70 1666 638 71 169 169 169 169 169 169 169 169 169 16	55.9	9.4	4.3	53.5	Fotal Delay
10 48 126 99 99 10	53.5 4.3 94 10 48 126 99 10 m53 m170 169 1076 211 55 107 0 2195 10 0 295 0 10 0.37 0.72 0.47	1) 53.5 4.3 9.4 48 126 99 10 m53 m170 169 55 1076 211 189 2612 2195 110 0 0 837 11 0 295 0 11 0 0 0	10 48 126 99 10 m53 m170 211 55 1076 211 107 211 1189 2612 2195 110 0 295 0 11 0 0 0	10 48 126 99 10 169 170 169 170 169 170 169 170 170 170 170 170 170 170 170 170 170	1) 48 126 99 107 169 179 179 179 179 179 179 179 179 179 17	EBL EBT WBT Flow (vph) 70 1666 638 0.49 0.64 0.29 0 y 53.5 4.1 9.2 0	0.0	0.3	0.2	0.0	Queue Delay
53.5 4.3 9.4 19.4 19.4 19.4 19.4 19.4 19.4 19.4	53.5 4.3 9.4 13 63.5 4.3 9.4 13 48 126 99 10 m53 m170 169 1076 211 55 1076 211 56 0 837 10 0 295 0 10 0.37 0,72 0,47	53.5 4.3 9.4 19. 53.5 4.3 9.4 19. 70	0.0 0.2 0.3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.0 0.2 0.3 (2.5) (3.5) (4.5)	53.5 4.3 9.4 19 10 48 126 99 10 m53 m170 169 1076 211 108 2612 2195 210 0 0 0	EBL EBT WBT Flow (vph) 70 1666 638 0.49 0.64 0.29	55.9	9.5	4.1	53.5	Control Delay
53.5 4.1 9.2 0.0 0.0 0.3 0.3 0.2 0.3 0.3 0.4 0.9 0.4 0.3 0.3 0.4 0.9 0.4 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	535 4.1 9.2 0.0 0.2 0.3 53.5 4.3 9.4 19.7 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	53.5 4.1 9.2 10.0 0.2 0.3 2.5 4.3 9.4 19.0 10.0 0.2 0.3 10.0 10.0 10.0 10.0 10.0 10.0 10.0	53.5 4.1 9.2 10.0 0.2 0.3 2.3 5.3 4.3 9.4 1.9 1.0 1.0 1.0 1.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	535 4.1 9.2 0.0 0.0 0.3 535 4.3 9.4 19.4 1.2 9.9 1.0 m.53 m.170 169 1076 211 55 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	53.5 4.1 9.2 10.0 0.2 0.3 5.3.5 4.3 9.4 19.1 10.0 0.2 0.3 10.3 10.3 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4	EBL EBT WBT 70 1666 638	0.77	0.29	0.64	0.49	//c Ratio
0.49 0.64 0.29 0.53.5 0.0 0.2 0.3 0.3 0.4 0.5 0.0 0.2 0.3 0.4 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	0.49 0.64 0.29 0.65 0.00 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	0.49 0.64 0.29 0.55 0.0 0.2 0.3 0.3 0.4 0.5 0.0 0.2 0.3 0.3 0.4 0.3 0.4 0.5 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	0.49 0.64 0.29 0.53.5 4.1 9.2. 1.0 0.0 0.2 0.3 0.3 0.3 0.3 0.4 0.5 0.3 0.3 0.3 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.49 0.64 0.29 0.535 4.1 9.2 1.9 0.0 0.2 0.3 0.3 0.3 0.4 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	63.5 4.1 9.2 9.0 0.0 0.2 0.3 0.0 0.2 0.3 0.4 0.4 0.5 0.0 0.2 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	EBL EBT WBT	232	638	1666	70	-ane Group Flow (vph)
h) 70 1666 638 0.49 0.64 0.29 53.5 4.1 9.2 10.3 0.0 0.2 0.3 53.5 4.3 9.4 19 10 48 126 99 10 m53 m170 169 1076 211 55 th 0 0 837 in 0 295 0 in 0 37 0.72 0.47	h) 70 1666 638 0.49 0.64 0.29 5.35 4.1 9.2 1.3 0.0 0.2 0.3 5.35 4.3 9.4 1.3 10 48 126 9.9 10 m53 m170 169 10 m53 m170 169 10 m53 m170 2195 10 0 0 837 10 0 295 0 10 0.37 0.72 0.47	h) 70 1666 638 0.49 0.64 0.29 0.5 0.1 0.2 0.0 0.2 0.3 53.5 4.3 9.4 19 48 126 99 10 m53 m170 169 175 211 189 2612 2195 180 0.0 0 190 0.37 0.72 0.47	h) 70 1666 638 0.49 0.64 0.29 53.5 4.3 9.4 1 10.0 0.2 0.3 53.5 4.3 9.4 1 10.0 0.2 0.3 10.0 0.2 11 55 10.0 0.0 10.0 0.0 10.0 0.0 10.0 0.0	h) 70 1666 638 0.49 0.64 0.29 5.35 4.1 9.2 1.3 0.0 0.2 0.3 5.35 4.3 9.4 1.3 10 48 126 9.9 10 m53 m170 169 1076 211 5.5 5.0 10 0 837 10 0 0 837 10 0 0 0.47	(1) 70 1666 638 (1) 70 1666 638 (1) 70 1666 638 (1) 70 169 (1) 70		SBL	WBT	EBT	EBL	Lane Group
								SBL 232 232 2077 255 9 0.0 1144 2112 1186 0 0 0 0 0		WBI 638 638 638 92 93 94 169 211 2195 837 0 0 0 0 047	EBT WEIT 1666 638 1666 638 164 13 92 12 0.2 17 0.2 17 0.2 17 0.3 17 0.3 18 0.4 19 0.3 10 0.3

Synchro 9 Report Page 22 KHA Queues

Balboa Transit Station Horizon Year Adopted Conditions 12: Grand Ave & Culver St

																							ı																		
																																				В		14.4	ပ		
•	SBR		48	1900								0.92	52	0	0																					Service					
۶	SBL	>	166	1900	4.9	1.00	0.97	96:0	1739	96:0	1739	0.92	180	=	221	Prot	4		17.8	17.8	0.17	4.9	2.0	292	c0.13		97.0	42.0	1.00	9.6	51.6	۵	51.6	Ω		Level of		time (s)	f Service		
4	WBR		116	1900								0.92	126	0	0																					HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
ļ	WBT	₩	471	1900	4.9	0.95	0.97	1.00	3434	1.00	3434	0.92	512	16	622	NA	9		66.4	66.4	0.63	4.9	4.1	2151	0.18		0.29	0.6	0.92	0.3	9.8	A	9.8	A		H		S	⊇		
L.	WBU	4	0 0	1900								0.92	0	0	0	Prot	-																			10.4	69.0	106.0	%8.69	15	
†	EBT	\$	1533	1900	5.1	0.95	1.00	1.00	3539	1.00	3539	0.92	1666	0	1666	NA	7		78.2	78.2	0.74	5.1	4.2	2610	c0.47		0.64	6.9	0.45	0.5	3.6	⋖	9.6	A							
•	EBL	*	64	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	70	0	70	Prot	2		7.6	9.7	0.07	4.4	2.0	126	0.04		0.56	47.6	1.06	1.3	51.6	۵					ratio		_		
	Movement	Lane Configurations	Traffic Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Transit Station Horizon Year Adopted Conditions
13: Lee St & Grand Ave Timing Plan: AM Peak Period

	†	/	ļ	✓	
Lane Group	EBT	WBL	WBT	NBL	
Lane Group Flow (vph)	1820	135	645	103	
v/c Ratio	0.77	0.65	0.22	0.59	
Control Delay	9.5	58.9	2.4	40.4	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	9.6	58.9	2.4	40.4	
Queue Length 50th (ft)	285	88	35	38	
Queue Length 95th (ft)	354	145	92	86	
Internal Link Dist (ft)	211		1401	337	
Tum Bay Length (ft)		400			
Base Capacity (vph)	2363	273	2915	545	
Starvation Cap Reductn	15	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.78	0.49	0.22	0.19	
Interception Community					

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Horizon Year Adopted Conditions
Timing Plan: AM Peak Period Balboa Transit Station 13: Lee St & Grand Ave

ment EET EBR WBL WST NBR NBR Configurations		†	>	/	ļ	•	•	
hi) 1631 43 124 593 49 46 hi) 1631 900 1900 1900 1900 hi 1631 100 1900 1900 1900 hi 100 100 100 095 hi 100 095 1100 097 hi 100 097 hi 10 097 hi 100 097 h	Movement	EBT	EBR	WBL	WBT	NBL	NBR	
h) 1631 43 124 593 49 46 h) 1631 43 124 593 49 46 h) 1900 1900 1900 1900 1900 1900 h 49	-ane Configurations	₩		F	ŧ	>		
1631 43 124 593 49 46 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 0.95 1.00 0.93 100 0.95 1.00 0.93 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.95 1.00 0.97 100 0.97	: Volume (vph)	1631	43	124	593	46	46	
1900 1900	e Volume (vph)	1631	43	124	593	46	46	
(s) 710 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1,00 0.95 1,00 0.95 1,00 1,00 0.95 1,00 0.93 1,00 0.95 1,00 0.93 1,00 0.95 1,00 0.95 1,00 0.97 1,00 0.95 1,00 0.97 1,00 0.95 1,00 0.97 1,00 0.95 1,00 0.97 1,00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.94	Lost time (s)	4.9		4.4	5.4	4.9		
100	Util. Factor	0.95		1.00	0.95	1.00		
1,00 0,95 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,95 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,95 1,00 0,97 1,00 0,97 1,00 0,92 1,00 0,97 1,00 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0		1.00		1.00	1.00	0.93		
3526 1770 3539 1697 3526 1770 3539 1697 3526 1770 3539 1697 3526 1770 3539 1697 1773 47 135 645 53 50 170 1 0 0 0 0 42 0 1 0 0 135 645 53 50 1 0 135 645 61 0 1 0 135 645 61 0 2	otected	1.00		0.95	1.00	0.97		
1,00 0.95 1,00 0.97 3526 1770 3539 1697 1773 47 135 645 53 50 (vph)	Flow (prot)	3526		1770	3539	1697		
3526 1770 3539 1697	rmitted	1.00		0.95	1.00	0.97		
HF 0.92 0.92 0.92 0.92 0.92 0.92 ph) 173 47 135 645 53 50 ph) 1819 0 135 645 61 0 0 ph) 1819 0 124 87.3 84 4 95 4.4 97 12.4 87.3 84 4 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flow (perm)	3526		1770	3539	1697		
ph) 1773 47 135 645 53 50 ph) 1819 0 0 0 0 0 42 0 ph) 1819 0 135 645 61 0 NA Prod NA Prod Color	hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
ph) 1819 0 135 645 61 0 NA Prod NA Pr	low (hdv) wol-	1773	47	135	645	23	20	
1819 0 135 645 61 0 NA Prof NA Prof 2	Reduction (vph)		0	0	0	45	0	
(s) 71.0 12.4 87.3 8.4 8.4 8.7 8.4 87.3 8.4 8.4 8.7 8.4 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.2 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3	Group Flow (vph)	1819	0	135	645	19	0	
(s) 71.0 12.4 87.3 8.4 8.4 8.5 9.0 0.67 0.12 0.82 0.08 8.4 9.5 9.4 9.5 9.4 9.5 9.4 9.5 9.4 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5	Туре	W		Prot	NA	Prot		
(s) 71.0 12.4 87.3 8.4 8.4 8.4 8.5 8.4 8.7 1.0 12.4 87.3 8.4 8.4 8.5 8.4 8.5 8.4 8.5 8.4 8.5 8.4 8.5 8.4 8.5 8.4 8.5 8.4 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5	cted Phases	2		-	9	∞		
(\$) 71.0 12.4 87.3 8.4 8.4 (\$) 71.0 12.4 87.3 8.4 8.4 (\$) 71.0 12.4 87.3 8.4 8.4 (\$) 0.67 0.12 0.82 0.08 8.4 (\$) 0.67 0.12 0.82 0.08 8.4 (\$) 0.65 0.2 0.08 0.18 0.09 \$\$ 0.05.2 0.08 0.18 0.09 \$\$ 0.52 0.05.2 0.05 0.100 1.00 1.00 1.00 1.00 1.00 1.0	itted Phases							
s) 71.0 12.4 87.3 8.4 0.67 0.12 0.82 0.08 4.9 4.4 5.4 4.9 4.4 5.4 4.9 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 2.0 2.0 4.5 11.9 44.7 2.0 46.6 0.52 0.05 0.10 0.77 0.65 0.2 0.45 1.9 44.7 2.0 46.6 0.52 1.0 0.10 1.00 44.7 0.0 1.00 2.0 5.5 0.2 0.9 5.5 0.2 0.9 8.2 5.0.3 2.4 7.5 A D A D A D A D A D A D A D A D A D A D	ted Green, G (s)	71.0		12.4	87.3	8.4		
0.67 0.12 0.82 0.08 4, 9, 4, 4, 9 4, 0, 2.0 4, 4, 9 2.0 4, 4, 9 2.0 4, 4, 9 2.0 6.52 0.08 0.17 0.65 0.22 0.45 11, 9 44, 7 2.0 46, 6 0.52 1.00 1.00 1.00 0.52 1.00 1.00 1.00 0.52 5.0 2.0 4, 5 0.55 0.2 0.45 0.55 1.00 1.00 1.00 0.52 1.00 1.00 1.00 0.53 2.2 47.5 0.58 2 50.3 2.2 47.5 0.58 2 1.05 1.05 1.05 0.73 8.2 1.05 47.5 0.9 B.2 1.05 47.5 0.9 B.2 1.05 0.9 0.	live Green, g (s)	71.0		12.4	87.3	8.4		
4,9	ited g/C Ratio	19:0		0.12	0.82	0.08		
207 2914 134 c0.08 0.18 c0.04 0.65 0.22 0.45 44.7 2.0 46.6 1.00 1.00 1.00 5.5 0.2 0.9 5.3 2.2 47.5 0.3 2.2 47.5 0.4 A D 10.5 A D 10.5 A D 10.5 B D 10.5 Sum of fost time (s) 70.7% ICU Level of Service 15	ance Time (s)	4.9		4.4	5.4	4.9		
207 2914 134 0.0.08 0.18 0.0.04 0.65 0.22 0.45 44.7 2.0 46.6 1.00 1.00 5.5 0.2 0.9 5.0.3 2.2 47.5 D A D 10.5 47.5 B D 10.5 47.5 B D 10.6 Sum of lost time (s) 70.7% ICU Level of Service 15	le Extension (s)	4.0		2.0	4.4	2.0		
0.058 0.18 c0.04 0.65 0.22 0.45 44.7 2.0 46.6 1.00 1.00 1.00 5.5 0.2 0.9 5.0 2 0.9 5.0 3 2 47.5 D A D 10.5 47.5 B D 10.5 47.5 10.6 0.9 10.7 3 Council of Service 0.73 70.7% ICU Level of Service	Grp Cap (vph)	2361		207	2914	134		
0.65 0.22 0.45 44.7 2.0 46.6 1.00 1.00 1.00 5.5 0.2 0.9 5.0.3 2.2 47.5 D A D 10.5 47.5 B D 10.5 47.5 B D 10.6 Sum of lost time (s) 70.7% ICU Level of Service 15	atio Prot	c0.52		c0.08	0.18	c0.04		
0.65 0.22 0.45 44.7 2.0 46.6 1.00 1.00 1.00 5.5 0.2 0.9 5.0 2 0.9 5.0 47.5 D A D 10.5 47.5 B D 10.5 47.5 10.5 47.5	atio Perm							
44.7 2.0 46.6 1.00 1.00 5.5 0.2 0.9 50.3 2.2 47.5 D A D 10.5 47.5 B D 10.4 HCM 2000 Level of Service 0.73 70.7% ICU Level of Service 15	atio	0.77		0.65	0.22	0.45		
100 100 100 55 02 0.9 503 22 47.5 D A D 10.5 47.5 B D 10.4 HCM 2000 Level of Service 0.73 106.0 Sum of lost time (s) 70.7% ICU Level of Service 15	m Delay, d1	11.9		44.7	5.0	46.6		
55 02 0.9 50.3 22 47.5 D A D 10.5 47.5 B D 10.4 HCM 2000 Level of Service 0.73 106.0 Sum of lost time (s) 15 ICU Level of Service 15	ession Factor	0.52		1.00	1.00	1.00		
50.3 2.2 47.5 D A D 10.5 47.5 B D 10.4 HCM 2000 Level of Service 0.73 70.7% ICU Level of Service 15	mental Delay, d2	5.0		5.5	0.2	6:0		
D A D 10.5 47.5 B D 10.4 HCM 2000 Level of Service 0.73 Sum of lost time (s) 70.7% ICU Level of Service 15	(s)	8.2		50.3	2.2	47.5		
10.4 HCM 2000 Level of Service 0.73 Sum of lost time (s) 70.7% ICU Level of Service 15	of Service	∢		۵	V	Ω		
10.4 HCM 2000 Level of Service 0.73 Sum of lost time (s) 70.7% ICU Level of Service 15	ach Delay (s)	8.2			10.5	47.5		
10.4 HCM 2000 Level of Service 0.73 106.0 Sum of lost time (s) 70.7% ICU Level of Service 15	ach LOS	A			В	Ω		
10.4 HCM 2000 Level of Service 0.73 5um of lost time (s) 70.7% ICU Level of Service 15	ection Summary							
0.73 106 0 Sum of lost time (s) 70.7% ICU Level of Service 15	2000 Control Delay			10.4		M 2000 I	evel of Service	В
106.0 Sum of lost time (s) 70.7% ICU Level of Service 15	2000 Volume to Capacit	y ratio		0.73				
Utilization 70.7% ICU Level of Service 15 ICU Level of Service 1p	ited Cycle Length (s)			106.0	Su	m of lost	time (s)	14.2
15 Ip	ection Capacity Utilization	E		70.7%	⊴	J Level o	Service	U
itical Lane Group	sis Period (min)			15				
_	ritical Lane Group							

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Balboa Transit Station 14: Grand Ave & Figueroa Blvd

Horizon Year Adopted Conditions
Timing Plan: AM Peak Period

	^	†	ţ	
Lane Group	EBL	EBT	WBT	
Lane Group Flow (vph)	88	1798	734	
v/c Ratio	0.63	0.97	0.24	
Control Delay	85.9	15.7	2.1	
Queue Delay	0.0	0.0	0.0	
Total Delay	85.9	15.7	2.1	
Queue Length 50th (ft)	82	0	24	
Queue Length 95th (ft)	143	#128	77	
Internal Link Dist (ft)		909	773	
Tum Bay Length (ft)	06			
Base Capacity (vph)	259	1863	3010	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.34	0.97	0.24	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

KHA Oueues

Balboa Transit Statio 14: Grand Ave & Figu

Movement EBI WBT WBR SBI SBR	Balboa Transit Station 14: Grand Ave & Figueroa Blvd	on ueroa	Blvd				Horizon Year	Horizon Year Adopted Conditions Timing Plan: AM Peak Period
EBI EBI WBI WBR SBI SBR 1		4	†	ţ	4	٠	*	
No.	Movement	EBF	EBT	WBT	WBR	SBL	SBR	
81 1654 646 29 0 0 0 1900 1900 1900 1900 1900 1900	Lane Configurations	¥	*	4₽				
1900 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 1780	Traffic Volume (vph)	81	1654	646	53	0	0	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	8	1654	949	53	0	0	
144 5.3 5.3 5.3 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 100 0.99 100 100 0.99 100 100 0.99 100 100 100 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 1876 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1875 1770 1870 1770 1770 1770 1770 1770 1770	Total Lost time (s)	4.4	5.3	5.3				
100 100 0.99 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 178 178 178 178 178 178 178 178 178 178	Lane Util. Factor	1.00	1.00	0.95				
170 183 3516 170 1843 3516 170 1843 3516 170 1843 3516 170 1843 3516 170 1843 3516 170 1843 3516 170 1843 172 173 173 0 0 0 0 170 184 173 0 0 0 0 170 184 173 0 0 0 0 170 184 173 0 0 0 0 170 170 184 170 170 170 170 170 170 170 170 170 170	F	1.00	1.00	0.99				
1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 1770 1863 3516 178 1798 732 0 0 0 0 179 183 1798 733 0 0 0 0 179 183 1798 733 0 0 0 0 178 1500 128.5 178 1500 128.5 178 1500 128.5 178 1500 128.5 179 1863 3012 170 170 0.03 170 170 0.04 170 170 0.07 170 170 0.07 170 170 1.0 170 170 1.0 170 170 1.0 171 1.9 172 14.1 1.9 173 14.1 1.9 174 1.0 175 14.1 1.9 175 14.1 1.9 170 170 170 170 185 1800 1800 1863 170 170 1878 170 170 188 A	Fit Protected	0.95	00:	00:				
170 140	Satd. Flow (prot)	1770	1863	3516				
1770 1053 3310 32 0.093 0.093 0.	Fit Permitted	0.95	00.1	1.00				
h) 88 1798 702 092 092 092 093 093 093 093 093 093 093 093 093 093	Satd. Flow (perm)	9/1	863	3516				
h) 88 1798 702 32 0 0 0 h) 88 1798 733 0 0 0 h) 89 1798 733 0 0 0 h) 118 1500 1285 h) 118 1500 1285 h) 118 1500 1285 h) 118 1500 1285 h) 10 120 1285 h) 10 120 1285 h) 10 120 1285 h) 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hy) 88 1798 733 0 0 0 hy) 88 1798 733 0 0 0 5 2 6 5 2 6 5 3 6 5 100 128.5 0.08 1.00 0.86 0.08 1.00 0.86 0.05 0.97 0.24 6.00 0.0 1.9 1.00 1.00 0.91 1.00 1.00 0.91 2 6.7 14.1 0.2 6 7.0 0.0 1.00 1.00 0.91 8 A A A A A A A A A A A A A A	Adj. Flow (vph)	88	1798	702	32	0	0	
h) 88 1798 733 0 0 0 0 Pout NA NA S 6 6 \$ 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	RTOR Reduction (vph)	0	0		0	0	0	
Prot NA NA	Lane Group Flow (vph)	88	1798	733	0	0	0	
5 2 6 118 1500 1285 118 1500 1285 118 1500 086 4 4 4 44 120 44 44 139 1843 3012 0.05 0.097 0.21 0.05 0.097 0.21 0.05 0.097 0.24 6/0 0.0 1.9 1.00 0.91 2 6.7 14.1 0.2 6.7 14.1 0.2 6.7 14.1 0.2 16.9 1.9 Relay 12.7 HCM 2000 Level of Service 10.0 0.0 1	Turn Type	Prot	¥	¥				
s) 1118 1500 128.5 008 100 086 44 5.3 5.3 2 0 4.4 4.4 139 1883 3012 005 0.97 0.21 063 0.97 0.24 67.0 0.0 1.9 1.00 1.00 0.91 6.7 14.1 0.2 6.7 14.1 0.2 6.8 A A 7.9 1.9 0.0 8 A A 12.7 HCM 2000 Level of Service 1.50 0.0 Service	Protected Phases	2	2	9				
) 1118 1500 128.5) 1118 1500 128.5) 0.08 4.4 5.3 5.3 1.00 0.86 4.4 5.3 5.3 1.20 4.4 4.4 1.39 1863 3012 0.05 0.97 0.24 6.70 0.19 1.00 1.00 0.91 1.00 0.91	Permitted Phases							
118 1500 1285 0.08 1.00 0.86 4.4 4.4 4.4 2.0 4.4 4.4 1.39 1863 3012 0.05 0.97 0.21 0.05 0.97 0.24 6.70 0.0 1.9 1.00 1.00 0.91 2 6.7 14.1 0.2 1.8 A 0.0 1.9 A	Actuated Green, G (s)	11.8	150.0	128.5				
0.08 1.00 0.86 4.4 5.3 5.3 2.0 4.4 4.4 1.39 1863 3012 0.05 0.07 0.21 0.05 0.097 0.24 6.70 0.0 1.9 1.00 1.00 0.91 2.0 4.1 1.9 E. B. A. A. A. 9.9 1.07 HCM 2000 Level of Service 1.05 1.50 Sum of lost time (s) 1.15 ICU Level of Service 1.15 ISO Sum of lost time (s)	Effective Green, g (s)	11.8	150.0	128.5				
7 4 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5	Actuated g/C Ratio	0.08	1.00	0.86				
2	Clearance Time (s)	4.4	5.3	5.3				
139 1863 3012 0.05 0.07 0.21 0.63 0.97 0.24 0.67 0.0 1.9 1.00 1.00 0.91 2 6.7 14.1 0.2 E B A 0.0 16.9 1.9 0.0 B A A 1.27 HCM 2000 Level of Service lelay 1.27 HCM 2000 Level of Service 1.59 1.9 0.0 B A 1.50 Sum of lost time (s) 1.2 Ith (s) 1.50 Sum of lost time (s) 1.50 Sum of	Vehicle Extension (s)	2.0	4.4	4.4				
0.05 0.97 0.21 0.63 0.97 0.24 67.0 0.0 1.9 1.00 1.00 0.91 2 6.7 14.1 0.2 1.1 1.9 E B A A A	Lane Grp Cap (vph)	139	1863	3012				
0.63 0.97 0.24 6.70 0.0 1.9 1.00 1.00 0.91 6.7 14.1 0.2 6.7 14.1 0.2 6.7 14.1 0.2 6.7 14.1 1.9 F. B. A. D.O. B. A.	v/s Ratio Prot	0.05	c0.97	0.21				
0.63 0.97 0.24 0.60 0.0 1.9 0.73.7 14.1 0.2 0.73.7 14.1 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	v/s Ratio Perm							
67.0 0.0 1.9 1.00 1.00 0.91 2 6.7 14.1 0.2 F B A 0.0 16.9 1.9 A 12.7 HCM 2000 Level of Service c-Capacity ratio 1.05 In (s) 150 Sum of lost time (s) 12. 15 ICU Level of Service 1.05 16.9 1.9 A 17.0 HCM 2000 Level of Service 1.05 18.0 Sum of lost time (s) 1.2 18.0 Sum of lost time (s) 1.2 19.0 Sum of lost time (s) 1.2 10.0 Level of Service 1.2 10.0 Level of Service 1.2 10.0 Level of Service 1.3	v/c Ratio	0.63	0.97	0.24				
1.00 1.00 0.91 2 6.7 14.1 0.2 E B A 0.0 E B A 0.0 B A A 0.0 1.69 1.9 0.0 B A A 1.27 1.27 HCM 2000 Level of Service 1.05 Ith (s) 1.50 Sum of lost time (s) 1.2 Ith (s) 1.50 Sum of lost time (s) 1.2 Ith (s) 1.50 Sum of lost time (s) 1.50 Sum of lost tim	Uniform Delay, d1	0.79	0.0	1.9				
2 6.7 14.1 0.2 73.7 14.1 1.9 E B A 0.0 B A A Y Y Y I(s) 1.95 I(s) 1.05 I(s) 1.05 I(s) 1.05 I(s) 1.05 I(s) 1.06	Progression Factor	1.00	1.00	0.91				
73.7 14.1 1.9 E B A 0.0 16.9 1.9 0.0 W 16.9 1.27 HCM 2000 Level of Service of Service or Capacity ratio 1.05 Sum of lost time (s) 12.7 HCM 2000 Level of Service or Capacity ratio 1.05 Sum of lost time (s) 12.0 Level of Service or Capacity ratio 1.5 LCU Level or	Incremental Delay, d2	6.7	14.1	0.2				
E B A 0.0 1.9 0.0 1.9 0.0 1.9 1.9 1.0 1.	Delay (s)	73.7	14.1	1.9				
16.9 1.9 0.0 9 A A A 19 A A 19 A A 12.7 HCM 2000 Level of Service 1.05 Sum of lost time (s) 12.0 118.0 Sum of lost time (s) 12.0 118.1 ICU Level of Service 12.0 12.1 In the (s) 12.0 13.1 In the (s) 12.0 14.1 In the (s) 12.0 15.1 In the (s) 12.0 16.1 In the (s) 12.0 17.1 In the (s) 12.0 18.1 In the (s) 12.0 19.1 In	Level of Service	ш	B	V				
y A A y 12.7 HCM 2000 Level of Service leady 12.7 HCM 2000 Level of Service In (s) 1.05 Sum of lost time (s) 12. In (s) 15.00 Sum of lost time (s) 12. In (s) 15.% ICU Level of Service 12. In (s) 15. ICU Level of Service 12.	Approach Delay (s)		16.9	1.9		0:0		
12.7 HCM 2000 Level of Service 1.05 150.0 Sum of lost time (s) 12. 91.5% ICU Level of Service	Approach LOS		œ	⋖		Υ		
12.7 HCM 2000 Level of Service 1.05 Sum of lost time (s) 12. 91.5% ICU Level of Service 15	Intersection Summary							
1.05 150.0 Sum of lost time (s) 91.5% ICU Level of Service 15	HCM 2000 Control Delay			12.7	HC	M 2000 L	evel of Service	В
150.0 Sum of lost time (s) 91.5% ICU Level of Service 15	HCM 2000 Volume to Capacity	y ratio		1.05				
91.5% 15	Actuated Cycle Length (s)			150.0	Sur	n of lost i		L:
a	Intersection Capacity Utilizatio	⊑		91.5%		J Level of	Service	Ł
c Critical Lane Group	Analysis Period (min)			15				
	c Critical Lane Group							

Synchro 9 Report Page 27

Balboa Transit Station 15: Mission Bay Dr & Grand Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

→ ← ✓ <i>></i> •	BL EBR NBL NBT SBT	1522 500 890	0.96 0.72 0.38	8.7 32.9 4.3	2.4 0.0 0.0	5.1 11.1 32.9 4.3 26.2	0 112 84	m0 110 31	526	25 285	1583	0 0 0 0 0	0 30 0 0 0	0 0 0 0 0	91 0.98 0.48 0.38 0.69	
<i>*</i>	EBL EBR								773	225		0 0	0 30	0 0	0.91 0.98	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	h 50th (ft)			Tum Bay Length (ft)		Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Synchro 9 Report Page 28 KHA Queues

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 15: Mission Bay Dr & Grand Ave

Movement								
	EBL	EBR	NBL	NBT	SBU	SBT	SBR	
Lane Configurations	<u>"</u>	¥C	K.	+	4	4₽		
Traffic Volume (vph)	539	1400	460	819	0	783	100	
(q)	299	1400	460	819	0	783	100	
Ideal Flow (vphpl) 1	0061	1900	1900	1900	1900	1900	1900	
(9	4.4	4.0	2.7	2.7		4.9		
Lane Util. Factor	1.00	1.00	76:0	0.95		0.95		
Fit	1.00	0.85	1.00	1.00		86.0		
Fit Protected (0.95	1.00	0.95	1.00		1.00		
Satd. Flow (prot) 1	1770	1583	3433	3539		3479		
	0.95	1.00	0.95	1.00		1.00		
Satd. Flow (perm) 1	0//	1583	3433	3539		3479		
Peak-hour factor, PHF (0.92	0.92	0.92	0.92	0.92	0.92	0.92	
	325	1522	200	830	0	821	109	
(hdv) uc	0	0	0	0	0	=	0	
Lane Group Flow (vph)	325	1522	200	890	0	949	0	
	Prot	Free	Prot	NA	Prot	NA		
Protected Phases	4		-	9	2	2		
Permitted Phases		Free						
Actuated Green, G (s)	14.9	75.0	15.3	20.0		29.8		
(2)	14.9	75.0	15.3	20.0		29.8		
	0.20	1.00	0.20	19.0		0.40		
Clearance Time (s)	4.4		2.7	2.7		4.9		
Vehicle Extension (s)	2.0		2.0	4.6		3.6		
Lane Grp Cap (vph)	351	1583	700	2359		1382		
	0.18		0.15	0.25		0.27		
v/s Ratio Perm		96:00						
	0.93	96.0	0.71	0.38		69.0		
	29.5	0.0	27.8	9.6		18.7		
	1.00	1.00	0.98	89.0		1.23		
Incremental Delay, d2	13.4	6.9	2.8	0.4		2.7		
	42.9	6.9	30.1	4.2		25.8		
	٥	A	ပ	⋖		ပ		
(s) /	13.3			13.5		25.8		
Approach LOS	В			В		ပ		
Intersection Summary								
HCM 2000 Control Delay			16.2	H	HCM 2000 Level of Service	evel of S	ervice	В
HCM 2000 Volume to Capacity ratio	atio		1.20					
Actuated Cycle Length (s)			75.0	Su	Sum of lost time (s)	ime (s)		15.0
Intersection Capacity Utilization			%0.79	⊴	ICU Level of Service	Service		U
Analysis Period (min)			15					
c Critical Lane Group								

Synchro 9 Report Page 29

KHA Oueues

Synchro 9 Report Page 30

Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Horizon Year Adopted Conditions
Timing Plan: AM Peak Period

	^	•	←	→	•	
Lane Group	EBL	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	765	102	1510	853	213	
v/c Ratio	0.97	0.50	99.0	0.49	0.25	
Control Delay	54.8	26.5	16.4	15.2	6.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.8	26.5	16.4	15.2	6.3	
Queue Length 50th (ft)	175	64	374	140	20	
Queue Length 95th (ft)	#289	102	438	211	63	
Internal Link Dist (ft)	261		749	743		
Tum Bay Length (ft)	270	205			70	
Base Capacity (vph)	790	401	2293	1736	845	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.97	0.25	99.0	0.49	0.25	
Negacea We Isalio	0.77	0.43	0.00		0.20	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year Adopted Conditions
Timing Plan: AM Peak Period Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

																																					O		14.4	ပ	
•	SBR	K.	196	196	1900	2.6	1.00	0.85	1.00	1583	1.00	1583	0.92	213	70	143	Perm		9	35.9	35.9	0.48	2.6	4.8	757		60:0	0.19	11.2	1.00	0.6	æ. c	2				HCM 2000 Level of Service		ime (s)	Service	
→	SBT	‡			1900			1.00		3539		3539	0.92	823	0	853	NA	9				0	9.6	4.8	`	0.24						4		7	Ω.		HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
←	NBL NBT	*	94 1389	`	_		_	1.00 1.00	95 1.00	. ,	0.95 1.00	1770 3539	0.92 0.92	02 1510	0 0	102 1510	Prot NA			7.7 48.6		0	4.4 5.0	2.0 4.0		0.06 c0.43		٥			1.9 1.2	9	י פ כ	16.6	m		23.9	0.80	75.0	%	15
*	EBR N		120		1900 19	7	-	-	0	17	0	17	0.92 0.	130	0		_				-	0.	7	. ,	_	0		0	33	Ö		77					23	0	7.	94.7%	
۸	EBL	N.	284	284	1900	4.4	0.97	0.97	96:0	3381	96:0	3381	0.92	635	24	741	Prot	4		17.0	17.0	0.23	4.4	2.0	992	c0.22		0.97	28.7	00:1	24.3	53.T	D :	53.1	O			ity ratio		ion	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

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Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

Lane Group WBL V Lane Group Flow (vph) 79 vc wc Ratio 0.61 control Delay 85.7	WBR					
19 Tlow (vph) 79 0.61 alay 85.7		NBT	NBR	SBL	SBT	
0.61 elay 85.7	46	1592	116	57	068	
85.7	0.29	0.61	0.10	0.30	0.29	
	20.7	3.1	0.1	6.67	5.5	
	0.0	0.4	0.0	0.0	0:0	
	20.7	3.4	0.1	6.62	5.5	
	0	42	0	28	184	
131	41	m41	m0	m104	m235	
		376			749	
Tum Bay Length (ft)	75		160	185		
Base Capacity (vph) 361	326	2613	1184	224	3050	
Starvation Cap Reductn 0	0	453	0	0	0	
Spillback Cap Reductn 0	0	0	0	0	15	
Storage Cap Reductn 0	0	0	0	0	0	
Reduced v/c Ratio 0.22	0.13	0.74	0.10	0.25	0.29	
Intersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

Synchro 9 Report Page 32 KHA Queues

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Movement Web Web Net		/	✓	←	•	٠	→	
figurations	ement	WBL	WBR	NBT	NBR	SBL	SBT	
tume (vph) 73 42 1445 107 52 819 tume (vph) 73 42 1445 107 52 819 tume (vph) 73 44 144 50 50 144 52 819 tume (sh) 190 1900 1900 1900 1900 1900 time (s) 44 44 50 50 44 52 819 time (s) 44 44 50 50 44 52 819 time (s) 100 100 100 100 100 100 95 time (s) 100 100 100 100 100 95 100 time (s) 100 100 100 100 100 95 100 time (s) 100 100 100 100 100 100 95 100 time (s) 111 111 109 109 152 129 <td>e Configurations</td> <td>r</td> <td>*</td> <td>‡</td> <td>₹_</td> <td>r</td> <td>‡</td> <td></td>	e Configurations	r	*	‡	₹_	r	‡	
time (kyn) 73 44 145 50 50 140 1900 1900 1900 1900 1900 1900 1900	ic Volume (vph)	73	42	1465	107	25	819	
time (s) 4.4 4.4 5.0 5.0 4.4 5.2 Fedor 100 0.95	II e voiume (vpri)	1900	1900	1900	1900	1900	1900	
Factor 1.00 1.00 0.95 1.00 1.00 0.95 ted (both of the color) 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	I Lost time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
ted (100 0.85 1.00 0.85 1.00 1.00 w (prot) 1700 183 35.39 15.83 1770 35.39 ted (100) 1700 1.00 1.00 0.95 1.00 w (prot) 1770 15.83 35.39 15.83 1770 35.39 r(prot, prot) 79 40 15.83 15.39 1.00 pp Flow (yph) 79 46 15.22 116 57 890 up Flow (yph) 79 47 15.22 10.0 57 890 up Flow (yph) 79 10.0 1.00 1.00 1.00 pp Flow (yph) 79 10.0 1.00 1.00 pp Flow (yph) 79 1.0 1.11 1.11 1.10 pp Flow (yph) 79 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	e Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
ted 0.95 1.00 1.00 0.95 1.00 w (perm) 1770 1583 3539 1583 1770 3539 fraction (ph) 770 1583 3539 1583 1770 3539 fraction (ph) 79 46 1592 1992 0.92 0.92 dup Flow (uph) 79 46 1592 116 57 890 up Flow (uph) 79 46 1592 110 57 890 up Flow (uph) 79 47 16 16 0.00 up Flow (uph) 79 41 16 16 0.00 up Flow (uph) 79 41 16 16 0.00 up Flow (uph) 79 41 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.00	0.85	1.00	0.85	1.00	1.00	
w (prod) 1770 1583 3559 1583 1770 3539 w (prod) 1770 1583 3559 1583 1770 3559 w (perm) 1770 1583 3559 1583 1770 3559 d (prin) 79 44 1592 109 092 092 d (prin) 79 44 1592 100 57 890 up Flow (prin) 79 44 1592 100 57 890 up Flow (prin) 79 44 1592 100 80 90 p Prot Perm NA Perm Prot NA Green, G (s) 11.1 11.1 1099 1099 152 129.3 Green, G (s) 11.1 11.1 1099 1099 152 129.3 Green, G (s) 11.1 11.1 1099 1099 152 129.3 Green, G (s) 11.1 11.1 11.1 1099	rotected	0.95	1.00	1.00	1.00	0.95	1.00	
ted 0.95 1.00 1.00 1.00 1.00 0.92 1.00 1.00 1.00 1.00 1.00 0.92 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	. Flow (prot)	1770	1583	3539	1583	1770	3539	
ribacion (yeth) 1770 1583 3559 1583 1770 3559 ribacion (yeth) 79 48 1592 116 57 890 up Flow (yeth) 79 43 1592 116 57 890 up Flow (yeth) 79 43 1592 100 57 890 up Flow (yeth) 79 43 1592 100 57 890 Planses 4 2 2 1 6 57 890 Planses 4 2 2 1 6 57 890 Planses 4 2 2 1 6 57 890 Green, G (s) 11.1 11.1 1099 1099 152 1293 Green, G (s) 11.1 11.1 1099 1099 152 1293 Green, G (s) 11.1 11.1 1099 1099 152 1293 Green, G (s) 11.1 11.1 1099 1099 152 1293 Green, G (s) 11.1 11.1 1099 1099 152 1293 Green, G (s) 11.1 11.1 1099 1099 162 1293 Green, G (s) 11.1 11.1 1099 1099 162 1293 Alersion (s) 2.0 2.0 38 38 2.0 3.5 Cap (wh) 130 11.2 2592 1159 179 3050 Perm 0.004 0.00 0.045 0.03 0.25 Perm 0.010 0.22 0.00 1.27 2.54 Fer E E A A A A A A A A A A A A A A A A A	ermitted	0.95	1.00	1.00	1.00	0.95	1.00	
rfactor, PHF 092 092 092 092 092 092 091 091 091 091 092 092 092 092 092 092 092 092 092 092	. Flow (perm)	1770	1583	3539	1583	1770	3539	
(vph) 79 46 1592 116 57 890 eduction (vph) 79 46 1592 10 57 890 abdeficion (vph) 79 3 1522 10 57 890 Phases 4 2 10 6 0 0 Phases 4 2 1 6 1 6 Clear, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 109.9	c-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
up Flow (vph) 0 43 1592 100 0 up Flow (vph) 79 3 1592 100 57 890 up Flow (vph) 79 3 152 100 6 0 Phases 4 2 1 6 6 0 0 Phases 4 2 1 1 109 109 152 1293 Genen (G) 11.1 11.1 1099 1099 152 1293 Genen (G) 11.1 11.1 1099 1099 152 1293 Genen (G) 11.1 11.1 1099 1099 152 1293 Genen (G) 11.1 11.1 11.1 1099 1099 152 1293 Genen (G) 11.1 11.1 11.1 1099 1099 1152 1293 Alersion (S) 1 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03	Flow (vph)	79	46	1592	116	22	890	
up Flow (vgh) 79 3 1592 100 57 890 by Passes 4 2 1 6 Phases 4 2 1 6 Phases 4 2 1 6 Phases 111 111 1099 152 1293 Geen, G (s) 111 111 1099 162 1293 Geen, G (s) 111 111 1099 162 1293 Geen, G (s) 111 111 1099 1699 152 1293 Geen, G (s) 111 111 1199 1099 152 1293 Geen, G (s) 111 119 1099 152 1293 Akersion (s) 2 2 3 3 3 6 Akersion (s) 4 4 5.0 6.0 6.2 1.9 Cap (wh) 1.30 1.1 2.54 1.9 1.0 1.2 2.54	R Reduction (vph)	0	43	0	16	0	0	
Photases	: Group Flow (vph)	79	3	1592	100	22	890	
Phases	Type	Prot	Perm	M	Perm	Prot	NA	
Phases 2 2 2 2 2 2 2 2 2	ected Phases	4		2		-	9	
Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Geen, G (s) 11.1 11.1 109.9 109.9 15.2 129.3 Geen, g (s) 11.1 11.1 109.9 109.9 15.2 129.3 Geen, g (s) 11.1 11.1 109.9 109.9 15.2 129.3 Geen, g (s) 11.1 11.1 10.9 109.9 15.2 129.3 Geen, g (s) 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.	nitted Phases		4		2			
Green, g(s) 11.1 11.1 11.99 15.2 129.3 Green, g(s) 0.07 0.07 0.07 0.07 0.07 0.07 Atersion (s) 2.0 2.0 3.8 3.8 2.0 3.5 Atersion (s) 2.0 2.0 3.8 3.8 2.0 3.5 Atersion (s) 2.0 3.8 3.0 3.5 3.5 Atersion (s) 2.0 3.8 3.0 3.5 3.5 Perm 0.00 0.00 0.00 0.05 0.05 9.0 Perm 0.61 0.03 0.01 0.02 0.00 0.05 0.05 9.0 Perm 0.01 0.07 0.01 0.07 0.07 0.07 0.09 0.05 0.09 0.05 0.09 0.02 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 0.00 0.00 <td< td=""><td>ated Green, G (s)</td><td>11.1</td><td>11.1</td><td>109.9</td><td>109.9</td><td>15.2</td><td>129.3</td><td></td></td<>	ated Green, G (s)	11.1	11.1	109.9	109.9	15.2	129.3	
giC Ratio 0.07 0.07 0.73 0.10 0.86 Filme(s) 44 45 50 50 44 5.2 Cap (vph) 2.0 3.8 3.8 2.0 3.5 Cap (vph) 0.04 0.04 0.04 0.05 Prof (vph) 0.00 0.00 0.05 Perm 0.01 0.03 0.05 Perm 0.04 0.03 0.05 Perm 0.05 0.04 0.05 Perm 0.05 0.04 0.05 Perm 0.05 0.05 Perm 0.05 0.05 Perm 0.06 0.05 Perm 0.06 0.05 Perm 0.07 0.01 0.00 Perm 0.06 0.07 0.01 Perm 0.07 0.01 0.03 0.05 Perm 0.08 0.07 Perm 0.06 0.07 Perm 0.08 0.05 Perm 0.04 0.03 Perm 0.05 0.05 Perm 0.05 0.	tive Green, g (s)	11.1	11.1	109.9	109.9	15.2	129.3	
Filme(s)	ated g/C Ratio	0.07	0.07	0.73	0.73	0.10	98.0	
All Part	rance Time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
Cap (wh) 130 117 2592 1159 179 3050 Pord c0.04 c0.45 c0.35 c0.25 Perem c0.00 c0.66 c0.03 c0.25 Perem c0.00 c0.25 c0.03 c0.25 Perem c0.00 c0.00 c0.2 c0.00 Perem c0.01 c0.00 c0.2 c0.00 Perem c0.01 c0.00 c0.2 c0.00 Perent c0.01 c0.00 c0.2 c0.00 c0.2 Delay (s) c9.7 c0.1 c0.0 c0.2 c0.00 c0.2 Delay (s) c9.7 c0.1 c0.0 c0.7 c0.1 c0.2 LOS E A A E A A LOS E A A A A A Do control Delay c c c c c c c LOS c c<	cle Extension (s)	2.0	2.0	3.8	3.8	2.0	3.5	
Prof. 60.04 60.45 60.03 60.25 Perm	Grp Cap (vph)	130	117	2592	1159	179	3050	
Perm 0.00 0.06 100 0.06 0.02 0.29 Pelay, d1 67.3 64.4 97 57 62.6 1.9 On Factor 1.00 1.00 0.22 0.00 1.27 25.4 Isl Delay, d2 5.4 0.0 0.7 0.1 0.3 0.2 Fervice E A A B A A Delay (s) 69.7 E A A A A LOS E A A A A A A Condrol Delay 6.9.7 E A <	atio Prot	c0.04		c0.45		0.03	c0.25	
10	atio Perm		0.00		90.0			
belay, d1 67.3 64.4 9.7 5.7 6.26 1.9 on Factor 1.00 1.00 0.2 0.01 1.7 2.54 lat Delay, d2 5.4 0.0 0.7 0.1 0.3 0.2 service E E A E A E A Delay, (s) 69.7 2.6 9.6	atio	0.61	0.03	0.61	0.09	0.32	0.29	
on Factor 1.00 1.00 0.22 0.00 1.27 2.54 Ial Delay, d. 2. 5.4 0.0 0.7 0.1 0.3 0.2 Fervice E E A A E A B A B B A B B B B B B B B B	orm Delay, d1	67.3	64.4	6.7	2.7	62.6	1.9	
Ital Delay, d2	ression Factor	1.00	1.00	0.22	0.00	1.27	2.54	
12.7 64.5 2.8 0.1 80.0 5.0	mental Delay, d2	5.4	0.0	0.7	0.1	0.3	0.2	
E E A A E A A E A A B A B B A B B B B B	y (s)	72.7	64.5	2.8	0.1	80.0	5.0	
69.7 2.6 9.6 E A A A I A A A I Capacity ratio 0.58 Sum of fost time (s) Utilization 55.3% ICU Level of Service 15 150 to 150	l of Service	ш	ш	⋖	V	ш	Α	
E A A A A A A A A A A A	oach Delay (s)	69.7		5.6			9.6	
HCM 2000 Level of Service Capacity ratio 0.58 Capacity ratio 0.58 Capacity ratio 150.0 Sum of lost time (s) Utilization 55.3% ICU Level of Service 15 15 15 15 15 15 15 1	oach LOS	ш		A			A	
How How How Service Capacity ratio 0.58 Capacity ratio 0.58 Camor I.50 Sum of lost time (s) I.50 Sum of lost time (s) I.50 I.51 I.52 I.5	Section Summary							
Capacity ratio 0.58 h (s) 1500 Sum of lost time (s) Utilization 55.3% ICU Level of Service 15	I 2000 Control Delay			8.0	ĭ	:M 2000 I	evel of Service	
h (s) 150.0 Sum of lost time (s) Utilization 55.3% ICU Level of Service 15	1 2000 Volume to Capacit	y ratio		0.58				
Utilization 55.3% ICU Level of Service 15 ICU Level of Service 10	ated Cycle Length (s)			150.0	S	m of lost	time (s)	13.8
15	section Capacity Utilization	L.		55.3%	⊇	U Level o	f Service	В
Critical Lane Group	ysis Period (min)			15				
	Critical Lane Group							

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Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	†	ţ	€	—	۶	→	
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	233	115	42	1157	37	991	
v/c Ratio	0.87	90.0	0.47	0.47	0.44	0.40	
Control Delay	82.4	37.6	6.96	10.0	17.1	12.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	
Total Delay	82.4	37.6	6.96	10.0	77.1	12.9	
Queue Length 50th (ft)	197	œ	43	73	38	207	
Queue Length 95th (ft)	287	59	m79	420	m58	277	
Internal Link Dist (ft)	303	271		804		461	
Tum Bay Length (ft)			92		20		
Base Capacity (vph)	336	310	119	2485	107	2449	
Starvation Cap Reductn	0	0	0	0	0	820	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	69.0	0.05	0.35	0.47	0.35	0.61	
Intersection Summary							

Wolume for 95th percentile queue is metered by upstream signal

Synchro 9 Report Page 34 KHA Oueues

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		×	4₽		¥	4₽	
Traffic Volume (vph)	100	∞	106	∞	_	2	39	1058	9	34	839	73
Future Volume (vph)	100	∞	106	∞	-	2	39	1058	9	34	836	73
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	2.0		4.4	2.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Fit		0.93			0.95		1.00	1.00		1.00	0.99	
Fit Protected		86.0			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1699			1727		1770	3536		1770	3497	
Fit Permitted		0.84			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1466			1438		1770	3536		1770	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	6	115	6	-	2	42	1150	7	37	912	79
RTOR Reduction (vph)	0	22	0	0	4	0	0	0	0	0	က	0
Lane Group Flow (vph)	0	208	0	0	11	0	42	1157	0	37	988	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		00			4		-	9		2	2	
Permitted Phases	∞			4				9				
Actuated Green, G (s)		24.8			24.8		8.9	104.6		6.3	104.1	
Effective Green, g (s)		24.8			24.8		8.9	104.6		6.3	104.1	
Actuated g/C Ratio		0.17			0.17		0.05	0.70		0.04	69:0	
Clearance Time (s)		4.9			4.9		4.4	2.0		4.4	2.0	
Vehicle Extension (s)		2.0			2.0		2.0	3.7		2.0	3.7	
Lane Grp Cap (vph)		242			237		80	2465		74	2426	
v/s Ratio Prot							c0.02	c0.33		0.02	0.28	
v/s Ratio Perm		c0.14			0.01							
v/c Ratio		98.0			0.05		0.53	0.47		0.50	0.41	
Uniform Delay, d1		6.09			52.6		70.0	10.2		70.3	8.6	
Progression Factor		1.00			1.00		1.20	0.84		0.95	1.13	
Incremental Delay, d2		24.0			0.0		2.5	9.0		1.5	0.4	
Delay (s)		84.9			52.7		8.98	9.1		68.1	11.5	
Level of Service		ш			۵		ш	V		ш	В	
Approach Delay (s)		84.9			52.7			11.8			13.5	
Approach LOS		ш			٥			В			В	
Intersection Summary												
HCM 2000 Control Delay			19.7	H	M 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	y ratio		0.54									
Actuated Cycle Length (s)			150.0	Su	m of lost	Sum of lost time (s)			14.3			
Intersection Capacity Utilization	=		54.9%	⊴	U Level o	f Service			⋖			
Analysis Period (min)			15									
 Critical Lane Group 												

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Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

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Lane Group	WBT	NBT	SBL	SBT	
Lane Group Flow (vph)	87	1198	162	891	
v/c Ratio	0.36	0.53	69.0	0:30	
Control Delay	4.3	5.7	42.4	1.3	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	4.3	5.7	42.4	1.3	
Queue Length 50th (ft)	0	88	82	Ξ	
Queue Length 95th (ft)	4	m105	m105 m#133	70	
Internal Link Dist (ft)	514	478		804	
Tum Bay Length (ft)			06		
Base Capacity (vph)	208	2246	236	2993	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.17	0.53	69:0	0.30	
Intersection Summary					
# 95th percentile volume exceeds capacity, queue may be longer	xceeds cal	pacity, q	nene may	be longer.	
Queue shown is maximum after two cycles.	m after two	cycles.		1	
m Wolumo for 05th normalic grant is motored by undersom signal	O COLO	- motoro	to an inch	lounio moo	

Synchro 9 Report Page 36 KHA Queues

Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

ક્ષ (મુ (મુ												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
		4			4		r	₩.		۴	4₽	
	0	0	0	32	0	45	0	1020	82	149	820	0
	0	0	0	32	0	45	0	1020	82	149	820	0
_	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.9			2.0		4.4	2.0	
Lane Util. Factor					1.00			0.95		1.00	0.95	
Fit					0.92			0.99		1.00	1.00	
Flt Protected					86:0			1.00		0.95	1.00	
Satd. Flow (prot)					1684			3500		1770	3539	
Flt Permitted					98.0			1.00		0.95	1.00	
Satd. Flow (perm)					1478			3500		1770	3539	
Peak-hour factor, PHF 0.	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	38	0	46	0	1109	86	162	891	0
RTOR Reduction (vph)	0	0	0	0	83	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	4	0	0	1193	0	162	891	0
Turn Type				Perm	NA		Prot	Ν		Prot	NA	
Protected Phases		4			4		_	9		2	2	
Permitted Phases	4			4								
Actuated Green, G (s)					3.6			47.1		10.0	61.5	
Effective Green, g (s)					3.6			47.1		10.0	61.5	
Actuated g/C Ratio					0.05			0.63		0.13	0.82	
Clearance Time (s)					4.9			2.0		4.4	2.0	
Vehicle Extension (s)					2.0			3.2		2.0	3.2	
Lane Grp Cap (vph)					20			2198		236	2901	
v/s Ratio Prot								c0.34		c0.09	0.25	
v/s Ratio Perm					00.00							
v/c Ratio					90:0			0.54		69.0	0.31	
Uniform Delay, d1					34.1			7.9		31.0	1.6	
Progression Factor					1.00			0.64		0.00	99.0	
Incremental Delay, d2					0.1			8.0		0.9	0.3	
Delay (s)					34.2			5.9		33.8	1.3	
Level of Service					ပ			V		ပ	⋖	
Approach Delay (s)		0.0			34.2			5.9			6.3	
Approach LOS		4			ပ			A			⋖	
Intersection Summary												
HCM 2000 Control Delay			7.1	Н	HCM 2000 Level of Service	Level of S	ervice		A			
HCM 2000 Volume to Capacity ratio	ţ.		0.54									
Actuated Cycle Length (s)			75.0	S	Sum of lost time (s)	time (s)			14.3			
Intersection Capacity Utilization			55.7%	⊇	ICU Level of Service	f Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

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Balboa Transit Station 20: Mission Bay Dr & Rosewood St

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	,	-	۶	•	
Lane Group	WBL	NBT	SBL	SBT	
Lane Group Flow (vph)	28	1386	21	2384	
v/c Ratio	0.18	0.32	0.14	0.73	
Control Delay	18.5	3.5	56.6	6.4	
Queue Delay	0.0	0.0	0.0	0.1	
Total Delay	18.5	3.5	56.6	6.5	
Queue Length 50th (ft)	2	0	6	99	
Queue Length 95th (ft)	22	132	m10	m444	
Internal Link Dist (ft)	221	096		526	
Tum Bay Length (ft)			09		
Base Capacity (vph)	368	4350	152	3253	
Starvation Cap Reductn	0	0	0	75	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	80.0	0.32	0.14	0.75	
International Contraction					
Intersection Summary					
 Wolume for 95th percentile aueue is metered by upstream signal. 	tile aueue is	meterec	by upstr	eam signal.	
				2	

Synchro 9 Report Page 38 KHA Queues

Balboa Transit Station

10: Mission Bay Dr & Rosewood St

10: Mission Bay Dr & Rosewood St

																																					A		12.0	O		
→	SBT	*	2193	2193	1900	4.0	0.95	1.00	1.00	3539	1.00	3539	0.92	2384	0	2384	NA	9		64.1	64.1	0.85	4.0	3.0	3024	c0.67		0.79	2.4	2.20	1.1	6.4	Α	9.9	Α		HCM 2000 Level of Service		ime (s)	Service		
<u>ب</u> ر	NBR SBL	y-	26 19		1900 1900	4.0	1.00	1.00	0.95	1770	0.95	1770	0.92 0.92	28 21			Prot	_		3.0	3.0	0.04	4.0	3.0	70	0.01		0.30	35.0	0.82	1.2	29.9	ပ				HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
←	NBT I	4413			_	4.0	0.91	1.00	1.00	2070	1.00	5070	0.92		0 2	0 1384	₹	2		57.1	57.1	0.76	4.0	3.0	3859	0.27		0.36	2.9	1.00	0.3	3.2	A	3.2	A		5.6	0.81	75.0	70.6%	15	
√	WBL WBR	>	5 21		1900 1900	4.0	1.00	0.89	66.0	1642	66.0	1642	0.92 0.92		77	9	Prot	80		2.9	2.9	0.04	4.0	3.0	63	00:00		60.0	34.8	1.00	9.0	35.4	D	35.4	O			ty ratio		on		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fit	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	

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Balboa Transit Station 21: Santa Fe St & Damon Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Perod

																						A	
•	SBR			29	19	0.92	73															of Service	
→	NBT SBT	t t	Stop Stop		125 52	0	136 57	SB 1	130	0	73	-0.30	4.0	0.15	826	7.7	7.7	۷				ICU Level of Service	
√	EBR NBL	K		20 13	20 13		22 14	EB 2 NB 1	22 150	0 14	0	0.05	4.4		1121 795	.3 8.3	8.3	A		8.1	A	26.3%	15
\ \	EBL EB	r	Stop		102	0	111	EB1 EB	111	111	0	0.23 -0.5		0.15 0.0			8.2	A				ion	
	Movement	Lane Configurations	Sign Control	Traffic Volume (vph)	Future Volume (vph)	Peak Hour Factor	Hourly flow rate (vph)	Direction, Lane #	Volume Total (vph)	Volume Left (vph)	Volume Right (vph)	Hadj (s)	Departure Headway (s)	Degree Utilization, x	Capacity (veh/h)	Control Delay (s)	Approach Delay (s)	Approach LOS	Intersection Summary	Delay	Level of Service	Intersection Capacity Utilization	Analysis Period (min)

Balboa Transit Station Horizon Year Adopted Conditions 22: Morena Blvd & Jutland Dr

	>	4	←	4	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	y -	¥.	+	K		4.₩	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	194	70	249	416	2	159	
Future Volume (vph)	194	20	249	416	2	159	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	211	77	271	452	2	173	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	211	22	271	452	63	115	
Volume Left (vph)	211	0	0	0	2	0	
Volume Right (vph)	0	77	0	452	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.07	0.03	
Departure Headway (s)	7.0	2.8	9.6	4.9	6.3	6.2	
Degree Utilization, x	0.41	0.04	0.42	0.62	0.11	0.20	
Capacity (veh/h)	484	571	624	716	544	220	
Control Delay (s)	13.6	7.8	11.5	14.4	8.8	9.6	
Approach Delay (s)	13.1		13.3		9.3		
Approach LOS	В		В		V		
Intersection Summary							
Delay			12.6				
Level of Service			В				
Intersection Capacity Utilization	lion		37.0%	⊇	ICU Level of Service	Service	¥
Analysis Period (min)			15				

Balboa Transit Station	tion	ć			Horizon Year Adopted Conditions
23: Morena Blvd & Costco Dwy	Costco	DWy			IIMING Plan: AM Peak Period
	•	—	٠	→	
Lane Group	WBL	NBT	SBL	SBT	
Lane Group Flow (vph)	165	841	46	315	
v/c Ratio	0.23	0.45	0.17	0.15	
Control Delay	10.8	8.4	18.3	4.2	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	10.8	8.4	18.3	4.2	
Queue Length 50th (ft)	7	38	7	12	
Queue Length 95th (ft)	30	122	33	26	
Internal Link Dist (ft)	195	3170		1658	
Tum Bay Length (ft)			110		
Base Capacity (vph)	2564	2111	566	2862	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	90.0	0.40	0.17	0.11	
Intersection Summary					

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Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 23: Morena Blvd & Costco Dwy

Movement WBI NBF NBF SR SBT Traffic Volume (ym) 74 45 47 44 44 44 Traffic Volume (ym) 97 55 657 117 42 290 Traffic Volume (ym) 97 55 67 117 42 290 deal Flow (prink) 97 55 117 42 290 deal Flow (prink) 97 100 1900 1900 1900 finate Unit Fador 097 095 100 095 100 finate Coup Flow (print) 3311 349 170 3339 14 14 12 20 0 0 0 0 0 0 0 0 0 0	MBI WBR S	N 6		\$\$81 \$\frac{1}{4}\$\$ \$290 \$290 \$290 \$290 \$0000 \$0000 \$000 \$000 \$0000 \$000 \$000 \$000 \$000 \$000 \$000 \$000 \$0000 \$000 \$000
\$5 657 117 42 290 \$5 657 117 42 290 \$5 657 117 42 290 \$5 657 117 42 290 \$5 67 117 42 290 \$5 67 117 42 290 \$5 67 117 42 290 \$5 67 190 1900 1900 \$5 67 44 5.5 \$6 098 100 0.95 \$6 098 100 0.95 \$6 099 0.99 \$6 074 127 46 315 \$6 0 0 0 0 0 \$7 14 127 46 315 \$6 0 714 127 46 315 \$6 0 714 12 200 \$1 44 14 12 200 \$1 44 14 14 14 14 14 14 14 14 14 14 14 14	(s) 44 (s) 47 (b) 75 (b) 75 (c) 75	1.		↑↑ 2220 2220 2220 202 203 203 233 315 315 6 6 6 6 6 7 7 8 7 8 8 8 8 9 9 8 9 9 8 9 9 8 9 9 9 9
55 657 117 42 290 1900 1900 1900 1900 1900 1900 1900 19	97 55 1900 1900 195 4.9 190 1900 1900 1900 1900 1900 1900 190	1 - 1 - 6 - 1 - 1 - 1 - 1		290 290 290 290 290 200 200 200 200 200
55 657 117 42 290 1900 1900 1900 1900 55 44 4 55.5 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 3459 1770 3539 1.00 0.95 1.00 3459 1770 3539 0.92 0.92 0.92 0.92 0.07 1.07 0.92 0.92 0.0 20 0.92 0.92 0.92 0.0 20 0.92 0.92 0.92 0.0 20 0.92 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.92 0.0 20 0.92 0.0	97 55 1900 1900 4.9 0.95 0.97 3311 3311 3311 113 0 ph) 52 0 ph) 113 0 Prof 8 8 8 8 (s) 4,4 s) 0.13 0.13 1.10 0.27 1.10	- 62		990 990 990 990 990 00 00 00 10 115 115 115 0 0 0 0 0 0 0
1900	1900 1900 4,9 10,97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.	86 100 100 100 100 100 100 100 100 100 10		9900 5.5 5.0 5.0 5.0 5.3 5.3 5.3 5.3 3.1 5.3 5.0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
5.5 4.4 5.5 0.95 1.00 0.95 0.96 1.00 0.95 0.98 1.00 1.00 3.459 1.00 1.00 0.92 0.92 0.92 0.92 0.02 0.92 0.92 0.92 0.0 0 0 0 0 0 821 0 46 315 0 0 0 0 0 0 0 821 0 46 315 0 0 0 0 0 0 0 14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 0.4 315 0.5 4.4 5.5 5.5	4.9 0.97 0.97 0.95 0.97 0.95 0.97 3.311 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	90 -		5.5. 195 000 000 000 000 315 315 315 000 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
0.95 1.00 0.95 0.98 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.03 1.70 3539 0.09 0.0 0 0 0 0.0 1.1 1.2 0.0 0.0 1.4 1.2 20.0 0.5 2 8 2 8 4 5.5 0.5 2 8 4 5.5 0.5 3.6 7 0.0 0.5 3.6 7 0.0 0.5 3.8 4 0.8 0.5 3.8 3.5 0.5 3.8 4 0.8 0.5 3.8 3.5 0.5 3.8 4 0.8 0.5 3.8 4 0.8 0.5 3.8 5 0.0 0.5 3.8 4 0.8 0.5 3.8 5 0.0 0	(s) 44 (s) 44 (s) 44 (s) 44 (s) 60 (s) 74 (s) 44 (s) 60 (s) 60 (s) 60 (s) 74 (s) 74 (s) 74 (s) 74 (s) 60 (s) 74 (s) 74 (s) 74 (s) 74 (s) 60 (s) 74 (s) 74	10.00		995 00 00 00 00 00 335 0 0 0 0 0 0 0 0 0 0
0.98 1.00 1.00 3.459 1.00 1.00 3.459 1.00 3.539 1.00 0.95 1.00 3.459 1.770 3.539 0.92 0.92 0.92 0.92 0.0 70 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 821 0.0 46 315 0.0 821 0.0 46 315 0.0 821 0.0 0.0 0.1 14.4 1.2 20.0 1.44 1.2 20.0 1.44 1.2 20.0 1.44 1.2 20.0 1.44 1.2 20.0 0.41 0.03 0.57 0.55 44 5.5 2.8 2.0	0.95 0.97 3311 3311 0.97 0.97 3311 0.92 0.92 0.92 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13	9:0		0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
100 0.95 1.00 3.459 1.00 3.459 1.770 3539 1.00 0.95 1.00 0.92 0.92 0.92 0.92 60 714 1.27 46 315 0 0 20 0 0 0 0 821 0 46 315 0 0 821 0 46 315 0 144 1.2 200 1.44 1.2 200 1.44 1.2 200 1.44 1.2 200 0.44 0.03 0.57 0.55 2.8 0.55 4.4 5.5 0.56 0.03 0.57 0.75 0.15 0.58 4 5.5 0.59 0.09 0.59 0.09 0.59 0.09 0.50 0.00 0.00 0.50 0.00 0.00	(c) 27 (c	9:0		539 539 539 539 315 315 0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 7 8 8 8 8
3459 1770 3559 1092 092 092 092 092 0 092 092 092 092 0 0 714 127 46 315 0 0 821 0 46 315 0 0 821 0 46 315 0 144 12 200 144 12 200 144 12 200 041 0.03 0.99 1431 61 2033 0.24 0.03 0.09 0.57 0.75 0.15 7.8 16.7 3.5 1.00 1.00 1.00 0.5 36.7 0.05 8.4 5.3 3.5 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	3311 9311 977 971 971 972 973 974 975 975 975 975 975 975 975 975	9:0		339 339 339 315 0 0 6 6 6 6 6 6 6 6 6 6 6 6 6
1400 0.92 1.00 3450 0.92 1.00 360 714 127 46 315 0 20 0 0 0 0 0 821 0 46 315 0 821 0 46 315 1 44 12 20.0 144 14 12 20.0 144 12 20.0 144 14 12 20.0 144 14 12 20.0 144 14 12 20.0 144 14 14 12 20.0 144 14 12 20.0 144 14 14 12 20.0 144 14 14 14 12 20.0 144 14 14 14 14 14 14 14 14 14 14 14 14	(s) 44 (s) 60.03 (s) 7.00 (s) 13.9 13.9	0.0		0.00 5.39 315 0.00 6 6 6 6 6.00 0.00 5.57
3459 1770 3539 60 724 092 092 092 092 60 714 17 46 315 60 821 0 46 315 144 12 200 144 12 200 144 12 200 144 12 200 144 12 200 144 12 200 614 003 657 55 44 55 28 44 55 28 70 03 60.24 60.03 009 60.24 60.03 009 60.24 60.03 009 60.24 78 16,7 3.5 78 16,7 3.5 A D A HCM 2000 Level of Service 652 Sum of lost time (s) 42.1% ICU Level of Service 15	HF 0.92 0.92 (9.00) Ph) 5.2 0 0 0.00 (9.00) Photo Prot B 8 8 8 8 8 9 9 0.00 (9.00) Photo Prot B 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0.0		539 315 315 315 315 000 000 000 557
0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	HF 0.92 0.92 0 ph) 52 0 ph) 113 0 Prot 8 8 4.4 1 5) 4.4 1 5) 0.13 0 4.9 1 6) 2.0 2 60.03 0 70.02 0 13.7 0 13.9 13.9	1,1		192 315 310 NA 6 600 000
60 714 127 46 315 0 20 0 0 0 0 821 0 0 0 121 0 0 0 144 12 200 144 12 200 041 003 057 55 44 5.5 20 20 1431 61 2033 0.024 0.03 0.09 0.057 0.75 0.15 7.8 16.7 3.5 1.00 1.00 0.5 36.7 0.0 8.4 53.3 3.5 A D A 8.4 HCM 2000 Level of Service 0.52 8.4 HCM 2000 Level of Service 0.52 3.48 Sum of lost time (s) 4.21% ICU Level of Service	105 60 ph) 152 0 ph) 133 0 ph) 134 44 ph) Prof 8 8 8 8 44 ph) 444 ph) 444 ph) 449 ph) 20 ph) 20 ph) 20 ph) 418 ph) 20 ph) 20 ph) 20 ph) 30 ph) 418 ph)	-		315 0 315 NA 6 000 000 000 5.57
0 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ph) 52 0 Prot 8 8 8 4 4 1 5) 4.4 1 6) 0.13 0 4.9 0 1.00 0.27 0 1.00 0.1 1.39 0.1 1.39 0.1			0 NA 6 6 0:00 0:00 5.57
0 821 0 46 315 NA Proi NA 1 1 6 144 12 200 144 12 200 041 12 200 041 12 200 051 052 28 28 4.4 5.5 28 2.8 6.03 009 0.57 0.75 0.15 78 16.7 3.5 1.00 1.00 1.00 0.5 38.7 0.0 8.4 5.3 3.5 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	(s) Prot 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9			315 NA 6 000 000 557 5.5
NA Prof NA 14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 14.1 1.2 20.0 14.1 1.2 20.0 14.1 1.2 20.0 14.1 1.2 20.0 14.1 1.2 20.0 15.5 2.8 2.0 2.8 2.8 2.0 2.8 2.8 2.0 2.8 14.31 6.1 20.33 20.24 0.03 0.09 0.57 0.75 0.15 1.00 1.00 0.5 36.7 0.0 0.5 36.7 0.0 0.5 36.7 0.0 0.6 3.4 53.3 3.5 4 B.4 53.3 3.5 4 A D A A 8.4 F.M. 2000 Level of Service 0.52 34.8 Sum of lost time (s) 15.1 1.2 20.0 16.2 20.0 17.2 20.0 18.4 A D A A 18.5 20.0 18.6 20.0 18	(s) 4.4 1 1 2.0 2.0 0.13 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.0	42 44-108		6 6 0.00 0.00 0.57 5.5
2 1 6 14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 04.1 0.03 0.57 2.5 4.4 5.5 2.8 2.0 2.0 2.0 24 0.03 0.057 0.75 0.15 7.8 16.7 3.5 1.00 1.00 0.5 36.7 0.0 8.4 53.3 3.5 A D A 8.4 HCM 2000 Level of Service 0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	(s) 4.4 1 1 4.4 1 1 6.1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 44-108		6 0.00 0.00 0.57 5.5
14.4 1.2 20.0 14.4 1.2 20.0 14.4 1.2 20.0 0.41 0.03 0.57 2.8 2.0 2.8 2.8 2.0 2.8 2.4 2.0 3.8 2.4 2.0 3.5 2.5 4.4 5.5 2.8 4 5.3 3.5 4.2 1.00 0.5 3.47 0.0 0.5 3.47 0.0 0.5 3.47 0.0 0.5 3.47 0.0 0.5 3.47 0.0 0.5 3.48 A D A 0.4 HCM 2000 Level of Service 0.5 2 34.8 Sum of lost time (s) 1.5 1.00 0.5 2 In the control of Service 0.5 3.4 1.00 0.5 2 In the control of Service 0.5 3.4 1.00 0	(s) 4.4 1 1 2.0 0.13 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	4 4 - 10 80		0.0 0.0 1.57 5.5
14.4 1.2 20.0 14.4 1.2 20.0 0.41 0.03 0.57 5.5 4.4 5.5 2.8 2.0 2.8 2.9 2.0 2.8 1.431 6.1 2033 c0.24 c0.03 0.09 0.57 0.75 0.15 7.8 16.7 3.5 1.00 1.00 1.00 0.5 36.7 0.0 8.4 5.3 3.5 A D A A ON 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 1.5 ICU Level of Service	(5) 4.4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 4 - 5 8		0.0 0.0 1.57 5.5
14.4 1.2 20.0 6.41 0.043 0.57 5.5 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0.24 0.03 0.09 0.57 0.75 0.15 1.00 1.00 1.00 0.5 3.67 0.0 8.4 53.3 3.5 A D A 8.4 53.3 3.5 A D A 8.4 S3.3 3.5 A D A 8.5 D A 8.	s) 4.4 1 1 4.9 4.9 5.0 2.0 2.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	4 - 2 8		.0.0 1.57 5.5
0.41 0.03 0.57 5.5 4.4 5.5 2.8 2.0 2.0 3.3 2.0 2.0 3.3 2.2.4 0.03 0.09 2.0.57 0.75 0.15 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 16.7 3.5 7.8 1.00 1.00 0.5 3.6 7 8 4 9.8 A A A A A A A A A A A A A A A A A A A	0.13 C 4.9 4.9 4.9 2.0 2.0 2.0 2.7 C 2.1 13.7 1.00 1.3.9 1.3.9 1.3.9 1.3.9	- 10 80).57 5.5
2.8	4.9 2.0 4.9 00.03 0.27 13.7 13.9 13.9 13.9	LO 80		5.5
2.8 2.0 2.8 1431 61 2033 60.24 6.0.03 0.09 60.57 0.75 0.15 7.8 16.7 3.5 1.00 1.00 1.00 6.5 38.7 0.0 8.4 53.3 3.5 A D A 8.4 9.8 A D A 8.4 HCM 2000 Level of Service 6.52 34.8 Sum of lost time (s) 15.1 CU Level of Service 15.1 Sum of lost time (s) 16.2 Sum of lost time (s) 17.2 Sum of lost time (s) 18.3 Sum of lost time (s) 19.4 HCM 2000 Level of Service	20 448 60.03 0.27 13.7 1.00 d2 0.1 13.9	8	4.4	
1431 61 2033 60.24 60.03 0.09 0.57 0.75 0.15 7.8 16.7 3.5 1.00 1.00 1.00 0.5 36.7 0.0 8.4 53.3 3.5 A D A 8.4 9.8 A D A 8.4 9.8 A D A 8.4 10.00 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	418 0.03 0.03 0.27 0.27 1.30 0.01 1.39 1.39 1.39		2.0	2.8
0.57 0.75 0.75 0.75 0.75 0.75 0.75 0.75	60.03 C C C C C C C C C C C C C C C C C C C	_		033
0.57 0.75 0.15 7.8 16.7 3.5 1.00 1.00 1.00 0.5 38.7 0.0 8.4 53.3 3.5 A D A A 9.8 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 1.5 15 15 15 15 15 15 15 15 15 15 15 15 15	0.27 13.7 1.00 0.1 13.9 13.9	4		60'
0.57 0.75 0.15 7.8 16.7 3.5 1.00 1.00 0.5 36.7 0.0 8.4 53.3 3.5 A D A 8.4 9.8 A A A 9.8 A HCM 2000 Level of Service 0.52 34.8 Sum of lost time (s) 15	0.27 13.7 1.00 d2 0.1 13.9 B 13.9			
7.8 16.7 3.5 1.00 1.00 1.00 0.5 36.7 0.0 8.4 53.3 3.5 A D A 8.4 9.8 A A A A A A A A A A A A A A A A A A A	13.7 1.00 d2 0.1 13.9 B B	7		1.15
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 d2 0.1 13.9 B	8	16.7	3.5
9.5 36.7 0.0 8.4 53.3 3.5 A D A P.8 8.4 9.8 A D A A 9.8 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	yy, d2 0.1 13.9 B (s) 13.9	0	1.00	.00
8.4 53.3 3.5 A D A 8.4 9.8 A A A A A HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	13.9 B 13.9	2	36.7	0.0
A D A 84 9.8 A A A A A 9.8 A A A A A A A A A A A A A A A A A A A	B (s) 139	4	53.3	3.5
9.8 A 9.8 A 9.8 A 9.8 A 9.8 A 9.8 A 9.4 HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	13.9	_	٥	Α
A A A A A A A A A A B A B A B A B A B A	(6)	4		9.8
9.4 HCM 2000 Level of Service 0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	В			А
9.4 HCM 2000 Level of Service 0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	ummary			
0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15			M 2000 Le	el of Service
34.8 Sum of lost time (s) 42.1% ICU Level of Service 15		2		
42.1% ICU Level of Service 15			n of lost tin	
			Level of S	
		2		

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Balboa Transit Station 24: Morena Blvd & Avati Dr

Horizon Year Adopted Conditions
Timing Plan: AM Peak Period

	-	/	-	•	۶	•	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	251	37	874	132	18	388	
v/c Ratio	0.34	0.10	0.53	60.0	0.09	0.22	
Control Delay	15.4	7.6	9.5	0.4	20.6	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	7.6	9.5	0.4	20.6	5.5	
Queue Length 50th (ft)	19	0	21	0	က	18	
Queue Length 95th (ft)	62	19	147	7	22	39	
Internal Link Dist (ft)	317		2205			3170	
Tum Bay Length (ft)		135		115	120		
Base Capacity (vph)	2693	1251	3219	1572	195	3181	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.03	0.27	80.0	0.00	0.12	
Intersection Summary							
illeiseululi Summary							

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Balboa Transit Station Horizon Year Adopted Conditions 24: Morena Blvd & Avati Dr Timing Plan: AM Peak Period

																																					A		15.3
→	SBT	#	357	357	1900	%0	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	388	0	388	NA	2	2	22.8	22.8	0.55	5.7	5.0	1958	3	0.20	4.6	1.00	0.1	4.7	A	8.0	Α		Service		
ၨ	SBL	-	17	17	1900		4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	18	0	18	Prot	2		9.0	9.0	0.01	4.4	2.0	25	0.0	0.72	20.2	1.00	58.2	78.5	ш				HCM 2000 Level of Service		Sum of lost time (s)
•	NBR	*-	121	121	1900		4.9	1.00	0.85	1.00	1607	1.00	1607	0.92	132	21	81	vo+mq	7	9	25.3	25.3	0.61	4.9	2.0	986	0.02	0.08	3.2	1.00	0.0	3.2	⋖				:M 2000		m of lost
•	NBT	‡	804	804	1900	-3%	0.9	0.95	1.00	1.00	3592	1.00	3592	0.92	874	0	874	NA	9		17.5	17.5	0.42	0.9	5.2	1525	to.24	0.57	0.6	1.00	6:0	6.6	V	0.6	A		H		S
F	NBU	₽	0	0	1900									0.92	0	0	0	Prot	-																		6.7	0.52	41.2
4	WBR	*-	34	34	1900		4.9	1.00	0.85	1.00	1662	1.00	1662	0.92	37	8	7	Prot	7		7.8	7.8	0.19	4.9	2.0	314	0.00	0.00	13.6	1.00	0.0	13.6	В						
>	WBL	F	231	231	1900	-10%	4.9	16:0	1.00	0.95	3605	0.95	3605	0.92	251	0	251	Prot	7		7.8	7.8	0.19	4.9	2.0	682	70.00	0.37	14.6	1.00	0.1	14.7	В	14.5	В			/ ratio	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Grade (%)	Total Lost time (s)	Lane Util. Factor	##	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ralio Priot	v/c.Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	 Actuated Cycle Length (s)

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Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Horizon Year Adopted Conditions Timing Plan: AM Peak Perlod

*	SBR	446	0.28	0.4	0.0	0.4	0	0		100	1583	0	0	0	0.28		
→	SBT	222	0.0	3.8	0.0	3.8	7	20	2205		2357	0	0	0	60.0		
•	NBR	304	0.19	0.3	0.0	0.3	0	0		120	1583	0	0	0	0.19		
+	NBT	1246	0.53	5.9	0.0	5.9	9	127	933		2357	0	0	0	0.53		
>	EBR	164	0.36	5.5	0.0	5.5	0	56		20	791	0	0	0	0.21		
•	EBL	86	0.27	14.5	0.0	14.5	17	42			782	0	0	0	0.13		
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	:	Intercontion Commons

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Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Movement EBI EBI EBI MBI	nt nfigurations	FR	FCL										
March Marc	figurations	ומר	EBI	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
99 0 151 0 0 0 0 1146 280 0 204 1900 1900 1900 1900 1900 1900 1900 1900		*		*					‡	*-		*	*-
90 0 151 0 0 0 0 1746 280 0 204 190 1900 1900 1900 1900 1900 1900 1900	lume (vph)	06	0	151	0	0	0	0	1146	280	0	204	410
1,00 1,00	lume (vph)	96	0 0	151	0	0	0	0	1146	780	0	204	410
100 100	time (s)	4.0	26	4 0	200	200	006	0061	4 0	4 0	0061	4.0	4.0
100	Factor	1.00		1.00					0.95	1.00		0.95	1.00
1700 100		1.00		0.85					1.00	0.85		1.00	0.85
1770 1583 3539 1583 3539 1583 3539 1770 1583 1600 1700	ted	0.95		1.00					1.00	1.00		1.00	1.00
100 100	v (prot)	1770		1583					3539	1583		3539	1583
1770 1883 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583 3539 1583	ted	0.95		1.00					1.00	1.00		1.00	1.00
F 092 092 092 092 092 092 092 092 092 092	w (perm)	1770		1583					3539	1583		3539	1583
98 0 164 0 0 0 0 1246 304 0 222 1) 98 0 137 0 0 0 0 1246 304 0 222 1) Perm Perm NA Free NA Free NA Free NA Free NA STA STA STA STA STA STA STA STA STA ST	ir factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1) 0 0 137 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(hdv)	86	0	164	0	0	0	0	1246	304	0	222	446
1) 98 0 27 0 0 0 1246 304 0 222 4 4 4 4 4 4 6 1 1 1 <th< td=""><td>duction (vph)</td><td>0</td><td>0</td><td>137</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></th<>	duction (vph)	0	0	137	0	0	0	0	0	0	0	0	0
Perm Perm NA Free NA 4 4 4 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.2 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 37.5 23.4 40 0.62 23.4 40 0.62 23.4 40 3.0 <td>up Flow (vph)</td> <td>86</td> <td>0</td> <td>27</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1246</td> <td>304</td> <td>0</td> <td>222</td> <td>446</td>	up Flow (vph)	86	0	27	0	0	0	0	1246	304	0	222	446
4 4 4 4 6 6 6 6 6 6	a	Perm		Perm					NA	Free		NA	Free
4 4 4 4 4 4 4 4 4 4	i Phases								2			9	
6.1 6.1 6.1 6.1 2.34 37.5 2.34 6.1 6.1 6.1 2.34 37.5 3.04 0.0 4.4 0.3 2.34 3.0 0.0 2.8 3.4 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.	l Phases	4		4						Free			Free
6.1 6.1 6.1 73.4 375 23.4 6.1 6.1 6.1 6.1 6.1 0.62 1.00 0.62 4.0 1.0 0.62 1.00 0.62 2.87 2.57 2.208 1583 2.208 2.87 2.57 2.208 1583 2.208 0.04 0.10 0.05 0.05 1.39 13.4 4.1 0.0 1.00 1.00 1.40 1.00 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Green, G (s)	6.1		6.1					23.4	37.5		23.4	37.5
0.16 0.16 0.16 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.62 1.00 0.02 0.03 0.05 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Green, g (s)	6.1		6.1					23.4	37.5		23.4	37.5
10	g/C Ratio	0.16		0.16					0.62	1.00		0.62	1.00
3.0 3.0	Time (s)	4.0		4.0					4.0			4.0	
257 2208 1583 2208 6 002 002 0035 006 0002 0010 0010 0010 0010 0010 0010	xtension (s)	3.0		3.0					3.0			3.0	
0.02	Cap (vph)	287		257					2208	1583		2208	1583
0.02 0.19 0.10 0.10 0.56 0.19 0.10 0.10 0.56 0.19 0.10 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.4 0.3 0.3 0.3 0.5 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.0 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.0 0.3 0.3	Prot								c0.35			90:0	
134 0.10 0.56 0.19 0.10 134 1.10 0.10 1.00 1.00 10.2 0.3 0.3 0.3 0.3 0.0 13.6 4.4 0.3 2.8 14.0 0.0 3.6 4.4 0.3 2.8 14.0 A A A A A A A A A A A A A A A A A A A	Perm	90.0		0.02						0.19			c0.28
13.4 1.00 2.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.34		0.10					0.56	0.19		0.10	0.28
100 100 100 100 100 100 100 100 100 100	Jelay, d1	13.9		13.4					4.1	0.0		2.8	0.0
136 0.3 0.3 0.0 0.0 1.36 1.36 1.28 1.40 0.0 3.6 1.2 8 1.40 0.0 3.6 1.2 8 1.40 0.0 3.6 1.2 8 1.2 8 1.2 8 1.2 8 1.3 8.0 1.2 8 1.3 8.0 1.3 8.0 1.3 8.0 1.3 8.0 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 8.0 1.3 1.3 1.3 8.0 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	ion Factor	1.00		1.00					1.00	1.00		1.00	1.00
13.6 4.4 0.3 2.8 14.0 15.1 14.0 15.1 14.0 15.1 14.0 15.1 14.0 15.1 15.1 15.1 15.1 15.1 15.1 15.1 15	ıtal Delay, d2	0.7		0.2					0.3	0.3		0.0	0.4
14.0 B 0.0 3.6 B A A B B B A B B A B B B B A B B B B		14.6		13.6					4.4	0.3		2.8	0.4
140 0.0 3.6 B A A 4.1 HCM 2000 Level of Service A 0.54 Sum of lost time (s) 8.0 43.3% ICU Level of Service A 15	Service	В		В					¥	¥		∢	A
4.1 HCM 2000 Level of Service A 0.54 Sum of lost time (s) 8.0 43.3% ICU Level of Service A 15.5 Sum of service	Delay (s)		14.0			0.0			3.6			1.2	
4.1 HCM 2000 Level of Service 0.54 Sum of lost time (s) 37.5 Sum of lost time (s) 13.3% ICU Level of Service 15	LOS SOL		В			4			⋖			A	
4.1 HCM 2000 Level of Service 0.54 Sum of lost time (s) 37.5 Sum of lost time (s) 43.3% ICU Level of Service 15	on Summary												
0.54 37.5 Sum of lost time (s) 43.3% ICU Level of Service 15	0 Control Delay			4.1	HC	M 2000 L	Level of S	Service		A			
37.5 Sum of lost time (s) 43.3% ICU Level of Service 15	0 Volume to Capaci	ity ratio		0.54									
43.3% ICU Level of Service 15	Cycle Length (s)			37.5	Su	m of lost	time (s)			8.0			
	on Capacity Utilizati	on	ľ	43.3%	ಶ	J Level o	f Service			⋖			
	Period (min)			15									

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KHA Queues

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Balboa Transit Station 26: Morena Blvd & Balboa Station Driveway/Balboa EB Ramps Timing Plan. AM Peak Perbol

		I				l	I	I	
	۸	†	ţ	√	•	•	٠	-	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	32	12	236	478	10	1203	54	331	
v/c Ratio	0.16	90:0	0.58	0.72	0.08	0.73	0.43	0.18	
Control Delay	30.8	28.4	30.0	12.7	33.9	19.9	45.1	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.8	28.4	30.0	12.7	33.9	19.9	45.1	8.6	
Queue Length 50th (ft)	13	4	92	28	4	241	23	34	
Queue Length 95th (ft)	37	19	165	128	19	#383	#73	74	
Internal Link Dist (ft)		132	684			1978		933	
Tum Bay Length (ft)					100		135		
Base Capacity (vph)	203	524	513	735	126	1739	126	1891	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	90:0	0.02	0.46	0.65	0.08	69.0	0.43	0.18	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station 26: Morena Blvd & Balboa Station Driveway/Balboa EB Ramps Timing Plan: AM Peak Period

EBI EBI EBI WBI WBI WBI WBI WBI NBI PR PR <th></th> <th>•</th> <th>†</th> <th>></th> <th>></th> <th>ţ</th> <th>4</th> <th>•</th> <th>•</th> <th>•</th> <th>٠</th> <th>→</th> <th>•</th>		•	†	>	>	ţ	4	•	•	•	٠	→	•
1	vement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
100 1900 1900 1900 1900 1900 1900 1900	ne Configurations	×	43			₩	*	K	₩.		*	₩.	
10	ffic Volume (vph)	56	9	_	140	11	440	6	957	150	20	258	47
1900 1900	ure Volume (vph)	53	10	-	140	11	440	6	627	120	20	258	47
100	al Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100	al Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
100 0.99 1.00 0.85 1.00 0.95 0.95 0	ie Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
100		1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.98	
1839 1895 1583 1770 1900 0.95 1900 0.95 1910 0.95 0.92 0.92 0.92 0.92 1911 1 152 84 478 10 1910 0 236 162 10 1910 0 236 162 10 1910 0 236 162 10 1910 0 236 162 10 1910 0 236 163 10 1910 0 236 163 10 1910 0 236 163 10 1910 0 236 163 10 1910 0 236 163 10 1910 0 236 193 10 1910 0 100 100 100 1910 0 100 100 1910 0 100 100 1910 0 100 100 1910 0 100 100 1920 0 238 558 1920 0 294 267 238 558 1920 0 294 267 238 558 1920 0 294 267 238 558 1920 0 100 100 100 1921 0 100 100 1921 0 100 100 1921 0 100 1	Protected	0.95	1.00			16.0	1.00	0.95	1.00		0.95	1.00	
100 0.95 100 0.95 100 0.95 180	d. Flow (prot)	1770	1839			1805	1583	1770	3467		1770	3457	
1839 1805 1583 1770 1932 0.92 0.92 0.92 0.92 0.92 1	Permitted	0.95	1.00			16.0	1.00	0.95	1.00		0.95	1.00	
1	d. Flow (perm)	1770	1839			1805	1583	1770	3467		1770	3457	
11 1 152 84 478 10 11 0 0 236 164 10 11 0 0 236 164 10 11 0 0 236 164 10 12 4 8 8 8 5 13 8 135 135 0.7 13 8 135 135 0.7 14 0 30 30 30 100 0.01 0.01 0.01 100 0.01 0.01 100 0.03 0.40 100 0.04 0.10 100 0.04 0.10 100 0.07 0.01 100 0.07 0.01 100 0.08 0.09 100 0.09 0.00 100 0.00 0.00 100 0.00 0.00 100 0.00 0.00 100 0.00 0.00 100 0.00 0.00 100 0.00 0.00 100 0.00 0.00 118 118 118 128 128 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 118 1	ak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1 0 0 0 316 0 10 10 11 10 10 10 10	. Flow (vph)	32	1	-	152	84	478	10	1040	163	24	280	21
11 0 0 236 162 10 NA Split NA Perm Prot 4 8 8 5 135 135 0.7 107 135 135 0.7 107 375 320 19 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 10	OR Reduction (vph)	0	_	0	0	0	316	0	13	0	0	15	0
NA Split NA Perm Prot	e Group Flow (vph)	32	11	0	0	236	162	10	1190	0	54	316	0
4 8 8 5 38 135 135 0.7 38 135 135 0.7 40 40 4.0 4.0 40 4.0 4.0 4.0 107 375 329 19 107 375 329 19 108 109 0.01 100 0.03 0.01 100 0.04 3.3 1.2 2.3 289 234 22.7 31.9 100 33 1.2 2.3 289 234 2.2 31.9 100 33 1.2 2.3 294 267 2.3 2.5 506 248 C E 649 Sum of lost time (s) 718% CU Level of Service 15 15 15 15 15 15 15	n Type	Split	¥		Split	NA	Perm	Prot	NA		Prot	NA	
8 138 135 136 0.7 9 38 135 135 0.7 9 0.06 0.21 0.21 0.01 9 40 40 40 4.0 4.0 9 30 3.0 3.0 3.0 1 107 375 329 19 1 107 375 329 19 1 100 0.01 0.01 0.01 0.63 0.49 0.53 1 289 234 22.7 31.9 1 100 1.00 1.00 1.00 1 100 1.00 1.00 1 289 234 22.7 31.9 1 289 234 22.7 31.9 1 289 234 22.7 31.9 1 289 234 22.7 31.9 1 289 234 22.7 31.9 1 289 264 267 26 2 6 2 48 2 6 7 2 6 6 2 3 0.69 2 Sum of lost time (s) 1 18% 1 CU Level of Service 0 649 Sum of lost time (s) 1 18% 1 CU Level of Service	tected Phases	4	4		∞	∞		2	2		_	9	
3.8 135 135 0.7 0.06 0.21 135 0.7 0.06 0.21 0.21 0.01 0.06 0.21 0.21 0.01 0.01 3.0 3.0 3.0 0.01 0.01 0.01 0.01 0.01 0.01 0.04 0.53 2.89 2.34 2.27 3.19 1.00 1.00 1.00 1.00 0.4 2.67 2.39 5.8 0.5 C C C 0.69 Sum of lost time (s) 7.18% I.OL Level of Service 0.69 Sum of lost time (s) 1.18% I.OL Level of Service	mitted Phases						∞						
38 135 135 0.7 0.06 0.21 0.01 0.06 0.21 0.01 0.07 3.0 3.0 3.0 0.10 0.01 0.01 0.10 0.04 0.21 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.53 0.10 0.04 0.54 0.10 0.04 0.54 0.10 0.04 0.05 0.10 0.04 0.05 0.10 0.04 0.05 0.10 0.04 0.05 0.10 0.04 0.05 0.10 0.05 0.1	uated Green, G (s)	3.8	3.8			13.5	13.5	0.7	29.6		2.0	30.9	
0.06	ective Green, g (s)	3.8	3.8			13.5	13.5	0.7	29.6		2.0	30.9	
40	uated g/C Ratio	90:0	90:0			0.21	0.21	0.01	0.46		0.03	0.48	
3.0 3.0 3.0 3.0 3.0 107 375 329 19 101 0.0.13 0.0.11 0.01 0.0.13 0.0.10 0.10 0.6.3 2.2.7 31.9 1.00 1.00 1.00 1.00 1.00 0.4 3.3 1.2 2.3.9 2.9 2.4 2.7 2.3.8 55.8 2.0 C C E 3.0 C C C 3.0 C C 3.0 C C 4.8 C C 5.18 HCM 2000 Level of Service 6.49 Sum of lost time (s) 7.18% I.OL Level of Service 1.18% I.OL Level of Service 1.18% I.OL Level of Service	arance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
107 375 329 19 201 0.13 0.01 0.10 0.63 0.49 0.53 2.28 23.4 2.27 31.9 1.00 1.00 1.00 1.00 1.00 3.3 1.2 2.39 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.6.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.38 55.8 2.9.4 2.9.7 2.9.7 2.8 2.9.4 2.9.7 2.9.7 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9.7 2.9 2.9 2.9.4 2.9 2.9 2.9 2.9 2.9.4 2.9 2.9 2.9 2.9 2.9.4 2.9 2.9 2.9 2.9 2.9 2.9 2.9 2.9 2.9 2.9	icle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
289 0.01 0.01 289 23.4 22.7 31.9 1.00 1.00 1.00 1.00 1.00 1.00 3.3 1.2 23.9 2.4 26.7 31.9 2.94 26.7 31.9 2.04 2.07 31.9 2.05 2.38 3.3 1.2 23.9 2.0 C C E 30.6 C C E 30.6 C C E 4.8 Sum of lost time (s) 7.18% ICU Level of Service	ie Grp Cap (vph)	103	107			375	329	19	1581		24	1645	
0.10 0.63 0.49 2.89 2.34 2.27 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.94 2.67 2.38 2.6 C C C 30.6 248 2.48 C C 30.69 Sum of lost time (s) 7.18% ICU Level of Service 1.5	Ratio Prot	c0.02	0.01			c0.13		0.01	c0.34		c0.03	0.09	
1 289 0.49 289 23.4 22.7 1.00 1.00 1.00 2.94 2.6.7 23.8 2.0 C C C 3.0.6 24.8 2.1.8 HCM 2000 Level of See 0.69 Sum of lost time (s) 7.1.8% ICU Level of Service 1.18% ICU Level of Service	Ratio Perm						0.10						
289 234 227 100 100 100 100 33 12 29.4 26.7 238 2 C C C 2 24.8 2 C C 2 24.8 2 C C 3 0.69 Sum of lost time (s) 11.8% ICU Level of Service 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	Ratio	0.31	0.10			0.63	0.49	0.53	0.75		1.00	0.19	
100 100 100 100 100 100 100 100 100 100	form Delay, d1	29.3	28.9			23.4	22.7	31.9	14.6		31.5	8.6	
294 33 1.2 C C C C 30.6 30.6 C 24.8 C C C 24.8 C C C 24.8 C C C 24.8 C C C 30.6 C C C 44.9 C	gression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
29.4 26.7 23.8 2 C C C 30.6 24.8 C C C C 24.8 C	remental Delay, d2	1.7	0.4			3.3	1.2	23.9	2.1		122.5	0.1	
2 C 30.6 C C C C C C C C C C C C C C C C C C C	ay (s)	31.0	29.4			26.7	23.8	55.8	16.7		153.9	6.6	
30.6 C 21.8 0.69 64.9 71.8%	el of Service	ပ	ပ			ပ	ပ	ш	В		ш	V	
21.8 0.69 64.9 71.8%	proach Delay (s)		30.6			24.8			17.0			30.1	
21.8 0.69 64.9 71.8%	proach LOS		ပ			ပ			В			O	
21.8 0.69 64.9 71.8%	Prsection Summary												
0.69 64.9 71.8%	M 2000 Control Delay			21.8	H	3M 2000 I	Level of S	service		ပ			
64.9 71.8%	M 2000 Volume to Capacity	ratio		69.0									
71.8%	uated Cycle Length (s)			64.9	S	m of lost	time (s)			16.0			
Ĺ	rsection Capacity Utilization	_		71.8%	ੁ	U Level o	f Service			ပ			
Sign Sign Client	Analysis Period (min)			15									
c Critical Lane Group	Critical Lane Group												

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Balboa Transit Station 27: Morena Blvd & Baker St

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	•					•	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	>-		*	*-	r	**	
Traffic Volume (veh/h)	70	26	965	17	15	364	
Future Volume (Veh/h)	20	56	965	17	15	364	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	22	28	1049	18	16	396	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	1279	1049			1067		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1279	1049			1067		
tC, single (s)	8.9	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	98	87			86		
cM capacity (veh/h)	154	224			649		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	20	1049	18	16	198	198	
Volume Left	22	0	0	16	0	0	
Volume Right	78	0	9	0	0	0	
CSH	187	1700	1700	649	1700	1700	
Volume to Capacity	0.27	0.62	0.01	0.02	0.12	0.12	
Queue Length 95th (ft)	56	0	0	2	0	0	
Control Delay (s)	31.2	0.0	0.0	10.7	0.0	0.0	
Lane LOS	۵			В			
Approach Delay (s)	31.2	0.0		0.4			
Approach LOS	O						
Intersection Summary							
Average Delay			1.1				
Intersection Capacity Utilization	ation		%8.09	⊇	U Level o	ICU Level of Service	В
Analysis Period (min)			_				

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station Horizon Year Adopted Conditions 28: Morena Blvd & Gesner St

	•	←	•	٠	→	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	46	1070	46	22	420	
v/c Ratio	0.30	0.52	0.05	0.19	0.17	
Control Delay	15.8	11.0	6.9	23.9	3.5	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.8	11.0	6.9	23.9	3.5	
Queue Length 50th (ft)	12	123	2	15	18	
Queue Length 95th (ft)	24	224	77	21	39	
Internal Link Dist (ft)	1333	298			3361	
Turn Bay Length (ft)			95	92		
Base Capacity (vph)	1389	3472	1553	1218	3539	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.31	0.03	0.05	0.12	
:						
Intersection Summary						

Synchro 9 Report
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KHA Oueues

Balboa Transit Station 28: Morena Blvd & Gesner St

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

0.18 3.0 1.00 0.1 3.0 A A A 31.6 31.6 0.67 6.0 4.2 2364 0.12 3.8 3.8 0.08 4.4 2.0 142 c0.03 52 52 52 4.4 4.4 1.00 0.95 1770 0.95 0.92 57 Prot 0.40 20.7 1.00 0.7 21.3 45 45 1900 5.9 1.00 1.00 1.00 1.00 1.00 1.00 49 0.03 0.05 6.1 1.00 0.0 6.2 A 23.5 23.5 0.50 5.9 4.4 786 0.61 8.6 1.00 0.8 9.4 A 9.2 NBT 984 984 984 1900 5.9 0.95 1.00 3539 1.00 3539 1.00 1.00 ¥ 23.5 23.5 0.50 0.50 5.9 4.4 1758 co.30 1070 53 53 1900 5.3 0.11 4.4 2.0 188 c0.03 0.28 1.00 0.3 19.5 B B Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Guare Volume (vph)
Ideas Flow (vphp)
Total Lost line (s)
Lane Util. Factor
Fit
Fit
Fit
Fit
Fit
Fit
Fit
Fit
Forecack
Satd. Flow (pcm)
Satd. Flow (pcm)
RTOR Reduction (vph)
RTOR Reduction (vph) Tum Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s) Progression Factor Incremental Delay, d2 -ane Group Flow (vph) Actuated g/C Railo Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) v/s Ratio Prot v/s Ratio Perm Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 52

14.7 A

Sum of lost time (s) ICU Level of Service

8.7 0.53 47.3 48.0%

HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (inn)
c Critical Lane Group

HCM 2000 Level of Service

Balboa Transit Station 29: Garnet Ave & Balboa WB Ramps

Intersection Sign configuration not allowed in HCM analysis.

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

Balboa Transit Station 36: Balboa EB Ramps & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

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	1	†	<i>></i>	>	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		*	¥c.		*				¥.			*
Traffic Volume (veh/h)	0	863	657	0	1501	0	0	0	210	0	0	280
Future Volume (Veh/h)	0	863	657	0	1501	0	0	0	210	0	0	280
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	938	714	0	1632	0	0	0	228	0	0	304
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		787			634							
pX, platoon unblocked	0.67						0.67	0.67		19:0	0.67	0.67
vC, conflicting volume	1632			938			1754	2570	469	2101	2570	816
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	963			938			1145	2360	469	1661	2360	0
IC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
IC, 2 stage (s)												
F (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	28	100	100	28
cM capacity (veh/h)	477			726			09	23	241	25	23	728
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	469	469	714	816	816	228	304					
Volume Left	0	0	0	0	0	0	0					
Volume Right	0	0	714	0	0	228	304					
cSH	1700	1700	1700	1700	1700	541	728					
Volume to Capacity	0.28	0.28	0.42	0.48	0.48	0.42	0.42					
Oueue Length 95th (ft)	0	0	0	0	0	25	25					
Control Delay (s)	0:0	0.0	0.0	0.0	0.0	16.4	13.4					
Lane LOS						ပ	В					
Approach Delay (s)	0:0			0.0		16.4	13.4					
Approach LOS						ပ	æ					
Intersection Summary												
Average Delay	roite		2.1		9	Oll Lovel of Service			ر			
Analysis Period (min)			15	2		3			>			

KHA HOM Unsignalized Intersection Capacity Analysis

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KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

Horizon Year Adopted Conditions
Timing Plan: AM Peak Period

Arterial Level of Service: EB Garnet Ave

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	SOT
Olney St	=	30	12.1	44.7	56.8	0.09	5.4	ш
Balboa Ave	=	30		14.2	37.7	0.19	17.7	۵
Soledad Mtn Rd	=	35		16.2	43.6	0.23	19.0	
Bond St	=	35		6.0	21.9	0.17	27.6	O
Mission Bay Dr	=	35		299	71.7	0.12	6.2	ш
l-5 Off-ramp	=	45		37.7	61.9	0.23	13.6	ш
Moraga Ave	=	45		5.3	33.3	0.27	29.1	В
Clairemont Dr	1	45		53.5	103.2	0.62	21.7	D
Total	=		201.4	228.7	430.1	1.92	16.0	ш

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	Œ	Speed	FOS
Clairemont Dr	=	45	14.7	44.5	59.2	0.13	8.2	Н
Moraga Ave	=	45		22.1	71.8	0.62	31.2	8
Santa Fe St	=	45		0.3	28.3	0.27	34.2	ш
Mission Bay Dr	=	45		79.2	103.4	0.23	8.1	ш
Bond St	=	32		8.0	16.3	0.12	27.4	O
Soledad Mtn Rd	=	32		6.3	27.3	0.17	22.1	O
Garnet Ave	=	32		0.4	27.8	0.23	29.8	В
Olney St	-	30		9.8	32.1	0.19	20.8	D
Total	=		204.0	162.2	366.2	1.97	19.3	D

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	LOS
Rosewood St	≡	32	23.6	3.5	27.1	0.20	26.2	В
Grand Ave	=	35		4.3	19.8	0.11	20.9	O
Bunker Hill St	=	32		2.7	20.0	0.11	19.0	O
Magnolia Ave	=	32		10.0	31.4	0.17	19.2	O
Garnet Ave	=	32		30.7	44.5	0.10	8.3	ш
Damon Ave	=	32		3.1	14.8	0.09	21.0	O
Bluffside Av	=	35		16.4	36.5	0.16	15.5	
Total	=		120.4	73.7	194.1	0.93	17.3	D

Synchro 9 Report Page 1 KHA Arterial Level of Service

Balboa Transit Station

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	Arterial	Flow		Signal	Travel	† <u>5</u>	Artorial	Artorial
Cross Street	Class	Speed	Time	Delay	Time (s)	Ē	Speed	LOS
Bluffside Av	≡	32	l	15.2	35.2	0.16	15.9	
Damon Ave	=	32		5.5	25.6	0.16	22.1	O
Garnet Ave	=	35		51.5	63.2	0.09	4.9	ш.
Magnolia Ave	=	32		12.5	26.3	0.10	14.0	Ω
Bunker Hill St	=	35		1.3	22.7	0.17	26.6	В
Grand Ave	=	32		26.2	40.5	0.11	9.4	ш.
Rosewood St	=	35		6.4	21.9	0.11	18.9	O
Total	=		116.8	118.6	235.4	0.89	13.6	Е

KHA Arterial Level of Service

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 1: Olney St & Garnet Ave

	•	†	>	ţ	←	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	34	1164	20	1522	439	194	
v/c Ratio	0.31	1.17	0.18	0.80	1.09	0.40	
Control Delay	17.7	107.1	11.0	15.5	97.3	18.6	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.7	107.1	11.0	15.5	97.3	18.6	
Queue Length 50th (ft)	7	~586	က	566	~207	53	
Queue Length 95th (ft)	30	#815	6m	366	#374	106	
Internal Link Dist (ft)		374		866	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	11	994	111	1903	403	482	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.31	1.17	0.18	0.80	1.09	0.40	
S selfer							

Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ane Group Flow (vph). Flt Protected Satd. Flow (prot) um Type

65 65 65 65 1900 4.9 1.00 0.96 0.98 0.83 0.83

56 56 1900

Synchro 9 Report Page 1 # 95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

The volume for 95th percentile queue is metered by upstream signal. Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

Horizon Year Adopted Conditions Timing Plan: PM Peak Period 0.92 22 22 1900 9.8 G 21.1 21.1 0.31 4.9 2.0 399 110 110 110 4.9 1.00 0.99 0.97 1789 0.69 0.69 0.69 3 436 NA :0.34 1.09 22.9 1.00 72.0 95.0 271 271 271 1900 0.92 295 0 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 28 28 30 ↑↑ 1373 1373 1373 1900 4.9 0.95 1.00 1.00 3529 1.00 3529 1.00 2 1520 36.1 36.1 0.54 4.9 5.9 5.9 0.43 0.80 12.5 0.94 3.3 15.1 15.1 ¥ 36.1 36.1 0.54 4.9 5.9 0.10 0.18 7.9 0.84 3.3 9.9 4.9 1.00 1.00 0.95 1770 0.11 206 20 20 56.4 1.14 67.0 101.7% 115 0.92 36.1 36.1 0.54 4.9 3.4 987 c0.63 1.17 1.00 1.00 88.6 1158 ¥ HCM 2000 Volume to Capacity ratio Actuated Cycle Length (s) Intersection capacity Utilization Analysis Pertod (min) c. Critical Lane Group 31 4.9 1.00 1.00 0.95 1770 0.11 206 0.92 34 Perm 36.1 36.1 0.54 4.9 3.4 0.31 8.5 1.00 7.2 15.7 Balboa Transit Station 1: Olney St & Garnet Ave Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph) HCM 2000 Control Delay Protector Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s) Progression Factor Incremental Delay, d2 Actuated g/C Ratio Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) v/s Ratio Prot Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1 v/s Ratio Perm

0.31 2.0 465

₹

Perm

0.12 0.38 17.9 1.00 0.2 18.1

KHA HCM Signalized Intersection Capacity Analysis

KHA Queues

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 2: Balboa Ave & Garnet Ave

2. Daiboa Ave & Calliet Ave	מוומ	Į.			THIRD LAND CART CHOO
	†	ţ	✓	٠	
Lane Group	EBT	WBT	WBR	SBL	
Lane Group Flow (vph)	626	1325	614	1209	
v/c Ratio	0.34	0.71	0.43	1.07	
Control Delay	6.6	10.1	6:0	61.8	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	6.6	10.1	6.0	61.8	
Queue Length 50th (ft)	72	132	0	~279	
Oueue Length 95th (ft)	103	506	0	m202	
Internal Link Dist (ft)	936	329		866	
Turn Bay Length (ft)					
Base Capacity (vph)	1848	1867	1441	1134	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.34	0.71	0.43	1.07	
Information Cummers					

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

Movement EBI RBI RBI RBI RBI SBR Lane Configurations 44 45 7 74 44 45 7 170 110 2 120 <td< th=""><th></th><th></th><th>Ť</th><th>,</th><th>/</th><th>۶</th><th>`</th><th></th></td<>			Ť	,	/	۶	`	
ph) 0 576 677 1107 1110 2 ph) 0 576 677 1107 1110 2 ph) 0 576 677 1107 1110 2 ph) 1 900 1900 1900 1900 1900 1900 1 900 1900 1	Movement	EBF	EBT	WBT	WBR	SBL	SBR	
ph) 0 576 677 1107 1110 2 ph) 0 576 677 1107 1110 2) 1900 1900 1900 1900 1900 1900) 50 5.0 4.0 4.9 100 0.95 0.91 0.97 100 100 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 0.95 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.20 1.20 1.20 1.20 1.20 1	Lane Configurations		ŧ	4₩	R _	Ž,		
ph) 0 576 677 1107 1110 2) 1900 1900 1900 1900 1900) 0.95 0.91 0.91 0.97 1900 100 0.93 0.95 0.91 0.97 0.97 100 0.93 0.85 1.00 100 0.93 3164 1.41 3.41 100 1.00 0.95 0.92 0.2 0.92 0.92 0.92 0.92 0.2 0.92 0.92 0.92 0.92 0.2 0.92 0.92 0.92 0.92 0.2 0.93 1.00 0.95 0.0 0.0 0.0 0.00 0.0 0.0 0.0 0.0 0.00 0.0 0.0	Traffic Volume (vph)	0	576	119	1107	1110	2	
1900 1900	Future Volume (vph)	0	576	119	1107	1110	2	
5.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 0.95 0.91 0.97 0.95 0.91 0.97 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.95 0.92 0	Total Lost time (s)		2.0	2.0	4.0	4.9		
100 093 085 1,00 1,0	Lane Util. Factor		0.95	0.91	0.91	0.97		
100 100 0.95 100 100 100 0.95 100 100 100 0.95 100 100 100 0.95 100 100 100 0.95 100 100 100 0.92 0.92 100 0.52 0.92 0.92 0.92 100 0.56 110 614 1209 0 100 0.56 1110 614 1209 0 100 0.56 1110 614 1209 0 100 0.57 0.51 4 100 0.52 0.52 1.00 0.33 100 0.52 0.52 1.00 0.33 100 0.52 0.52 1.00 0.33 100 0.03 0.03 100 0.03 0.03 100 0.03 0.03 100 0.03 0.03 100 0.03 0.03 100 0.00 0.224 100 0.00 0.03 100 0.00 0.00 100 0.00	Ŧ		1.00	0.93	0.85	1:00		
1539 3144 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1441 3441 1209	Flt Protected		1.00	1.00	1.00	0.95		
100 100 0.95 353 3164 1441 3441 3441 3441 3452 0.92 0.92 0.92 0.92 0 626 736 1203 1207 2 0 626 1110 6.14 1209 0 0 215 0 0 0 0 21	Satd. Flow (prot)		3539	3164	1441	3441		
3539 3164 1441 3441 1 092 092 092 092 1 0 02 13 0 0 0 0 2 15 0 0 0 0 2 15 0 0 0 0 2 15 0 0 0 3 10 614 1209 0 1 0 626 1110 614 1209 2 Free Prot 35.0 35.0 67.0 22.1 35.0 35.0 67.0 22.1 35.0 10.0 0.33 5.1 5.1 5.2 6.1 1 6.1 5.2 6.1 1 6.1 5.2 6.1 8 0.0 22.4 1.00 1.00 1.29 0.1 0.0 1.29 0.1 0.0 1.29 0.1 0.0 0.0 20.4 A B A E 9.8 9.8 60.4 A A A E 9.8 9.8 0.0 Coll Level of Service 0.05 0.05 1.05 0.05	Flt Permitted		1.00	1.00	1.00	0.95		
10,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,93 0,92 0,93	Satd. Flow (perm)		3539	3164	1441	3441		
9, 626, 736, 1203, 1207, 2 9, 0, 215, 0, 0, 0, 0 1, 0, 110, 614, 1209, 0 1, 0, 12, 2 2, 2, 4 350, 350, 670, 22.1 5,0, 50, 70, 22.1 1848, 1652, 140, 0,33 5,1, 6,1, 7, 22 1848, 1652, 141, 1135 0,18, 0,0, 22.4 1,00, 1,00, 1,29 0,3, 11,8, 0,0, 22.4 1,00, 1,00, 1,29 0,3, 11,8, 0,0, 22.4 1,00, 1,00, 1,29 0,4, 8, 14,0, 0,9, 60.4 A, B, A, E, E, A, B, A, E, E, A, B, A, B, B, A, B, B, B, A, B, B, B, A, B, B, B, A, B,	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
0 215 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	0	626	736	1203	1207	2	
626 1110 614 1209 0 NA	RTOR Reduction (vph)	0	0	215	0	0	0	
NA NA Free Prot 2 2 4 2 4 35.0 35.0 67.0 22.1 35.0 35.0 67.0 22.1 35.0 5.0 10.0 0.33 5.0 5.0 10.0 0.33 5.1 6.1 5.2 1848 1652 1441 1135 0.18 c0.35 0.18 c0.35 0.18 c0.35 0.34 0.67 0.43 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 14.0 0.9 66.4 A B A E 9.8 9.8 66.4 A A A E 26.0 HCM 2000 Level of Service 0.82 1.50 Sum of lost time (s)	Lane Group Flow (vph)	0	626	1110	614	1209	0	
2 2 4 35.0 35.0 67.0 22.1 35.0 35.0 67.0 22.1 35.0 1.0 0.33 5.0 5.0 4.9 6.1 6.1 4.9 1848 1652 1441 1135 0.18 c0.35 c0.35 0.18 c0.35 c0.35 0.19 c0.0 22.4 1.00 1.00 1.29 0.5 2 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9.8 9.8 60.4 A A A E 76.0 Sum of lost time (s) 0.05	Tum Type		NA	NA	Free	Prot		
35.0 35.0 67.0 22.1 35.0 35.0 67.0 22.1 35.0 35.0 67.0 22.1 0.52 0.52 1.00 0.33 5.0 5.0 4.9 6.1 6.1 5.2 6.1 6.1 5.2 0.43 1.41 1135 0.34 0.67 0.43 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.29 0.8 2.2 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9 8 9.8 60.4 A A A E 9.8 9.8 60.4 A A A C 0.8	Protected Phases		2	2		4		
35.0 35.0 67.0 22.1 35.0 35.0 67.0 22.1 35.0 5.0 1.0 2.1 6.1 6.1 5.2 1.84 1652 1441 1135 0.18 0.0.35 0.34 0.67 0.43 0.10 1.00 1.00 1.29 1.00 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 9.8 60.4 A B A E 9.8 9.8 60.4 A A A E 9.8 9.8 60.4 A A A E 9.8 9.8 10.0 1.00 1.00 1.00 1.00 0.82 0.82 0.82 0.83 0.84 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Permitted Phases				Free			
350 35,0 67,0 22.1 05.2 100 0.33 5.0 5.0 4.9 6.1 6.1 5.2 1848 1652 1441 135 0.18 c0.35 0.34 0.67 0.43 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 140 0.9 60.4 A B A E 9.8 9.8 60.4 A A A E 26.0 HCM 2000 Level of Service 0.82 1.50 Sum of lost time (s) 7.05% ICU Level of Service 1.50 1.50 1.50 1.50 1.50 1.50 1.50 1.50	Actuated Green, G (s)		35.0	35.0	0.79	22.1		
0.52 0.52 1.00 0.33 5.0 5.0 4.9 4.9 6.1 6.1 7.4 1.135 0.18 c0.35 c0.35 0.18 c0.35 c0.35 0.34 0.67 0.43 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9.8 9.8 60.4 A A A E 26.0 HCM 2000 Level of Service 26.0 Sum of lost time (s) 7.0.5% ICU Level of Service	Effective Green, g (s)		35.0	35.0	0.79	22.1		
5.0 5.0 4.9 6.1 6.1 5.2 1848 1652 1441 1135 0.18 c0.35 0.18 c0.35 0.34 0.67 0.43 1.00 1.00 1.29 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 14.0 0.9 6.04 A B A E 9.8 9.8 6.04 A A A E 9.8 9.8 10.0 Cond. Level of Service 0.82 0.82 0.82 0.82 0.82 0.82 0.83 0.84 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Actuated g/C Ratio		0.52	0.52	1.00	0.33		
6.1 6.1 5.2 1848 1652 1441 1135 0.18 c.0.35 0.18 c.0.35 0.43 0.67 0.43 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9.8 9.8 60.4 A A E 7.60 HCM 2000 Level of Service 0.82 1.00 Sum of lost time (\$) 7.0.5% ICU Level of Service 1.5	Clearance Time (s)		2.0	2.0		4.9		
1848 1652 1441 1135 018 c0.35 034 0.67 0.43 1.07 9,3 11,8 0.0 2.24 100 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9,8 14,0 0.9 60.4 A B A E 9,8 9,8 60.4 A A E 76,0 HCM 2000 Level of Service 0.82 1.00 Sum of lost time (s) 7.05% ICU Level of Service	Vehicle Extension (s)		6.1	6.1		5.2		
0.18 c0.35 c0.35 0.43 0.67 0.43 1.07 9.3 11.8 0.0 224 1.100 1.00 1.00 1.29 0.8 14.0 0.9 60.4 A B A E 9.8 9.8 60.4 A A A E 26.0 HCM 2000 Level of Service 0.02 0.02 0.03 0.03 0.03 0.03 0.03 0.03	Lane Grp Cap (vph)		1848	1652	1441	1135		
0.34 0.67 0.43 1.07 9,3 11.8 0.0 2.24 1.00 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9,8 14.0 0.9 60.4 A B A E 9,8 9,8 60.4 A A E 0.04 C C C C C C C C C C C C C C C C C C C	v/s Ratio Prot		0.18	c0.35		c0.35		
0.34 0.67 0.43 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9.8 9.8 60.4 A A E 26.0 HCM 2000 Level of Service 0.82 67.0 Sum of lost time (\$) 7.05% ICU Level of Service 15	v/s Ratio Perm				0.43			
9,3 11,8 0.0 22.4 100 1.00 1.00 1.29 0.5 2.2 0.9 31.5 9,8 14.0 0.9 60.4 A B A E 9,8 60.4 A A E 26.0 HCM 2000 Level of Service 0.82 67.0 Sum of lost time (s) 7.0.5% ICU Level of Service 15	v/c Ratio		0.34	19.0	0.43	1.07		
100 100 1.00 1.29 0.5 2.2 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9.8 9.8 60.4 A A A E 26.0 HCM 2000 Level of Service 0.02 0.02 0.05 0.05 0.05 0.05 0.05 0.05	Uniform Delay, d1		9.3	11.8	0.0	22.4		
0.5 2.2 0.9 31.5 9.8 140 0.9 60.4 A B A E 9.8 9.8 60.4 A A E 26.0 HCM 2000 Level of Service 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15.	Progression Factor		1.00	1.00	1.00	1.29		
9.8 14.0 0.9 60.4 A B A E 9.8 60.4 A A E 26.0 HCM 2000 Level of Service 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Incremental Delay, d2		0.5	2.2	6.0	31.5		
A B A E 9.8 9.8 60.4 A A E 26.0 HCM 2000 Level of Service 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Delay (s)		8.6	14.0	6.0	60.4		
9.8 9.8 60.4 A A E 26.0 HCM 2000 Level of Service 0.82 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Level of Service		×	В	⋖	ш		
A A E 26.0 HCM 2000 Level of Service 0.82 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Approach Delay (s)		8.6	8.6		60.4		
26.0 HCM 2000 Level of Service 0.82 6.7.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Approach LOS		A	∢		ш		
26.0 HCM 2000 Level of Service 0.82 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Intersection Summary							
0.82 6.7.0 Sum of lost time (s) 6.7.0 Sum of lost time (s) 70.5% ICU Level of Service 15	HCM 2000 Control Delay			26.0	¥	3M 2000	Level of Service	U
67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.82				
70.5% ICU Level of Service 15	Actuated Cycle Length (s)			0.79	S	m of lost	time (s)	6.6
Analysis Period (min) 15	Intersection Capacity Utiliza	ıtion		70.5%	⊇	U Level o	f Service	O
	Analysis Period (min)			15				

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 3

KHA Oueues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

3: Garnet Ave & Soledad Mtn Kd	nedad N	Ith Rd					IIMING Plan: PW Peak P
	•	†	ţ	4	٠	*	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	40	1439	2057	651	620	51	
v/c Ratio	0.16	0.56	06:0	0.46	98.0	0.14	
Control Delay	74.2	12.3	38.1	4.5	77.1	12.9	
Queue Delay	0.0	0.0	4.8	0.4	0.0	0.0	
Total Delay	74.2	12.3	42.9	4.9	77.1	12.9	
Queue Length 50th (ft)	71	362	1087	180	346	_	
Queue Length 95th (ft)	43	481	#1371	259	401	39	
Internal Link Dist (ft)		724	908		294		
Turn Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	284	2569	2273	1402	098	371	
Starvation Cap Reductn	0	0	173	293	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.56	86.0	0.59	0.72	0.14	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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KHA Queues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

																																			ن		18.7	Q		
•	SBR	R.	47	1900	5.4	1.00	0.85	1.00	1583	1.00	1583	0.92	51	40	12	custom	4	7	35.7	35.7	0.21	5.4	3.0	332	0.01		0.03	53.4	00.1	0.0 E2 E	5.50	1			HCM 2000 Level of Service		time (s)	f Service		
بو د	WBR SBL	£	599 570			1.00 0.97				1.00 0.95	83 3433		651 620		651 620	Prot	7 7				_	5.4 5.4			0.10 c0.18					0.1 10.0		73	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service		
†	WBT WI	*	1892 5								3539 15		2057 6		2057 6	NA pm+ov	9							2254 13			٥			5.0		29.5	O		30.6	06.0	170.0	77.1%	15	
†	L EBT	*	7 1324						(.,		3 3539		0 1439		0 1439	ot NA	5 2			_	_	4 5.5			1 c0.41					7.17		13.4	В							
•	Movement EBL	Lane Configurations	Traffic Volume (vph) 37	-					rot)	Fit Permitted 0.95	Satd. Flow (perm) 3433	Peak-hour factor, PHF 0.92	7		Lane Group Flow (vph) 40	Turn Type Prot			_	s)	0	Clearance Time (s) 4.4	Vehicle Extension (s) 2.0	Lane Grp Cap (vph) 228	v/s Ratio Prot 0.01	Perm				Incremental Delay, dz 0.1	Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 4: Bond St & Garnet Ave	Ave			Horizon Year Adopted Conditions Timing Plan: PM Peak Period
	t	↓	•	
Lane Group	EBT	WBT	NBR	
Lane Group Flow (vph)	2054	2625	45	
v/c Ratio	0.58	0.74	0.03	
Control Delay	0.7		0:0	
Queue Delay	0.0	2.3	0:0	
Total Delay	0.7	3.4	0:0	
Queue Length 50th (ft)	-	0	0	
Queue Length 95th (ft)	0	m0	0	
Internal Link Dist (ft)	908	574		
Turn Bay Length (ft)				
Base Capacity (vph)	3522	3539	1611	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	134	748	61	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.61	0.94	0.03	
Intersection Summary				
m Volume for 95th percentile queue is metered by upstream signal.	e queue i	s meterec	by upstream signal.	

1900

0 0 1

Horizon Year Adopted Conditions Timing Plan: PM Peak Period 0.03 0.03 1.00 0.0 41 41 1100 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 145 70.0 170.0 1.00 4.9 7.3 0.92 0 0 1900 0.0 A 0.92 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 0.74 0.0 1.00 0.6 0.6 A 0.6 A 170.0 1.00 1.00 4.9 7.3 3539 co.74 4.9
2415
2415
2415
1900
4.9
0.95
1.00
3539
0.92
2625 ¥ 0 0 1900 0.92 74 0 0.6 0.78 170.0 73.2% 68 68 1900 170.0 170.0 1.00 4.9 7.3 7.3 3520 0.58 0 2054 ¥ 2 0.58 0.0 0.6 0.6 0.6 A A A A A A A A **†** HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (inn)
c Critical Lane Group Balboa Transit Station 4: Bond St & Garnet Ave Lane Configurations
Traffic Volume (vph)
feater Volume (vph)
feater Volume (vph)
feater (vph)
Total Lost time (s)
Lane Util Fador
Fit Protected
Sald: Flow (prh)
Peak-hour factor, PHF
Adj. Flow (prh)
Lane Group Flow (vph) Turn Type
Protected Phases
Protected Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
vs Ratio Prot
vs Ratio Prot
vs Ratio Prot Progression Factor Incremental Delay, d2 ntersection Summary Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Synchro 9 Report Page 8

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Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

	•	†	*	•	ţ	4	•	+	•	٠	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	618	904	496	297	616	368	721	430	315	298	401	984
v/c Ratio	0.92	0.82	0.55	96.0	96.0	0.55	1.02	0.41	0.38	7.0	1.09	0.82
Control Delay	76.2	57.4	27.5	111.3	79.3	32.4	89.7	60.5	27.3	93.6	122.4	52.4
Queue Delay	58.1	1.9	8.0	26.4	3.7	0.2	0.0	0.0	1.	0.0	4.7	49.6
Total Delay	134.4	59.4	28.3	137.7	83.0	32.6	89.7	60.5	28.4	93.6	127.1	102.0
Queue Length 50th (ft)	322	519	380	332	575	276	~445	254	181	180	-491	557
Queue Length 95th (ft)	#441	603	295	#524	#726	369	#227	314	342	232	#717	629
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	299		120	410		325	265		100	200		265
Base Capacity (vph)	700	1096	902	313	1018	826	708	1039	825	628	368	1229
Starvation Cap Reductn	0	98	172	0	0	0	0	0	298	0	27	406
Spillback Cap Reductn	471	0	7	31	24	82	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.70	06:0	89.0	1.05	0.98	0.54	1.02	0.41	09.0	0.47	1.18	1.20

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KHA Oueues

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	4	†	<i>></i>	/	ţ	✓	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	‡	¥	F	*	*-	F	‡	*-	F	*	X.
Traffic Volume (vph)	269	832	456	273	901	366	663	396	290	274	369	905
Future Volume (vph)	269	832	456	273	901	366	663	396	290	274	369	902
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1:00	0.97	0.95	1.00	0.97	1.00	0.88
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
Fit 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	618	904	496	297	616	398	721	430	315	298	401	984
RTOR Reduction (vph)	0	0	45	0	0	43	0	0	37	0	0	24
Lane Group Flow (vph)	618	904	451	297	676	355	721	430	278	298	401	096
Tum Type	Prot	Ϋ́	vo+md	Prot	Α	vo+mq	Prot	A	vo+mq	Prot	₹	vo+mq
Protected Phases	က	∞	-	7	4	2	-	9	7	2	2	3
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	33.4	52.7	87.8	59.6	48.9	0.89	35.1	20.0	9.6/	19.1	33.6	0.79
Effective Green, g (s)	33.4	52.7	87.8	59.6	48.9	0.89	35.1	20.0	9.62	19.1	33.6	67.0
Actuated g/C Ratio	0.20	0.31	0.52	0.17	0.29	0.40	0.21	0.29	0.47	0.11	0.20	0.39
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	674	1097	817	308	1017	633	708	1040	741	385	368	1098
v/s Ratio Prot	c0.18	c0.26	0.11	0.17	c0.28	90:0	c0.21	0.12	0.07	0.09	c0.22	0.17
√s Ratio Perm			0.17			0.16			0.11			0.17
v/c Ratio	0.92	0.82	0.55	96:0	0.96	0.56	1.02	0.41	0.38	0.77	1.09	0.87
Uniform Delay, d1	6.99	54.4	27.8	69.7	59.7	39.5	67.5	48.2	29.2	73.4	68.2	47.6
Progression Factor	0.89	0.94	1.27	1.00	1.00	1:00	0.81	1.21	1.25	1.12	0.84	1.14
Incremental Delay, dz	14.7	5.9	0.4	41.	70.5	0.7	36.	4.0	0.5	4.7	69.9	0.7
Delay (s)	/ 4 .	26.9	35.6	8.O B.O	80.2	- 04	9.	78.	36.5 C. C	89.5	127.3	60.9
Approach Dolay (c)	١	1 0	٥	-	177	۵	-	7 07	2	-	- 01	_
Approach Delay (s)		700.4 H			- O			03.0			o. u	
CO I DOOR		,	ı		J	ı	ı	J		ı		ĺ
Intersection Summary												
HCM 2000 Control Delay			70.5	Ĭ	CM 2000	HCM 2000 Level of Service	Service		ш			
HCM 2000 Volume to Capacity ratio	y ratio		0.99									
Actuated Cycle Length (s)			170.0	₩.	nn of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	_		95.3%	≗	:U Level	CU Level of Service			ıL			
Analysis Period (min)			12									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

⁻ Volume exceeds capacity, queue is theoretically infinite.

- Couloue shown is maximum after two cydes.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cydes.

Horizon Year Adopted Conditions Balboa Transit Station 6: I-5 Off-ramp/Santa Fε

balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave	on a Fe S	t & Ga	rnet Av	e,	HOffzon Year Adopted Conditions Timing Plan: PM Peak Period
	†	ţ	4	*	
Lane Group	EBT	WBT	NBR	SBR	
Lane Group Flow (vph)	1539	2503	926	185	
v/c Ratio	0.91	0.49	96:0	0.31	
Control Delay	22.2	0.3	38.3	10.5	
Queue Delay	0.0	0.0	0.0	0:0	
Total Delay	22.2	0.3	38.3	10.5	
Queue Length 50th (ft)	199	0	149	28	
Queue Length 95th (ft)	#346	0	#277	99	
Internal Link Dist (ft)	1151	265			
Turn Bay Length (ft)					
Base Capacity (vph)	1698	2060	1018	909	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.91	0.49	96:0	0.31	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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KHA Oueues

Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	4	†	/	\	ļ	4	•	←	•	۶	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ			4413				N/N			*-
Traffic Volume (vph)	0	1416	0	0	2229	74	0	0	868	0	0	170
Future Volume (vph)	0	1416	0	0	2229	74	0	0	868	0	0	170
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
Lane Util. Factor		0.95			0.91				0.88			1.00
Frt		1.00			1.00				0.85			0.86
Fit Protected		1.00			1.00				1.00			1.00
Satd. Flow (prot)		3539			5061				2787			1611
Flt Permitted		1.00			1.00				1.00			1.00
Satd. Flow (perm)		3539			5061				2787			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1539	0	0	2423	80	0	0	926	0	0	185
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	15	0	0	27
Lane Group Flow (vph)	0	1539	0	0	2503	0	0	0	961	0	0	158
Turn Type		NA			NA				Prot			Perm
Protected Phases		∞			2.4				2			
Permitted Phases												9
Actuated Green, G (s)		24.0			20.0				18.0			18.0
Effective Green, g (s)		24.0			20.0				18.0			18.0
Actuated g/C Ratio		0.48			1.00				0.36			0.36
Clearance Time (s)		4.0							4.0			4.0
Vehicle Extension (s)		3.0							3.0			3.0
Lane Grp Cap (vph)		1698			5061				1003			579
v/s Ratio Prot		c0.43			0.49				c0.34			
v/s Ratio Perm												0.10
v/c Ratio		0.91			0.49				96:0			0.27
Uniform Delay, d1		12.0			0.0				15.6			11.4
Progression Factor		1.00			0.1				9.			1.00
Incremental Delay, d2		7.3			0.1				18.8			0.3
Delay (s)		19.3			0.1				34.4			11.6
Level of Service		2			V				ပ			B
Approach Delay (s)		19.3			0.1			34.4			11.6	
Approach LOS		В			A			ပ			В	
Intersection Summary												
HCM 2000 Control Delay			12.6	¥	HCM 2000 Level of Service	evel of S	ervice		В			
HCM 2000 Volume to Capacity ratio	ratio		0.93									
Actuated Cycle Length (s)			20.0	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization	_		77.2%	⊇	ICU Level of Service	f Service			۵			
Analysis Period (min)			12									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 7: Balboa EB Ramps & Garnet Avenue

FBF FBR WBL WBL WBL NBL NBL NBL NBL SBL SBL		٨	Ť	*	/	ţ	√	•	•	•	٠	→	•
Harrian Harr		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maria Mari	tions		ŧ	ĸ.		‡				¥L.			*-
None 1828 1575 140 1682 0 0 0 0 0 0 0 0 0	(veh/h)	0	1449	860	0	1682	0	0	0	337	0	0	90
1828	(Veh/h)	0	1449 Fro	098	0	1682	0	>	0 0	33/	0	O G	3
None			%			8			8			8	
None	_	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
ed 1828 1575 2489 3403 788 2616 3403 1828 1575 2489 3403 788 2616 3403 1828 1575 2489 3403 788 2616 3403 3403 380 414 414 10 70 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(hdv)	0	1575	935	0	1828	0	0	0	366	0	0	86
None													
None													
None	t/s)												
None None None None None None None None None None	av												
None None None None	(eh)												
ed 1828 1575 2489 3403 788 2616 3403 ne 1922 22 22 22 3.5 4.0 3.3 3.5 4.0 100 100 100 100 100 100 100 100 100 1			None			None							
ed 1828 1575 2489 3403 788 2616 3403 old 1828 1575 2489 3403 788 2616 3403 old 1828 1575 2489 3403 788 2616 3403 140 140 100 100 100 100 100 100 100 100	(ha/												
ed 1828 1575 2489 3403 788 2616 3403 ne 1828 1575 2489 3403 788 2616 3403 ne 1828 1575 2489 3403 788 2616 3403 182 22 248 141 775 6.5 6.9 7.5 6.5 6.9 100 100 100 100 100 100 100 100 100 10	(£)												
1828	cked												
1828	lume	1828			1575			2489	3403	788	2616	3403	914
1828	l vol												
13.5 13.5	I \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1000			1575			0000	2000	2007	7170	2402	014
4.1	Б	070			0/01			7.6	2402	8 (0107	2403	7 14
22 22 3.5 4.0 100 100 100 0 0 0 100 100 0 0 0 100 100 0 0 0 100 100 0 0 0 0 100 100 0 0 0 0 100 100 0 0 0 0 100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
22		c			c			C		c	C	-	c
100 100 100 0 0 100 100 100 100 100 0 0 100 101 102 103 WB1 WB2 NB1 SB1 102 103 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		7.7			7:7			3.3	4.0	5.5	3.3	4.0	5.5
## FB1 EB2 EB3 WB1 WB2 NB1 SB1 FB1 EB2 EB3 WB1 WB2 NB1 SB1 7 334 0 7 7		100			100			100	100	0	0	100	64
EB 1 EB 2 EB 3 WB 1 MB 2 NB 1 SB 1 788 788 935 914 914 366 98 0 0 0 0 0 0 0 0 0 935 0 0 0 0 0 1700 1700 1700 1700 334 276 98 0 0 0 0 0 347 39 276 0 0 0 0 0 1347 39 276 0 0 0 0 0 1347 39 276 0 0 0 0 0 1347 39 276 0 0 0 0 0 1347 39 276 0 0 0 0 0 1347 251 D 0 0 0 0 0 1347 39	Ê	330			414			9	7	334	0	7	276
788 788 935 914 914 366 98 0 0 0 0 0 0 0 0 0 0 935 0 0 0 0 0 1700 1700 1700 1700 1700 334 276 0.46 0.46 0.55 0.54 0.54 1.10 0.36 0 0 0 0 0 0 0 0 347 39 0 0 0 0 0 0 0 131 25.1 0 0 0 0 0 0 9 0 113.1 25.1 0 0 0 0 0 0 0 0 113.1 25.1 0 0 0 0 0 1 113.1 25.1 0 0 0 1 113.1 25.1		EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		788	788	935	914	914	396	86					
1700 1700 1700 1700 346 98 08 0.0 0.0 1700 1700 1700 1700 334 276 0.0 0.0 0.0 0.0 0.0 334 276 0.0 0.0 0.0 0.0 0.0 0.0 347 39 0.0 0.0 0.0 0.0 0.0 0.0 13.1 25.1 0.0 0.0 0.0 0.0 0.0 173.1 25.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		0	0	0	0	0	0	0					
1700 1700 1700 1700 334 276 0.46 0.46 0.55 0.54 0.54 1.10 0.36 0.0 0.0 0.0 0.0 0.113.1 25.1 0.0 0.0 0.0 113.1 25.1 0.0 0.0 0.0 113.1 25.1 0.0 0.0 0.0 113.1 25.1 0.0 0.0 0.0 113.1 25.1 0.0 0.0 1.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1		0	0	935	0	0	366	86					
0.46 0.46 0.55 0.54 0.54 1.10 0.36 0.0 0.0 0.0 0.0 0.0 1.31 25.1 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		1700	1700	1700	1700	1700	334	276					
0 0 0 0 0 347 39 0.0 0.0 0.0 0.0 0.0 113.1 25.1 0.0 113.1 25.1 F D F D F D F D F D F D F D F D F D F D	zity	0.46	0.46	0.55	0.54	0.54	1.10	0.36					
0.0 0.0 0.0 0.0 113.1 25.1 F D C C C C C C C C C C C C C C C C C C	oth (ft)	0	0	0	0	0	347	39					
any 9.1 ICU Level of Service D. D. 113.1 25.1 In 125.1 In		0.0	0.0	0.0	0.0	0.0	113.1	25.1					
0.0 0.0 113.1 25.1 11.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2							ш	۵					
F D 9.1 Utilization 67.6% ICU Level of Service 15	(s)	0.0			0.0		113.1	25.1					
9.1 Utilization 67.6% ICU Level of Service 15							ı	D					
9.1 ICU Level of Service 15 15	mary												
Utilization 67.6% ICU Level of Service 15				9.1									
	acity Utilizatio	uc		%9.19	2	U Level o	of Service			ပ			
	(min)			15									

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Balboa Transit Station 8: Balboa Ave & Moraga Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

*	SBR	323	0.70	13.9	0.0	13.9	0	84			822	_	J	_	0.39
•	SBL	111	0.58	55.8	0.0	55.8	19	134	501	155	701	0	0	0	0.16
4	WBR	101	0.11	6.1	0.0	6.1	12	42		250	964	0	0	0	0.10
ţ	WBT	1505	0.75	20.3	0.0	20.3	358	226	3203		2103	0	0	0	0.72
†	EBT	1616	0.59	5.9	0.0	5.9	177	284	554		3327	0	0	0	0.49
1	EBL	384	0.71	48.9	0.0	48.9	119	185		215	1020	0	0	0	0.38
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary

Synchro 9 Report Page 14 KHA Queues

Horizon Year Adopted Conditions Timing Plan: PM Peak Perbd Balboa Transit Station 8: Balboa Ave & Moraga Ave

																																					В		16.5	U		
•	SBR	¥C.	297	297	1900	5.6	1.00	0.85	1.00	1583	1.00	1583	0.92	323	288	35	Perm		4	11.1	11.1	0.11	5.6	2.0	173		0.02	0.20	41.1	1.00	0.2	41.3	۵				HCM 2000 Level of Service		ime (s)	Service		
٠	SBL	*	102		_		1.00	1.00	0.95	1770	0.95	1770	0.92	111	0	111	Prot	4		11.1	11.1	0.11	9.9	2.0	193	c0.06		0.58	42.9	1:00	5.6	45.5	Ω	42.4	O		1CM 2000 L		Sum of lost time (s)	CU Level of Service		
4	WBR	*-	93	93	1900	6.5	1.00	0.85	1.00	1583	1.00	1583	0.92	101	25	76	Perm		9	57.9	57.9	0.57	6.5	3.9	903		0.02	0.08	9.8	1.00	0.1	6.6	A				_					
ţ	WBT	*	1385	1385	1900	6.5	0.95			. ,		3539	0.92	1505	0	1505	₹	9		57.9	57.9	0.57	6.5	3.9	2020	c0.43		0.75	16.2	1:00	1.6	17.9	В	17.4	В		17.7	0.72	101.4	%6'.29	15	
†	EBT	‡	1487	1487	1900	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	1616	0	1616	¥	2		79.0	79.0	0.78	2.7	4.8	2757	0.46		0.59	4.6	1.00	0.5	2.0	A	12.6	В							
^	EBL	*	353	353	1900	4.4	0.97	1.00	0.95	3433	0.95	3433	0.92	384	0	384	Prot	2		15.9	15.9	0.16	4.4	2.0	538	00.11		0.71	40.6	1:00	3.7	44.3						city ratio	,	tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	F	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Transit Station 9: Clairemont Dr & Balboa Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

Lane Group EBL EBT WBL WBT NBL NBT SBL		•	†	/	ţ	•	•	•	۶	→	
472 1307 485 1325 93 389 395 334 0.85 0.98 0.86 100 0.65 0.78 0.70 1.00 80.2 68.0 80.3 3.73 29.9 78.0 46.6 111.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 80.2 68.0 80.3 73.2 229 78.0 46.6 111.7 80.2 68.0 80.3 73.2 96 209 431 456.5 37.7 49.5 37.3 49.88 16.3 77.6 411 46.6 40.1 3.203 3.7 49.88 16.3 27.6 41 46.6 17.7 40.1 3.203 4.30 4.30 4.4 46.6 17.7 40.1 3.20 3.20 3.20 3.20 3.2 3.2 3.2 6.50 1.34 6.50 13.24 3.35 8.3 </td <td>Lane Group</td> <td>EBL</td> <td>EBT</td> <td>WBL</td> <td>WBT</td> <td>NBL</td> <td>NBT</td> <td>NBR</td> <td>SBL</td> <td>SBT</td> <td></td>	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
0.85 0.98 0.86 1.00 0.65 0.78 0.70 1.00 80.2 68.0 80.3 73.2 29.9 78.0 46.6 111.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 80.2 68.0 80.3 73.2 9.29 78.0 46.6 111.7 248 709 255 -733 96 209 315 -355 377 #955 337 #988 163 276 441 #616 240 220 200 1350 1350 1350 100 100 120 650 1348 650 1324 335 893 604 335 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Group Flow (vph)	472	1307	485	1325	63	389	395	334	665	
80.2 68.0 80.3 73.2 92.9 780 46.6 111.7 0.0 0 0.0	v/c Ratio	0.85	86.0	98.0	1.00	0.65	0.78	0.70	1.00	1.13	
0.0 0.0 <td>Control Delay</td> <td>80.2</td> <td>0.89</td> <td>80.3</td> <td>73.2</td> <td>92.9</td> <td>78.0</td> <td>46.6</td> <td>111.7</td> <td>122.2</td> <td></td>	Control Delay	80.2	0.89	80.3	73.2	92.9	78.0	46.6	111.7	122.2	
80.2 68.0 80.3 73.2 92.9 78.0 46.6 111.7 248 709 255 -733 96 209 315 -385 327 #955 33 #98 163 276 441 #616 240 220 200 1350 100 120 650 1348 650 1324 335 893 604 335 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
248 709 255 -733 96 209 315 -355 377 #955 337 #988 163 276 441 #616 240 220 200 1350 100 10 120 650 1348 650 1324 335 893 604 335 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	80.2	0.89	80.3	73.2	92.9	78.0	46.6	111.7	122.2	
327 #955 337 #988 163 276 441 #616 240 220 220 1350 100 12 650 1348 650 1324 335 893 604 335 0 0 0 0 0 0 0 0 0 0 0 <t< td=""><td>Queue Length 50th (ft)</td><td>248</td><td>400</td><td>255</td><td>~733</td><td>96</td><td>500</td><td>315</td><td>~322</td><td>-607</td><td></td></t<>	Queue Length 50th (ft)	248	400	255	~733	96	500	315	~322	-607	
3203 630 1350 240 200 200 650 1348 650 1324 335 893 604 120 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.73 0.97 0.75 100 0.28 0.44 0.65 1.00	Queue Length 95th (ft)	327	#622	337	#688	163	276	441	#616	908#	
240 220 200 100 120 650 1348 650 1324 335 893 604 335 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.73 0,97 0,75 100 0,28 0,44 0.65 1.00	Internal Link Dist (ft)		3203		930		1350			098	
650 1348 650 1324 335 893 604 335 0	Tum Bay Length (ft)	240		220		200		100	120		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	920	1348	650	1324	335	893	604	335	688	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
0.73 0.97 0.75 1.00 0.28 0.44 0.65 1.00	Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
	Reduced v/c Ratio	0.73	0.97	0.75	1.00	0.28	0.44	0.65	1.00	1.12	

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cydes.

95th percentle volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cydes.

Synchro 9 Report Page 16 KHA Queues

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 9: Clairemont Dr & Balboa Ave

	4	†	7	\	ţ	√	•	-	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£	4₽		1	₩		×	‡	*	¥	4₽	
Traffic Volume (vph)	434	1144	26	446	1086	133	98	358	363	307	578	335
Future Volume (vph)	434	1144	26	446	1086	133	98	358	363	307	578	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3513		3433	3481		1770	3539	1583	1770	3344	
Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3513		3433	3481		1770	3539	1583	1770	3344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	472	1243	64	485	1180	145	93	386	395	334	628	364
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	33	0	44	0
Lane Group Flow (vph)	472	1305	0	485	1320	0	93	389	362	334	948	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	vo+mq	Prot	NA	
Protected Phases	2	2		-	9		co	∞	-	7	4	
Permitted Phases									∞			
Actuated Green, G (s)	25.7	60.4		26.2	60.2		12.8	22.3	48.5	30.1	39.6	
Effective Green, g (s)	25.7	60.4		26.2	60.2		12.8	22.3	48.5	30.1	39.6	
Actuated g/C Ratio	0.16	0.38		0.16	0.38		80.0	0.14	0.31	0.19	0.25	
Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Vehicle Extension (s)	2.0	3.5		2.0	3.0		5.0	2.4	2.0	2.0	5.6	
Lane Grp Cap (vph)	222	1336		999	1319		142	496	483	332	833	
v/s Ratio Prot	0.14	0.37		c0.14	c0.38		0.05	0.11	0.12	00.19	c0.28	
v/s Ratio Perm									0.11			
v/c Ratio	0.85	86:0		98.0	1.00		0.65	0.78	0.75	1.00	1.14	
Uniform Delay, d1	64.7	48.5		64.5	49.3		70.9	62.9	49.7	64.3	9.69	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.5	19.2		11.8	25.0		8.0	7.6	2.8	48.0	76.4	
Delay (s)	76.2	1.79		76.2	74.3		78.9	73.5	55.4	112.3	136.0	
Level of Service	ш	ш		ш	ш		ш	ш	ш	ш	ш	
Approach Delay (s)		6.69			74.8			0.99			130.1	
Approach LOS		ш			ш			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			84.6	Ĭ	CM 2000	HCM 2000 Level of Service	ervice		ш			
HCM 2000 Volume to Capacity ratio	ty ratio		1.03									
Actuated Cycle Length (s)			158.8	S	Sum of lost time (s)	time (s)			20.5			
Intersection Capacity Utilization	uc		95.2%	೨	U Level o	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

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KHA Oueues

Balboa Transit Station 10: Olney St & Balboa Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

→	SBT	271	0.47	15.3	0.0	15.3	48	123	244		1173	23	0	0	0.24
+	NBT	419	0.72	21.8	0.0	21.8	98	204	328		1193	0	0	0	0.35
ţ	WBT	266	0.43	14.4	0.0	14.4	47	152	936		1457	0	0	0	0.41
•	WBL	149	98.0	71.6	0.0	71.6	38	#175		120	174	0	0	0	98.0
†	EBT	428	0.45	16.6	0.0	16.6	46	103	1172		1508	0	0	0	0.28
•	EBL	35	0.18	26.5	0.0	26.5	∞	38		120	208	0	0	0	0.17
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station 10: Olney St & Balboa Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

•	SBR				1900								0.92	41	0	0																										
→	SBT	4	193	193	1900	4.9	1.00	0.98	1.00	1818	0.96	1753	0.92	210	=	260	NA	4		15.6	15.6	0.31	4.9	2.0	536		0.15	0.48	14.4	1.00	0.3	14.7	В	14.7	В							
ၨ	SBL		18	18	1900								0.92	20	0	0	Perm		4																							
•	NBR		44	44	1900								0.92	48	0	0																					В		14.4	В		
•	NBT	4	322	322	1900	4.9	1.00	86:0	1.00	1829	0.97	1787	0.92	320	00	411	NA	∞		15.6	15.6	0.31	4.9	2.0	546		c0.23	0.75	16.0	1.00	5.2	21.1	ပ	21.1	ပ							
•	NBL		19	19	1900								0.92	21	0	0	Perm		∞																		ervice					
4	WBR		24	24	1900								0.92	56	0	0																					HCM 2000 Level of Service		time (s)	f Service		
ţ	WBT	4₽	527	527	1900	2.0	0.95	0.99	1.00	3516	1.00	3516	0.92	573	4	595	NA	9		19.3	19.3	0.38	2.0	2.5	1330	c0.17		0.45	11.9	1.00	0.2	12.0	В	22.3	ပ		M 2000 I		Sum of lost time (s)	CU Level of Service		
/	WBL	jr.	137	137	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	149	0	149	Prot	-		4.8	4.8	0.09	4.4	2.0	166	80.00		0.00	22.9	1.00	40.5	63.4	ш				Н		Su	⊇		
<i>></i>	EBR		88	38	1900								0.92	41	0	0																					19.2	0.65	51.0	55.4%	15	
†	EBT	4₽	326	326	1900	2.1	0.95	0.99	1.00	3488	1.00	3488	0.92	387	Ξ	417	Ν	2		16.2	16.2	0.32	5.1	2.8	1107	0.12		0.38	13.5	1.00	0.2	13.7	В	15.0	Ω							
•	EBL	je-	32	32	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	32	0	32	Prot	2		1.8	1.8	0.04	4.4	2.0	62	0.02		0.56	24.2	1.00	8.9	31.1	ပ					y ratio		_		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

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Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

→	SBT	376	0.98	87.0	4.7	7.16	314	#465	328		453	38	0	0	0.91	
←	NBT	353	0.74	49.3	0.0	49.3	259	351	315		299	0	0	0	0.63	
ļ	WBT	1431	0.74	22.5	0.0	22.5	303	386	1076		1932	0	0	0	0.74	
\	WBL	133	0.72	9.77	0.0	9.77	120	191		20	244	0	0	0	0.55	
†	EBT	1066	0.62	28.6	0.0	28.6	354	497	276		1725	0	0	0	0.62	
•	EBL	20	0.50	78.1	0.0	78.1	43	87		20	116	0	0	0	0.43	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

73 73 1900

106

37 37 1900

181

17 1900

Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor

Balboa Transit Station 12: Grand Ave & Culver St

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

Culver St

٠	SBL	113	29.0	71.3	0.0	71.3	87	148	186		343	0	0	0	0.33	
ţ	WBT	1598	0.58	6.4	0.0	6.4	288	72	211		2750	21	0	0	0.59	
†	EBT	1204	0.41	1.9	0.0	1.9	28	71	1076		2949	0	0	0	0.41	
•	EBL	24	0.29	73.1	0.0	73.1	22	m35		22	146	0	0	0	0.16	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	
•	SBR		09	9	<u></u>								0.92	99	0	
→	SBT	4	213	213	1900	4.9	1.00	0.98	0.99	1800	0.70	1274	0.92	232	9	

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

¥

Perm

¥

Perm

29.2 197 0

> 8 1423 NA

> 133 Prot

> > 1062

Prot 50

Lane Group Flow (vph

0.92

0.92 115 0

0.92

182 182 1900 4.9 1.00 0.96 0.99 0.98 1771 0.88 198 198 198 339

1135 11135 11135 11900 4.9 0.95 0.98 11.00 3466 11.00 3466 11.00

122 172 1900 4.4 1.00 1.00 0.95 1770 0.95 133

910 910 910 1100 11.00 3501 11.00 3501 989

> 4.4 11.00 11.00 0.95 0.95 0.92 50

> > Fit Fit Protected Sart. Flow (prol) Fit Permitted Sart Flow (perm) Adj. Flow (vph) RTOR Reduction (vph)

0.98 46.9 1.00 41.5

88.4

0.22 0.74 42.5 1.00 5.2 47.7

> 0.75 23.1 0.82 2.3 21.1

> 0.72 58.0 1.04 8.6 68.9

0.62 24.8 1.00 1.7 26.5 C

0.57 62.3 1.00 5.6 67.9

> Uniform Delay, d1 Progression Factor Incremental Delay, d2

Delay (s) Level of Service Approach Delay (s) Approach LOS D

HCM 2000 Level of Service

14.4 E

Sum of lost time (s) ICU Level of Service

35.5 0.84 134.0 84.2%

Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
C Critical Lane Group

39.6 39.6 0.30 4.9 2.0 376

39.6 39.6 0.30 4.9 2.0 461

73.6 73.6 0.55 4.9 5.5 1903

14.1 0.11 4.4 2.0 186 c0.08

65.9 65.9 0.49 5.1 5.4 1721 0.30

6.6 6.6 0.05 4.4 2.0 87 0.03

> Clearance Time (s) Vehicle Extension (s)

Actuated g/C Ratio

Lane Grp Cap (vph) v/s Ratio Prot

v/s Ratio Perm

Actuated Green, G (s) Effective Green, g (s)

Turn Type Protected Phases Permitted Phases KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 12: Grand Ave & Culver St

																																					A		14.4	A		
*	SBR		27	27	1900								0.92	59	0	0																					Service					
٠	SBL	>	11	77	1900	4.9	1.00	0.97	96:0	1734	96:0	1734	0.92	84	10	103	Prot	4		12.3	12.3	60.0	4.9	2.0	159	90.00		0.65	58.8	1.00	9.9	65.4	ш	65.4	ш		evel of S		ime (s)	Service		
4	WBR		<i>L</i> 9	29	1900								0.92	73	0	0																					HCM 2000 Level of Service		m of lost	ICU Level of Service		
Ţ	WBT	₩	1403	1403	1900	4.9	0.95	0.99	1.00	3515	1.00	3515	0.92	1525	2	1596	NA	9		103.1	103.1	0.77	4.9	4.1	2704	c0.45		0.59	6.5	0.77	0.8	5.9	⋖	5.9	A		Ĭ		S	2		
Læ	WBU	4	0	0	1900								0.92	0	0	0	Prot	-																			7.0	09.0	134.0	25.0%	15	
†	EBT	‡	1108	1108	1900	5.1	0.95	1.00	1.00	3539	1.00	3539	0.92	1204	0	1204	NA	2		111.7	111.7	0.83	5.1	4.2	2950	c0.34		0.41	2.8	0.50	0.3	1.7	⋖	3.1	A							
4	EBL	r	72	77	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	24	0	24	Prot	2		4.4	4.4	0.03	4.4	2.0	28	0.01		0.41	63.5	1.09	1.4	70.4	ш					ratio		_		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fit	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Transit Station 13: Lee St & Grand Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	†	/	ţ	•	
Lane Group	EBT	WBL	WBT	NBL	
Lane Group Flow (vph)	1288	46	1611	47	
v/c Ratio	0.47	0.62	0.51	0.44	
Control Delay	3.4	75.1	2.4	43.3	
Queue Delay	0.1	0.0	0.0	0.1	
Total Delay	3.5	75.1	2.5	43.4	
Queue Length 50th (ft)	114	83	110	15	
Queue Length 95th (ft)	136	139	177	57	
Internal Link Dist (ft)	211		1401	337	
Tum Bay Length (ft)		400			
Base Capacity (vph)	2720	170	3176	423	
Starvation Cap Reductn	363	0	0	0	
Spillback Cap Reductn	0	0	201	85	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.55	0.57	0.54	0.14	
Intersection Summary					
Intersection Summary					

Synchro 9 Report Page 24 KHA Oueues

Balboa Transit Station Horizon Year Adopted Conditions
13: Lee St & Grand Ave Iming Plan: PM Peak Period

Movement EBT EBR WBL Lane Configurations ↑↑↑ 151 Tarlife volume (kph) 1151 34 89 Teatre Volume (kph) 1151 34 89 Ideal Flow (kphp) 1900 1900 1900 Total Lost time (s) 4,9 4,9 4,9 100 Fit Total Lost time (s) 1,00 0,95 Sald Flow (perm) 3524 1770 Peak-hour factor, PHF 0,92 0,92 0,92 Adj. Flow (perm) 1,287 0 97 Turn Type NA Turn Type NA Frotected Phases 2 1 Permitted Phases 2 1 Permitted Phases 3 102.4 11.9 Actualed Green, G (s) 102.4 11.9 Actualed Green, G (S) 102.4 11.9 Actualed Green, G (Sa) 102.4 11.9 Actualed Green, G (Sa) 102.4 11.9	MBL MB1 MB MB	NBL 17 17 1900 4.9 1.00 0.92 0.98 1.675 0.98 1.675 0.98 1.675 1.675 1.675 1.675 1.675 1.675 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8	NBR 27 27 1900 1900 1900 1900 1900 1900 1900 190	
15 1 34 1151 34 1151 34 1151 34 1151 34 1151 34 1151 34 1151 34 1151 34 1151 34 1151 34 1151 34 1150 3524 1150 3524 1151 37 10 100 100 100 100 100 100 100 100 100		17 17 17 1900 4.9 100 0.98 1675 0.98 1675 0.98 18 18 18 19 19 19 18 18 18 18 18 18 18 18 18 18 18 18 18	27 27 1900 0.92 0	
hh) 1151 34 h) 1151 34 1900 1900 1900 4.9 0.95 1.00 3.52.4 3.52.4 3.52		17 1900 4,9 1,00 0,92 0,98 1675 0,98 1675 0,92 18 28 18 28 19 19 19 19 19 19 19 19 19 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10	27 27 1900 092 0	
(yph) 1151 34 1900 1900 49 1900 1900 1900 1900 1900	_	17 1900 4.9 1.00 0.92 0.98 1675 0.98 1675 18 28 18 28 19 19 19 19 19 17 19 17 18 18 18 18 18 19 10 10 10 10 10 10 10 10 10 10 10 10 10	27 1900 092 0	
1900 1900 1900 1900 1900 1900 1900 1900		1900 1.00 0.92 0.98 1675 0.92 18 28 28 19 Prot 8	1900 0.92 29 29	
49 0.95 1.00 1.00 3.524 1.00 3.524 1.00 3.524 1.00 3.620 (vph) 1.267 0 (vph) 1.287 0 (vph) 1.287 0 (vph) 1.287 0 0 0.24 0 0.36		4.9 1.00 0.92 0.98 1.675 0.98 18 28 28 28 Prof	0.92 29 0	
(vph) 1287 0 (vph) NA (s) 102.4 (s)		100 0.92 0.98 1675 0.98 1675 0.92 18 28 28 19 Prot 8	0,92 29 20 0	
100 100 3524 100 3524 1092 092 (vph) 1287 0 (vph) 1287 0 (vph) 1287 0 (vph) 1287 0 (vph) 1287 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.92 0.98 1675 0.98 1675 0.92 18 28 19 Prot	0.92 29 0	
1100 3524 1100 3524 1100 3524 100 100 (vph) 1287 0 (vph) 1287 0 1024 (s) 102.4 (s) 102.4		0.98 1675 0.98 1675 0.92 18 28 19 Prot 8	0,92 29 0	
3524 100 3524 1100 3524 1100 3526 1100 1001 1261 127 127 127 1287 1287 1287 1287 1287 1		1675 0.98 1675 0.92 18 28 28 19 Prot	0.92 29 0	
100 3524 9524 092 092 (vph) 1287 0 (vph) 1287 0 (vph) 1287 2 2 2 2 3 6 9 102.4		0.98 1675 0.92 18 28 28 19 Prot	0.92 29 0	
3524 3524 9HF 0.92 0.92 (vph) 1287 0 (vph) 1287 0 2 2 5 (s) 102.4 6 (s) 102.4		1675 0.92 18 28 19 Prot 8	0.92 29 0	
1251 37 1251 37 1) 1287 0 NA 2 2 1 102.4 102.4		0.92 18 28 19 Prot 8 8	0.92 29 0	
1251 37 1 0 1 0 0 1 1287 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		18 28 19 Prot 8	29	
n) 1287 0 NA NA 2 2 2 102.4 0.76		28 19 Prot 8 8	0	
1287 0 NA NA 2 2 102.4 102.4 0.76		19 Prot 8 8		
NA 2 2 102.4 102.4 0.76		Prot 8	0	
2 102.4 102.4 0.76		о г.		
) 102.4 102.4 0.76		r.		
102.4		7.		
102.4		;		
0.76		5.5		
	98.0 60	0.04		
4.9	.4 5.4	4.9		
s) 4.0	2.0 4.4	2.0		
	57 3121	89		
0.37 c0.05		c0.01		
0.48	٥	0.28		
5.9	58.9 1.7	62.3		
0.44	_	1.00		
ncremental Delay, d2 0.6 5	5.0 0.6	0.8		
3.1		63.2		
	E A	ш		
(s) 3.1	5.8	63.2		
Approach LOS A	⋖	ш		
ntersection Summary				
HCM 2000 Control Delay	P.6	ICM 2000 L	HCM 2000 Level of Service	А
pacity ratio				
		Sum of lost time (s)	me (s)	14.2
ntersection Capacity Utilization 53.0%	_	ICU Level of Service	Service	A
Analysis Period (min)	15			

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Balboa Transit Station Horizon Year Adopted Conditions 14: Grand Ave & Figueroa Blvd

 Lane Group
 EBL
 EBT
 WBT

 Lane Group Flow (vph)
 76
 1207
 1653

 Lane Group Flow (vph)
 76
 1207
 1653

 Control Delay
 0.63
 0.65
 0.54

 Queue Delay
 98
 4
 1.8
 1.6

 Queue Length Soft (ft)
 84
 1.8
 1.6

 Accept Long (ft)
 90
 2.5
 7.73

 Tum Bay Length (ft)
 90
 1.047
 3.081

 Base Capacity (vph)
 2.49
 1863
 3081

 Base Capacity (vph)
 2.9
 18.63
 3081

 Reduced vic Ratio
 0
 0
 0
 0

 Reduced vic Ratio
 0
 0
 0

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Balboa Transit Station 14: Grand Ave & Figueroa Blvd

t

Conditions	PM Peak Period
doptec	Timing Plan.
Year	
Horizon Year A	

0 0 1900

0 0 1900

45

Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor

4176 1476 11476 11900 5.3 0.95 11.00 11.00 3523 3523 3523 11.00

11110 11110 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00

70 70 1900 1.00 1.00 0.95 1770 0.95 0.95

Fit Protected
Satt Flow (prof)
Elt Pennited
Satt Flow (perm)
Peak-hour factor, PHF
Adj. Flow (ppf)
Lane Group Flow (pth)

Horizon Year Adopted Conditions Timing Plan: PM Peak Period nd Ave

Daildoa Fransil Station	15: Mission Bay Dr & Gran	
	₽1	

→	SBT	1251	0.89	9.07	47.1	117.7	754	#636	478		1405	75	346	0	1.18	
←	NBT	1164	0.39	4.4	0.2	4.6	121	314	276		3016	951	0	0	0.56	
€	NBL	1338	0.94	56.2	7.6	63.8	721	611		285	1481	126	0	0	0.99	
*	EBR	1076	89.0	1.8	0.4	2.2	0	0			1583	0	160	0	97.0	
•	EBL	111	0.71	93.5	0.0	93.5	123	m188	773	225	240	0	0	0	0.46	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Interception Cumman

0.92

0.92

0.92 49 0

0 1653 ₹

1207

₹

Prot 5

Turn Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)

148.6 0.87 5.3 4.4 3079 0.47

170.0 170.0 1.00 5.3 4.4 11863 c0.65

11.7 11.7 0.07 4.4 2.0 121 0.04

Actuated g/C Ratio Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) v/s Ratio Prot

Synchro 9 Report Page 28 KHA Oueues

Synchro 9 Report Page 27

KHA HCM Signalized Intersection Capacity Analysis

12.7 B

HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service

3.2 0.70 170.0 62.8%

Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group

0.0 A

0.54 2.5 0.12 0.3 0.6 A 0.6 A

0.065 0.00 1.80 1.8 A 6.6

0.63 77.0 1.00 7.1 84.2

Uniform Delay, d1 Progression Factor Incremental Delay, d2

v/c Ratio

Delay (s) Level of Service Approach Delay (s) Approach LOS

^{# 95}th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 15: Mission Bay Dr & Grand Ave

Movement EBI NBI NBI SBI SBR Movement EBI F 17 17 14 16 17 17 17 18 265 17 17 18 265 17 17 18 265 17 17 18 265 17 17 18 265 17 17 18 265 17 17 18 265 17 17 18 265 17 17 18 265 17 18 265 18 18 265 18 18 265 18 18 18 265 18 18 18 265 18 18 265 18 18 265 18 18 18 18 265 18 18 18 265 18 18 18 18 18 18 18 18 18 18 18 18 18 18 18 18 18		4	~	•	←	₫	→	•	
No.	Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR	
102 990 1231 1071 0 886 265 1900 1900 1900 1900 1900 44 40 57 5.7 4.9 100 100 0.95 1.00 1900 1900 100 0.95 1.00 1.00 0.95 100 0.95 1.00 1.00 0.95 100 0.95 1.00 1.00 0.95 100 0.95 1.00 1.00 0.95 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 1444 0 1236 0 1770 100 0.95 1.00 1.00 1770 100 0.95 1.00 1.00 150 1700 708 144.9 69.2 150 1700 708 144.9 69.2 150 1700 708 144.9 69.2 150 1700 0.08 1.35 1.36 150 1700 0.08 0.34 0.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.36 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 150 1700 0.95 1.35 1.35 170 1700 0.95 1.35 1.35 170 170 0.95 1.35 1.35 170 170 0.95 1.35 1.35 170 170 0.95 1.35 1.35 170 170 0.95 1.35 170 170 0.95 1.35 170 170 0.95 1.35 170	Lane Configurations	۴	¥.	r.	*	4	\$		
102 990 1231 1071 0 886 265 1900 1900 1900 1900 1900 1900 4 4 0 5.7 5.7 6.7 4.9 1.00 1.00 0.97 0.95 0.95 1.00 0.85 1.00 0.97 0.97 1.00 0.85 1.00 0.97 0.97 1.70 1883 34.33 35.39 34.17 1.70 1883 34.33 35.39 34.17 1.71 10.86 0.92 0.92 0.92 1.71 10.76 13.38 1164 0 0.93 288 1.11 10.76 13.38 1164 0 0.93 288 1.11 10.76 13.38 1164 0 0.93 288 1.12 1.10 1.07 13.38 1164 0 0.125 0 1.11 10.76 13.38 1164 0 0.41 0 1.12 10.76 13.38 144.9 69.2 1.13 1.10 1.00 0.42 0.85 0.41 1.14 10.76 13.8 144.9 69.2 1.15 1.20 1.00 0.42 0.85 0.41 1.15 1.20 1.00 0.42 0.89 1.15 1.20 1.30 1.36 1.36 1.10 1.00 0.95 1.35 1.36 1.10 1.00 0.95 1.35 1.36 1.10 1.00 0.95 1.35 1.36 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35 1.35 1.10 1.10 0.95 1.35	Traffic Volume (vph)	102	066	1231	1071	0	988	265	
1900 1900	Future Volume (vph)	102	066	1231	1071	0	988	265	
44 40 57 57 49 100 100 0.97 0.95 0.95 100 0.95 1.00 0.97 0.95 100 0.95 1.00 0.97 0.95 100 0.95 1.00 0.97 1.00 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1383 1164 0 0 15 0 1770 1383 1164 0 1266 0 1770 1706 1388 1164 0 1266 0 1770 1700 1708 144.9 69.2 1700 1700 0.45 144.9 69.2 1700 1700 0.45 1.35 1.36 1700 1700 0.045 1.35 1.36 1700 1700 0.95 1.35 1.36 180 0.09 1.35 1.36	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
100 100 097 095 095 100 085 1.00 0.097 100 0.85 1.00 1.00 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3419 0.092 0.092 1770 100 100 100 100 100 150 1700 708 1449 692 150 1700 708 1449 692 150 1700 708 1449 692 150 1700 708 1449 692 150 1700 708 1449 692 150 1700 708 1449 692 150 1700 0.045 1.35 1.36 150 1700 0.045 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.36 150 1700 0.05 1.35 1.35	Total Lost time (s)	4.4	4.0	2.7	2.7		4.9		
100 0.85 1.00 1.00 0.97 1700 1.883 3433 3539 3417 1770 1.883 3433 3539 3417 1770 1.881 3.433 3539 3417 1770 1.882 3.433 3539 3417 1770 1.883 3.433 3539 3417 1770 1.881 3.433 3539 3417 1770 1.881 3.433 3539 3417 1770 1.881 3.433 3539 3417 1770 1.881 3.439 1.64 0 0.25 0.92 1770 1.881 1.64 0 0.25 0.92 1770 1.881 1.64 0 0.25 0.92 1770 1.881 1.64 0 0.25 0.92 150 1.700 7.08 144.9 6.92 150 1.700 7.08 144.9 6.92 150 1.700 0.42 0.85 0.41 150 1.700 0.42 0.85 0.41 150 1.700 0.42 0.85 0.45 150 1.700 0.42 0.85 0.45 150 1.700 0.42 0.85 0.38 0.36 1754 0.0 47.4 2.8 46.8 1754 0.0 47.4 2.8 46.8 1754 0.0 6.39 0.33 0.3 6.36 1755 1.35 1.35 1.36 18 55.2 4.0 72.3 18 55.2 4.0 72.3 18 55.2 4.0 72.3 18 55.3 14.0 0.39 0.39 0.39 10 0.09 1 0.09 0.95 1.35 1.36 10 0.09 1 0.09 0.95 1.35 1.36 10 0.09 1 0.09 1 0.09 1 0.09 1 0.09 1 0.09 1 10 0.09 1 0.09 1 0.09 1 0.09 1 0.09 1 0.09 1 0.09 1 10 0.09 1 0.	Lane Util. Factor	1.00	1.00	0.97	0.95		0.95		
1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 164 0 05 288 1770 1388 1164 0 1256 0 1770 1788 1449 0 0 1770 1788 1449 0 0 1780 170 0 0 0 0 1780 170 0 0 0 1780 170 0 0 0 1780 170 0 0 0 1780 170 0 0 1780 1780 0 1780 0 0 0 0 1780 0 0 0 1780 0 0 0 1780 0 0 0 1780 0 0 0 1780 0 0 0 1780 0 0 0 1780 0 0 0 1780 0 0 1780 0 0 1780 0 0 1780 0 0 1780 0 0 1780 0 0 1780 0 1780 0 0 1780	T.	1.00	0.85	1.00	1.00		0.97		
1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1770 1583 3433 3539 3417 1711 1076 1388 1164 0 963 288 170 10 0 0 0 0 15 0 0 170 111 1076 1388 1164 0 126 0 0 170 170 1388 1164 0 126 0 0 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 0 042 0 042 0 041 170 170 0 042 0 042 0 041 170 170 0 042 0 043 0 044 170 170 0 042 0 045 0 041 170 170 0 042 0 042 0 044 170 170 0 042 0 044 0 044 170 170 0 042 0 044 180 180 0 043 0 044 180 180 0 044 0 044 180 180 0 044 0 044 180 180 0 044 0 044 180 180 0 044 0 044 180 0 044	Fit Protected	0.95	1.00	0.95	1.00		1.00		
1095 100 095 100	Satd. Flow (prot)	1770	1583	3433	3539		3417		
1770 1583 3433 3539 3417	Fit Permitted	0.95	1.00	0.95	1.00		1.00		
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,93 288 1144 0 0 0 15 0 0 0 15 0 0 0 15 0 0 0 0 15 0 0 0 0 0 0 0 0 0	Satd. Flow (perm)	1770	1583	3433	3539		3417		
111 1076 1338 1164 0 963 288 10	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 0 0 0 0 0 15 0 hr) 111 1076 1338 1164 0 1236 0 Prof Free Prof NA	Adj. Flow (vph)	111	1076	1338	1164	0	963	288	
h) 111 1076 1338 1164 0 1236 0 Pot Free Prof NA Prof N	RTOR Reduction (vph)	0	0	0	0	0	15	0	
Prot Free Prot NA Prot NA 4 1 6 5 2 4 Free 1 6 5 2 150 1700 708 144.9 69.2 150 1700 708 144.9 69.2 150 1700 0.45 0.45 0.41 4 4 5 7 5 4.9 150 1.00 0.42 0.33 0.41 156 1583 142.9 3016 1.390 156 1583 142.9 3016 1.390 156 1583 142.9 3016 1.390 156 10.94 0.39 0.89 157 10.00 0.95 1.35 1.36 100 100 0.95 1.35 1.36 118 100 0.95 1.35 1.36 12 9.3 118 100 0.3 8.4 13 14 72.3 14 72.3 15 18 55.2 4.0 72.3 16 5 1.36 1.35 17 18 55.2 4.0 72.3 18 10.0 0.39 1.35 19 10.0 0.95 1.35 10 10.0 0.95 1.35 10 10 0.95 1.35 10 10 0.95 1.35 11 12 12 1.35 12 13 10 0.33 8.4 13 14 72.3 14 5 7 72.3 15 7 72.3 16 7 72.3 17 72 72.3 18 72 72 72.3 18 72 72 72.3 19 72 72 10 72 72	Lane Group Flow (vph)	111	1076	1338	1164	0	1236	0	
4 1 6 5 2 5 150 1700 708 144.9 69.2 150 1700 70.8 144.9 69.2 150 1700 70.8 144.9 69.2 150 1700 70.8 144.9 69.2 150 1700 70.8 144.9 69.2 144 5.7 5.7 6.7 4.9 156 1583 1429 3016 1390 156 1583 1429 3016 1390 156 1583 1429 3016 1390 156 10.8 0.3 0.3 0.3 154 0.0 0.474 2.8 46.8 154 0.0 0.95 13.5 13.6 154 0.0 0.95 13.5 13.6 155 18 10.0 0.3 8.4 18 5.2 4.0 72.3 18 18 5.2 4.0 72.3 19 18 5.2 4.0 72.3 19 18 5.2 4.0 72.3 19 19 19 10 10 10 10 10 10 10	Turn Type	Prot	Free	Prot	NA	Prot	NA		
Free 150 170 708 1449 692 692 692 150 1700 708 1449 692 692 692 693 150 1700 708 1449 692 692 693 150 1700 0.42 0.85 0.41 4.9 692 693 1700 0.42 0.85 0.41 4.9 692 693 1700 0.42 0.85 0.45 1.36 1.36 693 693 693 693 693 693 693 693 693 6	Protected Phases	4		-	9	2	2		
s) 15.0 170.0 70.8 144.9 69.2 0.09 1.00 0.42 0.85 0.41 4.4 5.7 5.7 4.9 1.50 170.0 0.42 0.85 0.41 4.4 5.7 5.7 4.9 0.06 1.00 0.42 0.85 0.43 0.06 0.03 0.03 0.03 0.07 0.68 0.94 0.39 0.89 75.4 0.0 47.4 2.8 46.8 1.00 0.95 1.35 1.46 1.00 0.95 1.35 1.84 8.47 1.8 55.2 4.0 72.3 F A E A E 9.6 3.14 72.3 A C C E 9.6 3.14 72.3 A C C E 9.6 1.00 0.90 0.90 0.90 1.14 72.3 A C C E 9.6 1.00 0.90 0.90 0.90 1.14 72.3 A C C E 1.14 72.3 A C C E 1.15 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.9	Permitted Phases		Free						
150 1700 708 144.9 69.2 4	Actuated Green, G (s)	15.0	170.0	70.8	144.9		69.2		
0.09 1.00 0.42 0.85 0.41 4.4 5.7 5.7 4.9 2.0 4.6 3.6 1.56 1583 1429 3016 1390 0.06 0.39 0.33 0.036 0.71 0.68 0.94 0.39 0.89 7.54 0.0 47.4 2.8 46.8 7.54 0.0 0.95 1.35 1.36 2 9.3 1.8 10.0 0.3 8.4 84.7 1.8 5.2 4.0 72.3 F A E A E A 84.7 1.8 5.2 4.0 72.3 F A E A Copacity ratio 0.91 Nullization 10 0.91 Sum of lost time (s) Int (s)	Effective Green, g (s)	15.0	170.0	70.8	144.9		69.2		
44 57 57 4.9 20 2.0 4.6 3.6 156 1583 1429 3016 1390 0.06 0.03 0.33 0.036 0.71 0.68 0.94 0.39 0.89 754 0.0 47.4 2.8 46.8 1.00 1.00 0.95 1.35 1.36 2 84.7 1.8 5.2 4.0 72.3 F	Actuated g/C Ratio	0.09	1.00	0.42	0.85		0.41		
156 1583 1429 3016 1330 156 1583 1429 3016 1330 0.06 0.0.39 0.33 0.0.36 0.071 0.68 0.94 0.39 0.89 75.4 0.0 47.4 2.8 46.8 1.00 0.95 1.35 1.36 2 9.3 1.8 10.0 0.3 8.4 F A E A E A E E A E A E A E E A E A E E A B E A B E A B E A B E A B E A B E A B E A B E A B E A B E A B E B B B B	Clearance Time (s)	4.4		2.7	2.7		4.9		
156 1583 1429 3016 1390 0.06 0.03 0.33 0.36 0.71 0.68 0.94 0.39 0.89 75.4 0.0 47.4 2.8 46.8 2 9.3 1.8 10.0 0.3 8.4 84.7 1.8 55.2 4.0 72.3 F A E A E 9.6 31.4 72.3 A	Vehicle Extension (s)	2.0		2.0	4.6		3.6		
0.06	Lane Grp Cap (vph)	156	1583	1429	3016		1390		
0.71 0.68 0.94 0.39 0.89 754 0.68 0.94 0.39 0.89 754 1.00 1.00 0.95 1.35 1.36 2 9.3 1.8 10.0 0.3 8.4 8.7 1.8 55.2 4.0 72.3 F A E A E 9.6 31.4 72.3 Y Y Y Y Y Y Y Y Y Y Y Y Y	v/s Ratio Prot	90.0		c0.39	0.33		c0.36		
75.4 0.0 47.4 2.8 46.8 175.4 0.0 47.4 2.8 46.8 1 100 0.95 1.35 136 2 9.3 18 10.0 0.3 8.4 F A E A E 9.6 31.4 72.3 Y y H (s) 100 0.95 1.35 1.36 A 2.8 4.0 72.3 B.4 7 1.8 55.2 4.0 72.3 E A E 9.6 31.4 72.3 C B E 9.6 31.4 72.3 H (s) 100 Sum of lost time (s) Ith (s) 100 Sum of lost time (s) Ith (s) 170.0 Sum of lost time (s) Ith (s) 170.0 Sum of lost time (s)	v/s Ratio Perm		89.00						
75.4 0.0 47.4 2.8 46.8 2 10.0 10.0 0.95 1.35 1.36 9.3 1.8 10.0 0.3 8.4 84.7 1.8 55.2 4.0 72.3 F A E A E A C E	v/c Ratio	0.71	89.0	0.94	0.39		0.89		
1.00 1.00 0.95 1.35 1.36 2 9.3 1.8 10.0 0.3 8.4 8.4 84.7 1.8 5.2 4.0 72.3 F A E A E A E 9.6 31.4 72.3 W	Uniform Delay, d1	75.4	0.0	47.4	5.8		46.8		
2 9,3 18 10.0 0.3 8.4 8.47 18 55.2 4.0 72.3 F A E A E 3.4 7 12.3 A C E	Progression Factor	1.00	1.00	0.95	1.35		1.36		
84.7 1.8 55.2 4.0 72.3 F A E A E 9.6 31.4 72.3 A C C C Bedsy 36.5 HCM 2000 Level of Service 0.09 activation 0.91 Sum of lost time (s) 170.0 Sum of lost time (s) 150.0 Sum of lost time	Incremental Delay, d2	9.3	1.8	10.0	0.3		8.4		
F A E A 72.3 9.6 31.4 72.3 A C E F A E Number of Service of	Delay (s)	84.7	1.8	55.2	4.0		72.3		
9.6 31.4 72.3 Y Y C E C E C Apacity ratio 0.91 Time (s) 170.0 Sum of lost time (s) C Wilization 86.2% ICU Level of Service 15	Level of Service	ш	A	ш	A		ш		
y y y selay 6 Capacity at a select of Service 6 Capacity at a select of Service 1 (s) 1 (100 Sum of lost time (s) 1 (s) 1 (s) 1 (s) 1 (s) 1 (s)	Approach Delay (s)	9.6			31.4		72.3		
36.5 HCM 2000 Level of Service 0.91 Sum of lost time (s) 86.2% ICU Level of Service 15	Approach LOS	⋖			ပ		ш		
36.5 HCM 2000 Level of Service 10.91 Sum of lost time (s) 86.2% ICU Level of Service 15	Intersection Summary								
ratio 0,91 170.0 Sum of lost time (s) 86.2% ICU Level of Service 15	HCM 2000 Control Delay			365	Ĭ	1 0000 M	P. Jo leye	ervice	d
170.0 Sum of lost time (s) 86.2% ICU Level of Service 15	HCM 2000 Volume to Canadi	tv ratio		0.91			5		a a
86.2% ICU Level of Service 15	Actuated Cycle Longth (c)	ry rang		1700	Ü	m of loc	time (c)		0 4
86.2%	Actuated Cycle Length (s)			0.071	ನ <u>s</u>	100 100 110	(s)		0.61
Ahalysis Period (min) 15	Intersection Capacity Utilization	uo		86.2%	2	n Level 0	Service		ш
	Analysis Period (min)			15					

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KHA Queues

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Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	٨	•	•	→	•	
Lane Group	EBL	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	419	338	1188	1437	539	
v/c Ratio	0.80	19.0	0.44	0.97	0.70	
Control Delay	37.7	29.3	4.9	43.3	18.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.7	29.3	4.9	43.3	18.5	
Queue Length 50th (ft)	78	191	164	392	149	
Queue Length 95th (ft)	#138	241	363	#226	273	
Internal Link Dist (ft)	261		749	743		
Tum Bay Length (ft)	270	202			70	
Base Capacity (vph)	226	208	2704	1480	775	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.75	19.0	0.44	0.97	0.70	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Balboa Transit Station Horizon Year Adopted Conditions 16: Mission Bay Dr & Bluffside Av Timing Plan: PM Peak Period

EBI EBR NBL NBT SBT SBR 243 143 311 1093 1322 496 243 143 311 1093 1322 496 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 094 100 1900 100 1900 1900 097 100 100 100 100 100 097 100 100 100 100 100 097 100 100 100 100 100 097 100 100 100 100 100 097 1070 100 100 100 100 100 0 0 0 0 0 0 100 244 650 356 356 48 10 244 650 356 48		4	~	•	•	-	`	
No.	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
243 143 311 1093 1322 496 1900 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	N.		F	*	‡	W.	
243 143 311 1093 1322 496 1900 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	243	143	311	1093	1322	496	
1900 1900	Future Volume (vph)	243	143	311	1093	1322	496	
44	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 1.00 0.95 0.95 1.00 0.94 1.00 1.00 0.085 0.97 0.95 1.00 0.085 0.97 0.95 1.00 1.00 0.97 0.95 1.00 1.00 0.97 0.95 1.00 1.00 0.97 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.94 1.70 3539 3539 1583 1.05 0.09 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.98 0.99 0.92 0.92 0.99 0.90 0.92 0.92 0.90 0.91 0.92 0.92 0.91 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 1.18 1.43 4.26 0.94 0.94 0.95 0.92 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.96 3.56 3.56 0.95 0.95 0.96 0.95 0.95 0.96 0.95 0.95 0.96 0.95 0.95 0.96 0.95 0.95 0.96 0.95 0.95 0.96 0.95 0.95 0.96 0.95 0.95 0.95 0.95 0.95 0.	Total Lost time (s)	4.4		4.4	2.0	9.6	9.6	
0.94 1.00 1.00 0.85 0.97 0.95 1.00 1.00 0.85 0.97 0.95 1.00 1.00 1.00 0.97 0.95 1.00 1.00 1.00 0.97 0.95 1.00 1.00 1.00 0.97 0.92 0.92 0.92 0.92 0.92 0.98 0.99 0.92 0.92 0.92 0.92 0.99 0.90 0.90 0.90 0.00 0.00 0.00 0.00 0.00	Lane Util. Factor	0.97		1.00	0.95	0.95	1.00	
0.97 0.95 1.00	Fit	0.94		1.00	1.00	1.00	0.85	
3309 1770 3339 3339 1883 3309 1770 3339 3339 1883 3309 1770 3339 3339 1883 3309 1770 3339 3339 1883 3309 1770 3339 3339 1883 188 1437 426 175 338 1188 1437 426 175 175 175 175 175 175 175 175 175 175	Fit Protected	0.97		0.95	1.00	1.00	1.00	
10	Satd. Flow (prot)	3309		1770	3539	3539	1583	
1770 3539 3539 1583 1583 1770 3539 3539 1583 1770 3539 3539 1583 1784 1539 1784 1437 426 128 1437 426 178 1437 426 188 1437 426 188 1437 426 188 1437 426 188 1437 426 188 1437 426 188 1437 426 188 188 1437 426 188 188 1437 426 188 188 1437 426 188	Fit Permitted	0.97		0.95	1.00	1.00	1.00	
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,93 0,93 0,93 0,94 0,95 0,9	Satd. Flow (perm)	3309		1770	3539	3539	1583	
h) 169 0 0 113 h) 109 0 0 0 113 h) 109 0 0 38 1188 1437 539 h) 100 0 38 1188 1437 426 h) 100 0 244 650 35.6 35.6 h) 100 0 244 650 35.6 35.6 h) 100 0 244 650 35.6 35.6 h) 100 0 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
h) 109 0 0 113 h) 109 0 0 338 1188 1437 426 l) Plot NA NA Perm 4 5 2 6 5 6 3.56 5) 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 244 65.0 35.6 35.6 10.6 24 65.0 35.6 35.6 10.7 20 40 48 48 10.7 20 6.7 0.44 0.97 0.64 10.0 0.88 17.2 4.8 10.0 0.88 17.2 4.8 10.0 0.89 26.7 3.5 24.2 19.7 10.0 0.88 17.2 4.8 10.0 0.89 26.7 3.5 24.2 19.7 10.0 0.88 17.2 4.8 10.0 0.89 26.7 3.5 24.2 19.7 10.0 0.88 14.14 24.4 10.0 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Adj. Flow (vph)	264	155	338	1188	1437	539	
hb) 310 0 338 1188 1437 426 Prot Prot NA NA Perm 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	REDICTION (Vph)	109	0	0	0	0	113	
Prot Prot NA NA Perm 4 5 2 6 6 5) 10.6 24.4 65.0 35.6 35.6 10.6 24.4 65.0 35.6 35.6 35.6 10.1 2.4 65.0 35.6 35.6 35.6 10.2 2.9 0.75 0.42 0.42 0.42 10.2 2.0 4.0 4.8 4.8 4.8 4.8 10.0 2.0 4.0 4.8	ane Group Flow (vph)	310	0	338	1188	1437	426	
4 5 2 6 5 2 6 6 6 3 3 6 6 106 244 650 35.6 35.6 35.6 106 244 650 35.6 35.6 35.6 107 0.12 0.29 0.76 0.42 0.42 0.42 10 2.0 2.0 40 10 4.8 4.8 4.8 10 2.0 2.0 40 4.8 4.8 4.8 4.8 2.0 0.79 0.74 0.97 0.64 0.97 0.64 2.0 0.79 0.74 0.97 0.64 0.07 0.64 3.5 2.6 1.72 4.8 4.1 2.4 4.4 4.2 2.0 0.4 0.97 0.64 0.07 0.64 3.5 2.6 4.8 4.1.4 2.4 4.4 4.4 4.4 4.4 4.4	Furn Type	Prot		Prot	NA	NA	Perm	
b) 10.6 24.4 65.0 35.6 35.6 35.6 0.10.6 24.4 65.0 35.6 35.6 35.6 0.12 0.12 0.29 0.76 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.42	Protected Phases	4		2	2	9		
s) 106 244 650 356 356 106 244 650 356 356 106 244 650 356 356 1012 0.29 0.76 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.42	Permitted Phases						9	
106 244 650 356 356 107 0.29 0.24 650 356 108 2.0 2.0 6.0 4.2 109 2.0 2.0 4.0 4.8 100 2.0 4.0 4.8 4.8 100 0.34 0.34 0.34 100 0.57 0.44 0.97 0.64 100 0.88 1.2 1.97 100 0.88 1.2 1.97 100 0.88 1.2 1.97 100 0.88 1.2 1.97 100 0.88 1.2 1.97 100 0.88 1.2 4.4 100 0.88 1.2 4.4 100 0.89 1.2 100 0.80 0.40 100 0.80 0.40 100 0.80	Actuated Green, G (s)	10.6		24.4	65.0	35.6	35.6	
0.12 0.29 0.76 0.42 0.42 1 4.4 5.0 5.6 5.6 5.6 2 0 40 4.8 4.8 412 5.0 5.0 1.48 4.8 412 5.0 20 1.48 4.8 2 0.0.9 0.0.19 0.34 0.0.41 0.75 0.67 0.44 0.97 0.64 3 5.9 2.67 3.5 2.42 19.7 1.00 0.88 1.23 1.00 1.00 2 6.7 2.0 0.4 1.12 4.8 D C A B A A D C A D C	Effective Green, g (s)	10.6		24.4	65.0	35.6	35.6	
44 44 50 56 56 20 20 40 48 48 412 508 2706 482 48 60.09 20.19 276 482 662 60.09 60.19 0.34 60.41 0.27 60.75 0.67 0.44 0.97 0.64 85 2.67 3.5 24.2 190 80 88 1.23 1.00 1.00 80 88 1.23 1.00 1.00 9 4.7 2.4 8 4.4 2.4 9 0.64 17.2 4.8 4.4 2.4 0 0.7 2.0 0.4 17.2 4.8 4.4 2.4 0 0 0.4 1.72 4.8 4.4 2.4 4.8 0 0 0 4 0.4 3.6 3.6 3.6 3.6 3.6 3.6 3.6	Actuated g/C Ratio	0.12		0.29	97.0	0.42	0.42	
2.0 2.0 4.0 4.8 4.8 412 508 2706 1482 662 0.09 0.0.19 0.34 0.0.11 0.27 0.75 0.67 0.44 0.97 0.64 35.9 2.67 0.44 0.97 0.64 1.00 0.88 1.23 1.00 0.04 2 6.7 2.0 0.4 17.2 4.8 42.7 2.56 4.8 41.4 24.4 0.7 D C A D C 0.0 42.7 2.56 4.8 41.4 24.4 0.0 D C A D C 0.0 42.7 2.56 4.8 41.4 24.4 0.0 D A D C A D A D C A D C A D C A D C	Clearance Time (s)	4.4		4.4	2.0	9.6	2.6	
412 508 2706 1482 662 C0.09	/ehicle Extension (s)	2.0		2.0	4.0	4.8	4.8	
0.009	-ane Grp Cap (vph)	412		208	2706	1482	662	
0.75 0.67 0.44 0.97 0.64 3.59 2.6.7 3.5 24.2 19.7 1.00 0.88 1.23 1.00 1.00 2 6.7 2.0 0.4 17.2 4.8 42.7 2.56 4.8 41.4 24.4 D C A 2 D C 42.7 3.5 4.8 5.0 42.7 2.6 4.8 41.4 24.4 D C A 3 D C A 4 3 D C A 5 D C	//s Ratio Prot	c0.09		c0.19	0.34	c0.41		
0.75 0.67 0.44 0.97 0.64 3.59 2.67 3.5 24.2 19.7 1.00 0.88 1.23 1.00 1.00 2 6.7 2.0 0.4 17.2 4.8 42.7 2.5 4.8 41.4 2.4.4 D C A D C 42.7 9.4 36.7 D A D C A D	//s Ratio Perm						0.27	
3.5.9 2.6.7 3.5 24.2 19.7 2 6.7 2.0 0.4 17.2 4.8 42.7 25.6 4.8 41.4 24.4 2.7 25.6 4.8 41.4 24.4 2.7 25.6 4.8 41.4 24.4 2.7 25.6 4.8 17.2 4.8 2.7 A D C A D C A D C A D A D A D A D A D A D A D A D A D A D	//c Ratio	0.75		19:0	0.44	0.97	0.64	
100 088 123 100 100 2 6.7 2.0 0.4 17.2 4.8 42.7 25.6 4.8 41.4 24.4 D C A D C 42.7 9.4 36.7 D A D C 42.7 9.4 36.7	Jniform Delay, d1	35.9		26.7	3.5	24.2	19.7	
2 67 2.0 0.4 17.2 4.8 42.7 25.6 4.8 41.4 24.4 D C A D C 42.7 9.4 36.7 D A D C 42.7 9.4 36.7 9.4 36.7 A D C Ocapacity ratio 0.83 Compaction 17.2% CU Level of Service CU	Progression Factor	1.00		0.88	1.23	1.00	1.00	
42.7 25.6 4.8 41.4 24.4 D C A D C 42.7 9.4 36.7 Y Y Y Y Copacity ratio 0.83 Cul Level of Service 17.2% Cul Level of Service 17.2% Cul Level of Service 17.2% Cul Level of Service	ncremental Delay, d2	6.7		2.0	0.4	17.2	4.8	
A D C A D C A B D C A B D C A B D C A B D C A B D C A B D A D D C A D D C A D D C A D D C A D D D C A D D D D	Delay (s)	42.7		25.6	4.8	41.4	24.4	
y A 36.7 y A D y A D elely 26.7 HCM 2000 Level of Service o Capacity ratio 0.83 Sum of lost time (s) v Utilization 77.2% ICU Level of Service	evel of Service	٥		ပ	⋖	۵	O	
y y 26.7 HCM 2000 Level of Service of Serv	Approach Delay (s)	42.7			9.4	36.7		
y y kelay 26.7 HCM 2000 Level of Service o Capacity ratio 0.83 Sum of lost time (s) v Utilization 77.2% ICU Level of Service	Approach LOS	Ω			A	O		
26.7 HCM 2000 Level of Service 0.83 Sum of lost time (s) 77.2% ICU Level of Service	ntersection Summary							
0.83 85.0 Sum of lost time (s) 77.2% ICU Level of Service	HCM 2000 Control Delay			747	Ĭ	0002 M.	evel of Service	C
85.0 Sum of lost time (s) 77.2% ICU Level of Service	ACM 2000 Volume to Capaci	ity ratio		0 0 0				•
Utilization 77.2% ICU Level of Service	Actuated Cycle Length (s)	ary ratio		85.0	Š	m of lost	time (s)	14.4
UIIIZAIIUII 17.270	ptoropotion Consolity I Hill 704	9		/00 77	3 5		C coning	
	ntersection capacity utilizat.	5		11.2%	٥	n revel o	Service	O.
Analysis Period (min)	Analysis Period (min)			2				
	control raise group							

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Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Perbd

nsit Station n Bay Dr & Damon Ave

	•	4	+	•	۶	→	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	177	147	1388	205	70	1551	
v/c Ratio	0.79	0.53	0.64	0.20	0.22	0.54	
Control Delay	96.1	33.9	34.3	13.5	45.8	1.	
Queue Delay	0.0	0.0	40.6	0.0	0.0	0.5	
Total Delay	96.1	33.9	74.9	13.5	45.8	1.7	
Queue Length 50th (ft)	195	26	749	73	22	9	
Queue Length 95th (ft)	273	131	871	m161	m29	m28	
Internal Link Dist (ft)	1169		376			749	
Tum Bay Length (ft)		75		160	182		
Base Capacity (vph)	391	420	2160	1001	322	2892	
Starvation Cap Reductn	0	0	875	0	0	817	
Spillback Cap Reductn	0	0	0	0	0	533	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.45	0.35	1.08	0.20	0.22	0.75	
Intersection Summary							
m. Volume for 95th percentile greatered is metered by unstream signal	di di in dii	s metere	hv inct	ream sinr	<u>-</u>		
Inches in the second se	ano de com	5	المام (ما	96.	į		

KHA Queues

Horizon Year Adopted Conditions Timing Plan: PM Peak Perbd Balboa Transit Station 17: Mission Bay Dr & Damon Ave

	\	√	+	4	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	k.	++	R _	×	₩	
Traffic Volume (vph)	163	135	1277	189	64	1427	
Future Volume (vph)	163	135	1277	189	64	1427	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Fit	1.00	0.85	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	177	147	1388	205	02	1551	
RTOR Reduction (vph)	0	6/	0	32	0	0	
Lane Group Flow (vph)	177	89	1388	170	70	1551	
Turn Type	Prot	Perm	¥	Perm	Prot	NA	
Protected Phases	4		2		-	9	
Permitted Phases		4		2			
Actuated Green, G (s)	21.4	21.4	103.8	103.8	31.0	139.0	
Effective Green, g (s)	21.4	21.4	103.8	103.8	31.0	139.0	
Actuated g/C Ratio	0.13	0.13	0.61	0.61	0.18	0.82	
Clearance Time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
Vehicle Extension (s)	5.0	2.0	3.8	3.8	2.0	3.5	
Lane Grp Cap (vph)	222	199	2160	996	322	2893	
v/s Ratio Prot	c0.10		c0.39		0.04	c0.44	
v/s Ratio Perm		0.04		0.11			
v/c Ratio	0.80	0.34	0.64	0.18	0.22	0.54	
Uniform Delay, d1	72.2	67.9	21.2	14.4	59.2	2.0	
Progression Factor	1:00	1.00	1.49	1.52	9.70	91.0	
Incremental Delay, d2	16.7	0.4	1.2	0.3	0.0	0.3	
Delay (s)	88.9	68.3	32.8	22.3	44.9	1.7	
Level of Service	ш	ш	ပ	ပ	۵	¥	
Approach Delay (s)	79.5		31.4			2.9	
Approach LOS	ш		ပ			А	
Intersection Summary							
HCM 2000 Control Delay			22.8	Ξ	M 2000	HCM 2000 Level of Service	U
HCM 2000 Volume to Capacity ratio	ratio		0.65				
Actuated Cycle Length (s)			170.0	S	Sum of lost time (s)	time (s)	13.8
Intersection Capacity Utilization	_		59.4%	⊇	ICU Level of Service	Service	В
Analysis Period (min)			15				
c Critical Lane Group							

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Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

_	SBT	158	.47	1.9	6.0	2.8	338	471	461		444	920	0	0	0.76	
٠	SBL S	ı				93.3					167 2			0	0.22 0	
←	NBT	1357	0.53	9.3	0.1	9.4	368	479	804		2580	249	0	0	0.58	
•	NBL	89	0.63	107.4	0.0	107.4	73	124		92	136	0	0	0	0.50	
ļ	WBT	17	80:0	38.7	0.0	38.7	6	32	271		280	0	0	0	90:0	
†	EBT	235	0.88	86.3	0.0	86.3	210	304	303		339	0	0	0	69.0	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	. (

Intersection Summary molecular of the Northead Summary working the Northead Signal of Nor

Synchro 9 Report Page 34 KHA Oueues

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Movement		4	†	~	/	ţ	4	•	•	•	•	-	•
100 100	Acutomont	0	FOT	LDD	IQ/W	TOW	COM	Ī	TOIN	CON	ī	TOS	COD
1900 1900	Movement	EBL	EBI	EBK	WBL	WBI	WBK	NBL	NBI	NBK	SBL	SBI	SBK
1 6 139 7 1 7 63 1900 1900 1900 1900 1900 1900 49	ane Configurations		÷			4		F	<u></u>		F	<u>₹</u>	
190 190	Fraffic Volume (vph)	7	9	139	7	_	7	63	1247	7	33	916	149
1900 1900 1900 1900 1900 44 100 100	-uture Volume (vph)	71	9	139	7		7	63	1247	2	33	916	149
100	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100	Total Lost time (s)		4.9			4.9		4.4	2.0		4.4	2.0	
0.91 0.94 1.00 0.95 1.00 0	ane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
10.98 0.98 0.95 16.74 1.704 1.770 15.04 0.92 0.92 0.92 15.04 1.372 1.770 15.04 1.372 1.770 1.94 0 0 10 0 68 1.94 0 0 10 0 68 1.94 0 0 10 0 68 1.94 0 0 10 0 68 1.95 25.7 25.7 10.4 2.5 25.7 25.7 10.4 2.5 25.7 20.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5 25.7 20.0 2.5	, <u>+</u>		0.91			0.94		1.00	1.00		1.00	0.98	
1674 1704 1770 088 0.79 0.95 0.95 0.95 0.95 1.504 1.372 1.770 1.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	-It Protected		0.98			0.98		0.95	1.00		0.95	1.00	
150	Satd. Flow (prot)		1674			1704		1770	3538		1770	3465	
1504 1372 1770 1504 1372 1770	-It Permitted		0.88			0.79		0.95	1.00		0.95	1.00	
257 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)		1504			1372		1770	3538		1770	3465	
7 151 8 1 8 68 141 0 0 7 0 0 0 141 0 0 0 7 0 0 0 141 0 0 0 7 0 0 0 141 0 0 0 7 0 0 68 1 NA Perm NA Proti 8 4 25.7 25.7 10.4 25.7 10.4 20 25.7 25.7 25.7 10.4 20 25.7 25.7 10.4 3.0 0.0 1 22.0 2.0 2.0 2.0 2.0 22.1 20 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
194 0 0 7 0 68 194 0 0 10 0 68 194 0 0 10 0 68 19 8 4 4 1 25.7 25.7 10.4 22.7 20.7 10.8 22.7 20.7 10.8 22.7 20.7 10.8 22.8 0.05 10.0 1.10 24.8 0.05 1.0 1.10 24.8 0.05 1.10 24.8 0.05 1.10 25.2 61.7 92.9 1.99 HCM 2000 Level of Service 1.90 Sum of lost time (s) 64.4% ICU Level of Service	Adj. Flow (vph)	11	7	151	80	—	80	89	1355	2	36	966	162
194 0 0 10 0 68 1 NA Perm NA Prot 8	RTOR Reduction (vph)	0	4	0	0	7	0	0	0	0	0	9	0
25.7 25.7 10.4 25.7 25.7 10.4 25.7 25.7 10.4 25.7 25.7 10.4 25.0 25.0 2.0 22.7 20.00 22.7 20.00 22.7 20.00 20.13 0.001 0.00 20.13 0.001 0.00 20.14 0.005 0.03 10.00 1.00 1.10 24.8 0.00 7.1 95.2 61.7 7.9 95.2 61.7 92.9 F E E F F F HCM 2000 Level of Service 170.0 Sum of lost time (s) 64.4% ICDL Level of Service 15.0 10.00 1.00 1.00 170.0 Sum of lost time (s) 64.4% ICDL Level of Service	-ane Group Flow (vph)	0	194	0	0	10	0	89	1357	0	36	1152	0
25.7 25.7 10.4 25.7 25.7 10.4 25.7 25.7 10.4 20.15 0.15 0.06 220 20 20 20 227 20 20 20 227 20 20 20 227 20 20 20 24.8 0.01 0.01 1.10 24.8 0.05 0.63 1.00 1.00 1.10 24.8 0.00 7.1 95.2 61.7 92.9 F E E 95.2 61.7 92.9 F F E 95.2 61.7 92.9 F F F 95.3 170.0 Sum of lost time (s) 10.00 Sum of lost time (s) 14.00 Sum of lost time (s) 15.00 Sum of lost time (s) 16.00 Sum of lost time (s) 17.00 Sum of lost time (s) 17.00 Sum of lost time (s) 17.00 Sum of lost time (s)	Furn Type	Perm	≨		Perm	Ν		Prot	NA		Prot	NA	
25.7 10.4 25.7 25.7 10.4 0.15 0.15 0.06 4.9 4.9 4.9 4.4 2.0 2.0 2.0 2.1 20.7 10.8 0.86 0.05 0.63 1.00 1.00 1.10 2.48 0.05 0.63 1.00 1.10 2.48 0.0 2.48 0.0 2.48 0.0 1.10 1.10 2.48 0.0 2.40 0.0 2.48 0.0 2.40 0.0 2.4	Protected Phases		∞			4		_	9		2	2	
25.7 25.7 10.4 25.7 25.7 10.4 0.15 0.15 0.16 4.9 4.9 4.9 4.4 2.0 2	Permitted Phases	∞			4				9				
25.7 25.7 10.4 17. 0.15 0.15 0.06 0.06 4.9 4.4 4.4 2.0 2.0 2.0 2.0 2.1 2.7 2.07 10.8 2.0 0.08 0.05 0.05 0.63 0.03 1.00 1.00 1.10 1.10 24.8 0.00 7.11 95.2 61.7 92.9 F E E F 95.7 61.7 92.9 F E E F 19.9 HCM 2000 Level of Service 1.90 Sum of lost time (\$) 64.4% ICU Level of Service 15.	Actuated Green, G (s)		25.7			25.7		10.4	123.0		7.0	119.6	
0.15 0.15 0.06 4 4.9 4.4 4.4 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3.0 108 2 0.04 0.05 0.05 0.04 0 0.05 0.05 0.03 1.00 0.06 0.05 0.05 0.03 1.00 0.07 0.00 0.00 0.00 0.00 0.00 0.00 0	Effective Green, g (s)		25.7			25.7		10.4	123.0		7.0	119.6	
49 49 44 20 20 20 227 207 108 2 20.13 0.01 0.004 0 0.04 0.005 0.63 0 1.00 0.01 1.10 0 24.8 0.05 0.10 1.10 0 25.2 61.7 77.9 1.10 0 24.8 0.01 0.0 0 1.00 0.0 0.10 0.10 0 1.00 0.0 0.10 0 1.00 0.0 0.0 0.10 0 1.00 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Actuated g/C Ratio		0.15			0.15		90.0	0.72		0.04	0.70	
20 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Clearance Time (s)		4.9			4.9		4.4	2.0		4.4	2.0	
227 207 108 co.13 0.01 0.86 0.05 0.03 1.00 1.00 1.00 24.8 0.00 7.19 95.2 61.7 77.9 19.9 HCM 2000 Level of Service 15.00 Sum of lost time (s) 64.4% ICU Level of Service 15.10 Evel of Service	Vehicle Extension (s)		2.0			2.0		2.0	3.7		2.0	3.7	
0.0.13 0.0.1 0.0.04 0.86 0.0.5 0.0.5 1.03 0.0.5 0.6.3 1.00 1.00 1.1.0 2.48 0.0 1.1.0 2.48 0.0 7.1 95.2 61.7 92.9 F E E F 95.2 61.7 19.9 HCM 2000 Level of Service 0.60 170.0 Sum of lost time (s) 64.4% ICU Level of Service 15	-ane Grp Cap (vph)		227			207		108	2559		72	2437	
0.013 0.001 0.63 0.86 0.05 0.63 70.3 61.7 77.9 1.00 1.10 1.10 24.8 0.0 7.1 95.2 61.7 92.9 F E E F 95.2 61.7 F H CM 2000 Level of Service 0.60 2um of lost time (s) 64.4% ICU Level of Service 15.	//s Ratio Prot							c0.04	00.38		0.02	0.33	
0.86 0.05 0.63 70.3 61.7 77.9 1.00 1.00 77.9 24.8 0.0 7.1 95.2 61.7 92.9 F E F 95.2 61.7 92.9 F HCM 2000 Level of Service 0.60 170.0 Sum of lost time (s) 64.4% ICU Level of Service	//s Ratio Perm		00.13			0.01							
70.3 61.7 77.9 1.00 1.00 1.10 24.8 0.0 7.1 95.2 61.7 92.9 F E F 95.7 61.7 92.9 19.9 HCM 2000 Level of Service 19.9 HCM 2000 Level of Service 170.0 Sum of lost time (s) 64.4% ICU Level of Service	//c Ratio		0.86			0.05		0.63	0.53		0.50	0.47	
100 100 110 248 00 7.1 95.2 61.7 92.9 F E E F 95.2 61.7 92.9 F E F 17.0 8um of lost time (s) 64.4% ICU Level of Service	Jniform Delay, d1		70.3			61.7		77.9	10.5		79.8	11.2	
24.8 0.0 7.1 95.2 61.7 92.9 F	Progression Factor		1.00			1.00		1.10	0.74		1.08	0.95	
95.2 61.7 92.9 F E F 95.2 61.7 F 61.7 F F 61.7 E F 61.7 C E F 19.9 HCM 2000 Level of Service 0.60 170.0 Sum of lost time (s) 64.4% ICU Level of Service 1.50 15.1 C E F 170.0 Sum of lost time (s)	ncremental Delay, d2		24.8			0.0		7.1	0.7		1.1	0.4	
95.2 61.7 F F F F F F F F F F F F F F F F F F F	Delay (s)		95.2			61.7		92.9	8.4		87.1	11.0	
95.2 61.7 F E E 19.9 HCM 2000 Level of Service 0.60 Sum of lost time (s) 64.4% ICU Level of Service 15	evel of Service		ш			ш		ш	4		ш	В	
19.9 0.60 170.0 64.4%	Approach Delay (s)		95.2			61.7			12.5			13.3	
19.9 0.60 170.0 64.4%	Approach LOS		ш			ш			В			В	
19.9 0.60 170.0 64.4%	ntersection Summary												
0.60 170.0 64.4%	HCM 2000 Control Delay			19.9	Ŧ	3M 2000	Level of S	ervice		В			
170.0 64.4% 15	HCM 2000 Volume to Capacit	ty ratio		09.0									
64.4% 15	Actuated Cycle Length (s)	,		170.0	Su	im of lost	time (s)			14.3			
Analysis Period (min) 15	ntersection Capacity Utilization	uc		64.4%	2	U Level o	of Service			ပ			
	Analysis Period (min)			15									
c Critical Lane Group	Critical Lane Group												

Synchro 9 Report Page 35

Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Horizon Year Adopted Conditions
Timing Plan: PM Peak Period

	ţ	—	٠	-	
Lane Group	WBT	NBT	SBL	SBT	
Lane Group Flow (vph)	187	1267	114	1070	
v/c Ratio	0.70	0.55	09.0	0.38	
Control Delay	24.4	11.7	50.4	5.6	
Queue Delay	13.3	0.1	0.0	0.6	
Total Delay	37.8	11.8	50.4	6.1	
Queue Length 50th (ft)	21	171	64	133	
Queue Length 95th (ft)	80	411	m136	377	
Internal Link Dist (ft)	514	478		804	
Tum Bay Length (ft)			06		
Base Capacity (vph)	410	2297	208	2786	
Starvation Cap Reductn	0	114	0	0	
Spillback Cap Reductn	197	0	0	1193	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.88	0.58	0.55	79.0	
Intersection Summary					
m Volume for 95th percentile queue is metered by upstream signal.	ile aueue is	metere	I by upstr	ım sianal.	
	one december	5	nde (a.		

Synchro 9 Report Page 36 KHA Oueues

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

•	SBR		0	0	1900								0.92	0	0	0																										
-	SBT	4₽	984	984	1900	2.0	0.95	1.00	1.00	3539	1.00	3539	0.92	1070	0	1070	NA	2		6.99	6.99	0.79	2.0	3.2	2785	0.30		0.38	2.8	1.67	0.4	2.0	∢	9.1	⋖							
٠	SBL	¥	105	105	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	114	0	114	Prot	2		8.0	8.0	0.09	4.4	2.0	166	c0.06		69.0	37.3	1.07	8.1	47.8	٥									
•	NBR		36	36	1900								0.92	36	0	0																					В		14.3	В		
•	NBT	4₽	1130	1130	1900	2.0	0.95	1.00	1.00	3523	1.00	3523	0.92	1228	7	1265	NA	9		54.5	54.5	0.64	2.0	3.2	2258	c0.36		0.56	8.5	1.15	6.0	10.8	В	10.8	В							
•	NBL	je-	0	0	1900								0.92	0	0	0	Prot	-																			ervice					
√	WBR		26	26	1900								0.92	19	0	0																					HCM 2000 Level of Service		time (s)	f Service		
ţ	WBT	4	0	0	1900	4.9	1.00	96.0	0.97	1723	0.80	1420	0.92	0	132	22	NA	4		8.2	8.2	0.10	4.9	2.0	136		c0.04	0.41	36.1	1.00	0.7	36.8	٥	36.8	Ω		M 2000		Sum of lost time (s)	ICU Level of Service		
>	WBL		116	116	1900								0.92	126	0	0	Perm		4																		H		S	⊇		
~	EBR		0	0	1900								0.92	0	0	0																					11.9	0.56	85.0	%0.09	15	
†	EBT	4	0	0	1900								0.92	0	0	0		4																0.0	∢							
•	EBL		0	0	1900								0.92	0	0	0			4																			y ratio		L		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	Critical Lane Groun

Synchro 9 Report Page 37

Balboa Transit Station 20: Mission Bay Dr & Rosewood St

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	/	-	٠	→
Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	2530	8	2003
v/c Ratio	0.25	0.57	90.0	0.63
Control Delay	19.6	4.0	40.0	9.4
Queue Delay	0.3	0.1	0.0	0.4
Total Delay	19.9	4.0	40.0	9.8
Queue Length 50th (ft)	3	86	2	200
Queue Length 95th (ft)	31	326	9m	954
Internal Link Dist (ft)	221	096		526
Tum Bay Length (ft)			09	
Base Capacity (vph)	333	4410	124	3166
Starvation Cap Reductn	0	0	0	548
Spillback Cap Reductn	104	331	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.62	90.0	0.77
Intersection Summary				
incorporation of the state of t				
 Wolume for 95th percentile queue is metered by upstream signal. 	ile queue i:	s metered	by upstr	eam signal.

Synchro 9 Report Page 38 KHA Queues

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 20: Mission Bay Dr & Rosewood St

vBel VBR NBT NBR SEI SBT NBR SEI rations VF AP	WBR NBT SRI SRT 29 295 32 7 1843 29 2295 32 7 1843 29 2295 32 7 1843 40 1900 1900 1900 40 1900 1900 1900 100 190 100 100 101 100 100 100 100 100 100 100 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.00 0 2.529 0.03 0.03 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 <		\	1	←	•	٠	→	
tions	tions		WBL	WBR	NBT	NBR	SBL	SBT	
(vph) 5 29 2295 32 7 1843 (vph) 5 29 2295 32 7 1843 (vph) 1900 1900 1900 1900 1900 (s) 4.0 4.0 4.0 4.0 (s) 4.0 4.0 4.0 4.0 (s) 8 4.0 4.0 4.0 (s) 8 1.00 1.00 (s) 99 1.00 1900 1900 (s) 99 1.00 1900 (s) 90 10 10 10 10 10 10 10 10 10 10 10 10 10	(vph) 5 29 2295 32 7 1843 (vph) 6 2 2295 32 7 1843 (vph) 1900 1900 1900 1900 (vp) 4.0 4.0 1900 1900 1900 (vp) 4.0 4.0 1900 1900 1900 (vp) 4.0 4.0 4.0 4.0 (vp) 6.99 1.00 0.95 1.00 (vp) 1634 5.075 1.770 3539 (vp) 1634 5.075 1.770 3539 (vp) 30 0.99 0.92 0.92 0.92 0.92 (vp) 100 0.95 1.00 (vp) 1634 5.075 1.770 3539 (vp) 30 0.92 0.92 0.92 0.92 (vp) 30 0.92 (vp	rations	>		441		r	₩	
(vph) 5 29 2995 32 7 1843 b) 1900 1900 1900 1900 1900 c) 40 40 40 40 c) 40 40 40 c) 699 100 095 100 c) 690 100 c) 690 100 095 100 c) 690 100	(vph) 5 29 295 32 7 1843 (vph) 1900 1900 1900 1900 1900 (s) 40 40 40 nr 1.00 0,91 100 0,95 nr 1.00 0,99 1.00 0,95 1.00 0,99 1.00 0,95 1.00 0,99 1.00 0,95 1.00 0,99 1.00 0,95 1.00 0,99 1.00 0,95 nr (vph) 30 0,92 0,92 0,92 0,92 nr (vph) 30 0 1770 3539 nr (vph) 30 0 1770 3539 nr (vph) 30 0 1 0 0,95 nr (vph) 30 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	e (vph)	2	53	2295	32	7	1843	
b) 1900 1900 1900 1900 1900 1900 1900 190	(c) 1900 1900 1900 1900 1900 1900 1900 190	e (vph)	2	56	2295	32	7	1843	
(\$) 4.0 4.0 4.0 4.0 In 1.00 0.95 In 1.00 0	(\$) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	. (Idyo	1900	1900	1900	1900	1900	1900	
ny (pp) 0.95 (100 0.95 (100 0.95 (100 0.95 (100 0.95 (100 0.95 0.99 (100 0.95 (100 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 0.99 (100 0.99 0.99 (100 0.99 0.99 0.99 (100 0.99 0.99 0.99 (100 0.99 0.99 0.99 (100 0.99 0.99 0.99 (100 0.99 0.99 0.99 0.99 (100 0.99 0.99 0.99 0.99 0.99 (100 0.99 0.99 0.99 0.99 0.99 (100 0.99 0.99 0.99 0.99 0.99 0.99 (100 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0	n (100 0.95) 1 1634 1.00 0.95 1 1634 1.00 0.95 1 1634 1.00 0.95 1 1634 1.00 0.95 1 10	e (s)	4.0		4.0		4.0	4.0	
0.88 1.00 1.00 1.00 1.00 1.00 0.99 1.00	0.88 1.00 1.00 1.00 1.00 1.03 1.03 1.03 1.00	tor	1.00		0.91		1.00	0.95	
(yeb) 1009 1009 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000 1009 1000	(http://doi.org/10.00000000000000000000000000000000000		0.88		1.00		1.00	1.00	
1634	1634 5075 1770 3539 1730 1634		66.0		1.00		0.95	1.00	
m) 1634 5075 100 m) 1634 5075 100 m, PHF 092 092 092 092 092 092 m, PHF 092 092 092 092 092 092 m, Cyph) 30 0 1 0 0 0 m, Cyph) 7 0 2529 0 8 2003 m, Cyph) 7 0 2529 0 8 2003 m, Cyph) 7 0 2529 0 8 2003 m, Cyph) 8 0 1 0 0 0 m, Cyph) 8 0 0 0 0 m, Cyph) 9 0 m, Cyph) 9 0 m, Cyph) 9 0 0 m, Cyph) 9	m) 1634 5075 100 m) 1634 5075 100 m) 1634 5075 100 m (vph) 30 092 092 092 092 092 m (vph) 30 0 1 1 0 0 0 m (vph) 30 0 1 1 0 0 0 m (vph) 7 0 2529 0 8 2003 m (vph) 7 0 2529 0 8 2003 m (vph) 7 0 2529 0 1 0 m (vph) 7 0 2529 0 8 2003 m (vph) 8 0 7 1 4 728 m (vph) 8 0 0.79 m (vph) 8 0 0.63 m (vph) 8 0 0.64 m (vph) 8 0 0.63 m (vph) 8 0 0.63 m (vph) 8 0 0.63 m (vph) 9 0 0.63 m (vph) 9 0 0.63 m (vph) 9 0 0.63 m (vph) 10 0.64 m (vph) 10 0.66 m (vph) 10		1634		5075		1770	3539	
m) 1634 5075 1770 3539 m, r. PHF 6,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0	m) 1634 5075 1770 3539 m) 1634 6075 1770 3539 m (vph) 30 092 092 092 092 m (vph) 30 0 0 0 0 0 m (vph) 30 0 0 2529 0 8 2003 m (vph) 7 0 2529 0 8 2003 es 8 8 2 2003 es 8 8 2 14 14 728 es 8 8 2 2003 es 9 14 14 728 es 9 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		66.0		1.00		0.95	1.00	
N, PHF 0.92 0.92 0.92 0.92 Nn (vph) 30 0.92 0.92 0.92 nn (vph) 30 0.529 0.92 0.92 ses 2 1 6 0 es 1 6 8 2003 ses 2 1 6 0 es 1 6 1 6 es 2 1 6 2 es 2 1 6 8 2003 es 2 1 6 8 2003 es 2 1 6 8 2003 es 6 7.4 1.4 7.28 8 es 6.7 1.4 1.4 7.28 9.0 es 6.7 4.0 4.0 4.0 4.0 4.0 4.0 es 6.0 4.0 4.0 4.0 4.0 4.0 4.0	Nr. PHF 0.92 0.92 0.92 0.92 Nr. (pph) 3 2.495 35 8 2003 Nr. (pph) 3 0 2529 0 8 2003 es 8 2 0 9 2003 es 8 2 1 6 es 8 2 1 6 es 1 NA Prof NA es 8 2 1 6 es 2 1 6 2003 es 2 1 6 6 es 2 1 6 6 es 67.4 1.4 72.8 72.8 es 67.4 4.0 4.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 <t< td=""><td></td><td>1634</td><td></td><td>5075</td><td></td><td>1770</td><td>3539</td><td></td></t<>		1634		5075		1770	3539	
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I, G (s) 4.2 67.4 1.4 72.8 I, g (s) 4.2 67.4 1.4 72.8 ation (0.05) 0.79 0.79 0.86 on (s) 3.0 4.0 4.0 4.0 on (s) 3.0 3.0 3.0 3.0 on (s) 3.0 3.0 3.0 3.0 on (s) 3.0 0.0 0.0 0.57 on (s) 0.6 0.0 0.0 0.57 on (s) 0.6 0.0 0.0 0.0 0.0 d (s) 3.6 0.2 0.0 0.0 0.0 0.0 d (s) 3.6 0.2 0.0 0.0 0.0 0.0 0.0 d (s) 3.0 4.4 4.75 9.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <	1, G (s) 4, 2 67, 4 14 72, 8 14, 2 67, 4 14 72, 8 14, 2 67, 4 14 72, 8 14, 2 67, 4 14 72, 8 14, 2 67, 4 14 72, 8 14, 2 67, 4 10, 2 67, 4 12, 8 14, 2 67, 4 10, 2 67, 4 10, 2 67, 2 6	ses							
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atio 0.05 0.79 0.02 0.86 \$(\$) 4.0 4.0 4.0 \text{on} 3.0 3.0 3.0 \text{on} 0.00 0.50 0.57 \text{on} 0.08 0.63 \text{on} 0.08 0.65 \text{on} 0.08 0.65 \text{on} 0.08 0.65 \text{on} 0.09 0.057 \text{on} 0.08 0.65 \text{on} 0.09 0.057 \text{on} 0.08 0.06 \text{on} 0.08 0.06 \text{on} 0.09 0.057 \text{on} 0.08 0.06 \text{on} 0.09 0.057 \text{on} 0.04 0.06 \text{on} 0.05 \text{on} 0.00 o	atio 0.05 0.79 0.02 0.86 (s) (s) 4.0 0.06 (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	:u, g (s)	4.2		67.4		1.4	72.8	
(s) 40 40 40 40 40 40 40 40 40 40 40 40 40	(yph) 80 400 400 400 400 400 400 400 400 800 4024 29 3031 600 600 600 600 600 600 600 600 600 60	Ratio	0.05		0.79		0.02	0.86	
on (s) 3.0 3.0 3.0 3.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	on (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ie (s)	4.0		4.0		4.0	4.0	
vph) 80 4024 29 3031 vph) c0.00 0.50 c0.57 dd 386 0.63 0.28 0.66 clor 1.00 1.03 4.13 2.0 clor 1.00 1.00 4.03 4.09 lay, d2 0.4 0.8 3.1 0.7 s 0.4 4.4 47.5 9.0 s 0.9 4.4 47.5 9.0 rol s 39.0 4.4 47.5 9.0 rol s 0.6 A 9.1 A rol s 0.6 A A A rol s 0.6 A A A rol s 0.6 A A A rol s 0.6 Sum of lost time (s) Social Villazion of Service rol s 0.9% Sum of lost time (s) Coccon cere of Service rol s 0.0% Sum of lost time (s) Coccon cere of service	vph) 80 4024 29 3031 d0.00 0.50 0.057 0.00 c0.57 d1 386 3.6 41.3 2.0 ctor 1.00 1.08 4.09 3.1 ior 0.4 0.8 3.1 0.7 ior 0.4 0.8 3.1 0.7 ior 0.4 0.8 3.1 0.7 ior 0.4 4.4 47.5 9.1 ior 0.7 A A A ior A A 9.1 A ior A A A A ior Delay 6.7 HCM 2000 Level of Service mento capacity ratio 0.66 Sum of lost time (s) 85.0 Sum of lost time (s) accity 0.9% ICU Level of Service 10.1 ICU Level of Service	sion (s)	3.0		3.0		3.0	3.0	
c0.00 0.50 0.00 c0.57 d1 38.6 0.63 0.28 0.66 c1.00 1.00 1.00 0.57 c2.0 1.00 1.00 0.57 c3.0 1.00 1.00 0.57 c3.0 1.00 1.00 0.58 c4.4 4.7.5 9.0 c5.0 1.00 1.00 0.57 c6.0 1.00 0.57 c7.0 1.00 0.57 c8.0 1.00 0.57 c9.0 0.00 0.00 0.00 c9.0 1.00 0.00 0.00 c9.0 1.00 0	c0.00 0.50 0.00 c0.57 d1 38.6 0.63 0.28 0.66 c1 0.08 0.63 0.28 0.66 c1 0.00 1.00 1.00 0.57 c1 0.00 0.63 c2 0.04 0.8 3.1 0.7 c3 0.04 0.8 3.1 0.7 c4 4 4.75 9.0 c5 0.04 0.44 c5 0.04 c6 0.05 c6 0.05 c6 0.05 c7 0.05 c8 0.05 c9		80		4024		56	3031	
d1 38.6 0.63 0.28 0.66 ctor 1.00 1.00 1.00 1.08 4.09 ctor 1.00 1.00 1.00 4.0 ctor 1.00 1.00 1.00 1.00 ctor	d1 38.6 0.63 0.28 0.66 ctor 1.00 1.00 1.08 4.09 ctor 1.00 1.00 1.00 4.00 ctor 1.00 1.00 4.4 4.0 ctor 1.00 1.00 A A A A A A A A A A A A A A A A A A		0.00		0.50		0.00	c0.57	
1	10.08	_							
td1 386 3.6 41.3 2.0 Idor 1.00 1.00 1.08 4.09 Idy, d2 0.4 0.8 3.1 0.7 Idy, d2 0.4 4 47.5 9.0 Idy, d2 0.4 4 47.5 9.0 Idy, d2 0.4 4 47.5 9.0 Idy, d2 0.4 4 4.7 5 9.0 Idy, d2 0.4 4.4 4.7 5 9.0 Idy, d2 0.4 4 4 4.7 5 9.0 Idy, d2 0.4 4 7 5 9.0 Idy, d2 0.4 4 4.7 5 9.0	d1 386 36 413 2.0 ctor 1.00 1.00 1.00 1.00 lay, d2 0.4 0.8 3.1 0.7 ctor 39.0 4.4 47.5 9.0 ctor 4.4 47.5 9.0 ctor 50.0 4.4 47.5 9.0 ctor 6.5		80.0		0.63		0.28	99.0	
100 108 4.09 1.	tion 100 108 409 lay, d2 0.4 0.8 3.1 0.7 s 20 4.4 47.5 9.0 (s) 39.0 4.4 47.5 9.0 A D A (s) 39.0 4.4 9.1 mmary to Delay 6.7 HCM 2000 Level of Service me to Capacity ratio 0.66 Length (s) 85.0 Sum of lost time (s) acity Utilization 6.0% (min) 15	/, d1	38.6		3.6		41.3	2.0	
lay, d2 0.4 0.8 3.1 0.7 sylon 4.4 47.5 9.0 i D A D A i (s) 39.0 4.4 9.1 A i (s) 39.0 4.4 9.1 A i (s) A A A A i (s) <td>lay, d2 0.4 0.8 3.1 0.7 18, 39,0 4.4 4.5 9.0 18 D A D A 18 D A D A 19 D A D A 10 Delay 10</td> <td>actor</td> <td>1.00</td> <td></td> <td>1.00</td> <td></td> <td>1.08</td> <td>4.09</td> <td></td>	lay, d2 0.4 0.8 3.1 0.7 18, 39,0 4.4 4.5 9.0 18 D A D A 18 D A D A 19 D A D A 10 Delay 10	actor	1.00		1.00		1.08	4.09	
39,0	39,0	oelay, d2	0.4		0.8		3.1	0.7	
Color Colo	(s) 390 A D A A D A A D A A (s) 390 A A A A A A A A A A A A A A A A A A A		39.0		4.4		47.5	0.6	
(\$) 39.0 4.4 9.1 D A A A A A A A A A A A A A A A A A A	(\$) 39.0 4.4 9.1 minuscript to the company of the c	ce	۵		V		۵	A	
D A A mmary froi Delay for Capacity ratio acity Utilization D A HCM 2000 Level of Service 0.66 Sum of lost time (s) 15 ICU Level of Service 15	nmary trol Delay trol Delay trol Delay 6.7 HCM 2000 Level of Service me to Capacity ratio 0.66 Length (s) 85.0 Sum of lost time (s) 2000/ (min) 15	ay (s)	39.0		4.4			9.1	
6.7 HCM 2000 Level of Service 0.66 850 Sum of lost time (s) 60.9% ICU Level of Service 15	6.7 HCM 2000 Level of Service 0.66 85.0 Sum of lost time (s) 60.9% ICU Level of Service 15	S	٥		A			Α	
6.7 HCM 2000 Level of Service 0.66 820 Sum of lost time (s) 60.9% ICU Level of Service 15	6.7 HCM 2000 Level of Service 0.66 Sum of lost time (s) 60.9% ICU Level of Service 15	ummary							
0.66 85.0 Sum of lost time (s) 60.9% ICU Level of Service 15	0.66 850 Sum of lost time (s) 60.9% ICU Level of Service 15	ontrol Delay			6.7	HC	M 2000 L	evel of Service	⋖
85.0 Sum of lost time (s) 60.9% ICU Level of Service 15	85.0 Sum of lost time (s) 60.9% ICU Level of Service 15	lume to Capacity	atio		99.0				
60.9% ICU Level of Service 15	60.9% ICU Level of Service 15	e Length (s)			85.0	Sur	n of lost i	ime (s)	12.0
	Q.	apacity Utilization			%6.09	ਹ	J Level of	Service	В
	ne Group	od (min)			15				

Synchro 9 Report Page 39

Balboa Transit Station 21: Santa Fe St & Damon Ave

Horizon Year Adopted Conditions
Timing Plan: PM Peak Period

																						A	
•	SBR			118	118	0.92	128															f Service	
→	NBT SBT				70 99		76 108	SB 1	236	0	128	-0.29	4.0	0.26	877	8.4	8.4	Α				ICU Level of Service	
√	EBR NBL	ĸ.			45 57			EB 2 NB 1	49 138	0 62	49 0				1121 772		8.4	A		8.3	Þ	33.9%	15
≺	EBL EI	F	Stop		83		06	EB1 EE		06	0				673 11	9.8	7.8	Α				tion	
	Movement	Lane Configurations	Sign Control	Traffic Volume (vph)	Future Volume (vph)	Peak Hour Factor	Hourly flow rate (vph)	Direction, Lane #	Volume Total (vph)	Volume Left (vph)	Volume Right (vph)	Hadj (s)	Departure Headway (s)	Degree Utilization, x	Capacity (veh/h)	Control Delay (s)	Approach Delay (s)	Approach LOS	Intersection Summary	Delay	Level of Service	Intersection Capacity Utilization	Analysis Period (min)

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station Horizon Year Adopted Conditions 22: Morena Blvd & Jutland Dr Tmhg Plan: PM Peak Period

	>	4	•	•	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	<u>r</u>	¥C.	*	R		₩.	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	613	11	171	275	24	303	
Future Volume (vph)	613	17	171	275	24	303	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	999	9	186	299	76	329	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	999	18	186	567	136	219	
Volume Left (vph)	999	0	0	0	56	0	
Volume Right (vph)	0	9	0	565	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.13	0.03	
Departure Headway (s)	7.3	6.1	7.1	6.4	7.4	7.3	
Degree Utilization, x	1.36	0.03	0.37	0.53	0.28	0.44	
Capacity (veh/h)	493	292	466	554	480	489	
Control Delay (s)	194.2	8.1	13.0	15.3	11.9	14.7	
Approach Delay (s)	189.3		14.4		13.6		
Approach LOS	ш		В		В		
Intersection Summary							
Delay			92.7				
Level of Service			ш				
Intersection Capacity Utilization	ion		62.0%	೨	ICU Level of Service	Service	В
Analysis Period (min)			15				

 KHA Synchro 9 Report Dueues Page 42

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 23: Morena Blvd & Costco Dwy

WBL WBR NN 1994 1900 1900 1900 1900 1900 1900 190	WEL WER NBT NBR SBI SBI 369 71 327 364 51 900 369 71 327 364 51 900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 0.98 1.00 190 1900 1900 0.98 1.00 1.00 10.0 10.0 0.96 1.00 1.00 1.00 10.0 0.98 1.00 0.95 1.00 1.00 0.99 1.00 0.95 1.00 1.00 0.96 1.00 0.95 1.00 1.00 0.96 1.00 0.95 1.00 1.00 0.96 1.00 0.95 1.00 1.00 0.97 0.92 0.92 0.92 0.92 0.98 1.31		>	4	•	•	٠	→	
No.	No. 1, 10 No. 1, 10 No. 1, 10 389	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
369 71 327 364 51 900 1900 1900 1900 1900 1900 1900 1900	369 71 327 364 51 900 1900 1900 1900 1900 1900 4,9 71 327 364 51 900 1900 1900 1900 1900 1900 0,98 0,95 100 0,95 0,98 0,92 100 0,95 0,96 100 0,95 100 0,96 100 0,95 100 0,96 100 0,95 100 0,96 100 0,95 100 0,96 100 0,95 100 0,96 100 0,95 100 0,96 100 0,95 100 0,96 100 0,95 100 0,96 1131 1,5 190 0,25 0,34 0,04 0,49 0,49 5,5 131 1,5 190 0,25 0,34 0,04 0,49 0,49 5,5 131 1,5 190 0,25 0,34 0,04 0,49 0,49 5,5 131 1,5 190 0,25 0,34 0,04 0,49 0,49 6,5 131 1,5 190 0,25 0,34 0,04 0,49 0,49 6,5 131 1,5 190 0,25 0,34 0,04 0,49 0,5 131 1,5 190 0,25 0,34 0,04 0,49 0,5 131 1,5 190 0,5 1004 0,49 0,5 131 1,5 190 0,5 1004 0,49 0,6 131 1,0 100 1,00 0,10 1,00 1,00 1,00 0,3 0,4 0,5 1,1 0,4 6,5 1 7,5 0,8 11,0 HCM 2000 Level of Service Capacity ratio 0,66 0,10 0,10 0,10 0,10 0,10 0,10 0,10 0,10	ane Configurations	1		₩		K	**	
1900 1900	1969	Fraffic Volume (vph)	369	71	327	364	51	006	
1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	uture Volume (vph)	369	71	327	364	21	006	
4.9 5.5 4.4 5.5 0.97 0.95 1.00 0.95 0.98 0.99 1.00 0.95 0.99 0.99 1.00 0.95 0.96 1.00 0.95 1.00 0.96 1.00 0.95 1.00 0.97 0.92 0.92 1.00 0.96 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1.77 355 396 55 978 1.8 0 488 0 55 978 1.9 0 6.5 978 1.1 1 6 1.2 190 1.2 191 1.2 190 1.3 1 1.5 190 1.4 5.5 2.0 2.8 2.0	4,9 5,5 44 5,5 0,97 0,95 1,00 0,95 0,98 0,92 1,00 0,95 0,98 0,92 1,00 0,95 0,98 0,92 1,00 0,95 1,00 0,95 1,00 0,95 0,96 1,00 0,95 1,00 0,96 1,00 0,95 1,00 0,96 1,00 0,95 1,00 1,00 0,92 0,92 0,92 0,92 1,00 1,7 3,50 5 9,78 1,00 4,43 0,48 0 5 9,78 1,00 4,43 0 4,88 0 5 9,78 1,00 4,43 0 4,88 0 5 9,78 1,00 1,31 1,5 1,90 1,90 1,90 1,90 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 0.95 1.00 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	0.97 0.95 1.00 0.95 0.96 0.98 0.98 0.99 0.99 0.90 0.90 0.90 0.90	Fotal Lost time (s)	4.9		5.5		4.4	5.5	
0.98 0.92 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.98 0.92 100 100 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.	-ane Util. Factor	0.97		0.95		1.00	0.95	
996 100 095 100 095 100 096 096 096 096 096 096 096 096 096 0	100 0.96 1.00 0.95 1.00 0.96 0.96 0.00 0.96 0.00 0.96 0.00 0.96 0.00 0.96 0.00 0.96 0.00 0.96 0.00 0.96 0.00 0.95 0.00 0.95 0.92 0.94 0	, <u>+</u>	0.98		0.92		1.00	1.00	
3.884 3.259 1770 3.539 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.9	3.384 3.259 1770 3539 9.096 0.90 0.90 0.90 1770 3539 1. 0022 0.92 0.92 0.92 0.92 0.92 1. 0032 0.92 0.92 0.92 0.92 1. 0032 0.92 0.92 0.92 0.92 1. 0032 0.92 0.92 0.92 1. 0034 0.96 55 978 1. 004 0.49 1. 005 0.34 0.04 0.49 1. 005 0.34 0.04 0.49 1. 005 0.34 0.04 0.49 1. 005 0.34 0.04 0.49 1. 005 0.34 0.04 0.49 1. 005 0.34 0.04 0.49 1. 005 0.34 0.04 0.49 1. 007 0.05 0.04 1. 008 0.45 0.08 1. 009 0.04 1. 009	It Protected	96:0		1.00		0.95	1.00	
996 100 095 100 095 100 095 100 095 092 092 092 092 092 092 092 092 092 093 092 093 093 093 093 093 093 093 093 093 093	100 0.96 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.92 0.94 0.96 0.95 0.94 0.95 0.92 0.94 0.95 0.92 0.94 0.95 0.95 0	Satd. Flow (prot)	3384		3259		1770	3539	
3384 3259 1770 3539 1 092 092 092 092 092 092 092 1) 35 0 263 09 05 092 092 1) 443 0 263 0 0 0 0 1) 443 0 488 0 55 978 1) 443 0 488 0 55 978 1) 9,6 13.1 1.5 190 9,6 13.1 1.5 190 0,25 0.34 0.04 0.04 4,9 5.5 28 2.8 2.0 2	3.384 3.259 1770 3539 1 0.92 0.92 0.92 0.92 0.92 0.92 3 1 0.92 0.92 0.92 0.92 0.92 3 2 0.26 3.96 5.5 978 9 43 0 488 0 55 978 1 13.1 1.5 190 9 6 13.1 1.5 190 9 6 13.1 1.5 190 9 6 13.1 1.5 190 9 6 13.1 1.5 190 9 6 13.1 1.5 190 9 6 13.1 1.5 190 1 0.25 0.34 0.04 0.49 4 9 5 5 6 78 2 0 0.2 0.34 0.04 0.49 4 9 5 5 7 8 2 0 0.2 0.34 0.04 0.49 1 0.2 0.3 0.3 0.28 1 0.1 0.0 1.00 1.00 1 0.0 1.00 1.00 1	It Permitted	96:0		1.00		0.95	1.00	
Fig. 6.92 6.92 6.92 6.92 6.92 6.93 6.93 6.93 6.93 6.93 6.93 6.93 6.93	- 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Satd. Flow (perm)	3384		3259		1770	3539	
1) 401 77 355 396 55 978 1) 435 0 263 0 0 0 1) 443 0 488 0 55 978 1) Prof NA Prof N	401 77 355 396 55 978 35 0 263 0 0 0 443 0 26 978 96 131 15 976 96 131 1.5 190 96 131 1.5 190 96 131 1.5 190 96 131 1.5 190 96 131 1.5 190 97 131 1.5 190 96 131 1.5 190 96 131 1.5 190 97 131 1.5 190 97 102 1.04 6.5 1.2 103 0.15 0.03 0.28 1.0 104 6.5 1.7 1.6 1.0 103 1.0 1.0 1.0 1.0 103 1.0 1.0 1.0 1.0 10	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
) 35 0 263 0 0 0 1) 443 0 488 0 55 978 Prot NA Prot NA 8 2 1 6 0.25 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 4.9 5.5 0.34 0.04 0.49 5.0 2.8 2.0 2.8 832 1094 68 17.24 c0.13 0.15 0.081 0.57 1.28 10.1 1.0 1.00 1.00 1.00 1.00 1.00 1.00)) 35 0 263 0 0 0 Prot NA Prot NA Pro	Adj. Flow (vph)	401	11	355	396	22	978	
)) 443 0 488 0 55 978 Prot NA Prot NA 8 2 2 1 6 9 6 13.1 1.5 190 0.25 0.34 0.04 0.04 4.9 5.5 2.8 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 6.1724 6.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.0 4.5 0.4 1.3 1 1.0 4 65 0.4 1.3 1 1.0 HCM 2000 Level of Service Capacity ratio 0.66 Nullization 0.66 Sum of lost time (s) Utilization 1.5)) 443 0 488 0 55 978 Prot NA Prot NA 8 2 2 104 4,9 6 13.1 1.5 190 0.25 0.34 0.04 0.04 4,9 5.5 0.44 5.5 2.0 2.8 2.8 2.0 832 1094 68 17.1 0.15 0.03 0.03 0.03 0.15 0.081 0.57 1.28 10.1 10.0 1.00 1.00 1.00 1.00 1.00 1.00	RTOR Reduction (vph)	32	0	263	0	0	0	
Prot NA Prot NA Prot O A B B B B B B B B B B B B B B B B B B	Prot NA Prot NA	ane Group Flow (vph)	443	0	488	0	22	978	
8 2 1 6 9,6 13.1 1.5 19.0 9,6 13.1 1.5 19.0 0.25 0.34 0.04 0.49 4,9 5.5 2.0 2.8 2.0 2.8 2.0 2.8 832 1094 68 1724 0.13 0.15 0.03 0.28 0.53 0.45 0.81 0.57 1.28 10.1 18.6 7.1 1.29 10.1 18.6 7.1 1.31 10.4 65.1 7.5 8 B E A 13.1 10.4 65.1 10.6 1.31 10.4 65.1 10.6 1.32 0.66 Sum of lost time (s) Utilization 0.66 ICU Level of Service 1.54 1.55 1.56 1.56 1.56 1.56 1.56 1.56 1.56	8 2 1 6 9.6 13.1 1.5 19.0 9.6 13.1 1.5 19.0 0.25 0.34 0.04 0.49 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 832 1094 68 1724 0.13 0.15 0.03 0.028 0.53 0.45 0.81 0.57 1.28 10.1 18.6 7.1 1.00 1.00 1.00 1.00 1.31 10.4 65.1 7.5 1.8 B B E A 13.1 10.4 65.1 7.5 1.8 11.0 HCM 2000 Level of Service Capacity ratio 0.66 Ulization 49.2% ICU Level of Service 1.5 0.04 1.5 0.04 1.5 0.04 1.6 0.06 Ulization 1.5 0.04 1.6 0.04 1.7 0.06 Ulization 1.5 0.04 1.5 0.04 1.6 0.04 1.7 0.06 Ulization 1.6 0.04 1.7 0.06 Ulization 1.5 0.04 1.5 0.04 1.6 0.04 1.7 0.06 Ulization 1.5 0.04	Furn Type	Prot		¥		Prot	NA	
9.6 13.1 1.5 19.0 9.6 13.1 1.5 19.0 0.25 0.34 0.04 0.49 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 83.2 1094 68 1724 c0.13 0.15 0.03 c0.28 0.53 0.45 0.81 0.57 12.8 10.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00	9.6 13.1 1.5 19.0 9.6 13.1 1.5 19.0 0.25 0.34 0.04 0.49 0.49 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 2.0 2.8 4.4 5.5 2.0 2.8 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Protected Phases	∞		2		-	9	
9 6 13.1 15 190 9 6 13.1 15 190 0.25 0.34 0.04 0.04 0.25 0.34 0.55 2.0 2.8 2.0 2.8 832 1094 68 1724 0.0.13 0.15 0.03 0.028 0.53 0.45 0.03 0.028 0.53 0.45 0.04 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	9 6 13.1 15 19.0 9.6 13.1 1.5 19.0 0.25 0.34 0.04 0.04 0.04 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 8.32 1094 68 1724 0.013 0.15 0.03 0.028 0.03 0.45 0.81 0.57 12.8 10.1 10.0 1.00 1.00 1.00 1.00 1.00 1.	Permitted Phases							
9,6 13.1 1.5 19.0 0.25 0.34 0.04 0.49 4,9 5.5 44 6.5 5.5 2.0 2.8 2.0 2.8 832 1094 68 1724 60.13 0.15 0.03 60.28 0.53 0.45 0.81 0.57 1.28 10.1 18.6 7.1 1.00 1.00 1.00 1.00 1.30 0.3 46.5 0.4 1.3.1 10.4 65.1 7.5 B B B E A 1.3.1 10.4 65.1 7.5 B B B C 1.3.1 10.4 65.1 10.6 B B B C 1.3.1 10.4 65.1 10.6 B B B B B B B B B B B B B B B B B B B	9,6 13.1 1.5 19.0 0.25 0.34 0.49 0.49 4,9 5.5 44 0.28 2.0 2.8 2.0 2.8 83.2 1094 68 1724 0.13 0.15 0.03 0.28 0.53 0.45 0.81 0.57 1.28 10.1 1.00 1.00 1.00 1.00 1.00 1.00 1.31 1.04 6.51 7.5 1.8 B B E A 13.1 1.04 6.51 7.5 1.31 1.04 6.51 7.5 1.31 0.46 B 1.31 0.66 1.30 0.40 1.40 0.40 1.40 0.	Actuated Green, G (s)	9.6		13.1		1.5	19.0	
0.25 0.34 0.04 0.49 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 822 1094 68 1724 60.13 0.15 0.03 6.28 0.53 0.45 0.81 0.57 1.28 10.1 186 7.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.31 1.04 65.1 1.5 1.34 1.04 HCM 2000 Level of Service 1.39 1.10 HCM 2000 Level of Service 1.39 1.10 HCM 2000 Level of Service 1.39 8.0 Sum of fost time (s) 1.11 49.2% ICU Level of Service 1.29 1.39 8.0 Sum of fost time (s) 1.30 49.2% ICU Level of Service	0.25 0.34 0.04 0.49 4.9 5.5 4.4 5.5 2.0 2.8 4.4 5.5 2.0 2.8 4.4 5.5 2.0 2.8 4.4 5.5 2.0 2.8 7.094 68 1724 60.13 0.15 0.03 6.0.28 0.53 0.45 0.81 0.57 1.28 10.1 18.6 7.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.31 10.4 6.51 7.5 1.31 10.4 6.51 7.5 1.31 10.4 6.51 7.5 1.31 10.4 6.51 7.5 1.31 10.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 0.4 6.51 7.5 1.31 10.5 7.5 1.31 10.5 7.5 1.31	Effective Green, g (s)	9.6		13.1		1.5	19.0	
4.9 5.5 4.4 5.5 2.0 2.8 8.32 1094 68 1724 c0.13 0.15 0.03 0.028 0.53 0.45 0.81 0.57 12.8 10,1 10,0 1.00 1.00 1.00 1.00 1.00 1.00 1.31 1.04 6.5 0.4 1.31 10.4 6.5 0.4 1.31 10.4 6.5 0.4 1.31 10.4 6.5 0.4 1.31 10.4 6.5 0.4 1.31 0.6 ER A 1.31 0.4 6.5 0.4 1.31 10.4 6.5 0.4 1.52 0.4 6.5 0	4.9 5.5 4.4 5.5 2.0 2.8 3.2 3.0 2.8 3.2 1094 68 1724 6.0 1.3 0.15 0.03 0.028 0.05 0.15 0.05 0.03 0.028 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.0	Actuated g/C Ratio	0.25		0.34		0.04	0.49	
2.0 2.8 2.0 2.8 8.2 2.0 2.8 8.2 2.0 2.8 8.2 2.0 2.8 8.2 2.0 2.8 6.3 1724 6.3 1.0 4.5 2.0 2.8 6.3 1724 6.3 2.0 2.8 6.3 1724 6.3 2.0 2.8 6.3 1724 6.3 2.0 2.8 6.3 2.0 2.8 6.3 2.0 2.8 6.3 2.0 2.8 6.3 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 2.8 2.0 2.8 832 1094 68 1724 c0.13 0.15 0.03 c0.28 0.53 0.45 0.81 0.57 12.8 10.1 1.00 1.00 1.00 1.00 1.00 1.31 1.04 65.1 7.5 B B B E A 13.1 10.4 65.1 7.5 B B B B E A 13.1 10.4 65.1 7.5 B B C A 13.1 1.0 HCM 2000 Level of Service Capacity ratio 0.66 Ullization 49.2% ICU Level of Service	Clearance Time (s)	4.9		2.5		4.4	5.5	
832 1094 68 1724 0.13 0.15 0.03 c0.28 0.53 0.45 0.81 0.57 12.8 10.1 18.6 7.1 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.31 10.4 65.1 7.5 B B E A 13.1 10.4 65.1 7.5 B B B E A 13.1 10.4 65.1 7.5 B B C A 13.1 10.4 65.1 10.6 B B B B B B B B B B B B B B B B B B B	60.13 1094 68 1724 60.13 0.15 0.03 c0.28 60.53 0.45 0.81 0.57 12.8 10.1 186 7.1 10.0 1.00 1.00 1.31 10.4 65.1 7.5 B B B E A 13.1 10.4 65.1 7.5 18.3 11.0 HCM 2000 Level of Service Capacity ratio 0.66 Unitization 1.5 10.4 10.6 10.6 10.6 10.7 10.7 10.8 10.	/ehicle Extension (s)	2.0		2.8		2.0	2.8	
60.13 0.15 0.03 c0.28 0.53 0.45 0.81 0.57 1.28 10.1 186 7.1 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.01	60.13 0.15 0.03 c0.28 0.53 0.45 0.81 0.57 12.8 10.1 18.6 7.1 10.0 1.00 1.00 1.00 10.3 0.3 46.5 0.4 13.1 10.4 65.1 7.5 B B E A 13.1 10.4 65.1 7.5 B B B E A 13.1 10.4 CM 2000 Level of Service Capacity ratio 0.66 Ulization 49.29, ICU Level of Service 15	-ane Grp Cap (vph)	832		1094		89	1724	
0.53 0.45 0.81 0.57 12.8 10.1 18.6 7.1 12.0 1.00 1.00 1.00 1.3 0.3 46.5 0.4 13.1 10.4 65.1 7.5 B B E A B I.3.1 10.4 10.6 Capacity ratio 0.66 Capacity ratio 0.66 Utilization 49.2% ICU Level of Service 1.5 Utilization 1.5	0.53 0.45 0.81 0.57 12.8 10.1 18.6 7.1 1.00 1.00 1.00 1.00 0.3 0.3 46.5 0.4 13.1 10.4 65.1 7.5 B B E A A 13.1 10.4 B B 13.1 10.4 B 13.1 0.4 CM 2000 Level of Service Capacity ratio 0.66 Ulization 49.2% ICU Level of Service 15	//s Ratio Prot	c0.13		0.15		0.03	c0.28	
12.8 10.45 0.81 0.57 12.8 10.1 18.6 7.1 10.0 1.00 1.00 10.3 46.5 0.4 13.1 10.4 65.1 7.5 13.1 10.4 65.1 7.5 13.1 10.4 E A 13.1 10.4 HCM 2000 Level of Service Capacity ratio 0.66 Sum of lost time (s) Utilization 49.2% ICU Level of Service 15.1 3.90 Sum of lost time (s) 15.1 49.2% ICU Level of Service 15.1 15.1 15.1 15.1 15.1 15.1 15.1 15.1	12.8 10.45 0.81 0.57 12.8 10.1 18.6 7.1 10.0 10.0 10.0 10.0 13.3 0.3 46.5 0.4 13.1 10.4 65.1 7.5 B B E A 13.1 10.4 65.1 7.5 B B B E A 13.1 10.4 HCM 2000 Level of Service Capacity ratio 0.66 Ullization 49.2% ICU Level of Service 15	//s Ratio Perm							
128 10.1 186 7.1 1.00 1.00 1.00 1.00 1.30 0.3 46.5 0.4 1.31 10.4 65.1 7.5 1.31 10.4 E A 1.31 10.4 HB 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1.05	12.8 10.1 18.6 7.1 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1	//c Ratio	0.53		0.45		0.81	0.57	
100 100 100 100 100 100 100 100 100 100	100 100 100 103 03 465 0.4 131 104 E A 131 10.4 B B 131 10.4 CM 2000 Level of Service Capacity ratio 0.66 Sum of lost time (s) Unitization 49.2% ICU Level of Service	Jniform Delay, d1	12.8		10.1		18.6	7.1	
13.1 10.4 65.1 7.5 18.8 B B E B B B B B B B B B B B B B B B B	131 0.3 465 0.4 131 10.4 65.1 7.5 13 10.4 65.1 7.5 13.1 10.4 10.6 13.1 10.4 10.6 13.1 10.4 10.6 14.0 HCM 2000 Level of Service Capacity ratio 0.66 Ulization 49.2% ICU Level of Service 15	Progression Factor	1.00		1.00		1.00	1.00	
13.1 10.4 65.1 7.5 B B E A 10.6 B B B B B B I 10.6 I 20.4 10.6 I 3.1 10.4 10.6 I 3.2 11.0 HCM 2000 Level of Service Capacity ratio 0.66 I (s) 39.0 Sum of lost time (s) I (s) 15.0 10.1 Level of Service 10.1 10.1 10.1 10.1 10.1 10.1 10.1 10.	13.1 10.4 65.1 7.5 B B E A 10.6 B B B B B B B B B B B B B B B B B B B	ncremental Delay, d2	0.3		0.3		46.5	0.4	
B E A 10.4 10.6	13.1 10.4 10.6 B B B B B B B B B B B B B B B B B B	Jelay (s)	13.1		10.4		65.1	7.5	
13.1 10.4 10.6 B B B B LOST TABLE B B B LOST TABLE B B B LOST TABLE B B LOST	13.1 10.4 10.6 B B B B R A In HCM 2000 Level of Service 1.0 6.6 Ulization 49.2% ICU Level of Service 1.5	evel of Service	В		В		ш	A	
B B B B B B B B B B B B B B B B B B B	B B B L And An Architecture (Service and Service and	Approach Delay (s)	13.1		10.4			10.6	
11.0 HCM 2000 Level of Service Capacity ratio	HCM 2000 Level of Service Capacity ratio 66 Sum of lost time (s) 79,2% ICU Level of Service 15 (s) 16 (s) 17 (s) 1	Approach LOS	В		В			В	
slay 11.0 HCM 2000 Level of Service Capacity ratio 0.66 Sum of lost time (s) h (s) 39.0 Sum of lost time (s) Utilization 49.2% ICU Level of Service 15 15	slay 11.0 HCM 2000 Level of Service Capacity ratio 0.66 Sum of lost time (s) h (s) 3.0 Sum of lost time (s) Utilization 49.2% ICU Level of Service 15 15	ntersection Summary							
Capacity ratio	Capacity ratio	HCM 2000 Control Delay			11.0	H	M 2000 L	evel of Service	В
h (s) 39.0 Sum of lost time (s) Utilization 49.2% ICU Level of Service 15	h (s) 39.0 Sum of lost time (s) Utilization 49.2% ICU Level of Service 15	HCM 2000 Volume to Capaci	ity ratio		99.0				
Utilization 49.2% ICU Level of Service	Utilization 49.2% ICU Level of Service 15	Actuated Cycle Length (s)			39.0	Su	m of lost	time (s)	14.8
		ntersection Capacity Utilizati	ion		49.2%	2	J Level o:	f Service	A
		Analysis Period (min)			15				
C Chindal Edite Group									

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Balboa Transit Station 24: Morena Blvd & Avati Dr

Horizon Year Adopted Conditions
Timing Plan: PM Peak Period

	•		-			•	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	210	52	716	210	19	1374	
v/c Ratio	0.35	0.16	0.47	0.16	0.28	89.0	
Control Delay	18.8	8.0	11.6	8.0	22.2	8.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.8	8.0	11.6	8.0	22.2	8.4	
Queue Length 50th (ft)	25	0	9/	0	16	66	
Queue Length 95th (ft)	53	22	126	12	46	173	
Internal Link Dist (ft)	317		2304			3170	
Tum Bay Length (ft)		135		115	120		
Base Capacity (vph)	2198	1032	2593	1583	276	2835	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.05	0.28	0.13	0.24	0.48	
Intersection Summary							

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Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 24: Morena Blvd & Avati Dr

																																				Α		15.3	В		
→	SBT	‡	1264	1264	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	1374	0	1374	NA	2	2	26.9	26.9	09:0	5.7	5.0	2110	c0.39		0.65	0.9	1.00	1.0	7.0	Α	7.6	Α		ervice					
٠	SBL	r	62	1000	4 4	1.00	1.00	0.95	1770	0.95	1770	0.92	19	0	. 67	Prot	2		3.5	3.5	80:0	4.4	2.0	137	0.04		0.49	19.9	1.00	1.0	20.9	ပ				HCM 2000 Level of Service		time (s)	Service		
•	NBR	*-	193	193	4 9	1.00	0.85	1.00	1583	1.00	1583	0.92	210	88	122	vo+mq	7	9	26.3	26.3	0.58	4.9	2.0	923	0.02	0.05	0.13	4.2	1.00	0.0	4.3	Þ				:M 2000 I		m of lost	ICU Level of Service		
•	NBT	‡	629	1000	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	716	0	716	NA	9		18.7	18.7	0.41	0.9	5.2	1467	0.20		0.49	6.7	1.00	9.0	10.3	В	8.9	A		H		S	⊴		
F	NBU	4	0	0	8							0.92	0	0	0	Prot	-																			0.6	89.0	45.1	56.3%	15	
✓	WBR	¥L.	48	48	4 9	1.00	0.85	1.00	1583	1.00	1583	0.92	25	43	6	Prot	7		7.6	9.7	0.17	4.9	2.0	266	0.01		0.03	15.7	1.00	0.0	15.7	В									
>	WBL	£	193	193	4.9	0.97	1.00	0.95	3433	0.95	3433	0.92	210	0	210	Prot	7		7.6	9.7	0.17	4.9	2.0	578	c0.06		0.36	16.6	1.00	0.1	16.7	В	16.5	В			v ratio		L		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Total Lost time (s)	Lane Util. Factor	Fit	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	Critical Lane Group

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Balboa Transit Station 25: Morena Blvd & Balb

nsit Station I Blvd & Balboa WB Ramps	Horizon Year Adopted Conditions	Timing Plan; PM Peak Period	
		Ramps	

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Lane Group	EBL	EBR	NBT	NBR	SBT	SBR	
Lane Group Flow (vph)	163	282	1188	86	785	1054	
v/c Ratio	0.41	0.57	0.58	0.10	0.38	0.67	
Control Delay	18.3	11.7	7.4	1.7	5.9	2.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.3	11.7	7.4	1.7	5.9	2.2	
Queue Length 50th (ft)	32	21	73	0	41	0	
Queue Length 95th (ft)	83	80	168	15	4	0	
Internal Link Dist (ft)			882		2304		
Tum Bay Length (ft)		20		120		100	
Base Capacity (vph)	671	709	2602	1190	2602	1583	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.24	0.40	0.46	80.0	0.30	19.0	
Intersection Summary							

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Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

	•	†	~	>	ļ	4	•	←	•	٠	→	•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	¥		W.					#	¥C		₩	¥C	
Traffic Volume (vph)	150	0 0	259	0	0 0	0 0	0 0	1093	8 8	0 0	227	970	
I deal 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					0.95	1.00		0.95	1.00	
Frt	1.00		0.85					1.00	0.85		1.00	0.85	
Fit Protected	0.95		1.00					1.00	1.00		1.00	1.00	
Satd. Flow (prot)	1770		1583					3539	1583		3539	1583	
FIt Permitted	0.95		1.00					1.00	1.00		1.00	1.00	
Satd. Flow (perm)	1770		1583					3539	1583		3539	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	163	0	282	0	0	0	0	1188	86	0	785	1054	
RTOR Reduction (vph)	0	0	135	0	0	0	0	0	40	0	0	0	
Lane Group Flow (vph)	163	0	147	0	0	0	0	1188	58	0	785	1054	
Turn Type	Perm		Perm					NA	Perm		NA	Free	
Protected Phases								2			9		
Permitted Phases	4		4						2			Free	
Actuated Green, G (s)	8.6		8.6					25.4	25.4		25.4	43.2	
Effective Green, g (s)	8.6		8.6					25.4	25.4		25.4	43.2	
Actuated g/C Ratio	0.23		0.23					0.59	0.59		0.59	1.00	
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)	401		329					2080	930		2080	1583	
v/s Ratio Prot								0.34			0.22		
v/s Ratio Perm	0.09		60:0						0.04			c0.67	
v/c Ratio	0.41		0.41					0.57	90:0		0.38	19.0	
Uniform Delay, d1	14.2		14.2					5.5	3.8		4.7	0.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7		0.8					0.4	0.0		0.1	2.2	
Delay (s)	14.9		15.0					5.9	3.8		4.8	2.2	
Level of Service	В		В					A	A		A	Þ	
Approach Delay (s)		15.0			0.0			2.7			3.3		
Approach LOS		В			V			A			A		
Intersection Summary													
HCM 2000 Control Delay			5.7	HC	HCM 2000 Level of Service	evel of S	ervice		A				
HCM 2000 Volume to Capacity ratio	y ratio		0.82										
Actuated Cycle Length (s)			43.2	Su	Sum of lost time (s)	time (s)			8.0				
Intersection Capacity Utilization	L.		45.2%	⊇	ICU Level of Service	f Service			A				
Analysis Period (min)			15										
 Critical Lane Group 													

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Balboa Transit Station 26: Morena Blvd & Balboa Station Driveway/Balboa EB Ramps Timing Plar. PM Peak Perbol

Lane Group EBL EBT WBT WBR NBL SBL SBT Lane Group Flow (vph) 87 34 359 576 5819 141 925 Wc Ratio 037 014 080 084 0.05 0.79 0.75 Control Delay 31.5 24.3 41.7 21.7 32.2 27.3 54.2 17.5 Couve Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Ouceue Length Sofn (ti) 34 41.7 21.7 32.2 27.3 54.2 17.5 Ouceue Length Sofn (ti) 34 #30 #26.4 12 #26.4 17.5 Ouceue Length Sofn (ti) 72 34 #30 #26.4 12 #26.4 17.5 Ouceue Length Sofn (ti) 72 34 #30 #26.4 12 #26.4 17.5 Access Capacity (vph) 72 34 #30 #36.4 17.8 882 Tum										
EBL EBT WBT WBR NBL NBT SBL 87		1	†	ţ	4	•	•	۶	→	
87 34 359 576 5 819 141 0.37 0.14 0.80 0.84 0.05 0.79 0.72 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 31.5 24.3 41.7 21.7 32.2 27.3 54.2 32.4 41.1 143 66 2 151 58 4 72 34 #300 #264 12 #254 #153 1 124 662 10 17 #254 #153 1 124 662 10 17 #15	Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
0.37 0.14 0.80 0.84 0.05 0.79 0.72 3.1.5 24.3 41.7 21.7 32.2 27.3 54.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Group Flow (vph)	87	34	326	576	2	819	141	925	
315 24.3 41.7 21.7 32.2 27.3 54.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	v/c Ratio	0.37	0.14	080	0.84	0.02	0.79	0.72	0.59	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	31.5	24.3	41.7	21.7	32.2	27.3	54.2	17.5	
31.5 24.3 41.7 21.7 32.2 27.3 54.2 34 11 143 66 2 151 58 72 17 32.2 17.3 54.2 17.3 17.3 17.3 17.3 17.3 17.3 17.3 17.3	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
34 11 143 66 2 151 58 72 34 #300 #264 12 #254 #153 3 124 662 100 1978 135 100 135 448 465 451 693 111 1118 196 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	31.5	24.3	41.7	21.7	32.2	27.3	54.2	17.5	
72 34 #300 #264 12 #254 #153 124 662 107 1978 100 135 448 465 451 693 1111 1118 196 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (ft)	34	=	143	99	2	151	28	140	
124 662 1078 108 135 1448 465 451 693 111 1118 196 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (ft)	72	34	#300	#264	12	#254	#153	#265	
100 135 448 465 451 693 111 1118 196 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (ft)		124	662			1978		882	
448 465 451 693 111 1118 196 0	Tum Bay Length (ft)					100		135		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	448	465	451	693	11	1118	196	1567	
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	
0.19 0.07 0.80 0.83 0.05 0.73 0.72	Storage Cap Reductn	0	0	0	0	0	0	0	0	
	Reduced v/c Ratio	0.19	0.07	080	0.83	0.02	0.73	0.72	0.59	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station 26: Morena Blvd & Balboa Station Driveway/Balboa EB Ramps Timing Plan: PM Peak Pertod

FBI FBF WBI WBT MBR NBI NBT NBR NBI NBT NBT NBR NBI NBT NBR NBI NBT NBR NBI NBT NBT NBR NBI NBT		1	†	/	>	ţ	✓	•	—	•	۶	→	•
4 7 7 4 27 5 300 30 530 5 573 189 27 5 300 30 530 5 573 189 40 40 100 1900 1900 1900 1900 1900 100 100 100 100 100 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
27 5 300 30 530 5 573 180 27 5 300 30 530 5 573 180 40 40 40 40 40 40 100 19	Lane Configurations	r	¢Ť			₩	¥C	F	₩		¥	4₽	
27 5 300 30 530 5 73 180 4 0 4 0 4 0 4 0 4 0 4 0 90 190	raffic Volume (vph)	8	27	2	300	30	530	2	573	180	130	840	7
1900 1900	uture Volume (vph)	8	27	2	300	30	530	2	573	180	130	840	11
100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100	Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
100 0.96 1.00 0.95 0.92 0	Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
100 0.96 100 0.95 100 1822 1782 1833 1770 3412 1822 100 0.95 100 0.95 100 0.95 100 0.95 100 0.96 100 0.95 100	Ft	1.00	0.98			1.00	0.85	1.00	96:0		1.00	1.00	
1822 1782 1583 1770 3412 1820 1920	Flt Protected	0.95	1.00			96:0	1.00	0.95	1.00		0.95	1.00	
100	Satd. Flow (prot)	1770	1822			1782	1583	1770	3412		1770	3532	
1822	FIt Permitted	0.95	1.00			96:0	1.00	0.95	1.00		0.95	1.00	
0.92 0.92 <td< td=""><td>Satd. Flow (perm)</td><td>1770</td><td>1822</td><td></td><td></td><td>1782</td><td>1583</td><td>1770</td><td>3412</td><td></td><td>1770</td><td>3532</td><td></td></td<>	Satd. Flow (perm)	1770	1822			1782	1583	1770	3412		1770	3532	
2	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
NA Split NA Perm Prof NA NA Perm Prof NA Pe	Adj. Flow (vph)	87	59	2	326	33	9/9	2	623	196	141	913	12
30 0 0 359 276 5 782 0 1	RTOR Reduction (vph)	0	4	0	0	0	300	0	37	0	0	_	0
NA Split NA Perm Prof NA 4 8 8 5 2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.2 4.0 4.0 4.0 7.3 3.0 3.0 3.0 7.3 3.0 3.0 3.0 7.3 4.1 3.1 3.0 7.3 4.1 3.1 4.1 7.3 4.1 3.2 4.1 7.3 4.1 3.2 4.1 7.3 4.1 3.2 7.3	-ane Group Flow (vph)	87	30	0	0	329	276	2	782	0	141	924	0
7.1 16.1 16.1 0.7 222 7.1 16.1 16.1 0.7 222 7.1 16.1 16.1 0.7 222 7.1 16.1 16.1 0.7 222 7.1 16.1 16.1 0.7 222 7.1 16.1 16.1 0.7 222 7.1 16.1 16.1 0.7 222 7.2 10.2 0.24 0.24 0.01 0.32 7.3 3.0 3.0 3.0 3.0 3.0 7.4 0.24 0.24 0.24 0.00 7.5 0.02 0.03 0.01 7.5 0.02 0.03 0.01 7.5 0.03 0.04 0.23 0.01 7.5 0.04 0.24 0.28 0.71 0.01 7.5 0.04 0.04 0.28 0.71 0.01 7.5 0.04 0.04 0.28 0.71 0.01 7.5 0.04 0.04 0.28 0.71 0.01 7.5 0.04 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.05 0.04 0.28 0.71 0.01 7.5 0.07 0.04 0.05 0.05 0.01 7.5 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 0.05 0.05 7.5 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0	Furn Type	Split	¥		Split	Ν	Perm	Prot	NA		Prot	NA	
7.1 16.1 16.1 16.22 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 0.10 0.24 0.24 0.01 0.32 0 4.0 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 9.0 0.0 3.0 3.0 3.0 1.0 0.0 0.0 0.23 0 2.80 0.7 1.8 1.05 0.0 2.80 0.7 2.0 0.0 0.23 0 0.4 1.5 2.4 3.36 2.0.3 2.3 0.4 1.5 1.0 1.0 1.0 1.0 0.4 1.5 2.4 3.36 2.0.3 2.1 0.4 1.5 7.8 8.3 2.1 4.1 0.4 1.5 7.8 8.3 2.1 4.1 0.5 0.0 0.0 1.0 1.0 1.0 0.4 1.5 7.8 8.3 2.1 4.1 0.5 0.5 0.5 0.5 0.5 0.5 0.6 0.7 0.0 0.0<	Protected Phases	4	4		∞	∞		2	2		_	9	
7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 7.1 16.1 16.1 0.7 22.2 0.10 0.24 0.24 0.10 0.32 0.40 4.0 4.0 4.0 4.0 0.30 3.0 3.0 3.0 3.0 0.02 0.020 0.17 0.02 0.020 0.17 0.04 0.8 0.74 0.28 0.71 0.05 0.05 0.17 0.04 15.9 7.8 8.3 2.1 0.04 15.9 7.8 8.3 2.1 0.05 0.05 0.05 0.07 0.07 0.00 1.00 0.04 15.9 7.8 8.3 2.1 0.05 0.05 0.05 0.07 0.00 1.00 1.00 0.04 15.9 7.8 8.3 2.1 0.05 0.05 0.05 0.07 0.05 0.07 0	Permitted Phases						8						
7.1 16.1 16.1 0.7 22.2 0.10 0.24 0.24 0.21 0.32 0.40 4.0 4.0 4.0 0.40 4.0 4.0 4.0 0.40 4.0 4.0 4.0 0.24 0.24 0.21 0.32 0.02 0.02 3.0 3.0 3.0 0.17 0.00 0.23 0.0 0.17 0.00 0.23 0.0 0.18 0.16 0.86 0.74 0.28 0.71 0.10 0.100 1.00 1.00 0.4 15.9 7.8 8.3 2.1 0.0 4 11.9 22.4 0.0 5.84 41.0 32.1 41.9 22.4 0.0 5.84 41.0 32.1 41.9 22.4 0.0 0.4 11.0 32.1 41.9 22.4 0.0 0.4 12.0 0.0 0.4 12.0 0.0 0.0 0.4 13.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 1.00 0.4 10.0 1.00 0.4 10	Actuated Green, G (s)	7.1	7.1			16.1	16.1	0.7	22.2		7.1	28.6	
0.10 0.24 0.24 0.01 0.32 0.03 0.03 0.03 0.03 0.03 0.03 0.03	Effective Green, g (s)	7.1	7.1			16.1	16.1	0.7	22.2		7.1	28.6	
40 40 40 40 40 30 30 30 3.0 4.0 1188 418 372 18 1105 0.02 0.02 0.1 0.0 0.23 0.7 0.16 0.16 0.74 0.28 0.71 0.7 0.280 0.74 0.28 0.71 0.7 0.0 0.10 1.00 1.00 1.00 1.00 1.00 1.00 0.10 1.00 1.	Actuated g/C Ratio	0.10	0.10			0.24	0.24	0.01	0.32		0.10	0.42	
3.0 3.0	Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
188 418 372 18 1105 5 0.02 0.02 0.02 0.02 0.02 5 0.16 0.86 0.74 0.28 0.71 5 280 2.51 2.43 3.86 20.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.4 1.59 7.8 8.3 2.1 2.84 41.0 32.1 41.9 22.4 2.64 41.0 32.1 41.9 22.4 2.65 0.03 3.65 0.00 2.63 HCM 2000 Level of Service C 2.63 HCM 2000 Level of Service C 2.63 Sum of lost time (s) 1.60 6.88% ICU Level of Service C 1.50 0.73 2.64 1.00 Level of Service C 2.65 0.73 2.65 0.73 2.65 0.74 2.65 0.75 2.65	/ehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
0.02	-ane Grp Cap (vph)	183	188			418	372	18	1105		183	1474	
0.16 0.86 0.77 0.28 0.71 2.80 2.81 0.74 0.28 0.71 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	//s Ratio Prot	c0.05	0.02			c0.20		0.00	c0.23		c0.08	0.26	
26.3 HCM 2000 Level of Service C C C C C C C C C C C C C C C C C C C	//s Ratio Perm						0.17						
280 251 243 336 203 100 100 100 100 0.4 159 7.8 8.3 2.1 284 41.0 32.1 41.9 22.4 28.4 41.0 32.1 41.9 22.4 26.5 D C D C C D C C C D C C C C D C C C C C C	//c Ratio	0.48	0.16			98.0	0.74	0.28	0.71		0.77	0.63	
100 100 100 100 100 100 100 100 100 100	Jniform Delay, d1	28.9	28.0			25.1	24.3	33.6	20.3		29.9	15.7	
28.4 15.9 7.8 8.3 2.1 28.4 10.32.1 41.9 22.4 30.2 35.5 22.5 C 3.3 HCM 2000 Level of Service C 68.8% ICU Level of Service C 15.3 15.5 16.0 68.8% ICU Level of Service C 15.3 15.0 16.0	Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
26.3 HCM 2000 Level of Service C C C C C C C C C C C C C C C C C C C	ncremental Delay, d2	1.9	0.4			15.9	7.8	8.3	2.1		17.9	0.8	
26.3 HCM 2000 Level of Service 15.8 Sum of lost time (s) 68.8% ICU Level of Service 15.8 ICU Level of Service 15.8 Sum of lost time (s) 68.8% ICU Level of Service 15.8 Sum of lost time (s) 68.8 Sum of lo	Jelay (s)	30.9	28.4			41.0	32.1	41.9	22.4		47.9	16.6	
30.2 35.5 22.5 C D C C C C C C C C C C C C C C C C C	evel of Service	O	ပ				O	۵	ပ			В	
26.3 HCM 2000 Level of Service 0.73 6.8 5 Sum of lost time (s) 6.89% ICU Level of Service 15	Approach Delay (s)		30.2			35.5			22.5			20.7	
26.3 HCM 2000 Level of Service 0.73 6.85 Sum of lost time (s) 6.8.8% ICU Level of Service 15	Approach LOS		ပ			D			O			ပ	
26.3 HCM 2000 Level of Service 0.73 6.8.5 Sum of lost time (s) 6.8.9% ICU Level of Service 15	ntersection Summary												
0.73 Sum of lost time (s) 68.5 Sum of lost time (s) 7.88.8% ICU Level of Service 15	HCM 2000 Control Delay			26.3	H	3M 2000	Level of 5	Service		ပ			
68.5 Sum of lost time (s) 68.8% ICU Level of Service 15	HCM 2000 Volume to Capacit	ty ratio		0.73									
68.8% ICU Level of Service 15	Actuated Cycle Length (s)			68.5	Su	im of lost	time (s)			16.0			
15	ntersection Capacity Utilizatio	nc		%8.89	೨	U Level o	f Service			ပ			
	Analysis Period (min)			15									
Cultical Lane Group	Critical Lane Group												

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Balboa Transit Station 27: Morena Blvd & Baker St

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

																																							Ф	
→	SBT	‡	1032	1032	Free	% 60	1122						None													SB 3	561	0	0	1/00	0.33	0 0	0.0						ICU Level of Service	
٠	SBL	<u>r</u>	39	36		0 0	42										533			533	4.1		2.2	96	1031	SB 2	561	0	0	1/00	0.33	0 0	0:0						J Level o	
•	NBR	*-	12	15		000	13																			SB 1	42	42	0	1031	0.04	ν,	o <	۰ ۲	5				ಠ	
•	NBT	*	478	4/8	£ 6	00%	520						None													NB 2	13	0	13	1/00	0.01	0 0	0.0					9.0	41.8%	15
4	WBR		20	70		000	22										520			520	6.9		3.3	96	201	NB 1	520	0	0	1/00	0.31	0 0	0.0	0	9				7	
\	WBL	>	= ;	= ;	Stop	%0 0	12										1165			1165	9.9		3.5	93	180	WB 1	34	12	22	30/	0.11	6 0	7.81	18.2	7.0	ر			ation	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade Deak Hour Factor	Hourty flow rate (vph)	Pedestrians	Lane Width (ft)	Walking Speed (ft/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (ft)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	IF (S)	bo dnene tree %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	volume to Capacity	Queue Lengin 95in (ii)	Control Delay (s)	Approach Delay (s)	Approach LOS	Applicacii EO3	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station Horizon Year Adopted Conditions 28: Morena Blvd & Gesner St Timing Plan: PM Peak Perlod

	•	←	•	٠	→	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	147	496	53	124	1109	
v/c Ratio	0.38	0.31	0.07	0.35	0.47	
Control Delay	10.3	11.5	4.6	19.1	5.5	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.3	11.5	4.6	19.1	5.5	
Queue Length 50th (ft)	6	45	0	24	59	
Queue Length 95th (ft)	47	98	17	69	119	
Internal Link Dist (ft)	1333	298			3362	
Turn Bay Length (ft)			95	92		
Base Capacity (vph)	1206	1863	828	430	2686	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.27	90.0	0.29	0.41	
:						
Intersection Summary						

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KHA Oueues

Balboa Transit Station 28: Morena Blvd & Gesner St

Horizon Year Adopted Conditions Timing Plan: PM Peak Perbd

																																					٧		14.7	A		
→	SBT	**	1020	1020	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	1109	0	1109	NA	9		22.9	22.9	09:0	0.9	4.2	2138	c0.31		0.52	4.3	1:00	0.3	4.6	₹ 6	0.0	¥		HCM 2000 Level of Service		time (s)	f Service		
•	SBL	*	114		_							1770		124		124	Prot	-							238	0.07					1.0		۵				HCM 2000		Sum of lost time (s)	CU Level of Service		
•	NBR	*-			_		1.00				1.00						Perm					0			563							0.8										
•	NBT	*			_	5.9	0.95	1.00	1.00	3539	1.00	3539				496	A	2		13.5	13.5	0.36	5.9	4.4	1260	0.14		0.39	9.1	1.00	0.3	v.y	T (5.7	τ.		7.5	0.57	37.9	44.9%	15	
4	WBR		94		1900									102	0																											
•	WBL	>	41	41	1900	4.4	1.00	0.91	0.98	1663	0.98	1663	0.92		06	57	Prot	00		4.6	4.6	0.12	4.4	2.0	201	c0.03		0.29	15.2	1.00	0.3	15.4	0 1	10.4	۵		ay	apacity ratio	(s)	tilization		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Apploacii LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 29: Garnet Ave & Balboa WB Ramps

Intersection Sign configuration not allowed in HCM analysis.

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

Balboa Transit Station 34: Balboa EB Ramps & Garnet Ave/Balboa Ave

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	į											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡	R _		‡				*-			*-
Traffic Volume (veh/h)	0	1449	860	0	1682	0	0	0	337	0	0	90
Future Volume (Veh/h)	0	1449	860	0	1682	0	0	0	337	0	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1575	932	0	1828	0	0	0	366	0	0	86
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		787			634							
pX, platoon unblocked	19:0			0.75			0.79	0.79	0.75	0.79	0.79	0.67
vC, conflicting volume	1828			1575			2489	3403	788	2616	3403	914
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1239			1107			942	2100	09	1103	2100	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
IF (S)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
po dueue free %	100			100			100	100	21	100	100	86
cM capacity (veh/h)	371			472			148	40	747	19	40	722
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	788	788	935	914	914	366	86					
Volume Left	0	0	0	0	0	0	0					
Volume Right	0	0	935	0	0	366	86					
cSH	1700	1700	1700	1700	1700	747	722					
Volume to Capacity	0.46	0.46	0.55	0.54	0.54	0.49	0.14					
Queue Length 95th (ft)	0	0	0	0	0	89	12					
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.4	10.8					
Lane LOS						В	В					
Approach Delay (s)	0.0			0.0		14.4	10.8					
Approach LOS						В	В					
Intersection Summary												
Average Delay			7									
Intersection Capacity Utilization	E		%9.79	2	U Level o	ICU Level of Service			U			
Analysis Period (min)			15	2		5			•			
, succession												

KHA HCM Unsignalized Intersection Capacity Analysis

Synchro 9 Report Page 53

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

Arterial Level of Service: EB Garnet Ave

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	COS
Olney St	=	30	12.1	107.1	119.2	0.09	2.6	ш
Balboa Ave	=	30		61.8	85.3	0.19	7.8	ш.
Soledad Mtn Rd	=	35		12.3	39.6	0.23	20.9	Ω
Bond St	=	35		0.7	21.7	0.17	27.8	ပ
Mission Bay Dr	=	35		57.4	72.9	0.12	6.1	ш
-5 Off-ramp	-	45		22.2	46.4	0.23	18.1	Ω
Moraga Ave	=	45		5.9	33.9	0.27	28.6	ш
Clairemont Dr	=	45		68.0	117.7	0.62	19.0	D
Total	=			335.4	236.7	1.92	12.9	ш

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(E	Speed	FOS
Clairemont Dr	=	45	14.7	73.2	87.9	0.13	6.6	Н
Moraga Ave	=	45	49.7	20.3	70.0	0.62	32.0	8
Santa Fe St	=	45	28.0	0.3	28.3	0.27	34.2	Ш
Mission Bay Dr	=	45	24.2	79.3	103.5	0.23	8.1	ш
Bond St	=	35	15.5	7.	16.6	0.12	26.9	O
Soledad Mtn Rd	=	35	21.0	38.1	59.1	0.17	10.2	ш.
Garnet Ave	=	32	27.3	6.0	28.2	0.23	29.3	В
Olney St		30	23.5	15.5	39.0	0.19	17.1	D
Total	=		203.9	228.7	432.6	1.97	16.4	Ш

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	œ	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	LOS
Rosewood St	=	35	23.6	4.0	27.6	0.20	72.7	В
Grand Ave	=	32		4.4	19.9	0.11	20.8	O
Bunker Hill St	=	32		11.7	26.0	0.11	14.6	
Magnolia Ave	=	35		9.3	30.7	0.17	19.6	O
Garnet Ave	=	32		60.5	74.3	0.10	5.0	ш
Damon Ave	=	35		34.3	46.0	0.09	6.8	ш
Bluffside Av	=	32		4.9	25.0	0.16	22.6	O
Total	=			1291	2495	0.93	13.4	ш

KHA Arterial Level of Service

Synchro 9 Report Page 1

Balboa Transit Station

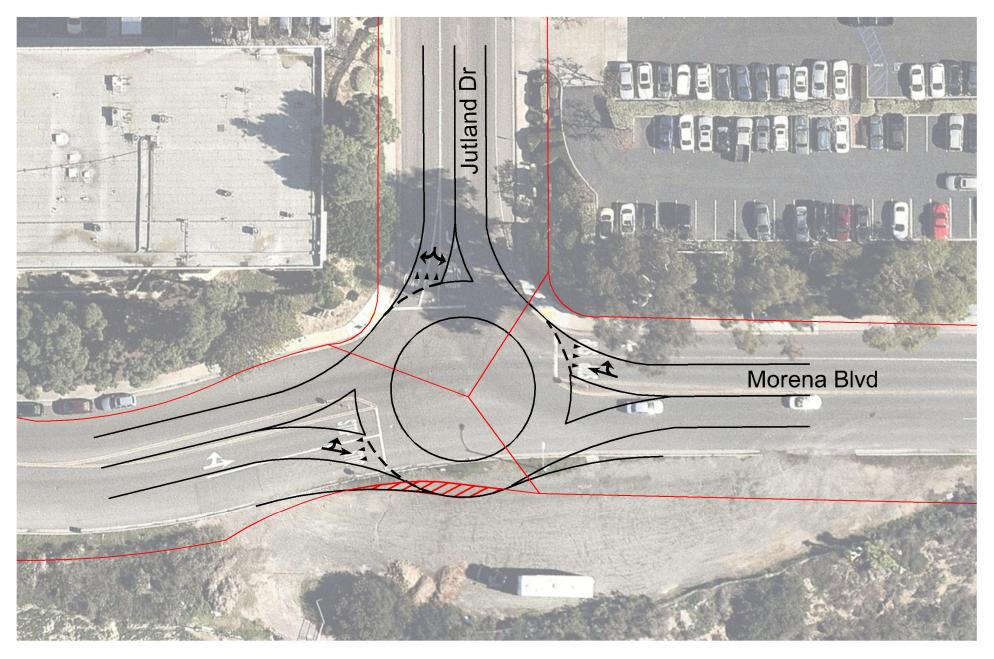
Horizon Year Adopted Conditions
Timing Plan: PM Peak Period

Arterial Level of Service: SB Mission Bay Dr								
Cross Street	Arterial Class	Flow	Running	Signal	Travel Time (s)	Dist (mi)	Arterial	Arterial
Bluffside Av	=	35	20.0	43.3	63.3	0.16	8.9	ľ
Damon Ave	=	32	20.1	1.1	21.2	0.16	26.7	ш
Garnet Ave	=	32	11.7	122.4	134.1	0.09	2.3	_
Magnolia Ave	=	35	13.8	11.9	25.7	0.10	14.4	Δ
Bunker Hill St	=	35	21.4	5.6	27.0	0.17	22.3	0
Grand Ave	=	32	14.3	70.6	84.9	0.11	4.5	_
Rosewood St	=	32	15.5	9.4	24.9	0.11	16.6	Δ
Total			1168	2643	381.1	0.89	8.4	

KHA Arterial Level of Service

APPENDIX F

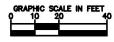
INTERSECTION MITIGATIONS

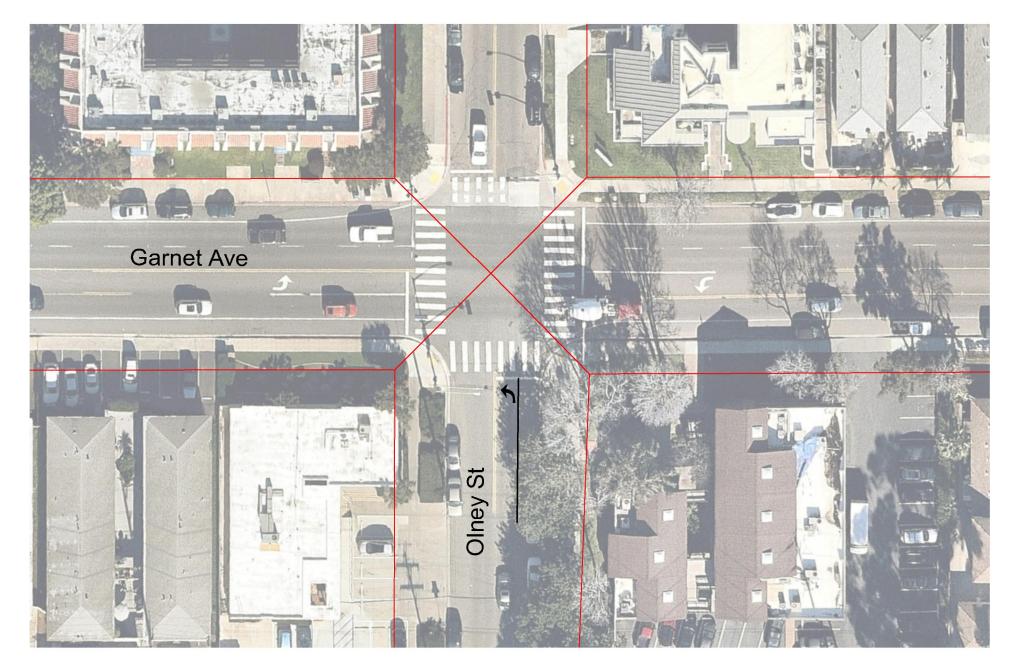




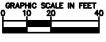
RIGHT OF WAY IMPACT

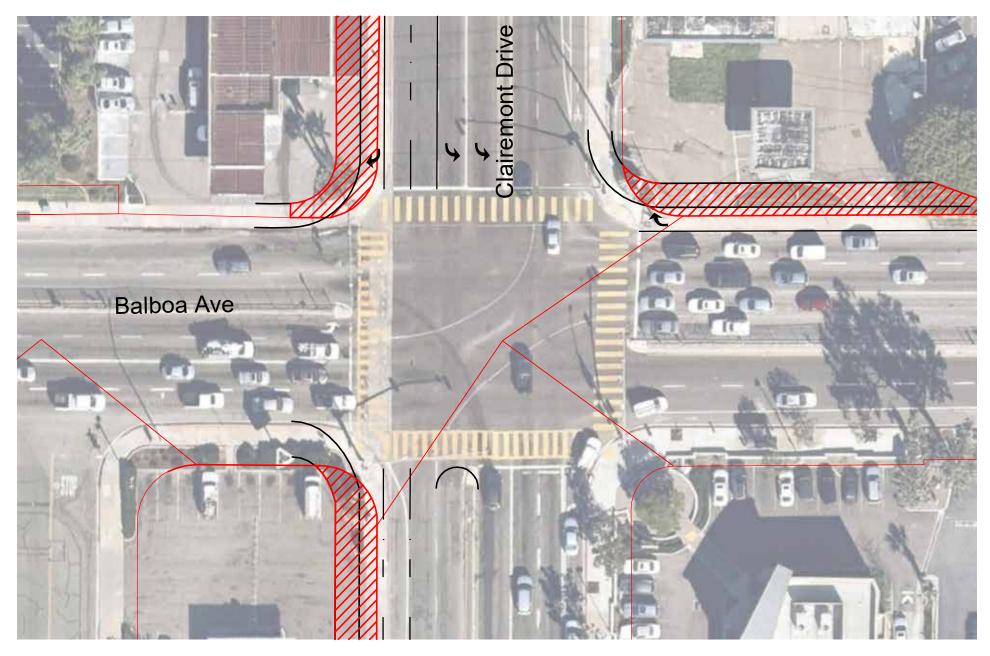








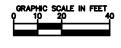






RIGHT OF WAY IMPACT





APPENDIX G

MITIGATED ADOPTED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

	•	-	•	•	4	†	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	15	1301	8	777	109	101	257
v/c Ratio	0.03	0.99	0.11	0.31	0.69	0.29	0.86
Control Delay	5.2	39.5	9.3	6.0	59.5	31.4	64.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	39.5	9.3	6.0	59.5	31.4	64.8
Queue Length 50th (ft)	3	~885	2	90	63	47	152
Queue Length 95th (ft)	9	#1145	8	117	#136	93	#275
Internal Link Dist (ft)		374		899		244	450
Turn Bay Length (ft)	50		50		100		
Base Capacity (vph)	448	1311	73	2510	178	393	333
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.99	0.11	0.31	0.61	0.26	0.77

Intersection Summary

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

	۶	→	•	•	←	•	•	†	/	/	↓	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥	f)		¥	∱ }		, T	f)			4	
Traffic Volume (vph)	14	1100	97	7	703	12	100	73	20	83	129	25
Future Volume (vph)	14	1100	97	7	703	12	100	73	20	83	129	25
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		4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.97			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	1840		1770	3530		1770	1802			1805	
Flt Permitted	0.34	1.00		0.06	1.00		0.45	1.00			0.84	
Satd. Flow (perm)	632	1840		105	3530		837	1802			1548	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	1196	105	8	764	13	109	79	22	90	140	27
RTOR Reduction (vph)	0	3	0	0	1	0	0	11	0	0	4	0
Lane Group Flow (vph)	15	1298	0	8	776	0	109	90	0	0	253	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	71.1	71.1		71.1	71.1		19.1	19.1			19.1	
Effective Green, g (s)	71.1	71.1		71.1	71.1		19.1	19.1			19.1	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.19	0.19			0.19	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.9	4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9		2.0	2.0			2.0	
Lane Grp Cap (vph)	449	1308		74	2509		159	344			295	
v/s Ratio Prot		c0.71			0.22			0.05				
v/s Ratio Perm	0.02			0.08			0.13				c0.16	
v/c Ratio	0.03	0.99		0.11	0.31		0.69	0.26			0.86	
Uniform Delay, d1	4.3	14.2		4.5	5.4		37.7	34.5			39.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	23.1		2.9	0.3		9.4	0.1			20.3	
Delay (s)	4.4	37.3		7.5	5.7		47.0	34.6			59.5	
Level of Service	Α	D		Α	Α		D	С			Е	
Approach Delay (s)		37.0			5.7			41.0			59.5	
Approach LOS		D			Α			D			E	
Intersection Summary												
HCM 2000 Control Delay			30.0	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capaci	ty ratio		0.96									
Actuated Cycle Length (s)			100.0		um of lost				9.8			
Intersection Capacity Utilization	on		91.5%	IC	CU Level	of Service	<u> </u>		F			
Analysis Period (min)			15									

c Critical Lane Group

	٠	→	•	•	←	•	4	†	~	\	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	905	935	588	198	753	264	501	484	249	273	282	498
v/c Ratio	1.02	0.72	0.60	0.68	0.77	0.51	0.85	0.44	0.34	0.75	0.32	0.32
Control Delay	86.9	43.3	16.2	76.6	61.4	8.9	72.8	42.2	20.2	75.4	46.5	17.5
Queue Delay	0.0	0.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.9	43.9	17.8	76.6	61.4	8.9	72.8	42.2	20.2	75.4	46.5	17.5
Queue Length 50th (ft)	~464	401	234	94	250	0	235	192	101	130	117	133
Queue Length 95th (ft)	#597	463	359	137	288	75	#357	266	184	177	162	176
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	565		120	410		325	265		100	200		265
Base Capacity (vph)	890	1376	980	336	1157	564	587	1112	751	430	875	1535
Starvation Cap Reductn	0	154	221	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.77	0.77	0.59	0.65	0.47	0.85	0.44	0.33	0.63	0.32	0.32

Intersection Summary

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

	۶	-	•	•	←	•	•	†	/	>	ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	77	^	7	ሻሻ	ተተተ	7	ሻሻ	^	7	ሻሻ	^	77
Traffic Volume (vph)	833	860	541	182	693	243	461	445	229	251	259	458
Future Volume (vph)	833	860	541	182	693	243	461	445	229	251	259	458
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	4.9	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.88
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)	3433	3539	1583	3433	5085	1583	3433	3539	1583	3433	3539	2787
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)	3433	3539	1583	3433	5085	1583	3433	3539	1583	3433	3539	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	905	935	588	198	753	264	501	484	249	273	282	498
RTOR Reduction (vph)	0	0	83	0	0	213	0	0	49	0	0	23
Lane Group Flow (vph)	905	935	505	198	753	51	501	484	200	273	282	475
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8	1	7	4		1	6	7	5	2	3
Permitted Phases			8			4			6			2
Actuated Green, G (s)	37.6	53.1	77.9	12.3	27.8	27.8	24.8	45.5	57.8	15.5	35.8	73.4
Effective Green, g (s)	37.6	53.1	77.9	12.3	27.8	27.8	24.8	45.5	57.8	15.5	35.8	73.4
Actuated g/C Ratio	0.26	0.37	0.54	0.08	0.19	0.19	0.17	0.31	0.40	0.11	0.25	0.51
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.9	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	4.3	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	890	1296	850	291	974	303	587	1110	631	366	873	1410
v/s Ratio Prot	c0.26	c0.26	0.10	0.06	0.15		c0.15	c0.14	0.03	0.08	0.08	0.09
v/s Ratio Perm			0.22			0.03			0.10			0.08
v/c Ratio	1.02	0.72	0.59	0.68	0.77	0.17	0.85	0.44	0.32	0.75	0.32	0.34
Uniform Delay, d1	53.7	39.6	22.8	64.4	55.6	48.9	58.3	39.6	30.0	62.8	44.7	21.3
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	34.4	2.2	0.7	5.1	4.2	0.4	11.2	1.2	0.1	7.1	1.0	0.1
Delay (s)	88.1	41.8	23.5	69.6	59.9	49.3	69.5	40.8	30.1	69.9	45.7	21.4
Level of Service	F	D	С	Е	Ε	D	Е	D	С	Е	D	С
Approach Delay (s)		54.6			59.2			50.3			40.5	
Approach LOS		D			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			52.1	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capa	city ratio		0.78									
Actuated Cycle Length (s)			145.0	S	um of los	t time (s)			19.0			
Intersection Capacity Utiliza	ition		73.3%	IC	CU Level	of Service	9		D			
Analysis Period (min)			15									

c Critical Lane Group

Horizon Year Adopted Conditions MITIGATED Timing Plan: AM Peak Period

	-	•	←	~	4
Lane Group	EBT	EBR	WBT	NBR	SBR
Lane Group Flow (vph)	938	714	1632	228	304
v/c Ratio	0.59	0.64	0.46	0.36	0.19
Control Delay	10.6	4.0	0.4	9.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	4.0	0.4	9.3	0.3
Queue Length 50th (ft)	84	0	0	27	0
Queue Length 95th (ft)	127	43	0	66	0
Internal Link Dist (ft)	362		554		
Turn Bay Length (ft)					
Base Capacity (vph)	1738	1140	3511	650	1598
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.63	0.46	0.35	0.19
Intersection Summary					

	۶	-	•	•	←	•	•	†	~	>	ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		^	7		^				7			7
Traffic Volume (vph)	0	863	657	0	1501	0	0	0	210	0	0	280
Future Volume (vph)	0	863	657	0	1501	0	0	0	210	0	0	280
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
Frt		1.00	0.85		1.00				0.86			0.86
Flt Protected		1.00	1.00		1.00				1.00			1.00
Satd. Flow (prot)		3539	1583		3539				1611			1611
Flt Permitted		1.00	1.00		1.00				1.00			1.00
Satd. Flow (perm)		3539	1583		3539				1611			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	938	714	0	1632	0	0	0	228	0	0	304
RTOR Reduction (vph)	0	0	390	0	0	0	0	0	48	0	0	0
Lane Group Flow (vph)	0	938	324	0	1632	0	0	0	180	0	0	304
Turn Type		NA	Perm		NA				Prot			Perm
Protected Phases		4			58				5			
Permitted Phases			4									4 5
Actuated Green, G (s)		19.5	19.5		43.0				15.5			43.0
Effective Green, g (s)		19.5	19.5		43.0				15.5			43.0
Actuated g/C Ratio		0.45	0.45		1.00				0.36			1.00
Clearance Time (s)		4.0	4.0						4.0			
Vehicle Extension (s)		3.0	3.0						3.0			
Lane Grp Cap (vph)		1604	717		3539				580			1611
v/s Ratio Prot		c0.27			c0.46				0.11			
v/s Ratio Perm			0.20									0.19
v/c Ratio		0.58	0.45		0.46				0.31			0.19
Uniform Delay, d1		8.7	8.1		0.0				9.9			0.0
Progression Factor		1.00	1.00		1.00				1.00			1.00
Incremental Delay, d2		0.5	0.5		0.1				0.3			0.1
Delay (s)		9.3	8.5		0.1				10.2			0.1
Level of Service		Α	Α		Α				В			Α
Approach Delay (s)		9.0			0.1			10.2			0.1	
Approach LOS		Α			Α			В			Α	
Intersection Summary												
HCM 2000 Control Delay			4.5	Н	CM 2000	Level of S	Service		Α			
HCM 2000 Volume to Capacity	ratio		0.58									
Actuated Cycle Length (s)			43.0		um of lost				8.0			
Intersection Capacity Utilization	1		65.5%	IC	CU Level	of Service			С			
Analysis Period (min)			15									

c Critical Lane Group

	•	→	•	←	•	•	†	<i>></i>	\	ļ	4	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	260	1018	400	886	124	159	407	395	201	342	386	
v/c Ratio	0.67	0.85	0.85	0.70	0.19	0.77	0.54	0.56	0.80	0.57	0.77	
Control Delay	46.7	34.7	55.6	28.0	5.2	63.5	32.1	17.9	64.6	35.9	21.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.7	34.7	55.6	28.0	5.2	63.5	32.1	17.9	64.6	35.9	21.1	
Queue Length 50th (ft)	68	251	107	205	0	82	102	122	54	89	52	
Queue Length 95th (ft)	#128	#440	#217	329	39	#208	145	204	#129	130	150	
Internal Link Dist (ft)		3203		630			1350			860		
Turn Bay Length (ft)	240		220		220	200		100	120		120	
Base Capacity (vph)	413	1219	469	1267	646	208	1378	704	251	1219	727	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.63	0.84	0.85	0.70	0.19	0.76	0.30	0.56	0.80	0.28	0.53	

Intersection Summary 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	77	∱ ∱		ሻሻ	^	7	7	^	7	ሻሻ	^	7
Traffic Volume (vph)	239	864	73	368	815	114	146	374	363	185	315	355
Future Volume (vph)	239	864	73	368	815	114	146	374	363	185	315	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3498		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3498		3433	3539	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	939	79	400	886	124	159	407	395	201	342	386
RTOR Reduction (vph)	0	6	0	0	0	80	0	0	55	0	0	231
Lane Group Flow (vph)	260	1012	0	400	886	44	159	407	340	201	342	155
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	9.6	29.1		11.7	30.5	30.5	9.9	18.2	29.9	6.2	14.5	14.5
Effective Green, g (s)	9.6	29.1		11.7	30.5	30.5	9.9	18.2	29.9	6.2	14.5	14.5
Actuated g/C Ratio	0.11	0.34		0.14	0.36	0.36	0.12	0.21	0.35	0.07	0.17	0.17
Clearance Time (s)	4.4	5.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
Vehicle Extension (s)	2.0	3.5		2.0	3.0	3.0	2.0	2.4	2.0	2.0	2.6	2.6
Lane Grp Cap (vph)	387	1197		472	1269	568	206	757	556	250	603	270
v/s Ratio Prot	0.08	c0.29		c0.12	0.25		c0.09	0.11	c0.08	0.06	0.10	
v/s Ratio Perm						0.03			0.13			0.10
v/c Ratio	0.67	0.85		0.85	0.70	0.08	0.77	0.54	0.61	0.80	0.57	0.58
Uniform Delay, d1	36.2	25.9		35.8	23.3	18.0	36.5	29.7	22.8	38.8	32.4	32.4
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	3.6	5.8		12.7	1.7	0.1	15.0	0.5	1.4	16.0	1.0	2.5
Delay (s)	39.8	31.7		48.5	25.0	18.0	51.4	30.2	24.2	54.8	33.4	35.0
Level of Service	D	С		D	С	В	D	С	С	D	С	С
Approach Delay (s)		33.3			31.1			31.2			38.7	
Approach LOS		С			С			С			D	
Intersection Summary												
HCM 2000 Control Delay			33.3	Н	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capac	city ratio		0.80									
Actuated Cycle Length (s)			85.0			t time (s)			20.5			
Intersection Capacity Utiliza	tion		70.0%	IC	U Level	of Service	;		С			
Analysis Period (min)			15									

c Critical Lane Group

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Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	211	22	271	452	178
v/c Ratio	0.42	0.05	0.26	0.41	0.09
Control Delay	11.9	4.5	6.7	2.3	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	4.5	6.7	2.3	5.6
Queue Length 50th (ft)	25	0	24	0	7
Queue Length 95th (ft)	63	8	66	31	21
Internal Link Dist (ft)	618		1658		240
Turn Bay Length (ft)					
Base Capacity (vph)	914	828	1113	1128	2005
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.03	0.24	0.40	0.09
Intersection Summary					

	•	•	†	/	>	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	ሻ	7	†	7		414			
Traffic Volume (vph)	194	20	249	416	5	159			
Future Volume (vph)	194	20	249	416	5	159			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0			
Lane Util. Factor	1.00	1.00	1.00	1.00		0.95			
Frt	1.00	0.85	1.00	0.85		1.00			
Flt Protected	0.95	1.00	1.00	1.00		1.00			
Satd. Flow (prot)	1770	1583	1863	1583		3534			
Flt Permitted	0.95	1.00	1.00	1.00		0.95			
Satd. Flow (perm)	1770	1583	1863	1583		3355			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	211	22	271	452	5	173			
RTOR Reduction (vph)	0	17	0	217	0	0			
Lane Group Flow (vph)	211	5	271	235	0	178			
Turn Type	Prot	Perm	NA	Perm	Perm	NA			
Protected Phases	8		2			6			
Permitted Phases		8		2	6				
Actuated Green, G (s)	7.6	7.6	16.9	16.9		16.9			
Effective Green, g (s)	7.6	7.6	16.9	16.9		16.9			
Actuated g/C Ratio	0.23	0.23	0.52	0.52		0.52			
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)	413	370	968	823		1744			
v/s Ratio Prot	c0.12		0.15						
v/s Ratio Perm		0.00		c0.15		0.05			
v/c Ratio	0.51	0.01	0.28	0.29		0.10			
Uniform Delay, d1	10.8	9.6	4.4	4.4		4.0			
Progression Factor	1.00	1.00	1.00	1.00		1.00			
Incremental Delay, d2	1.1	0.0	0.2	0.2		0.0			
Delay (s)	11.9	9.6	4.5	4.6		4.0			
Level of Service	В	Α	Α	Α		Α			
Approach Delay (s)	11.7		4.6			4.0			
Approach LOS	В		Α			А			
Intersection Summary									
HCM 2000 Control Delay			5.9	Н	CM 2000	Level of Servic	9	А	
HCM 2000 Volume to Capa	acity ratio		0.36						
Actuated Cycle Length (s)	j		32.5	S	um of lost	t time (s)		8.0	
Intersection Capacity Utiliz	ation		37.0%			of Service		А	
Analysis Period (min)			15						
a Critical Lana Croup									

MOVEMENT SUMMARY

₩ Site: 1 [AM - Future Adopted MITIGATED - Morena at Jutland]

Roundabout

Move	ment Perfo	rmance - V	ehicles								
Mo∨ ID	OD Mov	Demand Total ∨eh/h	l Flows HV %	Deg. Satn ∨/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South:	Morena Blv	d									
8	T1	271	2.0	0.515	7.8	LOSA	4.3	110.5	0.08	0.01	20.1
18	R2	452	2.0	0.515	7.8	LOSA	4.3	110.5	0.08	0.01	18.9
Appro	ach	723	2.0	0.515	7.8	LOSA	4.3	110.5	0.08	0.01	19.4
East:	Jutland Ave										
1	L2	211	2.0	0.277	7.3	LOSA	1.1	28.7	0.44	0.36	19.1
16	R2	22	2.0	0.277	7.3	LOSA	1.1	28.7	0.44	0.36	19.0
Appro	ach	233	2.0	0.277	7.3	LOSA	1.1	28.7	0.44	0.36	19.1
North:	Morena Blvo	i									
7	L2	5	2.0	0.200	6.0	LOSA	8.0	19.6	0.36	0.26	22.5
4	T1	173	2.0	0.200	6.0	LOSA	0.8	19.6	0.36	0.26	21.4
Appro	ach	178	2.0	0.200	6.0	LOSA	0.8	19.6	0.36	0.26	21.5
All Veh	nicles	1134	2.0	0.515	7.4	LOSA	4.3	110.5	0.20	0.12	19.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright ● 2000-2016 Akcelik and Associates Pty Ltd | sidrasolutions.com Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Wichdresday, July 26, 2017 2:57.07 PM Project: X(SND_TPTO/U9854 13006 - Balboo Station/SIDRAMorena at Jutland/Roundabout Mitigation Analysis sip7

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	34	1164	20	1522	295	144	194
v/c Ratio	0.31	1.11	0.18	0.76	0.90	0.27	0.43
Control Delay	18.0	82.6	11.2	13.6	54.0	17.1	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	82.6	11.2	13.6	54.0	17.1	19.3
Queue Length 50th (ft)	7	~586	3	266	110	38	53
Queue Length 95th (ft)	31	#815	m9	366	#237	78	104
Internal Link Dist (ft)		374		899		244	450
Turn Bay Length (ft)	50		50		100		
Base Capacity (vph)	111	1048	111	2007	363	582	501
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	1.11	0.18	0.76	0.81	0.25	0.39

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.

 95th percentile volume exceeds capacity, queue may be longer.

 Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	^		ሻ	∱ }		ሻ	ĵ.			4	
Traffic Volume (vph)	31	956	115	18	1373	28	271	110	22	56	65	57
Future Volume (vph)	31	956	115	18	1373	28	271	110	22	56	65	57
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		4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	1833		1770	3529		1770	1816			1755	
Flt Permitted	0.10	1.00		0.10	1.00		0.62	1.00			0.86	
Satd. Flow (perm)	196	1833		196	3529		1154	1816			1538	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	1039	125	20	1492	30	295	120	24	61	71	62
RTOR Reduction (vph)	0	6	0	0	2	0	0	11	0	0	18	0
Lane Group Flow (vph)	34	1158	0	20	1520	0	295	133	0	0	176	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	38.1	38.1		38.1	38.1		19.1	19.1			19.1	
Effective Green, g (s)	38.1	38.1		38.1	38.1		19.1	19.1			19.1	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.29	0.29			0.29	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.9	4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9		2.0	2.0			2.0	
Lane Grp Cap (vph)	111	1042		111	2006		328	517			438	
v/s Ratio Prot		c0.63			0.43			0.07				
v/s Ratio Perm	0.17			0.10			c0.26				0.11	
v/c Ratio	0.31	1.11		0.18	0.76		0.90	0.26			0.40	
Uniform Delay, d1	7.5	14.4		6.9	11.0		23.0	18.5			19.3	
Progression Factor	1.00	1.00		0.84	0.93		1.00	1.00			1.00	
Incremental Delay, d2	7.0	63.7		3.2	2.5		25.3	0.1			0.2	
Delay (s)	14.6	78.1		9.1	12.7		48.3	18.6			19.6	
Level of Service	В	Е		Α	В		D	В			В	
Approach Delay (s)		76.3			12.7			38.5			19.6	
Approach LOS		Е			В			D			В	
Intersection Summary												
HCM 2000 Control Delay			39.0	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capa	acity ratio		1.04									
Actuated Cycle Length (s)	·		67.0	S	um of los	t time (s)			9.8			
Intersection Capacity Utiliz	ation		94.6%	IC	U Level	of Service)		F			
Analysis Period (min)			15									

c Critical Lane Group

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	618	904	496	297	979	398	721	430	315	298	401	984
v/c Ratio	0.74	0.66	0.49	0.72	0.73	0.54	1.07	0.52	0.47	0.73	0.73	0.78
Control Delay	53.6	38.1	13.8	67.2	49.3	22.4	104.7	47.4	23.6	68.1	62.5	34.2
Queue Delay	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4
Total Delay	53.6	38.1	14.5	67.2	49.3	22.4	104.7	47.4	23.6	68.1	62.5	46.6
Queue Length 50th (ft)	257	341	178	130	290	178	~359	173	146	131	178	376
Queue Length 95th (ft)	338	463	316	175	349	269	#484	227	220	176	226	463
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	565		120	410		325	265		100	200		265
Base Capacity (vph)	835	1371	1018	428	1344	795	676	1009	680	546	865	1266
Starvation Cap Reductn	0	0	238	0	0	0	0	0	0	0	0	274
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.66	0.64	0.69	0.73	0.50	1.07	0.43	0.46	0.55	0.46	0.99

Intersection Summary

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻሻ	^	7	14.54	ተተተ	7	ሻሻ	^	7	ሻሻ	^	77
Traffic Volume (vph)	569	832	456	273	901	366	663	396	290	274	369	905
Future Volume (vph)	569	832	456	273	901	366	663	396	290	274	369	905
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.88
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)	3433	3539	1583	3433	5085	1583	3433	3539	1583	3433	3539	2787
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)	3433	3539	1583	3433	5085	1583	3433	3539	1583	3433	3539	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	618	904	496	297	979	398	721	430	315	298	401	984
RTOR Reduction (vph)	0	0	39	0	0	77	0	0	55	0	0	52
Lane Group Flow (vph)	618	904	457	297	979	321	721	430	260	298	401	932
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8	1	7	4	5	1	6	7	5	2	3
Permitted Phases			8			4			6			2
Actuated Green, G (s)	32.8	52.3	78.9	16.2	35.7	51.7	26.6	31.9	48.1	16.0	20.9	53.7
Effective Green, g (s)	32.8	52.3	78.9	16.2	35.7	51.7	26.6	31.9	48.1	16.0	20.9	53.7
Actuated g/C Ratio	0.24	0.39	0.58	0.12	0.26	0.38	0.20	0.24	0.36	0.12	0.15	0.40
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	834	1371	925	411	1344	606	676	836	564	406	547	1108
v/s Ratio Prot	0.18	0.26	0.10	0.09	c0.19	0.06	c0.21	0.12	0.06	0.09	0.11	c0.20
v/s Ratio Perm			0.19			0.14			0.11			0.13
v/c Ratio	0.74	0.66	0.49	0.72	0.73	0.53	1.07	0.51	0.46	0.73	0.73	0.84
Uniform Delay, d1	47.2	34.0	16.4	57.2	45.2	32.2	54.2	44.8	33.5	57.4	54.4	36.8
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	3.1	2.5	0.2	5.3	3.5	0.4	53.7	0.9	0.2	5.8	5.1	5.7
Delay (s)	50.3	36.5	16.5	62.5	48.7	32.6	107.9	45.7	33.7	63.3	59.5	42.5
Level of Service	D	D	В	Е	D	С	F	D	С	E	Е	D
Approach Delay (s)		35.8			47.3			73.7			50.2	
Approach LOS		D			D			Ε			D	
Intersection Summary												
HCM 2000 Control Delay			50.3	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capac	city ratio		0.86									
Actuated Cycle Length (s)			135.0			st time (s)			19.0			
Intersection Capacity Utilizat	tion		79.4%	IC	CU Level	of Service	9		D			
Analysis Period (min)			15									

c Critical Lane Group

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Lane Group	EBT	EBR	WBT	NBR	SBR
Lane Group Flow (vph)	1575	935	1828	366	98
v/c Ratio	0.84	0.73	0.52	0.68	0.06
Control Delay	16.9	4.8	0.5	23.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	4.8	0.5	23.0	0.1
Queue Length 50th (ft)	207	0	0	95	0
Queue Length 95th (ft)	#307	46	0	#188	0
Internal Link Dist (ft)	362		554		
Turn Bay Length (ft)					
Base Capacity (vph)	1868	1276	3491	541	1589
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.73	0.52	0.68	0.06
Intersection Summary					

^{# 95}th percentile volume exceeds capacity, queue may be longer.

KHA Queues

Queue shown is maximum after two cycles.

Timing Plan: PM Peak Period

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		^	7		^				7			7
Traffic Volume (vph)	0	1449	860	0	1682	0	0	0	337	0	0	90
Future Volume (vph)	0	1449	860	0	1682	0	0	0	337	0	0	90
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
Frt		1.00	0.85		1.00				0.86			0.86
Flt Protected		1.00	1.00		1.00				1.00			1.00
Satd. Flow (prot)		3539	1583		3539				1611			1611
Flt Permitted		1.00	1.00		1.00				1.00			1.00
Satd. Flow (perm)		3539	1583		3539				1611			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1575	935	0	1828	0	0	0	366	0	0	98
RTOR Reduction (vph)	0	0	441	0	0	0	0	0	13	0	0	0
Lane Group Flow (vph)	0	1575	494	0	1828	0	0	0	353	0	0	98
Turn Type		NA	Perm		NA				Prot			Perm
Protected Phases		4			5 8				5			
Permitted Phases			4									4 5
Actuated Green, G (s)		29.0	29.0		54.9				17.9			54.9
Effective Green, g (s)		29.0	29.0		54.9				17.9			54.9
Actuated g/C Ratio		0.53	0.53		1.00				0.33			1.00
Clearance Time (s)		4.0	4.0						4.0			
Vehicle Extension (s)		3.0	3.0						3.0			
Lane Grp Cap (vph)		1869	836		3539				525			1611
v/s Ratio Prot		c0.45			0.52				c0.22			
v/s Ratio Perm			0.31									0.06
v/c Ratio		0.84	0.59		0.52				0.67			0.06
Uniform Delay, d1		11.0	8.9		0.0				16.0			0.0
Progression Factor		1.00	1.00		1.00				1.00			1.00
Incremental Delay, d2		3.7	1.1		0.1				3.4			0.0
Delay (s)		14.7	10.0		0.1				19.3			0.0
Level of Service		В	В		Α				В			Α
Approach Delay (s)		12.9			0.1			19.3			0.0	
Approach LOS		В			Α			В			Α	
Intersection Summary												
HCM 2000 Control Delay			8.3	Н	CM 2000	Level of S	Service		А			
HCM 2000 Volume to Capacity	ratio		0.78									
Actuated Cycle Length (s)			54.9	S	um of los	t time (s)			8.0			
Intersection Capacity Utilization			67.6%	IC	CU Level	of Service			С			
Analysis Period (min)			15									
0 111 11 0												

c Critical Lane Group

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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	472	1307	485	1180	145	93	389	395	334	628	364	
v/c Ratio	0.90	0.93	0.90	0.84	0.21	0.70	0.60	0.62	0.90	0.82	0.71	
Control Delay	75.5	50.9	75.3	43.1	11.7	86.9	52.4	31.5	84.8	58.2	25.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	75.5	50.9	75.3	43.1	11.7	86.9	52.4	31.5	84.8	58.2	25.9	
Queue Length 50th (ft)	207	556	212	477	27	78	161	229	148	273	115	
Queue Length 95th (ft)	#331	#782	#340	628	79	#163	214	337	#258	342	229	
Internal Link Dist (ft)		3203		630			1350			860		
Turn Bay Length (ft)	240		220		220	200		100	120		120	
Base Capacity (vph)	537	1433	547	1433	697	150	904	646	372	986	600	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.88	0.91	0.89	0.82	0.21	0.62	0.43	0.61	0.90	0.64	0.61	
Intersection Summary												

⁹⁵th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1/1	∱ ∱		44	† †	7	¥	^	7	44	^	7
Traffic Volume (vph)	434	1144	59	446	1086	133	86	358	363	307	578	335
Future Volume (vph)	434	1144	59	446	1086	133	86	358	363	307	578	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3513		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3513		3433	3539	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	472	1243	64	485	1180	145	93	389	395	334	628	364
RTOR Reduction (vph)	0	2	0	0	0	57	0	0	40	0	0	173
Lane Group Flow (vph)	472	1305	0	485	1180	88	93	389	355	334	628	191
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	19.9	51.6		20.4	51.4	51.4	9.8	23.9	44.3	14.1	28.2	28.2
Effective Green, g (s)	19.9	51.6		20.4	51.4	51.4	9.8	23.9	44.3	14.1	28.2	28.2
Actuated g/C Ratio	0.15	0.40		0.16	0.40	0.40	0.08	0.18	0.34	0.11	0.22	0.22
Clearance Time (s)	4.4	5.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
Vehicle Extension (s)	2.0	3.5		2.0	3.0	3.0	2.0	2.4	2.0	2.0	2.6	2.6
Lane Grp Cap (vph)	526	1396		539	1401	626	133	651	540	372	768	343
v/s Ratio Prot	0.14	c0.37		c0.14	0.33		0.05	0.11	0.10	c0.10	c0.18	
v/s Ratio Perm						0.06			0.12			0.12
v/c Ratio	0.90	0.93		0.90	0.84	0.14	0.70	0.60	0.66	0.90	0.82	0.56
Uniform Delay, d1	53.9	37.5		53.7	35.5	25.1	58.6	48.5	36.3	57.1	48.4	45.2
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	17.4	11.8		17.4	4.8	0.1	12.2	1.2	2.2	22.8	6.6	1.6
Delay (s)	71.4	49.3		71.1	40.3	25.2	70.7	49.7	38.5	79.9	55.0	46.9
Level of Service	Е	D		Е	D	С	Е	D	D	Е	D	D
Approach Delay (s)		55.2			47.3			46.9			59.0	
Approach LOS		Е			D			D			Ε	
Intersection Summary												
HCM 2000 Control Delay			52.4	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capa	city ratio		0.92									
Actuated Cycle Length (s)			129.8	S	um of los	t time (s)			20.5			
Intersection Capacity Utiliza	ition		83.5%			of Service	;		Е			
Analysis Period (min)			15									

c Critical Lane Group

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Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	666	18	186	299	355
v/c Ratio	0.76	0.02	0.36	0.46	0.39
Control Delay	15.0	3.1	14.4	4.7	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	3.1	14.4	4.7	13.3
Queue Length 50th (ft)	90	0	29	0	30
Queue Length 95th (ft)	#243	7	80	41	68
Internal Link Dist (ft)	618		1658		240
Turn Bay Length (ft)					
Base Capacity (vph)	1300	1167	849	884	1493
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.02	0.22	0.34	0.24
Intersection Summary					

⁹⁵th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

	•	•	†	~	>	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	ሻ	7	†	7		414			
Traffic Volume (vph)	613	17	171	275	24	303			
Future Volume (vph)	613	17	171	275	24	303			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0			
Lane Util. Factor	1.00	1.00	1.00	1.00		0.95			
Frt	1.00	0.85	1.00	0.85		1.00			
Flt Protected	0.95	1.00	1.00	1.00		1.00			
Satd. Flow (prot)	1770	1583	1863	1583		3526			
Flt Permitted	0.95	1.00	1.00	1.00		0.93			
Satd. Flow (perm)	1770	1583	1863	1583		3279			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	666	18	186	299	26	329			
RTOR Reduction (vph)	0	9	0	215	0	0			
Lane Group Flow (vph)	666	9	186	85	0	355			
Turn Type	Prot	Perm	NA	Perm	Perm	NA			
Protected Phases	8		2			6			
Permitted Phases		8		2	6				
Actuated Green, G (s)	18.4	18.4	10.4	10.4		10.4			
Effective Green, g (s)	18.4	18.4	10.4	10.4		10.4			
Actuated g/C Ratio	0.50	0.50	0.28	0.28		0.28			
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)	885	791	526	447		926			
v/s Ratio Prot	c0.38		0.10						
v/s Ratio Perm		0.01		0.05		c0.11			
v/c Ratio	0.75	0.01	0.35	0.19		0.38			
Uniform Delay, d1	7.4	4.6	10.5	10.0		10.6			
Progression Factor	1.00	1.00	1.00	1.00		1.00			
Incremental Delay, d2	3.7	0.0	0.4	0.2		0.3			
Delay (s)	11.0	4.6	10.9	10.2		10.9			
Level of Service	В	А	В	В		В			
Approach Delay (s)	10.9		10.5			10.9			
Approach LOS	В		В			В			
Intersection Summary									
HCM 2000 Control Delay			10.7	Н	CM 2000	Level of Servic	9	В	
HCM 2000 Volume to Capa	acity ratio		0.62						
Actuated Cycle Length (s)	<u>, </u>		36.8	S	um of lost	t time (s)		8.0	
Intersection Capacity Utiliz	ation		62.0%			of Service		В	
Analysis Period (min)			15						
c Critical Lana Croup									

MOVEMENT SUMMARY

∀ Site: 1 [PM - Future Adopted MITIGATED - Morena at Jutland - Copy]

Roundabout Roundabout

Move	nent Perfo	rmance - Ve	hicles								
Mo∨ ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South:	Morena Blv		70	****	333		7511			por von	
8	T1	186	2.0	0.353	5.8	LOS A	2.2	56.6	0.15	0.05	21.4
18	R2	299	2.0	0.353	5.8	LOS A	2.2	56.6	0.15	0.05	20.1
Approa	ach	485	2.0	0.353	5.8	LOSA	2.2	56.6	0.15	0.05	20.6
East: J	utland Ave										
1	L2	666	2.0	0.747	18.3	LOSC	7.7	195.0	0.72	0.63	14.8
16	R2	18	2.0	0.747	18.3	LOSC	7.7	195.0	0.72	0.63	15.5
Approa	ich	685	2.0	0.747	18.3	LOSC	7.7	195.0	0.72	0.63	14.8
North:	Morena Blvo	t									
7	L2	26	2.0	0.633	20.0	LOSC	3.7	94.3	0.76	0.91	16.6
4	T1	329	2.0	0.633	20.0	LOSC	3.7	94.3	0.76	0.91	15.0
Approa	ıch	355	2.0	0.633	20.0	LOSC	3.7	94.3	0.76	0.91	15.1
All Veh	ides	1525	2.0	0.747	14.7	LOS B	7.7	195.0	0.55	0.51	16.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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APPENDIX H

PREFERRED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 1: Olney St & Garnet Ave

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	•	†	•	ţ	+	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	14	1272	8	748	225	245	
v/c Ratio	0.03	1.00	0.11	0.31	0.94	0.73	
Control Delay	6.2	44.6	13.1	9.3	85.2	51.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.2	44.6	13.1	9.3	85.2	51.0	
Queue Length 50th (ft)	3	~956	2	114	145	148	
Queue Length 95th (ft)	9	#1187	9m	m145	#287	239	
Internal Link Dist (ft)		374		899	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	443	1267	2	2431	258	360	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.03	1.00	0.11	0.31	0.87	89.0	

- Volume exceeds capacity, queue is theoretically infinite.
- Volume shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be broger.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 1: Olney St & Garnet Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

	•	†	<i>></i>	/	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	÷		F	₩			4			4	
Traffic Volume (vph)	13	1063	108	7	619	6	115	75	17	69	131	26
Future Volume (vph)	13	1063	108	7	619	6	115	75	17	69	131	26
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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
뜐	1.00	0.99		1:00	1.00			0.99			0.98	
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1770	1837		1770	3532			1793			1806	
Flt Permitted	0.35	1.00		0.05	1.00			0.59			0.82	
Satd. Flow (perm)	644	1837		102	3532			1080			1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	1155	117	00	738	10	125	82	18	75	142	28
RTOR Reduction (vph)	0	က	0	0	-	0	0	3	0	0	2	0
Lane Group Flow (vph)	14	1269	0	8	747	0	0	222	0	0	240	0
Turn Type	Perm	N		Perm	Α		Perm	Ϋ́		Perm	¥	
Protected Phases		2			9			∞			4	
Permitted Phases	2			9			8			4		
Actuated Green, G (s)	72.9	72.9		72.9	72.9			23.3			23.3	
Effective Green, g (s)	72.9	72.9		72.9	72.9			23.3			23.3	
Actuated g/C Ratio	69.0	69.0		69.0	69.0			0.22			0.22	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	442	1263		70	2429			237			329	
v/s Ratio Prot		69.0o			0.21							
√s Ratio Perm	0.02			0.08				c0.21			0.16	
v/c Ratio	0.03	1.00		0.11	0.31			0.94			0.73	
Uniform Delay, d1	5.3	16.5		2.6	9.9			40.6			38.4	
Progression Factor	1.00	1.00		1.38	1.32			00.1			1.00	
Incremental Delay, d2	0.1	26.5		3.0	0.3			40.4			0.7	
Delay (s)	5.4	43.0		.0L	0.6			r			45.4	
Level of Service	₹	٠,		מ	₹ 0			_ 5			٠,	
Approach Delay (s)		42.6			0.6			 			45.4	
Approach LOS		<u> </u>			⋖			_			<u> </u>	
Intersection Summary												
HCM 2000 Control Delay			36.2	¥	HCM 2000 Level of Service	Level of S	service		۵			
HCM 2000 Volume to Capacity ratio	ratio		0.99									
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization	_		%2.06	⊇	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 1

KHA Queues

Horizon Year with Preferred LU Balboa Transit Station 2: Balboa Ave & Garnet

2: Balboa Ave & Garnet Ave	arnet A	ve.			Timing Plan: AM Peak Period
	1	ţ	1	٤	
Lane Group	EBT	WBT	WBT WBR	SBL	
Lane Group Flow (vph)	561	750	392	1012	
v/c Ratio	1.29	0.53	0.27	89.0	
Control Delay	169.6	7.3	0.5	12.0	
Queue Delay	0.0	0.0	0.0	0:0	
Total Delay	169.6	7.3	0.5	12.0	
Queue Length 50th (ft)	~123	41	0	201	
Oueue Length 95th (ft)	#206	8	0	m204	
Internal Link Dist (ft)	936	284		868	
Turn Bay Length (ft)					
Base Capacity (vph)	434	1422	1441	14%	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	1.29	0.53	0.27	89.0	

Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

The volume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

9.9 C HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 0.68 12.0 0.94 0.6 11.9 B SBL 931 931 1900 4.9 0.97 1.00 0.95 0.95 0.95 0.95 0.92 23.1 23.1 0.44 4.9 5.2 1496 c0.29 Prot 0.27 0.27 1.00 0.5 0.5 7.722 7.722 7.722 7.722 4.0 0.91 1.00 1.00 1.00 1.00 1.00 7.85 392 Free Re Free 53.0 53.0 1.00 1441 10.9 0.60 53.0 70.1% ↑↑ 328 328 328 328 1900 5.0 0.92 1.00 1.00 1.00 3124 0.92 3124 0.92 3124 2.00 2.00 3.00 20.0 20.0 0.38 5.0 6.1 1178 0.16 0.43 1.00 0.7 13.0 B 8.7 A ¥ 470 470 1900 5.0 0.95 1.00 3524 0.83 2953 0.92 0 561 Ν 20.0 20.0 0.38 5.0 6.1 c0.19 0.50 12.7 1.00 1.0 HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cyale Length (\$)
Intersection Capacity Utilization
Analysis Period (min)
C Critical Lane Group 0.92 46 46 900 Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph) Protected Phases Permitted Phases Actuated Green, G (s) Effective Green, g (s) Actuated g/C Ratio Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) v/s Ratio Prot v/s Ratio Perm Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor -ane Group Flow (vph) Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1 Fit Protected Satd. Flow (prot) Tum Type

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 3

KHA Queues

Balboa Transit Station

3: Garnet Ave & Soledad Mtn Rd

Timing Plan: AM Peak Period

							,
	•	†	ţ	4	٠	*	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	154	1562	988	222	529	73	
v/c Ratio	0.53	0.61	0.42	0.42	0.79	0.20	
Control Delay	61.9	10.8	6.2	2.5	8.99	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	61.9	10.8	6.2	2.5	26.8	8.6	
Queue Length 50th (ft)	62	302	92	45	210	0	
Queue Length 95th (ft)	66	432	%	73	258	38	
Internal Link Dist (ft)		770	908		594		
Turn Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	291	2541	2134	1324	1032	366	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.53	0.61	0.42	0.42	0.51	0.20	
Intersection Summary							

KHA Oueues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Movement Feb. Feb. Wish Wish Seb. Seb.		4	†	ţ	4	٠	•	
(yph) 142 1437 815 512 487 67 (yph) 1900 1900 1900 1900 1900 1900 1900 190	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
(vph) 142 1437 815 512 487 67 (vph) 1400 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	K.	ŧ	*	*	K.	W.	
(viph) 142 1437 815 512 487 67 190 1900 1900 1900 1900 1900 1 0 0 190 1900 190	Traffic Volume (vph)	142	1437	815	512	487	19	
(s) 1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	142	1437	815	512	487		
(\$) 44 5.5 4.9 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
or 097 095 095 100 097 1.00 100 100 100 100 097 1.00 100 100 100 095 1.00 0.85 100 100 100 0.95 1.00 0.95 100 100 0.95 1.00 0.95 100 100 0.95 1.00 0.95 100 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 2.0 0.97 2.0 0.98 2.0 0.98 2.0 0.98 2.0 0.99 2.0 0.90	Total Lost time (s)	4.4	5.5	4.9	5.4	5.4	5.4	
100 100 085 100 088 10 3433 3539 3539 1583 1583 m) 3433 3539 3539 1583 1583 m) 3433 3539 3539 1583 1583 m) 3433 3539 3539 1583 3433 1583 m) 3433 3539 3539 1583 3433 1583 m) 3433 3539 3539 1583 3433 1583 m) (2) 2 0,92 0,92 0,92 0,92 0,92 m) (2) 2 0,92 0,92 0,92 0,92 m) (2) 0 0 0 0 0 0 0 0 m) (2) 154 1562 886 557 529 14 es 5 2 6 7 7 4 es 5 2 6 7 7 4 es 5 2 6 7 7 4 es 5 6 10 6 898 754 997 243 243 es 7 7 898 754 997 243 343 es 8 754 997 243 343 es 8 754 997 243 343 es 9 134 339 667 307 d1 548 89 134 339 667 307 d1 548 89 134 339 667 d1 548 89 134 061 100 1.00 es 6 10 0 0 0 0 0 0 es 7 7 7 7 0 0 0 es 7 8 14 0 0 0 0 for cold 0 0 0 0 0 for cold 0 0 0 0 0 0 for cold 0 0 0 0 0 0 for cold 0 0 0 0 for 0 0 0 0 0 for cold 0 0 0 for cold 0 0 0 0 for cold 0 0 0 0 for cold 0 0 0 for cold	Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00	
(yph) 0.95 100 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 100 0.95 100 0.95 100 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Ff	1.00	1.00	1.00	0.85	1.00	0.85	
(yph) 3433 3539 3539 1583 1583 (y) 3433 3539 3539 1583 3433 3539 3539 1583 3433 3539 3539 1583 (yph) 0.095 100 100 0.095 1.00 0.005 1.00 0.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1	Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
m) 0.95 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 0.02 0.02 0.02 0.02 0.02 0.02 0	Satd. Flow (prot)	3433	3539	3539	1583	3433	1583	
m) 3433 3539 3539 1583 1583 m) 3433 3539 3539 1583 3433 1583 m (yph) 0 0 0 0 0 0 59 m (yph) 154 1562 886 557 529 14 es 5 2 6 7 7 7 4 es 5 2 6 6 7 7 7 4 es 5 2 6 7 7 7 7 4 es 5 2 6 7 7 7 7 7 es 7 7 7 7 7 7 7 es 7 7 7 7 7 7 7 es 7 7 7 7 7 7 es 8 754 997 24,3 24,3 es 7 7 7 7 7 7 es 7 7 7 7 7 7 es 7 7 7 7 7 7 es 8 754 997 24,3 24,3 es 7 7 7 7 7 7 es 8 754 997 24,3 24,3 es 8 754 95,4 5,4 5,4 es 8 7 7 7 7 7 7 es 8 7 7 7 7 7 7 es 8 7 7 7 7 7 7 es 9 7 7 7 es 9 7 7 7 7 es 9 7 7 es 9 7 7 7 es 9	Fit Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
γγ PHF 0.92 0.93	Satd. Flow (perm)	3433	3539	3539	1583	3433	1583	
nn(vhh) 154 1562 886 557 529 73 nv(vph) 164 1562 886 557 529 73 nv(vph) 154 1562 886 557 529 73 nv (vph) 154 1562 886 557 529 14 es 5 2 6 7 7 4 4 es 5 2 6 7 7 4 4 alo 0.04 6.74 99.7 24.3 24.3 alo 0.05 10.6 89.8 75.4 99.7 24.3 24.3 alo 0.08 0.72 0.60 0.80 0.19 on (s) 2.0 5.6 8.0 2.0 2.0 3.0 (vph) 291 2542 2134 1330 667 307 on (s) 2.0 5.6 8.0 2.0 2.0 3.0 (vph) 291 2542 2134 1330 667 307 con (s) 2.0 5.6 8.0 0.2 0.0 alo 0.04 0.04 0.04 0.05 0.05 d1 548 8.9 13.1 3.8 480 40.9 con (s) 1.0 0.04 1.0 1.0 lay, d2 0.8 1.1 0.6 0.1 6.0 0.1 lay, d2 0.8 1.1 0.6 0.1 6.0 0.1 ey 55.6 10.0 5.9 2.4 54.0 41.0 and 10 alo 0.4 4 6.5 2.4 by A A A A A A A and 10 alo 0.4 4 6.5 2.4 by A A A A A A A and 10 alo 0.4 4 6.5 2.4 by A A A A A A A A and 10 alo 0.4 1.1 0.6 0.1 6.0 0.1 by A A A A A A A A and 10 alo 0.4 1.1 0.6 0.1 6.0 0.1 by B A A A A B and 10 alo 0.4 1.1 0.6 0.1 6.0 0.1 and 10 alo 0.4 1.1 0.6 0.1 5.0 0.1 by Badiy Utilization 6.2 7% ICU Level of Service 6.0 c.1 full min) 15	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
any (uph) 1 0 0 0 0 0 59 ww (uph) 154 1562 886 557 529 14 Prot NA NA pm-v Prot custom es 5 2 6 7 7 7 ses 7 2 6 7 7 7 t, G(s) 10.6 89.8 75.4 99.7 24.3 24.3 to not (s) 20.0 55.6 80 0.19 0.19 to not (s) 20.0 55.6 80 20.1 0.19 to not (s) 20.1 55.8 10.8 20.1 0.19 to not (s) 20.1 55.8 10.8 20.1 0.10 to 10.0 0.41 0.25 0.05 to 20.1 1.00 1.00 to 4.4 6.5 9.8 13.1 38 48.0 40.9 to 10.0 0.41 0.6 1.100 1.00 lay, d2 0.8 11 0.6 0.1 6.0 0.1 e	Adj. Flow (vph)	154	1562	988	222	529	73	
ww (vph) 154 1562 886 557 529 14 ses 5 2 6 7 7 4 es 5 2 6 7 7 4 es 5 2 6 7 7 i. G (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 10.6 89.8 75.4 99.7 24.3 24.3 i. g (s) 2.0 5.6 80 2.0 2.0 3.0 i. g (s) 4.4 5.5 4.9 5.4 5.4 5.4 5.4 i. g (s) 2.0 5.6 80 20.7 20.0 i. g (s) 2.0 5.0 30 i. g (s) 4.4 5.5 4.9 5.4 5.4 5.4 i. g (s) 2.0 10.0 0.4 0.4 0.7 0.0 i. g (s) 2.0 10.0 0.4 0.4 0.0 i. g (s) 2.0 1.1 0.6 0.1 0.0 i. g (s) 2.0 2.0 0.1 i. g (s) 2.0 3.0 i. g (s) 3.0 i. g (s) 4.4 5.5 4.9 5.4 5.0 i. g (s) 4.4 5.5 6.0 i. g (s) 4.0 i. g (s) 4.4 5.5 6.0 i. g (s) 4.0 i. g (s) 4.4 5.5 6.0 i. g (s) 4.4 5.5 6.0 i. g (s) 4.4 5.4 5.4 i. g (s) 4.4	RTOR Reduction (vph)	0	0	0	0	0	26	
es 5 6 7 7 4 4 es 5 2 6 7 7 7 4 4 es 5 2 6 7 7 7 7 4 4 es 5 2 6 7 7 7 7 4 4 es 5 2 6 7 7 7 7 7 4 es 5 2 6 7 7 7 7 7 4 es 5 2 6 7 7 7 7 7 4 es 5 2 6 7 7 7 7 7 7 4 es 5 6 7 7 7 7 7 7 7 6 6 6 6 6 6 6 6 6 6 6	Lane Group Flow (vph)	154	1562	988	222	529	14	
es 5 2 6 7 7 4 4 es 5 2 6 7 7 4 4 es 5 2 6 7 7 4 4 es 5 10.6 89.8 75.4 99.7 24.3 24.3 t.g(s) 10.6 89.8 75.4 99.7 24.3 24.3 t.g(s) 10.6 89.8 75.4 99.7 24.3 24.3 alio 0.08 0.72 0.60 0.80 0.19 0.19 es 7 2.0 5.6 8.0 2.0 2.0 3.0 ton(s) 2.0 5.6 8.0 2.0 3.0 ton(s) 2.0 5.6 8.0 2.0 3.0 ton(s) 2.0 5.4 3.4 3.0 ton(s) 2.0 5.4 3.4 0.0 ton(s) 2.0 6.1 0.0 0.1 en A A A D D mmany mmany men ocapacity ratio on 0.1 4.6 5.9 2.4 54.0 41.0 and to Capacity ratio on 0.2 7.8 1.1 0.6 0.1 1.00 backly Utilization 1.5 0.0 0.1 1.00 1	Tum Type	Prot	NA	NA	vo+mq		custom	
es 2 6 7 7 10.6 89.8 75.4 99.7 24.3 24.3 1.4 1.6 (\$) 10.6 89.8 75.4 99.7 24.3 24.3 1.4 1.4 1.6 (\$) 10.6 89.8 75.4 99.7 24.3 24.3 24.3 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	Protected Phases	2	2	9	7		4	
1, G (s) 10, 6 89, 8 75, 4 99, 7 24, 3 24,	Permitted Phases		2		9		7	
1, g(s) 10, 6 89, 8 75, 4 997 24, 3 24, 3 alio 0.08 0.72 0.60 0.09 0.19 0.19 0.19 0.19 0.19 0.19 0.1	Actuated Green, G (s)	10.6	8.68	75.4	7.66	24.3	24.3	
atio 0.08 0.72 0.60 0.80 0.19 0.19 ation 0.08 0.72 0.60 0.80 0.19 0.19 ation 0.04 0.72 0.60 0.80 0.19 0.19 ation 0.04 0.04 0.25 0.08 0.01 0.01 ation 0.04 0.04 0.25 0.08 0.01 0.01 ation 0.04 0.04 0.27 0.90 0.05 ation 0.08 1.1 0.6 0.1 0.0 1.00 ation 0.08 1.1 0.6 0.1 6.0 0.1 b	Effective Green, g (s)	10.6	8.68	75.4	7.66	24.3	24.3	
(c) 44 5.5 4.9 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Actuated g/C Ratio	0.08	0.72	09.0	0.80	0.19	0.19	
(vph) 2.0 5.6 8.0 2.0 3.0 (vph) 291 25.42 2134 1330 667 307 (vph) 291 25.42 2134 1330 667 307 (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) (v) </td <td>Clearance Time (s)</td> <td>4.4</td> <td>5.5</td> <td>4.9</td> <td>5.4</td> <td>5.4</td> <td>5.4</td> <td></td>	Clearance Time (s)	4.4	5.5	4.9	5.4	5.4	5.4	
(vph) 291 2542 2134 1330 667 307 0.04 c.0.44 0.25 0.08 c.0.15 0.01 0.1 0.04 0.24 0.27 0.05 0.1 0.42 0.79 0.05 0.1 0.41 0.61 1.00 1.0 0.10 0.01 0.01 1.0 0.8 1.1 0.6 0.1 1.0 5.9 2.4 5.0 0.1 1.0 5.9 2.4 5.0 0.1 1.1 4.6 5.9 2.4 5.0 1.0 5.9 2.4 5.0 0.1 1.0 5.9 2.4 5.0 0.1 1.1 4.6 5.0 0.1 0.0 1.1 4.6 5.0 0.1 0.0 1.2 4.0 4.0 0.0 0.1 1.0 5.0 2.4 5.0 0.1 1.0	Vehicle Extension (s)	2.0	9.9	8.0	2.0	2.0	3.0	
0.04	Lane Grp Cap (vph)	291	2542	2134	1330	199	307	
053 0.61 0.42 0.79 0.05 d1 54.8 8.9 13.1 3.8 48.0 40.9 ctor 1.00 1.00 0.41 0.61 1.00 1.00 lay, d2 0.8 1.1 0.6 0.1 6.0 0.1 e	v/s Ratio Prot	0.04	c0.44	0.25	80:0	c0.15	0.01	
to 553 0.64 0.42 0.79 0.05 to 70 0.83 0.64 0.42 0.79 0.05 ctor 1.00 1.00 0.41 0.61 1.00 1.00 lay, d2 0.8 1.1 0.6 0.1 6.0 0.1 s E A A A A D D y (s) B A A A D to 100 1.00 D to 141 4.6 52.4 to 100 1.00 to 100 1.00 To 100 1.00 To 100 0.10 To 10	v/s Ratio Perm				0.27			
d1 548 8.9 131 38 48.0 40.9 ctor 1.00 1.00 0.41 0.61 1.00 1.00 lay, d2 0.8 1.1 0.6 0.1 6.0 0.1 e	v/c Ratio	0.53	0.61	0.42	0.42	0.79	0.05	
ctor 1.00 1.00 0.41 0.61 1.00 1.00 lay, d2 0.8 1.1 0.6 0.1 6.0 0.1 E A A A D D y (s) E 1.41 4.6 5.24 mmany Intol Delay 126 Num of lost time (s) pacity talion 0.70 Length (s) 125.0 Sum of lost time (s) pacity talion 62.7% ICU Level of Service (final property) 156 Num of lost time (s) 18.00 Num of lost time (s) 1	Uniform Delay, d1	54.8	8.9	13.1	3.8	48.0	40.9	
lay, d2	Progression Factor	1.00	1.00	0.41	0.61	1.00	1.00	
55.6 10.0 5.9 2.4 54.0 41.0	Incremental Delay, d2	0.8		9.0	0.1	0.9	0.1	
(\$)	Delay (s)	929	10.0	5.9	2.4	54.0	41.0	
14.1 4.6 52.4	Level of Service	ш	⋖	⋖	⋖	۵	۵	
B A D mmary Into Dalay Into Dalay Into Capacity ratio 0.70 Pacity Utilization 125.0 Pacity Utilization 15 ICU Level of Service 18	Approach Delay (s)		14.1	4.6		52.4		
16.6 HCM 2000 Level of Service 0.70 125.0 Sum of lost time (s) 62.7% ICU Level of Service 15	Approach LOS		В	A		Ω		
16.6 HCM 2000 Level of Service 0.70 Sum of lost time (s) 18. 62.7% ICU Level of Service 15	Intersection Summary							
0.70 125.0 Sum of lost time (s) 18. 62.7% ICU Level of Service 15	HCM 2000 Control Delay			16.6	Ĭ	CM 2000	Level of Service	В
125.0 Sum of lost time (s) 18. 62.7% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.70				
ilization 62.7% IOU Level of Service 15	Actuated Cycle Length (s)	,		125.0	S	Im of lost	time (s)	18.7
Analysis Period (min) 15 c. Citical I ane Group	Intersection Capacity Utilizal	tion		62.7%	2	U Level o	of Service	В
c. Critical Lane Group	Analysis Period (min)			15				
	c Critical Lane Group							

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 4: Bond St & Garnet Ave	n Ave			Horizon Year with Preferred LU Timing Plan: AM Peak Period
	†	ţ	•	
Lane Group	EBT	WBT	NBR	
Lane Group Flow (vph)	1992	1504	40	
v/c Ratio	0.56	0.42	0.02	
Control Delay	9.0	6.0	0.0	
Queue Delay	0.0	0.0	0.0	
Total Delay	9.0	6.0	0.0	
Queue Length 50th (ft)	0	9	0	
Queue Length 95th (ft)	0	36	0	
Internal Link Dist (ft)	908	574		
Turn Bay Length (ft)				
Base Capacity (vph)	3529	3539	1611	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	38	0	17	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.57	0.42	0.03	
Intersection Summary				
Intersection Summary				

KHA Oueues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 4: Bond St & Garnet Ave

	4	†	<i>></i>	/	ļ	4	•	←	•	٠	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		#₽			‡				*			*-
Traffic Volume (vph)	0	1796	37	0	1384	0	0	0	37	0	0	0
Future Volume (vph)	0	1796	37	0	1384	0	0	0	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost time (s)		4.9			4.9				4.9			
Lane Util. Factor		0.95			0.45				00.1			
		00.1			00.1				0.89			
Fit Protected		1.00			0.0				0.0			
Satd. Flow (prot)		3529			3539				1611			
Flt Permitted		1.00			1.00				1.00			
Satd. Flow (perm)		3529			3539				1611			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1952	40	0	1504	0	0	0	40	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1992	0	0	1504	0	0	0	40	0	0	0
Tum Type		NA			NA				Perm			Perm
Protected Phases		2			9							
Permitted Phases									2			9
Actuated Green, G (s)		125.0			125.0				125.0			
Effective Green, g (s)		125.0			125.0				125.0			
Actuated g/C Ratio		1.00			1.00				1.00			
Clearance Time (s)		4.9			4.9				4.9			
Vehicle Extension (s)		7.3			7.3				7.3			
Lane Grp Cap (vph)		3529			3539				1611			
v/s Ratio Prot		c0.56			0.42							
v/s Ratio Perm									0.02			
v/c Ratio		0.56			0.42				0.02			
Uniform Delay, d1		0.0			0.0				0.0			
Progression Factor		1:00			1.00				1.00			
Incremental Delay, d2		0.5			0.3				0.0			
Delay (s)		0.5			0.3				0.0			
Level of Service		V			V				V			
Approach Delay (s)		0.5			0.3			0.0			0.0	
Approach LOS		A			Ø			⋖			V	
Intersection Summary												
HCM 2000 Control Delay			0.4	H	M 2000	HCM 2000 Level of Service	ervice		Α			
HCM 2000 Volume to Capacity ratio	ratio		09:0									
Actuated Cycle Length (s)			125.0	S	Sum of lost time (s)	time (s)			7.9			
Intersection Capacity Utilization	_		71.5%	⊇	ICU Level of Service	f Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 5: Mission Bay Dr & Gamet Ave

	•	†	~	>	ţ	√	•	—	•	٠	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	718	716	585	251	572	268	479	617	307	274	367	389
v/c Ratio	1.16	0.82	0.72	0.87	0.71	0.42	0.88	0.53	0.35	0.72	0.71	0.27
Control Delay	131.7	55.4	29.5	80.1	48.9	23.0	69.7	37.4	15.8	64.6	49.2	14.8
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Total Delay	131.7	55.4	29.7	80.1	48.9	23.0	69.7	37.4	15.8	64.6	51.7	14.8
Queue Length 50th (ft)	~357	271	250	197	220	118	201	219	113	11	268	78
Queue Length 95th (ft)	#483	339	521	#328	276	182	#338	295	192	156	380	115
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	299		120	410		325	265		100	200		265
Base Capacity (vph)	620	945	808	314	934	999	547	1168	830	447	518	1435
Starvation Cap Reductn	0	0	16	0	0	0	0	0	0	0	19	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	97.0	0.74	0.80	0.61	0.40	0.88	0.53	0.34	0.61	0.81	0.27

KHA Oueues

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

	^	†	<i>></i>	/	ţ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	ŧ	¥L.	je-	*	*-	£	#	*-	£	*	K K
Traffic Volume (vph)	199	629	238	231	526	247	441	298	282	252	338	358
Future Volume (vph)	199	629	538	231	526	247	441	298	282	252	338	358
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
Ft	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
FIt 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	718	716	282	251	572	268	479	617	307	274	367	386
RTOR Reduction (vph)	0	0	109	0	0	38	0	0	28	0	0	41
Lane Group Flow (vph)	718	716	476	251	572	230	479	617	279	274	367	348
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	N	vo+mq
Protected Phases	3	∞	-	7	4	2	-	9	7	2	2	3
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	22.6	31.0	50.9	20.3	28.7	42.6	19.9	41.2	61.5	13.9	34.8	57.4
Effective Green, g (s)	22.6	31.0	50.9	20.3	28.7	45.6	19.9	41.2	61.5	13.9	34.8	57.4
Actuated g/C Ratio	0.18	0.25	0.41	0.16	0.23	0.34	0.16	0.33	0.49	0.11	0.28	0.46
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	620	877	644	287	812	539	546	1166	778	381	518	1279
v/s Ratio Prot	c0.21	c0.20	0.12	0.14	0.16	0.02	c0.14	0.17	90:0	0.08	c0.20	0.05
v/s Ratio Perm			0.18			0.10			0.12			0.08
v/c Ratio	1.16	0.82	0.74	0.87	0.70	0.43	0.88	0.53	0.36	0.72	0.71	0.27
Uniform Delay, d1	51.2	44.3	31.4	51.1	44.3	31.8	51.4	34.0	19.6	53.7	40.5	20.9
Progression Factor	1:01	1.09	1.25	1.00	1.00	1:00	9.	9.0	1:00	1:00	1:00	1.00
Incremental Delay, d2	86.0	5.4	3.3	23.6	3.1	0.2	14.3	1.7	0.1	5.3	8.0	0.0
Delay (s)	137.9	23.6	42.7	74.7	47.4	32.0	65.7	35.7	19.7	29.0	48.5	20.9
Level of Service	_	۵	O	ш	۵	ပ	ш		B	ш		ပ
Approach Delay (s)		80.4			49.9			42.5			40.9	
Approach LOS		ı			٥			Ω			Ω	
Intersection Summary												
HCM 2000 Control Delay			57.5	H	3M 2000	HCM 2000 Level of Service	Service		Е			
HCM 2000 Volume to Capacity ratio	city ratio		0.88									
Actuated Cycle Length (s)			125.0	જ	im of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	lion		%9.62	೨	U Level	ICU Level of Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Volume exceeds capacity, queue is theoretically infinite.
 Oueue shown is maximum after two cydes.
 # 95th percentile volume exceeds capacity, queue may be briger.
 Oueue shown is maximum after two cydes.

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

	†	ţ	•	•	
Lane Group	EBT	WBT	NBR	SBR	
Lane Group Flow (vph)	1297	2101	223	8	
v/c Ratio	0.81	0.42	0.21	0.12	
Control Delay	15.4	0.3	8.7	3.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	15.4	0.3	8.7	3.5	
Queue Length 50th (ft)	134	0	11	0	
Queue Length 95th (ft)	202	0	36	18	
Internal Link Dist (ft)	1151	265			
Turn Bay Length (ft)					
Base Capacity (vph)	1688	5019	1041	640	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.77	0.42	0.21	0.13	
:					
Intersection Summary					

KHA Oueues

Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

	•	†	>	/	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩			4413				N/N			*-
Traffic Volume (vph)	0	1193	0	0	1759	174	0	0	202	0	0	74
Future Volume (vph)	0	1193	0	0	1759	174	0	0	205	0	0	74
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
Lane Util. Factor		0.95			0.91				0.88			1.00
귶		1.00			0.99				0.85			0.86
Flt Protected		1.00			1.00				1.00			1.00
Satd. Flow (prot)		3539			5017				2787			1611
Flt Permitted		1.00			1.00				1.00			1.00
Satd. Flow (perm)		3539			5017				2787			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1297	0	0	1912	189	0	0	223	0	0	80
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	28	0	0	51
Lane Group Flow (vph)	0	1297	0	0	2101	0	0	0	195	0	0	29
Turn Type		Ä			NA				Prot			Perm
Protected Phases		80			2.4				2			
Permitted Phases												9
Actuated Green, G (s)		20.1			44.1				16.0			16.0
Effective Green, g (s)		20.1			44.1				16.0			16.0
Actuated g/C Ratio		0.46			1.00				0.36			0.36
Clearance Time (s)		4.0							4.0			4.0
Vehicle Extension (s)		3.0							3.0			3.0
Lane Grp Cap (vph)		1613			5017				1011			584
v/s Ratio Prot		c0.37			c0.42				0.07			
v/s Ratio Perm												0.02
v/c Ratio		0.80			0.45				0.19			0.05
Uniform Delay, d1		10.3			0.0				9.6			9.1
Progression Factor		1:00			1:00				1.00			1.00
Incremental Delay, d2		3.0			0.1				0.1			0.0
Delay (s)		13.3			0.1				9.7			9.2
Level of Service		8			⋖				A			A
Approach Delay (s)		13.3			0.1			6.7			9.5	
Approach LOS		a			⋖			A			⋖	
Intersection Summary												
HCM 2000 Control Delay			5.5	¥	CM 2000	HCM 2000 Level of Service	service		∢			
HCM 2000 Volume to Capacity ratio	ratio		89.0									
Actuated Cycle Length (s)			44.1	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization	_		49.1%	⊡	U Level o	ICU Level of Service			⋖			
Analysis Period (min)			15									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station
7: Balboa EB Ramps & Garnet Ave Timing Plan: AM Peak Perbol

- Movement E	↑ Ha	₩ ₩	WBL	₩	√ NBL	NBR	
	44	W.		++		ĸ	
	741	657	0 0	1312	0 0	210	
	Free	ŝ		Free	Stop	217	
	%0			%0	%0		
J	0.92	0.92	0.92	0.92	0.92	0.92	
	802	714	0	1426	0	228	
Ż	None			None			
	442			634			
					0.72		
			802		1518	402	
			802		934	402	
			4.1		8.9	6.9	
			2.2		3.5	3.3	
			100		100	62	
			815		190	262	
Е	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
	402	402	714	713	713	228	
	0	0	0	0	0	0	
	0	0	714	0	0	228	
_	1700	1700	1700	1700	1700	262	
0	0.24	0.24	0.42	0.42	0.42	0.38	
	0	0	0	0	0	45	
	0.0	0.0	0.0	0.0	0.0	14.7	
						В	
	0.0			0.0		14.7	
						В	
			1.1				
ntersection Capacity Utilization			44.0%	ರ	ICU Level of Service	Service	A
			2				

Synchro 9 Report Page 13

Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year with Preferred LU a Ave

Lane Group EBL EBT WBT WBR Lane Group Flow (vpt) 338 998 1142 84 Lane Group Flow (vpt) 338 998 1142 84 Control Delay 0.0 0.0 0.12 3.12 Oueue Delay 0.0 5.2 19.2 3.5 Oueue Delay 0.0 0.0 0.0 0.0 Oueue Length Soft (ft) 6.0 6.7 18.1 0.0 Oueue Length Soft (ft) 113 116 273 22 Internal Link Dist (ft) 2.5 3.203 3.203 3.0 Mass Capacit (vpt) 3.9 2.779 1888 871 Base Capacit (vpt) 3.9 2.779 1888 871	SBL 102 0.41 31.0 0.0 31.0 36	SBR 284 0.61 10.3 0.0 10.3 1
(h) 338 988 1142 0.60 0.41 0.76 30.0 5.2 19.2 0.0 0.0 0.0 30.0 5.2 19.2 (h) 60 67 181 (f) 113 116 2.73 554 32.03 215 599 2.779 1888		284 0.61 10.3 0.0 10.3 1
0.60 0.41 0.76 30.0 5.2 19.2 0.0 0.0 0.0 30.0 5.2 19.2 0.0 6.7 19.2 0.0 67 181 0.0 113 116 273 0.0 5.9 2779 1888		0.61 10.3 0.0 10.3 1
30.0 5.2 19.2 0.0 0.0 0.0 30.0 5.2 19.2 10 60 67 181 113 116 273 115 554 32.03 215 599 2779 1888		10.3 0.0 1.3 6.2
0.0 0.0 0.0 30.0 5.2 19.2 30.0 6.7 181 0) 113 116 273 554 3203 215 54 3203 599 2779 1888		0.0 10.3 1 62
30.0 5.2 19.2 (f) 60 67 181 (f) 113 116 273 554 3203 215 599 2779 1858		10.3 1 62
(f) 60 67 181 (f) 113 116 273 554 3203 215 2779 1858 8		1 62
(f) 113 116 273 554 3203 215 2779 1858	82	62
554 3203 215 599 2779 1858		
215 599 2779 1858	201	
599 2779 1858	155	
	903	946
Starvation Cap Reducth 0 0 0 0 0	0	0
pillback Cap Reductn 0 0 0 0	0	0
Storage Cap Reductn 0 0 0 0	0	0
Reduced v/c Ratio 0.56 0.36 0.61 0.10	0.11	0.30

KHA Synchro 9 Report Oueues Page 14

Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Movement FBL FBT WBT WBR SBL SBR Lane Configurations Tarlic Volume (vph) 311 909 1051 77 94 261 Tarlic Volume (vph) 311 909 1051 77 94 261 Tarlic Volume (vph) 311 909 1051 77 94 261 Tarlic Volume (vph) 311 909 1051 77 94 261 Tarlic Volume (vph) 311 909 1900 1900 1900 Tarlic Lost Lime (s) 4,4 5,7 6,5 5,6 5,6 Tarlic Lost Lime (s) 4,4 5,7 6,5 5,6 5,6 Tarlic Lost Lime (s) 343 3539 3539 1583 1770 1583 Tarlic Lost Lime (s) 343 3539 3539 1583 1770 1583 Tarlic Lost Lime (s) 343 3539 3539 1583 1770 1583 Tarlic Lost Lime (s) 6,9 0,9 0,9 0,9 0,9 Tarlic Clearance Time (s) 6,9 0,9 0,9 0,9 0,9 Tarlic Clearance Time (s) 4,4 5,7 6,5 6,5 6,5 5,6 5,6 Tarlic Lost Lime (s) 4,4 5,7 6,5 6,5 5,6 5,6 5,6 Tarlic Lost Lime (s) 4,4 5,7 6,5 6,5 6,5 5,6	>> √ ↓ ↓ ↑
figurations	. WBT WBR SBL
Lyme (vph) 311 909 1051 77 Aume (vph) 311 909 1051 77 Aume (vph) 311 909 1051 77 A (vph) 1900 1900 1900 1900 A (vph) 44 5.7 6.5 4.5 1.4 8.4<	x **
lume (vph) 311 909 1051 77 r(wphol) 1900 1900 1900 1900 r(wphol) 1900 1900 1900 1900 r(word) 0.97 0.95 0.95 100 r(actor PHF 0.92 1.00 1.00 1.00 w (pord) 3433 3539 3539 1838 r(actor PHF 0.92 1.00 1.00 1.00 w (pord) 3433 3539 3539 1838 reactor PHF 0.92 0.92 0.92 0.92 phasses 5 2 6 6 Green, G(s) 1.01 4.14 26.1 26.1 Acree (roll) 0.16 0.68 0.43 0.43 0.43 <t< td=""><td>1051 77 94</td></t<>	1051 77 94
Higher High	1051 77 94
Factor 0.97 0.95 0.95 0.95 0.90	1900 1900 1900 1
ted 0,97 0,95 0,95 100 186 140 140 140 0.85 140 140 140 140 140 0.85 140 140 140 140 140 140 140 140 140 140	6.5 6.5 5.6
ted 0.95 1.00 1.00 1.00 0.85 ted 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.95 1.00 1.00
red 0.95 100 100 100 100 100 100 100 100 100 10	1.00 0.85 1.00
w (prod) 3433 3559 3559 1583 ted Qob 100 100 100 ted W (perm) 343 3559 3559 1583 reacior, PHF 0.92 0.92 0.92 0.92 (vph) 338 988 1142 84 deduction (wph) 38 988 1142 84 phases 5 2 6 4 phases 5 2 6 6 phases 10.1 41.4 26.1 26.1 26.1 Green, G(s) 10.1 41.4 26.1 26.	1.00 1.00 0.95
Hedden 0.95 1.00	3539 1583 1770
w (perm) 3433 3539 3539 1583 r (action) Head of the permitted of t	1.00 1.00 0.95
reactor, PHF 092 092 092 092 dot-clor (vph) 338 988 1142 84 dot-clor (vph) 0 0 0 0 48 1142 36 pub Flow (vph) 338 988 1142 26 pub Flow (vph) 341 36 pub Flow (vph) 356 2390 1506 674 put Flow (vph) 356 339 359 359 359 359 359 359 359 359 359	3539 1583 1770
(vph) 338 998 1142 84 oduction (vph) 338 998 1142 38 public (vph) 338 988 1142 38 public (vph) 338 988 1142 38 phases 5 6 6 6 6 Phases 5 2 6 6 6 6 Phases 6 10.1 41.4 26.1	0.92 0.92 0.92
diction (vph) 0 0 48 up Flow (vph) 338 998 1142 38 Phases 5 2 6 48 1142 38 Phases 5 2 6 2 6 4 8 1 2 6 6 6 4 8 1 2 6 5 8 1 4 4 1 2 1 2 1 4 4 1 4 3 4 4 3 4 4 4 4 4 4 3 4 4 4 4 4 4 3 4 3 4 <th< td=""><td>1142 84 102</td></th<>	1142 84 102
up Flow (vph) 338 988 1142 36 phases 5 6 6 phases 5 6 6 phases 5 6 6 phases 6 7 6 phases 6 7 6 phases 10.1 4.1 26.1 26.1 green, G(s) 10.1 4.1 26.1 26.1 26.1 green, G(s) 10.1 4.4 26.1	48 0
Phases 5 2 6 Phases 5 2 6 Phases 6 6 Green, G(s) 10.1 41.4 26.1 26.1 Green, G(s) 4.1 3.0 4.8 3.9 3.9 Prof. C.0.10 0.28 0.3.2 Perm 0.60 0.41 0.76 0.05 Perm 0.60 0.41 0.76 0.05 Perm 0.60 0.41 0.76 0.05 Perm 0.60 1.00 1.00 1.00 1.00 Perm 0.60 1.00 1.00 1.00 Perm 0.60 1.00 1.00 1.00 Perm 0.60 1.00 1.00 Pe	1142 36 102
Phases 5 2 6 6 Phases 6 6 Phases 6 6 Phases 7 2 6 6 Phases 6 6 Phases 7 2 6 6 Phases 6 6 Phases 7 2 6 6 Phases 7 2 6 6 Phase 8 6 7 6 Phase 8 6 7 6 7 Phase 8 6 7 6 Phase 8 6 Phase 8 6 7 6 Phase 8 7 6 Pha	NA Perm Prot
Phases 6 Green, G(s) 10.1 4.14 26.1 26.1 Green, G(s) 10.1 4.14 26.1 26.1 26.1 Green, G(s) 10.1 4.14 26.1 26.1 26.1 26.1 26.1 26.1 26.1 26.1	6 4
Green, G (s) 10.1 41.4 26.1 26.1 26.1 26.1 26.1 26.1 26.1 26.1	6 4
Green, g(s) 10.1 41.4 26.1 26.1 26.1 26.1 29.C Ratio 0.16 0.68 0.43 0.43 0.43 0.43 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45	26.1 26.1 8.6
g/C Ratio 0.16 0.68 0.43 0.43 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	26.1 26.1 8.6
Arribne (s) 44 57 65 65 65 Arribne (s) 20 448 39 39 39 39 30 410 41 41 41 41 41 41 41 41 41 41 41 41 41	0.43 0.43 0.14
Akension (s) 2.0 4.8 3.9 3.9 Cap (vph) 565 2390 1506 644 Prof. c0.10 0.28 0.32 0.02 Perm c0.10 0.28 0.33 4.9 1.0 0.00 Perm 0.60 0.41 0.76 0.05 0.00 0.00 Are Each 1.01 23.7 4.5 14.9 10.0 1.0	6.5 6.5 5.6
Cap (vph) 565 2390 1506 674 Prof -0.10 0.28 -0.32 0.22 Perm -0.10 0.28 -0.32 0.05 Perm 0.60 0.41 0.76 0.05 Belay, d1 23.7 4.5 14.9 10.3 In Delay, d2 1.10 1.00 1.00 1.00 1.00 erwice C A B B B B B Delay (s) 8 1.68 I.46 B B B B B B B B B B B B B B B B B B Delay (s) 6.6 Control of the c	3.9 3.9 2.0
Prof. 0.10 0.28 0.32 Perm 0.60 0.41 0.76 0.05 nelay, d1 23.7 4.5 14.9 10.3 nn Factor 1.00 1.00 1.00 1.00 lat Delay, d2 1.1 0.2 2.4 0.0 leevice C A B B B LOSS Delay (\$\$) A T 173 10.4 LOSS OCONTROL Delay OCONTROL DELA OCONTROL D	1506 674 248
Perm 0.002 Pelay, d1 0.050 0.41 0.76 0.050 Pelay, d1 23.7 4.5 14.9 10.3 Pelay, d1 23.7 4.5 14.9 10.3 Pelay, d2 1.0 1.00 1.00 1.00 Pelay, d2 1.1 0.2 2.4 0.0 Pelay, d2 4.7 17.3 10.4 Pelay, d2 2.4 4 0.0 Pelay, (s) 4.7 17.3 10.4 Pelay, (s) 6.8 16.8 Pelay, (s) 7.8 16.8 P	c0.32 c0.06
0.60 0.41 0.76 0.05	0.02
belay, d1 23.7 4.5 14.9 10.3 on Factor 1.00 1.00 1.00 1.00 1.00 lal Delay, d2 1.1 0.2 2.4 0.0 enviee C A B B Delay (s) P.8 16.8 ILOS A B B Douglay (s) P.8 16.8 ILOS A B B Occurrol Delay 14.6 O'Colume to Capacity ratio 0.66 Cycle Lengift (s) 6.13 Period (min) 15	0.76 0.05 0.41
no Factor 100 100 100 100 100 100 100 100 100 10	14.9 10.3 24.0
lat Delay, d2 1.1 0.2 2.4 0.0 ervice C A B B Bebey (s) A B B B Beby (s) A B B B Beby (s) A B B B B B B B B B B B B B B B B B B	1.00 1.00 1.00
24.9 4.7 17.3 10.4 belov(s) 2.4.9 4.7 17.3 10.4 belov(s) 2.6 A B B Bollog(s) A B B B B B B B B B B B B B B B B B B	2.4 0.0 0.4
C A B B 98 168 A B 168 A B C C A B B B C C C C C C C C C C C C	17.3 10.4 24.4
9.8 16.8 A B A B A B A B A B A B A B A B A B A B	B B
A B 14.6 I alay Capacity ratio (s) Ulization 15.5%	16.8
lay 14.6 capacity ratio 0.66 h (s) 61.3 Utilization 57.5%	В
lay 14.6 Capacity ratio 0.66 h (s) 61.3 Utilization 57.5%	
Capacity ratio 0.66 (1.3 (1.3 (1.3 (1.3 (1.3 (1.3 (1.3 (1.3	
h (s) 61.3 Utilization 57.5%	
Utilization 57.5% 15	
15	ICU Level of Service
	15
c Critical Lane Group	

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Synchro 9 Report Page 16

Balboa Transit Station 9: Clairemont Dr & Garnet Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

0 0 0.58 684 0.77 31.7 0.0 31.7 154 231 860 1177 228 0.95 91.6 91.6 91.6 140 #338 120 100 700 0 0 0 0 0 AVBR 478 0.68 24.4 0.0 24.4 201 315 NBT 441 0.59 36.8 36.8 36.8 129 178 1350 1254 137 0.64 55.1 0.0 55.1 80 80 200 304 913 0.75 31.6 0.0 31.6 240 376 630 1354 WBL 472 0.94 70.7 0.0 70.7 148 220 501 240 287 1171 0 0 0 0 0 0 0.70 0.75 884 0.85 41.0 0.0 41.0 253 253 3203 202 0.71 59.2 0.0 59.2 62 #134 Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (f)
Oueue Length 95th (f)
Internal Link Dist (f)
Tun Bay Length (f)
Base Capacity (typh)
Slarvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Storage Cap Reducth
Reduced v/c Ratio Lane Group Lane Group Flow (vph) v/c Ratio

95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Balboa Transit Station
9: Clairemont Dr & Garnet Ave
Timing Plan: AM Peak Period

Moderneric EB		•	†	<i>></i>	/	ţ	4	•	←	•	٠	→	•
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	ment	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
752 62 434 716 124 126 406 440 210 344 752 62 434 716 124 126 406 440 210 344 1900<	Configurations	K.	₽		£	\$		r	‡	*-	×	₽ ₽	
1,000 1900	: Volume (vph)	186	752	62	434	716	124	126	406	440	210	344	285
5.7 4.4 6.4 4.4 5.3 4.4 4.4 5.3 0.95 0.97 0.95 1.00 0.95 1.00 0.95 1.00 0.99 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00	s volume (vpm) Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.95 0.97 0.95 1.00 0.95	Lost time (s)	4.4	5.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
100 0.99 1.00 0.08 1.00 0.08 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 1.00 0.09 1.00 1.00 0.09 1.00 1.00 0.09 1.00 0.09 1.00 1.00 0.09 1.00 1	Util. Factor	76.0	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	
100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.92 0		1.00	66.0		1.00	86.0		1.00	1.00	0.85	1.00	0.93	
3499 3433 3461 1770 3539 1583 1770 3299 100	otected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
1 100 095 100 095 100 095 100 095 100 095 092 092 092 092 092 092 092 092 092 092	Flow (prot)	3433	3499		3433	3461		1770	3539	1583	1770	3299	
3499 3433 3461 1770 3539 1583 1770 3299 1770 3	rmitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
10,92 0,92	Flow (perm)	3433	3499		3433	3461		1770	3539	1583	1770	3299	
Street	hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
NA	low (vph)	202	817	19	472	778	135	137	441	478	228	374	310
NA Prof. NA Prof	Reduction (vph)	0	9	0	0	12	0	0	0	46	0	146	0
NA Prot Prot	Group Flow (vph)	202	878	0	472	901	0	137	441	459	228	238	0
2 1 6 3 8 1 7 27/8 138 33.1 11.5 199 337 128 27/8 138 33.1 11.5 199 337 128 27/8 138 33.1 11.5 199 337 128 8 0.30 0.15 0.35 0.12 0.21 0.36 0.14 103 5.03 1217 2.0 2.4 2.0	Туре	Prot	NA		Prot	NA		Prot	NA	vo+mq	Prot	NA	
27.8 13.8 33.1 11.5 19.9 31.7 12.8 12.8 13.8 33.1 11.5 19.9 33.7 12.8 12.8 13.8 33.1 11.5 19.9 33.7 12.8 13.0 0.15 0.35 0.12 0.21 0.36 0.14 13.5 2.0 3.0 2.0 2.4 2.0 2.0 10.2 0.14 0.26 0.08 0.12 0.11 0.15 0.35 0.14 0.26 0.08 0.12 0.11 0.15 0.35 0.14 0.26 0.08 0.15 0.11 0.16 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.25 2.5 4.4 0.9 5.1 43.4 0.17 2.50 2.5 4.4 0.9 5.1 43.4 0.18 0.19 HCM 2000 Level of Service D 0.17 0.17 0.15 0.15 0.17 0.17 0.10 0.15 0.17 0.17 0.10 0.15 0.18 0.19 HCM 2000 Level of Service D 1.00 0.10 0.10 0.10 0.10 1.	cted Phases	2	2		-	9		က	00	-	7	4	
278 138 33.1 115 199 337 128 27.8 138 33.1 11.5 199 337 12.8 27.8 138 33.1 11.5 199 337 12.8 1 5.7 44 6.4 6.4 6.3 4.4 6.3 12.1 1 5.7 4.4 6.4 6.4 6.2 0.3 0.1 0.3 0.1 0.0 1 1033 5.0 3.0 3.0 2.0 2.4 2.0 2	tted Phases									∞			
278 138 331 115 199 337 128 1030 1015 1035 1036 1014 1033 1036 1014 1033 1036 1014 1033 1036 1014 1033 1036 1014 1033 1036	ted Green, G (s)	7.8	27.8		13.8	33.1		11.5	19.9	33.7	12.8	21.2	
0.30	ive Green, g (s)	7.8	27.8		13.8	33.1		11.5	19.9	33.7	12.8	21.2	
57	ted g/C Ratio	0.08	0.30		0.15	0.35		0.12	0.21	0.36	0.14	0.23	
3.5 2.0 3.0 2.0 2.4 2.0 2.0 1033	ance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
1033 503 1217 216 748 566 240	le Extension (s)	2.0	3.5		2.0	3.0		2.0	2.4	2.0	2.0	2.6	
0.025	Grp Cap (vph)	284	1033		503	1217		216	748	299	240	743	
0.85 0.94 0.74 0.63 0.59 0.76 0.95 0.16 0.95 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1	atio Prot	90.0	c0.25		c0.14	0.26		0.08	0.12	0.11	c0.13	c0.16	
0.85 0.94 0.74 0.63 0.59 0.76 0.95 31.2 39.7 26.7 39.3 33.4 26.6 40.3 31.0 1.00 1.00 1.00 1.00 1.00 1.00 1	atio Perm									0.16			
312 397 267 393 334 266 403 100 100 100 100 100 100 100 100 100 1	atio	0.71	0.85		0.94	0.74		0.63	0.59	97.0	0.95	0.72	
100 100 100 100 100 100 100 100 100 100	m Delay, d1	42.1	31.2		39.7	26.7		39.3	33.4	26.6	40.3	33.7	
70 250 25 44 0.9 5.1 43.4 38.2 44.8 29.2 43.7 34.4 31.7 83.7 40.2 41.3 2.6 5.6	ession Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
38.2 64.8 29.2 43.7 34.4 31.7 83.7 10.2 E C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C F F C D C D	nental Delay, d2	8.9	7.0		25.0	2.5		4.4	6.0	5.1	43.4	3.3	
40.2	(s)	48.9	38.2		64.8	29.2		43.7	34.4	31.7	83.7	37.1	
40.2 41.3 34.4 D D C 40.9 HCM 2000 Level of Service D 0.87 77.3% ICU Level of Service D 15	of Service	Ω	٥		ш	ပ		۵	ပ	ပ	ı	٥	
40.9 HCM 2000 Level of Service 0.87 Sum of lost time (s) 77.3% ICU Level of Service 15	ach Delay (s)		40.2			41.3			34.4			48.8	
40.9 HCM 2000 Level of Service 0.87 Sum of lost time (s) 77.3% ICU Level of Service 15	ach LOS		Ω			O			ပ			Ω	
40.9 HCM 2000 Level of Service 0.87 Sum of lost time (s) 77.3% ICU Level of Service 15	ection Summary												
0.87 94.1 Sum of lost time (s) 77.3% ICU Level of Service 15	2000 Control Delay			40.9	H	3M 2000	Level of S	service		D			
94.1 Sum of lost time (s) 77.3% ICU Level of Service 15	2000 Volume to Capacit	v ratio		0.87									
Utilization 77.3% ICU Level of Service 15 ICU Level of Service 15	ted Cycle Length (s)			94.1	S	m of lost	time (s)			20.5			
is Period (min) 15	ection Capacity Utilizatio	_		77.3%	೨	U Level o	f Service			۵			
Hisa Lane Groun	sis Period (min)			15									
lindi Edire di Oud	Critical Lane Group												

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Balboa Transit Station

10: Olney St & Balboa Ave

Timing Plant AM Peak Period

 KHA Synchro 9 Report Obeues Page 18

Balboa Transit Station 10: Olney St & Balboa Ave

Horizon Year with Preferred LU
Timing Plan: AM Peak Period

Advenment EBL ane Configurations Trainic Volume (vph) 57 deal Flow (vpho) 1900 rotal Lost time (s) 4.4											
_		EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
_			*	\$			4			4	
-	521	70	46	165	17	19	192	91	11	236	14
		70	46	165	17	19	192	91	Ξ	236	14
	_	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
			4.4	2.0			4.9			4.9	
1.00			1.00	0.95			1.00			1.00	
1.00			1.00	66.0			96.0			0.99	
0.95			0.95	1.00			1.00			1.00	
1770			1770	3491			1781			1846	
0.95			0.95	1.00			0.97			86.0	
			1770	3491			1728			1810	
Peak-hour factor, PHF 0.92	Ŭ	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	299	22	20	179	18	21	500	66	12	257	15
		0	0	10	0	0	56	0	0	4	0
ane Group Flow (vph) 62	584	0	20	187	0	0	300	0	0	280	0
Prot	NA NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases 5			-	9			∞			4	
Permitted Phases						∞			4		
Actuated Green, G (s) 3.2	14.6		1.4	12.9			11.9			11.9	
Effective Green, g (s) 3.2			1.4	12.9			11.9			11.9	
	0.35		0.03	0.30			0.28			0.28	
			4.4	2.0			4.9			4.9	
(ehicle Extension (s) 2.0			2.0	2.5			2.0			2.0	
ane Grp Cap (vph) 133	1		28	1064			486			206	
c0.04			0.03	0.05							
							c0.17			0.15	
			98.0	0.18			0.62			0.55	
Jniform Delay, d1 18.7			20.4	10.8			13.2			12.9	
			1.00	1.00			1.00			1.00	
ncremental Delay, d2 0.9	0.3		8.89	0.1			1.6			0.7	
19.7			89.2	10.9			14.9			13.7	
В			ш	В			В			В	
Approach Delay (s)	12.0			26.7			14.9			13.7	
	В			ပ			В			В	
ntersection Summary											
HCM 2000 Control Delay		15.3	Н	HCM 2000 Level of Service	evel of S	service		В			
HCM 2000 Volume to Capacity ratio		0.57									
Actuated Cycle Length (s)		42.3	S	Sum of lost time (s)	time (s)			14.4			
ntersection Capacity Utilization		53.5%	೨	ICU Level of Service	f Service			⋖			
Analysis Period (min)		15									

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

	T	6	3	2	0	2	0	9	œ		_	0	0	0	3						
*	. SBT	319	1.03	89.2	0.0	89.2	-230	# 406	328		311	_	_	_	1.03						
_	NBT	639	0.83	33.4	0.0	33.4	326	#239	315		770	_	U	0	0.83				er.		
ļ	WBT	574	0.40	23.3	0.0	23.3	107	203	1076		1449	0	0	0	0.40		ite.		be long		
-	WBL	46	69:0	94.7	0.0	94.7	35	m#95		20	71	0	0	0	69:0		cally infin		leue may		
†	EBT	1382	0.97	49.0	0.0	49.0	~493	#656	276		1430	0	0	0	0.97		theoretic	cycles.	pacity, qu	cycles.	
١	EBL	30	0.32	57.5	0.0	57.5	70	51		20	101	0	0	0	0.30		icity, queue is	num after two	e exceeds ca	num after two	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	 Volume exceeds capacity, queue is theoretically infinite. 	Queue shown is maximum after two cycles.	# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.	

KHA Queues

Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period 1900 114 1114 1900 4.9 11.00 0.97 0.38 0.92 Ž 46.1 46.1 0.43 4.9 2.0 309 c0.45 1.03 29.9 1.00 57.8 87.7 163 163 1900 Perm 0.92 0.92 392 0 D 14.4 F 361 361 900 46.1 46.1 0.43 4.9 2.0 716 0.36 0.82 26.3 1.00 6.8 6.8 C ž Perm 34 0.92 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 53 53 0 49 49 900 0.41 1.01 1.01 0.9 24.1 C 479
479
479
479
1900
4.9
0.95
0.99
3490
1.00
33490
521 ¥ 42.0 42.0 0.40 4.9 5.5 5.5 0.16 7 3.4 3.4 0.03 4.4 2.0 56 c0.03 45 45 45 1900 1.00 1.00 0.95 0.95 0.95 49 49 Prot 0.88 51.1 1.03 72.7 25.1 47.8 1.00 106.0 99.9% 0.92 27 0 25 290 0.99 31.6 1.00 20.8 52.5 D D D 41247 11247 11247 11247 11247 11247 11.00 11.00 11.00 11.00 13529 11.00 11.55 11355 42.1 42.1 0.40 5.1 5.4 1401 ≨ 1381 Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
C Critical Lane Group 28 28 28 4.4 1.00 1.00 0.95 1770 0.95 0.95 30 0.49 50.2 1.00 2.3 52.5 D Prot 3.7 3.7 0.03 4.4 2.0 61 0.02 Fit Fit Protected Sard. Flow (prot) Fit Permitted Sard. Flow (perm) Pask-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph) Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor Clearance Time (s) Vehicle Extension (s) Lane Group Flow (vph Actuated Green, G (s) Effective Green, g (s) Delay (s) Level of Service Approach Delay (s) Approach LOS Turn Type Protected Phases Permitted Phases Lane Grp Cap (vph) v/s Ratio Prot Actuated g/C Ratio v/s Ratio Perm v/c Ratio

KHA HCM Signalized Intersection Capacity Analysis

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š Balboa Transit Station 12: Grand Ave & Culver

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Molume for 95th percentile queue is metered by upstream signal. 238 0.77 55.9 0.0 55.9 148 217 434 9.5 9.5 0.3 9.7 107 180 211 2188 4.7 0.5 5.2 146 m172 1076 2600 0.79 392 1751 0.67 t 51.8 0.0 51.8 48 m50 70 22 Total Delay

Oueue Length 50th (ff)

Oueue Length 95th (ff)

Internal Link Dist (ft)

Tum Bay Length (ft)

Base Capacity (wph)

Slarvation Cap Reducin

Spillback Cap Reducin -ane Group Flow (vph) Storage Cap Reductn Reduced v/c Ratio Control Delay Queue Delay v/c Ratio

KHA Queues

Balboa Transit Station 12: Grand Ave & Culver

Horizon Year with Preferred LU

Movement	12: Grand Ave & Culver St	ulver St							Timing Plan: AM Peak Period
EBL EBI WBI WBR SBL SBR 64 16/11 0 496 120 171 48 64 16/11 0 496 120 171 48 1900 1900 1900 1900 1900 1900 1900 100 0.95 0.95 100 0.97 0.97 100 0.95 1.00 0.97 0.97 0.97 0.97 0.97 0.95 1.00 0.97 0.96 1740 0.96 0.96 1740 0.96 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.92		^	†	L	ţ	4	٠	•	
March Marc	Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR	
64 1611 0 496 120 171 48 64 1611 0 496 120 171 48 1900 1900 1900 1900 1900 1900 1900 4 4 5.1 4.9 4.9 4.9 100 0.95 0.95 1.00 0.95 1.00 0.96 1770 3539 3436 1740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.96 1770 3539 3436 1.740 0.95 1.00 0.95 1.00 0.75 1.00 0.70 1.75 1.00 0.70 0.73 0.65 18.1 0.70 1.71 0.65 0.77 0.72 0.62 18.1 0.72 1.72 0.62 18.1 0.72 1.72 0.62 18.1 0.73 0.62 18.1 0.74 0.73 0.62 18.1 0.74 0.73 0.62 18.1 0.75 1.79 6.62 18.1 0.70 0.73 0.62 18.1 0.70 0.73 0.62 18.1 0.70 0.73 0.62 18.1 0.70 0.70 0.71 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70	Lane Configurations	*	ŧ	4	₩		>		
1900 1900 1900 1910 1900	Traffic Volume (vph)	64	1611	0	496	120	171	48	
1900 1900	Future Volume (vph)	64	1611	0	496	120	171	48	
1,00 0,95 0,95 1,00 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,92	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
100 095 095 100 100 095 095 095 095 095 095 095 095 095 0	Total Lost time (s)	4.4	5.1		4.9		4.9		
100 100 0.97 0.97 0.97 0.95 1.00 1.00 1.00 0.99 0.95 0.95 0.95 0.95 0.95 0.95 0	Lane Util. Factor	1.00	0.95		0.95		1.00		
1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1740 1751 0 0 0 0 0 0 0 0 0	Ft	1.00	1.00		0.97		0.97		
1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1770 3539 3436 1740 1781 0.53 130 186 52 1791 0.654 0.217 0.0 1751 0.654 0.217 0.0 1751 0.654 181 1751 0.654 181 1751 0.654 181 1751 0.654 181 1751 0.654 181 1751 0.654 181 1751 0.654 19 4.9 1751 0.654 19 4.9 1751 0.654 19 4.9 1751 0.650 0.77 1751 0.650 0.77 1752 0.67 0.30 0.77 1752 0.67 0.30 0.77 1753 0.65 0.67 0.30 0.77 1752 0.67 0.92 1.00 1752 0.67 0.92 1.00 1753 0.654 1 88 52.0 1873 0.75 0.44 1.01 1754 0.560 0.77 1757 0.73 0.64 1.01 1858 0.72 0.92 1871 0.55 0.64 1.01 1871 0.55 0.64 1.01 1871 0.55 0.64 1.01 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.55 0.64 0.77 1871 0.77 0.73 0.77 1871 0.77 0.73 0.77 1871 0.77 0.77	Fit Protected	0.95	1.00		1.00		96:0		
1770 3139 3100 0.96 1770 3139 3146 1740 1770 3139 3148 1740 1781 0 539 130 198 52 1781 0 539 130 198 52 1781 0 654 0 11 0 1781 0 654 0 11 0 1781 0 654 0 11 0 1781 0 654 181 4 1781 0 662 181 1781 0 662 181 1782 179 662 181 1783 179 662 181 1794 0 0 0 0 0 1795 0 0 0 1797 0 0 0 1891 0 0 1996 0 0 0 1997 0 0 1997 0 0 0 1998 0 0 1999 0 1999 0 19	Satd. Flow (prot)	1770	3539		3436		1740		
1770 3539 3436 1740 1770 3539 3436 1740 1751 0 2092 0.92 0.92 0.92 1751 0 654 0 227 0 1751 0 654 0 227 0 1751 0 654 0 227 0 1751 0 654 0 227 0 175 77.9 66.2 18.1 175 77.9 66.2 18.1 175 77.9 66.2 18.1 175 77.9 66.2 18.1 175 77.9 66.2 18.1 175 2600 2145 2.0 175 2600 2145 2.0 175 2600 2145 2.0 175 2600 2145 2.0 175 2600 2145 2.0 175 2600 2145 2.0 175 47.7 7.4 9.2 1.00 170 1.1 0.5 0.4 10.1 104 0.50 0.92 1.00 11 0.5 0.8 8 52.0 12 2600 2.0 2.0 13 2600 2.0 2.0 14 0.50 0.92 1.00 15 0.67 0.04 10.1 10 0.50 88 52.0 11 0.5 0.8 88 52.0 12 0.072 0.073 13 0.072 0.073 14 0.50 0.92 0.013 15 0.073 0.073 16 0.073 0.073 17 10.0 0.073 0.073 18 0.072 0.073 19 0.073 0.073 10 0.073 0.073	Flt Permitted	0.95	1.00		1.00		96.0		
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	1770	3539		3436		1740		
70 1751 0 539 130 186 52 70 1751 0 654 0 171 0 70 1751 0 654 0 171 0 70 1751 0 654 0 171 0 5 2 1 662 181 7.5 77.9 662 181 7.5 77.9 662 181 7.5 77.9 662 181 7.5 77.9 662 181 7.5 77.9 662 181 7.5 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.6 77.9 662 181 7.0 73 0.62 0.17 7.0 73 0.62 0.17 7.0 42 41 2.0 7.0 73 0.62 101 7.0 65 0.67 0.92 100 7.1 0.5 0.4 101 7.1 0.5 0.4 101 8 8 52.0 8 50.0 8 8 52.0 8 8 52.0 8 8 62.0 8 8 62.0 8 8 62.0 8 8 62.0 8 9 7.0 8 9 8 62.0 8 9 8 8 62.0 8 9 8 8 62.0 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
0 0 0 15 0 11 0 0 10 1751 0 654 0 227 0 10 1751 0 654 0 227 0 10 1751 0 654 0 227 0 12 17 17 9 662 181 12 17 9 662 181 12 17 9 662 181 13 17 9 662 181 14 51 49 49 49 49 15 2600 2145 297 15 2600 2145 297 15 2600 2145 297 16 6 0 67 0,30 0,77 17 1 0,5 0 64 101 10 1 0,5 0,4 1 0,20 11 0,5 0 64 101 12 506 1 100 13 88 520 14 88 520 15 88 520 16 88 520 17 HCM 2000 Level of Service 18 1	Adj. Flow (vph)	70	1751	0	239	130	186	52	
No 1751 0 654 0 227 0	RTOR Reduction (vph)	0	0	0	15	0	=	0	
Prot NA Prot NA Prot 5	Lane Group Flow (vph)	20	1751	0	654	0	227	0	
5 2 1 6 4 7.5 77.9 66.2 18.1 7.5 77.9 66.2 18.1 7.5 77.9 66.2 18.1 7.6 77.9 66.2 18.1 4.4 5.1 49 49 2.0 4.2 4.1 2.0 1.25 26.00 2.145 29.7 0.04 0.04 0.19 0.19 0.13 0.05 0.67 0.30 0.77 1.1 0.5 0.92 11.00 1.1 0.5 0.4 11.01 50.6 4.1 8.8 5.20 Capacity ratio 0.72 Capacity ratio 0.73 Capacity r	Turn Type	Prot	NA	Prot	NA		Prot		
7.5 77.9 66.2 18.1 7.5 77.9 66.2 18.1 7.5 77.9 66.2 18.1 7.0 0.73 0.62 18.1 7.0 1.2 0.62 0.17 7.0 4.2 4.1 4.9 4.9 7.0 1.2 2600 2.145 2.9 7.0 1.2 2600 2.145 2.9 7.0 1.2 2600 2.145 2.9 7.1 0.5 0.6 7 0.30 0.77 7.1 9.2 1.10 7.2 4.1 8.8 5.2 0 7.2 4.1 8.8 5.2 0 8.8 5.2 0 8.8 5.2 0 8.9 5.2 0 8.9 5.2 0 8.9 6.2 0	Protected Phases	2	2	-	9		4		
7.5 77.9 66.2 18.1 7.5 77.9 66.2 18.1 0.07 0.73 0.62 0.17 4.4 5.1 4.9 4.9 2.0 4.2 4.1 2.0 2.0 4.2 4.1 2.0 2.0 4.2 4.1 2.0 0.04 0.04 0.19 0.013 0.05 0.67 0.30 0.77 4.77 7.4 9.2 1.00 1.1 0.5 0.4 10.1 50.6 4.1 8.8 52.0 D A A D S 9 8 52.0 A A D A D A A D Capacity ratio 0.72 A A D A D A A D Capacity ratio 0.72 A A D A D A A D A D A A D A D A A D A D	Permitted Phases								
7.5 77.9 66.2 18.1 0.07 0.73 0.62 0.17 4.4 5.1 49 49 49 2.0 4.2 4.1 2.0 1.25 26.00 2145 29.7 0.04 0.04 0.19 0.19 0.013 0.056 0.67 0.30 0.77 1.1 0.5 0.41 10.1 50.6 4.1 8.8 52.0 D A A A D D 1.1 0.5 9.8 52.0 Capacity ratio 0.72 A D A D D 1.2 5.9 88 52.0 Capacity ratio 0.72 A D D A D D D D D D D D D D D D D D D	Actuated Green, G (s)	7.5	77.9		66.2		18.1		
007 0.73 0.62 0.17 4 5.1 4.9 4.9 5) 2.0 4.2 4.1 2.0 2.0 2.0 2.0 4.9 6.04 0.049 0.19 0.013 6.056 0.67 0.30 0.77 4.7 7.4 92 41.9 6.05 0.67 0.92 1.00 6.0 1.1 0.5 0.92 1.00 6.0 1.1 0.5 0.92 1.00 6.0 1.1 0.5 0.92 1.00 6.0 1.1 0.5 0.92 1.00 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.5 0.93 1.01 6.0 1.1 0.1 0.93 1.01 6.0 1.1 0.1 0.1 0.1 0.1 0.1 6.0 1.1 0.1 0.1 0.1 0.1 0.1 0.1 6.0 1.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	Effective Green, q (s)	7.5	77.9		66.2		18.1		
4.4 5.1	Actuated g/C Ratio	0.07	0.73		0.62		0.17		
2 2600 2145 297 297 200 2145 297 297 297 2018 2019 2013 2019 2013 2019 2019 2019 2019 2019 2019 2019 2019	Clearance Time (s)	4.4	5.1		4.9		4.9		
2600 2145 297 1 0.0.49 0.19 0.0.13 2 0.067 0.30 0.77 2 1.4 9.2 41.9 2 0.50 0.92 1.00 2 1.00 2 4.1 88 52.0 3 A A D D 3 A A D D 4 A A D D 5 9 8 52.0 4 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Vehicle Extension (s)	2.0	4.2		4.1		2.0		
1 C0.49 0.19 0.013 1 C0.67 0.30 0.77 1 C0.60 0.92 1.00 1 C0.50 0.92	Lane Grp Cap (vph)	125	2600		2145		297		
0.67 0.30 0.77 7.4 9.2 41.9 1 0.50 0.92 1.00 1 0.5 0.4 10.1 2 4.1 8.8 5.20 A A D D 5.9 8.8 5.20 A D D 6 7.2 88 5.20 A D D 7.2 88 5.20 A D D A D D D D D A D D D D D D D A D D D D D D D D D D D D D D D D D D D	v/s Ratio Prot	0.04	c0.49		0.19		c0.13		
0.067 0.30 0.77 7.74 9.2 41.9 10.050 0.92 1.00 10.05 0.04 1.0.1 8.8 52.0 A A A D D 5.9 88 52.0 A A D D 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service	v/s Ratio Perm								
7 74 92 419 1 0.50 0.92 100 0.5 0.4 10.1 0.5 0.4 10.1 10.7 88 52.0 A A A D A D A A D A D A 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service	v/c Ratio	0.56	0.67		0.30		0.77		
1 0.50 0.92 1.00 1 0.5 0.4 10.1 1 0.5 0.4 10.1 5 9 88 5.20 A A D 5 9 88 5.20 A A D 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Uniform Delay, d1	47.7	7.4		9.2		41.9		
1 0.5 0.4 10.1 5 4.1 8.8 5.20 A A A D D 5.9 8.8 5.20 A D D 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Progression Factor	1.04	0.50		0.92		1.00		
10.7 HCM 2000 Level of Service 15.3% ICU Level o	Incremental Delay, d2	<u></u>	0.5		0.4		10.1		
5.9 8.8 5.20 A A D A D 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Delay (s)	20.6	4.1		8.8		52.0		
5.9 8.8 5.2.0 A A D 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Level of Service	٥	⋖		⋖		۵		
A A D 10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Approach Delay (s)		5.9		89. 89.		52.0		
10.7 HCM 2000 Level of Service 0.72 0.72 1060 Sum of lost time (s) 72.3% ICU Level of Service 15	Approach LOS		A		A		D		
10.7 HCM 2000 Level of Service 0.72 Sum of lost time (s) 72.3% ICU Level of Service 15	Intersection Summary								
0.72 106.0 Sum of lost time (s) 72.3% ICU Level of Service 15	HCM 2000 Control Delay			10.7	H	CM 2000 I	evel of S	Service	В
106.0 Sum of lost time (s) 72.3% ICU Level of Service 15	HCM 2000 Volume to Capa	acity ratio		0.72					
zation 72.3% ICU Level of Service 15	Actuated Cycle Length (s)	,		106.0	S	im of lost	time (s)		14.4
Analysis Period (min) 15	Intersection Capacity Utiliza	ation		72.3%	೨	U Level o	Service		O
Citical Lana Grain	Analysis Period (min)			15					
	C Critical Lane Group								

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

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Balboa Transit Station 13: Lee St & Grand Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Perlod

√	WBT NBL	671	0.23 0.61	5.6	0.0	5.6	38	70	1401 337		2902 545	0 0	11 0	0 0	000 000
/	WBL	141	19.0							400	274	0	0	0	0.51
†	EBT	1898	0.81	12.1	0.1	12.2	334	#190	211		2338	25	0	0	000
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Padurad vír Patio

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station Horizon Year with Preferred LU 13: Lee St & Grand Ave Timing Plan: AM Peak Period

Movement EBT EBR WBT WBT NBR WBT NBR MBR		†	<u> </u>	/	ţ	•	•	
1446	fovement	EBT	EBR	WBL	WBT	NBL	NBR	
hh) 1698 48 130 617 52 48 hh) 1698 48 130 617 52 48 hh) 1698 130 617 52 48 hh) 1698 130 617 52 48 hh) 1690 1900 1900 1900 1900 h) 249 130 095 100 094 h) 100 095 100 097 h) 2352 1770 3539 1698 h) 2352 1770 3539 1698 h) 2352 1770 3539 1698 h) 249 52 141 671 57 52 h) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ane Configurations	#₽		F	‡	>		
hy 1698 48 130 617 52 48 1900 1900 1900 1900 1900 1900 100 0.95 1.00 0.95 1.00 100 0.95 1.00 0.97 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100 0.95 1.00 0.95 100	raffic Volume (vph)	1698	48	130	617	25	48	
1900 1900	uture Volume (vph)	1698	48	130	617	25	48	
(c) 7.0 (a) 6.7 (b) 6.7 (c) 6.	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 0.95 1.00 1.00 1.00 1.00 1.00 1.00 0.94 1.00 1.00 0.94 1.00 1.00 0.94 1.00 1.00 0.95 1.00 0.94 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.92 1.00 0.97 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.92 0	Fotal Lost time (s)	4.9		4.4	5.4	4.9		
100 100 100 094 100 100 100 094 100 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.92 1.00 0.97 1.00 0.92 0.92 0.92 0.92 1.00 0.92 0.92 0.92 0.92 1.00 0.91 0.92 0.92 0.92 1.00 0.92 0.92 0.92 0.92 1.00 0.01 0.01 0.01 1.00 0.01 0.01 0.01 1.00 0.01 0.01 0.01 1.00 0.01 0.01 0.01 1.00 0.01 0.01	ane Util. Factor	0.95		1.00	0.95	1.00		
100 095 100 097 1100 097 1100 097 1100 098 1100 097 1100 098 1100 097 1100 098 1100 097 1100 098 1100 097 1100 098 1100 097 1100 098 1100 097 1100 098 1100 097 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 098 1100 099 1100	æ	1.00		1.00	1.00	0.94		
3525 1770 3539 1688 100	It Protected	1.00		0.95	1.00	0.97		
100 0.95 100 0.97	atd. Flow (prot)	3525		1770	3539	1698		
3525 1770 3539 1698	It Permitted	1.00		0.95	1.00	0.97		
9,92 6,92 6,92 6,92 6,92 6,92 6,92 6,92	atd. Flow (perm)	3525		1770	3539	1698		
52 141 671 57 52 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0	eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
0 141 671 69 0 Prof NA Prof 1 1 6 8 8 12.7 86.9 88 12.7 86.9 88 0.12 0.82 0.08 4.4 5.4 4.9 2.0 2.4 4.9 2.0 2.4 4.9 0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 5.0.6 2.3 47.4 D A D D 1.07 47.4 B HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service	dj. Flow (vph)	1846	25	141	671	22	52	
Prof. NA Prof. Prof. NA	TOR Reduction (vph)	-	0	0	0	40	0	
Prof. NA Prof. 1 12.7 86.9 8.8 12.7 86.9 8.8 12.7 86.9 8.8 12.7 86.9 8.8 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 4.4 2.0 2.0 2.0 1.40 2.0 0.2 1.00 6.0 0.2 1	ane Group Flow (vph)	1897	0	141	671	69	0	
127 869 88 127 869 88 127 869 88 127 869 88 127 869 88 127 869 88 127 869 88 127 869 88 127 869 88 127 082 008 120 44 20 120 212 2901 140 120 0.04 120 0.03 0.49 120 1.00 1.00 120 0.2 1.00	urn Type	NA		Prot	NA	Prot		
12.7 86.9 88 12.7 86.9 8.8 0.12 0.82 0.08 4.4 5.4 4.9 2.0 2.1 40 0.08 0.19 0.04 0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 47.4 D A D 10.7 47.4 B HCM 2000 Level of Service 1.06 Sum of lost time (s) 73.3% I'CU Level of Service 15	rotected Phases	2		-	9	œ		
12.7 86.9 8.8 12.7 86.9 8.8 0.12 08.2 0.08 4.4 5.4 4.9 2.0 4.4 2.0 2.1 2.901 1.40 0.08 0.19 0.04 0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 5.0.6 2.3 4.7.4 D. A. D. D. D. A. D. D. D. A. D. D. D. A. D.	ermitted Phases							
12.7 86.9 8.8 4.4 5.4 4.9 2.0 4.4 2.0 2.12 2901 140 6.0.08 0.19 6.0.04 0.67 0.23 0.49 4.46 2.1 46.5 1.00 1.00 1.00 1.00 6.0 0.2 1.00 6.0 0.2 1.00 6.0 0.2 1.00 7.00 8.00 1.01 A.74 B A D 1.1.8 HCM 2000 Level of Service 1.06 Sum of lost time (s) 7.3.3% ICU Level of Service 1.5	ctuated Green, G (s)	70.3		12.7	86.9	8.8		
0.12 0.82 0.08 4.4 5.4 4.9 2.0 4.4 2.0 2.12 2901 140 0.07 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 1.00 6.0 0.2 10 6.0 0.2 10 6.0 0.2 10 7.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ffective Green, g (s)	70.3		12.7	6.98	8.8		
20 44 2.0 212 2901 140 20.08 0.19 20.04 20.07 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 50.6 2.3 47.4 D A D 10.7 A 77.4 B D 10.7 A 2000 Level of Service 0.76 13.3% ICU Level of Service 15	ctuated g/C Ratio	99.0		0.12	0.82	0.08		
2.0 4.4 2.0 2.12 2901 140 0.0.08 0.19 0.0.04 0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 5.0.6 2.3 4.7.4 D A D 1.0.7 A 14 B D 1.1.8 HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15	:learance Time (s)	4.9		4.4	5.4	4.9		
212 2901 140 60.08 0.19 60.04 0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 50.6 2.3 47.4 D A D 1.07 47.4 B B HCM 2000 Level of Service 0.76 10.6 Sum of lost time (s) 73.3% ICU Level of Service 15	'ehicle Extension (s)	4.0		2.0	4.4	2.0		
0.008 0.19 0.004 0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 47.4 D A D 1.07 47.4 B B A D 1.11.8 HCM 2000 Level of Service 1.06 Sum of lost time (s) 73.3% I CU Level of Service 15	ane Grp Cap (vph)	2337		212	2901	140		
0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 5.06 2.3 47.4 D A D 10.7 47.4 B D 10.7 47.4 B D 10.7 8.0 m of lost time (s) 73.3% ICU Level of Service 15	/s Ratio Prot	c0.54		c0.08	0.19	c0.04		
0.67 0.23 0.49 44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 50.6 2.3 47.4 D A D 10.7 47.4 B D 11.8 HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15	/s Ratio Perm							
44.6 2.1 46.5 1.00 1.00 1.00 6.0 0.2 1.0 50.6 2.3 47.4 D A D 10.7 47.4 B HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15.	/c Ratio	0.81		19:0	0.23	0.49		
1.00 1.00 1.00 6.00 2.3 47.4 50.6 2.3 47.4 D A D 10.7 47.4 B D 11.8 HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15	Iniform Delay, d1	13.0		44.6	2.1	46.5		
60 02 1.0 50.6 2.3 47.4 D A D 10.7 47.4 B D 11.8 HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15	rogression Factor	09.0		1.00	1.00	1.00		
50.6 2.3 47.4 D A D D A A D D A A D D A A D D A A D D A B D D A A A B D A A A B D A A A B D A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A B D A A A A B D A A A A B D A A A B D A A A B D A A A B D A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A A B D A A A A A B D A A A A A B D A A A A A A A A B D A A A A A A A A A B D A A A A A A A A A A A A A A A A A A A	ncremental Delay, d2	2.4		0.9	0.7	1.0		
10.7 47.4 B B B B B B B B B B B B B B B B B B B	elay (s)	10.2		9.09	2.3	47.4		
10.7 47.4 B D B D 11.8 HCM 2000 Level of Service 0.76 106 Sum of lost time (s) 73.3% ICU Level of Service 15	evel of Service	В		۵	V	۵		
11.8 HCM 2000 Level of Service 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15	pproach Delay (s)	10.2			10.7	47.4		
11.8 HCM 2000 Level of Service 0.76 10.60 Sum of lost time (s) 73.3% ICU Level of Service 15	pproach LOS	В			В	O		
11.8 HCM 2000 Level of Service 0.76 0.76 Sum of lost time (s) 73.3% ICU Level of Service 15	Itersection Summary							
0.76 106.0 Sum of lost time (s) 73.3% ICU Level of Service 15	ICM 2000 Control Delay			11.8	H	3M 2000 I	evel of Service	В
106.0 Sum of lost time (s) 73.3% ICU Level of Service 15	ICM 2000 Volume to Capaci	ity ratio		97.0				
Utilization 73.3% ICU Level of Service 15	ctuated Cycle Length (s)			106.0	S	im of lost	time (s)	14.2
nalysis Period (min) 15	ntersection Capacity Utilizati	lon		73.3%	೨	U Level o	Service	Q
	analysis Period (min)			15				
n Critical I and Croun	Critical Lane Group			2				

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Balboa Transit Station
14: Grand Ave & Figueroa Blvd
Timing Plan: AM Peak Period

Ļ	WBT	771	0.27	1.	0.0	1.1	14	23	773		2898	0	0	0	0.27	
†	EBT	1845	0.52	9.0	0.0	9.0	0	0	909		3539	0	0	0	0.52	
١.	EBL	141	0.73	86.0	0.0	86.0	136	204		06	260	0	0	0	0.54	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Intemal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intercontion Commons

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Balboa Transit Station 14: Grand Ave & Figuer

Horizon Year with Preferred LU

FB FB W FB FB W FB FB	Movement	1	†	ţ	4	٠	7	
FBL FBT WBT WBR SBL SBR 130 1697 662 47 0 0 130 1697 662 47 0 0 130 1900 1900 1900 1900 1900 144 5.3 5.3 5.3 5.3 100 100 0.99 0.95 0.95 100 100 0.99 0.95 0.95 100 100 0.99 0.95 0.95 1770 3539 3504 0 0 0 0 1770 3539 3504 0 0 0 0 1770 3539 3504 0 0 0 0 1771 1845 770 0 0 0 0 1771 1845 770 0 0 0 0 1771 1845 770 0 0 0 0 1871 1872 1240 0 0 0 1873 1500 1240 0 0 0 1873 1500 1240 0 0 0 1873 1500 1240 0 0 0 1873 1500 1240 0 0 0 1874 1975 1976 0 0 0 1875 1875 1875 0 0 0 0 1875 1875 1875 0 0 0 0 1875 1875 1875 0 0 0 0 1875 1875 1875 0 0 0 1875 1875 1875 0 0 0 1875 1875 0 0 0 0 1875 187	Movement				1		•	
130 144 145 146 140 141 144		묩	FBT	WBT	WBR	SBI	SBR	
130 1697 662 47 0 0 0 130 1697 662 47 0 0 0 130 1697 662 47 0 0 0 130 1697 662 47 0 0 0 130 1697 662 47 0 0 0 0 1900 1900 1900 1900 1900 1900 0 0 0 0 1900 0 0 0 0 100 0 0 0 0 100 0 0 0 0 100 0 0 0	Lane Configurations	*	ŧ	₩				
130 1697 662 47 0 0 1900 1900 1900 1900 1900 1900 1	Traffic Volume (vph)	130	1697	662	47	0	0	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	130	1697	662	47	0	0	
(s) 1.63 5.3 1.00 0.95 0.95 1.00 0.95 0.95 1.00 1.00 0.99 0.95 1.00 1.00 1.770 3539 3504 HF 0.92 0.92 0.92 0.92 0.92 ph) 141 1845 770 0 0 0 ph) 141 1845 770 0 0 0 ph) 141 1845 770 0 0 0 ph) 141 100 0.93 (s) 1.63 1500 1240 s) 1.63 1500 1240 s) 1.63 1500 1240 s) 2.0 44 44 44 5.3 5.3 c) 2.0 44 44 44 5.3 5.3 ph) 0.1 0 0.29 dz 1.18 0.6 0.2 dz 1.00 0.29 dz 1.18 0.6 0.2 dz 1.18 0.6 0.2 dz 1.19 0.6 1.0 dz 1.19 0.6 0.2 dz 1.19 0.6 1.0 dz 1.19 0.6 0.2 dz 1.19 0.6 1.0 dz 1.10 0.29 dz 1.10 0.29 dz 1.10 0.29 dz 1.11 0.6 0.29 dz 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 095 095 100 100 099 095 100 099 095 100 100 1770 3539 3504 1770 3539 3504 1770 3539 3504 1770 3539 3504 1771 3539 3504 1771 3539 3504 1771 1845 720 51 0 0 0 ph) 141 1845 720 51 5 2 6 5 3 53 5 3 53 5 3 53 6 44 5 44 7 4 4 4 7 5 5 027 6 648 00 29 6 00.2	Total Lost time (s)	4.4	5.3	5.3				
100 100 099 0.95 100 100 1770 3539 3504 1770 3539 3504 1770 3539 3504 1770 3539 3504 1770 1845 700 092 090 091 141 1845 770 0 0 0 091 141 1845 770 0 0 0 091 141 1845 770 0 0 0 091 141 1845 770 0 0 0 092 0.92 0.92 0.92 093 144 5.3 5.3 0.11 1.00 0.83 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.80	Lane Util. Factor	1.00	0.95	0.95				
(a) 100 100 100 100 100 100 100 100 100 10	Frt	1.00	1.00	0.99				
1770 3539 3564 1770 3539 3564 1770 3539 3564 1770 3539 3564 141 1845 720 51 0 0 141 1845 720 0 0 0 141 1845 770 0 0 0 141 1845 770 0 0 0 141 1845 770 0 0 0 141 1845 770 0 0 0 141 1845 770 0 0 0 142 1845 770 0 0 0 153 1500 1240 153 1500 1240 153 1500 1240 153 1500 1240 153 1500 1240 153 1500 1240 150 1240 150 239 150 100 229 150 100 0.29 150 100 100	Fit Protected	0.95	1.00	1.00				
1770 3539 3504 100 1770 3539 3504 1770 3539 3504 1770 3539 3504 1770 3539 3504 1770 1845 730 51 0 0 0 0 0 0 0 0 0	Satd. Flow (prot)	1770	3539	3504				
HF 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Flt Permitted	0.95	1.00	1.00				
HF 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	1770	3539	3504				
ph) 141 1845 720 51 0 0 0 0 1 1 1 1845 720 51 0 0 0 0 0 0 1 1 1 1845 720 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
ph) 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	141	1845	720	21	0	0	
ph) 141 1845 770 0 0 0 Prof. NA NA Prof. NA NA 5 2 6 5 2 6 6 2 6 (s) 16.3 150.0 124.0 s) 0.11 1.00 083 4.4 5.3 5.3 5) 2.0 4.4 4.4 6.10 0.29 co.08 0.02 29 co.18 0.0 2.9 co.18 0.0 2.9 co.18 0.0 0.29 co.19 0.00 co.29 0.00 co.30	RTOR Reduction (vph)	0	0	-	0	0	0	
(s) 16.3 150.0 124.0 (s) 2.0 4 4 4.4 (d) 2.0 6.2 (d) 2.0 2.9 (d) 3 0.52 (d) 2.9 (d) 3 0.52 (d) 2.9 (d) 4 0.0 (d) 6 0.2 (d) 6 0.2 (d) 7 0.0 (d) 8 0.0 (d) 9 0.0 (d) 150.0 (e) 10 0.0	Lane Group Flow (vph)	141	1845	770	0	0	0	
(s) 16.3 1500 124.0 (s) 2.0 4.4 4.4 (c) 2.0 2.2 (c) 3.0 2.9 (c) 4.4 4.4 (c) 6.0 2.9 (c) 6.1 0.0 0.2 (c) 6.1 0.0 0.2 (c) 7.6 5.0 6.1 0.0 (c) 6.1 0.0 (c) 6.1 0.0 (c) 6.2 0.0 (c) 7.6 5.0 (c) 1.0 0.0 (c) 6.2 0.0 (c) 6.3 0.	Turn Type	Prot	M	NA				
(s) 16.3 150.0 124.0 s) 16.3 150.0 124.0 0.11 1.00 0.83 4.4 5.3 5.3 2.0 4.4 4.4 192 3839 2896 c.0.08 c.0.52 0.22 d. 1.00 1.00 0.29 1.00 1.00 0.29 d. 1.18 0.6 0.2 7.5 0.6 1.0 R. A A A A A A A A A HCM 2000 Level of Service 1.00 0.58 9.00 Sum of lost time (s)	Protected Phases	2	2	9				
(\$) 16.3 150.0 124.0 (\$) 16.3 150.0 124.0 (\$) 16.3 150.0 124.0 (\$) 11.3 150.0 124.0 (\$) 11.0 0.8 2.0 (\$) 2.0 4.4 4.4 (\$) 2.9 4.8 4.4 (\$) 2.9 4.8 6.4 (\$) 2.9 6.4 8.0 0.2 (\$) 2.9 6.4 8.0 0.2 (\$) 2.9 6.4 8.0 0.2 (\$) 2.9 6.4 8.0 0.2 (\$) 4.0 1.0 0.2 (\$) 4.0 1.0 0.2 (\$) 4.0 1.0 0.2 (\$) 5.0 1.0 0.2 (\$) 6.4 8.0 0.2 (\$) 7.5 0.6 1.0 (\$) 6.7 1.0 (\$) 6.7 1.0 (\$) 6.7 1.0 (\$) 6.8 0.2 (\$) 6.9 1.0 (\$) 6	Permitted Phases							
s) 16.3 150.0 124.0 0.11 1.00 0.83 4.4 4.4 1.92 35.39 28% c.0.08 c.0.52 0.22 c.0.08 c.0.52 0.27 6.4.8 0.0 2.9 1.00 1.00 0.29 d.2 11.8 0.6 0.2 7.6.5 0.6 1.0 F A A A A A A A A Industrian 150.0 Sum of lost time (s) 9.9 Utilization 150.0 1240 1.50 Sum of lost time (s)	Actuated Green, G (s)	16.3	150.0	124.0				
0.11 1.00 0.83 1	Effective Green, g (s)	16.3	150.0	124.0				
14	Actuated g/C Ratio	0.11	1.00	0.83				
2 3539 2896 2 0.52 0.22 3 0.52 0.27 3 0.52 0.27 3 0.6 0.2 5 0.6 1.0 6 0.4 1.0 7 A A A A A A A A A A A A A A A A A A A	Clearance Time (s)	4.4	5.3	5.3				
2 3539 2896 3 0.052 0.22 8 0.52 0.27 9 0.00 2.9 1.00 0.29 1.00 0.29 1.00 0.20 2.9 0.0 2.9 0.0 3.9 1.0 4.6 HCM 2000 Level of Service 0.58 1.50 Sum of lost time (s) 1.51.3% ICU Level of Service	Vehicle Extension (s)	2.0	4.4	4.4				
8 0.52 0.22 8 0.52 0.27 8 0.00 2.9 1.00 0.29 1.00 0.29 1.00 0.29 1.00 0.0 A A A 0.0 A A A 0.0 A A A A 0.0 A A A 0.0 A A A 1.0 A A A 0.0 A A A 1.0 A	Lane Grp Cap (vph)	192	3539	2896				
8 0.52 0.27 8 0.0 2.9 1.00 0.29 8 0.6 0.2 1.00 0.29 1.00 0.00 A A 0.00 A A 0.00 A A 0.00 A A 0.00 A A 0.00 A A 100 A A 100 A A 100 A 150 Sum of lost time (s) 51.3% ICU Level of Service 1.50 Sum of lost time (s) 51.3% ICU Level of Service	v/s Ratio Prot	80:00	c0.52	0.22				
8 0.52 0.27 8 0.00 2.9 1.00 0.29 6 0.6 1.0 7.9 1.0 0.0 7.9 1.0 0.0 8 A A A A A A A A A A A A A A A A A A A	v/s Ratio Perm							
8 0.0 2.9 1.00 0.29 6 0.6 1.0 5.9 1.0 0.0 A A A A A A A A A A A A A A A A A A A	v/c Ratio	0.73	0.52	0.27				
100 0.29 8 0.6 0.2 0.6 0.2 1.0 0.0 A A A 0.0 A A A A A A A A A A A A A A A A A A A	Uniform Delay, d1	64.8	0.0	5.9				
9 0.6 0.2 5 0.6 1.0 A A 0.0 A A 0.0 A A A 0.0 A A A 0.0 4.6 HCM 2000 Level of Service 0.58 150.0 Sum of lost time (s) 51.3% ICU Level of Service 1.5 1.5	Progression Factor	1.00	1.00	0.29				
5.9 1.0 0.0 A A A A A A A A A A A HCM 2000 Level of Service 0.58 15.0 51.3% ICU Level of Service 15.1	Incremental Delay, d2	11.8	9.0	0.7				
5.9 1.0 0.0 A A A A A A A A A A A A A B A A B A A A B A A A B A B	Delay (s)	76.5	9.0	1.0				
5.9 1.0 0.0 A A A A A A A A A A 1.0 A 6 A 1.0 A	Level of Service	ш	⋖	⋖				
A A A A A A A A 4 4.6 HCM 2000 Level of Service 0.58 150.0 Sum of lost time (s) 51.3% ICU Level of Service 1.5	Approach Delay (s)		5.9	1.0		0.0		
4.6 HCM 2000 Level of Service 0.58 150.0 Sum of lost time (s) 51.3% ICU Level of Service 1.5	Approach LOS		∢	A		∢		
4.6 HCM 2000 Level of Service 0.58 190.0 Sum of lost time (s) 51.3% ICU Level of Service 1.5	Intersection Summary							
0.58 150.0 Sum of lost time (s) 51.3% ICU Level of Service 15	HCM 2000 Control Delay			4.6	H	M 2000 I	evel of Service	A
150.0 Sum of lost time (s) zation 51.3% ICU Level of Service	HCM 2000 Volume to Capac	ity ratio		0.58				
Utilization 51.3% ICU Level of Service 15	Actuated Cycle Length (s)			150.0	Su	m of lost	ime (s)	12.7
	Intersection Capacity Utilizat	ion		51.3%	⊇	J Level of	Service	А
	Analysis Period (min)			15				

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

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Balboa Transit Station 15: Grand Ave & Mission Bay Dr

Horizon Year with Preferred LU Timing Plan: AM Peak Period

SBK	0.06	0.1	0.0	0.1	0	0		150	1583	0	0	0	90:0
SBL	0.87	38.7	1.6	40.3	300	358	495		1103	0	73	0	0.89
WBK 075	0.67	0.6	0.0	0.6	0	192			1466	0	0	0	19.0
WBI	0.55	30.3	0.0	30.3	116	195	535		096	0	0	0	0.55
1637	0.82	17.5	0.0	17.5	309	358	773		1982	0	0	0	0.82
200 200	0.84	47.2	0.0	47.2	131	#189		225	391	0	0	0	97.0
Lane Group	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio
	299 1632 530 975 918	up Flow (vph) 299 1632 530 975 918 0.84 0.82 0.55 0.67 0.87	up EBL EBI WBI VBIX SBL upFlow (vph) 299 16.32 530 975 918 delay 47.2 17.5 30.3 9.0 38.7	up Fab. EBI WBI WBI SBL upFlow (vph) 299 1632 530 975 918 up Flow (vph) 0.84 0.82 0.55 0.67 0.87 elay 47.2 17.5 30.3 9.0 38.7 alay 0.0 0.0 0.0 0.0 1.6	Up Eb Eb WB WB NB SB 3 Up Flow (vph) 299 1632 530 975 918 elay 084 082 055 067 087 4 elay 472 175 303 9.0 38.7 alay 47.2 175 303 9.0 40.3 40.3 40.3 B B B B B B B B B B B B B B B B B B B	299 1632 530 975 918 0.084 0.087 0.0	up FBL FBL WBI VMR SBL up Flow (vph) 299 1622 530 975 918 elay 084 082 0.55 0.67 0.87 elay elay 47.2 17.5 30.3 9.0 38.7 alay 47.2 17.5 30.3 9.0 40.3 alay 47.2 17.5 <td> Page 14 Page 14 Page 15 </td> <td>299 16.22 530 975 918 0.84 0.82 5.05 0.67 0.87 0.87 0.87 0.87 0.00 0.00 0.00 0.1.6 47.2 17.5 30.3 9.0 40.3 131 309 116 0 300 #189 358 195 192 358 225 225 225 299 297 298 298 225 225 299 297 298 298 225 225 299 297 298 298 225 299 297 298 225 299 299 299 299 299 299 299 299 299</td> <td>299 1632 530 975 918 0.084 0.082 0.087 0.0</td> <td>299 1632 530 975 918 299 1632 530 975 918 084 082 0835 067 087 918 47.2 17.5 30.3 9.0 38.7 47.2 17.5 30.3 9.0 40.3 131 309 116 0 300 #189 358 195 192 358 773 535 495 225 25 30 960 1466 1103 7</td> <td>299 1632 598 975 918 084 082 055 067 087 087 087 087 087 087 087 087 087 08</td> <td>1 294 1632 183 975 918 183 184 183 184 183 184 184 184 184 184 184 184 184 184 184</td>	Page 14 Page 14 Page 15	299 16.22 530 975 918 0.84 0.82 5.05 0.67 0.87 0.87 0.87 0.87 0.00 0.00 0.00 0.1.6 47.2 17.5 30.3 9.0 40.3 131 309 116 0 300 #189 358 195 192 358 225 225 225 299 297 298 298 225 225 299 297 298 298 225 225 299 297 298 298 225 299 297 298 225 299 299 299 299 299 299 299 299 299	299 1632 530 975 918 0.084 0.082 0.087 0.0	299 1632 530 975 918 299 1632 530 975 918 084 082 0835 067 087 918 47.2 17.5 30.3 9.0 38.7 47.2 17.5 30.3 9.0 40.3 131 309 116 0 300 #189 358 195 192 358 773 535 495 225 25 30 960 1466 1103 7	299 1632 598 975 918 084 082 055 067 087 087 087 087 087 087 087 087 087 08	1 294 1632 183 975 918 183 184 183 184 183 184 184 184 184 184 184 184 184 184 184

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 15: Grand Ave & Mission Bay Dr

Movement EBL EBI WBI SBR SBR Lane Conditionists 7 44 77 17 150 48 97 18 18 17 18 18 17 18 18 18 17 18 <			t				•	
275 1501 488 897 845 91 275 1501 488 897 845 91 1900 1900 1900 1900 1900 1900 1900 1	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
275 1501 488 897 845 91 1900 1900 1900 1900 1900 1900 1900 1	Lane Configurations	F	#	#	R. R	K.	* _	
275 1501 488 897 845 91 1900 1900 1900 1900 1900 1900 100 095 0.95 0.88 0.97 1.00 1.00 1.00 1.00 0.85 1.00 0.85 1.00 1.00 1.00 1.00 0.85 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 0.00 0.00 0.00 1.00 1.00 1.00	Traffic Volume (vph)	275	1501	488	897	845	91	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	275	1501	488	897	845	91	
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0,95 1,00 1,00 0,95 1,00 0,10 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,00 1,14 3,38 1,21 1,00 1,00 1,00 1,14 3,38 1,21 1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1.00 0.95 0.95 0.88 0.97 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.85 1.00 0.85 0.95 1.00 1.00 0.95 1.00 1.70 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 3433 1583 1.770 3539 3539 2.787 343 1589 1.5 2 420 2.03 2.03 2.32 75.0 1.5 2 420 2.03 2.03 2.32 75.0 1.5 2 420 2.03 2.03 2.32 75.0 1.5 2 420 2.03 2.03 2.32 75.0 1.5 3.6 2.0 2.0 3.6 2.0 3.6 2.0 2.0 3.6 2.0 3.6 2.0 2.0 3.6 2.0 4.9 0.00 2.0 0.40 0.15 0.09 0.0.7 2.0 1.14 3.38 1.21 1.00 2.0 1.00 1.14 3.38 1.21 1.00 2.0 1.00 1.14 3.38 1.21 1.00 2.0 5.0 5.0 7.7 37.0 0.1 2.0 5.0 5.0 7.7 37.0 0.1 2.0 5.0 5.0 7.7 37.0 0.1 2.0 5.0 5.0 3.0 3.4 2.0 3.8 2.2 1.2 3.7 5.0 0.1 2.0 5.0 5.0 3.5 0.1 2.0 3.8 2.2 1.2 3.7 5.0 0.1 2.0 5.0 5.0 3.8 2.2 1.2 3.7 5.0 0.1 2.0 5.0 5.0 3.8 2.2 1.2 3.7 5.0 0.1 2.0 5.0 5.0 5.0 3.8 2.2 1.2 3.7 5.0 0.1 2.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Total Lost time (s)	2.7	4.9	2.7	2.7	4.9	4.0	
100 100 100 0.85 100 0.85 100 0.95 100 1770 3539 3539 2787 3433 1883 1883 1893 1770 3539 3539 2787 3433 1883 1883 1893 1770 3539 3539 2787 3433 1883 1883 1893 1893 1893 1893 1893 18	Lane Util. Factor	1.00	0.95	0.95	0.88	0.97	1.00	
0.95 1.00 1.00 0.95 1.00 1	Fit	1.00	1.00	1.00	0.85	1.00	0.85	
1770 3539 3539 7787 3433 1883 9 095 100 100 0.95 100 1770 3539 3539 2787 3433 1883 = 092 092 0.92 0.92 0.92 0.92 9 1632 530 264 918 99 9 1632 530 264 918 99 9 1632 530 264 918 99 15 2 6 6 4 Free 6 4 Free 7 152 420 20.3 20.3 23.2 75.0 152 420 20.3 20.3 23.2 75.0 152 420 20.3 20.3 23.2 75.0 152 420 20.3 20.3 23.2 75.0 152 420 20.3 20.3 23.2 75.0 153 49 5.7 5.7 4.9 174 49 5.7 5.7 4.9 175 0.4 0.06 176 0.4 0.15 0.09 177 0.4 0.15 0.09 187 38 1981 957 754 100 188 0.6 0.2 198 0.8 0.5 0.3 0.06 198 0.8 0.5 0.3 0.06 100 1.14 33.8 1.21 1.00 100 1.14 33.8 1.21 1.00 100 1.14 33.8 1.21 1.0	Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	
0.95 1.00 1.00 0.95 1.00 1 770 3539 3539 2787 3433 1583 1 829 1632 630 975 918 99 1 0 0 0 0 711 0 0 092 1 0 0 0 0 711 0 0 092 1 0 0 0 0 711 0 0 092 2 99 1632 530 975 918 99 1 0 0 0 0 0 711 0 0 0 1 5 4 0 0 203 264 918 99 1 15 2 42.0 203 23.2 75.0 1 15 2 42.0 20.3 23.2 75.0 1 15 2 42.0 20.3 23.2 75.0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 15 2 42.0 20.3 23.2 75.0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0	Satd. Flow (prot)	1770	3539	3539	2787	3433	1583	
1770 3539 3539 2787 3433 1583	FIt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
10.02 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Satd. Flow (perm)	1770	3539	3539	2787	3433	1583	
1 299 1632 530 975 918 99 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
)) 299 1632 530 264 918 99 Prof. NA Prof. Prof. Free 5 6 6 4 Free 6 4 4 Free 7 6 6 4 4 Free 7 6 6 4 4 Free 8 6 6 4 4 Free 9 152 420 20.3 23.2 75.0 15.2 42.0 20.3 23.2 75.0 0.20 0.56 0.27 0.27 0.31 1.00 0.20 0.56 0.27 0.27 0.31 1.00 0.20 0.56 0.27 0.27 0.31 1.00 0.20 0.56 0.27 0.27 0.31 1.00 0.20 0.56 0.27 0.27 0.31 1.00 0.20 0.56 0.27 0.27 0.31 1.00 0.84 0.85 0.25 0.36 0.06 0.84 0.82 0.55 0.35 0.06 0.84 0.82 0.55 0.35 0.06 0.84 0.85 0.35 0.06 0.84 0.85 0.35 0.37 0.00 0.85 0.35 0.35 0.00 0.86 0.35 0.35 0.00 0.87 0.35 0.35 0.00 0.88 0.35 0.35 0.00 0.89 0.35 0.35 0.00 0.30 0.30 0.1 0.00	Adj. Flow (vph)	299	1632	530	975	918	66	
) 299 1632 530 264 918 99 Prof. NA NA Prof. Prof. Free 5 6 4 Free 6 6 4 4 Free 7 15.2 42.0 20.3 20.3 23.2 75.0 20.0 20.0 20.0 20.3 20.3 23.2 75.0 20.0 20.0 20.0 20.3 20.3 23.2 75.0 20.0 20.0 20.0 20.0 20.0 3.6 2.0 3.6 2.0 3.6 20.0 2.0 3.6 20.0 2.0 3.6 20.0 2.0 3.6 20.0 2.0 3.6 20.0 2.0 20.0 2.0 20.0 2.0 20.0 2.0 20.0 2.0 2	RTOR Reduction (vph)	0	0	0	711	0	0	
Prot NA Prot Prot Free	Lane Group Flow (vph)	299	1632	530	264	918	66	
5 6 6 4 Free 15.2 420 20.3 20.3 23.2 75.0 15.2 420 20.3 20.3 23.2 75.0 15.2 420 20.3 20.3 23.2 75.0 15.2 420 20.3 20.3 23.2 75.0 20 0.56 0.27 0.27 0.31 1.00 20 0.56 0.27 0.27 0.31 1.00 20 0.46 0.15 0.09 0.0.7 28.4 0.82 0.55 0.35 0.87 0.06 28.7 13.5 23.5 22.0 24.4 0.0 28.7 13.5 23.5 22.0 24.4 0.0 28.7 13.5 23.5 22.0 24.4 0.0 28.7 13.5 23.5 22.0 24.4 0.0 28.8 13.5 23.5 22.0 24.4 0.0 28.9 5.3 33.4 0.0 29.9 5.3 33.4 A 20 5.3 33.4 20 6.3 38.7 HCM 2000 Level of Service Capacity ratio 138.7 17.1 29.0 75.7 37.0 0.1 20.9 5.9 3 33.4 20.9 5.9 3 38.7 HCM 2000 Level of Service Capacity ratio 138.8 17.1 29.0 75.7 37.0 0.1 20.9 5.9 3 33.4 20.9 3.8 7 HCM 2000 Level of Service 1.0 0.93 Sum of lost time (s) 1.0 Utilization 7.38% ICU Level of Service	Turn Type	Prot	₹	₹	Prot	Prot	Free	
15.2 4.20 20.3 23.2 23.2 75.0 15.2 4.20 20.3 23.2 23.2 75.0 15.2 4.20 20.3 23.2 75.0 0.20 0.56 0.27 0.27 0.31 1.00 2.0 0.56 0.27 0.27 0.31 1.00 3.8 1981 95.7 75.4 1061 1583 0.17 0.046 0.15 0.09 0.0.27 0.84 0.82 0.35 0.36 0.06 2.87 13.5 23.5 22.0 24.4 0.0 1.00 1.00 1.14 3.38 1.21 1.00 1.32 3.6 2.2 1.2 7.5 0.1 4.19 1.1 29.0 75.7 37.0 0.1 B	Protected Phases	2	2	9	9	4		
15.2 42.0 20.3 23.2 75.0 15.2 42.0 20.3 20.3 23.2 75.0 15.2 42.0 20.3 20.3 23.2 75.0 2.0 0.56 0.27 0.27 0.31 1.00 5.7 4.9 5.7 5.7 4.9 1.10 2.0 3.6 2.0 2.0 3.6 358 1981 957 754 1061 1583 0.17 0.46 0.15 0.09 0.0.7 0.84 0.85 2.2 0.24 0.06 2.87 13.5 28.5 22.0 24.4 0.06 1.00 1.00 1.14 3.38 1.21 1.00 1.10 1.00 1.14 3.38 1.21 1.00 1.10 1.20 7.5 3.0 1.1 1.1 1.1 2.0 7.5 3.0 0.1 1.1 1.2 2.0 7.5 3.3 4 2.0 5.3 3.4 A 36.7 HCM 2000 Level of Service 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 2.0 5.3 3.3 4 1.1 1.2 3.3 3.3 4 1.1 1.3 3.3 4 1.1 1.3 3.3 4 1.1 1.3 3.3 4 1.1 1.3 3.3 4 1.1 1.3 3.3 4 1.1 1.3 3.3 4 1.1 1.3 4 1.1 1.3 5.3 5 1.1 1.3 5	Permitted Phases						Free	
15.2 42.0 20.3 20.3 23.2 75.0 5.7 6.2 6.2 6.2 7 0.2 1 1.00 5.7 8.4 9 7 7 7 4.4 9 2.0 3.6 2.0 2.0 3.6 3.8 1981 957 754 1061 1583 0.17 0.46 0.15 0.09 0.2 7 0.8 0.8 0.55 0.35 0.8 7 0.06 0.8 4 0.8 2 0.55 0.35 0.8 7 0.06 1.00 1.00 1.14 3.38 1.2 1.10 1.3 2 12 12 7.5 0.1 4.1.9 17.1 29.0 75.7 37.0 0.1 D B C E D A 20.9 59.3 3.4 1.3 2 2.0 2.4 0.0 1.4 3.3 8.2 1.2 1.00 1.5 2.0 1.5 3.5 0.1 1.6 0.0 1.3 3.8 1.2 1.00 1.7 0.0 1.3 3.8 1.2 1.00 1.8 0.0 1.4 0.0 1.4 0.0 1.9 1.7 1 29.0 75.7 37.0 0.1 1.9 8 0.0 75.7 37.0 0.1 1.0 0.0 3.3 3.4 1.0 0.0 3.3 3.4 1.0 0.0 3.3 5.7 HCM 2000 Level of Service 1.0 0.0 3.3 Sum of lost time (s) 1.0 Inization 7.3 8% ICU Level of Service 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Actuated Green, G (s)	15.2	42.0	20.3	20.3	23.2	75.0	
020 056 027 027 031 1.00 2.0 3.6 2.0 2.0 3.6 2.0 2.0 2.0 3.6 3.8 1981 957 754 1061 1583 0.17 0.46 0.15 0.09 0.0.7 0.84 0.82 0.55 0.35 0.87 0.06 2.87 13.5 2.20 2.44 0.0 1.00 1.00 1.14 3.38 1.21 1.00 1.01 1.01 1.2 20 7.57 0.1 D B C E D A 2.0.9 59.3 33.4 C. A C B C C C C. A C C C C C. A C C C C C C C. A C C C C C C C C C. A C C C C C C C C C. A C C C C C C C C C. A C C C C C C C C C C C. A C C C C C C C C C C C. A C C C C C C C C C C C C C C C. A C C C C C C C C C C C C C C C C C C	Effective Green, g (s)	15.2	45.0	20.3	20.3	23.2	75.0	
5.7 4.9 5.7 4.9 2.0 3.6 2.0 2.0 3.6 3.8 1981 95.7 754 1061 1583 0.17 c.0.46 0.15 0.09 c.0.27 0.84 0.82 0.55 0.35 0.87 0.06 2.87 13.5 2.3.5 2.2.0 2.4.4 0.0 1.00 1.00 1.14 3.38 1.2.1 1.00 1.12 7.5 0.1 2.09 5.9 7.7 7 37.0 0.1 D B C E D A 2.09 5.9 3.4 C E D A 3.84 A A A A A A A A A A A A A	Actuated g/C Ratio	0.20	0.56	0.27	0.27	0.31	1.00	
2.0 3.6 2.0 3.6 3.8 1981 957 754 1061 1583 3.8 1981 957 754 1061 1583 3.8 1981 957 754 1061 1583 3.8 1982 0.55 0.35 0.87 0.06 3.8 1982 0.55 0.35 0.87 0.06 3.8 1.2 2.2 2.4 0.06 3.8 2.2 1.2 7.5 0.1 4.1.9 17.1 29.0 75.7 37.0 0.1 5. 20.9 59.3 3.4 A 6. 20.9 59.3 3.4 A 7. 20.9 59.3 3.4 A 6. 20.9 59.3 3.4 A 7. 20.9 59.3 A	Clearance Time (s)	2.7	4.9	2.7	2.7	4.9		
388 1981 957 754 1061 1583 0.17	/ehicle Extension (s)	2.0	3.6	2.0	2.0	3.6		
0.17	-ane Grp Cap (vph)	358	1981	957	754	1061	1583	
084 082 055 0.35 0.87 0.06 28.7 13.5 23.5 22.0 24.4 0.06 1.00 1.00 1.14 3.38 1.21 1.00 1.14 3.38 1.21 1.00 1.15 3.6 2.2 1.2 7.5 0.1 1.15 2.0 5.3 1.2 7.5 0.1 1.16 0.1 5.0 1.3 1.2 1.2 1.2 1.00 1.17 1.1 2.0 1.2 7.5 0.1 1.1 2.0 5.3 1.2 1.2 1.0 1.1 2.0 5.3 1.2 1.0 1.1 2.0 5.3 1.3 1.4 1.1 2.0 5.3 1.3 1.4 1.1 2.0 5.3 1.3 1.4 1.1 2.0 5.3 1.3 1.4 1.1 2.0 5.3 1.3 1.4 1.1 2.0 5.3 1.3 1.4 1.1 3.3 1.4 1.4 1.1 3.3 1.4 1.4 1.1 3.3 1.4 1.4 1.1 3.3 1.4 1.4 1.1 3.3 1.4 1.4 1.1 3.3 1.4 1.4 1.1 3.3 1.4 1.4 1.3 1.4 1.4 1.4 1.4 3.3 1.4 1.4 1.5 1.4 1.4 1.4 1.5 1.4 1.4 1.4 1.5 1.4 1.	//s Ratio Prot	0.17	c0.46	0.15	0.09	c0.27		
0.84 0.82 0.55 0.85 0.87 0.06 2.87 13.5 23.5 2.20 2.44 0.0 1.100 1.14 3.38 1.21 1.00 1.14 3.38 1.21 1.00 1.15 3.6 2.2 1.2 7.5 0.1 41.9 17.1 29.0 75.7 37.0 0.1 2.9 59.3 3.4 C E D A C E C C C E C C B O A A D A	//s Ratio Perm						90:0	
287 135 235 220 244 0.0 1.00 1.00 1.14 3.38 1.21 1.00 1.32 36 22 1.2 7.5 0.1 41.9 17.1 29.0 75.7 37.0 0.1 D B C E D A 20.9 59.3 33.4 C E C C E C C E C C E C C E C C C C C C C C C C C C	//c Ratio	0.84	0.82	0.55	0.35	0.87	90:0	
1.00 1.00 1.14 3.38 1.21 1.00 1.3.2 3.6 2.2 1.2 7.5 0.1 1.3.2 9.0 75.7 37.0 0.1 1.0 B C E D A 2.0.9 59.3 33.4 C E C 2.0.9 38.7 HCM 2000 Level of Service Capacity ratio 0.93 Sum of lost time (s) 1.5.0 Sum of lost time (s) 1.5.1 Sum of lost time (s) 1.5.1 Sum of lost time (s) 1.5.2 Sum of lost time (s) 1.5.3 Sum of lost time (s) 1.5.4 Sum of lost time (s) 1.5.5 Sum of lost time (s)	Uniform Delay, d1	28.7	13.5	23.5	22.0	24.4	0.0	
13.2 3.6 2.2 1.2 7.5 0.1 41.9 17.1 29.0 75.7 37.0 0.1 D B C E D A C E C C E C Capacity ratio 0.93 Sum of lost time (s) Utilization 7.38% ICU Level of Service 1.5 0.9 1.	Progression Factor	1.00	1:00	1.14	3.38	1.21	1.00	
419 17.1 29.0 75.7 37.0 0.1 D B C E D A 20.9 59.3 33.4 C E C C E C LA LA LA LA LA LA LA LA LA L	Incremental Delay, d2	13.2	3.6	2.2	1.2	7.5	0.1	
D B C E D A 20.9 59.3 3.4 3.4 C E C C C C C C C C C C C C C C C	Delay (s)	41.9	17.1	29.0	75.7	37.0	0.1	
20,9 59,3 33,4 C E C L L L L L Slay Slay Slay 16,5) This Type Collected of Service Capacity ratio 0,93 This Type Collected of Service	Level of Service	Ω	В	ပ	ш	Ω	Α	
C E C I A 36.7 HCM 2000 Level of Service Capacity ratio 0.93 In (s) 75.0 Sum of lost time (s) Utilization 73.8% ICU Level of Service 15	Approach Delay (s)		20.9	59.3		33.4		
lay 36.7 HCM 2000 Level of Service Capacity ratio 0.93	Approach LOS		ပ	ш		ပ		
slay 36.7 HCM 2000 Level of Service Capacity ratio 0.93 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) Utilization 73.8% ICU Level of Service 15 15	Intersection Summary							
Capacity ratio 0.93 Sum of lost time (s) 75.0 Sum of lost time (s) Utilization 7.3.8% ICU Level of Service 15	HCM 2000 Control Delay			36.7	Ĭ	3M 2000	Level of Service	D
h (s) 75.0 Sum of lost time (s) Utilization 73.8% ICU Level of Service 15	HCM 2000 Volume to Capaci:	ty ratio		0.93				
Utilization 73.8% ICU Level of Service 15	Actuated Cycle Length (s)			75.0	જ	m of lost	time (s)	16.3
15	Intersection Capacity Utilization	uo		73.8%	೨	U Level o	f Service	D
	Analysis Period (min)			15				

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Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Horizon Year with Preferred LU Timing Plan: AM Peak Period

ane Group	<u> </u>	₽	- NBT	→ SBT	≯ SBR	
-ane Group Flow (vph)	931	110	1472	834	278	
//c Ratio	0.87	09.0	0.74	0.56	0.36	
Sontrol Delay	33.2	39.9	21.7	20.0	8.3	
ueue Delay	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	33.2	39.9	21.7	20.0	8.3	
Queue Length 50th (ft)	197	26	276	166	31	
Dueue Length 95th (ft)	262	115	627	231	88	
ntemal Link Dist (ft)	261		749	743		
rum Bay Length (ft)	270	202			70	
Sase Capacity (vph)	1175	204	1996	1484	191	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.79	0.54	0.74	0.56	0.36	
recellon Cummon						
nersection Summary						

Synchro 9 Report Page 30 KHA Oueues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

EBI EBR N 128 129 1 178 129 1 178 129 1 1900 1900 19 1900 1900 19 1900 1900	EBL EBR NBL NBT SBR 728 129 101 1354 767 256 728 129 101 1354 767 256 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 0.94 100 100 100 190 1900 0.98 1.00 0.95 1.00 100 100 0.98 1.00 1.00 1.00 100 100 0.98 1.00 1.00 1.00 100 100 0.98 1.00 1.00 1.00 100 100 0.98 1.00 1.00 1.00 100 100 0.98 1.00 1.00 1.00 100 100 0.98 1.70 3539 3539 1583 1.00 1.00 1.00 1.00 100 1.00 <th></th> <th>1</th> <th>~</th> <th>•</th> <th>←</th> <th>-</th> <th>`</th> <th></th>		1	~	•	←	-	`	
National Properties	National Periods National Pe	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
728 129 101 1354 767 256 1900 1900 1900 1900 1900 1900 44 4 50 156 56 56 6 997 100 1354 767 256 6 998 1091 1359 100 1900 6 998 1770 100 100 100 6 998 1770 100 100 100 6 998 1770 1359 1583 6 998 1770 100 100 100 6 998 1770 1359 1583 6 998 1770 100 100 6 992 0,92 0,92 0,92 0,92 0,92 6 992 0,92 0,92 0,92 0,92 0,92 6 992 0,92 0,92 0,92 0,92 0,92 6 993 1338 1770 110 1472 834 278 6 90 110 1472 834 278 791 140 110 1472 834 278 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 791 140 110 1472 834 178 792 0.92 0.92 0.92 0.92 723 6.7 42.3 30.6 30.6 720 0.04 0.04 0.24 720 0.04 0.04 0.04 720 0.04 0.04 0.04 720 0.04 0.04 0.04 720 0.04 0.04 0.04 720 0.08 18 1 720 0.08 18 1 720 0.08 18 1 720 0.08 18 1 720 0.08 18 1 720 0.08 18 1 720 0.08 18 1 720 0.08 0.09 1.00 1.00 1.00 720 0.09 0.00 0.00 1.00 1.00 720 0.00 0.00 0.00 0.00 1.00 1.00 720 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	728 129 101 1354 767 256 1900 1900 1900 1900 1900 1900 4.4 4.4 5.0 15.6 5.6 0.97 100 1095 1900 1900 0.98 1.00 1.00 0.05 0.98 1.00 1.00 0.05 0.98 1.770 3539 3539 1583 0.96 0.95 100 1.00 0.91 1770 3539 3539 1583 0.96 0.95 100 1.00 0.97 1.00 1.00 1.00 0.98 1.770 3539 3539 1583 0.96 0.95 1.00 1.00 0.97 1.00 1.00 1.00 0.97 1.00 1.00 1.00 0.98 1.70 1.00 1.00 0.31 0.09 0.92 0.92 0.92 0.91 1.70 1.70 1.70 1.70 0.91 1.70 1.70 1.70 0.92 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.96 0.95 1.63 1.83 0.97 0.92 0.92 0.92 0.92 0.98 0.91 1.71 1.00 0.98 0.95 0.94 0.94 0.10 0.10 1.00 0.10 0.10 0.10 0.10 0.10	Lane Configurations	X.		r	*	*	*	
728 129 101 1354 767 256 1900 1900 1900 1900 1900 1900 1900 1900	728 129 101 1354 767 256 1900 1900 1900 1900 1900 1900 4	Traffic Volume (vph)	728	129	101	1354	191	256	
1900 1900	1900 1900	Future Volume (vph)	728	129	101	1354	191	256	
100 100	44	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 1.00 0.95 0.95 1.00 0.96 0.96 0.96 0.96 0.96 0.96 1.00 1.00 0.85 0.96 0.96 0.96 1.00 1.00 0.85 0.96 0.96 0.96 1.00 1.00 0.85 0.96 0.96 0.95 1.00 1.00 0.85 0.96 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.97 1.00 0.95 0.95 1.00 0.95 0.98 1.00 0.98 0.98 1.00 1.00 0.085 0.96 0.96 0.96 1.00 1.00 0.085 0.96 0.96 0.96 1.00 1.00 0.085 0.96 0.95 1.00 1.00 1.00 0.96 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Total Lost time (s)	4.4		4.4	2.0	2.6	9.6	
0.98 1.00 1.00 0.85 0.96 0.95 1.00 1.00 0.85 0.96 0.95 1.00 1.00 1.00 0.98 1.770 3539 3539 1583 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.92 0.92 0.92 0.92 0.92 0.91 1.40 1.10 1.472 8.44 1.13 0.09 0.50 0.41 0.41 0.33 6.7 42.3 30.6 30.6 0.31 0.09 0.56 0.41 0.41 0.44 4.4 5.0 5.6 5.6 0.27 0.06 0.42 0.24 0.31 0.09 0.56 0.41 0.41 0.44 3.32 1.22 1.72 14.8 0.27 0.06 0.42 0.24 0.37 0.06 0.42 0.24 0.37 0.06 0.42 0.27 0.44 3.32 1.22 1.72 14.8 0.83 1.7 1.0 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 0.04 0.58 0.57 0.05 0.04 0.05 0.04 0.58 0.027 0.042 0.042 0.04 0.05 0.059 0.042 0.04 0.070 0.070 0.070 0.07 0.070 0.070 0.070 0.07 0.070 0.070 0.070 0.07 0.070 0.070 0.070 0.07 0.070 0.0	0.98 1.00 1.00 0.85 0.96 0.96 1.00 1.00 0.85 0.98 1.770 3559 3559 1583 0.99 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Lane Util. Factor	0.97		1.00	0.95	0.95	1.00	
0.96 0.95 1.00 1.00 0.96 0.95 1.00 1.00 0.96 0.95 1.00 1.00 0.96 0.95 1.00 1.00 0.96 0.95 1.00 1.00 0.97 0.92 0.92 0.92 0.92 0.97 1.40 1.10 1.47 8.34 1.78 0.91 0.0 1.10 1.47 8.34 1.73 0.0 1.10 1.47 8.34 1.73 0.0 1.10 1.47 8.34 1.73 0.0 1.10 1.42 8.34 1.73 0.0 1.10 1.42 8.34 1.73 0.0 1.10 1.42 8.34 1.73 0.0 1.10 1.20 0.30 6 0.3 1.2 1.3 30 6 30 6 0.3 1.4 4.4 5.0 5.6 5.6 5.6 0.3 1.0 0.9 0.56 0.41 0.41 0.8 1.9 1.43 6.45 0.0 0.4 0.44 6.0 2.4 0.1 0.0 0.9 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.54 1.00 1.00 0.8 1.55 0.00 1.81 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.96 0.95 1.00	표	0.98		1.00	1.00	1.00	0.85	
3388 1770 3539 1583 1683 1780 1096 0.956 1096 0.95 1000 1.00	3388 1770 3539 3539 1563 1563 1569 1696 0.956 100 1000 1000 1000 1000 1000 1000 100	Fit Protected	96:0		0.95	1.00	1.00	1.00	
1996 0.95 1.00 1.00 1.00 1.388 1.770 1.3539 1.583	0.96 0.95 1.00 1.00 0.98 0.95 1.00 1.00 0.92 0.92 0.92 0.92 0.92 1.40 1.10 1.472 0.93 1.583 1.40 1.10 1.472 0.94 0.92 1.40 1.10 1.472 0.94 0.92 1.40 1.10 1.472 0.94 0.92 1.40 1.10 1.472 0.94 0.79 1.40 1.10 1.472 0.94 1.05 1.40 1.40 1.40 1.04 1.41 1.42 1.43 0.64 1.44 1.44 1.43 0.44 0.41 1.44 1.44 1.48 0.41 1.44 1.44 1.48 0.41 1.44 1.44 1.48 0.41 1.44 1.44 1.48 0.41 1.44 1.44 1.48 0.41 1.44 1.44 1.48 0.41 1.44 1.44 1.44 0.41 1.44 1.44 1.44 0.41 1.44 1.44 1.44 0.41 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.44 1.48 0.47 1.44 1.48 1.48 1.44 1.48 1.44 1.48 1.44 1.48 1.44 1.48 1.44 1.	Satd. Flow (prot)	3388		1770	3539	3539	1583	
1770 3389 1770 3539 1583 1883 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 373 140 0 0 0 0 0 0 0 0 0	1770 3539 1583 1583 1770 3539 1583 1783 1791 1402 804 2092 6	Flt Permitted	96:0		0.95	1.00	1.00	1.00	
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,91 0,9	F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,91 0,9	Satd. Flow (perm)	3388		1770	3539	3539	1583	
hy) 791 140 110 1472 834 278 hy) 910 0 10 0 105 hy) 910 110 1472 834 278 hy) 910 1 10 1472 834 173 hy 910 1 10 17 10 173 hy 910 1 17 10 17 10 hy 910 1 17 10 17 10 hy 910 1 17 10 17 10 hy 910 1 17 10 hy 170 1 18 1 hy 910 1 17 10 hy 170 1 18 1 hy 910 1 17 10 hy 170 1 18 1 hy 180 1 180 1 180 1 hy 180 1 180 1 180 1 hy 180 1 180 1 180 1 hy 180 1 h	hy) 791 140 110 1472 834 278 hy) 910 0 0 0 105 hy) 910 110 1472 834 278 hy) 910 10 110 1472 834 173 hy) 910 10 110 1472 834 173 hy 10 10 147 834 173 hy 10 10 10 10 10 10 10 10 10 10 10 10 10	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 21 0 0 0 105 h) 910 0 110 1472 834 113 Prot NA NA Perm 4 5 2 6 6 6) 6 23 3 6.7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 42.3 30.6 30.6 7 6.7 42.3 30.6 30.6 7 6.7 42.3 30.6 30.6 7 6.7 42.3 30.6 30.6 7 6.7 42.3 30.6 30.6 7 6.7 42.3 30.6 30.6 7 7 4 4 50 56 56 56 7 6 0.4 0.4 0.4 8 4.8 7 7 7 0.6 0.4 0.2 0.4 7 100 0.8 154 100 1.00 7 100 0.89 154 100 1.00 7 100 0.89 154 100 1.00 7 100 0.89 154 100 1.00 7 100 0.89 154 100 1.00 7 100 0.89 154 100 1.00 7 100 0.89 154 100 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 154 1.00 1.00 7 100 0.89 158 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	hh) 21 0 0 0 105 h) 910 0 110 1472 844 173 h) Prot NA Perm 4 5 2 6 6 5) 23.3 6.7 42.3 30.6 30.6 h) 23.3 6.7 42.3 30.6 30.6 h) 23.3 6.7 42.3 30.6 30.6 h) 2.4 4 4.4 4.8 4.8 4.8 h) 2.0 70 0.5 0.41 0.41 h) 2.0 2 0 4.0 4.8 4.8 h) 2.0 4.0 6.0.4 0.2 4.8 h) 2.0 4.0 6.0 6.5 6.6 h) 2.0 7 0.0 0.7 0.7 14.8 h) 2.0 87 0.7 0 0.7 0.7 14.8 h) 2.0 87 0.7 0 0.7 10.0 h) 2.0 8.3 2.0 1.7 1.0 h) 31.7 2.0 8 18.9 15.8 h) 2.0 1.3 1.7 1.0 h) 2.0 0.8 18.9 15.8 h) 2.0 1.8 B B h) 2.0 1.8 1 h) 2.0 0.8 18.9 15.8 h) 2.0 1.0 1.0 1.0 h) 2.0 0.8 18.9 15.8 h) 2.0 1.0 1.0 1.0 h) 3.1 1.0 1.0 1.0 h) 3.1 1.0 1.0 1.0 h) 3.1 1.0 1.0 h) 4.0 1.0 h) 4.0 1.0 h) 4.0 1.0 h) 4.0 1.0 h) 5.0 1.0 h) 5.0 1.0 h) 4.0 1.0 h) 6.0 1.0 h)	Adj. Flow (vph)	791	140	110	1472	834	278	
hb) 910 0 110 1472 834 173 Prot Prot NA NA Perm 4 5 2 6 6 5) 23.3 6.7 42.3 30.6 30.6 7) 23.3 6.7 42.3 30.6 30.6 7) 23.3 6.7 42.3 30.6 30.6 10.0 0.3 0.6 0.4 0.4 1 4.4 5.0 5.6 5.6 5.6 1.0 0.7 0.0 0.4 0.8 4.8 1.0 0.9 0.5 0.0 1.1 0.87 0.70 0.74 0.88 0.27 0.87 0.70 0.74 0.88 0.27 2.4 3.3 2 12.2 17.2 14.8 2.4 3.3 2 12.2 17.2 14.8 2.5 7.3 8.3 2.0 1.7 1.0 2.6 D C B B B 3.1.7 37.9 20.8 18.9 15.8 C C D C B C B 3.1.7 2.0 18.1 C C B C B Ay Ay Ay Ay Ay Ay Ay Ay Ay A	hb) 910 0 110 1472 834 173 Prot Prot NA NA Perm 4 5 2 6 6 5) 23.3 6.7 42.3 30.6 30.6 7 23.3 6.7 42.3 30.6 30.6 9 23.3 6.7 42.3 30.6 30.6 1.00 0.31 0.09 0.56 0.41 0.41 4.4 5.0 5.6 5.6 5.6 1.00 0.027 0.06 0.04 0.21 0.07 0.04 0.04 0.24 0.07 0.04 0.04 0.04 1.00 0.89 1.54 1.00 1.00 2 7.3 83 2.0 1.7 1.0 2 7.3 83 2.0 1.7 1.0 2 7.3 83 2.0 1.7 1.0 2 7.3 83 2.0 1.7 1.0 2 7.3 83 2.0 1.7 1.0 2 7.3 83 2.0 1.7 1.0 2 7.3 83 2.0 1.7 1.0 2 0 8 8 8 4 W 200 Level of Service 1.00 0.85 Sum of lost time (s) 1.01 0.85 Sum of lost time (s) 1.01 0.15 Sum of lost time (s) 1.01 0.15 Sum of lost time (s) 1.01 0.15 Sum of lost time (s)	RTOR Reduction (vph)	21	0	0	0	0	105	
Prot Prot NA NA Perm 4 5 2 6 6 5) 23.3 6.7 42.3 30.6 30.6 23.3 6.7 42.3 30.6 30.6 23.3 6.7 42.3 30.6 30.6 23.1 0.09 0.56 0.41 0.41 4.4 5.0 5.6 0.41 2.0 2.0 4.0 4.8 4.8 1052 158 1995 1443 645 0.027 0.06 0.0-2 0.24 0.10 0.89 1.54 1.00 1.00 2 7.3 3.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B Ay Ay Ay Ay Ay Ay Ay Ay Ay A	Prot Prot NA NA Perm 4 5 2 6 6 5) 23.3 6.7 42.3 30.6 30.6 1 23.3 6.7 42.3 30.6 30.6 0.31 0.09 0.56 0.41 0.41 4.4 4.4 5.0 5.6 5.6 5.6 0.31 0.09 0.56 0.41 0.41 0.41 1.05 1.0 4.4 5.0 5.6 5.6 5.6 0.02 2.0 4.0 4.8 4.8 4.8 4.8 1.05 1.0 1.4 4.4 5.0 5.0 5.6 5.7 5.7 5.7 5.7 5.7	Lane Group Flow (vph)	910	0	110	1472	834	173	
4 5 2 6 6 5) 23.3 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 42.3 30.6 30.6 6.7 4.3 30.6 0.4 6.8 4.8 4.8 6.0 20.7 4.8 4.8 6.0 20.7 0.6 0.4 0.2 6.0 4.0 0.11 6.0 0.8 1.2 17.2 14.8 6.0 0.7 0.7 0.7 0.5 0.2 6.0 0.7 0.7 0.7 0.8 18 6.0 0.7 0.7 0.8 18 6.0 0.7 0.7 0.8 18 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 6.0 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0	4 5 2 6 6 5 2.33 6.7 42.3 30.6 30.6 6 23.3 6.7 42.3 30.6 30.6 7 3.3 6.7 42.3 30.6 30.6 7 3.3 6.7 42.3 30.6 30.6 7 4.4 4.5 5.0 5.0 4.0 0.4 7 1052 158 1995 1443 645 7 0.27 0.04 0.24 0.24 7 3.3 12.2 17.2 14.8 7 0.87 0.70 0.74 0.58 0.27 7 3 8.3 2.0 1.7 1.0 7 0.89 1.54 10.0 1.00 7 0.89 1.54 10.0 1.00 7 0.89 1.54 10.0 1.00 7 0.89 1.54 10.0 1.00 7 0.89 1.54 10.0 1.00 7 0.89 1.54 10.0 1.00 7 0.89 1.54 10.0 1.00 7 0.89 1.58 0.50 7 0.89 1.58 0.50 7 0.89 1.89 1.58 7 0.89 1.89 1.58 7 0.89 1.89 1.58 7 0.89 1.89 1.58 7 0.89 1.89 1.58 7 0.89 1.89 1.58 7 0.89 1.89 1.58 7 0.89 1.89 1.89 7 0.89 1.89 7 0.	Turn Type	Prot		Prot	NA	NA	Perm	
5 23.3 6.7 42.3 30.6 6 23.3 6.7 42.3 30.6 30.6 0.31 0.09 0.56 0.41 0.41 0.44 4.4 5.0 5.6 5.6 0.20 0.09 0.56 0.41 0.41 0.87 0.09 0.56 0.42 0.41 0.87 0.06 0.042 0.24 0.87 0.06 0.042 0.24 0.87 0.70 0.74 0.58 0.27 0.87 0.70 0.74 0.58 0.27 0.87 0.70 0.74 0.58 0.27 0.87 0.70 0.74 0.58 0.27 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 1.54 1.00 1.00 0.89 0.89 0.89 0.88 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.80 0.89 0.89 0.80 0.89 0.89 0.80 0.80 0.80	s) 23.3 6.7 42.3 30.6 6 23.3 6.7 42.3 30.6 30.6 0.31 0.09 0.56 0.41 0.41 4.4 4.4 4.4 5.0 5.6 5.6 5.6 1.05 0.20 4.0 4.8 4.8 0.07 0.04 0.04 0.24 0.087 0.70 0.74 0.58 0.27 2.4 33.2 12.2 17.2 14.8 2.4 33.2 12.2 17.2 14.8 2.4 33.2 12.2 17.2 14.8 2.4 33.2 12.2 17.2 14.8 2.4 33.2 12.2 17.2 14.8 2.4 33.2 12.2 17.2 14.8 2.5 7.3 8.3 2.0 1.7 10 C B B B Ay Ay Ay Ay Ay Ay Ay Ay Ay A	Protected Phases	4		2	2	9		
5) 23.3 6.7 42.3 30.6 30.6 7) 23.3 6.7 42.3 30.6 30.6 103.1 0.09 0.56 0.41 0.41 4.4 4.4 5.0 5.6 5.6 5.6 105 2.0 4.0 4.8 4.8 105 1.56 1.95 1.43 645 0.27 0.06 0.0.4 0.24 0.11 0.87 0.70 0.74 0.58 0.27 2.4 3.3 1.2 1.72 1.48 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 2 0.0 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 3.1.7 3.7 2.0 18.1 1.0 C D C B B A 1.0 0.85 1.8 1.0 C C B B B A 0.83 1.0 1.0 1.0 C C B 1.0 1.0 C C	s) 23.3 6.7 42.3 30.6 30.6 l) 23.3 6.7 42.3 30.6 30.6 0.31 0.09 0.56 0.41 0.41 4.4 4.4 5.0 5.6 5.6 1.05 2.0 2.0 4.0 4.8 4.8 1.05 1.05 1.4 5.0 5.6 5.6 5.6 0.20 2.0 4.0 4.8 4.8 4.8 4.8 1.05 1.05 1.04 0.4 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.17 0.12 0.27 0.12 0.27 0.27 0.0 0.27 0.27 0.13 0.27 0.27 1.00 0.27 0.27 0.28 0.27 0.27 0.28 0.27 0.28 0.27 0.28 0.27 0.28 0.28 0.28 0.28 0.28 0.28 0.28 0.28 0.28<	Permitted Phases						9	
23.3 6.7 42.3 30.6 30.6 6.31 0.09 0.56 0.41 0.41 4.4 4.4 5.0 5.6 0.41 0.41 4.4 4.4 5.0 5.6 0.41 0.41 4.4 4.4 5.0 5.6 0.41 0.41 1.05 2.0 2.0 4.0 4.8 4.8 0.027 0.06 0.0.42 0.24 0.10 0.87 0.70 0.74 0.58 0.27 0.87 0.70 0.74 0.58 0.27 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B C C B C C B C C B C C B C C B C C C B C	23.3 6.7 42.3 30.6 30.6 4.4 4.4 5.0 6.5 0.41 0.41	Actuated Green, G (s)	23.3		6.7	42.3	30.6	30.6	
0.31 0.09 0.56 0.41 0.41 4.4 5.0 5.6 5.6 5.0 5.0 4.0 4.8 1.052 1.58 1.995 1.443 645 0.027 0.06 0.0.42 0.24 0.44 3.32 1.2.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 2 C B B 3.17 0.0 C B B B 3.18 0.0 C B B B 3.19 0.0 C B B B 3.10 0.0 C B 3.10 0	0.31 0.09 0.56 0.41 0.41 4.4 5.0 5.6 5.6 5.6 2.0 4.0 4.8 48 48 1.052 158 1995 1443 645 0.027 0.06 0.042 0.24 1.00 0.87 12.2 17.2 148 1.00 0.89 1.54 10.0 2. 7.3 8.3 2.0 1.7 1.0 0.89 1.54 10.0 1.00 2. 7.3 8.3 2.0 1.7 1.0 0.89 1.54 10.0 1.00 2. 7.3 8.3 2.0 1.7 1.0 0.89 1.54 10.0 1.00 0.89 1.54 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	Effective Green, g (s)	23.3		6.7	42.3	30.6	30.6	
44 44 50 56 5.6 20 40 48 4.8 1052 158 1995 1443 645 00.27 0.06 0.042 0.24 0.87 0.70 0.74 0.58 0.27 244 33.2 12.2 17.2 148 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 31.7 37.9 2.08 18.9 15.8 C C B C B 31.7 0.05 0.05 0.05 0.05 Ay	4.4	Actuated g/C Ratio	0.31		0.09	0.56	0.41	0.41	
1052 2.0 4.0 4.8 4.8 1052 1052 158 1995 1443 645 645 60.27 0.06 60.42 0.24 0.11 60.87 0.07	1052 2.0 4.0 4.8 4.8 1052 158 1995 1443 645 645 60.27 0.06 60.42 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.27 0.08 0.27 0.08 0.27 0.08 0.27 0.08 0.27 0.08 0.27 0.08 0.27 0.08 0.27 0.08	Clearance Time (s)	4.4		4.4	2.0	9.6	5.6	
1052 158 1995 1443 645 0.0.27 0.06 0.0.42 0.24 0.87 0.70 0.74 0.58 0.27 24.4 33.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 83 2.0 1.7 1.0 C D C B B 31.7 2.0 8 18.9 15.8 C D C B B 31.7 2.0 18.1 C C B Ay	1052 158 1995 1443 645 0.027 0.06 0.042 0.24 0.87 0.70 0.74 0.58 0.27 24.4 33.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B C D C B B B Ay y y y volument of the property	Vehicle Extension (s)	2.0		2.0	4.0	4.8	4.8	
0.027 0.06 00.42 0.24 0.11 0.87 0.70 0.74 0.58 0.27 24.4 33.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 3.17 2.0 18.1 C C B C B 3.17 C C B 3.17 C C B 4.4 C C C C C C C C C C C C C C C C C C	0.027 0.06 00.42 0.24 0.11 0.87 0.70 0.74 0.58 0.11 0.87 0.70 0.74 0.58 0.27 2.4.4 33.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 31.7 37.9 2.08 18.9 15.8 C C B B B 31.7 C D C B B B 31.7 C D C B C B AND SOLUTION OF SERVICE C C B C C C C C C C C C C C C C C C C C	Lane Grp Cap (vph)	1052		158	1995	1443	645	
0.87 0.70 0.74 0.58 0.27 24.4 33.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 31.7 37.9 20.8 18.9 15.8 C C B B B 31.7 2.20 18.1 C C B C B A	0.87 0.70 0.74 0.58 0.11 24.4 33.2 12.2 17.2 14.8 1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 31.7 37.9 2.08 18.9 15.8 C D C B B B 31.7 2.0 18.1 C C B S C B C B A	//s Ratio Prot	c0.27		90.0	c0.42	0.24		
0.87 0.70 0.74 0.58 0.27 1.44 3.3.2 1.22 17.2 14.8 2 7.3 8.3 2.0 1.7 1.0 C D C B B 31.7 37.9 20.8 18.9 15.8 C B B B 31.7 C B B A C B B B C B B A A A A A A A A A A A A A	0.87 0.70 0.74 0.58 0.27 2.4.4 3.3.2 1.2.2 17.2 14.8 2.4.4 3.3.2 12.2 17.2 14.8 2.7.3 8.3 2.0 1.7 1.0 2.0 B B B 31.7 37.9 20.8 18.9 15.8 2.0 1.8 B 31.7 C B B B 2.0 1.8 B 2.0 1.	//s Ratio Perm						0.11	
2.4.4 33.2 12.2 17.2 14.8 1.0 0.89 1.54 1.0 0.89 1.54 1.0 0.1.00 1.00 1.00 1.00 1.00 1.00 1.	2 44 33.2 12.2 17.2 14.8 2 1.00 0.89 1.54 1.00 2 7.3 8.3 2.0 1.0 31.7 37.9 20.8 18.9 15.8 C D C B B B C C B B B A	//c Ratio	0.87		0.70	0.74	0.58	0.27	
1.00 0.89 1.54 1.00 1.00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 31.7 37.9 20.8 18.9 15.8 C C B B B 31.7 C D C B B 4.9 22.0 18.1 C C B A SANCE V B V C B C B C B C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C C B C C C B C C C B C C C B C C C B C C C C	1,00 0.89 1.54 1,00 1,00 2 7.3 8.3 2.0 1.7 1.0 C D C B B B 31.7 2.20 18.1 C C B C B 31.7 C B 22.0 18.1 C B	Jniform Delay, d1	24.4		33.2	12.2	17.2	14.8	
2 7.3 8.3 2.0 1.7 1.0 31.7 37.9 20.8 18.9 15.8 C D C B B B 31.7 C C B B 31.7 C C B A	2 7.3 8.3 2.0 1.7 1.0 31.7 37.9 20.8 18.9 15.8 C D C B B B 31.7 C D C B C B C B 31.7 C B 22.0 18.1 C C B	Progression Factor	1.00		0.89	1.54	1.00	1.00	
31.7 37.9 20.8 18.9 15.8 C D C B B B C B B B 22.0 18.1 C B B A 24.0 18.1 C B B A A A A A A A A A A A A A	31.7 37.9 20.8 18.9 15.8 C D C B B B C B B C B B B C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C C C	ncremental Delay, d2	7.3		8.3	2.0	1.7	1.0	
C D C B B B 31.7 22.0 18.1 C B Y Y A 23.3 HCM 2000 Level of Service ht (s) T5.0 Sum of lost time (s) In (s) T0.1% ICU Level of Service T0.1% ICU Level of Service	C D C B B B 31.7 22.0 18.1 C B Y Y C Capacity ratio 0.85 C U Level of Service 15.0 Sum of lost time (s) CU Level of Service 15.0 Sum of lost time (s) CU Level of Service 15.0 Sum of lost time (s) CU Level of Service	Delay (s)	31.7		37.9	20.8	18.9	15.8	
31.7 22.0 18.1 Y Y C B C B Y 23.3 HCM 2000 Level of Service (see of Serv	31.7 22.0 18.1 Y Y C B C B O Capacity ratio 0.85 Sum of lost time (s) Utilization 70.1% ICU Level of Service 15	evel of Service	ပ		۵	ပ	В	В	
y y 23.3 HCM 2000 Level of Service Capacity ratio 0.85 Sum of lost time (s) (Utilization 70.1% ICU Level of Service	y y 2.3.3 HCM 2000 Level of Service elely 0.85 Num of lost time (s) 1.0.11/2ation 70.1% ICU Level of Service 1.5	Approach Delay (s)	31.7			22.0	18.1		
189 23.3 HCM 2000 Level of Service Capacity ratio	23.3 HCM 2000 Level of Service classify ratio 0.85 Sum of lost time (s) 75.0 Sum of lost time (s) 15.1 CU Level of Service 15.1 CU Level of Service 15.2 CU Level of Service 15.3 CU Level of Servic	Approach LOS	ပ			ပ	В		
slay 23.3 HCM 2000 Level of Service Capacity ratio 0.85 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) Utilization 70.1% ICU Level of Service	slay 23.3 HCM 2000 Level of Service Capacity ratio 0.85 HCM 2000 Level of Service h (s) 75.0 Sum of lost time (s) Utilization 70.1% ICU Level of Service 15 15	Intersection Summary							
Capacity ratio 0.85 Sum of lost time (s) 75.0 Sum of lost time (s) 1.1% I'Ullization 7.1% I'U Level of Service	Capacity ratio 0.85 Sum of lost time (s) 75.0 Sum of lost time (s) 70.1% IUIIzation 70.1% ICU Level of Service 15	HCM 2000 Control Delay			23.3	H	3M 2000	Level of Service	U
h (s) 75.0 Sum of lost time (s) Utilization 70.1% ICU Level of Service	h (s) 75.0 Sum of lost time (s) Utilization 70.1% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.85				
Utilization 70.1% ICU Level of Service	Utilization 70.1% ICU Level of Service 15 ICU Level of Service	Actuated Cycle Length (s)	,		75.0	S	m of lost	time (s)	14.4
	2	Intersection Capacity Utilizar	tion		70.1%	೨	U Level o	f Service	U
	Pethod I and Cours	Analysis Period (min)			15				

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Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

	>	4	•	•	٠	→	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	93	64	1542	138	82	847	
v/c Ratio	0.65	0.34	0.62	0.12	0.37	0.28	
Control Delay	86.0	18.4	13.8	4.3	74.9	4.0	
Oueue Delay	0.0	0.0	11.7	0.0	0.0	0.0	
Total Delay	86.0	18.4	25.6	4.3	74.9	4.0	
Oueue Length 50th (ft)	06	0	391	19	83	174	
Oueue Length 95th (ft)	148	46	512	47	m137	228	
Internal Link Dist (ft)	1203		376			749	
Tum Bay Length (ft)		75		160	182		
Base Capacity (vph)	361	373	2475	1128	224	3022	
Starvation Cap Reductn	0	0	930	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.26	0.17	1.00	0.12	0.37	0.28	
Intersection Summary							
		l	l	l			

m Volume for 95th percentile queue is metered by upstream signal.

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Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 17: Mission Bay Dr & Damon Ave

																																					В		13.8	В	
→	SBT	**	6/1	6/1	1900	5.2	0.95	1.00	1.00	3539	1.00	3539	0.92	847	0	847	NA	9		128.1	128.1	0.85	5.2	3.5	3022	0.24		0.28	2.1	1.64	0.5	3.0	70	Y 4			HCM 2000 Level of Service				
<u>ب</u> ب	NBR SBL	r K	127 75		-		1.00 1.00				1.00 0.95	1583 1770	0	138 82		117 82	Perm Prot	-				٥	5.0 4.4		1107 224	c0.02			7.3 60.0		0.2 0.3						HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
←	S NBT	*	59 1419		_		_	5 1.00	0 1.00	` '	0 1.00	3 3539		64 1542		5 1542	Z	2			_	٥		0 3.8		00.44						5 13.2 F B	12.7	. B			14.9	0.59	150.0	29.6%	7
*	WBL WBR	·-	86 5		_						0.95 1.0	1770 1583	0.92 0.92			93	Prot Perm	4				٥	4.4 4.4		145 129	c0.05			66.7 63.4		0.0 F./	73.8 03.	404	5. П				ty ratio		uc	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (S)	Approach Delay (s)	Approach LOS	Interconding Communication	intersection summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

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Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

→	SBT	1118	0.50	14.9	1.3	16.3	294	352	461		2254	863	0	0	0.80						
٠	SBL	35	0.45	83.6	0.0	83.6	34	73		20	107	0	0	0	0.33				ت		ıal.
←	NBT	1260	0.54	10.7	0.0	10.7	342	492	804		2318	0	0	0	0.54		ite.		be longe		ream sigr
•	NBL	09	0.59	105.1	0.0	105.1	09	m103		9	119	0	0	0	0.50		cally infin		rene may		d by upst
ţ	WBT	16	0.05	36.9	0.0	36.9	6	30	271		313	0	0	0	0.05		s theoreti	cycles.	pacity, qu	cycles.	is metere
†	EBT	376	1.14	139.4	0.0	139.4	-406	#617	303		331	0	0	0	1.14		r, queue is	n after two	ceeds ca	n after two	e dnene
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	 Volume exceeds capacity, queue is theoretically infinite. 	Queue shown is maximum after two cycles.	# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.	m Volume for 95th percentile queue is metered by upstream signal

Synchro 9 Report Page 34 KHA Queues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

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Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Lane Group	WBT	NBT	SBL	SBT	
Lane Group Flow (vph)	144	1290	282	911	
v/c Ratio	0.54	0.61	1.19	0.32	
Control Delay	12.4	14.7	147.6	3.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	12.4	14.7	147.6	3.1	
Queue Length 50th (ft)	0	227	~212	80	
Queue Length 95th (ft)	38	323	m#367	m154	
Internal Link Dist (ft)	514	495		804	
Tum Bay Length (ft)			06		
Base Capacity (vph)	515	2104	236	2806	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.28	0.61	1.19	0.32	
Intersection Summary					
 Volume exceeds capacity, queue is theoretically infinite. 	ly, queue is	theoret	cally infini	e.	
Queue shown is maximum after two cycles.	m after two	cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.	exceeds cap	oacity, q	nene may	be longer.	
Queue shown is maximum after two cycles.	m after two	cycles.			
m Volume for 95th percentile givene is metered by instream signal	tile on on the	cmotorc	d by unch	leunis med	

Synchro 9 Report Page 36 KHA Queues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Movement EB1 EB1 WB1 WB1 NB1 NB1 NB1 NB1 NB1 BB1 SB1 SB1			t	-	-			-	-	-		•	
Part	Tovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
b (γργ) 0 0 0 45 0 87 0 1076 110 259 838 838 838 938 938 938 938 938 938 93	ane Configurations		4			4		F	₹		*	₩	
by the by	ic Volume (vph)	0	0	0	45	0	87	0	1076	110	259	838	0
tory (ryth) (ryt	re Volume (vph)	0 0	0 0	0	45	0 0	8/	0 0	10/6	01.10	259	838	0
tory by the by t	Flow (vpnpi)	2006	1900	0061	006	0061	0061	0061	0061	0061	0061	0061	1900
100 0.95 1.00 0.95 1	Lost time (s)					4.9			0.0		4.4	0.0	
od) including the control of the co	: Utili. Factor					0.00			0.95		00.1	0.95	
ou) 0.98 1.00 1.099 1.00 1.00 1.00 1.00 1.00 1.0	100					16.0			0.99		00.1	00.1	
1,000	otected					86.0			00.1		0.95	00.1	
100 100	Flow (prot)					1668			3490		1770	3539	
1504 3490 1770 3539	srmitted					0.89			1.00		0.95	1.00	
0.92	Flow (perm)					1504			3490		1770	3539	
0 0 0 49 0 95 0 1170 120 282 0 0 0 0 133 0 0 17 0 0 0 0 0 0 133 0 0 17 0 0 0 0 0 0 183 0 0 17 0 0 0 0 0 0 183 0 0 17 0 0 0 0 0 0 183 0 0 184 0 185 1 4 4 7 1 6 5 1 5 6 45,1 100 15 1 5 6 45,1 100 15 1 5 6 45,1 100 15 1 0 0 0 0 0 0 0 1 112 2098 236 2 1 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0	hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
0 0 0 0 133 0 0 0 1283 0 282 0 0 0 111 0 0 1283 0 282 4 4 4 4 4 1 6 56 56 451 100 56 56 451 100 56 56 451 100 56 50 4 4 4 4 50 007 060 013 000 112 2008 236 236 200 120 001 010 061 119 000 110 010 000 000 000 000 110 010 000 000 000 000 000 110 010 000 000 000 000 000 000 110 010 000 000 000 000 000 000 000 00	low (vph)	0	0	0	46	0	96	0	1170	120	282	911	0
0 0 0 0 11 0 0 0 1283 0 282 4 4 4 4 1 6 56 451 100 5 56 451 100 5 56 451 100 5 56 451 100 5 56 451 100 5 56 56 451 100 5 50 5 50 5 50 5 50 5 50 5 50 5	Reduction (vph)	0	0	0	0	133	0	0	7	0	0	0	0
Perm NA Prot NA Prot N	Group Flow (vph)	0	0	0	0	Ξ	0	0	1283	0	282	911	0
1 4 4 4 1 6 5 5 5 6 6 10.0 8 5 6 6 10.0 8 6 10.0	Туре				Perm	NA		Prot	NA		Prot	NA	
1	cted Phases		4			4		-	9		2	2	
5.6 45.1 10.0 5.6 45.1 10.0 5.6 45.1 10.0 5.6 45.1 10.0 5.0 0.0 7 0.60 0.13 0.50 4.4 5.0 0.13 0.10 0.10 0.10 0.10 0.10 0.10 0.	tted Phases	4			4								
5.6 45.1 10.0 5.6 45.1 10.0 5.0 6.0 0.13 0.07 0.50 0.13 0.03 0.13 0.03 0.10 0.10 0.01 0.01	ted Green, G (s)					9.6			45.1		10.0	59.5	
0.07 0.60 0.13 0.44 2.0 3.2 2.0 4.44 2.0 3.2 2.0 4.44 2.0 0.37 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.0	ive Green, g (s)					9.6			45.1		10.0	59.5	
2.0 3.2 2.0 1.12 2.098 2.36 2.0 1.12 2.098 2.36 2.0 0.01 0.016 0.016 0.016 0.016 0.016 0.01 0.01 1.43 0.94 32.5 1.00 1.43 0.96 7.0016 0.0 32.5 14.5 14.5 A 25.8 HCM 2000 Level of Service C 0.66 2.00 0.016	ted g/C Ratio					0.07			09:0		0.13	0.79	
2.0 3.2 2.0 112 2.098 2.36 2.8 2.00.01 0.01 0.01 1.19 (0.10 0.10 0.01 1.43 0.96 0.0 3.25 14.5 147.9 25.8 HCM 2000 Level of Service C 0.56 75.0 Sum of lost time (s) 14.3 15.0 Sum of lost time (s) 14.3 15.1 Sum of lost time (s) 14.3 15.1 Sum of lost time (s) 14.3	ance_Time(s)					4.9			2.0		4.4	2.0	
112 2098 236 2 00.01 0.10 0.61 1.19 0 0.10 0.10 0.61 1.19 0 0.10 0.10 0.61 1.19 0 0.10 0.10 0.61 1.19 0 0.10 0.10 1.00 1.00 0.60 25.8 HCM 2000 Level of Service C 0.66 750 Sum of lost time (s) 14.3 14.3 15.15 14.3 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5	le Extension (s)					2.0			3.2		2.0	3.2	
0.01 0.037 0.016 (0.016	Grp Cap (vph)					112			2098		236	2807	
0.00 0.61 1.19 (0.00 0.00 0.00 0.10 0.00 0.10 0.00 0.10 0.00 0.10	atio Prot								c0.37		c0.16	0.26	
0.10 0.61 1.19 0 32.3 9.4 32.5 1.00 1.43 0.96 0.1 1.0 116.7 32.5 14.5 147.9 C B F F 0.0 32.5 14.5 147.9 A C B F F 25.8 HCM 2000 Level of Service C 0.56 750 Sum of lost time (s) 14.3 15.0 Sum of lost time (s) 14.3	atio Perm					c0.01							
32.3 9.4 32.5 100 1.43 0.96 0.1 1.00 1.06 0.0 32.5 14.5 147.9 0.0 32.5 14.5 147.9 0.0 32.5 14.5 F 0.0 32.5 14.5 F 0.0 32.5 14.5 F 0.0 32.5 14.5 F 14.5 147.9 F 14.5 147.9 F 15.0 Sum of lost time (s) 14.3 14.3 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	atio					0.10			0.61		1.19	0.32	
100 143 096 100 143 096 101 102 116.7 32.5 14.5 14.5 A C B B F 25.8 HCM 2000 Level of Service C 056 750 Sum of lost time (s) 14.3 15.0 Sum of lost time (s) 14.3	m Delay, d1					32.3			9.4		32.5	2.2	
25.8 HCM 2000 Level of Service C C 67.4% I/U Level of Service C C 14.3 15.0 14.3 15.0 14.3 15.0 14.3 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	ession Factor					1.00			1.43		96:0	1.24	
32.5 14.5 147.9 C B F O	nental Delay, d2					0.1			1.0		116.7	0.3	
0.0 32.5 14.5 F A C B B F 25.8 HCM 2000 Level of Service C 0.66 75.0 Sum of lost time (s) 14.3 15.15 15.15 14.3	(s)					32.5			14.5		147.9	2.9	
0.0 32.5 14.5 A C B B 25.8 HCM 2000 Level of Service C 0.66 75.0 Sum of lost time (s) 14.3 15.15 ICU Level of Service C 15.15 ICU Level of Service C	of Service					ပ			В		ш	V	
A C B B 25.8 HCM 2000 Level of Service 0.66 75.0 Sum of lost time (s) 1 15.1 ICU Level of Service 1 15.1 ICU Level of Service 1 15.1 ICU Level of Service 1	ach Delay (s)		0.0			32.5			14.5			37.2	
25.8 HCM 2000 Level of Service 0.66 75.0 Sum of lost time (s) 67.4% ICU Level of Service 15	ach LOS		A			ပ			В			Ω	
25.8 HCM 2000 Level of Service 0.66 75.0 Sum of lost time (s) 1 67.4% ICU Level of Service 15	section Summary												
0.66 750 Sum of lost time (s) 1 6.74 ICU Level of Service 15	2000 Control Delay			25.8	H	:M 2000	Level of S	service		ပ			
h (s) 75.0 Sum of lost time (s) 1 Utilization 67.4% ICU Level of Service 15	2000 Volume to Capaci	y ratio		99.0									
Utilization 67.4% ICU Level of Service 15	ited Cycle Length (s)			75.0	S	m of lost	time (s)			14.3			
	section Capacity Utilization	u.		67.4%	೨	U Level o	of Service			ပ			
	rsis Period (min)			15									

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Balboa Transit Station 20: Mission Bay Dr & Rosewood St

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Lane Group WBL NBT SBL SBT Lane Group Flow (vph) 24 1496 17 2578 Wc Ratio 0.16 0.33 0.11 0.79 Control Delay 18 2.5 348 4.4 Queue Delay 0.0 0.0 0.0 0.0 Cueue Length Soft (ft) 2.5 348 4.5 Queue Length Soft (ft) 2.3 142 480 Internal Link Dist (ft) 2.3 480 6.0 Internal Link Dist (ft) 2.21 960 5.35 Internal Link Dist (ft) 2.21 960 5.35 Internal Link Dist (ft) 2.21 960 5.35 Sall Base Capacity (vph) 3.65 4512 148 32.56 Salux distriction Cap Reductin 0 0 0 0 0 Solings Cap Reductin 0 0 0 0 0 0 Reduced v/c Reductin 0 0 0 0 0		/	—	٠	→	
Lane Group Flow (vph) 24 1496 17 2578 Wer Ratio 0.16 0.33 0.11 0.79 Control Delay 188 2.5 3.48 4.4 Oucle bength Soft (%) 2.5 3.48 4.5 Oucle Length Soft (%) 2.3 142 m9 480 Internal Link Dist (%) 2.21 960 5.35 Internal Link Dist (%) 2.21 960 5.35 Internal Link Dist (%) 3.45 4.51 Slanger Capacity (ph) 3.45 4.51 Slanger Capacity (ph) 3.45 4.51 Slanger Cap Reductin 0 0 2.3 Solvinger Cap Reductin 0 0 0 0 Reduced Vic Ratio 0.7 0.33 0.11 0.80 Internal Link Dist (%) 0.3 0.11 0.80 Internal Link Dist (%) 0.3 0.11 0.80 Internal Link Dist (%) 0.3 0.11 0.80	Lane Group	WBL	NBT	SBL	SBT	
wic Ratio 0.16 0.33 0.11 0.79 Outdroid Delay 188 2.5 34.8 4.4 Oueue Delay 0.0 0.0 0.0 0.0 Total Delay 18.8 2.5 34.8 4.5 Oueue Length 50h (ft) 2 0 8 2 Oueue Length 50h (ft) 23 480 18 Immed Link Dist (ft) 23 480 18 Internal Link Dist (ft) 221 48 256 Sea Capadry (pt) 365 45.1 148 3256 Salaryalin Cap Reductin 0 0 0 0 0 Spillback Cap Reductin 0 0 0 0 0 0 Reduced Vic Ratio 0 0 0 0 0 0 0 Reduced Vic Ratio 0.07 0.33 0.11 0.80 0 0 0 Medical Vic Ratio 0.07 0.33 0.11 0.06 0 <td< td=""><td>Lane Group Flow (vph)</td><td>24</td><td>1496</td><td>17</td><td>2578</td><td></td></td<>	Lane Group Flow (vph)	24	1496	17	2578	
Control Delay 188 2.5 34.8 4.4 Oueue Delay 0.0 0.0 0.0 0.0 Oueue Length Soft (it) 2 0 8 4.5 Oueue Length Soft (it) 23 142 m9 480 Internal Lik Dist (it) 23 142 m9 480 Inm Bay Length (it) 221 960 535 Inm Bay Length (it) 365 4512 18 3256 Base Capacity (whi) 365 4512 18 3256 Situration Cap Reductin 0 0 2 3 Spinage Cap Reductin 0 0 0 0 Reduced vic Reductin 0 0 0 0 Reduced vic Reductin 0 0 0 0 Reduced vic Ratio 0 0 0 0 Reduced vic Ratio 0 0 0 0 All transcription Surmany 10 0 0 0	v/c Ratio	0.16	0.33	0.11	62.0	
Queue Delay 0.0 0.0 0.0 Total Delay 18 2.5 34.8 4.5 Queue Length Soft (ft) 2 0 8 2 Queue Length Soft (ft) 23 142 m9 480 Dueue Length Soft (ft) 221 960 535 Intermal Link Dist (ft) 221 960 535 Base Capacity (vph) 365 4512 148 3256 Slarvalon Cap Reductn 0 0 23 25 Slorage Cap Reductn 0 0 0 0 Spillback Cap Reductn 0 0 0 0 Reduced v/c Ratio 0 0 0 0 Reduced v/c Ratio 0 0 0 0 Reduced v/c Ratio 0 0 0 0 Intersection Surman 0 0 0 0 Machine for 95th percentile rules is meletered by unstream signal m. Volume for 95th percentiles in meletered by unstream signal	Control Delay	18.8	2.5	34.8	4.4	
Total Delay 188 2.5 34.8 4.5 Oueue Length Softh (11) 2 0 8 2 Oueue Length Softh (11) 2 142 m9 480 Internal Link Dist (11) 221 960 535 Internal Link Dist (11) 221 960 535 Base Capacity (pth) 365 4512 148 3256 Slanget Cap Reductn 0 0 23 Split Back Cap Reductn 0 0 0 0 0 Reduced Vic Ratio 0,07 0,33 0,11 0,80 Intersection Summary M. Valume for OSth percentile is metered by unstream signal m. Valume for OSth percentile curies is metered by unstream signal	Queue Delay	0.0	0.0	0.0	0.0	
Queue Length 50th (ft) 2 0 8 2 Lobuse Length 50ft (ft) 23 142 m9 480 Internal Link Dist (ft) 23 142 m9 480 Internal Link Dist (ft) 221 960 535 Turn Bay Length (ft) 364 4512 148 3256 Starvation Cap Reductin 0 0 0 0 Spillback Cap Reductin 0 0 0 0 Reduced Vic Ratio 0 0 0 0 Reduced Vic Ratio 0.07 0.33 0.11 0.80 Intersection Summary Modernment of Control of the Universal Signal m. Volume for OSH percentile is melered by unstream signal	Total Delay	18.8	2.5	34.8	4.5	
Queue Length 95th (ft) 23 142 m9 480 Inmanul Link Dist (ft) 221 960 535 Turn Bay Length (ft) 60 535 Base Capacity (with) 365 4512 148 3256 Salvastion Cap Reductin 0 0 23 23 23 23 Spillback Cap Reductin 0 0 0 0 0 0 0 0 0 0 Reduced vice Reduction (or Reduction Control of the Control of Con	Queue Length 50th (ft)	2	0	∞	2	
Internal Link Dist (ft) 221 960 535 Tun Bay Lengfil (f) 60 Base Capacity (vph) 365 4512 148 3256 Slarvallon Cap Reductn 0 0 23 Sloriage Cap Reductn 0 0 0 0 0 Sloriage Cap Reductn 0 0 0 0 0 Reduced v/c Ratio 0,07 0,33 0,11 0,80 Intersection Summary M. Volume for 95th percentile curele is metered by unstream signal	Queue Length 95th (ft)	23	142	6m	480	
Turn Bay Length (t) 60 Base Capacity (pth) 365 4512 148 3256 Base Capacity (pth) 365 4512 148 3256 Starvalion Cap Reductn 0 0 23 Spirage Cap Reductn 0 0 0 0 Storage Cap Reductn 0 0 0 0 Reduced Vic Ratio 0.07 0.33 0.11 0.80 Intersection Summary Multiple for 95th percentile quete is metered by unstream signal	Internal Link Dist (ft)	221	096		535	
Base Capacity (vph) 365 4512 148 3256 Slarvation Cap Reductin 0 0 23 Spillback Cap Reductin 0 0 0 0 Storage Cap Reductin 0 0 0 0 Reduced Vic Ratio 0.07 0.33 0.11 0.80 Intersection Summary Intersection Summary	Tum Bay Length (ft)			09		
Starvation Cap Reductin 0 0 23 Splillack Cap Reductin 0 0 0 0 Storings Cap Reductin 0 0 0 0 Reduced Vic Ratio 0.07 0.33 0.11 0.80 Intersection Summary Intersection Summary Intersection Summary	Base Capacity (vph)	365	4512	148	3256	
Spillback Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Reduced vic Ratio 0.07 0.33 0.11 0.80 Intersection Summary Intersection Summary Intersection Institute is melered by unstream signal	Starvation Cap Reductn	0	0	0	23	
Storage Cap Reducth 0 0 0 0 Reduced vic Ratio 0.07 0.33 0.11 0.80 Intersection Summary In Volume fir 95th percentile rulesie is melered by unstream signal	Spillback Cap Reductn	0	0	0	0	
Reduced v/c Ratio 0.07 0.33 0.11 0.80 Intersection Summary m. Volume frr 95th percentile cuterie is metered by unstream signal	Storage Cap Reductn	0	0	0	0	
Intersection Summary m. Volume frr 95th percentile queue is metered by unstream signal	Reduced v/c Ratio	0.07	0.33	0.11	0.80	
m Volume for 95th persentile green is matered by unstream signal	Intersection Summan					
m Volume for 95th percentile guerie is metered by upstream signal.	increased on minary					
	m Volume for 95th percen	tile anene is	metered	by upstr	ım sianal.	

Synchro 9 Report Page 38 KHA Queues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 20: Mission Bay Dr & Rosewood St

Movement WBI, WBR WBT (MB) NBT (MB)		>	4	•	•	٠	→	
NA	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
18 1855 21 16 2372 1900 1900 1900 1900 1900 1900 1900 4	Lane Configurations	Þ		4413		¥	₩	
1900 1000 1000	Traffic Volume (vph)	4	9	1355	21	16	2372	
1900 1900	Future Volume (vph)	4	<u>@</u>	1355	71	9	2372	
1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1,00 0,91 1,00 0,95 0,89 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,640 5,074 1,770 3539 1,640 5,074 1,770 3539 1,640 5,074 1,770 3539 1,640 5,074 1,770 3539 1,640 5,074 1,770 3539 1,640 5,074 1,770 3539 1,640 5,074 1,770 3539 1,9	Total Lost time (s)	4.0		4.0		4.0	4.0	
0.89 1.00 1.00 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 0.92 0.92 0.92 0.92 0.92 0.92 0	Lane Util. Factor	1.00		0.91		1.00	0.95	
1099 100 095 100 1040 5074 1770 3539 1040 5074 1770 3539 1040 5074 1770 3539 1040 5074 1770 3539 1040 0.92 0.92 0.92 1070 1.03 0.92 0.92 1070 1.04 0.07 0.07 1070 1.05 0.07 0.08 1070 1.07 0.08 1070 1.00 0.07 1070 1.00 0.07 1080 0.38 0.49 0.05 1090 0.38 0.49 0.05 100 1.00 1.00 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.07 100 1.00 0.07 0.00 100 1.00 0.00 100 1.00 0.00 100 1.00 0.00 100 1.00 0.00 100 0.00 0.00 100	Ŧ	0.89		1.00		1.00	1.00	
1640 5074 1770 3539 1640 5074 1770 3539 1640 5074 1770 3539 1640 5072 0.92 0.92 0.92 4	Fit Protected	0.99		1.00		0.95	1.00	
1949 100 0.95 100 1040 0.95 100 1504 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.95 0	Satd. Flow (prot)	1640		5074		1770	3539	
1640 5074 1770 3539	Flt Permitted	0.99		1.00		0.95	1.00	
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,93 0,94 0,95 0,9	Satd. Flow (perm)	1640		5074		1770	3539	
hy) 19 0 1473 23 17 2578 hy) 5 0 1473 23 17 2578 hy) 5 0 1495 0 17 2578 Proi	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 19 0 11 0 0 0 h) 5 0 1495 0 17 2578 Prot NA Prot NA 8 2 11 6 1 6 2 8 58.7 1.5 64.2 0.04 0.78 0.02 0.86 0.04 0.78 0.02 0.86 0.05 0.00 0.29 0.01 0.073 0.08 0.38 0.49 0.85 0.09 0.29 0.01 0.073 0.08 0.38 0.49 0.85 0.49 0.85 0.49 0.85 0.50 0.3 5.8 1.8 0	Adj. Flow (vph)	4	20	1473	23	17	2578	
h) 5 0 1495 0 17 2578 Prot NA Prot NA 8 2 1 6 64.2 3) 2.8 5.8.7 1.5 64.2 0.0.4 0.78 0.02 0.06 0.0.4 0.78 0.02 0.06 0.0.9 3.0 3.0 3.0 0.0.8 0.38 0.49 0.85 0.0.9 0.29 0.01 0.073 0.0.8 0.38 0.49 0.85 2.5 3.6.4 2.9 2.0.5 0.3 5.8 1.8 2.0.7 0.0 1.0 0.7 2.0.5 0.3 5.8 1.8 2.0.7 0.0 0.3 5.8 1.8 2.0.8 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.9 0.3 5.8 1.8 2.0.0 0.3 5.8 1.8 2.0.0 0.3 0.3 5.8 1.8 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.3 2.0.0 0.3 0.3 0.3 0.	RTOR Reduction (vph)	19	0	-	0	0	0	
Prot NA Prot NA	Lane Group Flow (vph)	2	0	1495	0	17	2578	
8 2 1 6 8 2 1 6 9 28 58.7 1.5 64.2 9 2.8 58.7 1.5 64.2 9 0.04 0.78 0.02 0.86 9 0.04 0.78 0.02 0.86 9 0.00 0.02 0.86 0.00 0.29 0.01 0.73 0.00 0.29 0.01 0.73 0.08 0.38 0.49 0.85 3.49 2.5 36.4 2.9 1.00 1.00 1.00 1.08 2.5 36.4 2.9 1.00 1.00 1.00 1.8 3.5.4 2.8 45.1 4.6 D A A A	Turn Type	Prot		MA		Prot	NA	
s) 2.8 58.7 1.5 64.2 2.8 58.7 1.5 64.2 0.04 0.78 0.02 0.86 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 6.1 3971 35 30.29 0.08 0.29 0.01 0.0.73 0.08 0.38 0.49 0.85 3.49 2.5 36.4 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 2 0.5 0.3 5.8 1.8 2 0.5 0.3 4.0 4.0 6.5 2 0.5 0.3 4.0 4.0 6.5 2 0.5 0.3 4.0 4.0 6.5 2 0.5 0.3 4.0 4.0 6.5 1.00 1.00 1.00 1.08 0.97 2 0.5 0.3 4.0 4.0 4.0 6.5 2 0.5 0.3 4.0 4.0 6.5 2 0.5 0.3 4.0 4.0 6.5 1.00 1.00 1.00 1.00 0.97 2 0.5 0.3 4.0 4.0 4.0 6.5 2 0.5 0.3 4.0 4.0 4.0 6.5 2 0.5 0.3 5.8 1.8 4.0 4.0 6.5 2 0.5 0.3 5.8 1.8 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Protected Phases	∞		2		-	9	
s) 2.8 58.7 1.5 64.2 1 2.8 58.7 1.5 64.2 0.04 0.78 0.02 0.06 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 6.1 3971 3.5 30.2 6.1 3971 3.5 30.2 6.0 0.29 0.01 6.73 0.08 0.38 0.4 2.9 34.9 2.5 36.4 2.9 1.00 1.00 1.08 0.97 2 0.5 3.6 1.8 4.6 A A A A A A A A A A B A A A A B A A A A B A A A B B A <th< td=""><td>Permitted Phases</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Permitted Phases							
28 58.7 1.5 64.2 0.04 0.78 0.02 0.86 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 61 3871 35 3029 0.08 0.38 0.49 0.85 3.49 2.5 36.4 2.9 1.00 1.00 1.08 0.87 2 0.5 0.3 5.8 1.8 2 0.5 0.3 5.8 1.8 3 3.4 2.8 45.1 4.6 D A A A	Actuated Green, G (s)	2.8		58.7		1.5	64.2	
0.04 0.78 0.02 0.86 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 61 3971 35 3029 c0.00 0.29 0.01 c0.73 0.08 0.38 0.49 0.85 3.49 2.5 3.64 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 2 35.4 2.8 45.1 4.6 D A D A	Effective Green, g (s)	2.8		58.7		1.5	64.2	
40 40 40 40 53 30 30 30 61 3971 35 3029 60.00 0.29 0.01 60.73 60.08 0.38 0.49 0.85 34.9 2.5 36.4 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 35.4 2.8 45.1 4.6 D A A A A B A A A A B A A A A B A A A A B A A A A B A A A A B A A A A B A A A A B A A A A B A A<	Actuated g/C Ratio	0.04		0.78		0.02	0.86	
30 30 3.0 61 3971 35 30.29 61 3971 35 30.29 60.00 0.29 0.01 60.73 60.08 0.38 0.49 0.85 34.9 2.5 36.4 2.9 1.00 1.00 1.00 0.97 2 0.5 0.3 5.8 1.8 0.5 0.3 5.8 1.8 0.5 0.4 0.8 0.5 0.5 0.3 5.8 1.8 0.5 0.5 0	Clearance Time (s)	4.0		4.0		4.0	4.0	
61 3971 35 3029 C0.00 0.29 0.01 c0.73 0.08 0.38 0.49 0.85 3.49 2.5 3.64 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 18 3.54 2.8 45.1 4.6 A A D A Y Y Y Y Y Y Y Y Y Y Y Y Y	Vehicle Extension (s)	3.0		3.0		3.0	3.0	
c0.00 0.29 0.01 c0.73 0.08 0.38 0.49 0.85 34.9 2.5 36.4 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 D A 4.9 D A A 4.9 Y Y Y Capacity ratio 0.87 Capac	Lane Grp Cap (vph)	19		3971		32	3029	
0.08 0.38 0.49 0.85 3.49 2.5 3.6.4 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 2.4 2.8 45.1 4.6 D A D A D A A 35.4 2.8 45.1 4.6 by	//s Ratio Prot	00.00		0.29		0.01	c0.73	
0.08 0.38 0.49 0.85 3.49 2.5 3.64 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 5.4 2.8 45.1 4.6 5.4 2.8 45.1 4.6 5.5 4 2.8 45.1 4.6 5.5 4 2.8 45.1 4.6 5.5 4 2.8 45.1 4.6 5.6 4 2.9 2.9 5.6 4 2.9 2.9 5.6 4 2.9 4.9 5.6 4 2.8 45.1 4.6 5.6 4 2.8 4.6 5.6 4 2.8 45.1 4.6 5.6 4 2.8 45.1 4.6 5.6 4 2.8 45.1 4.6 5.6 4 2.8 45.1 4.6 5.6 4 2.8 45.1 4.6 5.6 4 2.8 45.1 4.6 5.6 4 2.8 4.8 4.6 5.6 4 2.8 4.8 4.6 5.6 4 2.8 4.8 4.8 5.8 4 2.8 4.8 5.8 5.8 4.8 4.8 5.8	v/s Ratio Perm							
349 25 36.4 2.9 1.00 1.00 1.08 0.97 2 0.5 0.3 5.8 1.8 35.4 2.8 45.1 4.6 35.4 2.8 45.1 4.6 A D A D A y y y y y v (Spadiyatio 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87	v/c Ratio	0.08		0.38		0.49	0.85	
100 100 108 097 2 0.5 0.3 5.8 1.8 2 0.5 1.8 45.1 4.6 D A A A.9 35.4 2.8 45.1 4.6 A 4.9 A 35.4 2.8 4.9 A 4.9 A A.9 A 1.8 A 4.9 A 1.8 A 4.9 A 1.8	Uniform Delay, d1	34.9		2.5		36.4	2.9	
2 0.5 0.3 5.8 1.8 35.4 2.8 45.1 4.6 D A D A A A A A A A A A A A A A A A A	Progression Factor	1.00		1.00		1.08	0.97	
35.4 2.8 45.1 4.6 D A D A 35.4 2.8 4.9 Y Y Y Y Y Y Y Y Y Y Y Y Y	Incremental Delay, d2	0.5		0.3		2.8	1.8	
35.4 2.8 4.9 35.4 2.8 4.9 4.9 Y Y HCM 2000 Level of Service 15.0 Sum of lost time (s) Utilization 75.6% ICU Level of Service 15.0 Sum of lost time (s) Utilization 75.6% ICU Level of Service	Delay (s)	35.4		2.8		45.1	4.6	
35.4 2.8 4.9 Y Y A A A A A A Capacity ratio 0.87 Cultification 75.0 Sum of lost time (s) Cultification 75.0% Cultification 75.0% Cultification 15.0%	Level of Service	٥		⋖		٥	A	
y y 4.3 HCM 2000 Level of Service of capacity ratio 0.87 Sum of lost time (s) rUtilization 75.6% ICU Level of Service 15	Approach Delay (s)	35.4		5.8			4.9	
4.3 HCM 2000 Level of Service 0.87 75.0 Sum of lost time (s) 75.6% ICU Level of Service 15	Approach LOS	D		A			V	
4.3 HCM 2000 Level of Service 0.87 75.0 Sum of lost time (s) 75.6% ICU Level of Service 15	Intersection Summary							
0.87 75.0 Sum of lost time (s) 75.% ICU Level of Service 15	HCM 2000 Control Delay			4.3	Ξ	CM 2000	Level of Service	A
75.0 Sum of lost time (s) 75.6% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.87				
Utilization 75.6% ICU Level of Service 15 ICU Level of Service 15 ICU Level of Service	Actuated Cycle Length (s)			75.0	Su	m of lost	time (s)	12.0
15	Intersection Capacity Utilizat	ion		75.6%	2	U Level o	f Service	Q
r Critical I and Grain	Analysis Period (min)			15				
c chilical Earle Group	c Critical Lane Group							

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Horizon Year with Preferred LU Timing Plan: AM Peak Period

88 88 0.92 96 Stop 47 47 0.92 51 Stop 134 134 0.92 146 SB1 0 96 -0.36 4.2 0.17 809 8.1 21 21 0.92 23 169 169 23 0 0 0.06 4.6 0.21 751 8.8 8.8 37 37 0.92 40 Balboa Transit Station 21: Santa Fe St & Damon Ave 180 180 140 4.7 0.06 4.7 0.23 722 9.1 EBL Stop 129 129 0.92 140 Direction, Lane #
Volume Total (vph)
Volume Left (vph)
Volume Right (vph)
Had (s)
Departure Headway (s)
Degree Utilization, x
Capacity (ver/h)
Confor Delay (s)
Approach Delay (s)
Approach LOS Lane Configurations Sign Control Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Hourly flow rate (vph)

			A		
			ICU Level of Service		
	8.7	A	35.5%	15	
ection Summary		of Service	ection Capacity Utilization	sis Period (min)	

Balboa Transit Station Horizon Year with Preferred LU 22: Morena Blvd & Jutland Dr Timing Plan: AM Peak Period

22: Morena Blvd & Jutland Dr	ıtland	ے					Timing Plan: AM Peak Period
	•	4	•	•	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	×	K.	*	R		4.₩	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	190	13	257	391	4	164	
Future Volume (vph)	190	13	257	391	4	164	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	207	14	279	425	4	178	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	207	14	279	425	63	119	
Volume Left (vph)	207	0	0	0	4	0	
Volume Right (vph)	0	14	0	425	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.07	0.03	
Departure Headway (s)	7.0	2.8	9.6	4.9	6.2	6.2	
Degree Utilization, x	0.40	0.02	0.43	0.58	0.11	0.20	
Capacity (veh/h)	486	574	628	720	551	226	
Control Delay (s)	13.4	7.7	11.6	13.1	8.7	9.5	
Approach Delay (s)	13.0		12.5		9.2		
Approach LOS	В		В		Α		
Intersection Summary							
Delay			12.1				
Level of Service			В				
Intersection Capacity Utilization	_		35.5%	⊇	ICU Level of Service	Service	Ą
Analysis Period (min)			15				

Balboa Transit Station
23: Morena Blvd & Costco Dwy
Timing Plan: AM Peak Period

Lane Group WBL Lane Group Flow (vph) 170 vc Ratio 0.24 Control Delay 10.8	TON		
up Flow (vph)	2	SBL	SBT
əlay	844	46	312
	0.45	0.17	0.14
	8.5	18.4	4.2
Queue Delay 0.0	0.0	0.0	0.0
Total Delay 10.8	8.5	18.4	4.2
Queue Length 50th (ft) 7	39	7	12
Queue Length 95th (ft) 31	123	33	26
Internal Link Dist (ft) 195	3170		1658
Tum Bay Length (ft)		110	
Base Capacity (vph) 2556	2101	265	2849
Starvation Cap Reductn 0	0	0	0
Spillback Cap Reductn 0	0	0	0
Storage Cap Reductn 0	0	0	0
Reduced v/c Ratio 0.07	0.40	0.17	0.11
Intercoction Cummans			

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Balboa Transit Station Horizon Year with Preferred LU 23: Morena Blvd & Costco Dwy Timing Plan: AM Peak Period

Movement WBI WBR NBT NBR SBT		-	4	•	•	٠	→	
100 56 654 122 42 287 100 56 654 122 42 287 100 656 654 122 42 287 100 190	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
100 56 654 122 42 287 100 56 654 122 42 287 100 1900 1900 1900 1900 4.9 5.5 122 287 0.97 0.95 0.96 1.00 0.97 0.95 1.00 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.97 0.92 0.92 0.92 0.92 0.98 0.94 0.95 0.93 0.99 0.90 0.90 0.90 0.90 0.90	ane Configurations	1		₩		r	‡	
1900 1900 1900 1900 1900 1900 1900 1900	raffic Volume (vph)	9 1 0	25 22	654	122	42	287	
4.9 5.5 44 5.5 0.97 0.95 1.00 0.95 0.97 0.95 1.00 0.95 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 109 61 711 1.33 46 312 109 61 711 1.33 46 312 109 61 711 1.33 46 312 110 61 711 1.33 46 312 117 0 8.2 0.92 0.92 0.92 117 0 8.2 0 1.0 0.09 0.09 1100 0 0 0 0.03 0.09 0.09 0.09 1100 0 0 0 <td< td=""><td>deal Flow (vphpl)</td><td>1900</td><td>1900</td><td>1900</td><td>1900</td><td>1900</td><td>1900</td><td></td></td<>	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 0.95 1.00 0.95 0.95 0.96 0.95 0.98 1.00 0.95 0.98 1.00 1.00 0.95 0.98 1.00 1.00 0.95 0.98 1.00 1.00 0.95 0.99 1.00 0.99 0.99 1.00 0.90 0.9	otal Lost time (s)	4.9		5.5		4.4	5.5	
0.95 0.98 1.00 1.00 0.97 0.97 0.98 1.00 1.00 0.97 0.97 0.99 0.90 0.997 0.997 0.997 0.995 1.00 0.997 0.997 0.992 0.	ane Util. Factor	0.97		0.95		1.00	0.95	
0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.98 0.92 0.92 0.92 0.92 0.99 0.92 0.92 0.92 0.92 0.90 0.91 0.92 0.92 0.90 0.92 0.92 0.92 0.90 0.91 0.92 0.92 0.90 0.91 0.92 0.92 0.90 0.91 0.92 0.92 0.90 0.91 0.92 0.91 0.92 0.92 0.92 0.91 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.94 0.93 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.95 0.94 0.95 0.95 0.94 0.95 0	æ	0.95		0.98		1.00	1.00	
3313 3456 1770 3539 977 100 1005 1000 978 100 0.052 1000 978 100 0.052 1000 978 100 0.052 1000 978 100 0.02 1000 979 100 100 100 1000 979 100 100 100 1000 979 100 100 100 100 1000 979 100 100 100 100 100 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 168 3.5 979 170 100 970 170 100 970 170 100 970 170 170 970 170 970	It Protected	0.97		1.00		0.95	1.00	
0.97 1.00 0.95 1.00 0.95 1.00 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	atd. Flow (prot)	3313		3456		1770	3539	
3313 3456 1770 3539 1092 092 092 092 092 119 83 0 21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	It Permitted	0.97		1.00		0.95	1.00	
1092 0,92	atd. Flow (perm)	3313		3456		1770	3539	
199 61 711 133 46 312 197 61 711 133 46 312 117 0 823 0 0 0 0 0 117 0 823 0 46 312 8	eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
) 53 0 21 0 0 0)) Frot NA Prot NA Pro	dj. Flow (vph)	109	19	711	133	46	312	
) 117 0 823 0 46 312 Prof NA	TOR Reduction (vph)	23	0	21	0	0	0	
Prot NA Prot NA A Prot NA B C C C C C C C C C C C C C C C C C C	ane Group Flow (vph)	117	0	823	0	46	312	
8 2 1 6 4.5 14.5 1.2 20.1 4.5 14.5 1.2 20.1 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 4.25 14.31 60 20.3 2.0 2.8 2.0 2.8 2.0 2.8 3.5 2.0 2.0 2.8 3.5 3.5 2.0 2.8 3.5 3.5 2.0 2.8 3.5 3.5 2.0 2.8 3.5 3.5 2.0 2.8 3.5 3.5 2.0 2.8 3.5 3.5 2.0 2.8 3.5 3.5 2.0 2.8 3.5	urn Type	Prot		₹		Prot	NA	
4.5 14.5 1.2 20.1 4.5 14.5 1.2 20.1 0.13 0.41 0.03 0.57 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 4.5 1.43 60 20.32 6.0 0.24 60.0 2.8 6.0 0.24 60.0 0.0 1.00 0.0 0.0 0.0 1.00 1.00 1.00 1.00 1.3 9.4 5.7 3.5 B A 6.7 3.5 B A 6.7 3.5 B A 6.7 3.5 B A B B A 13.9 9.4 10.3 Capacity ratio 0.52 Sum of lost time (\$) Initization 42.3% ICU Level of Service	Protected Phases	80		2		-	9	
4.5 14.5 1.2 20.1 4.5 14.5 1.2 20.1 6.13 0.41 0.03 0.57 4.9 5.5 4.4 5.5 4.9 5.5 4.4 5.5 20 2.8 2.0 2.8 4.5 1431 60 2032 6.0 6.0 2032 0.09 6.0 6.0 2032 0.09 6.0 6.0 2032 0.09 6.0 6.0 2032 0.09 6.0 6.0 2032 0.09 6.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 <td>Permitted Phases</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Permitted Phases							
4.5 14.5 1.2 20.1 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 4.9 5.5 4.4 5.5 4.9 5.5 4.4 5.5 4.5 2.9 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 2.0 2.8 4.5 3.5 4.5 3.5 4.5 3.5 4.5 3.5 4.5 3.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.	ctuated Green, G (s)	4.5		14.5		1.2	20.1	
0.13 0.41 0.03 0.57 4.9 5.5 44 5.5 2.0 2.8 2.0 2.8 4.25 1431 60 2032 c0.04 c0.24 c0.03 0.09 0.27 0.58 0.77 0.15 1.38 7.9 16.8 3.5 1.00 1.00 1.00 1.00 1.01 0.5 40.0 0.0 1.3.9 8.4 56.7 3.5 1.8 A E A 13.9 8.4 10.3 1	:ffective Green, g (s)	4.5		14.5		1.2	20.1	
4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 4.25 14.31 60 2.03.2 c0.04 c0.24 c0.03 0.09 c0.27 0.58 0.77 0.15 1.38 7.9 16.8 3.5 1.39 8.4 56.7 3.5 B. A E A 13.9 8.4 56.7 3.5 B. A E A 13.9 8.4 10.3 B. A E A 10.3 8.0 Sum of lost time (\$) Utilization 42.3% ICU Level of Service	ctuated g/C Ratio	0.13		0.41		0.03	0.57	
20 2.8 2.0 2.8 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.28 4.26 4.20 4.20 4.20 4.20 4.20 4.20 4.20 4.20	Clearance Time (s)	4.9		5.5		4.4	5.5	
425 1431 60 2032 c0.04 c0.24 c0.03 0.09 0.27 0.58 0.77 0.15 1.00 1.00 1.00 1.00 1.139 8.4 56.7 3.5 B. A E A B. A E A Capacity ratio 0.52 Outlization 42.3% ICU Level of Service 15.00 1.00 16.00 1.00 17.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 18.00 1.00 19.00 1.00 10.00 1.00 1	(ehicle Extension (s)	2.0		2.8		2.0	2.8	
0.004	ane Grp Cap (vph)	425		1431		9	2032	
0.27 0.58 0.77 0.15 13.8 7.9 16.8 3.5 1.00 1.00 1.00 1.00 1.01 0.5 40.0 0.0 13.9 8.4 56.7 3.5 8 A E A 13.9 8.4 10.3 13.9 8.4 10.3 I B A E A 13.9 8.4 10.3 I B A E A I B B I B A E A I B B I B A E A I B B I B A E A I B B I B A E A I B B I B A E A I B B I B B A E A I B B I B B A B B I B B B B I B B B B B I B B B B B I B B B B	/s Ratio Prot	c0.04		c0.24		c0.03	0.09	
0.27 0.58 0.77 0.15 1.38 7.9 16.8 3.5 1.00 1.00 1.00 1.00 1.01 0.5 40.0 0.0 1.3.9 8.4 56.7 3.5 1.3.9 8.4 56.7 3.5 1.3.9 8.4 10.3 1.3.9 8.4 10.3 1.3.9 8.4 E.A 1.3.9 E.A 1.3.9 E.A 1.3.9 E.A 1.3.9 E.A 1.3.9 E.A 1.3.	/s Ratio Perm							
138 79 168 35 100 100 100 100 101 0.5 40.0 0.0 13.9 8.4 E A 13.9 8.4 10.3 B A E A 13.9 8.4 10.3 Capacity ratio 0.52 Sum of lost time (s) Utilization 42.3% ICU Level of Service 15	/c Ratio	0.27		0.58		0.77	0.15	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Jniform Delay, d1	13.8		7.9		16.8	3.5	
13.9 8.4 56.7 3.5 8.4 13.9 8.4 13.5 8.7 8.5 8.4 13.9 8.4 10.3 8.4 10.3 8.4 10.3 8.4 10.3 8.4 10.3 8.4 10.3 8.5 8.4 10.3 8.5 8.4 10.3 8.5 8.4 10.3 8.5 8.4 10.3 8.5 8.4 10.3 8.5 8.4 10.0 Level of Service 15.3 8.5 10.0 Level of Service 15.	Progression Factor	1.00		1.00		1.00	1.00	
13.9 8.4 56.7 3.5 B A E A 13.9 8.4 10.3 B A B B 10.8 B A B B B B A B B B B A B B B B B B B B B B B	ncremental Delay, d2	0.1		0.5		40.0	0.0	
B	telay (s)	13.9		8.4		26.7	3.5	
13.9 8.4 10.3 B A B Comparing the compact of the co	evel of Service	В		⋖		ш	⋖	
B A B B B B B B B B B	pproach Delay (s)	13.9		8.4			10.3	
1	pproach LOS	В		⋖			В	
slay 9.6 HCM 2000 Level of Service Capacity ratio 0.52 Sum of lost time (s) h (s) 35.0 Sum of lost time (s) Utilization 42.3% ICU Level of Service 15 Innoverselvent	ntersection Summary							
Capacity ratio 0.52 h (s) 3.50 Sum of lost time (s) Utilization 42.3% ICU Level of Service 15	ICM 2000 Control Delay			9.6	H	M 2000 I	evel of Service	A
h (s) 35.0 Sum of lost time (s) Utilization 42.9% ICU Level of Service 15	HCM 2000 Volume to Capacit	ity ratio		0.52				
Utilization 42.3% ICU Level of Service 15 ICU Level of Service 15	ctuated Cycle Length (s)	,		35.0	Su	m of lost	time (s)	14.8
15	ntersection Capacity Utilization	lon		42.3%	⊇	J Level o	Service	A
Critical and Grain	nalvsis Period (min)			15				
	Critical Lane Group			!				

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Balboa Transit Station 24: Morena Blvd & Avati Dr

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	241	41	870	126	22	387	
v/c Ratio	0.33	0.11	0.52	80:0	0.11	0.22	
Control Delay	15.4	7.4	9.1	0.4	50.6	5.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	7.4	9.1	0.4	20.6	5.4	
Queue Length 50th (ft)	18	0	20	0	4	18	
Queue Length 95th (ft)	09	70	146	7	24	39	
Internal Link Dist (ft)	317		2205			3170	
Tum Bay Length (ft)		135		115	120		
Base Capacity (vph)	2682	1248	3219	1574	194	3187	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.03	0.27	0.08	0.11	0.12	
Intersection Summary							

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Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 24: Morena Blvd & Avati Dr

																																						В		15.3	V		
→	SBT	##	356	356	1900	%0	2.7	0.95	1.00	1.00	3539	1.00	3539	0.92	387	0	387	NA	2	2	23.0	23.0	0.56	2.7	2.0	1970	0.11		0.20	4.6	1.00	0.1	4.7	⋖	12.2	В		ervice					
ၨ	SBL	۴	70	70	1900		4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	22	0	22	Prot	2		9.0	9.0	0.01	4.4	2.0	25	00.01		0.88	20.3	1.00	124.9	145.2	_				Level of S		time (s)	Service	5	
•	NBR	*-	116	116	1900		4.9	1.00	0.85	1.00	1607	1.00	1607	0.92	126	46	77	vo+mq	7	9	25.4	25.4	0.62	4.9	2.0	886	0.01	0.03	0.08	3.2	1.00	0.0	3.2	Ø				HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
•	NBT	‡	800	800	1900	-3%	0.9	0.95	1.00	1.00	3592	1.00	3592	0.92	870	0	870	Ν	9		17.7	17.7	0.43	0.9	5.2	1539	c0.24		0.57	8.9	1.00	0.8	6.7	⋖	8.9	A		Ĭ		S	2	!	
F	NBU	9	0	0	1900									0.92	0	0	0	Prot	_																			10.7	0.51	41.3	37.5%	15	2
1	WBR	¥.	38	88	1900		4.9	1.00	0.85	1.00	1662	1.00	1662	0.92	41	33	8	Prot	7		7.7	7.7	0.19	4.9	2.0	309	0.00		0.02	13.7	1.00	0.0	13.7	m									
>	WBL	K.	222	222	1900	-10%	4.9	0.97	1.00	0.95	3605	0.95	3605	0.92	241	0	241	Prot	7		7.7	7.7	0.19	4.9	2.0	672	c0.07		0.36	14.6	1.00	0.1	14.8	В	14.6	В			vratio		u		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Grade (%)	Total Lost time (s)	Lane Util. Factor	ŧ.	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	rangists i carda (mini)

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Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Horizon Year with Preferred LU Timing Plan: AM Peak Period

25. Moleria bivo & baiboa W b Rarrips	balboa	۷ ۵ ۸	allibs	ı	ı		IIIIIIII FIAII. AM F
	•	<i>></i>	•	←	→	\	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	86	164	304	1546	237	446	
v/c Ratio	0.30	0.39	09:0	09:0	0.21	0.28	
Control Delay	21.3	7.2	21.2	5.9	14.0	0.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	7.2	21.2	5.9	14.0	0.4	
Queue Length 50th (ft)	25	0	75	102	25	0	
Queue Length 95th (ft)	62	40	153	190	24	0	
Internal Link Dist (ft)	463			933	2205		
Tum Bay Length (ft)		20	200			100	
Base Capacity (vph)	119	706	119	27.77	1353	1583	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.23	0.45	0.56	0.18	0.28	

Intersection Summary

Synchro 9 Report Page 46 KHA Queues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Movement		•	/	•	←	→	`	
figurations	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
tume (vph) 90 151 280 1422 218 410 tume (vph) 90 151 280 1422 218 410 v (vphp) 1900 1900 1900 1900 1900 1900 time (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 time (s) 1.00 1.00 1.00 1.00 1.00 1.00 timed 0.35 1.00 0.35 1.00 1.00 1.00 timed 0.35 1.00 0.35 1.00 1.00 1.00 1.00 timed 0.35 1.00 0.35 1.30 1.30 1.30 1.00 timed 0.35 <t< td=""><td>Lane Configurations</td><td><u>r</u></td><td>K.</td><td>×</td><td>*</td><td>#</td><td>W.</td><td></td></t<>	Lane Configurations	<u>r</u>	K.	×	*	#	W.	
time (sy) 1900 1900 1900 1900 1900 1900 1900 190	Traffic Volume (vph)	8 8	151	280	1422	218	410	
trime (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 Fedor 10in 0.95 0.95 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 0.95 100 0.85 100 0.95 100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Fedor 1.00 1.00 0.95 0.95 1.00 1.00 0.95 1.00 1.00 0.85 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00	Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
ted 100 085 100 100 085 w (por) 170 183 170 3539 3539 1533 ted 0.95 1.00 0.95 1.00 1.00 1.00 tractor, PHF 0.92 0.92 0.92 0.92 0.92 reflection (wph) 0.05 1.00 1.00 0.95 reflection (wph) 0.05 1.00 0.95 1.00 1.00 w (por) 0.05 1.00 0.01 0.01 w (por) 0.05 1.00 0.01 0.01 w (por) 0.05 1.00 0.01 0.01 w (por) 0.05 1.00 w (por) 0.05 1.00 w (por) 0.05 1.00 w (por) 0.05 1.00 w (por) 0.01 w (por) 0.01 w (por) 0.01 w (por) 0.01 w (por) 0.02 w (por) 0.01 w (por) 0.02 w (por) 0.03 w	Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	
ted 0.95 1.00 0.95 1.00 1.00 w (perm) 1770 1583 1770 3539 3539 1583 w (perm) 1770 1583 1770 3539 3539 1583 fractor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, PHF 0.92 0.92 0.92 0.92 0.92 dup.Flow (uph) 0 141 0 0 0 0 0 up.Flow (uph) 0 141 0 0 0 0 0 up.Flow (uph) 0 141 0 0 0 0 0 up.Flow (uph) 0 141 0 0 0 0 0 pp. Flow (uph) 0 141 0 0 0 0 0 0 pp. Flow (uph) 0 141 0 0 0 0 0 0 w (leen, G (s) 6.4 6.4 12.9 31.4 14.5 45.8 Green, G (s) 6.4 6.4 12.9 31.4 14.5 45.8 A 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Ft	1.00	0.85	1.00	1.00	1.00	0.85	
w (prod) 1770 1583 1770 3559 1583 w (prod) 0.95 100 0.95 100 100 100 w (perm) 0.95 100 0.95 100 100 100 (ph) 98 144 304 154 237 446 up Flow (wph) 98 144 304 1546 237 446 Phases 2 0.0 0 0 0 0 0 Phases 4 2 3 304 1546 237 446 Phases 4 4 30 1546 237 446 Phases 4 4 129 314 445 466 Green, G (s) 6.4 6.4 129 314 445 458 Green, G (s) 6.4 6.4 129 314 145 458 Green, G (s) 6.4 6.4 129 314 145 45	Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00	
tred 0.95 1.00 0.95 1.00 1.00 frequen) 1770 1583 1770 3539 3539 1583 fractor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, PHF 0.92 0.92 0.92 0.92 fraction (yph) 0. 144 0.0 0.0 0.0 gup Flow (yph) 98 23 304 1546 237 446 Phases 4 4 12 314 145 458 Green, G(s) 6.4 6.4 12.9 31.4 14.5 458 Green, G(s) 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Front Cap (ph) 247 221 498 2426 1120 1583 Front Cap (ph) 247 221 498 2426 1120 1583 Front Cap (ph) 247 221 498 2426 1120 0.28 Front Cap (ph) 17.9 17.2 14.3 4.0 1.0 0.0 Front Cap (ph) 17.9 17.2 14.3 4.0 1.0 0.0 Front Cap (ph) 17.9 17.4 16.5 4.6 11.6 0.4 Front Cap (ph) 18.0 18.0 1.0 1.0 1.0 1.0 1.0 1.0 Front Cap (ph) 18.0 18.0 18.0 18.0 18.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Satd. Flow (prot)	1770	1583	1770	3539	3539	1583	
rifactor, PHF 1583 1770 3539 3539 1583 1	Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00	
rfactor, PHF 092 092 092 092 092 092 0001 0001 0001	Satd. Flow (perm)	1770	1583	1770	3539	3539	1583	
(vph) 98 164 304 1546 237 446 eduction (vph) 98 164 304 1546 237 446 behabits 23 304 1546 237 446 Phases 4 4 1546 237 466 Phases 4 4 124 145 458 Green, G(s) 64 64 129 31.4 14.5 458 Green, G(s) 64 64 129 31.4 14.5 45.8 Green, G(s) 64 64 129 31.4 14.5 45.8 Green, G(s) 64 64 12.9 31.4 14.5 45.8 Green, G(s)	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
up Frow (vph) 0 141 0 0 0 up Frow (vph) 98 23 304 154 237 446 Phases 4 4 5 2 6 Free Phases 4 4 12 31.4 14.5 45.8 Green, G (s) 6.4 1.29 31.4 14.5 45.8 Green, G (s) 6.4 6.4 12.9 31.4 14.5 45.8 Green, G (s) 6.4 6.4 12.9 31.4 14.5 45.8 Green, G (s) 6.4 6.4 12.9 31.4 14.5 45.8 Green, G (s) 6.4 6.4 12.9 31.4 14.5 45.8 Green, G (s) 6.4 4.0 4.0 4.0 4.0 4.0 4.0 As inne(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Cap (wph) 24.7 22.1 <t< td=""><td>Adj. Flow (vph)</td><td>86</td><td>164</td><td>304</td><td>1546</td><td>237</td><td>446</td><td></td></t<>	Adj. Flow (vph)	86	164	304	1546	237	446	
up Flow (vgh) 98 23 304 1546 237 446 Phases 4 1 7 NA Free Phases 4 4 1 7 6 6 Phases 4 4 1 7 6 6 6 6 6 6 6 6 6 6 6 6 6 7 6 6 6 6 4 6 1 7 6 6 6 4 1 7 1 6 6 4 4 1 6 6 6 4 1 4 1 6 6 6 4 1 4 1 6 6 6 4 1 6 1 6 6 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 <td>RTOR Reduction (vph)</td> <td>0</td> <td>141</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td>	RTOR Reduction (vph)	0	141	0	0	0	0	
Properson Perm Prof NA NA Free	Lane Group Flow (vph)	86	23	304	1546	237	446	
Phases	Turn Type	Perm	Perm	Prot	NA	NA	Free	
Phases	Protected Phases			2	2	9		
Green, G(s) 64 64 129 314 145 458 Green, G(s) 70 14 0.14 0.28 0.32 1.00 Alersion (s) 3.0 3.0 3.0 3.0 3.0 Alersion (s) 247 221 498 2426 1120 1583 Perm 0.06 0.01 0.17 0.044 0.07 Perm 0.06 0.01 0.01 0.04 0.028 Perm 0.06 0.01 0.04 0.07 In 179 17.2 14.3 40 11.5 0.0 In 170 1.00 1.00 1.00 1.00 1.00 Isl Delay, d2 1.1 0.2 2.2 0.6 0.1 0.4 B B B B A B A Belay (s) 18.0 6.5 4.3 ILOS B A A A ILOS B A A INCOMENTE OF CONTROL DEVEL OF Service Cycle Length (s) 458 Sum of lost time (s) In 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 In 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Permitted Phases	4	4				Free	
Green g(s) 6.4 6.4 12.9 31.4 14.5 45.8 Gradio (Carlo (Carl	Actuated Green, G (s)	6.4	6.4	12.9	31.4	14.5	45.8	
g/C Ratio 0.14 0.14 0.28 0.69 0.32 1.00 s l'ime (s) 4.0 4.0 4.0 4.0 Cap (vph) 247 221 498 2426 1120 1583 Prot 0.17 0.41 0.07 0.28 Prot 0.00 0.01 0.61 0.64 0.21 0.28 Pelay, d1 17.9 17.2 14.3 4.0 11.5 0.0 on Factor 1.00 1.00 1.00 1.00 1.00 In Boeley, d2 1.1.4 16.5 4.6 11.6 0.4 Erevice B B B B A B A B A Delay (s) B B B A A B A Occurrol Delay 7.1 HCM 2000 Level of Service Oyde tengliy ratio 0.68 Occurrol Delay 7.1 HCM 2000 Level of Service 0.00 0.00 Occurrol Delay 7.1 HCM 2000 Level of Service 0.00 0.00 Control Delay 7.1 HCM 2000 Level of Service 0.00 0.00 Control Delay 7.1 HCM 2000 Level of Service 0.00 0.00 Control Delay 1.00 0.00 Control Delay 1.00 0.00 In Red Capacity Intilization 1.00 In	Effective Green, g (s)	6.4	6.4	12.9	31.4	14.5	45.8	
Time (s)	Actuated g/C Ratio	0.14	0.14	0.28	69:0	0.32	1.00	
All Principle State All Principle State All Principle All Principl	Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		
Cap (wh) 247 221 498 2426 1120 1583 Pord 0.17 0.17 0.17 0.17 0.18 Perm 0.06 0.01 0.61 0.64 0.28 Beay, d1 17.9 17.2 14.3 4.0 11.5 0.0 In Delay, d2 1.1 0.0 1.00 1.00 1.00 1.00 In Delay, d2 1.1 0.2 2.0 0.0 0.1 0.4 Delay, d2 1.7 16.5 4.6 11.6 0.4 11.6 0.4 Delay, d2 1.8 B B A B A A LOS B A B A A A A Occurrol Delay 1 1 1 1 1 A A A Accurrent Capacity ratio 1 1 1 1 1 1 1 1 1 1 1 1	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		
Prod 017 0544 007 0028 Perm 006 001 016 064 021 0228 Delay, d1 17.9 17.2 14.3 4.0 11.5 0.0 on Factor 1.00 1.00 1.00 1.00 1.00 In Delay, d2 1.1 0.2 2.2 0.6 0.1 0.4 Delay (s) 18.0 17.4 16.5 4.6 11.6 0.4 Delay (s) 18.0 8 8 8 8 8 8 A Delay (s) 18.0 6.5 4.3 LOS B 6.5 4.3 O Control Delay 771 HCM 2000 Level of Service Cycle Length (s) 45.8 Drought (s) 45.8 Sum of lost time (s) 1.00 O Control Delay 71 HCM 2000 Level of Service Cycle Length (s) 45.8 Drought (s) 45.8 Sum of lost time (s) 1.00 I Service Cycle Length (s) 45.8 I CU Level of Service 1.00 Cycle Length (s) 1.00 I Service 1.00 Cycle Length (s) 1.00 Cycle (min) 1.5 I Service 1.00 Cycle Length (s) 1.00 Cycle (min) 1.5 I Service 1.00 Cycle Length (s) 1.00 Cycle (min) 1.5 I Service 1.00 Cycle (min) 1.00 Cycle (min	Lane Grp Cap (vph)	247	221	498	2426	1120	1583	
Perm 0.06 0.01 cd.28 Pelay d1 779 172 143 40 115 0.0 on Factor 1.00 1.00 1.00 1.00 1.00 Factor 1.00 1.00 1.00 1.00 Factor 1.00 1.00 1.00 1.00 Factor 1.00 1.00 1.00 1.00 Order 1.00 1.00 1.00 1.00 Order 1.00 1.00 1.00 1.00 Factor 1.00 1.00 1.00 Factor 1.00 1.00 1.00 Factor 1.00 1.00 1.00 Factor 1.00 Facto	v/s Ratio Prot			0.17	c0.44	0.07		
0.40	v/s Ratio Perm	90.0	0.01				c0.28	
Delay, d1 77.9 77.2 74.3 4.0 1.5 0.0 On Factor 1.00 1.00 1.00 1.00 1.00 Indeplay, d2 1.1 0.2 2.2 0.6 0.1 0.4 Indeplay, d2 1.7 16.5 4.6 11.6 0.4 Indeplay 18.0 18.0 8 8 8 A B A Indeplay 18.0 18.0 4.3 Indeplay 18.0 18.0 4.3 Indeplay 18.0 18.0 Indeplay 18.0 18.0 Indeplay 18.0 18.0 Indeplay 18.0 18.0 Indeplay 18.0	v/c Ratio	0.40	0.10	0.61	0.64	0.21	0.28	
on Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	17.9	17.2	14.3	4.0	11.5	0.0	
Izel Delay, d2 1.1 0.2 2.2 0.6 0.1 0.4 cervice B B B B B A B A B A B A B B B B B B B B B B B B B A B B A B B A B B A B	Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
190 17.4 16.5 4.6 11.6 0.4	Incremental Delay, d2		0.2	2.2	9.0	0.1	0.4	
18.0 6.5 4.3 18.0 6.5 4.3 A A 7.1 HCM 2000 Level of Service acity ratio 0.68 21.0% ICU Level of Service 15.10% ICU Level of Service	Delay (s)	19.0	17.4	16.5	4.6	11.6	0.4	
18.0 6.5 4.3 B A A A 7.1 HCM 2000 Level of Service acity ratio 0.68 A5.8 Sum of lost time (s) 15.0% ICU Level of Service 15	Level of Service	В	В	В	A	В	A	
A A 7.1 HCM 2000 Level of Service 3.1	Approach Delay (s)	18.0			6.5	4.3		
7.1 HCM 2000 Level of Service 0.68 Sum of lost time (s) 2ation 51.0% ICU Level of Service 15.0%	Approach LOS	В			⋖	A		
7.1 HCM 2000 Level of Service 0.68 0.68 Sum of lost time (s) 25.0% ICU Level of Service 15 0% ICU Level of Service	Intersection Summary							
acity ratio 0.68 5.0m of lost time (s) 25.0% ICU Level of Service 15	HCM 2000 Control Delay			7.1	Ĭ	CM 2000	Level of Service	А
45.8 Sum of lost time (s) zation 51.0% ICU Level of Service 15	HCM 2000 Volume to Capaci	tvratio		0.68				
zation 51.0% ICU Level of Service 15	Actuated Cycle Length (s)			45.8	S	um of lost	time (s)	12.0
15	Intersection Capacity Utilization	on		51.0%	2	U Level o	fService	×.
2	Analysis Period (min)			15				
	C Critical Lane Group			!				

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26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps	salboa	Statior	ı Entra	nce/B	alboa	בם צמ	mps		IIMING PIAN: AIM PEAK PERIOD
	•	†	ţ	4	•	•	٠	→	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	32	12	236	478	10	1199	54	347	
v/c Ratio	0.16	90:0	0.58	0.72	0.08	0.73	0.43	0.19	
Control Delay	30.8	28.4	29.9	12.7	33.9	19.9	45.0	6.6	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.8	28.4	29.9	12.7	33.9	19.9	45.0	6.6	
Queue Length 50th (ft)	13	4	92	28	4	240	23	36	
Oueue Length 95th (ft)	37	19	165	128	19	#380	#73	78	
Internal Link Dist (ft)		96	647			1978		933	
Tum Bay Length (ft)					100		135		
Base Capacity (vph)	202	526	515	737	126	1745	126	1898	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	90.0	0.02	0.46	99.0	0.08	69.0	0.43	0.18	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Synchro 9 Report Page 48 KHA Queues

Horizon Year with Preferred LU S Timing Plan: AM Peak Period Palboa Transit Station 26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps

> → / <	NBR SBL SBT SBR	¥	150 50 272	150 50 272	1900 1900 1	4.0	1.00	1.00	0.95	1770	0.95 1.00	1770	0.92 0.92	163 54 296	0 0		Prot NA	1 6		2.0	2.0	0	4.0		54 1645			1.00	31.4	1.00	122.5	153.9	<u>.</u>	29.3	O		U		16.0	O	
•	NBT	₩	953		_		0.95				1.00		0.92			1186	N	2			29.5	0.46				c0.34						16.7	В	17.0	В						
•	NBL	¥-	6	6	1900	4.0	1.00	1.00	0.95	1770	0.95	1770	0.92			10	Prot	2		0.7	0.7	0.01	4.0	3.0	19	0.01		0.53	31.9	1.00	23.9	55.7	ш				Service		_	е	
∢	WBR	*-	440	440	1900	4.0	1.00	0.85	1.00	1583	1.00	1583	0.92	478	316	162	Perm		∞	13.5	13.5	0.21	4.0	3.0	329		0.10	0.49	22.6	1.00	1.2	23.8	S				HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service	
ţ	WBT	₩	11	11	1900	4.0	1.00	1.00	0.97	1805	0.97	1805	0.92	84	0	236	NA	∞		13.5	13.5	0.21	4.0	3.0	376	c0.13		0.63	23.4	1.00	3.3	26.6	ပ	24.7	O		CM 2000		am of los	:U Level	
/	WBL		140	140	1900								0.92	152	0	0	Split	∞																			İ		S	2	
<i>></i>	EBR		_	-	1900								0.92	-	0	0																					21.7	69.0	64.8	71.7%	15
†	EBT	¢	10	9	1900	4.0	1.00	0.99	1.00	1839	1.00	1839	0.92	1	-	11	₹	4		3.8	3.8	90.0	4.0	3.0	107	0.01		0.10	28.9	1.00	0.4	29.3	ပ	30.5	ပ						
•	EBL	*	29	29	1900	4.0	1.00	1.00	0.95	1770	0.95	1770	0.92	32	0	32	Split	4		3.8	3.8	90:0	4.0	3.0	103	c0.02		0.31	29.2	1.00	1.7	31.0	O					ipacity ratio		ization	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

Balboa Transit Station 27: Morena Blvd & Baker St

Horizon Year with Preferred LU Timing Plan: AM Peak Period

	•	/	-	Ĺ	٠	•	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	¥		+	R.	¥	₩	
Traffic Volume (veh/h)	27	36	782	23	20	290	
Future Volume (Veh/h)	27	36	782	23	20	290	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	29	39	820	22	22	315	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	1052	820			875		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1052	820			875		
tC, single (s)	9.9	6.9			4.1		
tC, 2 stage (s)							
fF (s)	3.5	3.3			2.2		
po queue free %	87	87			4		
cM capacity (veh/h)	216	304			191		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	89	820	25	22	158	158	
Volume Left	29	0	0	22	0	0	
Volume Right	39	0	22	0	0	0	
cSH	259	1700	1700	191	1700	1700	
Volume to Capacity	0.26	0.50	0.01	0.03	0.09	60.0	
Queue Length 95th (ft)	76	0	0	2	0	0	
Control Delay (s)	23.8	0.0	0.0	8.6	0.0	0.0	
Lane LOS	S			⋖			
Approach Delay (s)	23.8	0.0		9.0			
Approach LOS	ပ						
Intersection Summary							
Average Delay			1 4				
Average Deray	ation		515%		o lava	CILL evel of Service	۵
Analysis Period (min)	allon		15	2	רבאם	DO A DO	¢

KHA HCM Unsignalized Intersection Capacity Analysis

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Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 28: Morena Blvd & Gesner St

						•
	>	←	4	٠	→	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	88	951	45	52	372	
v/c Ratio	0.23	0.39	0.04	0.19	0.14	
Control Delay	11.0	7.1	4.0	20.0	3.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.0	7.1	4.0	20.0	3.2	
Queue Length 50th (ft)	9	46	_	6	14	
Queue Length 95th (ft)	88	146	14	36	31	
Internal Link Dist (ft)	1333	298			3361	
Turn Bay Length (ft)			95	95		
Base Capacity (vph)	1316	2458	1110	277	2885	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.39	0.04	0.19	0.13	
:						
Intersection Summary						

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KHA Oueues

Balboa Transit Station 28: Morena Blvd & Gesner St

Horizon Year with Preferred LU Timing Plan: AM Peak Period

																																				8		14.7	A		
→	SBT	₩	342	342	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	372	0	372	NA	9		22.5	22.5	0.63	0.9	4.2	2218	0.11		0.17	2.8	1.00	7.0	4.0 A	17.8	В		HCM 2000 Level of Service		time (s)	f Service		
٠	SBL	*	48	48	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	52	0	52	Prot	-		[1.	0.03	4.4	2.0	54	c0.03		96:0	17.4	1.00	10/./	- F				2M 2000 I		Sum of lost time (s)	ICU Level of Service		
•	NBR	*-	41	41	1900	5.9	1.00	0.85	1.00	1583	1.00	1583	0.92	45	18	27	Perm		2	17.1	17.1	0.48	5.9	4.4	754		0.02	0.04	5.0	1.00	0.0	0. A				Ĭ		Š	2		
←	NBT	‡	875	875	1900	5.9	0.95	1.00	1.00	3539	1.00	3539	0.92	951	0	951	Ν	2		17.1	17.1	0.48	5.9	4.4	1685	c0.27		0.56	6.7	1:00	0.0	? ⊲	7.2	V		10.7	0.55	35.9	44.5%	15	
✓	WBR		48	48	1900								0.92	52	0	0																									
/	WBL	>	33	33	1900	4.4	1.00	0.92	0.98	1680	0.98	1680	0.92	36	48	40	Prot	∞		3.0	3.0	0.08	4.4	2.0	140	c0.02		0.29	15.4	1.00	15.0	. a	15.9	В			ity ratio		uo		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	표	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

29: Garnet Ave & Balboa WB Ramps

	Ì		,	•	
Lane Group	EBT	WBT	WBR	SBR	
Lane Group Flow (vph)	1520	1164	262	750	
v/c Ratio	0.30	0.54	0.32	0.71	
Control Delay	0.2	9.3	2.5	15.1	
Oueue Delay	0.0	0.0	0.0	0.0	
Total Delay	0.2	9.3	2.5	15.1	
Queue Length 50th (ft)	0	61	0	72	
Queue Length 95th (ft)	0	88	26	#137	
Internal Link Dist (ft)	265	362			
Turn Bay Length (ft)			300		
Base Capacity (vph)	5047	2405	988	1062	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.30	0.48	0.30	0.71	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

	•	†	ļ	4	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	*		<u> </u>	
Traffic Volume (vph)	0	1398	1071	241	0	069	
Future Volume (vph)	0	1398	1071	241	0	069	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.91	0.91	1.00		0.88	
Frt		1.00	1.00	0.85		0.85	
Flt Protected		1.00	1.00	1.00		1.00	
Satd. Flow (prot)		2082	2085	1583		2787	
Flt Permitted		1.00	1.00	1.00		1.00	
Satd. Flow (perm)		5085	5085	1583		2787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	1520	1164	262	0	750	
RTOR Reduction (vph)	0	0	0	152	0	37	
Lane Group Flow (vph)	0	1520	1164	110	0	713	
Turn Type		NA	NA	Perm		Prot	
Protected Phases		14	∞			-	
Permitted Phases				∞			
Actuated Green, G (s)		38.2	16.1	16.1		14.1	
Effective Green, g (s)		38.2	16.1	16.1		14.1	
Actuated g/C Ratio		1.00	0.42	0.42		0.37	
Clearance Time (s)			4.0	4.0		4.0	
Vehicle Extension (s)			3.0	3.0		3.0	
Lane Grp Cap (vph)		2082	2143	<i>L</i> 99		1028	
v/s Ratio Prot		0.30	c0.23			c0.26	
v/s Ratio Perm				0.07			
v/c Ratio		0.30	0.54	0.17		69.0	
Uniform Delay, d1		0.0	8.3	6.9		10.2	
Progression Factor		1.00	1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.3	0.1		2.1	
Delay (s)		0.0	9.8	7.0		12.3	
Level of Service		⋖	⋖	A		В	
Approach Delay (s)		0.0	8.3		12.3		
Approach LOS		⋖	⋖		В		
Intersection Summary							
HCM 2000 Control Delay			5.7	H H	M 2000 L	HCM 2000 Level of Service A	
HCM 2000 Volume to Capacity ratio	ratio		0.61				
Actuated Cycle Length (s)			38.2	Sur	Sum of lost time (s)	ime (s) 8.0	
Intersection Capacity Utilization			51.5%	<u>ਹ</u>	ICU Level of Service		
Analysis Period (min)			2				
250 () () () ()							

Critical Lane Group

Balboa Transit Station

							IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	akreilou
Arterial Level of Service: EB Garnet Ave	f Service: EB	Garnet Ave			*Reduction	on of s	*Reduction of signal delay for	ay for
					transit	anenb	iumo lane	
	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	LOS
2		200	404	440	202	000	22	L
Omey or	=	3	1.71	D:FF	- 20	20.0	5.0	
Balboa Ave	=	30	23.5	12.0	35.5	0.19	18.8	Ω
Soledad Mtn Rd	=	32	27.4	10.8	38.2	0.23	21.7	Ω
Bond St	=	35	21.0	9.0	21.6	0.17	28.0	ပ
Mission Bay Dr	=	35	15.5		70.9		6.3	ш
l-5 Off-ramp ★	=	45	24.2		10.2 39.6 34.	4 0.23	21.2	Ω
Balboa WB Ramps	=	45	7.1	0.4]] } 	0.07	31.4	В
Moraga Ave ★	=	45	22.2	€.	3.4 27.4 25.	. € 0.20	26.8	ပ
Clairemont Dr	=	45	49.7	41.0	206	0.62	24.7	ပ
Total	=		202.7	185.4	388.1	1.92	17.8	Ω

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	LOS
		45	447	240	0.00	0.40	40.5	L
Ordinome Di		2	7.1.1	5	0.01	2	2.0	
Moraga Ave	=	45	49.7	19.2	68.9	0.62	32.5	ω
Balboa WB Ramps	=	45	22.2	12.9	35.1	0.20	20.9	
Santa Fe St	-	45	7.1	0.3	7.4	0.07	31.8	В
Mission Bay Dr	-	45	24.2	48.9	73.1	0.23	11.5	ш
Bond St	-	35	15.5	0.9	16.4	0.12	27.2	O
Soledad Mtn Rd	-	32	21.0	6.2	27.2	0.17	22.2	S
Garnet Ave	=	32	27.4	0.5	27.9	0.23	29.7	8
Olney St	=	30	23.5	9.3	32.8	0.19	20.4	D
Total	_		205.3	129.8	335.1	1.97	21.1	D

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	Œ	Speed	SOT
-		70	0 00		7 00	000	0.70	
TO DOOMSON	ш	3	0.03	C.2	1.02	07.0	7:17	
		70	45.7	0	200	0 40	47.0	(
тителог рау рт	E	3		5. 5.	1.42	21.0	O: 61	ם
Bunker Hill St	=	32	14.7	14.7	29.4	0.11	13.3	ш
Magnolia Ave	=	32	21.4	10.7	32.1	0.17	18.8	O
Garnet Ave	=	32	13.8	37.4	51.2	0.10	7.2	ш.
Damon Ave	=	35	11.7	13.8	25.5	0.09	12.2	ш
Bluffside Av	=	35	20.1	21.7	41.8	0.16	13.5	Ш
Total	=		121.0	109.8	230.8	0.94	14.6	О

KHA Arterial Level of Service

Synchro 9 Report Page 1

Balboa Transit Station

Horizon Year with Preferred LU Timing Plan: AM Peak Period

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Arterial

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	SOT
DI. SE . L. A	111	30	ט טט	ט טט	V UV	0.46	44.0	C
Diditional 2 to	=	3	0.04	0.04	0.01	2 .	2:-)
Damon Ave	=	32	20.1	4.0	24.1	0.16	23.5	O
Garnet Ave	=	32	11.7	49.2	6.09	0.09	5.1	ш.
Magnolia Ave	=	32	13.8	14.9	28.7	0.10	12.9	ш
Bunker Hill St	=	35	21.4	3.1	24.5	0.17	24.6	ш
Grand Ave	=	35	14.7	38.7	53.4	0.11	7.3	ш.
Resembed St	#	38	15.7	4.	20.1	0.12	50.0	
Total	=		117.4	134.3	251.7	0.89	12.8	

KHA Arterial Level of Service

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 1: Olney St & Garnet Ave

i. Oiley of a Gallet Ave	אמ						IIIIIII I I I I I I I I CAN I CIDA
	•	†	/	ţ	•	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	34	1137	16	1460	467	189	
v/c Ratio	0.31	1.15	0.14	0.77	1.17	0.38	
Control Delay	17.7	6.96	13.5	18.1	126.1	17.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.7	6.96	13.5	18.1	126.1	17.6	
Queue Length 50th (ft)	7	~561	4	267	~235	49	
Queue Length 95th (ft)	30	#190	m8	326	#405	100	
Internal Link Dist (ft)		374		899	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	111	992	111	1903	366	498	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.31	1.15	0.14	0.77	1.17	0.38	

Volume exceeds capacitly, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

95th percentile volume exceeds expacitly, queue may be longer.

Oueue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Synchro 9 Report Page 1

KHA Oueues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 1: Olney St & Garnet Ave

	•	†	*	/	ţ	4	•	-	4	٨	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>.</u>	¢Ì		F	₩			4			4	
Traffic Volume (vph)	31	918	128	15	1319	24	301	110	18	48	99	09
Future Volume (vph)	31	918	128	15	1319	24	301	110	18	48	99	09
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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			1:00			1.00	
	1.00	86:0		1.00	1.00			0.99			0.95	
	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	1829		1770	3530			1789			1752	
Flt Permitted	0.11	1.00		0.11	1.00			89.0			98.0	
Satd. Flow (perm)	506	1829		206	3530			1259			1519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	866	139	16	1434	26	327	120	20	52	72	9
RTOR Reduction (vph)	0	7	0	0	7	0	0	က	0	0	21	0
Lane Group Flow (vph)	34	1130	0	16	1458	0	0	464	0	0	168	0
	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			9			œ			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)	36.1	36.1		36.1	36.1			21.1			21.1	
Effective Green, g (s)	36.1	36.1		36.1	36.1			21.1			21.1	
Actuated g/C Ratio	0.54	0.54		0.54	0.54			0.31			0.31	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	110	985		110	1901			396			478	
v/s Ratio Prot		c0.62			0.41							
v/s Ratio Perm	0.16			0.08				c0.37			0.11	
v/c Ratio	0.31	1.15		0.15	0.77			1.17			0.35	
Uniform Delay, d1	8.5	15.4		7.7	12.1			22.9			17.7	
Progression Factor	1.00	1.00		1.26	1.24			1:00			1.00	
Incremental Delay, d2	7.2	78.1		2.3	5.6			101.3			0.2	
Delay (s)	15.7	93.6		12.1	17.6			124.2			17.8	
Level of Service	В	ш		В	В			ш			В	
Approach Delay (s)		91.3			17.5			124.2			17.8	
Approach LOS		ш			В			ш			В	
Intersection Summary												
HCM 2000 Control Delay			58.8	H	HCM 2000 Level of Service	Level of S	ervice		Ш			
HCM 2000 Volume to Capacity ratio	ratio		1.16									
Actuated Cycle Length (s)			0.79	S	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization		_	101.7%	⊇	ICU Level of Service	f Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year with Preferred LU

	بو د	
-ane Group EBT WBT W	WBR SBL	
Flow (vph) 421 1272	710 1017	
//c Ratio 0.23 0.65 0	0.49 0.90	
Control Delay 9.0 6.3	1.2 29.8	
Queue Delay 0.0 0.0	0.0 0.0	
Fotal Delay 9.0 6.3	1.2 29.8	
Queue Length 50th (ft) 45 68	0 234	
Queue Length 95th (ft) 68 129	0 m203	
nternal Link Dist (ft) 936 329	866	
Furn Bay Length (ft)		
1854 1965	1441 1139	
Starvation Cap Reductn 0 0	0 0	
Spillback Cap Reductn 0 0	0 0	
Storage Cap Reductn 0 0	0 0	
Reduced v/c Ratio 0.23 0.65 0	0.49 0.89	

Balboa Station 2: Balboa Ave & Garnet Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

Movement EBI WBT SBL SBR Lane Configurations 44 16 7 140 Lane Configurations 44 16 7 140 Traff's Colume (ph) 0 387 516 1307 796 140 Future Volume (ph) 0 387 516 1307 796 140 Future Volume (ph) 0 387 516 1307 796 140 Future Volume (ph) 0 387 516 1307 796 140 190								
0 387 516 1307 796 140 0 0 387 516 1307 796 140 1900 1900 1900 1900 1900 1900 1 0 0 1900 190	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
0 387 516 1307 796 140 1900 1900 1900 1900 1900 1900 5.0 5.0 4.0 4.9 10.0 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	Lane Configurations		‡	₩₽	*-	N.		
1900 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	0	387	516	1307	961	140	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	0	387	516	1307	796	140	
5.0 5.0 4.0 4.9 1.00 0.022 0.085 0.98 1.00 1.00 1.00 0.97 1.00 1.00 1.00 0.98 3539 3106 1441 3389 0.92 0.92 0.92 0.92 0.92 0. 421 933 710 995 0.9 0. 421 933 710 995 0.0 0. 421 933 710 995 0.0 1.00 1.00 1.00 0.38 5.0 5.0 1.00 0.33 5.0 5.0 1.00 0.33 5.0 5.0 1.00 0.33 6.1 5.1 1112 1.84 1627 1441 1112 0.12 0.03 0.0 2.14 1.00 1.00 1.00 1.33 0.3 1.5 1.2 2.5 A A B A C B B A C B B A C B B A C B B B A C B B B A C B B B B	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.95 0,91 0,97 0,97 1,00 0,92 0,88 0,98 1,00 1,00 1,00 0,96 1,00 0,96 1,00 0,96 1,00 0,96 1,00 0,96 1,00 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0	Total Lost time (s)		2.0	2.0	4.0	4.9		
100 092 088 0.98 100 100 100 096 3539 3106 1441 3389 100 100 100 096 3539 3106 1441 3389 0 2 092 092 092 092 0 421 561 1421 865 152 0 0 339 0 22 092 092 0 421 561 1421 865 152 0 0 421 933 710 995 0 10 421 570 220 2 Free Prot 4 2 2 Free Prot 4 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 11.1 35.1 1.2 7.1 35.3 1.2 7.1 35.3 1.2 7.1 35.3 1.2 7.2 35.3	Lane Util. Factor		0.95	0.91	0.91	0.97		
100 100 100 0.96 3539 3106 1441 3389 0 92 092 092 092 0.92 0 421 933 710 995 0 0 421 933 710 995 0 0 421 933 710 995 0 10 421 933 710 995 0 10 52 052 140 220 35.1 35.1 67.0 220 5.0 5.0 100 0.33 5.0 5.0 4.9 4.9 6.1 6.1 5.1 41112 0.12 0.30 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 8.3 A C Service sadiy ratio 0.70 Sum of lost time (s) sation 6.36% ICU Level of Service 15 5.0 5.0 Sum of lost time (s) sation 6.36% ICU Level of Service	Ff		1.00	0.92	0.85	0.98		
3539 3106 1441 3389 100 0.95 1	Fit Protected		1.00	1.00	1.00	96.0		
100 100 0.96 3539 3106 1441 3865 0 421 561 1421 865 152 0 0 0 339 0 0 22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Satd. Flow (prot)		3539	3106	1441	3389		
3539 3106 1441 3389 0 92 092 092 092 092 0 0 421 561 1421 865 152 0 0 421 933 710 995 00 NA NA Free Prot 35.1 35.1 67.0 22.0 35.3 35.1 35.1 67.0 22.0 5.0 5.0 5.0 4.9 6.1 6.1 6.1 5.2 1854 1627 1441 1112 0.12 0.30 0.49 0.23 0.57 0.49 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 8.3 29.5 A A A C C Sation 63.6% ICU Level of Service 5.0 5.0	Fit Permitted		1.00	1.00	1.00	96.0		
0 92 092 092 092 092 092 092 0 0 0 0 0 0	Satd. Flow (perm)		3539	3106	1441	3389		
0 421 561 1421 865 152 0 0 2 339 0 22 0 0 421 933 710 922 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 35.1 35.1 67.0 220 0.50 5.0 100 0.33 5.1 67.0 220 6.1 6.1 6.1 5.2 1.84 1627 1441 1112 0.12 0.30 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.23 0.57 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 29.5 A B A C 8.9 12.3 1.2 29.5 A B A C 8.9 12.3 1.2 29.5 A A A C 8.9 3 3 29.5 A A A A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
0 0 339 0 22 0 0 421 933 710 995 0 0 421 933 710 995 0 2 2 4 4 1 5 1 670 220 35.1 35.1 670 220 6.5 0 5.0 4.9 6.1 6.1 6.2 0 0.12 0.30 0.49 0.23 0.57 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.33 0.3 1.5 1.2 29.5 A B A C 8.9 12.3 1.2 29.5 A A A A C 8.9 12.3 1.2 29.5 A A B A C 8.9 12.3 1.2 29.5 A A B A C 8.9 12.3 1.2 29.5 A A B A C 8.9 12.3 1.2 29.5 A A B A C 8.9 12.3 1.2 29.5 A A A A C 8.9 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	Adj. Flow (vph)	0	421	561	1421	865	152	
0 421 933 710 995 0 0 NA NA Free Prot 2 2 4 4 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.2 1.00 0.33 5.0 5.0 4.9 6.1 6.1 5.1 6.1 5.2 0.29 0.23 0.57 0.49 0.24 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 8.3 A C C 8.9 8 A C C 8.9	RTOR Reduction (vph)	0	0	339	0	22	0	
NA NA Free Prot 2 2 4 4 5 2 4 4 5 2 4 4 6 4 4 6 5 6 5 6 6 5 6 5 6 6 1 6 1 6 1 6 1 6 1 5 2 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1	Lane Group Flow (vph)	0	421	933	710	995	0	
2 2 Free 4 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.2 05.2 10.0 0.33 5.0 1.0 0.33 0.2 0.3 0.4 0.0 3.0 0.2 0.3 0.5 0.4 0.0 9.9 8.6 10.9 0.0 21.4 1.0 100 1.0 1.3 0.0 1.0 1.3 1.2 29.5 A B A C 8.9 12.3 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 8.3 B A C 8.9 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3	Tum Type		Ϋ́	NA	Free	Prot		
Free 35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 6.52 6.52 1.00 6.33 6.50 1.00 6.33 6.50 1.00 6.33 6.50 1.00 6.33 6.20 6.20 6.20 6.20 6.20 6.20 6.20 6.20	Protected Phases		7	2		4		
35.1 35.1 67.0 22.0 35.1 35.1 67.0 22.0 35.0 135.1 67.0 22.0 0.55.0 5.0 4.9 6.1 6.1 15.2 0.12 0.0.3 0.12 0.0.3 0.12 0.0.49 0.10 1.00 1.00 1.33 0.3 1.5 1.2 1.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 2.5 A B A C B A C B B B A C B B A C B B A C B B A C B B A C B B A C B B A C B B A C B B A C B B A C B B A C B B B A C B B B A C B B B A C B B B B	Permitted Phases				Free			
35.1 35.1 67.0 22.0 6.2 0.5 1.00 0.33 5.0 5.0 4.9 6.1 6.1 5.1 5.2 1864 1627 1441 1112 0.12 0.30 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C 8.9 8.3 8.3 29.5 A A A C 8.9 8.3 8.3 29.5 A A A C 8.9 8.3 8.3 8.3 8.3 A C 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Actuated Green, G (s)		35.1	35.1	0.79	22.0		
652 652 100 0.33 5.0 5.0 4.9 6.1 6.1 6.1 1864 1627 1441 1112 012 0.30 0.49 0.23 0.57 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 29.5 8.9 12.3 1.2 29.5 A B A C 8.9 8.3 29.5 A A A A C 8.9 8.3 29.5 A A A A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 B A C 8.9 8.3 29.5 A A B A C 8.9 8.3 29.5 B A C 8.9 8	Effective Green, g (s)		35.1	35.1	0.79	22.0		
6.1 6.1 6.1 6.2 6.1 6.1 6.1 6.2 1854 1627 141 1112 0.12 0.030 0.49 0.23 0.57 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 8.3 2.95 A B A C 8.9 8.3 2.95 A A A C 8.9 8.9 8.3 2.95 A A A C 8.9 8.9 8.3 2.95 A A A C 8.9 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A A C 8.9 8.9 8.9 A A C 8.9 8.	Actuated g/C Ratio		0.52	0.52	1.00	0.33		
6.1 6.1 5.2 1884 1627 141 1112 0.12 0.30 0.029 0.23 0.57 0.49 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 8.9 12.3 2.9.5 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 8.9 12.3 1.2 29.5 9.1 1.2 1.1 1.2 1.3 1.3 1.3 1.4 1.4 A A A A A C C C C C C C C C C C C C C	Clearance Time (s)		2.0	2.0		4.9		
1884 1627 1441 1112 0.12 0.30 0.49 0.89 0.23 0.57 0.49 0.89 8.6 109 0.0 21.4 1.00 1.33 0.3 1.5 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C A A A A C C A A B C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C C C Catalon 63.6% ICU Level of Service 1.15 1.2 20.5 A A A C C C Catalon 63.6% ICU Level of Service 1.15 1.2 20.5 A A C C C C C C C C C C C C C C C C C C	Vehicle Extension (s)		6.1	6.1		5.2		
0.12	Lane Grp Cap (vph)		1854	1627	1441	1112		
023 0.57 0.49 8.6 10.9 0.0 21.4 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 3.1	v/s Ratio Prot		0.12	c0.30		c0.29		
8.6 10.9 0.89 8.6 10.9 0.0 21.4 1.00 1.00 1.00 1.33 0.3 1.5 1.2 1.1 8.9 12.3 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C C 14.7 HCM 2000 Level of Service 0.70 Sum of lost time (s) 2zation 6.36% ICU Level of Service 15.5 1.2 1.1 14.7 HCM 2000 Level of Service 14.7 HCM 2000 Level of Service 15.5 1.2 1.4 16.7 1.2 1.4 17.7 HCM 2000 Level of Service 17.8 1.2 1.2 1.3 18.9 1.2 1.3 1.3 1.3 19.9 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	v/s Ratio Perm				0.49			
8 6 10,9 0.0 21,4 1.0 1.33 0.3 1.5 1.2 29.5 8.9 12.3 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C A A A C A A A C A A A C C A A A A	v/c Ratio		0.23	0.57	0.49	0.89		
100 100 1.33 0.33 1.5 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C 8.9 8.3 29.5 A A A C 14.7 HCW 2000 Level of Service 0.70 Sum of lost time (s) 5 zation 6.36% ICU Level of Service 15	Uniform Delay, d1		9.8	10.9	0.0	21.4		
8.9 1.3 1.2 1.1 8.9 12.3 1.2 29.5 A B A C 8.9 8.3 29.5 A A A C 14.7 HCM 2000 Level of Service 2.70 Sum of lost time (s) 2.21	Progression Factor		1.00	1.00	1.00	1.33		
8.9 12.3 1.2 29.5 A B A C 8.9 8.3 29.5 A A C 14.7 HCM 2000 Level of Service cation 6.3.6% ICU Level of Service 15.1 15.1 1.2 29.5 C. C. C. C. C. C. C. C. C. C. C. C. C. C	Incremental Delay, d2		0.3	1.5	1.2	-		
A B A C 8.9 8.3 29.5 A A A C A A A C A A A C A A A C A A A C A A A C C A A A A	Delay (s)		8.9	12.3	1.2	29.2		
8.9 8.3 29.5 A A C C acity ratio 0.70 Sum of lost time (s) cation 6.36% ICU Level of Service 15	Level of Service		⋖	В	A	ပ		
A A C 14.7 HCM 2000 Level of Service 24ion 63.6% ICU Level of Service 15.0 Sum of lost time (s) 16.1 Icu of 10.0 Service 16.1 Icu of 10.0 Service 17.0 Service 18.1 Icu of 10.0 Service	Approach Delay (s)		8.9	8.3		29.5		
14.7 HCM 2000 Level of Service 2.70 Sum of lost time (s) 4.50 Sum of lost time (s) 5.50 ICU Level of Service 15	Approach LOS		⋖	⋖		ပ		
14.7 HCM 2000 Level of Service 0.70 0.70 Sum of lost time (s) zation 6.3.6% ICU Level of Service 15	Intersection Summary							
backy ratio 0.70 Sum of lost time (s) cation 63.6% ICU Level of Service 15 15	HCM 2000 Control Delay			14.7	H	SM 2000	Level of Service	В
67.0 Sum of lost time (s) zation 63.6% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.70				
Utilization 63.6% ICU Level of Service 15	Actuated Cycle Length (s)			0.79	ร	um of lost	time (s)	6.6
	Intersection Capacity Utilizat	ion		63.6%	೨	U Level o	of Service	В
	Analysis Period (min)			7				

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 3: Garnet Ave & Soledad Mtn Rd

	•	†	ţ	4	٠	•	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	112	1238	1829	555	496	140	
v/c Ratio	89.0	0.47	7.0	0.40	0.81	0.40	
Control Delay	88.1	8.3	27.7	3.4	67.7	24.1	
Oueue Delay	0.0	0.0	0.3	0.0	0.0	0.0	
Total Delay	88.1	8.3	28.0	3.4	67.7	24.1	
Queue Length 50th (ft)	24	217	813	132	234	45	
Queue Length 95th (ft)	96#	304	929	144	284	106	
Internal Link Dist (ft)		724	908		294		
Turn Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	165	2640	2376	1399	830	352	
Starvation Cap Reductn	0	0	141	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	89.0	0.47	0.82	0.40	0.56	0.40	

⁹⁵th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

7.0 7.0 0.05 4.4 2.0 165 co.03 0.68 67.9 1.00 8.4 76.3 EBL 103 103 103 100 0.97 1.00 0.95 3433 0.95 112 112 Prot Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Guare Volume (vph)
Ideas Flow (vphp)
Total Lost line (s)
Lane Util. Factor
Fit
Fit
Fit
Fit
Fit
Fit
Fit
Fit
Fit
Forecack
Satd. Flow (pcm)
Satd. Flow (pcm)
RTOR Reduction (vph)
RTOR Reduction (vph)
RTOR Reduction (vph) Tum Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s) Progression Factor Incremental Delay, d2 -ane Group Flow (vph) Actuated g/C Railo Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) v/s Ratio Prot v/s Ratio Perm ntersection Summary Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1

Synchro 9 Report Page 5 KHA Queues

Balboa Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year with Preferred LU Timing Plan: PM Peak Period

18.7 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 0.25 51.2 1.00 0.5 51.7 25.9 25.9 0.18 5.4 3.0 282 0.04 SBL 456 456 456 456 1900 5.4 0.97 3433 0.95 496 0 Prot 25.9 25.9 0.18 5.4 2.0 613 c0.14 0.81 57.2 1.00 7.3 64.5 E E 61.7 511 511 511 1900 0.85 0.85 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0m+0v 123.3 0.85 5.4 2.0 1405 0.07 0.28 0.40 2.4 1.77 1.77 555 0.77 16.2 1.48 2.0 25.9 C C C 24.5 0.80 145.0 68.1% 1683 1683 1900 4.9 0.95 1.00 1.00 3539 3539 3539 1.00 Ä 97.4 97.4 0.67 4.9 8.0 2377 c0.52 1829 EBT 1139 11139 11139 11139 11500 5.5 0.95 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.38 1238 Ϋ́ 108.2 5.5 5.6 2640 0.35 0.47 7.2 1.00 0.6 7.8 A A A A B HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (inn)
c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

(t) (t) (t) (t) (t)
1708 2222
0.49 0.63 0.5 1.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.5 1.2 0.0 0.1 0.5 0.5 0.0 0.1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
0.5 1.1 0.0 0.1 0.5 1.2 0.50h (t) 0 18 0.50h (t) 0 18 0.50h (t) 0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2
0.0 0.1 0.5 1.2 0.5 1.2 0.0 18 0.0 18 0.0 m.22 0.0 m.22
0.5 1.2 1.50th (ft) 0 18 1.95th (ft) 0 m.22
1 50th (ft) 0 18 1 95th (ft) 0 m22
(t) 0 0
700
HEHIRI DISK (II) OUG 3/4
um Bay Length (ft)
Base Capacity (vph) 3511 3539 1611
Starvation Cap Reductn 0 0 0
Spillback Cap Reductn 0 222 0
Storage Cap Reductn 0 0 0
Reduced v/c Ratio 0.49 0.67 0.03

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 4: Bond St & Garnet Ave

	•	†	<i>></i>	/	ţ	1	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4₽			₩				W.			₩_
Traffic Volume (vph)	0	1488	84	0	2044	0	0	0	46	0	0	0
Future Volume (vph)	0	1488	84	0	2044	0	0	0	46	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost unite (s)		0.4.7			0.05				100			
Edit Ciii acco		0.00			100				0.86			
Fit Protected		1.00			1.00				1.00			
Satd. Flow (prot)		3511			3539				1611			
Flt Permitted		1.00			1.00				1.00			
Satd. Flow (perm)		3511			3539				1611			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1617	91	0	2222	0	0	0	20	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1708	0	0	2222	0	0	0	20	0	0	0
Tum Type		NA			NA				Perm			Perm
Protected Phases		2			9							
Permitted Phases									2			9
Actuated Green, G (s)		145.0			145.0				145.0			
Effective Green, g (s)		145.0			145.0				145.0			
Actuated g/C Ratio		1.00			1.00				1.00			
Clearance Time (s)		4.9			4.9				4.9			
Vehicle Extension (s)		7.3			7.3				7.3			
Lane Grp Cap (vph)		3511			3539				1611			
v/s Ratio Prot		0.49			c0.63							
v/s Ratio Perm									0.03			
v/c Ratio		0.49			0.63				0.03			
Uniform Delay, d1		0.0			0.0				0.0			
Progression Factor		1.00			1.00				1.00			
Incremental Delay, d2		0.4			0.5				0.0			
Delay (s)		0.4			0.5				0.0			
Level of Service		Þ			⋖				⋖			
Approach Delay (s)		0.4			0.5			0.0			0.0	
Approach LOS		⋖			A			⋖			∢	
Intersection Summary												
HCM 2000 Control Delay			0.4	Н	:M 2000	HCM 2000 Level of Service	ervice		A			
HCM 2000 Volume to Capacity ratio	y ratio		99:0									
Actuated Cycle Length (s)			145.0	S	m of lost	Sum of lost time (s)			7.9			
Intersection Capacity Utilization	_		64.5%	⊇	J Level o	f Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 5: Mission Bay Dr & Gamet Ave

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	989	482	360	737	388	710	551	385	301	523	795
v/c Ratio	06:0	0.82	0.63	1.09	0.79	0.55	1.08	0.47	0.43	0.75	1.10	0.61
Control Delay	8.89	59.9	35.1	130.7	56.9	27.6	112.4	40.4	18.7	73.5	120.1	29.2
Queue Delay	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.2	0.0	2.0	2.2
Total Delay	8.89	59.9	35.6	130.7	56.9	27.6	112.4	40.4	19.9	73.5	122.1	31.3
Queue Length 50th (ft)	223	338	343	~385	345	218	~384	216	180	144	~558	285
Queue Length 95th (ft)	#317	411	257	#286	424	302	#210	287	281	189	#785	326
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	292		120	410		325	265		250	200		265
Base Capacity (vph)	228	832	770	329	935	759	929	1178	968	523	476	1312
Starvation Cap Reductn	0	0	89	0	0	0	0	0	302	0	72	361
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.82	69.0	1.09	0.79	0.51	1.08	0.47	0.65	0.58	1.29	0.84

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KHA Oueues

Balboa Station 5: Mission Bay Dr & Garnet Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

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Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	ŧ	₩	F	‡	*-	F	‡	*	£	*	K. K.
Traffic Volume (vph)	445	630	443	331	678	357	653	202	354	277	481	731
Future Volume (vph)	445	930	443	331	678	357	653	202	354	277	481	731
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	76.0	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	484	982	482	360	737	388	710	551	382	301	523	795
RTOR Reduction (vph)	0	0	44	0	0	25	0	0	23	0	0	48
Lane Group Flow (vph)	484	685	438	360	737	336	710	551	362	301	523	747
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	pm+ov
Protected Phases	m	80	-	7	4	2	_	9	7	2	2	n
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	22.8	34.1	61.9	27.0	38.3	55.3	27.8	48.3	75.3	17.0	37.1	59.9
Effective Green, g (s)	22.8	34.1	61.9	27.0	38.3	55.3	27.8	48.3	75.3	17.0	37.1	59.9
Actuated g/C Ratio	0.16	0.24	0.43	0.19	0.26	0.38	0.19	0.33	0.52	0.12	0.26	0.41
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	539	832	675	329	934	603	929	1178	822	402	476	1151
v/s Ratio Prot	0.14	0.19	0.12	c0.20	c0.21	0.07	c0.21	0.16	0.08	0.09	c0.28	0.10
v/s Ratio Perm			0.15			0.15			0.15			0.17
v/c Ratio	06:0	0.82	0.65	1.09	0.79	0.56	1.08	0.47	0.44	0.75	1.10	0.65
Uniform Delay, d1	0.09	52.6	32.9	29.0	49.6	35.2	28.6	38.2	21.7	61.9	54.0	34.1
Progression Factor	0.83	0.98	1.27	1.00	1.00	1:00	1.00	1:00	1:00	1.00	1.00	1.00
Incremental Delay, d2	15.7	8.2	1.5	77.3	6.7	9.0	58.3	0.5	0.1	9.9	70.8	1.0
Delay (s)	9.29	29.6	43.2	136.3	26.3	32.9	116.9	38.7	21.9	68.5	124.8	32.1
Level of Service	ш	ш	Ω	ш	ш	Ω	ш	Ω	ပ	ш	ш	Ω
Approach Delay (s)		9.99			70.4			68.5			70.3	
Approach LOS		ш			ш			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			66.3	H	CM 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	ratio		1.01									
Actuated Cycle Length (s)			145.0	S	im of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization			95.5%	೨	U Level	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

	1	ţ	•	•
Lane Group	EBT	WBT	NBR	SBR
Lane Group Flow (vph)	1442	2250	875	205
v/c Ratio	98.0	0.45	0.84	0.33
Control Delay	18.8	0.3	24.3	10.0
Oueue Delay	0.0	0.0	0.0	0.0
Total Delay	18.8	0.3	24.3	10.0
Queue Length 50th (ft)	171	0	125	29
Oueue Length 95th (ft)	#311	0	#233	89
Internal Link Dist (ft)	1151	265		
Turn Bay Length (ft)				
Base Capacity (vph)	1721	5035	1036	626
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.45	0.84	0.33

Intersection Summary
95th percentile volume exceeds capacity, queue may be bnger.
Queue shown is maximum after two cycles.

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KHA Oueues

Balboa Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	4	†	/	\	ļ	4	•	←	•	۶	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ			4413				N. N.			*-
Traffic Volume (vph)	0	1327	0	0	1986	84	0	0	802	0	0	189
Future Volume (vph)	0	1327	0	0	1986	84	0	0	802	0	0	189
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
Lane Util. Factor		0.95			0.91				0.88			1.00
Frt		1.00			0.99				0.85			0.86
Fit Protected		1.00			1.00				1.00			1.00
Satd. Flow (prot)		3539			5054				2787			1611
Flt Permitted		1.00			1.00				1.00			1.00
Satd. Flow (perm)		3539			5054				2787			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1442	0	0	2159	91	0	0	875	0	0	205
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	70	0	0	39
Lane Group Flow (vph)	0	1442	0	0	2250	0	0	0	855	0	0	166
Turn Type		NA			A				Prot			Perm
Protected Phases		∞			2 4				2			
Permitted Phases												9
Actuated Green, G (s)		23.4			49.4				18.0			18.0
Effective Green, g (s)		23.4			49.4				18.0			18.0
Actuated g/C Ratio		0.47			1.00				0.36			0.36
Clearance Time (s)		4.0							4.0			4.0
Vehicle Extension (s)		3.0							3.0			3.0
Lane Grp Cap (vph)		1676			5054				1015			587
v/s Ratio Prot		c0.41			0.45				c0.31			
v/s Ratio Perm												0.10
v/c Ratio		98.0			0.45				0.84			0.28
Uniform Delay, d1		11.5			0.0				14.4			1.1
Progression Factor		1.00			0.1				9:			1.00
Incremental Delay, d2		8.4			0.1				6.4			0.3
Delay (s)		16.3			0.1				20.8			11.4
Level of Service		2			⋖				ပ			B
Approach Delay (s)		16.3			0.1			20.8			11.4	
Approach LOS		В			⋖			ပ			В	
Intersection Summary												
HCM 2000 Control Delay			9.3	¥	HCM 2000 Level of Service	evel of S	ervice		A			
HCM 2000 Volume to Capacity ratio	ratio		0.85									
Actuated Cycle Length (s)			49.4	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization			71.5%	⊡	ICU Level of Service	f Service			O			
Analysis Period (min)			12									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 7: Balboa EB Ramps & Garnet Ave

		I	I	I	I		
	†	~	/	ţ	•	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	*	¥L.		*		¥C.	
Traffic Volume (veh/h)	1272	098	0	1470	0	337	
Future Volume (Veh/h)	1272	098	0	1470	0	337	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1383	935	0	1598	0	366	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (ft)	442			634			
pX, platoon unblocked			0.99		69.0	66.0	
vC, conflicting volume			1383		2182	692	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1359		1724	657	
tC, single (s)			4.1		8.9	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		100	6	
cM capacity (veh/h)			495		22	401	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
Volume Total	692	692	935	199	199	366	
Volume Left	0	0	0	0	0	0	
Volume Right	0	0	935	0	0	366	
cSH	1700	1700	1700	1700	1700	401	
Volume to Capacity	0.41	0.41	0.55	0.47	0.47	0.91	
Queue Length 95th (ft)	0	0	0	0	0	243	
Control Delay (s)	0.0	0:0	0:0	0:0	0:0	57.9 F	
Approach Delay (s)	0.0			0.0		57.9	
Approach LOS						L.	
Intersection Summary							
Average Delay			5.0				
Intersection Capacity Utilization	uc		62.7%	⊇	ICU Level of Service	f Service	В
Analysis Period (min)			12				

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KHA Oueues

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Lane Group EBL Lane Group Flow (vph) 372 W. Ralio 072	t					IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
rp Flow (vph)		ţ	1	٠	•	
tp Flow (vph)	EBT	WBT	WBR	SBL	SBR	
	1371	1285	93	102	313	
	0.55	0.77	0.12	0.43	0.70	
Control Delay 37.6	9.9	19.5	3.4	32.7	15.2	
Queue Delay 0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay 37.6		19.5	3.4	32.7	15.2	
Oueue Length 50th (ft) 76	. 111	213	0	40	16	
Oueue Length 95th (ft) #146		347	24	81	98	
Internal Link Dist (ft)	554	3203		201		
Tum Bay Length (ft) 215			250	155		
Base Capacity (vph) 518	3 2476	1671	796	804	867	
Starvation Cap Reductn 0	0	0	0	0	0	
Spillback Cap Reductn 0	0	0	0	0	0	
Storage Cap Reductn 0	0	0	0	0	0	
Reduced v/c Ratio 0.72	0.55	0.77	0.12	0.13	0.36	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 8: Garnet Ave & Moraga Ave

Movement Lane Configurations Traffic Volume (vph)	EBL	EBT	WBT	WBR	SBL	000	
ne Configurations affic Volume (vph)		**			ŀ	SBK	
affic Volume (vph)	ř.	t	*	*	×	*	
The state of the s	342	1261	1182	98 8	94	288	
r dulle Volume (vpm) deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.7	6.5	6.5	9.9	5.6	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	
£	1.00	1.00	1.00	0.85	1.00	0.85	
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	3539	1583	1770	1583	
-It Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	372	1371	1285	93	102	313	
RTOR Reduction (vph)	0	0	0	46	0	234	
ane Group Flow (vph)	372	1371	1285	44	102	79	
Furn Type	Prot	NA	M	Perm	Prot	Perm	
Protected Phases	2	7	9		4		
Permitted Phases				9		4	
Actuated Green, G (s)	10.3	47.8	32.3	32.3	9.2	9.2	
Effective Green, g (s)	10.3	47.8	32.3	32.3	9.2	9.2	
Actuated g/C Ratio	0.15	0.70	0.47	0.47	0.13	0.13	
Clearance Time (s)	4.4	2.7	6.5	6.5	9.6	5.6	
Vehicle Extension (s)	2.0	4.8	3.9	3.9	2.0	2.0	
Lane Grp Cap (vph)	517	2476	1673	748	238	213	
v/s Ratio Prot	c0.11	0.39	c0.36		90.00		
//s Ratio Perm				0.03		0.05	
v/c Ratio	0.72	0.55	0.77	90:0	0.43	0.37	
Uniform Delay, d1	27.6	2.0	14.9	8.6	27.1	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	0.4	2.3	0.0	0.5	0.4	
Delay (s)	31.6	5.5	17.2	8.6	27.6	27.3	
Level of Service	ပ	∢	В	A	ပ	U	
Approach Delay (s)		11.0	16.7		27.4		
Approach LOS		В	В		ပ		
ntersection Summary							
HCM 2000 Control Delay			15.2	H	M 2000 L	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	y ratio		0.70				
Actuated Cycle Length (s)			68.3	Sul	Sum of lost time (s)	time (s)	16.5
ntersection Capacity Utilization	u.		62.0%	ಶ	ICU Level of Service	Service	В
Analysis Period (min)			15				
Critical Lane Group							

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Balboa Station 9: Clairemont Dr & Garnet Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

→	SBT	933	0.87	53.6	0.0	53.6	411	496	098		1277	0	0	0	0.73
٠	SBL	376	1.04	113.0	0.0	113.0	-367	#629		120	360	0	0	0	1.04
•	NBR	473	0.74	39.0	0.0	39.0	311	446		100	635	0	0	0	0.74
•	NBT	426	0.72	62.6	0.0	62.6	1%	254	1350		831	0	0	0	0.51
•	NBL	78	0.70	95.7	0.0	95.7	70	#155		200	123	0	0	0	0.63
ţ	WBT	1211	0.94	57.9	0.0	67.6	551	#787	930		1282	0	0	0	0.94
\	WBL	282	1.06	110.5	0.0	110.5	~538	#463		220	222	0	0	0	1.06
†	EBT	1145	0.99	71.9	0.0	71.9	542	#787	3203		1153	0	0	0	0.99
•	EBL	382	96:0	0.66	0.0	0.66	180	#314		240	396	0	0	0	96:0
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

Synchro 9 Report Page 16 KHA Oueues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 9: Clairemont Dr & Garnet Ave

FEL EBI EBR WBI 351 1004 50 538 351 1004 50 538 351 1004 50 538 351 1004 50 538 351 1004 50 538 351 1004 50 538 351 1004 50 538 30.92 0.92 0.92 0.92 30.92 0.92 0.92 0.92 30.92 0.92 0.92 0.92 30.92 0.92 0.92 0.92 30.93 0.94 0.92 30.93 0.94 0.93 30.1143 0.56 30.35 2.0 30.35 2.0 31.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.16 32.01 0.33 0.17 32.01 0.	WBL 538 538 538 1900 44 0.97 1.00 0.95 0.95 3433 0.92 585 0 0.92 5	BET WBR 		[] [] [] [] [] [] [] [] [] []	SBL 346 346 1900 4,4 1,00 0,95 1770 0,95 1770 0,92 376 376 Prot	SBT 605 605 605 605 1900 5.3 0.95 1.00 3383 0.92 658 658 33 33 33 34 34 34 34 34 34 34
(s) 1004 50 588 10	538 538 538 1900 44 44 100 0.95 3433 0.95 3433 0.95 585 0 585 785 785 785 785 785 785 785 785 785		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		346 346 346 1900 4.4 1.00 0.95 1770 0.95 1770 0.95 376 376 7	605 605 605 1900 5.3 0.95 0.95 0.95 1.00 3383 0.92 658 858 33 900 NA
(s) 351 1004 50 588 1 1004 50 588 1 1004 50 588 1 1000 1900 1900 1900 1900 1900 1900	538 1900 4.4 0.97 1.00 0.95 3.433 0.92 585 585 Prot 1		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	<u> </u>	346 1900 4.4 1.00 1.00 1.00 0.95 1770 0.95 376 0 376 Prot	605 1900 5.3 0.95 0.95 0.95 1.00 3333 0.92 658 833 900 NA
) 351 1004 50 58 1900 1900 1900 1900 1900 1900 1900 1900	5.88 1900 4.4 0.97 1,00 0.95 3,433 0.95 0.92 0.92 0.92 0.92 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0		08-80	<u> </u>	346 1900 1,000 1,000 1,000 0,95 1770 0,95 376 0,92 376 1770 1770 1770 1770 1770 1770 1770 17	605 1900 5.3 0.95 0.96 1.00 3383 0.92 688 33 900 NA
1900 1900 1900 1900 1900 1900 1900 1900	1900 4.4 0.97 1.00 0.95 3433 3433 0.95 585 585 Prod 1		2 0 1 2 2 1 3 1 2 2	<u> </u>	1900 4.4 1.00 1.00 0.95 1770 0.95 1770 0.95 376 Prot	1900 5.3 0.95 0.96 1.00 3383 1.00 3383 0.92 658 338 900 NA
(s) 162 461 57 44 4 57 697 698 699 699 699 699 699 699 699 699 699	4.4 0.97 1.00 0.95 3.433 3.433 0.92 5.85 0 5.85 Prol 1		08-80	p.	4.4 1.00 1.00 0.95 1770 0.95 1770 0.92 376 Prot	5.3 0.95 0.96 1.00 3383 1.00 3383 0.92 658 33 900 NA
100 0.99 0	0.97 1.00 0.95 3433 0.95 3433 0.95 585 585 0 585 1 Prot		2 - 1 - 1 - 2		1.00 1.00 1.00 0.95 1770 0.92 376 0 376 Prot	0.95 0.96 0.96 1.00 3383 0.92 658 33 900 NA
100 099 100 09	1.00 0.95 3433 0.95 3433 0.92 585 0 585 Prot 1		8 - 8 0	je l	1.00 0.95 1770 0.95 1770 0.92 376 0 376 Prot	0.96 1.00 3383 1.00 3383 0.92 658 658 33 900 NA
(s) 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	0.95 3433 0.95 3433 0.92 585 0 585 Prot 1		2 2 2 3 7 3 7	<u>a</u>	0.95 1770 0.95 1770 0.92 376 0 376 Prot	1.00 3383 1.00 3383 0.92 658 33 900 NA
3433 3514 3433 3514	3433 0.95 3433 0.92 585 0 585 Prot		25 - 15 - 1 - 2	je l	1770 0.95 1770 0.92 376 0 376 Prot	3383 1.00 3383 0.92 658 33 900 NA
(a) 0.95 1.00 0.	0.95 3433 0.92 585 0 585 Prot 1		2 33 7	<u>a</u>	0.95 1770 0.92 376 0 376 Prot	1.00 3383 0.92 658 658 33 900 NA
HF 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	3433 0.92 585 0 585 Prot 1		25 0 7 7	直	0.92 376 0 376 Prot	3383 0.92 658 33 900 NA 4
HF 092 092 092 092 092 099 0pt) 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.92 585 0 0 585 1 Prot 1		2	l md	0.92 376 0 376 Prot	0.92 658 33 900 NA 4
ph) 382 1091 54 585 ph) 3 2 1091 54 585 ph) 382 1103 0 60 ph) 382 1103 0 60 ph) 382 1103 0 60 ph) 382 1103 0 60 ph) 382 1103 0 60 ph) 382 1103 0 60 ph) 382 1103 0 60 ph) 382 1101 0 60 ph) 382 1101 0 60 ph) 44 5.7 44 ph) 45 7 44 ph) 46 50 ph) 382 1101 0 60 ph) 46 50 ph) 47 100 ph) 48 1 1100 ph) 49 1 100 ph) 40 1	585 1 0 0 585 1 Prot 1 1		2	le le	376 0 376 Prot	658 33 900 NA 4
ph) 80 2 0 689 ph) 382 1143 0 585 ph) 82 1143 0 585 ph) Rot IA3 0 585 s) 16.2 46.1 22.6 s) 16.2 46.1 22.6 s) 0.12 0.33 0.16 s) 2.0 3.5 2.0 s) 2.0 3.5 2.0 s) 2.0 3.5 2.0 s) 0.17 0.03 0.17 c) 0.97 0.99 1.06 e2.0 47.1 59.0 d2 36.1 24.7 55.8 ph) 1.00 1.00 1.00 d2 36.1 24.7 55.8 ph) 1.00 1.00 1.00 d2 36.1 24.7 55.8 ph) 1.00 d2 47.1 55.8 ph) 1.00 d2 4	0 585 1 Prot 1 22.6			md '	376 Brot 7	33 900 NA 4
ph) 382 1143 0 585 Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA NA Prof NA NA NA NA NA NA NA NA NA NA NA NA NA	Prot 1 122.6		7	md '	376 Prot	900 A 4
(s) 16.2 46.1 22.6 s) 16.2 3.5 15.1 55.1 20.1 20.2 47.1 55.9 s) 10.2 10.0 10.0 10.0 10.0 10.0 10.0 10.0		NA 6 1.8	2	pm+	Prot 7	NA 4
(s) 16.2 46.1 22.6 s) 10.2 0.12 0.3 5.15 15.1 55.1 2.0 s) 10.1 0.3 0.17 0.10 0.10 0.10 0.10 0.10 0.10 0.10		6 1.8	2	46	7	4
(s) 16.2 46.1 22.6 (s) 16.2 46.1 22.6 0.12 0.33 0.16 4.4 5.7 4.4 5.7 4.4 5.7 4.4 3.5 1.51 551 0.11 0.33 0.17 0.97 0.99 1.06 6.2.0 47.1 59.0 0.07 0.99 1.00 6.2.0 47.1 59.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.1 4.7 55.8 6.2 4.7 55.8 6.2 4.7 55.8 6.2 4.7 55.8 6.2 4.7 55.8 6.3 6.1 1.00 1.00 1.00 1.0 1.00 1.00 1.00 1.00 1.0 1.00 1.00 1.00 1.00 1.0 1.0 1.00 1.00 1.00 1.0 1.0 1.00 1.00 1.00 1.0 1.0 1.0 1.00 1.00 1.0 1.0 1.0 1.00 1.00 1.0 1.0 1.0 1.0 1.00 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		1.8		46		
(\$) 16.2 46.1 22.6 (\$) 16.2 46.1 22.6 (\$) 16.2 46.1 22.6 (\$) 0.12 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15		1.8				
s) 16.2 46.1 22.6 0.12 0.33 0.15 0.12 0.33 0.15 0.13 0.15 0.35 2.0 3.5 0.11 0.03 0.0.17 0.97 0.99 1.06 0.97 0.99 1.06 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.99 0.10 1.00 0.00 0.00 0.00 0.00 0.00 0.00					28.7	43.2
0.12 0.33 0.16 4.4 5.7 4.4 5.7 2.0 3.5 2.0 3.5 1151 551 0.11 0.33 0.017 0.97 0.99 1.06 6.2.0 47.1 5.9.0 d2 3.6.1 2.4.7 5.9.0 d2 3.6.1 2.4.7 5.9.0 e1.00 1.00 1.00 1.00 d2 3.6.1 2.4.7 5.9.0 e1.00 1.00 1.00 d2 3.6.1 2.4.7 5.9.0 d3 3.6.1 2.4.7 5.9.0 d4 3.6.1 2.4.7 5.9.0 d5 3.6.1 2.4.7 5.9.0 d6 3.6.1 2.4.7 5.9.0 d7 3.6.1 2.4.7 5.9.0 d8 3.6.1 2.4.7 5.9.0 d9 3.6.1 2.4.7		1.8	9.0 23.5	46.1	28.7	43.2
s) 2,0 4,4 5,7 4,4 4, 5,7 2,0 4,4 3,5 2,0 3,5 2,0 1,5 1,5 1,5 1,5 1,5 1,5 1,5 1,5 1,5 1,5		.37	0	_	0.20	0.31
S		6.4	4.4 5.3	3 4.4	4.4	5.3
395 1151 551 0.11 60.33 60.17 0.97 0.99 1106 62.0 47.1 59.0 1.00 1.00 1.00 d2 36.1 24.7 558 98.1 71.9 1148 F E F F E F F C Capacity ratio 10.2 10.0 10.2 140.7 51.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0		3.0			2.0	5.6
d2 62.0 47.1 59.0 10.6 62.0 47.1 59.0 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1		274	113 591		361	1038
d2 84.7 106 62.0 47.1 59.0 1.00 1.00 1.00 1.00 d2 36.1 24.7 55.8 98.1 71.9 114.8 F E F F F F F F F F F F F F F F F F F F		.35		ľ	c0.21	c0.27
6.20 47.1 59.0 1.06 62.0 47.1 59.0 42.0 42.1 59.0 42.0 42.1 59.0 42.0 42.0 42.0 42.0 42.0 42.0 42.0 42				0.13		
62.0 47.1 59.0 d2 36.1 1.00 1.0		.94	0.69 0.72		1.04	0.87
d2 36.1 24.7 55.8 36.1 24.7 55.8 98.1 71.9 114.8 F E F 78.4 E F 78.4 2 F 78		3.0	64.5 55.5	43.1	26.0	46.0
d2 36.1 24.7 55.8 98.1 71.9 114.8 F E F F R 78.4 E E F F R 10.2 F		.00	_		1.00	1.00
98.1 71.9 114.8 F E F F F F F F F F F F F F F F F F F F		3.8		7.8	58.6	7.7
179. F E F F 78.4 E F F F F F F F F F F F F F F F F F F		6.9	ш,		114.6	53.8
78.4 E E C Delay 10.2 10.2 10.2 10.7 10.7 10.7 10.7 10.7 10.7 10.7	ட	Ш	Е		ш	O
Iny 72.1 (2.10 close) (2.10 close) (3.10 clo	7	5.7	56.8			71.2
72.1 1.02 140.7		Ш				ш
72.1 1.02 140.7						
1.02		HCM 2000 Level of Service	arvice	ш		
140.7						
/90, 100		Sum of lost time (s)		20.5		
	91.2% ICU L	ICU Level of Service		ш.		
Analysis Period (min)	15					
c Critical Lane Group						

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KHA Queues

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Balboa Station 10: Olney St & Balboa Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	3T	88	0.48	4.	0:	4	53	31	44		1150	09	0	0	0.26
†	SBT	2	õ	15	0	15	_,	-	2		Ξ	Ĭ			0.
•	NBT	442	0.73	22.2	0.0	22.2	93	216	328		1172	6	0	0	0.38
ţ	WBT	269	0.43	15.0	0.0	15.0	49	157	936		1424	0	0	0	0.42
•	WBL	152	0.89	78.4	0.0	78.4	39	#183		120	171	0	0	0	0.89
†	EBT	427	0.45	17.0	0.0	17.0	47	106	1172		1479	0	0	0	0.29
1	EBL	36	0.19	27.1	0.0	27.1	6	39		120	212	0	0	0	0.17
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 10: Olney St & Balboa Ave

Movement EB1 EB1 MB1		^	†	/	/	ţ	4	•	←	•	٠	-	•
1	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
33 353 40 140 524 24 20 340 46 19 207 130 353 40 140 524 24 20 340 46 19 207 140 150 140 1524 24 20 340 46 19 207 140 100 1900	Lane Configurations	*	₩\$		<i>y</i> -	₩\$			4			4	
1900 1900	Fraffic Volume (vph)	33	353	40	140	524	24	20	340	46	19	207	39
1900 1900	uture Volume (vph)	33	353	40	140	524	24	20	340	46	19	207	39
1,00 0,95 1,00 0,95 1,00	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0,95 1,00 0,95 1,00	Fotal Lost time (s)	4.4	5.1		4.4	2.0			4.9			4.9	
1,00 0,98 1,00 0,99 0,98 0,98 0,98 1,00 0,95 1,00 0,95 1,00 1,00 1,00 1,00 0,95 1,00	Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
100	だ	1.00	0.98		1.00	0.99			0.98			86:0	
1770 3486 1770 3516 1830 1819 095 100 095 100 097 1819 1770 3486 1770 3516 1786 1752 1770 3486 1770 26 22 370 50 21 255 0.92 0	-It Protected	0.95	1.00		0.95	1.00			1.00			1.00	
1095 1000 0995 1000 10997 1096 11700 3486 11710 3486 11710 3486 11710 3486 11710 3486 11710 3486 11710 3486 11710 3486 384 43 152 570 286 22 370 509 209	Satd. Flow (prot)	1770	3486		1770	3516			1830			1819	
1770 3486	-It Permitted	0.95	1.00		0.95	1.00			0.97			96:0	
1	Satd. Flow (perm)	1770	3486		1770	3516			1786			1752	
36 384 43 152 570 26 22 370 50 21 225 36 112 0 0 152 570 0 0 88 0 0 11 36 112 0 152 570 0 0 88 0 0 11 4 163 163 48 194 165 165 165 003 031 009 037 032 032 44 51 04 50 037 032 20 28 20 25 20 25 20 28 20 28 20 25 61 1092 163 1311 566 556 002 0.12 0.09 0.17 0.024 0.16 014 0.05 0.38 0.45 0.17 0.024 0.17 010 1.00 1.00 1.00 1.00 1.00 1.00 98 0.24 12.3 12.5 12.6 14.7 157 249 21.6 14.7 189 204 HCM 2000 Level of Service C Capacity ratio 0.66 Capacity ratio 0.67 Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
1	Adj. Flow (vph)	36	384	43	152	570	26	22	370	20	21	225	42
36	RTOR Reduction (vph)	0	12	0	0	4	0	0	∞	0	0	=	0
Prot NA Prof NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA NA Perm NA NA NA NA NA NA NA NA NA NA NA NA NA	-ane Group Flow (vph)	36	415	0	152	592	0	0	434	0	0	277	0
5 2 1 6 8 4 1.8 16.3 4.8 19.4 16.5 4 1.8 16.3 4.8 19.4 16.5 6 1.8 16.3 4.8 19.4 16.5 6 0.03 0.31 0.09 0.37 0.32 4.9 6 2.0 2.8 2.0 2.5 2.0 4.9 6 4.9<	Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
1.8 16.3 4.8 19.4 8 14.5	Protected Phases	2	2		_	9			00			4	
1.8 16.3 48 19.4 16.5 1.8 16.3 48 19.4 16.5 1.8 16.3 48 19.4 16.5 1.8 16.3 48 19.4 16.5 1.8 16.3 0.09 0.37 0.02 2.0 2.5 2.0 2.0 2.5 2.0 2.0 0.02 2.1 0.09 0.17 0.09 2.1 0.09 0.17 0.09 2.1 0.00 0.17 0.09 2.1 0.00 0.17 0.09 2.2 1.2 1.2 16.0 2.2 1.2 1.2 16.0 2.3 1.2 1.2 16.0 2.4 1.3 9 2.3 1.2 16.0 2.5 1.5 2.4 1.2 2 2.6 2.7 1.2 2 2.7 1.2 2 2.8 E B C C Capacity ratio 0.66 2.9 4 HCM 2000 Level of Service C Capacity ratio 0.66 2.9 8 HCM 2000 Level of Service B 2.0 8 HCM 2000 Level of Service B 3.4 1.4 1 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	Permitted Phases							∞			4		
1,8 16,3 4,8 19,4 16,5 0,03 0,31 0,037 0,32 4,4 5,1 4,4 5,0 4,9 4,4 5,1 4,4 5,0 6,2 4,4 5,1 6,1 1,0 2,0 2,5 6,1 1092 163 1311 566 6,1 1092 163 1311 566 7,2 7,3 7,3 7,3 7,3 7,3 7,3 7,3 7,5 7,4 7,3 7,3 7,5 7,4 7,3 7,3 7,5 7,5 8 E B C 7,6 7,6 7,6 7,7 7,7 7,5 7,6 7,8 7,8 7,7 7,8 7,8 7,8 7,9 7,9 7,9 7,1 7,3 7,2 7,1 7,3 7,2 7,1 7,3 7,3 7,1 7,3 7,4 7,2 7,4 7,5 8 E B C 9,8 0,06 1,00 10,0	Actuated Green, G (s)	<u>6</u>	16.3		4.8	19.4			16.5			16.5	
0.03	ffective Green, g (s)	9.	16.3		4.8	19.4			16.5			16.5	
14 51 44 50 49 15 28 2.0 2.5 2.0 161 1092 163 1311 566 1002 0.12 0.09 0.017 0.024 0.59 0.38 0.93 0.45 0.077 0.59 0.38 0.93 0.45 0.077 0.59 0.38 0.91 0.45 0.077 0.59 0.38 0.39 0.45 0.077 0.59 0.39 0.45 0.077 0.077 0.59 0.59 0.59 0.2 0.2 0.2 0.59 0.59 0.59 0.2 0.2 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.50 0.50 0.50 0.59 0.50 0.50 0.50 0.59 0.50 0.50 0.50 0.59 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	ctuated g/C Ratio	0.03	0.31		0.09	0.37			0.32			0.32	
S 2.0 2.8 2.0 2.5 2.0 1 61 1092 163 1311 566 1 0.02 0.12 0.09 0.017 0.024 0.059 0.38 0.93 0.45 0.77 0.0 1.0 1.0 1.0 1.00 0.0 1.0 1.0 1.0 1.00 0.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0	Clearance Time (s)	4.4	5.1		4.4	2.0			4.9			4.9	
1002 163 1311 566 1002 0.12 0.09 0.17 0.024 1005 0.38 0.93 0.45 0.77 100 1.00 1.00 1.00 1.00 247 139 2.34 12.3 16.0 100 1.00 1.00 1.00 1.00 248 14.1 73.7 12.5 5.6 248 248 2.34 2.34 2.16 249 260 2.16 2.49 2.16 249 20.4 HCM 2000 Level of Service C 100 1.00 1.00 1.00 101 1.00 1.00 1.00 102 1.00 1.00 1.00 103 1.00 1.00 1.00 104 1.00 1.00 1.00 105 1.00 1.00 1.00 106 1.00 1.00 1.00 107 1.00 1.00 1.00 108 1.00 1.00 1.00 109 1.00 1.00 1.00 100 1.00 1.00 1.00	(ehicle Extension (s)	2.0	2.8		2.0	2.5			2.0			2.0	
0.02 0.12 0.09 0.017 0.024 0.59 0.38 0.93 0.45 0.77 2.4.7 13.9 2.3.4 12.3 16.0 4.2 24.7 13.9 2.3.4 12.3 16.0 4.2 34.8 0.2 5.0.2 5.6 C B E B C C C B E B C C I S C C C C C C C C C C C C C C C C C C	ane Grp Cap (vph)	19	1092		163	1311			999			222	
0.59 0.38	/s Ratio Prot	0.02	0.12		60.00	c0.17							
0.59 0.38 0.93 0.45 0.77 24.7 13.9 23.4 12.3 16.0 24.7 13.9 23.4 12.3 16.0 24.7 13.9 23.4 12.3 16.0 24.8 20.2 2.6 2.6 34.5 14.1 73.7 12.5 21.6 15.7 24.9 21.6 15.7 24.9 21.6 15.8 24.9 21.6 15.9 20.4 HCM 2000 Level of Service C 10 Capacity ratio 0.66 Sum of lost time (\$\$) 14.4 11	/s Ratio Perm								c0.24			0.16	
247 139 234 123 160 d2 9.8 0.100 1.00 1.00 1.00 d2 9.8 1.41 73.7 12.5 5.6 C B E B C C C C 15.7 24.9 21.6 Individual control of the contr	/c Ratio	0.59	0.38		0.93	0.45			0.77			0.50	
100 100 100 100 100 100 100 2	Jniform Delay, d1	24.7	13.9		23.4	12.3			16.0			14.4	
d2 9,8 0.2 50.2 0.2 5.6 34,5 14,1 73.7 12.5 21.6 7.6 C B E B C C Isy 24,9 21.6 C C Delay 20.4 HCM 2000 Level of Service C C In (c) Capacity ratio 0.66 Sum of lost time (s) 14.4 14.4 yth Utilization 56.9% ICU Level of Service B B n) 15 15 14.4 B	Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
34.5 14.1 73.7 12.5 21.6 1.7 1.5 1.6 1.7 1.5 1.6 1.6 1.7 1.5 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	ncremental Delay, d2	8.6	0.2		50.2	0.2			9.9			0.3	
C B E B C C 15.7 24.9 21.6 C C B M C C C C C C C C C C C C C C C C	Jelay (s)	34.5	14.1		73.7	12.5			21.6			14.7	
15.7 24.9 21.6 B C C C Delay Delay 10.0capacity ratio 10.0capa	evel of Service	ပ	В		ш	В			ပ			В	
20.4 HCM 2000 Level of Service 20.4 HCM 2000 Level of Service 50.6 52.0 Sum of lost time (s) 14, 56.9% ICU Level of Service 15.9% ICU Level of Service	opproach Delay (s)		15.7			24.9			21.6			14.7	
20.4 HCM 2000 Level of Service 0.66 52.0 Sum of lost time (s) 14, 56.9% ICU Level of Service 15	Approach LOS		В			ပ			O			В	
20.4 HCM 2000 Level of Service 0.66 5.20 Sum of lost time (s) 14 56.9% ICU Level of Service 15	ntersection Summary												
0.66 52.0 Sum of lost time (s) 56.9% ICU Level of Service 15	HCM 2000 Control Delay			20.4	Ĭ	CM 2000	Level of S	Service		U			
52.0 Sum of lost time (s) 56.9% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		99.0									
56.9% ICU Level of Service 15	Actuated Cycle Length (s)	,		52.0	S	im of lost	time (s)			14.4			
Analysis Period (min) 15	ntersection Capacity Utilizat	ion		26.9%	೨	U Level o	of Service			В			
	Analysis Period (min)			15									

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KHA Queues

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Balboa Station 11: Olney St & Grand Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

SBT	393	0.99	85.5	14.5	100.0	324	# 209	328		445	48	0	0	0.99	
NBT	351	0.64	40.4	0.0	40.4	234	331	315		613	0	0	0	0.57	
WBT	1486	080	26.0	0.0	26.0	314	416	1076		1849	0	0	0	0.80	
WBL	146	0.79	86.1	0.0	86.1	133	#221		20	506	0	0	0	0.71	
EBT	1073	99.0	31.8	0.0	31.8	396	495	276		1620	0	0	0	99.0	
EBL	45	0.54	84.6	0.0	84.6	36	#87		20	06	0	0	0	0.50	
Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	
	EBL EBT WBL WBT NBT	Flow (vph) 45 1073 146 1486 351	Ip EBL EBT WBL WBT NBT Ip Flow (vph) 45 1073 146 1486 351 0.54 0.66 0.79 0.80 0.64	ID EBL EBT WBL WBT NBT np Flow (vpt) 45 1073 146 138 351 np Flow (vpt) 054 066 079 080 064 say 84.6 31.8 86.1 26.0 40.4	ID EBI EBT WBL WBT NBT IpFlow (vph) 45 1073 146 1486 351 IpFlow (vph) 6.54 0.66 0.79 0.89 0.64 Alay 8.46 31.8 86.1 26.0 40.4 Alay 0.0 0.0 0.0 0.0 0.0	Film (vph) 45 1073 146 1486 351 100 (vph) 45 1073 146 1486 351 1054 0.66 0.79 0.80 0.64 y 84.6 31.8 86.1 26.0 40.4 84.6 31.8 86.1 26.0 40.4 84.6 31.8 86.1 26.0 40.4	Ip EBL EBT WBL WBT NBT IpFlow (vph) 45 1073 146 1486 351 Alay 0.54 0.66 0.79 0.80 0.64 Alay 0.6 0.0 0.0 0.0 0.0 Alay 0.0 0.0 0.0 0.0 0.0 Alay 84.6 31.8 86.1 26.0 40.4 Alay 39 396 133 314 234	EBL EBT WBL WBT NBT	Flow (vph) 45 1073 146 1486 351 510w (vph) 45 1073 146 1486 351 51 51 51 51 51 51 51 51 51 51 51 51 5	File (vph) 45 1073 146 1486 351 1084 (vph) 45 1073 146 1486 351 1054 0.66 0.79 0.80 0.64 104 1054 0.64 105	by) 45 1073 146 1486 351 0.54 0.66 0.79 0.80 0.64 84.6 31.8 86.1 26.0 40.4 0.0 0.0 0.0 0.0 0.0 84.6 31.8 86.1 26.0 40.4 0.1 39 138 86.1 26.0 40.4 0.1 39 138 86.1 314 234 0.1 495 #221 416 331 276 50 1076 315 90 1620 206 1849 613	(1)	Hell RBT WBL WBT NBT NBT NBT NBT NBT NBT NBT NBT NBT N	EBL EBT WBL WBT NBT NBT	EBL EBT WBL WBT NBT 0 45 1073 146 1486 351 0 0.54 0.66 0.79 0.80 0.64 84.6 31.8 86.1 26.0 40.4 84.6 31.8 86.1 26.0 40.4 1 39 396 12.2 40.4 40.4 1 39 396 #221 416 331 50 495 #221 416 331 50 6 50 0 0 10 0 0 0 0 10 0 0 0 0 0 10 0 0 0 0 0 10 0 0 0 0 0 10 0 0 0 0 0

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 11: Olney St & Grand Ave

Movement EBI EBI EBI EBI WBI		•	†	~	/	ţ	4	•	•	•	•	→	•
1900 1900	Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1	-ane Configurations	*	₩₽		je-	₩₽			4			4	
190 41 920 57 134 1151 216 30 174 119 190 1900	Fraffic Volume (vph)	41	930	22	134	1151	216	30	174	119	94	213	54
1900 1900	uture Volume (vph)	41	930	22	134	1151	216	30	174	119	94	213	54
44 5.1 44 4.9 4.9 4.9 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.92 0.92 0.92 1.00 0.95 1.00 0.92 0.92 0.92 1.00 0.95 1.00 0.92 0.92 0.92 1.00 0.95 1.00 0.95 1.00 1.00 0.04 0.04 0.04 0.05 0.04 1.00 0.04 0.04 0.04 0.04 1.00 0.04 0.04 0.04 0.04 1.00 0.00 0.08 0.04 0.03 1.00 0.00 0.08 0.04 0.03 1.00 0.00 0.08 0.04 0.03 1.00 0.00 0.08 0.04 0.04 1.00 0.00 0.08 0.04 0.09 1.00 0.00 0.08 0.09 0.09 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 095	Fotal Lost time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
100 099	ane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
(c) 5.5 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1 1	1.00	0.99		1.00	86.0			0.95			0.98	
1770 3569 1770 3455 1762 1770 3569 1770 3455 1762 1770 3569 1770 3455 1633 1770 3569 1770 3455 1633 1770 3569 1770 3455 1633 1781 255 25 26 26 26 26 1781 255 26 26 26 26 1782 26 26 26 26 26 1783 25 26 26 26 26 1783 25 26 26 26 1784 27 27 27 27 1784 27 27 27 27 1785 27 27 27 1785 27 27 27 1785 27 27 27 1785 27 27 27 1785 27 27 27 1785 27 1785 27	It Protected	0.95	1.00		0.95	1.00			1.00			0.99	
1770 3509	satd. Flow (prot)	1770	3209		1770	3455			1762			1802	
HF 092 092 092 092 092 092 092 092 092 092	It Permitted	0.95	1.00		0.95	1.00			0.92			99.0	
HF 092 092 092 092 092 092 092 092 092 092	satd. Flow (perm)	1770	3209		1770	3455			1633			1205	
1011 62 146 1251 235 33 189 129 1011 62 146 1251 235 33 189 129 1011 10	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
ph) 0 3 0 0 10 0 0 17 0 0 17 0 0 17 0 0 17 0 0 17 0 0 17 0 0 17 0 0 17 0 0 17 0 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 0	(dj. Flow (vph)	45	1011	62	146	1251	235	33	189	129	102	232	26
Piot NA Piot NA Perm NA	TOR Reduction (vph)	0	m	0	0	10	0	0	17	0	0	2	0
Prof. NA Prof. NA Perm NA	ane Group Flow (vph)	45	1070	0	146	1476	0	0	334	0	0	388	0
(s) 5.5 61.8 14.0 70.5 8 43.8 (s) 5.5 61.8 14.0 70.5 8 43.8 (s) 6.6 61.8 14.0 70.5 8 43.8 (s) 6.6 61.8 14.0 70.5 8 43.8 (s) 6.6 61.8 14.0 70.5 9 43.8 (s) 6.6 61.0 6.5 9 6.5 9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	urn Type	Prot	¥		Prot	NA		Perm	Ä		Perm	NA	
(s) 5.5 6.18	Protected Phases	2	2		-	9			∞			4	
(s) 5.5 61.8 140 70.5 43.8 (s) 5.5 61.8 140 70.5 43.8 (s) 5.5 61.8 140 70.5 43.8 (s) 6.5 61.8 140 70.5 43.8 (s) 6.5 61.8 140 70.5 43.8 (s) 6.4 6.1 6.1 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2	Permitted Phases							∞			4		
S	Actuated Green, G (s)	5.5	61.8		14.0	70.5			43.8			43.8	
0.04 0.46 0.10 0.53 0.33 4.4 5.1 4.4 4.9 4.9 4.9 2.0 2.0 2.0 2.0 7.2 1618 184 1817 533 0.03 0.30 0.008 0.043 0.20 0.62 0.66 0.79 0.81 0.63 0.63 2.80 5.86 2.63 3.82 0.04 1.00 1.00 1.00 1.00 0.05 1.48 30.1 1.89 2.51 3.98 0.05 0.05 0.05 0.05 0.05	Iffective Green, g (s)	5.5	61.8		14.0	70.5			43.8			43.8	
14 5.1 44 4.9 4.9 4.9 2.0 5.4 2.0 5.5 2.0 72 1618 184 1817 533 0.03 0.30 0.08 0.043 0.20 0.05 0.06 0.79 0.81 0.05 0.05 0.06 0.79 0.83 1.00 0.01 1.00 1.07 0.83 1.00 0.02 1.15 2.1 15.9 3.3 1.7 1.03 1.00 1.07 0.88 25.1 39.8 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	Actuated g/C Ratio	0.04	0.46		0.10	0.53			0.33			0.33	
S	Slearance Time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
72 1618 184 1817 533 0.03 0.30 0.08 0.43 0.20 0.62 0.66 0.79 0.81 0.63 6.32 2.80 5.86 2.6.3 3.82 0.00 1.00 1.07 0.83 1.00 0.10 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	/ehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
0.03	ane Grp Cap (vph)	72	1618		184	1817			533			393	
0.62 0.66 0.79 0.81 0.20 0.83	/s Ratio Prot	0.03	0.30		80.00	c0.43							
0.62 0.66 0.79 0.81 0.63 0.62 2.80 5.86 2.63 3.82 0.63 2.80 5.86 2.63 3.82 0.63 2.10 1.07 1.07 1.00 0.63 30.1 7.8 25.1 39.8 0.64 30.1 7.8 25.1 39.8 0.65 2.1 3.9	/s Ratio Perm								0.20			c0.32	
63.2 28.0 58.6 26.3 38.2 38.2 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10	/c Ratio	0.62	99.0		0.79	0.81			0.63			0.99	
d2 11.5 2.1 15.9 3.3 1.00 7.4.8 30.1 78.8 25.1 39.8 F. C. E. C. C. D. C. C. C. D. C. C. C. D. C. C. D. C. C. C. D. C. C. C. D. C. C. C. D. C. C. C. C. D. C. C. C. C. D. C.	Jniform Delay, d1	63.2	28.0		9.89	26.3			38.2			44.8	
d2 11.5 2.1 15.9 3.3 1.7 74.8 30.1 78.8 25.1 39.8	Progression Factor	1.00	1.00		1.07	0.83			1.00			1.00	
74.8 30.1 788 25.1 39.8 P E	ncremental Delay, d2	11.5	2.1		15.9	3.3			1.7			41.7	
E C E C D D 39.8 31.9 29.9 39.8 C D D C C D D C C D D C C D D C C D D C C D D C C D D C C D C C D D C C D C C D D C C D C C D D C C C D D C C C D D C C C D D C C C D D C C C D C C C D D C C C D C C C D D C C C C D D C C C C D C C C C D D C C C C D D C C C C D D C C C D D C C C D D C C C D D C C D D C C D	oelay (s)	74.8	30.1		78.8	25.1			39.8			86.5	
31.9 29.9 39.8 C C D D Selay 37.9 HCM 2000 Level of Service 10 Capacity ratio 0.89 Sum of lost time (s) 134.0 Sum of lost time (s) 146% ICU Level of Service 15 CO Company of 15 CO Level of Service 15 CO Company of 15 CO Control of Service 15 CO Control of Service 16 CO CO CONTROL OF 17 CONTROL OF 17 CONTROL OF 17 CONTROL OF 17	evel of Service	ш	ပ		ш	ပ			۵			ш	
C C C D 37.9 HCM 2000 Level of Service 0.89 Sum of lost time (s) 134.0 Sum of lost time (s) 94.6% ICU Level of Service 15	pproach Delay (s)		31.9			29.9			39.8			86.5	
37.9 HCM 2000 Level of Service 0.89 134.0 Sum of lost time (s) 94.6% ICU Level of Service 15	pproach LOS		ပ			ပ			Ω			ш	
37.9 HCM 2000 Level of Service 0.89 134.0 Sum of lost time (s) 14 94.6% ICU Level of Service 15	ntersection Summary												
0.89 134.0 Sum of lost time (s) 14 94.6% ICU Level of Service 15	4CM 2000 Control Delay			37.9	Ĭ	3M 2000	Level of S	ervice		Q			
134.0 Sum of lost time (s) 94.6% ICU Level of Service 15	ICM 2000 Volume to Capacity	v ratio		0.89									
2ation 94.6% 1	ctuated Cycle Length (s)			134.0	S	im of lost	time (s)			14.4			
nalysis Period (min) 15	ntersection Capacity Utilization	_		94.6%	2	U Level o	of Service			ш			
Mallocal Lower Comme	analysis Period (min)			15									
	Critical Lane Group			!									

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Balboa Station 12: Grand Ave & Culver St

Horizon Year with Preferred LU Timing Plan: PM Peak Perlod

	^	†	ļ	٤	
Lane Group	EBL	EBT	WBT	SBL	
Lane Group Flow (vph)	22	1265	1676	116	
v/c Ratio	0.27	0.43	0.61	0.67	
Control Delay	71.5	2.1	6.7	71.0	
Oueue Delay	0.0	0.0	0.0	0.0	
Total Delay	71.5	2.1	6.7	71.0	
Queue Length 50th (ft)	70	63	316	68	
Queue Length 95th (ft)	m30	84	485	149	
Internal Link Dist (ft)		1076	211	186	
Tum Bay Length (ft)	22				
Base Capacity (vph)	146	2945	2748	344	
Starvation Cap Reductn	0	0	9	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.15	0.43	0.61	0.34	
Intersection Summary					
mediaconol community					
 Wolume for 95th percentile queue is metered by upstream signal. 	ile queue i	s metered	l by upstr	am signal.	

KHA Queues

Balboa Station Horizon Year with Preferred LU 12: Grand Ave & Culver St Timing Plan: PM Peak Period

	•	†	L	ţ	4	٠	•	
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR	
Lane Configurations	×	+	4	₩₽		>		
Traffic Volume (vph)	70	1164	0	1471	71	79	28	
Future Volume (vph)	20	1164	0	1471	71	79	28	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.1		4.9		4.9		
Lane Util. Factor	1.00	0.95		0.95		1.00		
Frt	1.00	1.00		0.99		0.97		
Fit Protected	0.95	1.00		1.00		96:0		
Satd. Flow (prot)	1770	3539		3515		1733		
FIt Permitted	0.95	1.00		1.00		96:0		
Satd. Flow (perm)	1770	3539		3515		1733		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	77	1265	0	1599	11	98	30	
RTOR Reduction (vph)	0	0	0	2	0	=	0	
Lane Group Flow (vph)	22	1265	0	1674	0	105	0	
Turn Type	Prot	₹	Prot	NA		Prot		
Protected Phases	2	2	_	9		4		
Permitted Phases								
Actuated Green, G (s)	4.3	111.5		103.0		12.5		
Effective Green, g (s)	4.3	111.5		103.0		12.5		
Actuated g/C Ratio	0.03	0.83		0.77		0.09		
Clearance Time (s)	4.4	2.1		4.9		4.9		
Vehicle Extension (s)	5.0	4.2		4.1		2.0		
Lane Grp Cap (vph)	26	2944		2701		161		
v/s Ratio Prot	0.01	c0.36		c0.48		90.00		
v/s Ratio Perm								
v/c Ratio	0.39	0.43		0.62		0.65		
Uniform Delay, d1	9.89	2.9		8.9		28.7		
Progression Factor	1.07	0.53		0.77		1:00		
Incremental Delay, d2	1.3	0.3		0.9		7.0		
Delay (s)	69.3	1.9		6.2		65.7		
Level of Service	ш	V		V		ш		
Approach Delay (s)		3.0		6.2		65.7		
Approach LOS		A		⋖		ш		
Intersection Summary								
HCM 2000 Control Delay			7.1	Н	HCM 2000 Level of Service	Level of S	service	A
HCM 2000 Volume to Capacity ratio	y ratio		0.62					
Actuated Cycle Length (s)			134.0	S	Sum of lost time (s)	time (s)		14.4
Intersection Capacity Utilization	E		57.2%	೨	ICU Level of Service	f Service		В
Analysis Period (min)			15					
c Critical Lane Group								
L								

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Balboa Station Horizon Year with Preferred LU 13: Lee St & Grand Ave Timing Plan: PM Peak Period

_	NBL	20	0.45	43.8	0.2	44.0	17	26	337		424	0	114	0	0.16	
	WBT	1677	0.53	5.6	0.1	2.7	121	195	1401		3173	0	340	0	0.59	
*	WBL	104	0.63	74.4	0.0	74.4	88	147		400	176	0	0	0	0.59	
†	EBT	1342	0.50	3.7	0.1	3.8	126	152	211		5696	276	0	0	0.55	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

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Balboa Station Horizon Year with Preferred LU 13: Lee St & Grand Ave Timing Plan: PM Peak Period

EBT 1200 1200 1200	2					
	EBK	WBL	WBT	NBL	NBR	
		×	**	Þ		
	32	%	1543	. 82	28	
	33	%	1543	18	28	
	1900	1900	1900	1900	1900	
		4.4	5.4	4.9		
0.95		1.00	0.95	1.00		
1.00		1.00	1.00	0.92		
1.00		0.95	1.00	86.0		
3524		1770	3539	1678		
1.00		0.95	1.00	86.0		
3524		1770	3539	1678		
	0.92	0.92	0.92	0.92	0.92	
1304	38	104	1677	70	30	
	0	0	0	53	0	
1341	0	104	1677	71	0	
NA		Prot	NA	Prot		
2		-	9	00		
101.6		12.6	118.1	9.6		
101.6		12.6	118.1	9.6		
0.76		60.0	0.88	0.04		
4.9		4.4	5.4	4.9		
4.0		2.0	4.4	2.0		
2671		166	3119	70		
0.38		90.00	c0.47	00.01		
0.50		0.63	0.54	0.30		
6.3		58.4	1.8	62.3		
0.44		1.00	1.00	1.00		
9.0		5.2	0.7	6:0		
3.4		63.7	2.5	63.2		
∢		ш	⋖	ш		
3.4			0.9	63.2		
Α			A	ш		
HCM 2000 Control Delay		5.8	Н	M 2000 L	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio		0.54				
Actuated Cycle Length (s)		134.0	S	Sum of lost time (s)	time (s)	14.2
ntersection Capacity Utilization		54.8%	⊇	CU Level of Service	Service	А
		15				

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Balboa Station
Horizon Year with Preferred LU
14: Grand Ave & Figueroa Blvd
Timing Plan: PM Peak Period

12 12 13 13 13 14 13 14 15 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	
125 1237 0.74 0.35 98.4 0.3 0.0 0.0 98.8 0.3 138 0 0.0 2.08 0.0 2.08 0.0 2.08 9.0 9.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
98.4 0.3 98.4 0.3 0.0 0.0 98.4 0.3 1.38 0 2.08 0 2.09 605 90 0	
98.4 0.3 0.0 0.0 98.4 0.3 138 0 208 0 249 3539 0	
0.0 0.0 98.4 0.3 138 0 208 0 605 90 249 3539 :	
98.4 0.3 138 0 208 0 605 90 249 3539 :	
138 0 208 0 605 90 249 3539 2	
208 0 605 90 249 3539 2 0 0	
605 90 249 3539 0 0	
90 249 3539 0 0	
249 3539	
0 0	
Spiliback Cap Reductn 0 0 0	
Storage Cap Reductn 0 0 0	
Reduced v/c Ratio 0.50 0.35 0.94	

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Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 14: Grand Ave & Figueroa Blvd

		Ť		,	ŀ	•	
Movement	EB	EBT	WBT	WBR	SBL	SBR	
ane Configurations	¥	ŧ	₽				
raffic Volume (vph)	115	1138	1515	20	0	0	
uture Volume (vph)	115	1138	1515	02	0	0	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
otal Lost time (s)	4.4	5.3	5.3				
-ane Util. Factor	1.00	0.95	0.95				
	1.00	1.00	0.99				
Flt Protected	0.95	1.00	1.00				
Satd. Flow (prot)	1770	3539	3516				
Flt Permitted	0.95	1.00	1.00				
Satd. Flow (perm)	1770	3539	3516				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	125	1237	1647	9/	0	0	
REDICTION (vph)	0	0	-	0	0	0	
.ane Group Flow (vph)	125	1237	1722	0	0	0	
Type	Prot	NA	NA				
Protected Phases	2	2	9				
Permitted Phases							
Actuated Green, G (s)	16.4	170.0	143.9				
Effective Green, g (s)	16.4	170.0	143.9				
Actuated g/C Ratio	0.10	1.00	0.85				
Clearance Time (s)	4.4	5.3	5.3				
Vehicle Extension (s)	2.0	4.4	4.4				
ane Grp Cap (vph)	170	3539	2976				
//s Ratio Prot	c0.07	0.35	c0.49				
//s Ratio Perm							
//c Ratio	0.74	0.35	0.58				
Jniform Delay, d1	74.7	0.0	3.9				
Progression Factor	1.00	1.00	4.48				
ncremental Delay, d2	13.2	0.3	9.0				
Delay (s)	87.9	0.3	18.2				
evel of Service	ш	¥	В				
Approach Delay (s)		8.3	18.2		0.0		
Approach LOS		A	В		⋖		
ntersection Summary							
HCM 2000 Control Delay			13.8	H	M 2000 I	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	ty ratio		0.61				
Actuated Cycle Length (s)			170.0	Su	Sum of lost time (s)	ime (s)	12.7
ntersection Capacity Utilization	uo		28.6%	⊇	ICU Level of Service	Service	В
Analysis Period (min)			7				
TIME COLOR TIME			Ω				

Synchro 9 Report Page 27

KHA Queues

Balboa Station 15: Grand Ave & Mission Bay Dr

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	4	†	ţ	✓	٠	•	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	93	1141	1438	1251	1065	253	
v/c Ratio	0.74	0.53	0.81	0.71	0.92	0.16	
Control Delay	108.7	21.1	45.0	17.7	65.0	0.2	
Queue Delay	0.0	0.2	3.7	0.5	47.9	0.0	
Total Delay	108.7	21.3	45.7	18.2	112.9	0.2	
Queue Length 50th (ft)	103	384	718	271	623	0	
Queue Length 95th (ft)	#180	462	964	290	269	0	
Internal Link Dist (ft)		773	536		492		
Tum Bay Length (ft)	225					150	
Base Capacity (vph)	141	2143	1784	1767	1233	1583	
Starvation Cap Reductn	0	293	259	171	289	0	
Spillback Cap Reductn	0	26	26	136	0	181	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	99:0	0.62	0.94	0.78	1.13	0.18	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 15: Grand Ave & Mission Bay Dr

																																				Service D		15.0	O		
•	SBR	*	233	1900	4.0	1.00	0.85	1.00	1583	1.00	1583	0.92	253	0	253	Free		Free	170.0	170.0	1.00			1583		0.16	0.16	0.0	1:00	0.5	0.2	⋖				HCM 2000 Level of Service		time (s)	ICU Level of Service		
۶	SBL	£	086	1900	4.9	76.0	1.00	0.95	3433	0.95	3433	0.92	1065	0	1065	Prot	4		57.2	57.2	0.34	4.9	3.6	1155	c0.31		0.92	54.3	0.97	11.3	64.1	ш	51.8	O		CM 2000		Sum of lost time (s)	U Level o		
4	WBR	K.	1151	1900	5.7	0.88	0.85	1.00	2787	1.00	2787	0.92	1251	362	886	Prot	9		82.8	82.8	0.50	2.7	4.6	1406	0.32		0.63	30.6	1.24	<u></u>	39.8	۵				Ĭ		S	೨		
ţ	WBT	‡	1323	1900	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	1438	0	1438	¥	9		82.8	82.8	0.50	2.7	4.6	1786	c0.41		0.81	35.1	1.06	3.3	40.4	۵	40.1	D		39.8	0.84	170.0	81.8%	15	
†	EBT	ŧ	1050	1900	4.9	0.95	1.00	1.00	3539	1.00	3539	0.92	1141	0	1141	¥	2		103.0	103.0	0.61	4.9	3.6	2144	0.32		0.53	19.5	1.00	0.9	20.4	ပ	26.1	ပ							
4	EBL	*	98	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	93	0	93	Prot	2		12.0	12.0	0.07	4.4	2.0	124	c0.05		0.75	77.5	1.00	19.2	2.96	ıL					y ratio		5		
	Movement	Lane Configurations	Traffic Volume (vph)	I deal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Synchro 9 Report Page 29

Balboa Station 16: Mission Bay Dr & Bluffside Av

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	4	•	←	→	•	
Lane Group	EBL	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	518	358	1161	1386	707	
v/c Ratio	0.99	0.70	0.44	96:0	0.88	
Control Delay	8.89	31.2	3.9	42.1	29.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.89	31.2	3.9	42.1	29.4	
Queue Length 50th (ft)	122	214	98	370	228	
Queue Length 95th (ft)	#226	251	283	#525	#465	
Internal Link Dist (ft)	261		749	743		
Tum Bay Length (ft)	270	202			70	
Base Capacity (vph)	525	208	2664	1440	800	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.99	0.70	0.44	960	0.88	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Synchro 9 Report Page 30 KHA Queues

Balboa Station Horizon Year with Preferred LU 16: Mission Bay Dr & Bluffside Av Timing Plan: PM Peak Period

NB								
174 175 174 174 174 175	E	В	EBR	NBL	NBT	SBT	SBR	
322 155 329 1068 1275 650 1900 1900 1900 1900 1900 1900 44 4 50 56 56 097 100 095 095 100 097 100 095 100 085 097 100 095 100 100 100 097 100 095 100 100 100 097 095 100 100 100 097 095 100 100 100 097 095 100 100 100 098 12326 170 3539 3539 1583 097 092 092 092 092 092 092 097 092 092 092 092 092 092 098 1161 1386 551 099 116 244 640 346 346 0 116 244 640 346 346 0 116 244 640 346 346 0 116 244 640 346 346 0 116 244 640 346 346 0 116 244 640 346 346 0 116 244 640 346 346 0 116 244 640 346 346 0 116 244 650 66 68 0 116 0 249 075 009 100 100 0 20 090 090 100 100 0 380 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 0 100 090 090 100 100 100 100 0 100 090 090 100 100 100 100 0 100 090 090 100 100 100 100 0 100 090 090 100 100 100 100 100 100 10		>-		je-	‡	‡	¥	
322 155 329 1068 1275 660 1900 1900 1900 1900 1900 4 4 5 6 6 5 6 5 6 0.97 1.00 0.95 0.95 1.00 0.95 1.00 1.00 0.85 0.97 0.95 1.00 1.00 0.85 3326 1.70 3539 3539 1583 3326 1.00 1.00 1.00 3326 1.00 1.00 1.00 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 3539 3539 1583 1770 0.044 0.040 0.040 1770 0.044 0.09 0.090 1.00 1770 0.090 0.090 1.00 1.00 1770 0.090 0.090 1.00 1.00 1770 0.090 0.090 1.00 1.00 1770 0.080 0.000 0.000 1.00 1770 0.080 0.000 0.000 1.000 1.00 1770 0.080 0.000 0.000 1.000 1.000 1770 0.080 0.000 0.000 1.000 1.000 1780 0.080 0.000 0.000 1.000 1.000 1780 0.080 0.000 0.000 1.000 1.000 1780 0.080 0.000 0.000 0.000 1.000 1.000 1780 0.080 0.000 0.000 0.000 1.000 1.000 1780 0.080 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.000 1.000 1780 0.000		72	155	329	1068	1275	920	
1900 1900 1900 1900 1900 1900 1900 1900		22	155	329	1068	1275	920	
44 44 50 56 56 56 56 56 56 56	19	8	1900	1900	1900	1900	1900	
0.97 1.00 0.95 0.95 1.00 0.85 0.97 0.095 0.95 1.00 0.85 0.97 0.95 1.00 1.00 1.00 0.85 0.97 0.97 0.95 1.00 1.00 1.00 0.85 0.97 0.95 1.00 1.00 1.00 1.00 0.97 0.95 1.00 1.00 1.00 1.00 0.97 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	4	1.4		4.4	2.0	2.6	2.6	
0.95 1.00 1.00 0.85 0.97 0.97 0.99 0.97 0.99 0.90 1.00 0.85 0.97 0.99 0.90 1.00 1.00 0.80 0.97 0.99 0.90 0.90 0.90 0.90 0.90 0.9	0.0	26		1.00	0.95	0.95	1.00	
0.97 0.95 1.00 1.00 3.326 1.770 3.539 3.539 1.583 0.97 0.95 1.00 1.00 1.00 3.326 1.770 3.539 3.539 1.583 1.770 3.539 3.539 1.583 1.770 3.539 3.539 1.583 1.70 1.00 1.00 1.00 1.20 0.02 0.02 0.02 0.02 1.146 0.388 1.161 1.386 5.51 1.14 0.29 0.75 0.41 0.41 4.4 5.0 5.6 5.6 5.9 1.14 0.29 0.75 0.41 0.41 4.4 5.0 5.6 5.6 5.6 6.0 1.3 0.02 0.33 0.39 2.0 0.3 0.39 0.40 5.086 3.66 2.71 3.9 2.66 0.86 2.80 0.90 0.90 1.00 1.00 2.880 2.9 0.4 16.3 13.7 4.4 2.73 3.9 4.0 3.6 E C A D D D 7.46 2.73 3.9 4.0 3.6 E C A D D 7.46 2.73 3.9 4.0 3.6 E C A D D 7.46 0.98 Sum of lost time (s) 1.16 (s) 88.0 Sum of lost time (s) 1.16 1.35	0.	95		1.00	1.00	1.00	0.85	
33.8	0.	26		0.95	1.00	1.00	1.00	
10,000 1	33	56		1770	3539	3539	1583	
170 3539 3539 1583 1	0	26		0.95	1.00	1.00	1.00	
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,93 0,94 0 0 0 0 0 156 0 156 0 156 0 156 0 156 0 156 0 156 0 156 0 156 0 156 0 0 156 0 0 156 0 0 0 0 0 0 0 0 0	33	56		1770	3539	3539	1583	
350 168 358 1161 1386 707 4 46		92	0.92	0.92	0.92	0.92	0.92	
h) 72 0 0 0 156 h) 446 0 388 1161 1386 551 Prot NA NA Perm 4 5 2 6 6 5) 1116 244 640 346 346 0.14 0.29 0.75 0.41 0.41 2.0 2.0 4.0 48 4.8 4.4 4.4 5.0 5.6 5.6 0.13 0.20 0.33 0.39 0.39 0.70 0.44 0.96 0.86 3.66 27.1 3.9 24.6 2.9 1.00 0.99 0.70 0.44 0.96 0.86 3.66 27.1 3.9 24.6 2.9 1.00 0.99 0.70 0.44 0.96 0.86 3.66 27.1 3.9 24.6 2.9 1.00 0.99 0.70 0.40 0.90 1.00 2 38.0 2.9 0.4 163 3.8 2 4 3.8 3 8 6 27.1 3.9 24.6 2.9 3 8 6 27.1 3.9 24.6 2.9 4 3.8 4 3.8 4 3.8 5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	3	20	168	358	1161	1386	707	
h) 446 0 338 1161 1386 551 Prot Prot NA NA Perm 4 5 2 6 6 6 5) 1116 24.4 64.0 34.6 34.6 1116 24.4 64.0 34.6 34.6 1116 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.6 34.6 1176 24.4 64.0 34.8 4.8 128 264 14.4 0.96 0.86 129 0.70 0.44 0.96 0.86 120 0.99 0.70 0.44 0.96 0.86 120 0.99 0.70 0.40 1.00 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 1.00 120 0.90 0.90 1.00 1.00 120 0.90 0.90 1.00 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 1.00 120 0.90 0.90 0.90 120 0.90 0.90 0.90 120 0.90 0.90 0.90 120 0.90 0.90 120 0.90 0.90 120 0.90 0.90 120 0.90 120 0.90 120 0.90 120 0.90 120 0.90 120 0.90 120 0.90 120 0.90 120 0.90 1		72	0	0	0	0	156	
Prot Prot NA Perm Frot NA Perm F		46	0	358	1161	1386	551	
4 5 2 6 6 1116 244 640 346 346 1116 244 640 346 346 1116 244 640 346 346 1014 029 075 041 041 4.4 4.4 5.0 5.6 5.6 2.0 4.0 48 48 453 508 2664 140 644 c0.13 c0.20 0.33 c0.39 0.20 0.31 c0.20 2 38.0 2.9 0.4 16.3 1.00 0.99 0.70 0.44 0.96 0.86 2 7.1 3.9 246 22.9 1.00 0.90 0.70 0.44 0.96 0.86 2 7.1 3.9 246 22.9 1.46 27.3 3.9 40.9 36.6 E C A D D D 7 4.6 27.3 3.9 40.9 36.6 E C A D D D 7 4.6 3.94 A D D D 7 4.6 3.94 B S O Sum of lost time (s) 1 th (s)		rot		Prot	NA	NA	Perm	
s) 11.6 24.4 64.0 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6		4		2	2	9		
116							9	
11.6		9.1		24.4	64.0	34.6	34.6	
0.14 0.29 0.75 0.41 0.41 4.4 4.4 5.0 5.6 5.6 2.0 2.0 4.0 4.8 4.8 4.53 5.08 2.64 1.40 6.44 0.0.13 0.0.20 0.33 0.39 0.0.9 0.70 0.44 0.96 0.86 3.6.6 27.1 3.9 2.46 2.29 1.00 0.99 0.90 1.00 1.00 2.38.0 2.9 0.4 16.3 13.7 74.6 27.3 3.9 4.09 36.6 E C A D D D 74.6 3.94 E C A D D 74.6 3.94 F A D D 74.6 3.88 NCM 2000 Level of Service 1.00 0.88 Sum of lost time (s) 1.01 1.02 1.03 1.03 1.03 1.03 1.04 0.98 NCM 2000 Level of Service 1.05 1.03 1.03 1		9.1		24.4	64.0	34.6	34.6	
44 44 50 56 56 20 40 40 48 483 568 2664 1440 644 60.13 60.20 0.33 60.39 60.20 0.33 60.39 70.20 0.33 60.39 70.20 0.34 60.86 86.6 27.1 3.9 246 22.9 1.00 0.90 0.90 1.00 1.00 2 38.0 2.9 0.4 16.3 13.7 74.6 27.3 3.9 40.9 36.6 E		14		0.29	0.75	0.41	0.41	
453 508 264 140 644 60,13 6,020 0.33 60,38 60,19 0,70 0,44 0,96 0,86 1,00 0,99 0,70 0,44 0,96 0,86 2 38,6 27,1 3,9 24,6 22,9 1,00 0,90 0,90 1,00 1,00 2 38,0 2,9 0,4 16,3 13,7 74,6 27,3 3,9 40,9 36,6 6 8 C A D D D 74,6 27,3 3,9 40,9 36,6 A 8 C A D D D A A B D D D A A B D D A A A B D D A A B B A B B		1.4		4.4	2.0	9.6	5.6	
453 508 2664 1440 644 (0.13		0.2		2.0	4.0	4.8	4.8	
0.013 0.020 0.033 0.039 0.035		53		208	2664	1440	644	
0.99 0.70 0.44 0.96 0.35 3.66 27.1 3.9 24.6 22.9 1.00 0.90 0.90 1.00 1.00 2 38.0 2.9 0.4 16.3 13.7 4.6 2.9 4 39.4 E C A D D 74.6 9.4 39.4 E C A D D 74.6 9.4 39.4 E C A D D 1.00 0.90 0.90 0.90 0.90 1.00 0.29 0.90 0.90 0.90 1.00 0.29 0.90 0.90 0.90 0.90 1.00 0.29 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.29 0.90 0.90 0.90 0.90 0.90 0.90 0	.00	13		c0.20	0.33	c0.39		
099 070 044 096 086 386 27.1 3.9 24.6 229 1.00 0.90 0.90 1.00 1.00 2.9 0.4 16.3 13.7 74.6 27.3 3.9 40.9 36.6 E C A D D 74							0.35	
36.6 27.1 3.9 24.6 22.9 1.00 0.90 0.90 1.00 2.380 2.9 0.4 16.3 13.7 176.6 27.3 3.9 40.9 36.6 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D D 1.6 C A D 1.6 C	0.0	66		0.70	0.44	96:0	98.0	
2 380 2.9 0.4 16.3 13.7 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.		9.6		27.1	3.9	24.6	22.9	
2 380 29 04 16.3 13.7 74.6 27.3 3.9 40.9 36.6 F C A D D D 74.6 94 39.4 F A D 74.7 32.8 HCM 2000 Level of Service Capacity ratio 0.88 Int(s) 85.0 Sum of lost time (s) 14 Int(s) 15.8 ICU Level of Service 15.1		8		0.00	0.00	1.00	1.00	
74.6 27.3 3.9 40.9 36.6 E		3.0		5.9	0.4	16.3	13.7	
E C A D D D D D D D D D D	74	4.6		27.3	3.9	40.9	36.6	
74.6 94 39.4 F A D Y Y Salabata Sum of lost time (s) 14 It (s) 85.0 Sum of lost time (s) 14 It (s) 79.5% ICU Level of Service 15		ш		ပ	V	٥	۵	
Y Y Selay 32.8 HCM 2000 Level of Service C-apacity ratio 0.88 In (s) 85.0 Sum of lost time (s) 14.5 ICU Level of Service 15.14		4.6			9.4	39.4		
32.8 HCM 2000 Level of Service 0.88 85.0 Sum of lost time (s) 14 79.5% ICU Level of Service 15		ш			⋖	٥		
32.8 HCM 2000 Level of Service 0.88 85.0 Sum of lost time (s) 14 79.5% ICU Level of Service 15	ary							
0.88 85.0 Sum of lost time (s) 14 79.5% ICU Level of Service 15	Delay			32.8	H	:M 2000	Level of Service	v
85.0 Sum of lost time (s) 14 79.5% ICU Level of Service 15	to Capacity rat	.0		0.88				
Utilization 79.5% ICU Level of Service 15	gth (s)			85.0	S	m of lost	time (s)	14.4
15	ty Utilization			79.5%	೨	U Level o	f Service	Q
	Ê			7				

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Balboa Station 17: Mission Bay Dr & Damon Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

→	SBT	1480	0.52	1.0	0.5	1.5	2	m20	749		2836	792	0	0	0.72			
٠	SBL	107	0.33	47.6	0.0	47.6	06	m93		182	322	0	0	0	0.33			al.
•	NBR	246	0.25	6.7	6.0	10.6	62	126		160	886	495	0	0	0.50			eam sign
←	NBT	1308	0.62	24.6	31.2	55.8	477	617	376		2103	864	0	0	1.06			l by upstr
4	WBR	207	0.65	40.6	0.0	40.6	103	189		75	435	0	0	0	0.48			s meterec
•	WBL	205	0.82	94.7	0.0	94.7	225	307	1218		391	0	0	0	0.52			anene i
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	:	Intersection Summary	m Volume for 95th percentile queue is metered by upstream signal

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																																					ပ		13.8	В		
→	SBT	₩	1362	1362	1900	5.2	0.95	1.00	1.00	3539	1.00	3539	0.92	1480	0	1480	NA	9		136.3	136.3	0.80	5.2	3.5	2837	c0.42		0.52	5.7	0.12	0.2	0.0	A	4.0	А		HCM 2000 Level of Service		ime (s)	Service		
<u>ر</u>	SBL	-	86		_	4.4	1.00			•		1770		107	0	107	Prot	_		31.0	31.0			2.0		90:0						46	٥				HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
•	NBR				_	2.0	1.00		1.00			1583		246	47	199	Perm		2	101.1	101.1				941							9	В									
•	NBT	ŧ	•	_	_							3539		1308	0	1308	₹	2		101.1	101.1			3.8						Ì		53	O	22.4	S		20.7	0.64	170.0	%2.09	15	
4	WBR	*-	190	190	1900	4.4	1.00	0.85	1.00	1583	1.00	1583	0.92	207	94	113	Perm		4	24.1	24.1	0.14	4.4	2.0	224		0.07	0.50	67.4	1.00	9.0	68.1	ш									
/	WBL	۴	189	189	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	202	0	205	Prot	4		24.1	24.1	0.14	4.4	2.0	250	c0.12		0.82	70.8	1.00	17.7	9.88	ш.	78.3	Ш			ty ratio		nc		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	

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Balboa Station 18: Mission Bay Dr & Driveway/Magnolia Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

Lane Group Lane Group Lane Group Flow (vph) Lane Group Flow (vph	→
384 17 100 1485 117 006 080 082 153.7 37.1 115.4 10.5 0.0 0.0 0.0 0.2 153.7 37.1 115.4 10.7 4-69 8 105 288 640 8 105 288 8401 32 m#175 576 303 271 186 2412 0 0 0 266 0 0 0 0 266 0 0 0 0 266 0 0 0 0 0 266 0 0 0 0 0 266 0 0 0 0 0 266 0 0 0 0 0 266 0 0 0 0 0 0 266 0 0 0 0 0 0 266 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SBT
1.17 0.06 0.80 0.62 15.37 37.1 115.4 10.5 0.0 0.0 0.0 0.2 15.3.7 37.1 115.4 10.7 46.9 8 10.5 2.68 8 46.91 32 m#175 5.76 30.3 27.1 18.4 2412 0 0 0 266 0 0 0 0 0 1.17 0.06 0.74 0.69 imm affer wo cycles.	1320
153.7 37.1 115.4 10.5 0.0 0.0 0.0 0.2 153.7 37.1 115.4 10.7 -469 8 105 268 8 105 268 8 105 268 303 271 65 329 291 136 2412 0 0 0 266 0 0 0 0 0 1.17 0.06 0.74 0.69 imm after two cycles.	0.59
0.0 0.0 0.2 0.2 153.7 37.1 115.4 10.7 5469 8 105 268 4691 32 m#175 576 303 271 65 329 291 136 2412 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	18.3
153.7 37.1 115.4 10.7 -469 8 105 288 #641 32 m#175 576 303 271 65 0 0 0 266 0 0 0 0 266 0 0 0 0 0 266 1.1.7 0.06 0.74 0.69 minm after two cycles.	6.4
469 8 105 268 # 4691 32 m#175 576 303 271 65 329 291 136 2412 1 0 0 0 0 0 0 0 0 0 0 1.17 0.06 0.74 0.69 0. himm after two cycles. mun after two cycles. mun after two cycles.	24.7
#691 32 m#175 576 303 271 804 65 329 291 136 2412 1 0 0 0 0 0 0 0 0 1.17 0.06 0.74 0.69 0. imum after two cycles.	421
303 271 804 65 804 329 291 136 2412 1 0 0 0 266 0 0 0 0 0 1.17 0.06 0.74 0.69 0. inum after two cycles. imum after two cycles. imum after two cycles.	485
65 329 291 136 2412 1 0 0 0 0 0 6 0 117 006 074 069 0 127 006 074 069 00 000 000 0000 0000 00000 00000000	461
329 291 136 2412 0 0 0 266 0 0 0 0 0 1.17 0.06 0.74 0.69 (1) 0 0.07 0.00 0 0 0.00 0.00 0 0.00 0.00 0	
0 0 0 266 0 0 0 0 0 0 0 0 0 0 0 1.17 0.06 0.74 0.69 0 0.02 0.03 0.04 0.69 0.04 0.05 0.04 0.69 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	2224
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	848
1.17 0.06 0.74 0.69 pacity queue is theoretically infinite. wimum after two cycles. ximum after two cycles.	0
1.17 0.06 0.74 0.69 apacity, queue is theoretically infinite. sximum affer two cycles. ame exceeds capacity, queue may be longer. sximum affer two cycles.	0
Intersection Summary - Volume exceeds capacity, queue is theoretically infinite. Oueue shown is maximum after two cycles. # 95th percentile volume exceeds capacity, queue may be longer. Oueue shown is maximum after two cycles.	96:0
-	
_	
Queue shown is maximum after two cycles.	
Modume for 95th percentile queue is metered by upstream signal.	

KHA Synchro 9 Report Obeues Page 34

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 18: Mission Bay Dr & Driveway/Magnolia Ave

6 4 7 92 1363 3 30 962 252 262 262 2 7 92 1363 3 3 9 962 252 262 2 7 92 1363 3 3 9 962 252 262 2 7 92 1363 3 3 9 962 252 262 2 1900 1900 1900 1900 1900 1900 1900 1	† EB
2 7 92 1363 3 30 962 1900 1900 1900 1900 1900 1900 1900 1900	4
1900 1900	8 213
4.9	1900 1900
100 100 095 100 095 100 095 094 100 100 100 095 098 098 100 100 095	
0.94 10.0 10.0 0.97 0.98 0.95 1.00 0.98 0.82 0.95 1.00 0.95 1.00 1.423 1.770 3538 1.770 3429 0.92 0.92 0.92 0.92 0.92 0.92 0.92 2 8 100 1482 0.92 0.92 0.92 0.92 1.4 0.0 0.0 0.0 0.0 1.4 1 0 100 1485 0.3 1.046 0.20 0.07 0.68 0.04 0.64 2.0 0.07 0.68 0.04 0.64 2.0 0.07 0.68 0.04 0.64 2.0 0.07 0.68 0.04 0.64 0.00 0.07 0.68 0.04 0.64 0.00 0.07 0.68 0.04 0.64 0.00 0.07 0.68 0.04 0.64 0.00 0.07 0.68 0.04 0.64 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.68 0.04 0.04 0.00 0.07 0.08 0.07 0.04 0.00 0.07 0.08 0.07 0.07 0.00 0.00 0.00 0.00 0.00 0.00	1.00
1709 1770 1780 1780 1780 1780 1780 1780 1780	0.92
082 095 100 095 100 1433 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 3439 1770 100 01 01 01 01 01 01 01 01 01 01 01 0	1680
1423 1770 3538 1770 3429 0.92 0.92 0.92 0.92 0.92 0.92 0.8	0.87
092 092 092 092 092 092 092 092 092 092	1489
2 8 100 1482 3 33 1046 1 1 0 100 1482 3 33 1046 NA Prol NA Prol NA Prol NA 4 1 6 5 2 34.0 12.1 115.0 6.7 109.6 20.0 0.7 0.68 0.04 0.64 4.9 4.4 5.0 4.4 5.0 2.0 2.0 3.7 2.0 3.7 2.84 125 2393 6.9 2210 2.0 2.0 3.7 2.0 3.7 2.84 125 2393 6.9 2210 0.01 0.80 0.62 0.04 0.59 0.04 0.80 0.62 0.48 0.59 5.48 178 15.3 79.9 17.3 1.00 1.08 0.61 1.00 1.00 0.0 22.9 1.0 1.9 1.2 5.48 107.0 10.4 81.8 18.5 D F B F B F B F B F B F B F B F	
NA	7
NA Prot NA Prot NA Prot NA Prot NA Prot NA Prot NA Prot NA Prot NA Prot NA NA NA NA NA NA NA NA NA NA NA NA NA	32 0
NA Prof NA Prot NA A Prot NA A A A A A A A A A A A A A A A A A A	
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12.1 115.0 6.7 1 12.1 115.0 6.7 1 12.1 115.0 6.7 1 2.0 3.7 2.0 125 239.3 69 3 0.06 0.0.42 0.02 0.08 0.62 0.48 17.8 15.3 79.9 10.8 0.61 1.00 10.0 10.4 81.8 F B F F 16.5 Bervice D	œ
12.1 115.0 6.7 1 0.07 0.68 0.04 4.4 5.0 4.4 4.4 3.7 2.0 125 2393 69 3 0.06 0.42 0.02 0.08 0.62 0.48 77.8 15.3 79.9 1.08 0.61 1.00 22.9 1.0 1.04 81.8 F B F F 1.65 B	0.40
0.07 0.68 0.04 4.4 5.0 0.44 4.4 5.0 0.44 1.2 2393 69 3 0.06 0.042 0.02 0.08 0.62 0.048 17.8 15.3 79.9 11.08 0.61 1.00 12.9 1.0 1.9 10.0 1.4 81.8 F	24.0
4.4 5.0 4.4 2.0 3.7 2.0 125 2393 69 500 60.00 00	34.0
2.0 3.7 2.0 125 2393 69 300 0.06 0.042 0.002 0.80 0.62 0.048 17.8 15.3 79.9 17.8 15.3 79.9 107.0 10.4 81.8 F B F F B F F B F F B F F B F F B F F B F F B F F B F F B F F B F F B F F B F F B B F F B F	4.9
125 2393 69 3 00.06 0.042 0.02 080 0.62 0.48 1778 153 799 108 0.61 1.00 22.29 1.0 1.9 107.0 10.4 81.8 F B F F 16.5 B F 16.5 B F 16.	2.0
0.06	297
080 062 048 778 153 79,9 108 061 100 229 1.0 1.9 107.0 10.4 81.8 F 16.5 B F 14.5 B 14.3	
080 062 088 778 15.3 79.9 778 16.3 79.9 108 061 1.0 22.9 1.0 1.9 107.0 10.4 81.8 F B F F 16.5 B Service D D	c0.24
7.8 15.3 79.9 10.0 22.9 1.0 1.9 10.0 1.9 10.0 1.9 1.6 E E E E E E E E E E E E E E E E E E E	1.19
100 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1.00
107.0 10.4 81.8 F 16.5 B F 16.5 B F 16.5 B F 16.5 B F 14.3 D D D D D D D D D D D D D D D D D D D	112.2
F 16.5 B F Address B B B B B B B B B B B B B B B B B B	180.2
16.5 B B Service D 14.3 D	L.
Bervice	180.2
service	Ŀ
service	
	36.9
	0.77
	170.0
	79.3%
	15

Synchro 9 Report Page 35

Balboa Station 19: Mission Bay Dr & Driveway/Bunker Hill St

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	ļ	-	۶	→	
Lane Group	WBT	NBT	SBL	SBT	
Lane Group Flow (vph)	304	1344	204	1095	
v/c Ratio	98.0	69.0	0.98	0.43	
Control Delay	41.1	19.4	95.0	8.7	
Queue Delay	1.5	0.2	0.0	0.3	
Total Delay	42.6	19.6	95.0	0.6	
Queue Length 50th (ft)	81	398	137	251	
Queue Length 95th (ft)	#196	578	m#244	m309	
Internal Link Dist (ft)	514	492		804	
Tum Bay Length (ft)			06		
Base Capacity (vph)	416	1959	208	2565	
Starvation Cap Reductn	0	124	0	0	
Spillback Cap Reductn	30	0	0	749	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.79	0.73	0.98	09:0	
Intersection Summary					
# 95th percentile volume exceeds capacity, queue may be longer.	exceeds cal	pacity, q	Jeue may	be longer.	
Queue shown is maximum after two cycles.	m after two	cycles.			
m Volume for 95th percentile greater is metered by unstream signal	i quan dit	s meter	by Inct	ream signal	

Synchro 9 Report Page 36 KHA Queues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 19: Mission Bay Dr & Driveway/Bunker Hill St

Movement EBI EBI EBI WBI WBI NBI NB	EBL EBT EBR atlons			0.92 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	₩BT 1194 11194 11194 11194 11194 1900 5.0 0.95 0.95 1.00 3521 1.00 3521 1.298 3521 NA 6 6 6			SBT SBR ↑↑↑ ↑↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑
Second Second	ations			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4194 11194 1900 5.0 0.95 0.99 11.00 3521 1.00 3521 1.00 31341 NA			
s (γρή) 0 0 0 154 0 126 0 1194 42 188 1007 1007 1000 1900 1900 1900 1900 1900	a (vph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1194 1194 1900 5.0 0.95 0.99 1.00 3521 1.00 0.92 1.298 1.341 NA			
Page Page	help) 1900 1900 1900 1900 1900 1900 1900 190			0.92 0 0 0 1 Prof	1194 1900 5.0 0.95 0.99 1.00 3521 1.00 0.92 1.298 1.341 NA			
htpl) 1900 1900 1900 1900 1900 1900 1900 190	htpl) 1900 1900 1900 1900 1900 1900 1900 190			0.92 0 0 0 0 Prot	1900 5.0 0.95 1.00 3521 1.00 3521 1.20 0.92 0.92 1.341 NA			
e (s) 4.9 5.0 6.9 5.0 4.4 5.0 6.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	e (s) od) od) cm) cm) cm) cm) od) in (vph) 0 0 0 ion (vph) 0 0 0 0 0 ion (vph) 0 0 0 0 0 ion (vph) 0 0 0 0 0 ion (vph) 0 0 0 0 0 ion (vph) 0 0 0 0 0 ion (vph) 0 0 0 0 0 ion (vph) 0 0 0 0 0 0 ion (vph) 0 0 0 0 0 0 ion (vph) 0 0 0 0 0 0 ion (vph) 0 0 0 0 0 0 ion (vph) 0 0 0 0 0 0			0.92 0 0 0 Prot	5.0 0.95 1.00 3.521 1.00 0.92 0.92 1.341 NA			
tor for find the find	tor (a) ou) tor, PHF 0.92 0.92 0.92 itor, PHF 0.92 0.92 0.92 itor, PHF 0.92 0.92 0.92 itor, PHF 0.92 0.92 itor, PHF 0.92 0.92 output o			0.92 0 0 0 0 Prot	0.95 0.99 11.00 11.00 12.00 12.00 12.00 13.41 NA			
ot) include the control of the cont	od) imm) imm) imm) imm) imm(wh) i			0.92 0 0 0 Prot	0.99 1.00 3.521 1.00 3.521 0.92 1.298 NA 0.92			
ol) 097 100 098 100 099 100 09	ent) Int, PHF 0.92 0.92 0.92 (o.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0			0.92 0 0 0 Prot	1.00 3521 1.00 3521 0.92 1298 3 1341 NA			
ol) 1703 3521 1770 3539 am) 1683 3521 1770 3539 non 1683 3521 1770 3539 tor, PHF 092 092 092 092 092 092 092 092 100 092	cof) tor, PHF 0.92 0.92 0.92 iton (vph) 0 0 0 low (vph) 0 0 0 sess 4 4 sess 4 4 sess 4 4 sess A 4 sess A 4 radio (s) A 6 rug (s) A 7 rug (s) A 7 rug (s) A 7 rug (s) A 8 rug (s) A 9 rug			0.92 0 0 0 Prot	3521 1.00 3521 0.92 1298 3 1341 NA			
100 0.95 1.00 1	inn) 10			0.92 0 0 0 Prot	1.00 3521 0.92 1298 1341 NA			
mm) 1450 3521 1770 3539 nor, PHF 0.92 <th< td=""><td>Em) tor, PHF 0,92 0,92 0,92 tor, PHF</td><td></td><td></td><td>0.92 0 0 0 0 Prot</td><td>3521 0.92 1298 3 1341 NA</td><td></td><td></td><td></td></th<>	Em) tor, PHF 0,92 0,92 0,92 tor, PHF			0.92 0 0 0 0 Prot	3521 0.92 1298 3 1341 NA			
tor, PHF 0.92 0.93	tor, PHF 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92			0.92 0 0 0 Prot	0.92 1298 3 3 1341 NA 6			
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Perm NA Prot NA Prot Sesses 4 4 4 4 1 6 5 5 8 8 8 8 9 1 1 6 1 5 8 8 8 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	sess 4 nn G (s) nn g (s) Ratio ne (s) Round (yph) n , d1 actor elay, d2 ce ce ce cy vy (s) A A	Perm 4	NA 4 13.5	Prot 1	NA 6		Prot 5	NA 2
ses 4 4 4 4 6 5 stacks 4 4 4 4 1 6 5 stacks 4 4 4 4 7 100 6 stacks 7 13.5 47.2 100 6 100 6 Ratio 0.16 0.16 0.56 0.12 100 6 4.4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 1 6 5.0 6.0 0.0 6 0.12 1 1 4 2 2 0	ses ses ses ses ses ses ses ses ses ses	4	13.5 13.5	-	9		2	2 41 4
ses 4 4 n, G (s) 4 4 n, G (s) 13.5 47.2 10.0 n, g (s) 13.5 47.2 10.0 Ratio 0.16 0.56 0.12 10.0 Ratio 0.16 0.56 0.12 10.0 4.4 sion (s) 2.0 3.2 2.0 4.4 sion (s) 2.0 3.2 2.0 4.4 sion (s) 2.0 3.2 2.0 2.0 (r) I 0.0 0.3 0.0 0.98 0.0 (r) I 3.44 13.6 37.4 47.3 actor 1.00 1.26 1.2 1.2 celeby, d. 0 0 49.4 18.4 7.5 average 0 0 49.4 18.4 7.5 average 0 0 49.4 18.4 7.5 average 0 0 49.4 18.4 7.5 </td <td>hses 4 nn, G(s) nn, G(s) nn, g(s) Ratio ne (s) sion (s) (uph) n n n, d1 actor elelay, d2 ce</td> <td>4</td> <td>13.5</td> <td></td> <td></td> <td></td> <td></td> <td>41 6</td>	hses 4 nn, G(s) nn, G(s) nn, g(s) Ratio ne (s) sion (s) (uph) n n n, d1 actor elelay, d2 ce	4	13.5					41 6
13.5 13.5 10.0 0.0	en, G (s) nn, g (s) Reatio Reatio ne (s) sion (s) (uph) n cut actor elay, d2 ce ce		13.5					414
any g(s) 13.5 47.2 10.0 6 Ratio 0.16 0.16 0.15 0.12 (Ratio 0.16 0.16 0.15 0.12 (Ratio 0.16 0.16 0.15 0.12 (Ratio 0.17 0.18 0.13 0.13 0.13 (Ratio 0.18 0.19 0.18 0.11 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 0.19 (Ratio 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19	nn g (s) Ratio ne (s) sion (s) (vph) n , d1 actor cee ce ce sy (s)		13.5		47.2		10.0	0.0
Ratio 0.16 0.56 0.12 consists res(s) 4.9 5.0 4.4 sion(s) 2.0 3.2 2.0 sion(s) 2.30 1.955 2.08 2.0 sion(s) 2.30 1.955 2.08 2.0 sion(s) 2.30 1.955 2.08 2.08 2.0 n 0.12 0.79 0.69 0.98 0.0 0.8 0.0 0.8 0.0 0.8 0.0 0.8 0.0 0.8 0.0 0.8 0.0	Ratio ren (s) sion (s) (vpn) n n, d1 actor ce ce ce xy (s)		,,,		47.2			61.6
he (s) 4.9 5.0 4.4 sion (s) 2.0 5.0 4.4 sion (s) 2.0 3.2 2.0 sion (s) 2.0 1.65 2.0 (c) 0.0 0.0 0.0 0.0 0.0 0.0 actor 1.00 1.26 1.22	ne (s) sion (s) (typh) n d, d1 actor elay, d2 ce ce ev (s)		0.16		0.56			0.72
sion (s) 2.0 3.2 2.0 (uph) 230 1955 208 2 n 00.12 0.0.38 0.0.12 0.0.12 0.0.12 0.0.12 0.0.12 0.0.12 0.0.12 0.0.12 0.0.12 0.0.12 0.0.98 0.0.98 0.0.98 0.0.98 0.0.98 0.0.98 0.0.98 0.0.98 0.0.98 0.0.9 0.0	sion (s) ((pph) n actor elay, d2 ce ce sy (s)		4.9		2.0		4.4	2.0
(vph) 230 1955 208 2 n	(vph) n t, d1 actor eleay, d2 ce		2.0		3.2		2.0	3.2
n	n 7, d1 actor elay, d2 ce ce %y (s)		230		1955			564
0.012 0.69 0.98 C 0.79 0.69 0.98 C 0.79 0.69 0.98 C 0.79 0.69 0.98 C 0.79 0.79 0.69 0.98 C 120 1.20 1.20 1.20 1.20 1.20 1.20 1.20 1	d2				c0.38	ਠ		0.31
10.79 0.69 0.98 (0.79 1.06) 0.69 0.98 (0.79 1.06) 0.98 (0.79 1.06) 0.74 1.26 1.22 1.22 1.22 1.24 1.24 1.22 1.25 1.25 1.24 1.24 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.25	d2		c0.12					
3.4.4 13.6 37.4 13.6 37.4 1.22 1.22 1.22 1.22 1.22 1.22 1.22 1.	59		0.79		69:0			0.43
100 126 122 131 131 132 132 133 133 134	q 5		34.4		13.6		37.4	4.7
15.1	d2		1.00		1.26	`	1.22	1.61
184 92.9 184 92.9			15.1		1.4	•	47.3	0.4
D D B F			49.4		18.4		92.9	7.9
0.0 49.4 184 A D B B Ly Ly Ly Logacity ratio 0.75 Sum of lost time (s) 14.3 Utilization 7.29% ICU Level of Service C T.29% ICU Level of Service C 15. Sum of lost time (s) 14.3 15. C Level of Service C			۵		В		L.	۷
A D B B (I			49.4		18.4			21.3
lay 22.9 HCM 2000 Level of Service Capacity ratio 0.75 N (s) 85.0 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15			D		В			ပ
slay 22.9 HCM 2000 Level of Service Capacity ratio 0.75 Sum of lost time (s) h (s) 85.0 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15 15	ntersection Summary							
Capacity ratio 0.75 Sum of lost time (s) 85.0 Utilization 72.9% ICU Level of Service 15			:M 2000 Level of	Service		ပ		
h (s) 85.0 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15								
Utilization 72.9% ICU Level of Service 15			m of lost time (s)			14.3		
	Utilization		J Level of Service	a		ပ		
		15						

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Balboa Station 20: Mission Bay Dr & Rosewood St

Horizon Year with Preferred LU Timing Plan: PM Peak Perlod

	\	—	٠	→
Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	2731	2	2166
v/c Ratio	0.21	09:0	0.04	99:0
Control Delay	19.8	3.8	41.4	2.8
Oueue Delay	0.0	0.1	0.0	0.0
Total Delay	19.8	3.9	41.4	2.8
Queue Length 50th (ft)	2	0	က	0
Oueue Length 95th (ft)	28	372	m2	433
Internal Link Dist (ft)	221	096		536
Tum Bay Length (ft)			09	
Base Capacity (vph)	329	4583	122	3284
Starvation Cap Reductn	0	0	0	27
Spillback Cap Reductn	0	521	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	60:0	19:0	0.04	0.67
Intersection Summary				
Intersection Summary				
M Volume for 95th percentile queue is metered by upstream signal.	le queue i	s metered	by upstr	eam signal.

KHA Queues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 20: Mission Bay Dr & Rosewood St

Moocement WBI WBR NBT NBR SBT Lane Configuations 4 25 2486 27 5 1993 Taffir Volume (yph) 1900 1900 1900 1900 1900 Taffir Volume (yph) 1900 1900 1900 1900 1900 Lane Cultive (yclume (yph) 1900 1900 1900 1900 1900 Lane Ulli Factor 0.99 1.00 0.95 1.00 0.95 1.00 Fit Paneluli Factor 0.99 1.00 0.95 1.00 0.95 1.00 Sald Flow (pem) 16.33 5.077 1.770 35.39 1.00 0.95 Sald Flow (pem) 16.33 5.077 1.770 35.39 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 <t< th=""><th></th><th>></th><th>4</th><th>•</th><th>•</th><th>٠</th><th>→</th><th></th></t<>		>	4	•	•	٠	→	
March Marc	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
4 25 2486 27 5 1993 4 25 2486 27 5 1993 1900 1900 1900 1900 1900 1900 40 40 40 40 40 40 40 40 100 0.99 100 0.95 100 100 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 103 5077 1770 3539 104 50 688 1.3 74.1 105 50 688 1.3 74.1 106 1.00 6.54 0.00 6.0.61 107 1.00 1.00 1.00 1.00 108 1.00 1.00 1.12 1.13 109 1.00 1.00 1.12 1.13 100 1.00 1.00 1.12 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.00 1.14 1.15 1.13 100 1.00 1.15 1.14 1.15 1.15 100 1.00 1.15 1.11 1.15 1.15 100 1.00 1.15 1.11 1.15 100 1.00 1.15 1.11 1.15 100 1.00 1.15 1.11 1.15 100 1.00 1.15 1.11 1.15 100 1.00 1.15 1.11 1.15 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 1.10 100 1.10 1.10 1.10 1.10 1.10 1.10 1.10	Lane Configurations	>		4413		*	*	
1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1000	Traffic Volume (vph)	4	25	2486	27	5	1993	
1900 1900	Future Volume (vph)	4	22	2486	27	2	1993	
1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1,00	Total Lost time (s)	4.0		4.0		4.0	4.0	
0.88 1.00 1.00 1.00 0.099 0.099 1.00 1.00 1.	Lane Util. Factor	1.00		0.91		1.00	0.95	
1633 100 0.95 100 1633 5077 1770 3539 1633 5077 1770 3539 1633 5077 1770 3539 1639 100 0.95 100 163 2 0.92 0.92 0.92 0.92 1	Ŧ	0.88		1.00		1.00	1.00	
1633 5077 1770 3539 1633 5077 1770 3539 1633 5077 1770 3539 1633 5077 1770 3539 4	Fit Protected	0.99		1.00		0.95	1.00	
1039 100 1095 100 10339 100 10339 100 10339 100 10339 100 1032 10	Satd. Flow (prot)	1633		2077		1770	3539	
1633 5077 1770 3539 1770 3539 1770 3539 1770 29 20 20 20 20 20 20 2	Flt Permitted	0.99		1.00		0.95	1.00	
F 0,92 0,93 0,9	Satd. Flow (perm)	1633		2077		1770	3539	
hy 26 0 1 200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
h) 26 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	4	27	2702	59	2	2166	
h) 5 0 2730 0 5 2166 Pot NA Prot NA P	RTOR Reduction (vph)	79	0	-	0	0	0	
Prot NA Prot NA	Lane Group Flow (vph)	2	0	2730	0	2	2166	
8 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Turn Type	Prot		M		Prot	NA	
s) 2.9 688 1.3 74.1 0.03 081 1.3 74.1 0.03 081 1.3 74.1 4.0 4.0 4.0 5.5 4109 27 3085 0.00 0.54 0.00 0.5.1 0.09 0.66 0.19 0.70 39.8 3.3 41.3 1.8 1.00 1.00 1.12 1.13 2 0.7 0.9 2.4 1.0 0.7 0.0 0.112 1.13 0.9 0.7 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Protected Phases	∞		2		-	9	
s) 2.9 68.8 1.3 74.1 1 2.9 68.8 1.3 74.1 0.03 0.81 0.02 0.87 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 55 4109 27 3085 5.5 4109 27 3085 6.0 0.54 0.00 0.0.61 0.9 0.54 0.00 0.0 0.0 1.00 1.00 1.12 1.13 1.8 2 0.7 2.4 1.0 2.4 1.0 0.7 0.9 2.4 1.0 A A 0.7 0.9 0.	Permitted Phases							
2.9 688 1.3 74.1 0.03 0.81 0.02 0.87 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 5.5 4109 27 3085 0.00 0.54 0.00 0.01 3.98 3.3 41.3 1.8 1.00 1.00 1.12 1.13 2 0.7 0.9 2.4 1.0 A 40.5 4.2 4.85 3.0 A 5.1 4.0 5.1 4.2 A 10.5 4.2 4.8 5 3.0 A 40.5 4.2 4.8 5 3.0 A 40.5 4.2 4.8 5 3.0 A 5.1 4.2 4.8 5 3.0 A 6.5 4.2 4.8 5 3.0 A 7.1 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated Green, G (s)	2.9		8.89		1.3	74.1	
003 0.81 0.02 0.87 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 55 4109 27 3085 0.00 0.54 0.00 0.61 0.09 0.66 0.19 0.70 3.88 3.3 41.3 1.8 1.00 1.00 1.10 1.13 2 0.7 0.9 2.4 1.0 40.5 4.2 48.5 3.0 A 40.5 4.2 48.5 3.0 A 40.5 4.2 48.5 3.0 A 5 4.2 4.2 48.5 3.0 A 6 5 3.0 A A A A A A A A A A A A A A A A A A A	Effective Green, g (s)	2.9		8.89		1.3	74.1	
40 40 40 40 53 30 30 30 55 4109 27 3085 60.00 0.54 0.00 60.61 0.09 0.66 0.19 0.70 398 33 41.3 1.8 1.00 1.00 1.12 1.13 40.5 42 48.5 3.0 A A A A b A A A celay 3.9 HCM 2000 Level of Service copacity ratio 0.72 Sum of lost time (s) n (s) 85.0 Sum of lost time (s) n (s) 15 ICU Level of Service	Actuated g/C Ratio	0.03		0.81		0.02	0.87	
3.0 3.0 3.0 3.0 55	Clearance Time (s)	4.0		4.0		4.0	4.0	
55 4109 27 3085 0.00 0.54 0.00 0.0.01 0.09 0.66 0.19 0.70 3.98 3.3 41.3 1.8 1.00 1.00 1.12 1.13 2 0.7 0.9 2.4 1.0 A 40.5 4.2 48.5 3.0 A 40.5 4.2 48.5 3.0 A 40.5 A 42 A 5 A 42 A 6 A 5 A 42 A 7 A 6 B A A A A A A A A A A A A A A A A A	/ehicle Extension (s)	3.0		3.0		3.0	3.0	
0.00 0.54 0.00 0.61 0.09 0.66 0.19 0.70 39.8 3.3 41.3 1.8 1.00 1.00 1.12 1.13 2 0.7 0.9 2.4 1.0 40.5 4.2 48.5 3.0 D A D A 40.5 4.2 48.5 3.0 Y	-ane Grp Cap (vph)	22		4109		27	3085	
0.09 0.66 0.19 0.70 39.8 3.3 41.3 1.8 1.00 1.00 1.12 1.13 2 0.7 0.9 2.4 1.0 40.5 4.2 48.5 3.0 D A D A D A A 40.5 4.2 3.1 40.5 4.2 48.5 3.0 Capacity ratio 0.72 N HCM 2000 Level of Service 15 85.0 Sum of lost time (s) 16 85.0 Sum of lost time (s) 17 1.13 1.8 N A D A A A D A	//s Ratio Prot	00.00		0.54		0.00	c0.61	
0.09 0.66 0.19 0.70 39.8 3.3 41.3 1.8 1.00 1.00 1.12 1.13 2 0.7 0.9 2.4 1.0 0.9 2.4 1.0 0.9 2.4 1.0 0.9 2.4 1.0 0.9 48.5 3.0 0.9 48.5 3.0 0.9 48.5 3.0 0.9 6.5 3.0	//s Ratio Perm							
39.8 3.3 41.3 1.8 1.00 1.00 1.1.2 1.1.3 2 0.7 0.9 2.4 1.0 40.5 4.2 48.5 3.0 A 42 48.5 3.0 A 5 4 5 3.0 A 6 5 3.0 A 7 8 8 7 8 8 9 8 9 8 9 9 9 9 9 9 9 9 9 9	//c Ratio	0.09		99.0		0.19	0.70	
100 1.00 1.13 2 0.7 0.9 2.4 1.0 40.5 4.2 48.5 3.0 D A D A D A 40.5 4.2 3.1 D A D A D A 40.5 4.2 3.1 D A D A 40.5 4.2 3.1 D A D A A D A A D B A D A A D B A D	Jniform Delay, d1	39.8		3.3		41.3	1.8	
2 0.7 0.9 2.4 1.0 40.5 4.2 48.5 3.0 D A D A A 40.5 4.2 3.1 A A D A A A A A A A A A A A A A A A A A	Progression Factor	1.00		1.00		1.12	1.13	
40.5 4.2 48.5 3.0 A D A D A D A 40.5 4.2 A Y Y Y Y Y Y Y Y Y Y Y Y Y	ncremental Delay, d2	0.7		6:0		2.4	1.0	
D A D A A D A A A A A A A A A A A A A	Delay (s)	40.5		4.2		48.5	3.0	
40.5 4.2 3.1 Y Y O Capacity ratio 0.72 Sum of lost time (\$) rullization 65.1% ICU Level of Service 65.1% ICU Level of Service 15.1% ICU Level of Service	evel of Service	٥		∢		۵	А	
y y y Selay Capacity ratio C32 C42 C53 C43 C43 C43 C43 C43 C43 C43	Approach Delay (s)	40.5		4.2			3.1	
3.9 HCM 2000 Level of Service 0.72 85.0 Sum of lost time (s) 65.1% ICU Level of Service 15	Approach LOS	Ω		∢			Α	
3.9 HCM 2000 Level of Service 0.72 85.0 Sum of lost time (s) 65.1% ICU Level of Service 15	ntersection Summary							
0.72 85.0 Sum of lost time (s) . 65.1% ICU Level of Service 15	HCM 2000 Control Delay			3.9	H	:M 2000	evel of Service	٨
85.0 Sum of lost time (s) 65.1% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.72				
Utilization 65.1% ICU Level of Service 15 ICU Level of Service 15 ICU Level of Service	Actuated Cycle Length (s)			85.0	S	m of lost	time (s)	12.0
15	ntersection Capacity Utilizat	ion		65.1%	⊴	J Level o	Service	O
Critical Lane Groun	Analysis Period (min)			15				
	c Critical Lane Group							

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Balboa Station 21: Santa Fe St & Damon Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	•	*	•	←	→	*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	>			₩	æ		
Sign Control	Stop			Stop	Stop		
Traffic Volume (vph)	109	99	81	9	46	154	
Future Volume (vph)	109	99	81	9	46	154	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	118	72	88	11	105	167	
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total (vph)	190	159	272				
Volume Left (vph)	118	88	0				
_	72	0	167				
	-0.07	0.14	-0.33				
Departure Headway (s)	4.8	4.8	4.3				
Degree Utilization, x	0.25	0.21	0.32				
	693	90/	804				
Control Delay (s)	9.4	9.1	9.3				
Approach Delay (s)	9.4	9.1	9.3				
Approach LOS	A	⋖	⋖				
Intersection Summary							
Delay			9.3				
Level of Service			⋖				
Intersection Capacity Utilization			42.5%	ಠ	ICU Level of Service	f Service A	
Analysis Period (min)			15				

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Station Horizon Year with Preferred LU 22: Morena Blvd & Jutland Dr Timing Plan: PM Peak Period

ZZ. Moreria bivd & Juliarid Dr	Juliario	5					IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	/	✓	←	•	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	X	*	*-		4.₩	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	288	10	176	259	17	317	
Future Volume (vph)	288	10	176	259	17	317	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	639	7	191	282	18	345	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	689	11	191	282	133	230	
Volume Left (vph)	639	0	0	0	92	0	
Volume Right (vph)	0	Ξ	0	282	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.10	0.03	
Departure Headway (s)	7.3	6.1	7.1	6.4	7.3	7.2	
Degree Utilization, x	1.30	0.02	0.38	0.50	0.27	0.46	
Capacity (veh/h)	497	292	498	553	483	491	
Control Delay (s)	171.0	8.0	13.2	14.6	11.8	15.1	
Approach Delay (s)	168.3		14.0		13.9		
Approach LOS	Ŀ		В		В		
Intersection Summary							
Delay			81.5				
Level of Service			Ŀ				
Intersection Capacity Utilization	tion		%9.09	⊇	ICU Level of Service	f Service	В
Analysis Period (min)			15				

Balboa Station
Horizon Year with Preferred LU
23: Morena Blvd & Costco Dwy

Lane Group WBL NBT SBL SBT Lane Group Flow (vph) 494 752 60 970 w C Ratio 0.53 0.53 0.53 0.64 0.64 Oucue Delay 13.5 6.7 21.2 10.1 Oucue Delay 0.0 0.0 0.0 0.0 Oucue Length 65th (ft) 34 27 21.2 10.1 Oucue Length 95th (ft) 90 77 45 133 Internal Link DSt (ft) 195 31.70 1658 Base Capacity (wht) 2339 1758 233 2594 Base Capacity (wht) 2339 1758 233 2594 Skillack Cap Reductin 0 0 0 0 Skillack Cap Reductin 0 0 0 0	
h) 494 752 60 053 053 026 (2 13.5 6.7 21.2 (2) 0 0 0.0 0.0 13.5 6.7 21.2 (3) 13.5 6.7 21.2 (4) 13.9 77 45 19.8 3170 110 23.39 1758 233 2 ch 0 0 0	
053 053 026 (135 050 026 (135 051 026 (135 0	
135 6.7 212 7 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	
135 6.7 21.2 7 13 6.7 21.2 7 10 90 77 45 10 195 3170 110 2339 1758 233 2 ch 0 0 0	
13.5 6.7 21.2 7 11.0 3.4 20 10 10 10 10 10 10 10 10 10 10 10 10 10	
10 34 20 10 10 90 77 45 195 3170 110 2339 1758 233 2 ch 0 0 0	
90 77 45 195 3170 107 110 2339 1758 233 3 10 0 0 10 0 0	
195 3170 110 cth 2339 1758 233 2 cth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
110 2339 1758 233 ctn 0 0 0 1 0 0 0	
2339 1758 233 ctn 0 0 0 In 0 0 0	
0 0 0	
0 0 0	
Storage Cap Reducth 0 0 0 0 0	
Reduced v/c Ratio 0.21 0.43 0.26 0.37	
Intersection Summary	

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Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 23: Morena Blvd & Costco Dwy

		>	4	←	•	٠	→	
NA NA NA NA NA NA NA NA	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
378 76 320 372 55 892 1900 1900 1900 1900 1900 1900 1900 49 55 82 82 82 1900 1900 1900 1900 1900 1900 49 55 82 82 82 100 1900 1900 1900 1900 100 100 100 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1131 105 110 10 10 100 10 100 100 10 100 100 1131 105 110 10 100 100 10 100 100 10 100 100 10 100 100 10 100 100 10 100 100 10 100 100 10 100 100 10 100 100 10 10 100 10 100 100 10 100 100 10 100 100 10 100 100 10 10 100 10 100	Lane Configurations	1		₩		r	**	
378 76 320 372 55 882 1900 1900 1900 1900 1900 1900 49 65 44 65 5 0.97 0.95 1.00 0.95 0.96 1.00 0.95 1.00 0.96 1.00 0.95 1.00 0.96 1.00 0.95 1.00 0.96 1.00 0.95 1.00 0.97 0.92 0.92 0.92 0.92 0.92 3382 3254 1.770 3539 0.96 1.00 0.95 1.00 0.97 0.92 0.92 0.92 0.92 0.98 1.31 1 1.5 19.0 0.98 1.31 1 1.5 19.0 0.98 1.31 1 1.5 19.0 0.98 1.31 1 1.5 19.0 0.98 1.31 1 1.5 19.0 0.98 1.31 1 1.5 19.0 0.20 2.8 2.0 2.8 0.33 0.04 0.48 0.20 2.8 2.0 2.8 0.14 0.15 0.03 0.027 0.14 0.15 0.03 0.027 0.15 0.04 0.48 0.16 0.10 0.10 0.04 0.10 0.10 0.10 0.04 0.11 0.10 0.10 0.04 0.13 1 10.5 9.14 7.6 0.14 0.3 7.2.6 0.4 0.3 0.2.5 Sum of lost time (s) 0.10 1.00 0.0.40 0.65 0.0.40	Traffic Volume (vph)	378	9/	320	372	22	892	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	378	76	320	372	22	892	
49 55 44 55 0.97 0.95 1.00 0.95 0.98 1.00 0.95 1.00 0.98 1.00 0.95 1.00 0.98 1.00 0.95 1.00 0.98 1.00 0.95 1.00 0.98 1.00 0.95 1.00 0.98 1.00 0.95 1.00 0.99 0.92 0.92 0.92 1.00 0.95 0.00 0.99 0.92 0.95 1.00 0.99 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 3.48 404 60 970 0.93 0.48 0.04 0.04 0.98 1.31 1.5 19.0 0.98 1.31 1.5 19.0 0.98 1.31 1.5 19.0 0.99 0.91 0.92 0.92 0.99 0.91 0.92 0.92 0.95 0.93 0.94 0.95 0.98 0.98 0.95 0.95 0.99 0.99 0.95 0.95 0.99 0.99 0.95 0.95 0.99 0.99 0.99 0.95 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 0.95 1.00 0.95 0.95 0.97 0.95 1.00 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Total Lost time (s)	4.9		5.5		4.4	5.5	
0.97 0.92 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	0.97		0.95		1.00	0.95	
0.96 100 0.95 100 0.95 100 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.	Ŧ	0.97		0.92		1.00	1.00	
3382 3254 1770 3539 9,96 1,00 0,95 1,00 9,96 1,00 0,92 1,00 4,11 83 348 404 60 970 h) 458 0 269 0 0 0 h) 458 0 0 269 0 0 0 h) 458 131 15 190 9,8 131 15 190 2,0 2,5 0,33 0,48 4,9 5,5 44 5,5 0,54 0,04 0,48 1,12 1,05 1,00 1,00 1,00 1,00 1,00 1,00 2 0,4 0,91 1,15 1,00 2 0,5 0,4 0,90 0,57 1,2 0,4 0,90 0,57 1,2 0,4 0,90 0,57 1,2 0,4 0,90 0,57 1,2 0,4 0,90 0,57 1,2 0,4 0,90 0,57 1,3 1 10,5 9,14 7,6 B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B F A 13,1 10,5 9,14 7,6 B B B B B B 13,1 10,5 9,14 7,6 B B B B B B B B B B B B B B B B B B B	Fit Protected	96:0		1.00		0.95	1.00	
10.96 1.00 0.95 1.00 3.382 1.00 3.382 1.00 3.539 1.00 3.284 1.00 3.539 1.00 3.284 1.00 3.295 0.92	Satd. Flow (prot)	3382		3254		1770	3539	
13382 3254 1770 3539 170 3539 170 3539 170 3539 170 3539 170 3539 170 3539 170 3539 170 3539 170 3539 170 3539 170 1	Fit Permitted	96:0		1.00		0.95	1.00	
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,90 0,9	Satd. Flow (perm)	3382		3254		1770	3539	
Mathematical Proof Mathema	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 36 0 269 0 0 0 h) 458 0 483 0 60 970 Prot NA Prot NA 8 2 10 1 6 0 930 98 131 15 190 0 25 033 0.04 0.48 49 5.5 44 5.5 0 2.0 2.8 2.0 2.8 44 5.5 0 0.14 0.15 0.03 0.027 0 0.54 0.44 0.90 0.57 0 1.00 1.00 1.00 1.00 2 0.1 1.2 18 7.2 1.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2 0.4 0.3 72.6 0.4 13.1 10.5 9.1 A 7.6 B B B B F A 7.6 B B B B F A 7.6 B B B B F A 7.6 B B B B F A 7.6 B B B B B F A 7.6 B B B B B F A 7.6 B B B B B B B B B B B B B B B B B B B	Adj. Flow (vph)	411	83	348	404	99	026	
h) 458 0 483 0 60 970 Prot NA Prot NA 8 2 1 1 6 9 8 131 15 190 0 25 033 004 048 4 9 5.5 44 5.5 0 20 2.8 2.0 2.8 845 1087 67 1715 0 54 0.44 0.03 0.57 1 128 10.2 0.3 0.27 0 54 0.44 0.90 0.57 1 128 10.2 188 7.2 1 10.0 1.00 1.00 1.00 2 0 4 0.3 72.6 0.4 1 31 10.5 91.4 7.6 B B B F A 1 31 10.5 91.4 7.6 B B B B F A 1 31 10.5 91.4 7.6 B B B B F A 1 31 10.5 91.4 7.6 B Capacity ratio 0.66 Capac	RTOR Reduction (vph)	36	0	569	0	0	0	
Prot NA Prot NA 8 8 2 1 6 6 8 8 2 1 1 6 6 8 8 8 9 13.1 1.5 19.0 6 9 8 13.1 1.5 19.0 6 9 8 13.1 1.5 19.0 6 9 8 13.1 1.5 19.0 6 9 8 13.1 1.5 19.0 6 9 8 13.1 1.5 19.0 6 9 8 4.4 5.5 6 9 6 7 1715 6 7 1715 6 7 1715	Lane Group Flow (vph)	458	0	483	0	09	970	
8 2 1 6 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 0.25 0.33 0.04 0.48 845 0.35 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.7 1.2 1087 67 1715 0.54 0.44 0.90 0.57 1.2 0.44 0.90 0.57 1.2 10.0 1.00 1.00 2 0.4 0.3 72.6 0.4 1.3 1 10.5 91.4 7.6 8 B F A 1.3 1 10.5 91.4 7.6 9 A y y y y H(S)	Turn Type	Prot		M		Prot	NA	
s) 9.8 13.1 1.5 19.0 9.8 13.1 1.5 19.0 0.25 0.33 0.04 0.48 4.9 5.5 4.4 5.5 2.0 2.8 4.4 5.5 0.14 0.087 6.7 1715 0.14 0.15 0.03 0.027 0.54 0.44 0.90 0.57 1.28 10.87 6.7 1715 0.54 0.44 0.90 0.57 1.28 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.4 0.3 72.6 0.4 1.31 10.5 91.4 7.6 B B F F F B F F F F F F F F F F F F F F	Protected Phases	∞		2		-	9	
9 9 8 131 1.5 19.0 0 0.25 0.33 0.04 0.48 4 9 5.5 13.1 1.5 19.0 2 0 2.8 2.0 2.8 845 1087 6.7 1715 0.54 0.44 0.90 0.57 1.28 10.2 0.04 0.54 0.44 0.90 0.57 1.28 10.2 10.0 2 0.4 0.3 72.6 0.4 1.31 10.5 91.4 7.6 B B B F A 13.1 10.5 91.4 7.6 B B B B F A 13.1 10.5 91.4 7.6 Capacity ratio 0.66 Ca	Permitted Phases							
9,8 13.1 1.5 19.0 2,5 0.33 0.048 4,9 5.5 4,4 5.5 845 1087 67 1715 0.014 0.15 0.03 0.027 0.054 0.44 0.90 0.57 12,8 10,2 18,8 7,2 10,0 1,00 1,00 1,00 2 0.4 0.3 72.6 0.4 13.1 10.5 91.4 7.6 13.1 10.5 91.4 7.6 13.1 10.5 91.4 7.6 13.1 10.5 91.4 7.6 13.1 0.6 0.4 13.1 0.6 0.4 13.1 0.5 91.4 7.6 13.1 0.5 91.4	Actuated Green, G (s)	8.6		13.1		1.5	19.0	
0.25 0.33 0.04 0.48 4.9 4.9 5.5 4.4 5.5 4.4 5.5 5.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.2 2.8 2.0 2.2 2.0 2.2 2.0 2.2 2.0 2.2 2.0 2.2 2.0 2.2 2.0 2.0	Effective Green, g (s)	8.6		13.1		1.5	19.0	
49 55 44 55 20 28 20 2.8 845 1087 67 1715 60.14 0.15 0.03 60.27 0.54 0.44 0.90 0.57 1.28 10.2 1.88 7.2 1.00 1.00 1.00 1.00 2 0.4 0.3 72.6 0.4 B B F A A B B B B B A 11.5 HCM 2000 Level of Service Condactivation 0.66 Service In (s) 39.2 Sum of lost time (s) Unilization 15 CU Level of Service 10 15 CU Level of Service	Actuated g/C Ratio	0.25		0.33		0.04	0.48	
2 0 2 8 2 0 2 8 845 1087 67 1715 c0.14 0.15 0.03 c0.27 0.54 0.44 0.90 0.57 128 102 188 7.2 100 1.00 1.00 0.04 2 0.4 0.3 72.6 0.4 131 10.5 91.4 7.6 B B F A A 131 10.5 91.4 7.6 B B B B B B B B B B A 11.9 HCM 2000 Level of Service Capacity ratio 0.66 Capacity ratio 0.66 39.2 Sum of lost time (s) In (s) 15 16 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6	Clearance Time (s)	4.9		5.5		4.4	5.5	
845 1087 67 7715 0.14 0.15 0.03 0.027 0.54 0.44 0.90 0.57 128 10.2 188 7.2 1.00 1.00 1.00 2 0.4 0.3 72.6 0.4 1.31 10.5 9.14 7.6 B B F A 1.31 10.5 1.04 A y y y tubilization 49.6% ICU Level of Service 10.00 1.00 1.00	Vehicle Extension (s)	2.0		2.8		2.0	2.8	
co.14 0.15 0.03 cd.27 0.54 0.44 0.90 0.57 12.8 10.2 18.8 7.2 1.00 1.00 1.00 2 0.4 0.3 7.26 0.4 13.1 10.5 91.4 7.6 B B B F A 13.1 10.5 91.4 7.6 Y Y Y Y It and the control of t	Lane Grp Cap (vph)	845		1087		19	1715	
0.54 0.44 0.90 0.57 12.8 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.4 0.3 72.6 0.4 13.1 10.5 72.6 0.4 13.1 10.5 1.4 7.6 13.1 10.5 1.24 13.1 10.5 1.24	v/s Ratio Prot	c0.14		0.15		0.03	c0.27	
0.54 0.44 0.90 0.57 1.28 1.02 1.02 1.00 1.00 1.00 1.00 1.00 1.00	v/s Ratio Perm							
128 102 188 72 100 1.00 1.00 1.00 2 0.4 0.3 72.6 0.4 13.1 10.5 91.4 7.6 B F A 13.1 10.5 12.4 B B F A 13.1 10.5 12.4 B B Capacity ratio 0.66 th (s) 39.2 Sum of lost time (s) 11.9 HCM 2000 Level of Service (s) 11.9 HCM 2000 Level of Service (s) 11.9 HCM 2000 Level of Service (s) 11.9 1.9 HCM 2000 Level of Service (s)	v/c Ratio	0.54		0.44		0.00	0.57	
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	12.8		10.2		18.8	7.2	
2 0.4 0.3 72.6 0.4 13.1 10.5 91.4 7.6 13.1 10.5 12.4 13.1 10.5 12.4 Y Y (Capacity ratio 0.66 Service 1.6) (Ultilization 49.6% ICU Level of Service 1.6) 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Progression Factor	1.00		1.00		1.00	1.00	
13.1 10.5 91.4 7.6 13.1 10.5 12.4 13.1 10.5 12.4 13.1 10.5 12.4 13.1 10.5 12.4 14.9 HCM 2000 Level of Service of Ser	Incremental Delay, d2	0.4		0.3		72.6	0.4	
B	Delay (s)	13.1		10.5		91.4	7.6	
13.1 10.5 12.4 9	Level of Service	В		В		ш.	¥	
y B B y 11.9 HCM 2000 Level of Service lefay 11.9 HCM 2000 Level of Service ocapacity ratio 0.66 Sum of lost time (s) In (s) 39.2 Sum of lost time (s) Utilization 49.6% ICU Level of Service 15 ICU Level of Service	Approach Delay (s)	13.1		10.5			12.4	
11.9 HCM 2000 Level of Service 0.66 S9.2 Sum of lost time (s) 49.6% ICU Level of Service 15	Approach LOS	В		В			В	
11.9 HCM 2000 Level of Service 0.66 39.2 Sum of lost time (s) 49.6% ICU Level of Service 15	Intersection Summary							
0.66 39.2 Sum of lost time (s) 49.6% ICU Level of Service 15	HCM 2000 Control Delay			11.9	Н	M 2000 I	evel of Service	В
39.2 Sum of lost time (s) zation 49.6% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		99.0				
Utilization 49.6% ICU Level of Service 15 ICU Level of Service 15	Actuated Cycle Length (s)			39.2	S	m of lost	time (s)	14.8
g	Intersection Capacity Utilizat	ion		49.6%	⊇	U Level o	Service	A
	Analysis Period (min)			15				
	 Critical Lane Group 							

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Balboa Station 24: Morena Blvd & Avati Dr

Horizon Year with Preferred LU Timing Plan: PM Peak Period

Lano Grann							
raile Gioup	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	200	26	713	201	73	1364	
v/c Ratio	0.34	0.18	0.46	0.15	0.30	0.67	
Control Delay	18.7	7.8	11.5	6.0	22.4	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.7	7.8	11.5	6.0	22.4	8.2	
Queue Length 50th (ft)	24	0	75	0	11	76	
Queue Length 95th (ft)	21	24	125	12	25	168	
Internal Link Dist (ft)	317		2304			3170	
Tum Bay Length (ft)		135		115	120		
Base Capacity (vph)	2186	1029	2596	1583	275	2838	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	60.0	90.0	0.27	0.13	0.27	0.48	
Intersection Summary							

Synchro 9 Report Page 44 KHA Queues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 24: Morena Blvd & Avati Dr

																																					4	<	4 E	A 153
→	SBT	*	1255	1900	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	1364		0	0 1364	0 1364 NA	0 1364 NA 2	0 1364 NA 2 5	0 1364 NA 2 2 5 5	0 1364 NA 2 2 5 5 27.1	0 NA 2 2 5 5 27.1 27.1	0 NA NA 2 2 5 5 27.1 27.1 0.60	1364 NA 2 5 5 27.1 27.1 0.60 5.7 5.0	1364 NA 2 5 5 27.1 27.1 0.60 5.7 5.0	1364 NA 2 2 27.1 27.1 27.1 5.7 5.7 5.0 6.0 2126 c0.39	0 1364 NA 2 27.1 27.1 0.60 5.7 5.0 60.39	0 1364 NA 2 2 27.1 27.1 0.60 5.7 5.0 5.0 6.0.39	0 NA NA 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2	0 1364 NA NA NA 2 2 27.1 27.1 27.1 5.0 5.0 5.0 5.0 5.0 6.0 6.39 6.0 6.4 5.8 5.8 1.00	0 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 NA NA NA STATE OF S	0 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 NA NA S 2 5 5 2 27.1 27.1 0.00 5.0 5.0 6.8 6.8 6.8 A A A	0 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 0 1364 NA NA NA NA NA NA NA NA NA NA NA NA NA	0 NA NA NA NA NA NA NA NA NA NA NA NA NA
٠	SBL	×	67	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	73	•	0	73	73 Prot	73 Prot 5	73 Prot 5	73 Prot 5 5	73 Prot 5 5 3.6 3.6	73 Prot 5 3.6 3.6 3.6	73 Prot 5 3.6 3.6 0.08 4.4	73 Prot 5 5 3.6 0.08 4.4 2.0													Prof 2 3.6 3.6 0.08 0.04 0.052 1.3 0.04 0.52 0.04 0.52 0.04 0.52 0.04 0.52 0.04 0.52 0.04 0.52 0.04 0.05 0.04 0.05 0.04 0.05 0.05 0.04 0.05 0.05		73 Prof 5 3.6 0.08 0.08 1.41 2.0 141 0.04 0.052 199 1.3 2.1.3 2.1.3 C	Prof 2 3.6 3.6 0.08 0.08 1.4 2.0 1.41 0.04 1.30 1.30 1.30 1.30 1.30 1.30 1.30 C.5 2.1.3 C.5 2.1.
•	NBR	X	185	1900	4.9	1.00	0.85	1.00	1583	1.00	1583	0.92	201	84		117	117 pm+ov	117 pm+ov 7	117 pm+ov 7 6	117 pm+ov 7 6 26.2	117 pm+ov 7 6 26.2 26.2	117 pm+ov 7 6 26.2 26.2 26.2 0.58	117 pm+ov 7 6 26.2 26.2 26.2 0.58 4.9	pm+ov 7 6 26.2 26.2 26.2 0.58 4.9	pm+ov 7 6 26.2 26.2 26.2 0.58 4.9 2.0	pm+ov 7 6 26.2 26.2 26.2 0.58 4.9 2.0 919 0.02	pm+ov 7 6 6 26.2 26.2 26.2 0.58 4.9 2.0 919 919	117 7 7 6 6 26.2 26.2 26.2 0.58 4.9 2.0 919 0.02 0.05	pm+ov 7 7 6 6 26.2 26.2 0.58 4.9 2.0 919 0.02 0.05 0.05	117 pm+ov 7 6 6 6 2.6.2 2.6.2 2.0.2 2.0 2.0 919 0.02 0.03 0.03 4.3 1.00	pm+ov 7 7 6 6 26.2 26.2 26.2 0.58 4.9 2.0 919 0.02 0.05 0.05 4.3 4.3 4.3 4.3 1.00 0.05 0.05 0.05 0.05 0.05 0.05 0.05	117 pm+ov 6 6 26.2 26.2 26.2 26.2 0.58 4.9 919 0.02 0.05 0.05 0.05 1.00 0.05 4.3	117 pm+ov 7 7 6 26.2 26.2 26.2 26.2 2.0 0.58 919 0.02 0.02 0.03 4.3 1.00 0.01 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3	117 pm+ov 7 7 6 26.2 26.2 26.2 26.2 2.0 2.0 919 0.02 0.03 4.3 4.3 4.3 4.3 4.3	117 pm+ov 7 6 6 26.2 26.2 26.2 0.58 4.9 2.0 919 0.02 0.05 0.05 0.05 1.00 0.05 4.3 4.3	117 pm+ov 7 6 6 26.2 26.2 26.2 2.0 2.0 919 0.02 0.05 0.03 1.00 4.3 4.3	117 pm+ov 7 6 6 2.6.2 2.6.2 2.6.2 2.0 9.19 9.19 0.02 0.02 0.13 4.3 1.00 0.00 0.13 4.3 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	117 pm+ov 7 6 6 26.2 26.2 26.2 2.0 2.0 919 0.05 0.05 0.05 0.03 4.3 4.3 4.3 4.3	pm+ov 7 6 6 26.2 26.2 26.2 26.2 20.0 20.0 20.0	pm+ov Prof 7 5 6 6 8 6 26.2 3.6 26.2 3.6 26.2 3.6 0.58 0.08 4.9 4.4 4.2 0.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2
—	NBT	++	656	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	713	0		713	713 NA	713 NA 6	NA 6	NA 6	NA 6 6 18.8 18.8	NA 6 6 18.8 18.8 0.42	NA 6 6 0.42 0.42 6.0	NA 6 6 0.42 6.0 6.0 5.2	NA 6 6 6 18.8 18.8 0.42 6.0 5.2 5.2	NA 6 6 6 6 0.042 6.0 6.0 6.0 6.2 6.2 1475 0.20	NA NA 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	NA 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	NA 6 6 6 18.8 18.8 18.8 0.42 6.0 6.0 6.0 6.0 6.0 0.20 0.20 0.48 0.48 0.48	NA 6 6 6 18.8 18.8 18.8 0.42 6.0 6.0 6.0 6.0 0.20 0.20 0.48 9.6 9.6 1.00	NA 6 6 6 118.8 118.8 0.42 6.0 5.2 6.0 5.2 0.20 0.20 0.48 9.6 9.6 1.00 0.6	NA 6 6 6 118.8 118.8 0.42 6.0 5.2 6.0 5.2 0.20 0.20 0.48 9.6 1.00 0.6 10.2	NA 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	NA 66 60 60 60 60 60 60 60 60 60 60 60 60	NA 660 600 600 600 600 600 600 600 600 60	NA 66.0 18.8 18.8 18.8 18.8 19.4 6.0 14.7 17.3 17.3 14.7 17.7 17.7 17.7 17.7 17.7 17.7 17.7	NA	NA NA NA NA NA NA NA NA NA NA NA NA NA N	NA NA NA NA NA NA NA NA NA NA NA NA NA N	NA NA NA NA NA NA NA NA NA NA NA NA NA N
F	NBU	4	00	1900								0.92	0	0	<	O	Prot	Prot 1	Prot 1	Prot 1	Prot 1	Prot	Prot	Prot	Prot	Prot 1	Prot to 1	Prot	Pro total	Piot	- to to to to to to to to to to to to to	Prot 1	Piot -	Prot	Prot	Prot	P P P P P P P P P P P P P P P P P P P	Prot 1 1 8.9	Prot 1 1 8.9 0.67 45.1	Prof 1 1 8.9 8.9 0.67 45.1
4	WBR	K.	25 25	1900	4.9	1.00	0.85	1.00	1583	1.00	1583	0.92	26	49	10	2	Prot	Prot 7	Prot	Prot 7	Prot 7.4 7.4 7.4	Prot 7.4 7.4 7.4 0.16	Prot 7.4 7.4 7.4 0.16 4.9	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.5 0.01	Prot 7 7 7 7.4 7.4 7.4 7.4 9.16 4.9 2.0 2.59 0.01	Prot 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Prot 7 7.4 7.4 7.4 7.4 7.4 2.0 2.5 2.5 0.01 0.04 0.04 15.9	Prot 7 7.4 7.4 7.4 7.4 0.16 4.9 2.0 2.5 0.01 0.04 15.9	Prot 7 7.4 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.0 2.0 0.01 1.00 0.00	Prot 7 7.4 7.4 0.16 4.9 2.0 2.0 2.0 2.0 2.0 0.01 1.00 1.00 1.00	Prot 7 7.4 7.4 0.16 4.9 2.0 2.0 2.0 2.0 2.0 0.01 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0 0.00 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prot 7 7.4 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.59 0.01 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Prot 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Prot 7 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.	Prof. 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.
/	WBL	£	184	1900	4.9	0.97	1.00	0.95	3433	0.95	3433	0.92	200	0	200		Prot	Prot 7	Prot 7	Prot 7	Prot 7.4 7.4 7.4	Prot 7 7.4 7.4 7.4 0.16	Prot 7 7.4 7.4 7.4 0.16 4.9	Prot 7 7.4 7.4 0.16 4.9 2.0	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 563	Prot 7.4 7.4 7.4 0.16 4.9 2.0 2.0 563	Prot 7 7.4 7.4 0.16 4.9 2.0 563 c0.06	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 563 0.06	Prot 7 7.4 7.4 0.16 4.9 2.0 2.0 563 0.06 0.36	Prot 7 7.4 7.4 0.16 4.9 2.0 2.0 563 0.06 0.36 1.67	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 563 0.06 0.36 1.6.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Prot 7.4 7.4 7.4 7.4 0.16 2.0 2.0 563 0.06 0.36 1.6.7 1.00 1.00 1.6.9 1.6.9	Prot 7 7.4 7.4 7.4 7.4 7.4 7.4 9.16 2.0 2.0 563 0.06 0.06 1.00 0.36 1.67 1.00 0.16 9.16 9.16 9.16 9.16 9.16 9.16 9.16 9	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.0 6.36 0.36 0.36 1.00 0.1 1.00 0.1 1.69 1.69	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.0 563 0.36 0.36 1.00 0.1 1.00 1.00 1.69 B B	Prot 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4	Prot 7.4 7.4 7.4 7.4 6.16 6.3 6.0.0 6.0.0 6.0.0 1.00 0.1 1.6.9 1.6.9 1.6.9 1.6.9	Prot 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4	Prot 7.4 7.4 7.4 0.16 4.9 2.0 2.0 0.36 1.6.7 1.00 0.1 16.9 B 16.9 B 16.9 B 17.9	Prot 7.4 7.4 0.16 4.9 2.0 5.63 0.36 1.6.7 1.00 0.1 1.00 0.1 1.6.9
		rations	e (vph)	hpl)	e (S)	tor			rot)		erm)	tor, PHF	(-	tion (vph)	low (vph)			ases	ases	ases ases en, G (s)	ases ases en, G (s) en, g (s)	ases ases en, G (s) en, g (s) Ratio	ases ases en, G (s) en, g (s) Ratio ne (s)	sses ases en, G (s) en, g (s) Ratio ne (s)	1ses ases en, G (s) en, g (s) Ratio ne (s) Ision (s)	ises ases en, G (s) en, g (s) Ratio ne (s) ision (s)	sses ases en, G (\$) en, g (\$) Ratio in e (\$) Sion (\$)	sses sses en, G (\$) en (\$) Ratio ne (\$) o (yph)	sses sses en, G (s) en, g (s) Ratio ne (s) Silon (s) o (wph) n	sses sses sses en, G (\$) en, g (\$) Ratio ne (\$) Sision (\$) o (vph) n	sses sses saes an, G (s) en, g (s) Radio nne (s) o (vph) n n n actor	sses sses sses sn. G (s) en, g (s) Ratio nn e(s) sion (s) n n n y, d1	sses ses ser, as ses ser, as ser, as s	sses an, G (s) an, g (s) sion (s) sion (s) o (uph) n n n actor selay, d2 fce cce	sses sses sses an. G (s) an. g (s) Ratio ne (s) (vph) n n n n n n o (vph) n n actor	sses sses sses sacs sn, G (s) sn, G (s) Ratio nn (s) o (vph) n n m n y, d1 cactor belay, d2 cc cc Sacs Sacs Sacs Sacs Sacs Sacs Sac	sses sses sses sases an, G (\$) an pe (\$) n n n n n n n n n n n n n n n n n n n	sses an, G (s) an, g (s) Reatio ne (s) sion (s) (wph) n n n n n n n n n n n n n n n n n n n	Turn Type Proceeder Phases Permitted Phases Permitted Phases Actuated Green. G (s) Proceeder Phases Actuated Green. G (s) Proceeder Phases Permitted Proceeder Proceder Proceeder Proceder Proceder Proceder Proceder Proceder Proceder Pr	Turn Type Protected Phases Protected Phases Actualed Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective Green, G (s) Effective G (s) Effec
	Movement	-ane Configurations	Traffic Volume (vph)	deal Flow (vphpl)	Fotal Lost time (s)	ane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	-It Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	Reduction (vph)	ane Group Flow (vph)	T. T.	urn Iype	rotected Pha	Turn Type Protected Phate Permitted Phate	urn Type Protected Pha Permitted Pha Actuated Grei	urn Type Protected Pha Permitted Pha Actuated Gree	urn Type Protected Pha Permitted Pha Actuated Gree Effective Gree Actuated g/C	urn Type rotected Pha Permitted Pha cutuated Gree ffective Gree cutuated g/C	urn Type rotected Pha Permitted Ph; ctuated Gree ffective Gree cctuated g/C clearance Tir	urn Type Protected Pha Permitted Pha Cutuated Gree Effective Gree Cutuated g/C Cutuated g/C Clearance Tin Ehicle Exten	un type rotected Pha emitted Pha cruated Grec ffective Grec cruated g/C learance Tin ehicle Exten ane Grp Cap.	un iype rotected Pha emitted Phe ectuated Gree (ctuated Gree ciffective Gree (clearance Tin ehicle Exten ane Grp Cat 1/8 Ratio Prot 1/8 Ratio Perf 1/8 Ratio Perf 1/8 Ratio Perf 1/8 Ratio Perf 1/8 Ratio Perf 1/8 Ratio Perf	urn rype Protected Pha Protected Pha Permitted Phc Effective Gree Effective Gree Effective Gree Fortune Grif Erkliche Exten ane Grp Car A'S Ratio Prot I'S Ratio Perr I'C Ratio	urn type Protected Pha Pemited Ghe Actuated Gre Effective Gre Cutuated g/C Clearance Tin Cehicle Exten ane Grp Cap "R Ratio Port Ys Ratio Pert Vc Ratio	urn type Protected Pha Permited Gere Actualed Gree Iffective Gree Actualed g/C Ilearance Tin Chicle Exten ane Grp Ca; 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio Prot 7/8 Ratio	urn rype Protected Phae Protected Phae Actuated Gree Effective Gree Effective Gree Effective Gree Actuated g/C Actuated g/	urn type Protected Pha ermitted Pha ermitted Protected Gree Effective Gree Effective Gree Effective Gree From From From Celtice Exten ane Grp Cag "R Ratio Perr "R Ratio Perr "R Ratio Perr "R Ratio Perr "R Ratio Perr "R Ratio Perr "R Ratio Perr "R Ratio Perr "Perr	un type rotected Pha- rotected Pha- rotected Pha- rotected Pha- rotected Gree riffetive Gree riffetive Gree riffetive Gree rotected glob rotected glob rotected glob rotected glob rotected glob rotected	um type Poetcied Physical Poetcied Physical Poetcied Physical Poetcied Physical Poetcied Physical Poetcied Peetcied Peetcied Poetcied Peetcied Peetcied Peetcied Poetcied Peetcied Peetcied Peetcied Poetcied Peetcied Peetcied Peetcied Peetcied Poetcied Peetcied Peetcied Peetcied Peetcied Peetcied Peet	fun type Pomitted Pra- Pomitted Pra- Pomitted Pra- Pomitted Pra- Pomitted Pra- Pomitted Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifective Gree Fifetive Gree Fifet	fun type Protection by pe Protection by	Protected Phases Permitted Phases Permitted Phases Permitted Phases Permitted Phases Actuated Green, G (s) Actuated gC Ratio Clearance Time (s) Vehicle Extension (S) Lane Gsp Cap (ph) Vs Ratio Perm	unn lype Torocted Phases Permitted Phases Permitted Phases Actualed Green, G (s) Effective Green, g (s) Actualed Green G (s) Effective Green, g (s) Actualed Green G (s) Lehicle Extension (s) ane Grp Cap (wh) Als Ratio Pront Als Ratio Pront Als Ratio Pront Als Ratio Pront Als Ratio Pront Als Ratio Als Rat	un type Pemilited Phy Pemilite	lum lypes Protocted Phases Permitted Phases Actuated Green, G (s) Effective Green, g (s) Actuated Green, G (s) Effective Green, g (s) Actuated Green, G (s) Clearance Time (s) Clearance Time (s) Vehicle Extension (s) Ara Bio Prot Ars Railo Perm Ar

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KHA Oueues

Balboa Station 25: Morena Blvd & Balboa WB Ramps

Horizon Year with Preferred LU Timing Plan: PM Peak Period

•	SBR	1054	19.0	2.2	0.0	2.2	0	0		100	1583	0	0	0	19.0	
→	SBT	845	0.55	12.0	0.0	12.0	9/	145	2304		1567	0	0	0	0.54	
←	NBT	1363	99.0	8.3	0.0	8.3	88	190	882		2114	0	0	0	0.64	
•	NBL	86	0.58	36.9	0.0	36.9	22	#82		200	170	0	0	0	0.58	
*	EBR	282	0.52	7.2	0.0	7.2	9	48		20	761	0	0	0	0.37	
1	EBL	163	0.42	16.9	0.0	16.9	32	69	439		681	0	0	0	0.24	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 25: Morena Blvd & Balboa WB Ramps

Movement EBI EBR NBI NBT SBT SBR A		4	<u>/-</u>	•	—	-	•	
figurations	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
tume (vph) 150 259 90 1254 777 970 tume (vph) 150 259 90 1254 777 970 v (vphp) 190 190 190 190 190 190 v (vphp) 190 100 100 100 190 190 time 100 100 100 100 100 100 time 0.55 100 100 100 100 100 time 0.55 100 100 100 100 100 time 0.55 100 0.95 100 100 100	Lane Configurations	¥	K.	je-	*	‡	R.	
(v(php)) 190 12	Traffic Volume (vph)	150	259	8 8	1254	777	970	
time (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	rutule volume (vpm) Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Factor 1.00 1.00 1.00 0.95 0.95 1.00 led 0.95 1.00 0.85 led 0.95 1.00 0.85 1.00 0.95 1.00 0.85 led 0.95 1.00 0.95 1.00 0.85 led 0.95 1.00 0.95 1.00 1.00 0.85 led 0.95 1.00 0.95 1.00 1.00 0.90 0.95 1.00 1.00 0.90 0.90 0.90 0.90 0.90 0.90	Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
ted (100 0.85 1.00 1.00 0.85 ted (100) 0.85 ted (100) 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	
ted 0.95 1.00 0.95 1.00 1.00 v (pord) 1770 1583 1770 3539 3539 1583 v (pord) 163 28 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 89 98 1363 845 1054 p section (vph) 163 84 4 5 5 6 1054 p section (vph) 163 84 133 2103 1502 1583 p section (vph) 163 84 143 133 2103 1502 1583 p section (vph) 163 84 143 138 192 57 92 0.0 p section (vph) 163 84 143 138 192 57 92 0.0 p section (vph) 163 84 143 138 192 57 92 0.0 p section (vph) 163 84 143 188 192 57 92 0.0 p section (vph) 163 85 56 145 p section (vph) 163 85 56 p section (vph) 163 84 143 144 143 144 144 144 144 144 144 14	Fit	1.00	0.85	1.00	1.00	1.00	0.85	
w (prod) 1770 1583 1770 3559 3559 1583 w (prod) 1770 1583 1770 3559 1583 1583 r (prh) 170 1583 1770 3559 1583 1583 r (ph) 170 1583 1770 3559 3539 1583 r (ph) 183 282 98 1363 845 1054 up Flow (ph) 163 89 98 1363 845 1054 p Perm Perm Perm Port NA Ree Green, G (s) 9.2 9.2 3.2 5.6 Ree Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0	Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00	
tried 0.95 1.00 0.95 1.00 1.00 from) 1770 1583 1770 3539 3539 1583 factor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, PHF 0.92 0.92 0.92 0.92 0.92 fractor, C(ph) 163 282 98 1363 845 1054 up Flow (uph) 163 88 1363 845 1054 up Flow (uph) 163 88 1363 845 1054 up Flow (uph) 163 88 1363 845 1054 pup Flow (uph) 163 84 1363 845 1054 pup Flow (uph) 163 84 142 84 1054 gCreen, G(s) 9.2 9.2 3.2 25.2 18.0 4.24 gCreen, G(s) 9.2 9.2 3.2 25.2 18.0 4.0 cap (uph) 384 343 133 2103 1502 1583 Prot (uph) 384 343 133 2103 1502 1583 Prot (uph) 384 343 133 2103 1502 1583 Prot (uph) 143 138 19.2 5.7 9.2 0.0 on Factor 1.00 1.00 1.00 1.00 1.00 Includely, d. 14.5 38.2 6.4 9.7 2.2 belay (s) 14.5 8 5.6 Included (s) 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	Satd. Flow (prot)	1770	1583	1770	3539	3539	1583	
w (perm) 1770 1583 1770 3559 3559 1583 r(pd) 0.92 0.92 0.92 0.92 0.92 0.92 (r(ph) 163 98 1363 845 1054 dub (low) 0 193 0 0 0 0 up Flow (vph) 163 89 98 1363 845 1054 phases 9 183 84 1054 0	Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00	
rfactor, PHF 092 092 092 092 092 092 091 091 091 091 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	1770	1583	1770	3539	3539	1583	
(vph) 163 282 98 1363 845 1054 clockion (vph) 163 282 98 1363 845 1054 publication (vph) 163 89 96 1363 845 1054 production (vph) 163 89 1363 845 1054 Phases 4 4 2 6 Free Flores 92 32 25.2 180 42.4 Green, G(s) 92 92 32 25.2 180 42.4 Green, G(s) 92 92 32 25.2 180 42.4 Green, G(s) 92 92 32 25.2 180 42.4 Green, G(s) 93 3.2 25.2 180 42.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 40.4 <t< td=""><td>Peak-hour factor, PHF</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td></td></t<>	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
up Flow (vph) 0 193 0 0 0 up Flow (vph) 163 89 98 1363 3845 1054 In Plases Perm Perm Perm Perm Perm Perm Phases 4 4 5 2 6 Free Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 0.2 0.0 0.4 0.4 0.0 a Finne(s) 3.0 3.0 3.0 3.0 3.0 3.0 A Perm 0.02 0.2 0.2 0.0 0.0 0.0 0.0 Perm 0.04 0.0 0.3 0.2 0.0	Adj. Flow (vph)	163	282	86	1363	845	1054	
up Flow (vph) 163 89 98 1363 845 1054 Phases Perm Perm Perm Pere Free Phases 4 5 2 6 Free Phases 4 4 5 2 6 Free Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 9.2 9.2 3.2 25.2 18.0 42.4 Green, G (s) 4.0	RTOR Reduction (vph)	0	193	0	0	0	0	
Phases Perm Perm Prof NA NA Free Phases 5 2 6 6	Lane Group Flow (vph)	163	86	86	1363	845	1054	
Phases	Turn Type	Perm	Perm	Prot	NA	NA	Free	
Phases	Protected Phases			2	2	9		
Green, 6 (s) 9,2 9,2 3,2 25,2 18,0 42,4 Green, 6 (s) 9,2 9,2 3,2 25,2 18,0 42,4 Green, 6 (s) 9,2 9,2 3,2 25,2 18,0 42,4 Green, 6 (s) 9,2 9,2 3,2 25,2 18,0 42,4 Green, 6 (s) 9,2 9,2 3,2 25,2 18,0 42,4 100 6 (s) 9,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4	Permitted Phases	4	4				Free	
Green g(s) 9.2 9.2 3.2 2.5.2 18.0 4.2.4 Gradio (S. Radio	Actuated Green, G (s)	9.5	9.2	3.2	25.2	18.0	42.4	
g/C Ratio 0.22 0.22 0.08 0.59 0.42 1.00 serime(s) 4.0 4.0 4.0 4.0 All 18,0 4.0 4.0 4.0 Cap (vph) 3.0 3.0 3.0 3.0 Cap (vph) 3.84 3.43 13.3 2103 1502 1583 Prof (vph) 0.06 0.39 0.24 Perm 0.09 0.06 0.39 0.24 Perm 0.42 0.26 0.74 0.65 0.56 0.67 On Factor 1.00 1.00 1.00 1.00 1.00 Included y, d.1 14.2 38.2 6.4 9.7 2.2 Everke B B B D A A A A A A A A A A A A A A A A	Effective Green, g (s)	9.5	9.2	3.2	25.2	18.0	42.4	
Time (s)	Actuated g/C Ratio	0.22	0.22	0.08	0.59	0.42	1.00	
Alexacology 30 30 30 30 30 30 30 30 30	Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		
Cap (vph) 384 343 133 2103 1502 1583 Proff 0.06 0.39 0.24 0.64 0.67 Perm 0.09 0.06 0.39 0.24 0.67 Perm 0.42 0.26 0.74 0.65 0.67 Delay dt 1.00 1.00 1.00 1.00 1.00 In Pactor 1.00 1.00 1.00 1.00 1.00 Brevie 0.8 0.4 1.0 0.5 2.2 2.2 Brevie B B A A A A A LOS B B B A A A A A D Control Delay 7.7 HCM 2000 Level of Service 0.93 1.01 Level of Service 0.93 1.01 Level of Service Perpetiod (min) 15 1.01 Level of Service 1.01 Level of Service 1.01 Level of Service	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		
Prof. 0.00 0.00 0.39 0.24 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Lane Grp Cap (vph)	384	343	133	2103	1502	1583	
Perm 0.09 0.06 0.067 14.2 0.26 0.74 0.65 0.65 0.67 14.3 13.8 19.2 5.7 9.2 0.0 15.1 14.2 38.2 6.4 9.7 2.2 Delay (3) 14.5 8.5 6.4 9.7 2.2 Delay (4) 1.1 14.2 38.2 6.4 9.7 2.2 Delay (5) 14.5 8.5 6.4 9.7 2.2 Delay (5) 14.5 8.5 6.4 9.7 2.2 Delay (5) 14.5 8.5 6.4 9.7 2.2 Delay (5) 14.5 8.5 6.4 9.7 2.2 Delay (5) 14.5 8.5 6.4 9.7 2.2 Delay (6) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/s Ratio Prot			90.0	0.39	0.24		
0.42 0.26 0.74 0.65 0.67	v/s Ratio Perm	0.09	90:0				20.67	
on Factor 14.3 13.8 19.2 5.7 9.2 0.0 on Factor 1.00 1.00 1.00 1.00 1.00 lian Delay, dz 0.8 10.4 19.0 1.7 2.2 erivbe B B D A A A A LOS B A A A A on Summary on Control Delay on Capacity Intitization 1.5 on Capacity Unitization 1.5 on Page 2.5 on Capacity Unitization 1.5 on Page 2.5 on Capacity Unitization 1.5	v/c Ratio	0.42	0.26	0.74	0.65	0.56	19:0	
on Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	14.3	13.8	19.2	2.7	9.2	0.0	
Ize Delay, d2 0.8 0.4 19,0 0.7 0.5 2.2 Fervice B B D A A A A Delay (s) 14.5 B B A A A A A LOS B B B B A A A A A LOS B B B B A	Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
15.1 14.2 38.2 64 9.7 2.2	Incremental Delay, d2	0.8	0.4	19.0	0.7	0.5	2.2	
B B D A A A B B B B B B B B B B B B B B B B	Delay (s)	15.1	14.2	38.2	6.4	6.7	2.2	
14.5 8.5 5.6 B A A A A 7.7 HCM 2000 Level of Service 3.93 Sum of lost time (s) 2.81 Sum of lost time (s) 2.81 Sum of lost time (s) 2.81 Sum of lost time (s) 2.81 Sum of lost time (s) 2.82 Sum of lost time (s) 2.83 Sum of lost time (s) 2.84 Sum of lost time (s) 2.84 Sum of lost time (s) 2.85 Sum of lo	Level of Service	В	В	۵	⋖	⋖	Α	
A A A 7.7 HCM 2000 Level of Service 3.93 Sum of lost time (s) 2.81 CU Level of Service 15 15 15 15 15 15 15 15 15 15 15 15 15 1	Approach Delay (s)	14.5			8.5	9.6		
7.7 HCM 2000 Level of Service acity ratio 0.93 Sum of lost time (s) zation 49.6% ICU Level of Service 15	Approach LOS	В			4	⋖		
7.7 HCM 2000 Level of Service 0.93 Sum of lost time (s) 224 Sum of lost time (s) 15 ICU Level of Service	Intersection Summary							
acity ratio 0.93 42.4 Sum of lost time (s) ration 49.6% ICU Level of Service	HCM 2000 Control Delay			7.7	Ħ	000C M	evel of Service	٨
zation 42.4 Sum of lost time (s) 22.4 Sum of lost time (s) 22.4 Sum of lost time (s) 23.4 Sum of lost time (s) 25.1 Sum of lost time (s) 25.1 Sum of lost time (s) 26.2 Sum of lost time (s) 27.2 Sum of lost time (s) 27.3 Sum of lost time (s) 27.4 Sum of lost time (s) 27.4 Sum of lost time (s) 27.4 Sum of lost time (s) 27.4 Sum of lost time (s) 27.4 Sum of lost time (s) 27.5 Sum of	HCM 2000 Volume to Canaci	ity ratio		0 03				
zation 49.6% ICU Level of Service	Actuated Cycle Length (s)	ily land		42.4	Ī	m of lost	time (s)	12.0
Ullization 47.0% ICU LEVEL UI SELVICE	Actuated Cycle Length (3)	2		40704	3 5	100 1001	tillie (s)	0.51
Analysis Petrod (min) 15	mersection capacity unitzat.	u0		49.0%	٦	n revel o	Service	¥
	Analysis Period (min)			2				

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KHA Queues

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Balboa Station							Ĭ	orizon	Horizon Year with Preferred LU
26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps	Balboa	Station	. Entra	ınce/B	alboa	EB Ra	sdw		Timing Plan: PM Peak Period
	1	†	ţ	4	•	•	ၨ	→	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	87	34	326	216	2	968	141	985	

	^	†	ļ	4	€	—	٠	→	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	87	34	326	576	2	968	141	985	
v/c Ratio	0.29	0.05	0.73	0.85	0.03	0.56	69.0	0.62	
Control Delay	14.4	6.7	25.1	25.4	7.4	9.6	32.4	11.4	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.4	6.7	25.1	25.4	7.4	9.6	32.4	11.4	
Queue Length 50th (ft)	18	2	86	108	_	9/	28	66	
Queue Length 95th (ft)	46	19	#204	#278	2	117	#107	146	
Internal Link Dist (ft)		105	879			1978		882	
Tum Bay Length (ft)					100		135		
Base Capacity (vph)	343	755	554	747	211	1927	250	1945	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.25	0.05	0.65	0.77	0.02	0.46	0.56	0.51	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Preferred LU S Timing Plan: PM Peak Period Balboa Station 26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps

•	SBR		= ;	1900								0.92	12	0	0																										
→	SBT	₩	895	1900	4.0	0.95	1.00	1.00	3533	1.00	3533	0.92	973	2	983	NA	9		20.3	20.3	0.45	4.0	3.0	1600	0.28		0.61	9.3	1.00	0.7	10.0	V	11.1	В							
٠	SBL	¥	130	1900	4.0	1.00	1.00	0.95	1770	0.24	455	0.92	141	0	141	Perm		9	20.3	20.3	0.45	4.0	3.0	206		c0.31	89.0	6.7	1.00	9.1	18.8	В									
•	NBR		180	1900								0.92	196	0	0																					В		8.0	ပ		
•	NBT	₩.	644	1900	4.0	0.95	0.97	1.00	3423	1.00	3423	0.92	700	24	842	NA	2		20.3	20.3	0.45	4.0	3.0	1551	0.25		0.54	8.9	1.00	0.4	9.3	Þ	9.3	⋖							
•	NBL	F	20 1	1900	4.0	1.00	1.00	0.95	1770	0.21	384	0.92	2	0	2	Perm		2	20.3	20.3	0.45	4.0	3.0	174		0.01	0.03	8.9	1.00	0.1	6.9	⋖				Service					
✓	WBR	X	530	1900	4.0	1.00	0.85	1.00	1583	1.00	1583	0.92	929	101	475	Perm		∞	16.5	16.5	0.37	4.0	3.0	583		c0.30	0.81	12.8	1.00	8.6	21.3	ပ				Level of 3		time (s)	of Service		
ţ	WBT	₩	93	1900	4.0	1.00	1.00	96:0	1782	0.72	1343	0.92	33	0	326	NA	80		16.5	16.5	0.37	4.0	3.0	464		0.27	0.73	12.2	1.00	5.3	17.5	В	19.9	В		HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
/	WBL		300	1900								0.92	326	0	0	Perm		∞																		Ĭ		S	2		
~	EBR		LC II	1900								0.92	2	0	0																					13.2	0.74	44.8	70.8%	15	
†	EBT	¢Ì	77	1900	4.0	1.00	0.98	1.00	1822	1.00	1822	0.92	59	က	31	NA	4		16.5	16.5	0.37	4.0	3.0	671	0.02		0.05	9.1	1.00	0.0	9.1	V	10.1	В							
4	EBL	r	88	1900	4.0	1.00	1.00	0.95	1770	0.45	830	0.92	87	0	87	Perm		4	16.5	16.5	0.37	4.0	3.0	305		0.10	0.29	10.0	1.00	0.5	10.5	B					y ratio		<u></u>		
	Movement	Lane Configurations	Traffic Volume (vph)	I deal Flow (yphpl)	Total Lost time (s)	Lane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Station 27: Morena Blvd & Baker St

Horizon Year with Preferred LU Timing Plan: PM Peak Period

																																								A	
→	SBT	‡	840	840	Free	%0	0.92	913						None													SB 3	456	0	0	1700	0.57	0	0.0						ICU Level of Service	
٠	SBL	۴	47	47			0.92	21										437			437	4.1		2.2	95	1119	SB 2	456	0	0	1700	0.27	0	0.0						U Level	
•	NBR	*	22	22			0.92	24																			SB 1	21	21	0	1119	0.05	4	8.4	⋖	0.4				2	
•	NBT	*	380	380	Free	%0	0.92	413						None													NB 2	24	0	24	1700	0.01	0	0.0					80	36.7%	15
4	WBR		28	28			0.92	30										413			413	6.9		3.3	95	288	NB 1	413	0	0	1700	0.24	0	0.0		0.0					
>	WBL	>-	15	15	Stop	%0	0.92	16										972			972	9.9		3.5	93	239	WB 1	46	16	30	330	0.12	10	15.5	O	15.5	ပ			ration	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (ft)	Walking Speed (ft/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (ft)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	IF (S)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	CSH	Volume to Capacity	Onene Length 95th (ft)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Station Horizon Year with Preferred LU 28: Morena Blvd & Gesner St Timing Plan: PM Peak Period

20. INDIGINA DIVA & COSIGI OF	000	5				Things I M. I M. I Can I Clied
	•	+	•	٠	→	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	134	439	20	111	985	
v/c Ratio	0.34	0.26	90.0	0.30	0.44	
Control Delay	8.6	10.4	4.7	17.5	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.6	10.4	4.7	17.5	5.5	
Queue Length 50th (ft)	∞	38	0	71	49	
Queue Length 95th (ft)	43	9/	16	61	100	
Internal Link Dist (ft)	1333	298			3362	
Turn Bay Length (ft)			95	95		
Base Capacity (vph)	1295	1995	914	461	2876	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.22	0.05	0.24	0.34	
Intersection Summary						

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KHA Oueues

Balboa Station 28: Morena Blvd & Gesner St

Horizon Year with Preferred LU Timing Plan: PM Peak Period

→					_		0 0.95				5 1.00	١	_	6			ot NA				6 21.3		4 6.0			_					3 0.3		,	0.2 A		HCM 2000 Level of Service A		Sum of lost time (s) 14.7	a	
→	NBR SBL	r R	46 102		_		1.00 1.00				1.00 0.95	Ì	0.92 0.92	50 111		19 111	Perm Prot			13.4 3.6			5.9 4.4		585 176	90:0			7.3 15.7		0.0 5.3					HCM 20		Sum of I	ICU Lev	
←	WBR NBT	**	86 404		1900 1900	5.9	0.95	1.00	1.00	3539	1.00	3539	0.92 0.92	4	0 0		AA	2		13.4	13.4	0.37	5.9	4.4	1310	0.12		0.34	8.2	1.00	0.3	4. <	¥ 00	0.5 A		7.4	0.52	36.2	41.1%	
\	WBL N	>	38			4.4	1.00	0.91	86:0	1663	86:0	1663		41	81	53	Prot	∞		4.5	4.5	0.12	4.4	2.0	506	c0.03		0.26	14.3	1.00	0.5	14.6 D	14 £	0.4 B			acity ratio		ation	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	퐈	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Tum Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Approach Doloy (c)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	

KHA HCM Signalized Intersection Capacity Analysis

•	SBR	1152	0.75	19.1	0.0	19.1	233	396			1536	<u></u>	0	0	0.75	
4	WBR	445	0.50	3.8	0.0	3.8	0	52		300	1005	0	0	0	0.44	
ţ	WBT	1153	0.59	21.0	0.0	21.0	167	206	362		2504	0	0	0	0.46	
†	EBT	2317	0.46	0.3	0.0	0.3	0	0	592		5081	0	0	0	0.46	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Turn Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

	•	†	ļ	✓	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	*-		N. N.	
Traffic Volume (vph)	0	2132	1061	409	0	1060	
Future Volume (vph)	0	2132	1061	409	0	1060	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900 ĝ.ĝ	
l otal Lost time (s)		2.0	4.0	4.0		2.0	
Lane Util. Factor		0.91	0.91	1.00		0.88	
!		1.00	1.00	0.85		0.85	
Fit Protected		1.00	1.00	1.00		1.00	
Satd. Flow (prot)		5085	5085	1583		2787	
FIt Permitted		1.00	1.00	1.00		1.00	
Satd. Flow (perm)		5085	5085	1583		2787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	2317	1153	445	0	1152	
RTOR Reduction (vph)	0	0	0	274	0	27	
Lane Group Flow (vph)	0	2317	1153	171	0	1125	
Turn Type		NA	NA	Perm		Prot	
Protected Phases		14	8				
Permitted Phases				8			
Actuated Green, G (s)		81.7	31.4	31.4		44.3	
Effective Green, g (s)		77.7	31.4	31.4		44.3	
Actuated g/C Ratio		0.95	0.38	0.38		0.54	
Clearance Time (s)			4.0	4.0		2.0	
Vehicle Extension (s)			3.0	3.0		3.0	
Lane Grp Cap (vph)		4836	1954	809		1511	
v/s Ratio Prot		0.46	c0.23			c0.40	
v/s Ratio Perm				0.11			
v/c Ratio		0.48	0.59	0.28		0.74	
Uniform Delay, d1		0.2	20.0	17.4		14.4	
Progression Factor		1.00	1:00	1:00		1.00	
Incremental Delay, d2		0.1	0.5	0.3		2.0	
Delay (s)		0.3	20.5	17.6		16.4	
Level of Service		A	ပ	2		a	
Approach Delay (s)		0.3	19.7		16.4		
Approach LOS		A	В		В		
Intersection Summary							
HCM 2000 Control Delay			10.1	일 	:M 2000 L	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	atio		89:0				
Actuated Cycle Length (s)			81.7	NS.	Sum of lost time (s)	ime (s)	6.0
Intersection Capacity Utilization			64.2%	ਠ	CU Level of Service	Service	U
Analysis Period (min)			15				
c Critical Lane Group							

Critical Lane Group

	ś		
	9	=	
•	į	1	
i	۰	7	
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	4	Ë	
:	•		
	(7	

Horizon Year with Preferred LU Timina Plan: PM Peak Period

						Timing	Timing Plan: PM Peak Period	ak Period
Arterial Level of Service: EB Garnet Ave	f Service: EE	3 Garnet Ave			*Reducti	on of sig	*Reduction of signal delay for	y for
					transit	transit queue iump lane	ump lane	
	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	LOS
ō		טט	404	000	4000	000	0.0	L
Omey or	Ē	8	1.71	5.00	0.001	00.0	0.4	ŀ
Balboa Ave	=	30	23.5	29.8	53.3	0.19	12.5	ш.
Soledad Mtn Rd	=	32	27.3	8.3	35.6	0.23	23.2	O
Bond St	=	35	21.0	0.5	21.5	0.17	28.1	Ф
Mission Bay Dr	=	35	15.5	59.9	75.4	0.12	5.9	ш.
l-5 Off-ramp [★]	=	45	24.2	10:0	2.4 13.0 36	36.€ 0.23	19.5	Δ
Balboa WB Ramps	=	45	7.1	1.0	8.1 8.1	20.0	29.0	Ω
Moraga Ave [★]	=	45	22.2	4 G.5	.3 28.7 26.5	5.5 0.20	25.6	ပ
Clairemont Dr		45	49.7	71.9	121.6	0.62	18.4	
Total	=		202.6	293.6	496.2	1.92	13.9	ш

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	Ē	Speed	SOT
Clairomont Dr	=	AF	117	57.0	7.0 G	0.13	6.7	ш
Moraga Ave	:=	45	49.7	19.5	69.2	0.62	32.3	. ш
Balboa WB Ramps	=	45	22.2	25.9	48.1	0.20	15.3	ш
Santa Fe St	=	45	7.1	0.3	7.4	0.07	31.8	В
Mission Bay Dr	=	45	24.2	56.9	81.1	0.23	10.3	ш.
Bond St	=	35	15.5	1.1	16.6	0.12	26.9	O
Soledad Mtn Rd	=	32	21.0	27.7	48.7	0.17	12.4	ш
Garnet Ave	=	32	27.3	1.2	28.5	0.23	29.0	Ω.
Olney St	=	30	23.5	18.1	41.6	0.19	16.0	ш
Total	=		205.2	208.6	413.8	1.97	17.1	

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	Œ	Speed	SOT
101	- 110	20	000	כנ	A 7.0	מטט	0 30	C
TO DOOMOSON		3	0.04	5.5	F:17	V.£V	7.07	2
		r.c	47.0		1 00	0 7 0	10.4	L
IMISSION DAY DI	E	S	0.51		0.00	21.0	C.21	
Bunker Hill St	=	32	14.6	19.4	34.0	0.11	11.5	ш
Magnolia Ave	=	35	21.4	10.5	31.9	0.17	18.9	O
Garnet Ave	=	32	13.8	40.4	54.2	0.10	6.8	ш.
Damon Ave	=	35	11.7	24.6	36.3	0.09	8.6	ш.
Bluffside Av	=	32	20.1	3.9	24.0	0.16	23.6	O
Total	≡		121.0	120.3	241.3	0.94	14.0	ш

KHA Arterial Level of Service

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Balboa Station

Horizon Year with Preferred LU Timing Plan: PM Peak Period

Arterial Level	Arterial Level of Service: SB Mission Bay Dr	Mission Ba	y Dr				
	Arterial	Flow	Running	Signal	Travel	Dist	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed
A 1. 72 10	100	מני	טטט	40.4	A 00	0.40	c
Didinalde AV	E	3	0.02	1.7	1.70	51.5	5.0
Damon Ave	=	32	20.1	1.0	21.1	0.16	26.8
Garnet Ave	=	32	11.7	120.1	131.8	60.0	2.4
Driveway	=	32	13.8	18.3	32.1	0.10	11.5
Driveway	=	32	21.4	8.7	30.1	0.17	20.0
Grand Ave	=	32	14.6	65.0	79.6	0.11	4.9
Reserved St	#	35	15.9	3 6	19.6	0.12	3.00
Total	=		117.4	258.0	375.4	0.89	9.8

KHA Arterial Level of Service

APPENDIX I

MITIGATED PREFERRED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

	۶	→	•	•	←	•	4	†	/	/	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	f)		¥	∱ }		J.	f)			4	
Traffic Volume (vph)	13	1063	108	7	679	9	115	75	17	69	131	26
Future Volume (vph)	13	1063	108	7	679	9	115	75	17	69	131	26
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		4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	1837		1770	3532		1770	1812			1806	
Flt Permitted	0.35	1.00		0.05	1.00		0.42	1.00			0.85	
Satd. Flow (perm)	657	1837		97	3532		781	1812			1560	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	1155	117	8	738	10	125	82	18	75	142	28
RTOR Reduction (vph)	0	3	0	0	1	0	0	7	0	0	4	0
Lane Group Flow (vph)	14	1269	0	8	747	0	125	93	0	0	241	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	77.2	77.2		77.2	77.2		19.0	19.0			19.0	
Effective Green, g (s)	77.2	77.2		77.2	77.2		19.0	19.0			19.0	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.18	0.18			0.18	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.9	4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9		2.0	2.0			2.0	
Lane Grp Cap (vph)	478	1337		70	2572		139	324			279	
v/s Ratio Prot		c0.69			0.21			0.05				
v/s Ratio Perm	0.02			0.08			c0.16				0.15	
v/c Ratio	0.03	0.95		0.11	0.29		0.90	0.29			0.86	
Uniform Delay, d1	4.0	12.7		4.3	5.0		42.6	37.6			42.2	
Progression Factor	1.00	1.00		1.44	1.39		1.00	1.00			1.00	
Incremental Delay, d2	0.1	15.1		3.0	0.3		46.0	0.2			22.4	
Delay (s)	4.1	27.8		9.1	7.1		88.6	37.8			64.6	
Level of Service	А	С		Α	А		F	D			Е	
Approach Delay (s)		27.5			7.2			66.0			64.6	
Approach LOS		С			А			Е			Е	
Intersection Summary												
HCM 2000 Control Delay			28.5	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	city ratio		0.94									
Actuated Cycle Length (s)			106.0	Sı	um of lost	time (s)			9.8			
Intersection Capacity Utiliza	ition		89.6%	IC	CU Level	of Service			Е			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	44	^	7	44	^	7	1,1	44	7	77	†	77
Traffic Volume (vph)	661	659	538	231	526	247	441	568	282	252	338	358
Future Volume (vph)	661	659	538	231	526	247	441	568	282	252	338	358
deal 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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	718	716	585	251	572	268	479	617	307	274	367	389
RTOR Reduction (vph)	0	0	83	0	0	65	0	0	51	0	0	41
Lane Group Flow (vph)	718	716	502	251	572	203	479	617	256	274	367	348
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8	1	7	4	5	1	6	7	5	2	3
Permitted Phases			8			4			6			2
Actuated Green, G (s)	22.6	36.1	58.2	13.0	26.5	40.6	22.1	43.2	56.2	14.1	34.8	57.4
Effective Green, g (s)	22.6	36.1	58.2	13.0	26.5	40.6	22.1	43.2	56.2	14.1	34.8	57.4
Actuated g/C Ratio	0.18	0.29	0.47	0.10	0.21	0.32	0.18	0.35	0.45	0.11	0.28	0.46
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	620	1022	737	357	750	514	606	1223	711	387	518	1279
v/s Ratio Prot	c0.21	c0.20	0.12	0.07	0.16	0.04	c0.14	0.17	0.04	0.08	c0.20	0.05
v/s Ratio Perm			0.20			0.08			0.12			0.08
v/c Ratio	1.16	0.70	0.68	0.70	0.76	0.39	0.79	0.50	0.36	0.71	0.71	0.27
Uniform Delay, d1	51.2	39.6	26.1	54.1	46.3	32.7	49.2	32.4	22.6	53.5	40.5	20.9
Progression Factor	1.01	1.13	1.29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	87.4	2.2	2.0	5.1	5.1	0.2	6.5	1.5	0.1	4.8	8.0	0.0
Delay (s)	139.4	47.0	35.7	59.2	51.4	32.9	55.7	33.9	22.7	58.3	48.5	20.9
Level of Service	F	D	D	Е	D	С	Е	С	С	E	D	С
Approach Delay (s)		76.6			48.6			38.9			40.7	
Approach LOS		Е			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			54.9	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capa	city ratio		0.84									
Actuated Cycle Length (s)	1		125.0	S	um of los	st time (s)			19.0			
Intersection Capacity Utiliza	ation		79.6%	IC	CU Level	of Service	Э		D			
Analysis Period (min)			15									

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Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	44	7		^		#			
Traffic Volume (vph)	741	657	0	1312	0	210			
Future Volume (vph)	741	657	0	1312	0	210			
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0		4.0		4.0			
Lane Util. Factor	0.95	1.00		0.91		1.00			
Frt	1.00	0.85		1.00		0.86			
Flt Protected	1.00	1.00		1.00		1.00			
Satd. Flow (prot)	3539	1583		5085		1611			
FIt Permitted	1.00	1.00		1.00		1.00			
Satd. Flow (perm)	3539	1583		5085		1611			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	805	714	0	1426	0	228			
RTOR Reduction (vph)	0	382	Ö	0	Ö	89			
Lane Group Flow (vph)	805	332	0	1426	0	139			
Turn Type	NA	Perm		NA		Prot			
Protected Phases	4			5.8		5			
Permitted Phases		4							
Actuated Green, G (s)	17.0	17.0		36.6		11.6			
Effective Green, g (s)	17.0	17.0		36.6		11.6			
Actuated g/C Ratio	0.46	0.46		1.00		0.32			
Clearance Time (s)	4.0	4.0				4.0			
Vehicle Extension (s)	3.0	3.0				3.0			
Lane Grp Cap (vph)	1643	735		5085		510			
v/s Ratio Prot	c0.23			c0.28		0.09			
v/s Ratio Perm	55.20	0.21		55.25		3.00			
v/c Ratio	0.49	0.45		0.28		0.27			
Uniform Delay, d1	6.8	6.6		0.0		9.3			
Progression Factor	1.00	1.00		1.00		1.00			
Incremental Delay, d2	0.2	0.4		0.0		0.3			
Delay (s)	7.0	7.1		0.0		9.6			
Level of Service	A	A		A		A			
Approach Delay (s)	7.1	- ' '		0.0	9.6	,,			
Approach LOS	A			A	A				
				- '	- ' '				
Intersection Summary			4.1		ON 2000	ll . £ C ;		A	
HCM 2000 Control Delay			4.1	Н	GM 2000	Level of Service	е	А	
HCM 2000 Volume to Capa	acity ratio		0.44 36.6		uma afile -	t time o (o)		9.0	
Actuated Cycle Length (s)	-ti-u				um of lost			8.0	
Intersection Capacity Utiliza	ation		44.0%	IC	U Level	of Service		Α	
Analysis Period (min)			15						

Intersection Summary				
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	Α	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	36.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	44.0%	CU Level of Service	Α	
Analysis Period (min)	15			

c Critical	Lane	Group
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻሻ	^		14	444	7	ሻ	44	7	1/1/	44	7
Traffic Volume (vph)	186	752	62	434	716	124	126	406	440	210	344	285
Future Volume (vph)	186	752	62	434	716	124	126	406	440	210	344	285
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5027		3433	5085	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5027		3433	5085	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	817	67	472	778	135	137	441	478	228	374	310
RTOR Reduction (vph)	0	10	0	0	0	96	0	0	52	0	0	244
Lane Group Flow (vph)	202	874	0	472	778	39	137	441	426	228	374	66
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	8.6	17.9		11.7	20.3	20.3	8.7	15.8	27.5	5.6	12.7	12.7
Effective Green, g (s)	8.6	17.9		11.7	20.3	20.3	8.7	15.8	27.5	5.6	12.7	12.7
Actuated g/C Ratio	0.12	0.25		0.17	0.29	0.29	0.12	0.22	0.39	0.08	0.18	0.18
Clearance Time (s)	4.4	5./		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
Vehicle Extension (s)	2.0	3.5		2.0	3.0	3.0	2.0	2.4	2.0	2.0	2.6	2.6
Lane Grp Cap (vph)	417	1270		567	1457	453	217	789	614	271	634	283
v/s Ratio Prot	0.06	c0.17		c0.14	c0.15		c0.08	0.12	c0.11	0.07	0.11	
v/s Ratio Perm						0.02			0.15			0.04
v/c Ratio	0.48	0.69		0.83	0.53	0.09	0.63	0.56	0.69	0.84	0.59	0.23
Uniform Delay, d1	29.0	23.9		28.6	21.3	18.5	29.5	24.4	18.1	32.2	26.7	24.9
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	0.3	1.6		9.7	0.4	0.1	4.3	0.7	2.7	19.7	1.2	0.3
Delay (s)	29.4	25.6		38.3	21.6	18.5	33.9	25.1	20.9	51.8	27.9	25.2
Level of Service	С	С		D	С	В	С	С	С	D	С	C
Approach Delay (s)		26.3			27.0			24.3			33.0	
Approach LOS		С			С			С			С	
Intersection Summary												
HCM 2000 Control Delay			27.4	Н	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capa	city ratio		0.74									
Actuated Cycle Length (s)			70.8	S	um of los	t time (s)			20.5			
Intersection Capacity Utiliza	ation		62.0%	IC	CU Level	of Service	9		В			
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY



Site: 1 [AM - Future Preferred MITIGATED - Morena at Jutland - Copy]

Roundabout Roundabout

Move	nent Perfo	rmance - Ve	hicles								
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South:	Morena Blv	d									
8	T1	279	2.0	0.501	7.6	LOS A	4.1	104.8	0.07	0.01	20.2
18	R2	425	2.0	0.501	7.6	LOS A	4.1	104.8	0.07	0.01	19.1
Approa	ıch	704	2.0	0.501	7.6	LOS A	4.1	104.8	0.07	0.01	19.5
East: J	utland Ave										
1	L2	207	2.0	0.265	7.2	LOS A	1.1	27.1	0.44	0.36	19.1
16	R2	14	2.0	0.265	7.2	LOS A	1.1	27.1	0.44	0.36	19.0
Approa	ıch	221	2.0	0.265	7.2	LOS A	1.1	27.1	0.44	0.36	19.1
North:	Morena Blvo	b									
7	L2	4	2.0	0.203	6.1	LOSA	0.8	20.1	0.36	0.26	22.5
4	T1	178	2.0	0.203	6.1	LOS A	0.8	20.1	0.36	0.26	21.4
Approa	ıch	183	2.0	0.203	6.1	LOS A	0.8	20.1	0.36	0.26	21.5
All Veh	icles	1108	2.0	0.501	7.3	LOSA	4.1	104.8	0.19	0.12	19.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Timing Plan: AM Peak Period

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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	7	7	†	7		4 ↑		
Traffic Volume (vph)	190	13	257	391	4	164		
Future Volume (vph)	190	13	257	391	4	164		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		0.95		
Frt	1.00	0.85	1.00	0.85		1.00		
Flt Protected	0.95	1.00	1.00	1.00		1.00		
Satd. Flow (prot)	1770	1583	1863	1583		3535		
Flt Permitted	0.95	1.00	1.00	1.00		0.95		
Satd. Flow (perm)	1770	1583	1863	1583		3361		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	207	14	279	425	4	178		
RTOR Reduction (vph)	0	11	0	203	0	0		
Lane Group Flow (vph)	207	3	279	222	0	182		
Turn Type	Prot	Perm	NA	Perm	Perm	NA		
Protected Phases	8		2			6		
Permitted Phases		8		2	6			
Actuated Green, G (s)	7.5	7.5	17.0	17.0		17.0		
Effective Green, g (s)	7.5	7.5	17.0	17.0		17.0		
Actuated g/C Ratio	0.23	0.23	0.52	0.52		0.52		
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)	408	365	974	828		1758		
v/s Ratio Prot	c0.12		c0.15					
v/s Ratio Perm		0.00		0.14		0.05		
v/c Ratio	0.51	0.01	0.29	0.27		0.10		
Uniform Delay, d1	10.9	9.6	4.3	4.3		3.9		
Progression Factor	1.00	1.00	1.00	1.00		1.00		
Incremental Delay, d2	1.0	0.0	0.2	0.2		0.0		
Delay (s)	11.9	9.6	4.5	4.5		3.9		
Level of Service	В	Α	Α	Α		Α		
Approach Delay (s)	11.7		4.5			3.9		
Approach LOS	В		Α			Α		
Intersection Summary								
HCM 2000 Control Delay			5.8	HCM 2000 Level of Service			Α	
HCM 2000 Volume to Capacity ratio			0.35					
Actuated Cycle Length (s)			32.5	Sum of lost time (s)			8.0	
Intersection Capacity Utilization			35.5%	IC	CU Level	of Service	Α	
Analysis Period (min)			15					

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)		¥	↑ ↑		J.	f)			4	
Traffic Volume (vph)	31	918	128	15	1319	24	301	110	18	48	66	60
Future Volume (vph)	31	918	128	15	1319	24	301	110	18	48	66	60
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		4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1829		1770	3530		1770	1823			1752	
Flt Permitted	0.11	1.00		0.11	1.00		0.63	1.00			0.89	
Satd. Flow (perm)	201	1829		201	3530		1171	1823			1573	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	998	139	16	1434	26	327	120	20	52	72	65
RTOR Reduction (vph)	0	7	0	0	2	0	0	9	0	0	21	0
Lane Group Flow (vph)	34	1130	0	16	1458	0	327	131	0	0	168	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.1	37.1		37.1	37.1		20.1	20.1			20.1	
Effective Green, g (s)	37.1	37.1		37.1	37.1		20.1	20.1			20.1	
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.30	0.30			0.30	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.9	4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9		2.0	2.0			2.0	
Lane Grp Cap (vph)	111	1012		111	1954		351	546			471	
v/s Ratio Prot		c0.62			0.41			0.07				
v/s Ratio Perm	0.17			0.08			c0.28				0.11	
v/c Ratio	0.31	1.12		0.14	0.75		0.93	0.24			0.36	
Uniform Delay, d1	8.0	14.9		7.3	11.4		22.8	17.7			18.4	
Progression Factor	1.00	1.00		0.94	1.02		1.00	1.00			1.00	
Incremental Delay, d2	7.0	66.0		2.3	2.2		30.6	0.1			0.2	
Delay (s)	15.0	80.9		9.1	13.8		53.4	17.8			18.6	
Level of Service	В	F		Α	В		D	В			В	
Approach Delay (s)		79.0			13.8			42.7			18.6	
Approach LOS		Е			В			D			В	
Intersection Summary												
HCM 2000 Control Delay			41.3	H	CM 2000	Level of S	Service		D			
HCM 2000 Volume to Capa	city ratio		1.05									
Actuated Cycle Length (s)			67.0	Sı	um of lost	time (s)			9.8			
Intersection Capacity Utiliza	ition		94.8%	IC	U Level o	of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Horizon Year with Preferred LU MITIGATED Timing Plan: PM Peak Period

Balboa Station 7: Balboa EB Ramps & Garnet Ave/Balboa Ave Horizon Year with Preferred LU MITIGATED Timing Plan: PM Peak Period

	٠	→	•	•	←	4	4	†	/	\	↓	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1/1	^	7	1/2	^	7	ሻሻ	44	7	77		77
Traffic Volume (vph)	445	630	443	331	678	357	653	507	354	277	481	731
Future Volume (vph)	445	630	443	331	678	357	653	507	354	277	481	731
deal 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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adi, Flow (vph)	484	685	482	360	737	388	710	551	385	301	523	795
RTOR Reduction (vph)	0	0	32	0	0	80	0	0	46	0	0	49
Lane Group Flow (vph)	484	685	450	360	737	308	710	551	339	301	523	746
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8	1	7	4	5	1	6	7	5	2	3
Permitted Phases	_		8			4		_	6	_	_	2
Actuated Green, G (s)	21.7	37.1	63.7	16.6	32.0	48.2	26.6	46.5	63.1	16.2	35.7	57.4
Effective Green, g (s)	21.7	37.1	63.7	16.6	32.0	48.2	26.6	46.5	63.1	16.2	35.7	57.4
Actuated g/C Ratio	0.16	0.27	0.47	0.12	0.24	0.36	0.20	0.34	0.47	0.12	0.26	0.43
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	551	972	746	422	838	565	676	1218	739	411	492	1184
v/s Ratio Prot	c0.14	0.19	0.12	0.10	c0.21	0.07	c0.21	0.16	0.06	0.09	c0.28	0.10
v/s Ratio Perm	00.11	0.10	0.17	0.10	00.E1	0.13	00.E1	0.10	0.16	0.00	00.20	0.17
v/c Ratio	0.88	0.70	0.60	0.85	0.88	0.54	1.05	0.45	0.46	0.73	1.06	0.63
Uniform Delay, d1	55.4	44.0	26.3	58.0	49.6	34.6	54.2	34.4	24.4	57.3	49.6	30.5
Progression Factor	0.84	0.95	1.24	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.9	4.1	0.9	14.8	12.7	0.6	48.6	0.5	0.2	5.7	58.3	0.8
Delay (s)	60.3	45.8	33.5	72.8	62.3	35.2	102.8	34.8	24.5	63.0	108.0	31.2
Level of Service	F	D.0	C	7 E	E	D	F	C	C	E	F	C
Approach Delay (s)	_	46.5	J	_	57.8	J		61.7	Ū	_	61.9	
Approach LOS		D			E			E			E	
		- 0										
Intersection Summary			50.0		011.000	21 1 1	0 :					-
HCM 2000 Control Delay			56.9	Н	CM 200	D Level of	Service		Е			
HCM 2000 Volume to Capa	city ratio		0.97	_					10.0			
Actuated Cycle Length (s)			135.0			st time (s)			19.0			
Intersection Capacity Utiliza	ation		91.2%	10	JU Level	of Servic	е		F			
Analysis Daried (min)			16									

Approach Loo	U	L	_	
Intersection Summary				
HCM 2000 Control Delay	56.9	HCM 2000 Level of Service	Е	
HCM 2000 Volume to Capacity ratio	0.97			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	91.2%	CU Level of Service	F	
Analysis Period (min)	15			

ane Group

	→	•	•	←	4	/		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	^	7		^ ^		7		
Traffic Volume (vph)	1272	860	0	1470	0	337		
Future Volume (vph)	1272	860	0	1470	0	337		
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0	4.0		4.0		4.0		
Lane Util. Factor	0.95	1.00		0.91		1.00		
Frt	1.00	0.85		1.00		0.86		
Flt Protected	1.00	1.00		1.00		1.00		
Satd. Flow (prot)	3539	1583		5085		1611		
Flt Permitted	1.00	1.00		1.00		1.00		
Satd. Flow (perm)	3539	1583		5085		1611		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	1383	935	0	1598	0	366		
RTOR Reduction (vph)	0	430	0	0	0	25		
Lane Group Flow (vph)	1383	505	0	1598	0	341		
Turn Type	NA	Perm		NA		Prot		
Protected Phases	4			58		5		
Permitted Phases		4						
Actuated Green, G (s)	28.9	28.9		53.5		16.6		
Effective Green, g (s)	28.9	28.9		53.5		16.6		
Actuated g/C Ratio	0.54	0.54		1.00		0.31		
Clearance Time (s)	4.0	4.0				4.0		
Vehicle Extension (s)	3.0	3.0				3.0		
Lane Grp Cap (vph)	1911	855		5085		499		
v/s Ratio Prot	c0.39			0.31		c0.21		
v/s Ratio Perm		0.32						
v/c Ratio	0.72	0.59		0.31		0.68		
Uniform Delay, d1	9.3	8.3		0.0		16.2		
Progression Factor	1.00	1.00		1.00		1.00		
Incremental Delay, d2	1.4	1.1		0.0		3.9		
Delay (s)	10.7	9.4		0.0		20.0		
Level of Service	В	Α		Α		С		
Approach Delay (s)	10.2			0.0	20.0			
Approach LOS	В			Α	С			
Intersection Summary								
HCM 2000 Control Delay			7.2	Н	CM 2000	Level of Service	e	Α
HCM 2000 Volume to Capa	acity ratio		0.71					
Actuated Cycle Length (s)	•		53.5	Si	um of lost	t time (s)		8.0
Intersection Capacity Utiliza	ation		62.7%	IC	U Level	of Service		В
Analysis Period (min)			15					
- Critical Lana Craus								

c Critical Lane Group

Horizon Year with Preferred LU MITIGATED Trning Plan: PM Peak Period Balboa Station 9: Clairemont Dr & Balboa Ave

Fig. Fig. Fig. Web.		•	†	>	/	ţ	✓	•	←	•	۶	→	•
ph) 351 1004 50 538 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 382 954 160 72 92 92 92 92 92 92 92 92 92 92 92 92 92	vement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ph) 351 1004 50 538 954 160 72 332 ph) 1901 1900 1900 1900 1900 1900 1900 190	ane Configurations	1	444		1	444	X	F	₩	¥.	4	₩	¥c_
ph) 351 1004 56 538 954 160 72 332 954 160 1900 1900 1900 1900 1900 1900 1900	raffic Volume (vph)	351	1004	20	238	954	160	72	392	435	346	902	253
1900 1900	uture Volume (vph)	351	1004	20	538	954	160	72	392	435	346	902	253
10	al Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
(vph) 0.97 0.91 0.97 0.91 1.00 0.95 0.95 0.99 0.99 0.95 0.95 0.95 0	tal Lost time (s)	4.4	2.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
100 0.89	ne Util. Factor	0.97	0.91		0.97	0.91	9.	9:	0.95	1.00	0.97	0.95	1.00
0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 0.00 0.95 0.00 0.95 1.00 0.95 0.00 0.00		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
3433 5049	Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
100 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	td. Flow (prot)	3433	5049		3433	5085	1583	1770	3539	1583	3433	3539	1583
1949 3433 5085 1583 1770 3539 1	Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
1091	td. Flow (perm)	3433	5049		3433	5085	1583	1770	3539	1583	3433	3539	1583
1091 54 585 1037 714 78 426 20 0 0 123 0 0 0 0 0 0 0 0 0	ak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
140	j. Flow (vph)	382	1091	24	585	1037	174	78	426	473	376	658	275
1140	OR Reduction (vph)	0	ç,	0	0	0	123	0	0	46	0	0	158
NA	ne Group Flow (vph)	382	1140	0	585	1037	51	78	426	427	376	658	117
25.7 16.8 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 4.4 6.2 0.2 0.0 0.0 0.0 0.2 25.7 4.4 6.2 0.4 4.4 5.3 22.0 3.0 3.0 2.0 2.0 24 23.5 2.0 3.0 3.0 2.0 2.4 23.5 2.0 3.0 3.0 2.0 2.4 23.5 2.0 3.0 3.0 2.0 2.4 25.5 2.0 3.0 3.0 2.0 2.4 25.5 2.0 3.0 2.0 2.4 25.5 2.0 3.0 2.0 2.4 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5 2.0 2.0 25.5	m Type	Prot	Ν		Prot	NA	Perm	Prot	Ν	vo+mq	Prot	NA	Perm
25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 21.5 25.7 16.8 27.9 27.9 6.9 27.5 20.2 20.2 20.2 20.2 20.2 20.2 20.2 20	tected Phases	2	2		_	9		က	_∞	_	7	4	
25.7 168 27.9 27.9 6.9 21.5 16.8 27.7 27.9 6.9 21.5 16.8 27.9 27.9 6.9 21.5 16.8 27.7 27.9 6.9 21.5 16.8 27.7 27.9 6.9 21.5 16.8 27.9 27.9 6.9 21.5 16.8 27.9 27.9 6.9 21.5 16.8 27.0 2.2 2.0 2.0 3.0 3.0 2.0 2.4 2.0 3.0 3.0 2.0 2.4 2.0 3.0 3.0 2.0 2.4 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	mitted Phases						9			∞			4
15.7 168 279 279 69 215 16.27 0.18 0.29 0.29 0.07 0.23 17.3	uated Green, G (s)	13.9	25.7		16.8	27.9	27.9	6.9	21.5	38.3	10.8	25.4	25.4
0.27 0.18 0.29 0.29 0.07 0.23 0.03 0.03 0.03 0.03 0.03 0.03 0.03	ective Green, g (s)	13.9	25.7		16.8	27.9	27.9	6.9	21.5	38.3	10.8	25.4	25.4
137	:uated g/C Ratio	0.15	0.27		0.18	0.29	0.29	0.07	0.23	0.40	0.11	0.27	0.27
35 20 30 30 20 24 1371	sarance Time (s)	4.4	5.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
1371 609 1489 466 129 884 6023 60.17 60.20 0.03 0.04 0.12 0.083 0.96 0.69 0.11 0.60 0.53 1324 386 29.5 24.3 42.5 32.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 65.3 30.9 24.4 47.9 32.6 2.0 65.3 30.9 24.4 47.9 32.6 2.0 65.3 30.9 24.4 47.9 32.6 2.0 7 C C D C 2.0 8.3 30.9 24.4 47.9 32.6 2.0 8.3 30.9 24.4 47.9 32.6 2.0 8.3 30.9 24.4 47.9 32.6 2.0 9 0.00 2.0 9 0.00 2.0 1.	hide Extension (s)	2.0	3.5		2.0	3.0	3.0	2.0	2.4	2.0	2.0	2.6	2.6
0.023	ne Grp Cap (vph)	204	1371		609	1499	466	129	804	949	391	920	425
0.83 0.96 0.69 0.11 0.60 0.53 3.24 3.86 29.5 24.3 42.5 32.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Ratio Prot	0.11	c0.23		c0.17	c0.20		0.04	0.12	0.12	c0.11	c0.19	
1 0.83 0.96 0.99 0.11 0.60 0.53 32.4 32.8 29.5 24.3 42.5 32.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Ratio Perm						0.03			0.15			0.07
324 386 283 243 425 321 100 1.00 1.00 1.00 1.00 1.00 46 263 30.9 244 47.9 32.6 370 65.3 30.9 24.4 47.9 32.6 C C D C B C C D C C D C 389 HCM 2000 Level of Service 0.85 946 Sum of lost time (s) 73.1% ICU Level of Service	Ratio	9/.0	0.83		96.0	0.69	0.11	09.0	0.53	29.0	96:0	0.69	0.28
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	iform Delay, d1	38.7	32.4		38.6	29.5	24.3	42.5	32.1	23.0	41.7	31.1	27.3
46 287 14 0.1 54 0.4 5 37.0 65.3 30.9 24.4 47.9 32.6 38.9 41.5 30.1 D E C C D C C D C 30.1 38.9 41.5 30.1 C C B C 30.1 38.9 ACM 2000 Level of Service 0.86 94.6 Sum of lost time (s) 73.1% (CU Level of Service	gression Factor	1.00	1.00		1.00	1.00	1.00	9.	1.00	1.00	1.00	1.00	1.00
370 653 309 244 479 326 1 D E C C D C 2 389 C C D C 395 HCM 2000 Level of Service 0.85 946 Sum of lost time (s) 73.1% CU Level of Service	remental Delay, d2	2.7	4.6		26.7	1.4	0.1	5.4	0.4	2.0	35.2	2.1	0.3
38.9	lay (s)	44.5	37.0		65.3	30.9	24.4	47.9	32.6	25.0	6.9/	33.2	27.6
38.9 41.5 30.1 D D C 39.5 HCM 2000 Level of Service 0.85 94.6 Sum of lost time (s) 73.1% ICU Level of Service 15	vel of Service	۵	Δ		ш	ပ	ပ	Ω	ပ	ပ	ш	ပ	ပ
39.5 HCM 2000 Level of Service 0.85 Sum of lost time (s) 73.1% (CU Level of Service 15	proach Delay (s)		38.9			41.5			30.1			44.6	
39.5 HCM 2000 Level of Service 0.85 946 Sum of lost time (s) 73.1% ICU Level of Service 15	proach LOS		Ω			Ω			ပ			Ω	
39.5 HCM 2000 Level of Service 0.85 94.6 Sum of lost time (s) 73.1% ICU Level of Service 15	ersection Summary												
0.85 94.6 Sum of last time (s) 73.1% ICU Level of Service 15	:M 2000 Control Delay			39.5	Ì	2M 2000	Level of 3	Service		Ω			
946 Sum of lost time (s) 73.1% ICU Level of Service 15	M 2000 Volume to Capacit	y ratio		0.85									
73.1% 15	tuated Cycle Length (s)			94.6	٠.	um of lost	time (s)			20.5			
alysis Period (min) 15	ersection Capacity Utilizatio	=		73.1%	0	U Level o	of Service			۵			
Outline I and Outline	alysis Period (min)			15									
Critical Lane Group	Critical Lane Group												

Synchro 9 Report Page 4

Balboa Station 22: Morena Blvd & Jutland Dr

Horizon Year with Preferred LU MITIGATED Timing Plan: PM Peak Period

Movement WBI NBT NBT NBT NBT AP Lame Configurations N 7 4 4 4 4 Traffic Volume (wh) 588 10 176 259 17 317 Traffic Volume (wh) 1900 1900 1900 1900 1900 Traffic Volume (wh) 1900 1900 1900 1900 1900 Traffic Volume (wh) 1900 1900 100 0.85 1.00 1.00 Traff Colume (wh) 1900 1900 1900 1.00 1.00 0.85 The Protected 0.85 1.00 1.00 1.00 0.85 1.00 The Pennind of One 0.85 1.00 1.00 1.00 0.85 1.00 The Pennind of One 0.85 1.00 1.00 1.00 0.95 1.00 The Pennind of One 0.85 1.00 1.00 1.00 0.95 1.00 The Pennind of One 0.85 <								
588 10 176 259 17 317 317 317 318 318 318 318 318 318 318 318 318 318	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
588 10 176 259 17 317 1910 1900 1900 1900 1900 1900 1900 19	Lane Configurations	*	W.	*	*-		€1.	
588 10 176 259 17 317 1900 1900 1900 1900 1900 1900 4.0 4.0 4.0 4.0 4.0 4.0 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.85 1.00 0.95 1.00 0.94 1.770 1583 1863 1583 3530 0.94 1.770 1583 1863 1583 3516 0.94 1.770 1583 1863 1583 3516 0.94 1.770 1583 1863 1583 3516 0.94 0.94 1.77 171 171 181 81 82 0.82 0.92 0.92 0.92 0.92 0.92 0.92 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29 <td< td=""><td>Traffic Volume (vph)</td><td>288</td><td>9</td><td>176</td><td>259</td><td>17</td><td>317</td><td></td></td<>	Traffic Volume (vph)	288	9	176	259	17	317	
1900 1900 1900 1900 1900 1900 1900 100 1	Future Volume (vph)	588	10	176	259	17	317	
4.0 4.0 4.0 4.0 4.0 4.0 1.00 1.00 1.00 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1.00 1.00 1.00 0.95 1.00 0.85 1.00 0.95 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.94 1770 1583 1863 1583 3316 0.95 0.92 0.92 0.92 0.93 0.92 0.92 0.92 0.92 0.93 0.93 11 191 282 18 345 0.95 0.92 0.92 0.92 0.93 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	
100 0.85 100 0.85 100 0.85 100 0.95 100 1000 1000 1000 1000 1000 1000 100	Lane Util. Factor	1.8	1.8	9.	1.00		0.95	
0.95 100 100 100 100 0.97 100 0.95 100 100 0.95 100 100 100 0.94 1770 1583 1863 1583 3530 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	Ft	1.00	0.85	1.00	0.85		1.00	
1770 1583 1863 1583 3530 1770 1583 1863 1583 3530 1770 1583 1863 1583 3316 0.92 0.92 0.92 0.92 0.92 0.92 0.9 11 191 282 18 345 0.9 6 0 201 0 0 0 0.9 191 81 0 363 0 6 0 201 0 0 0 0 8 2 2 6 0 10 10 10 10 10 10 10 10 10 10 10 10 10	Flt Protected	0.95	1.00	1.00	1.00		1.00	
1770 1583 1863 1583 3316 1770 1583 1863 1583 3316 1770 1583 1863 1583 3316 1770 1583 1863 1583 3316 1771	Satd. Flow (prot)	1770	1583	1863	1583		3530	
1770 1583 1863 1316 0.82 0.82 0.92 0.92 0.92 0.8 0.9 0.92 0.92 0.92 0.9 0.2 0.92 0.92 0.9 0.2 0.92 0.92 0.9 0.2 0.92 0.92 0.8 0.8 0.8 0.8 0.9 17.7 17.7 10.4 10.4 10.4 0.40 0.49 0.29 0.29 0.29 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.05 0.011 0.74 0.0 0.05 0.10 0.05 0.00 0.0 0.0 0.0 0.0 0.0 1.00 1.00 1.	Flt Permitted	0.95	1.00	1.00	1.00		0.94	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	1770	1583	1863	1583		3316	
639 11 191 282 18 345 0 6 0 201 0 0 0 8 1 8 1 8 345 Prof Perm NA Perm Perm NA 8 8 2 6 6 177 177 104 104 104 177 177 104 104 104 177 177 104 104 104 177 177 104 104 0.49 0.29 0.29 0.29 0.49 0.29 0.29 0.29 0.40 0.40 0.26 0.40 0.70 0.00 0.10 0.74 0.01 0.36 0.18 0.38 7.3 4.7 10.2 9.6 10.3 1.00 1.00 0.40 0.2 0.3 0.0 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.00 0.4 0.2 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05 0.0 0.0 0.4 0.3 1.05	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
639 6 0 201 0 0 84 2 6 6 8 83 8 2 2 6 6 17.7 17.7 104 10.4 10.4 17.7 17.7 10.4 10.4 10.4 17.9 17.7 10.4 10.4 10.4 17.9 17.7 10.4 10.4 10.4 17.9 17.7 10.4 10.4 10.4 17.9 17.7 10.4 10.4 10.4 17.9 17.7 10.4 10.4 10.4 17.9 17.7 10.4 10.4 10.4 17.9 10.2 0.29 0.29 0.29 17.9 10.7 10.0 1.00 1.00 17.9 10.7 10.0 1.00 1.00 17.9 10.7 10.0 1.00 1.00 17.9 10.7 10.6 9.8 10.5 17.9 10.1 10.5 17.9 10.1 10.5 17.9 10.5	Adi. Flow (vph)	636	11	191	282	18	345	
Fig. 639 5 191 81 0 363 Prot Perm NA Perm Perm NA 8	RTOR Reduction (vph)	0	9	0	201	0	0	
Prot Perm NA Perm Perm NA Perm NA	Lane Group Flow (vph)	639	2	191	81	0	363	
8 2 6 6 17.7 17.7 10.4 10.4 10.4 17.7 17.7 10.4 10.4 10.4 17.7 17.7 10.4 10.4 10.4 17.7 17.7 10.4 10.4 10.4 10.49 0.49 0.29 0.29 0.29 4.0 4.0 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 867 776 536 456 955 60.36 0.00 0.10 0.05 0.01 0.73 4.7 10.2 9.6 10.3 1.00 1.00 1.00 1.00 1.00 3.3 0.0 0.4 0.2 0.3 10.6 4.7 10.6 9.8 10.5 B A B A B A B B A B B A B B B B B B B B	Turn Type	Prot	Perm	NA	Perm	Perm	NA	
17.7 17.7 10.4 10.5 10.3 10.5	Protected Phases	∞		2			9	
177 177 104 104 104 104 107 177 177 104 104 104 107 107 177 104 104 104 104 049 049 029 029 029 029 029 029 029 029 029 02	Permitted Phases		∞		2	9		
177 177 104 104 104 0.49 0.29 0.29 4.0 40 40 40 3.0 3.0 3.0 3.0 887 776 536 456 955 0.36 0.00 0.05 0.74 0.01 0.36 0.18 0.38 1.00 1.00 1.00 1.00 1.00 3.3 0.0 0.4 0.2 0.3 10.6 4.7 10.6 9.8 10.5 B A B A B A B B A B B B B B B B B B B	Actuated Green, G (s)	17.7	17.7	10.4	10.4		10.4	
0.49 0.49 0.29 0.29 0.29 4.0 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 867 776 536 456 955 60.36 0.00 0.00 0.05 0.01 0.74 0.01 0.36 0.18 0.38 7.3 4.7 10.2 9.6 10.3 1.00 1.00 1.00 1.00 1.00 3.3 0.0 0.4 0.2 0.3 10.6 4.7 10.6 9.8 10.5 B A B A B B B 10.5 10.1 ACM 2000 Level of Service of Service 10.4	Effective Green, g (s)	17.7	17.7	10.4	10.4		10.4	
4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	Actuated g/C Ratio	0.49	0.49	0.29	0.29		0.29	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Clearance Time (s)	4.0	4.0	4.0	4.0		4.0	
60.36	Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
60.36 0.10 0.05 c0.11 0.74 0.01 0.36 0.18 0.38 7.3 4.7 10.2 9.6 10.3 1.00 1.00 1.00 1.00 1.00 1.00 0.4 0.2 0.3 10.6 4.7 10.6 9.8 10.5 B A B A B A B 10.5 10.1 A HCM 2000 Level of Service consists of the constant of 60.6% ICU Level of Service constant of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% ICU Level of 60.6% I	Lane Grp Cap (vph)	867	9//	536	456		955	
0.00 0.05 co.11 0.73 4.7 10.2 9.6 10.38 7.3 4.7 10.2 9.6 10.38 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	v/s Ratio Prot	c0.36		0.10				
0.74 0.01 0.36 0.18 0.38 7.3 4.7 10.2 9.6 10.3 1.00 1.00 1.00 1.00 1.00 3.3 0.0 0.4 0.2 0.3 10.6 4.7 10.6 9.8 10.5 B A B A B 10.5 10.1 B B B B 10.5 B B 10.5 Color of the colo	v/s Ratio Perm		0.00		0.05		c0.11	
7.3 4.7 10.2 9.6 10.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	v/c Ratio	0.74	0.01	0.36	0.18		0.38	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	7.3	4.7	10.2	9.6		10.3	
33 00 04 02 03 10.6 4.7 10.6 9.8 10.5 B A B A B 10.5 B B A B B 10.1 B B A B B 10.5 B A B B 10.5 B A B B 10.5 B A B B 10.5 B A B B 10.5 B A B B 10.5 B A B B 10.5 B A B B 10.5 B B 10.1 C A B 10.5 C A	Progression Factor	1.00	1.00	1.00	1.00		1.00	
10.6 4.7 10.6 9.8 10.5 B A B A B 10.5 10.1 10.5 B B B 10.5 10.4 HCM 2000 Level of Service acity ratio 60.6% ICU Level of Service 160.6% ICU Le	Incremental Delay, d2	3.3	0.0	0.4	0.2		0.3	
10.5 10.1 10.5 B A B B 10.5 10.1 10.5 B B B 10.4 HCM 2000 Level of Service 10.4 HCM 2000 Level of Service 10.5 Sum of lost time (s) 10.5 Sum of lost time (s) 10.5 Sum of lost time (s) 10.5 Sum of lost time (s) 10.5 Sum of lost time (s) 10.5 Sum of lost time (s) 10.5 Sum of lost time (s) 10.5 Sum of lost time (s)	Delay (s)	10.6	4.7	10.6	9.8		10.5	
10.5 B B B B B C D D D D D D D D D D D D D D	Level of Service	മ	¥	മ	V		a	
B B B B B C C C Level of Service 10.4 HCM 2000 Level of Service 36.1 Sum of lost time (s) 25.1 C Level of Service 15.1 C Level	Approach Delay (s)	10.5		10.1			10.5	
10.4 HCM 2000 Level of Service acity ratio 0.60 Sum of lost time (s) 2ation 60.6% ICU Level of Service 15	Approach LOS	Ф		മ			Ф	
10.4 HCM 2000 Level of Service 0.60 0.80 1.9 cm of lost time (s) zation 60.6% ICU Level of Service 15	Intersection Summary							
actify ratio U.bd/	HCM 2000 Control Delay			10.4	¥	3M 2000 L	evel of Service	В
cation 60.6% (CU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.50	c	-	5	C
60.5% ICU Level of Service 15	Actuated Cycle Length (s)			30.	ನ :	Im of lost	time (s)	8.0
	Intersection Capacity Utiliza	tion		90.09	೨	O Level o	Service	m
	Analysis Period (min)			2				

KHA HCM Signalized Intersection Capacity Analysis

MOVEMENT SUMMARY



Site: 1 [PM - Future Preferred MITIGATED - Morena at Jutland - Copy - Copy]

Roundabout Roundabout

Move	ment Perfo	ormance - Ve	ehicles								
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South:	Morena Blv	d									
8	T1	191	2.0	0.341	5.6	LOS A	2.1	54.2	0.12	0.03	21.5
18	R2	282	2.0	0.341	5.6	LOSA	2.1	54.2	0.12	0.03	20.2
Approa	ach	473	2.0	0.341	5.6	LOS A	2.1	54.2	0.12	0.03	20.7
East: J	utland Ave										
1	L2	639	2.0	0.713	16.7	LOS C	6.6	167.4	0.68	0.59	15.3
16	R2	11	2.0	0.713	16.7	LOS C	6.6	167.4	0.68	0.59	15.9
Approa	ach	650	2.0	0.713	16.7	LOS C	6.6	167.4	0.68	0.59	15.3
North:	Morena Blvo	b									
7	L2	18	2.0	0.629	19.4	LOS C	3.7	94.5	0.76	0.90	16.8
4	T1	345	2.0	0.629	19.4	LOS C	3.7	94.5	0.76	0.90	15.2
Approa	ach	363	2.0	0.629	19.4	LOS C	3.7	94.5	0.76	0.90	15.3
All Veh	icles	1486	2.0	0.713	13.8	LOS B	6.6	167.4	0.52	0.49	16.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2016 Akcelik and Associates Pty Ltd | sidrasolutions.com Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Wednesday, July 26, 2017 4:56:13 PM Project: K:\SND_TPTO\095413006 - Balboa Station\SIDRA\Morena at Jutland\Roundabout Mitigation Analysis.sip7

APPENDIX J

REDUCED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 1: Olney St & Garnet Ave

	I		I		I		
	4	†	/	ţ	•	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	46		ж	765	111	279	
v/c Ratio	0.11	0.92	0.04	0.31	0.42	0.88	
Control Delay	9.9		10.7	8.9	39.6	0.99	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	9.9		10.7	8.9	39.6	0.99	
Queue Length 50th (ft)	10		-	115	62	168	
Queue Length 95th (ft)	22		m2	m147	115	#295	
Internal Link Dist (ft)		374		899	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	444	1298	20	2474	304	359	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.92	0.04	0.31	0.37	0.78	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Nolume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 1: Olney St & Garnet Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

	4	†	<i>></i>	/	ļ	✓	•	←	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	43		F	₩			4			4	
Traffic Volume (vph)	45	1056	46	က	689	15	47	46	9	103	74	80
Future Volume (vph)	42	1056	46	က	689	15	47	46	9	103	74	80
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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.99			96:0	
Fit Protected	0.95	1.00		0.95	1:00			0.98			86:0	
Satd. Flow (prot)	1770	1851		1770	3528			1805			1749	
Fit Permitted	0.34	1.00		0.05	1:00			69.0			0.81	
Satd. Flow (perm)	635	1851		101	3528			1276			1452	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	1148	20	က	749	16	21	53	7	112	80	87
RTOR Reduction (vph)	0	-	0	0	-	0	0	2	0	0	16	0
Lane Group Flow (vph)	46	1197	0	3	764	0	0	109	0	0	263	0
Tum Type	Perm	NA		Perm	NA		Perm	NA		Perm	Ν	
Protected Phases		2			9			œ			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)	74.3	74.3		74.3	74.3			21.9			21.9	
Effective Green, g (s)	74.3	74.3		74.3	74.3			21.9			21.9	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.21			0.21	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	445	1297		70	2472			263			299	
v/s Ratio Prot		c0.65			0.22							
v/s Ratio Perm	0.08			0.03				0.09			c0.18	
v/c Ratio	0.11	0.92		0.04	0.31			0.41			0.88	
Uniform Delay, d1	5.1	13.4		4.9	6.1			36.5			40.8	
Progression Factor	1.00	1.00		1.47	1.34			9.			1.00	
Incremental Delay, d2	0.5	12.3		1.0	0.3			0.4			24.0	
Delay (s)	9.6	25.7		8.2	8.4			36.9			64.8	
Level of Service	V	ပ		V	V			Ω			ш	
Approach Delay (s)		24.9			8.4			36.9			64.8	
Approach LOS		ပ			⋖			۵			ш	
Intersection Summary												
HCM 2000 Control Delay			24.8	오	HCM 2000 Level of Service	evel of S	ervice		ပ			
HCM 2000 Volume to Capacity ratio	ratio		0.91									
Actuated Cycle Length (s)			106.0	Su	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization	_		84.0%	☲	ICU Level of Service	f Service			ш			
Analysis Period (min)			12									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 1

KHA Oueues

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 2: Balboa Ave & Garnet Ave

2. Daiboa Ave & Garriel Ave	אוופן א	ų	ı		IIIIIIII FIAN FEAN FEIDU
	†	ţ	4	٠	
Lane Group	EBT	WBT	WBR	SBL	
Lane Group Flow (vph)	295	750	393	1018	
v/c Ratio	1.38	0.53	0.27	89.0	
Control Delay	207.7	7.3	0.5	12.6	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	207.7	7.3	0.5	12.6	
Queue Length 50th (ft)	~128	41	0	198	
Queue Length 95th (ft)	#212	8	0	m231	
Internal Link Dist (ft)	936	284		899	
Turn Bay Length (ft)					
Base Capacity (vph)	407		1422 1441	1496	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	1.38	0.53	0.27	89.0	
:					

- Volume exceeds capacity, queue is theoretically infinite.

Oueue shown is maximum after two cycles.

By 95th percentile volume exceeds expacify, queue may be longer.

Oueue shown is maximum after two cycles.

Ducues shown is maximum after two cycles.

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

Movement EBL Lane Configurations Traffic Volume (vph) 51 Future Volume (vph) 51 Future Volume (vph) 1900 Total Lost lime (s) 1900 Total Lost lime (s) 1900 Future Volume (vph) 1900 Future Volume (v	EBT	WBT	WBR	a		
DOS (197) (10) (10) (10) (10) (10) (10) (10) (10	\$			JUC	SBR	
ph) (1) (1) (2) (3) (4) (4) (4) (4)		4	R.	1		
((vph)	466	328	723	937	0	
)))))))))))))))))))	466	328	723	937	0	
)) PHF 0	1900	1900	1900	1900	1900	
PHF 0	2.0	2.0	4.0	4.9		
PHF 0	0.95	0.91	0.91	0.97		
PHF 0 (vph)	1.00	0.92	0.85	1.00		
PHF 0	1.00	1.00	1.00	0.95		
m) nr, PHF 0 nn (vph)	3522	3124	1441	3433		
m) nr, PHF 0 on (vph)	0.81	1.00	1.00	0.95		
or, PHF 0	2879	3124	1441	3433		
n (vph)	0.92	0.92	0.92	0.92	0.92	
	202	357	786	1018	0	
	0	245	0	0	0	
	562	202	393	1018	0	
Tum Type	NA	NA	Free	Prot		
Protected Phases	2	2		4		
Permitted Phases			Free			
Actuated Green, G (s)	20.0	20.0	53.0	23.1		
Effective Green, g (s)	20.0	20.0	53.0	23.1		
Actuated g/C Ratio	0.38	0.38	1.00	0.44		
Clearance Time (s)	2.0	2.0		4.9		
Vehicle Extension (s)	6.1	6.1		5.2		
Lane Grp Cap (vph)	1086	1178	1441	1496		
v/s Ratio Prot		0.16		c0.30		
v/s Ratio Perm	c0.20		0.27			
v/c Ratio	0.52	0.43	0.27	99.0		
Uniform Delay, d1	12.8	12.3	0.0	12.0		
Progression Factor	1.00	1.00	1.00	0.95		
Incremental Delay, d2	7	0.7	0.5	1.0		
Delay (s)	13.9	13.0	0.5	12.4		
Level of Service	В	В	V	В		
Approach Delay (s)	13.9	8.7		12.4		
Approach LOS	В	∢		В		
Intersection Summary						
HCM 2000 Control Delay		11.2	오	M 2000 I	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio		09.0				
Actuated Cycle Length (s)		53.0	Sul	Sum of lost time (s)	time (s)	6.6
Intersection Capacity Utilization		70.3%	ಶ	J Level o	ICU Level of Service	U
Analysis Period (min)		15				

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 3

KHA Queues

Balboa Transit Station

3: Garnet Ave & Soledad Mtn Rd

Timing Plan: AM Peak Period

	1	†	ţ	4	٠	*	
Lane Group	EBL	EBT	WBT	WBR	SB	SBR	
Lane Group Flow (vph)	132	1591	006	552	521	09	
v/c Ratio	0.45	0.62	0.42	0.42	0.79	0.17	
Control Delay	26.8	10.8	7.5	3.1	57.0	10.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.8	10.8	7.5	3.1	57.0	10.5	
Queue Length 50th (ft)	23	309	78	26	207	0	
Queue Length 95th (ft)	98	441	110	87	256	35	
Internal Link Dist (ft)		770	908		264		
Turn Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	291	2550	2142	1324	1032	352	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.45	0.62	0.42	0.42	0.50	0.17	
Intersection Summary							

Synchro 9 Report Page 5

KHA Oueues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year with Reduced LU Timing Plan: AM Peak Period

Movement EBL Lane Configurations ↑↑ Traffic Volume (kph) 121 Traffic Volume (kph) 1721 Ideal Flow (kph) 1900 Tolal Lost firme (s) 44 Lane Util. Factor 0.97 Fil Protected 0.95 Sand. Flow (port) 3433 Sand. Flow (perm) 3433	FBT 1464 1464 1464 1900 5.5 0.95 1.00 1.00 3539 0.92 0.92 1.51 0.02 1.51 0.02 0.92 0.92 0.92 0.92 0.92 0.92 0.92	MBT 828 828 828 828 828 828 828 1900 4.9 0.95 1.00 3539 1.00 3539 0.92 0.92	WBR 508 508 1900	SBL 479	SBR	
sr (th	1464 1464 1900 5.5 0.95 1.00 1.00 3539 1.00 3539 1.00 3539 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	828 828 828 1900 4.9 0.95 1.00 1.00 3539 1.00 1.00	508 508 1900	479	R.	
(q)	1464 1464 1900 5.5 0.95 1.00 1.00 3539 1.00 3539 1.00 3539 1.00 1.00 1.50 1.50 1.50 1.50 1.50	828 828 828 4.9 0.95 1.00 1.00 3539 1.00 3539	508 508 1900	479		
(hi	1464 1900 5.5 0.095 1.00 3539 1.00 3539 0.92 1591 0.92	1900 4.9 0.95 1.00 3539 1.00 3539 0.92	1900	479	55	
	5.5 0.095 1.00 1.00 3539 1.00 3539 0.92 1591 0	4.9 0.95 1.00 1.00 3539 1.00 3539 0.92	2006	000	55	
	0.95 1.00 1.00 3539 1.00 3539 0.92 1591 0	4.7 0.95 1.00 3539 1.00 3539 0.92	N 4	006	1900	
	1.00 1.00 3539 1.00 3539 0.92 1591 0	1.00 1.00 3539 1.00 3539 0.92	100	0.4	1.00	
	1.00 3539 1.00 3539 0.92 1591 0	1.00 3539 1.00 3539 0.92	0.85	1.00	0.85	
	3539 1.00 3539 0.92 1591 0 1591	3539 1.00 3539 0.92	1.00	0.95	1.00	
	1.00 3539 0.92 1591 0 1591	1.00 3539 0.92	1583	3433	1583	
	3539 0.92 1591 0 1591 NA	3539	1.00	0.95	1.00	
	0.92 1591 0 1591	0.92	1583	3433	1583	
Peak-hour factor, PHF 0.92	1591 0 1591		0.92	0.92	0.92	
	1591	006	552	521	09	
	1591 NA	0	0	0	48	
Lane Group Flow (vph) 132	NA	006	552	521	12	
Turn Type Prot	5	NA	vo+mq	Prot	custom	
Protected Phases 5	2	9	7	7	4	
	2		9		7	
_	90.1	75.7	7.66	24.0	24.0	
s)	90.1	75.7	7.66	24.0	24.0	
U	0.72	0.61	0.80	0.19	0.19	
Clearance Time (s) 4.4	5.5	4.9	5.4	5.4	5.4	
Vehicle Extension (s) 2.0	9.9	8.0	2.0	2.0	3.0	
Lane Grp Cap (vph) 291	2550	2143	1330	629	303	
	c0.45	0.25	80:0	c0.15	0.01	
Perm			0.27			
	0.62	0.45	0.42	0.79	0.04	
	8.9	13.0	3.8	48.1	41.1	
	0.00	0.51	0.82	9.5	00.1	
Incremental Delay, dZ 0.4	7.0	0.6	- c	0.0	1.0	
Delay (s) 24:3	0.0 a	- ∨	2.c A	<u>-</u> _	41.Z	
Annroach Delay (s)	13.5	7 4		22 8	2	
Approach LOS	2 0	8 ×				
Intersection Summary						
HCM 2000 Control Delay		16.5	오	M 2000	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio		0.71				
Actuated Cycle Length (s)		125.0	Sur	m of lost	Sum of lost time (s)	18.7
Intersection Capacity Utilization		63.2%	ט	J Level (ICU Level of Service	В
Analysis Period (min)		15				

KHA HCM Signalized Intersection Capacity Analysis

V Analysis

Balboa Transit Station 4: Bond St & Garnet Ave	n Ave			Horizon Year with Reduced LU Timing Plan. AM Peak Period
	†	ţ	•	
Lane Group	EBT	WBT	NBR	
Lane Group Flow (vph)	2021	1520	38	
v/c Ratio	0.57	0.43	0.02	
Control Delay	9.0	6:0	0.0	
Queue Delay	0.0	0.0	0.0	
Total Delay	9.0	6.0	0.0	
Queue Length 50th (ft)	0	7	0	
Queue Length 95th (ft)	0	88	0	
Internal Link Dist (ft)	908	574		
Turn Bay Length (ft)				
Base Capacity (vph)	3529	3539	1611	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.57	0.43	0.02	
Intersection Summary				
Intersection Summary				

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Balboa Transit Station Horizon Year with Reduced LU 4: Bond St & Garnet Ave

	4	†	~	>	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₽ ₽			*				*			*
Traffic Volume (vph)	0	1824	32	0	1398	0	0	0	32	0	0	0
Future Volume (vph)	0	1824	32	0	1398	0	0	0	32	0	0	0
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			
Lane Util. Factor		0.95			0.95				1.00			
Frt		1.00			1.00				98.0			
Fit Protected		1.00			1.00				1.00			
Satd. Flow (prot)		3529			3539				1611			
Fit Permitted		1.00			1.00				1.00			
Satd. Flow (perm)		3529			3539				1611			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1983	38	0	1520	0	0	0	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2021	0	0	1520	0	0	0	38	0	0	0
Tum Type		NA			NA				Perm			Perm
Protected Phases		2			9							
Permitted Phases									2			9
Actuated Green, G (s)		125.0			125.0				125.0			
Effective Green, g (s)		125.0			125.0				125.0			
Actuated g/C Ratio		1.00			1.00				1.00			
Clearance Time (s)		4.9			4.9				4.9			
Vehicle Extension (s)		7.3			7.3				7.3			
Lane Grp Cap (vph)		3529			3539				1611			
v/s Ratio Prot		c0.57			0.43							
v/s Ratio Perm									0.02			
v/c Ratio		0.57			0.43				0.02			
Uniform Delay, d1		0.0			0.0				0.0			
Progression Factor		1.00			1.00				1.00			
Incremental Delay, d2		9.0			0.3				0.0			
Delay (s)		9.0			0.3				0.0			
Level of Service		⋖			⋖				A			
Approach Delay (s)		9.0			0.3			0.0			0.0	
Approach LOS		⋖			⋖			∢			A	
Intersection Summary												
HCM 2000 Control Delay			0.4	H	:M 2000	HCM 2000 Level of Service	ervice		A			
HCM 2000 Volume to Capacity ratio	y ratio		0.61									
Actuated Cycle Length (s)			125.0	S	Sum of lost time (s)	time (s)			7.9			
Intersection Capacity Utilization	<u>_</u>		72.2%	೨	U Level o	ICU Level of Service			ပ			
Analysis Period (min)			15									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

KHA Oueues

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

	4	†	~	/	ţ	4	•	←	4	٠	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	752	713	579	233	574	263	478	266	286	272	358	411
v/c Ratio	1.14	0.79	69.0	0.83	0.73	0.42	0.84	0.52	0.33	0.72	0.72	0.29
Control Delay	124.4	53.0	26.4	74.3	50.5	23.3	65.0	37.6	15.5	64.5	51.0	15.2
Oueue Delay	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0
Total Delay	124.4	53.0	26.6	74.3	50.5	23.3	65.0	37.6	15.5	64.5	53.0	15.2
Queue Length 50th (ft)	~369	275	234	183	228	120	195	207	101	110	263	82
Oueue Length 95th (ft)	#496	339	486	270	277	176	#337	290	175	155	377	123
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	292		120	410		325	265		100	200		265
Base Capacity (vph)	629	945	837	334	934	929	270	1153	901	447	497	1434
Starvation Cap Reductn	0	0	22	0	0	0	0	0	0	0	21	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.75	0.71	0.70	0.61	0.40	0.84	0.52	0.32	0.61	0.80	0.29

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KHA Oueues

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

	•	†	<i>></i>	/	ţ	✓	•	←	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř.	ŧ	* _	J	*	*-	F	‡	*-	¥.	*	K.
Traffic Volume (vph)	692	929	533	214	528	242	440	551	263	250	329	378
Future Volume (vph)	692	929	533	214	278	242	440	221	263	250	329	378
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
표	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	752	713	579	233	574	263	478	266	286	272	358	411
RTOR Reduction (vph)	0	0	116	0	0	36	0	0	28	0	0	40
Lane Group Flow (vph)	752	713	463	233	574	224	478	266	258	272	358	371
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq
Protected Phases	က	∞	τ-	7	4	2	-	9	7	2	2	3
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	24.0	32.0	52.8	19.9	27.9	41.7	20.8	40.7	9.09	13.8	33.3	57.3
Effective Green, g (s)	24.0	32.0	52.8	19.9	27.9	41.7	20.8	40.7	9.09	13.8	33.3	57.3
Actuated g/C Ratio	0.19	0.26	0.42	0.16	0.22	0.33	0.17	0.33	0.48	0.11	0.27	0.46
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	629	905	899	281	789	528	571	1152	167	379	496	1277
v/s Ratio Prot	c0.22	c0.20	0.12	0.13	0.16	0.02	c0.14	0.17	0.02	0.08	c0.19	90.0
v/s Ratio Perm			0.18			0.09			0.11			0.08
v/c Ratio	1.14	0.79	69:0	0.83	0.73	0.42	0.84	0.52	0.34	0.72	0.72	0.29
Uniform Delay, d1	20.2	43.3	29.5	50.9	42.0	32.3	20.2	34.2	19.8	53.7	41.6	21.1
Progression Factor	1.02	1.08	1.25	1:00	1.00	1:00	1.00	1.00	1.00	1:00	1.00	1.00
Incremental Delay, d2	78.5	4.2	2.1	17.2	3.7	0.5	6.6	1.7	0.1	5.3	80.00	0.0
Delay (s)	129.8	51.0	39.1	68.1	48.8	32.5	60.4	35.9	19.9	29.0	20.4	21.2
Level of Service	ш	٥	۵	ш	٥	ပ	ш	۵	В	ш	۵	O
Approach Delay (s)		9.9/			49.0			41.1			41.1	
Approach LOS		ш			Ω			٥			Ω	
Intersection Summary												
HCM 2000 Control Delay			55.8	H	CM 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	ly ratio		98.0									
Actuated Cycle Length (s)			125.0	જ	m of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	u.		80.08	೨	U Level	ICU Level of Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

⁻ Volume exceeds capacity, queue is theoretically infinite.

- Couloue shown is maximum after two cydes.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cydes.

Balboa Transit Station
6: I-5 Off-ramp/Santa Fe St & Garnet Ave Timing Plan: AM Peak Period

	†	ţ	•	*	
Lane Group	EBT	WBT	NBR	SBR	
Lane Group Flow (vph)	1289	2062	227	80	
v/c Ratio	080	0.41	0.22	0.12	
Control Delay	15.2	0.3	8.7	3.3	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	15.2	0.3	8.7	3.3	
Queue Length 50th (ft)	133	0	17	0	
Queue Length 95th (ft)	200	0	37	17	
Internal Link Dist (ft)	1151	265			
Turn Bay Length (ft)					
Base Capacity (vph)	1689	5014	1041	643	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	97.0	0.41	0.22	0.12	
Intersection Summary					

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KHA Oueues

Balboa Transit Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Horizon Year with Reduced LU Garnet Ave Timing Plan: AM Peak Period

	4	†	7	>	ţ	4	•	-	4	٨	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ			4413				N.			*-
Traffic Volume (vph)	0	1186	0	0	1722	175	0	0	500	0	0	74
Future Volume (vph)	0	1186	0	0	1722	175	0	0	500	0	0	74
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
Lane Util. Factor		0.95			0.91				0.88			1.00
표		1.00			0.99				0.85			98.0
Fit Protected		1.00			1.00				1.00			1.00
Satd. Flow (prot)		3539			5015				2787			1611
Flt Permitted		1.00			1.00				1.00			1.00
Satd. Flow (perm)		3539			5015				2787			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1289	0	0	1872	190	0	0	227	0	0	80
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	53	0	0	51
Lane Group Flow (vph)	0	1289	0	0	2062	0	0	0	198	0	0	29
Turn Type		NA			N				Prot			Perm
Protected Phases		80			2.4				2			
Permitted Phases												9
Actuated Green, G (s)		20.0			44.0				16.0			16.0
Effective Green, g (s)		20.0			44.0				16.0			16.0
Actuated g/C Ratio		0.45			1.00				0.36			0.36
Clearance Time (s)		4.0							4.0			4.0
Vehicle Extension (s)		3.0							3.0			3.0
Lane Grp Cap (vph)		1608			5015				1013			585
v/s Ratio Prot		c0.36			c0.41				0.07			
v/s Ratio Perm												0.02
v/c Ratio		0.80			0.41				0.20			0.05
Uniform Delay, d1		10.3			0.0				9.6			9.1
Progression Factor		1.00			9.				1.00			1.00
Incremental Delay, d2		3.0			0.1				0.1			0.0
Delay (s)		13.3			0.1				6.7			9.1
Level of Service		В			A				⋖			V
Approach Delay (s)		13.3			0.1			6.7			9.1	
Approach LOS		В			⋖			A			A	
Intersection Summary												
HCM 2000 Control Delay			5.5	H	:M 2000	HCM 2000 Level of Service	ervice		A			
HCM 2000 Volume to Capacity ratio	ratio		19:0									
Actuated Cycle Length (s)			44.0	S	m of lost	Sum of lost time (s)			8.0			
Intersection Capacity Utilization	_		48.4%	೨	U Level o	f Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

4

Balboa Transit Station
7: Balboa EB Ramps & Garnet Ave Timing Plan: AM Peak Period

																																								A	
•	NBR	¥L.	210	210			0.92	228										401			401	6.9		3.3	62	266	NB 1	228	0	228	266	0.38	44	14.7	В	14.7	В			f Service	
•	NBL		0	0	Stop	%0	0.92	0									0.72	1508			925	8.9		3.5	100	193	WB 2	90/	0	0	1700	0.42	0	0.0						ICU Level of Service	
ţ	WBT	44	1299	1299	Free	%0	0.92	1412						None		634											WB 1	706	0	0	1700	0.42	0	0.0		0.0				೨	
/	WBL		0	0			0.92	0										802			802	4.1		2.2	100	817	EB 3	714	0	714	1700	0.42	0	0.0					1.1	44.0%	15
/	EBR	¥C.	657	657			0.92	714																			EB 2	401	0	0	1700	0.24	0	0.0							
†	EBT	##	738	738	Free	%0	0.92	802						None		442											EB 1	401	0	0	1700	0.24	0	0.0		0.0				on	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (ft)	Walking Speed (#1/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (ft)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	po dueue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	CSH	Volume to Capacity	Queue Length 95th (ft)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

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Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

	4	†	ţ	4	۶	•	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	336	086	1134	84	102	278	
v/c Ratio	0.59	0.41	97.0	0.12	0.41	09:0	
Control Delay	29.8	5.2	19.1	4.0	30.9	10.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.8	5.2	19.1	4.0	30.9	10.1	
Queue Length 50th (ft)	26	19	178	_	32	0	
Queue Length 95th (ft)	112	114	569	23	83	61	
Internal Link Dist (ft)		554	3203		201		
Tum Bay Length (ft)	215			200	155		
Base Capacity (vph)	602	2797	1870	873	606	948	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.35	0.61	0.10	0.11	0.29	
Intersection Summany							
intersection Sammary							

KHA Synchro 9 Report Oueues Page 14

Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

																																					В		16.5	В		
<i>*</i>	SBR	R.	256	256	006	5.6	1.00	0.85	1.00	1583	1.00	1583	0.92	278	239	39	Perm		4	9.8	8.6	0.14	5.6	2.0	223		0.02	0.18	23.1	1.00	0.1	23.2	ပ				HCM 2000 Level of Service		ne (s)	ervice		
٨	SBL	*	94	94	1900	9.6	1.00				0.95	1770		102	0	102	Prot	4		9.8			9.6	2.0	249	90:00			23.9				ပ	23.5	ပ		ICM 2000 Le		Sum of lost time (s)	ICU Level of Service		
4	WBR	K	11	11	1900	6.5	1.00	0.85	1.00	1583	1.00	1583	0.92	84	45	39	Perm		9	25.8	25.8	0.42	6.5	3.9	699		0.02	90.0	10.4	1.00	0.0	10.5	В				I		S	2		
ţ	WBT	+	1043	1043	1900	6.5	0.95	1.00	1.00	3539	1.00	3539	0.92	1134	0	1134	¥	9		25.8	25.8	0.42	6.5	3.9	1496	c0.32		0.76	14.9	1.00	2.4	17.3	В	16.9	В		14.5	0.65	61.0	57.2%	15	
†	EBT	#	905	902	1900	2.7	0.95	1.00	1.00	3539	1.00	3539	0.92	086	0	980	¥	2		41.1	41.1	0.67	2.7	4.8	2384	0.28		0.41	4.5	1.00	0.2	4.7	⋖	9.8	∢							
4	EBL	*	309	309	1900	4.4	0.97	1.00	0.95	3433	0.95	3433	0.92	336	0	336	Prot	2		10.1	10.1	0.17	4.4	2.0	268	00.10		0.59	23.5	1.00		24.6	ပ					v ratio		<u></u>		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fit	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Synchro 9 Report Page 16

Balboa Transit Station 9: Clairemont Dr & Garnet Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

vph) 203 877 468 906 136 439 vph) 203 877 468 906 136 439 0,71 0,85 0,93 0,74 0,64 0,59 5,89 408 681 315 548 36,7 0,0 0,0 0,0 0,0 0,0 0,0 0,0 1,0 62 250 446 236 79 127 1,0 430 4411 #293 371 152 177 1,0 430 430 220 200 1350 1,0 240 220 200 1360 1,0 289 1177 504 1361 361 261 1,0 289 1177 504 1361 361 361 361 1,0 289 1177 504 1361 361 361 361 1,0 0 0 0 <t< th=""><th></th><th>•</th><th>†</th><th>/</th><th>ţ</th><th>•</th><th>•</th><th>•</th><th>۶</th><th>→</th><th></th></t<>		•	†	/	ţ	•	•	•	۶	→	
203 877 468 906 136 439 0,71 0.85 0.93 0.74 0.64 0.59 58.9 40.8 68.1 31.5 54.8 36.7 0,0 0.0 0.0 0.0 0.0 0.0 58.9 40.8 68.1 31.5 54.8 36.7 42.2 550 146 238 79 127 #136 #411 #293 317 152 177 240 220 177 541 1361 305 1261 0	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
0,71 085 093 0,74 0.64 0.59 58.9 40.8 68.1 31.5 54.8 36.7 0.0 0.0 0.0 0.0 0.0 0.0 58.9 40.8 68.1 31.5 54.8 36.7 4136 #411 #293 371 152 177 240 220 220 136 240 1177 594 1361 305 1261 0 0 0 0 0 0 0	Lane Group Flow (vph)	203	877	468	906	136	439	474	228	189	
58.9 40.8 68.1 31.5 54.8 36.7 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio	0.71	0.85	0.93	0.74	0.64	0.59	89.0	0.95	0.77	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	58.9	40.8	68.1	31.5	54.8	36.7	24.2	90.5	31.4	
58.9 40.8 68.1 31.5 54.8 36.7 62.2 550 146 238 79 127 7 172 7 172 230 20 240 220 126 240 177 564 1361 305 1261 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
62 250 146 236 79 127 #136 #411 #293 371 152 177 240 220 200 1360 200 289 1177 504 1361 305 1261 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	58.9	40.8	68.1	31.5	54.8	36.7	24.2	90.5	31.4	
#136 #411 #293 371 152 177 3203 630 1350 240 229 1177 504 1361 305 1261 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (ft)	62	250	146	236	79	127	196	139	151	
3203 630 1350 240 177 504 1361 305 1261 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (ft)	#136	#411	#293	371	152	177	310	#337	230	
240 220 200 200 200 200 200 200 200 200	Internal Link Dist (ft)		3203		630		1350			098	
289 1177 504 1361 305 1261 0	Tum Bay Length (ft)	240		220		200		100	120		
	Base Capacity (vph)	588	1177	204	1361	305	1261	700	240	1182	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
0.50 0.50 0.50 0.50	Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
0.70 0.73 0.93 0.43 0.33	Reduced v/c Ratio	0.70	0.75	0.93	19:0	0.45	0.35	89.0	0.95	0.58	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Balboa Transit Station
Balboa Transit Station
9: Clairemont Dr & Garnet Ave
Timing Plan: AM Peak Period

EBI EBI WBI WBI WBI WBI WBI NBI SBI 187 146 61 431 710 123 126 404 436 210 188 746 61 431 710 123 126 404 436 210 1900		•	†	~	•	ţ	4	•	-	•	٠	→	•
1,00 1,00	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
746 61 431 710 123 125 404 436 210 746 61 431 710 123 125 404 436 210 746 61 431 710 132 125 404 436 210 746 61 431 710 132 125 404 436 210 746 61 431 710 130 1900 1900 1900 1900 1900 1900 190	Lane Configurations	ř.	4₽		K.	₩.		r	#	*-	×	₩.	
146 61 431 710 123 125 404 436 210 190	Traffic Volume (vph)	187	746	19	431	710	123	125	404	436	210	341	285
1900 1900	Future Volume (vph)	187	746	61	431	710	123	125	404	436	210	341	285
57	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.95	Total Lost time (s)	4.4	5.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
1,00 0.99 1,00 0.98 1,00 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00 1,00 0.95 1,00	Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	
100	Fit	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.93	
3499 3433 3461 1770 3539 1583 1770 1349 1349 1343 3461 1770 3539 1583 1770 1349 1349 1349 1349 1349 1369 100 1095 100 1095 100 1095 100 1095 100 1095 100 1095 100 1095 100 1095 100 1095 100 1005 100 1005 100 1005 100 1005 1	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
100	Satd. Flow (prot)	3433	3499		3433	3461		1770	3539	1583	1770	3298	
3499 3433 3461 1770 3539 1583 1770 1770 3539 1583 1770 1770 3539 1583 1770 1770 3539 1583 1770 1770 3539 1583 1770 1770 3539 1583 1770 1770 3539 1583 1770 1770 378	Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
STATE Color Colo	Satd. Flow (perm)	3433	3499		3433	3461		1770	3539	1583	1770	3298	
811 66 468 772 134 136 439 474 228 8	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Name	Adj. Flow (vph)	203	811	99	468	772	134	136	439	474	228	371	310
NA	RTOR Reduction (vph)	0	9	0	0	12	0	0	0	46	0	146	0
NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA Prof NA NA Prof NA NA NA NA NA NA NA N	Lane Group Flow (vph)	203	871	0	468	894	0	136	439	425	228	535	0
27.5 138 328 11.4 19.7 33.5 12.8 27.5 13.8 32.8 11.4 19.7 33.5 12.8 12.8 13.5 27.5 13.8 32.8 11.4 19.7 33.5 12.8 12.8 10.29 0.15 0.35 0.14 19.7 33.5 12.8 10.29 0.15 0.35 0.14 19.7 20.1 0.35 0.14 10.28 2.0 2.0 2.4 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Turn Type	Prot	M		Prot	NA		Prot	NA	vo+mq	Prot	NA	
275 138 328 114 197 335 128 125 138 328 114 197 335 128 125 138 228 114 197 335 128 128 135 229 20 20 20 20 20 20 2	Protected Phases	2	2		-	9		co	∞	-	7	4	
27.5 13.8 32.8 11.4 19.7 33.5 12.8 27.5 13.8 3.2.8 11.4 19.7 33.5 12.8 1 5.7 4.4 6.4 6.4 6.3 4.4 4.4 1 5.7 4.4 6.4 6.4 5.3 4.4 4.4 1 5.7 4.4 6.4 6.4 5.3 4.4 4.4 4.4 1 0.28 2.0 3.0 3.0 2.0	Permitted Phases									∞			
175 138 328	Actuated Green, G (s)	7.8	27.5		13.8	32.8		11.4	19.7	33.5	12.8	21.1	
1029 0.15 0.35 0.14 0.29 0.15 0.35 0.14 0.25 0.14 0.25 0.14 0.25 0.14 0.25 0.20 2.0	Effective Green, g (s)	7.8	27.5		13.8	32.8		11.4	19.7	33.5	12.8	21.1	
57	Actuated g/C Ratio	0.08	0.29		0.15	0.35		0.12	0.21	0.36	0.14	0.23	
3.5 2.0 3.0 2.0 2.4 2.0 2.0	Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
1028 506 1212 215 744 566 242 0.025 0.0.14 0.26 0.08 0.12 0.11 0.13 c 0.085 0.92 0.74 0.63 0.59 0.75 0.94 13.11 334 2.66 39.1 33.3 2.64 40.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 0.02 0.00 4.35 34.3 31.3 81.6 1.02 0.03	Vehicle Extension (s)	2.0	3.5		2.0	3.0		2.0	2.4	2.0	2.0	2.6	
0.0.25	Lane Grp Cap (vph)	286	1028		206	1212		215	744	299	242	743	
0.85 0.92 0.74 0.63 0.59 0.75 0.94 0.05 0.16 0.94 0.05 0.17 0.94 0.05 0.15 0.94 0.00 0.100	v/s Ratio Prot	90:0	c0.25		c0.14	0.26		0.08	0.12	0.11	00.13	c0.16	
0.85 0.92 0.74 0.63 0.59 0.75 0.94 3.1.1 39.4 26.6 39.1 33.3 26.4 40.0 6.8 22.5 2.4 4.4 1.0 4.9 41.6 3.7.9 61.9 2.90 43.5 34.3 31.3 81.6 D E C D C C F 3.9.8 40.2 34.2 40.3 HCM 2000 Level of Service D 0.87 Sum of lost time (s) 20.5 76.9% ICU Level of Service D	v/s Ratio Perm									0.16			
311 394 266 391 333 264 400 100	v/c Ratio	0.71	0.85		0.92	0.74		0.63	0.59	0.75	0.94	0.72	
100 100 100 100 100 100 100 100 100 100	Uniform Delay, d1	41.8	31.1		39.4	56.6		39.1	33.3	26.4	40.0	33.5	
6 8 225 24 44 10 49 416 3 379 619 290 435 343 313 81.6 9 9 8 40.2 D C C F 9 9 8 40.2 D C C F 1 40.2 D C C F 9 10 10 10 10 10 10 10 10 10 10 10 10 10	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
319 619 290 43.5 34.3 31.3 81.6 10	Incremental Delay, d2	6.5	8.9		22.5	2.4		4.4	1.0	4.9	41.6	3.3	
9.9 E C D C C F 9.9.8 40.2 34.2 D D C C F 40.3 HCM 2000 Level of Service D 0.87 93.6 Sum of lost time (s) 20.5 16.9% ICU Level of Service D 15	Delay (s)	48.3	37.9		61.9	29.0		43.5	34.3	31.3	81.6	36.8	
39.8 40.2 34.2 D C C 40.3 HCM 2000 Level of Service D 0.87 76.9% ICU Level of Service D 15	Level of Service	_	۵		ш	ပ		۵	O	ပ	ш	_	
40.3 HCM 2000 Level of Service 0.87 Sum of lost time (s) 76.9% ICU Level of Service 15	Approach Delay (s)		39.8			40.2			34.2			48.0	
40.3 HCM 2000 Level of Service 0.87 Sum of lost time (s) 76.9% ICU Level of Service 15	Approach LOS		D			D			ပ			O	
40.3 HCM 2000 Level of Service 0.87 Sum of lost time (s) 76.9% ICU Level of Service 15	Intersection Summary												
0.87 93.6 Sum of lost time (s) 76.9% ICU Level of Service 15	HCM 2000 Control Delay			40.3	Ĭ	3M 2000	l evel of S	ervice		۵			
93.6 Sum of lost time (s) 76.9% ICU Level of Service 15	HCM 2000 Volume to Capacit	tvratio		0.87						1			
Utilization 76.9% ICU Level of Service 15 1CU Level of Service 15 1CU Level of Service	Actuated Cycle Length (s)			93.6	S	im of lost	time (s)			20.5			
15	Intersection Capacity Utilization	uo		76.9%	2	U Level o	f Service			٥			
Control I and Groun	Analysis Period (min)			15									
	c Critical Lane Group												

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Balboa Transit Station Horizon Year with Reduced LU 10: Olney St & Balboa Ave Timing Plan: AM Peak Period

Lane Group EBL EBT WBL WBT NBT Lane Group Flow (vph) 63 586 50 199 329 We Ratio 0.24 0.46 0.23 0.19 329 Control Delay 2.19 1.28 24.0 1.29 1.70 Couteu Delay 2.19 1.28 24.0 1.29 1.70 Total Delay 2.19 1.28 24.0 1.29 1.70 Total Delay 2.19 1.28 24.0 1.29 1.70 Ouceu Length Soft (ft) 50 1.25 4.4 4.6 1.39 Ouceu Length Soft (ft) 50 1.25 4.4 4.6 1.39 Inm Bay Length (ft) 1.50 1.75 4.4 1.39 1.32 Inm Bay Length (ft) 1.50 1.50 1.00 1.00 1.00 Sanxalion Cap Reductn 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0	SBT 287 0.53 1.16.7
h) 63 586 50 199 024 046 023 019 21.9 128 240 12.9 0.0 0.0 0.0 0.0 17) 14 41 11 18 17) 50 125 44 46 170 170 170 170 170 0 0 0 0	
(1) (2) (4) (4) (5) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	
21.9 12.8 24.0 12.9 (2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
21.9 12.8 24.0 12.9 (f) 14 41 11 18 (f) 50 125 44 46 1172 936 1172 936 1172 1916 220 1707 7 1170 0 0 0 0	
(f) 14 41 11 18 (f) 50 125 44 46 1172 4936 1150 150 150 0 0 0 151 1916 220 1707 1 152 1916 220 1707 1 153 1916 220 1707 1 154 155 155 155 155 155 155 155 155 155	
(f) 50 125 44 46 1172 936 150 150 1707 1 151 1916 220 1707 1 151 0 0 0 0	
150 1172 936 150 1707 1707 1707 1707 1707 1707 1707 1	129
150 150 150 150 1707 1707 1707 1707 1707	244
321 1916 220 1707 rctn 0 0 0 0 0 0	
0 0 0	1420
0 0 0	14
0 0 0	0
Storage Cap Reductn 0 0 0 0 0	0
Reduced v/c Ratio 0.20 0.31 0.23 0.12 0.24	0.20
Intersection Summary	

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Balboa Transit Station 10: Olney St & Balboa Ave

Horizon Year with Reduced LU
Timing Plan: AM Peak Period

Monomeration EBI EBI WBI WBI MBR NBI NBI NBI NBI SBI SBI SBI SBI SBI SBI SBI SBI SBI TBI	ह <u>दि</u>	EBL	FRT	CDD	Id/V	1		2	FCZ	NBR	CBI	TOO	CDD
			בחו	EDR	WDL	WBI	WBK	NBL	NBI	5	JUC	SPI	202
(yph) \$8 \$20 19 46 166 18 192 92 12 237 (pp) 1900 190		-	4₽		F	₩			4			4	
(yph) 58 5.0 19 46 165 18 18 192 92 12 237 (s) 44 5.0 1900 1	,	28	520	19	46	165	18	18	192	92	12	237	15
1,000 1900	•	28	520	19	46	165	18	18	192	92	12	237	15
(\$) 44 5.1 44 5.0 44 5.0 4.9 4.9 100 or of the color of	(a) time (a)	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 1.00 0.95 1.00 0.95 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.95 1.00 0.95 1.00 0.97 0.97 0.99 0.99 0.99 0.95 0.97 0.99 0	,	4.4	5.1		4.4	2.0			4.9			4.9	
1.00 0.99 1.00 0.98 0.96 0.99 0.99 0.99 0.95 1.00 0.98 0.99 1.00 0.98 0.99 1.00 0.99 1.00 0.95 1.00 0.97 1.00 0.99 1.00 0.97 1.00 0.99 1.00 0.97 1.00 0.99 1.00		1.00	0.95		1.00	0.95			1.00			1.00	
1770 3520 1770 3486 1781 100 100 100 100 1770 3520 1770 3486 1781 1845 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.97 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		1.00	66.0		1.00	86.0			96:0			0.99	
(μ) 1770 3820 1770 3486 1781 1845 (μ) 1770 3820 1770 3486 1781 1891 (μ) 1770 3820 1770 3486 1730 1997 1992 (μ) 1770 3820 1770 3486 1730 1897 1992 1993		3.95	1.00		0.95	1.00			1.00			1.00	
No. 1770 3520 1770 3486 1730 1730 1807 180		770	3520		1770	3486			1781			1845	
March 1770 3520		0.95	1.00		0.95	1.00			0.97			86.0	
N, PHF 0.92 0.93 <		770	3520		1770	3486			1730			1807	
(s) 565 21 50 179 20 209 100 13 w (vph) 63 83 0 11 0 0 29 0 0 s 3 0 50 18 0 29 0 0 s 3 0 50 18 0 29 0 0 es 5 2 1 6 8 8 4 es 5 2 1 6 8 8 4 t G(s) 3.2 14.6 1.4 12.9 11.9 Perm 4 t G(s) 3.2 14.6 1.4 12.9 11.9 4 Perm t G(s) 3.2 14.6 1.4 12.9 11.9 4.9 Perm t G(s) 3.2 14.4 5.0 0.5 4.9 Perm 4.9 Perm t G(s) 2.0 3.0 3.0		3.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
10 0 0 0 0 0 0 0 0 0		63	299	21	20	179	20	20	500	100	13	258	16
Main		0	3	0	0	Ξ	0	0	53	0	0	4	0
Prot NA Prot NA Perm NA Perm NA 3.2 14.6 1.4 12.9 8 4 3.2 14.6 1.4 12.9 11.9 0.08 0.35 0.028 0.028 4.4 5.1 0.03 0.30 0.028 2.0 2.8 2.0 2.5 2.0 2.0 2.8 2.0 2.5 2.0 2.0 2.8 0.03 0.05 0.05 3.3 12.14 5.8 10.63 0.05 0.047 0.048 0.08 0.042 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.01 0.3 68.8 0.1 1.49 1.02 1.03 0.55 0.05 1.04 1.05 0.5 1.05 1.05 0.05 1.06 1.07 0.05 1.07 1.1 89.2 10.9 14.9 1.08 E	Group Flow (vph)	63	583	0	20	188	0	0	300	0	0	283	0
5 2 1 6 8 8 4 3.2 146 14 129 119 3.2 146 1.4 129 119 3.2 146 1.4 129 11.9 0.08 0.35 0.03 0.30 0.28 2.0 2.8 2.0 2.5 2.0 2.0 2.8 2.0 2.5 2.0 1.33 1214 58 1063 496 0.07 0.03 0.05 0.05 0.04 0.0.17 0.03 0.05 0.01 0.0 1.00 1.00 1.00 1.00 1.0 1.00 1.0		Prot	W		Prot	NA		Perm	NA		Perm	NA	
3.2 146 1.4 12.9 8 11.9 3.2 146 1.4 12.9 11.9 0.08 0.35 0.03 0.30 0.28 0.08 0.35 0.03 0.30 0.28 2.0 2.0 2.0 2.0 1.3 12.4 5.0 2.0 4.9 1.3 12.4 5.0 0.05 0.05 0.0.4 c0.17 0.03 0.05 0.05 0.0.7 0.08 0.18 0.02 1.8 0.08 0.18 0.02 1.0 0.1 0.0 0.10 0.10 0.10 1.0 0.1 0.0 1.0 0.10 0.1		2	2		-	9			∞			4	
3.2 146 1.4 12.9 11.9 0.08 0.38 0.03 0.28 4.4 0.37 0.03 0.28 2.0 2.8 2.0 2.5 2.0 2.0 2.8 2.0 2.5 2.0 0.04 0.47 0.48 0.86 0.18 0.62 1.0 0.3 6.88 0.1 1.00 1.0 0.3 6.88 0.1 14.9 1.7 11.1 89.2 10.9 14.9 1.8								∞			4		
3.2 14.6 1.4 12.9 11.9 0.08 0.35 0.03 0.30 0.28 4.4 4 5.1 4.4 4.2 5.0 5.8 2.0 2.8 2.0 2.5 2.0 1.3 1214 5.8 1063 486 0.04 0.017 0.03 0.05 0.017 0.047 0.48 0.86 0.18 0.62 1.0 1.0 1.00 1.00 1.00 1.00 1.0 1.0 1.0 1.0 1.0 1.0 1.1 89.2 10.9 14.9 B B F B F B F B B C B B 1.2 A C B B C B B 1.3 A C B B B B B B B B B B B B B B B B B B		3.2	14.6		1.4	12.9			11.9			11.9	
0.08 0.35 0.03 0.30 0.28 4.4 5.1 4.4 5.0 4.9 4.9 2.0 2.8 2.0 2.5 2.0 2.9 2.0 4.1 5.8 1063 486 c0.04 c0.17 0.03 0.05 0.017 0.47 0.48 0.86 0.18 0.62 1.00 1.00 1.00 1.00 1.00 1.10 0.00 1.00 1.00 1.00 1.10 0.00 1.00 1.00 1.00 1.10 0.00 1.00 1.00 1.00 1.10 0.00 1.00 1.00 1.49 B F B F B B F B B B B B B B B B B B B B		3.2	14.6		1.4	12.9			11.9			11.9	
44 5.1 44 5.0 4.9 2.0 2.8 2.0 2.5 2.0 133 1214 58 1063 486 5.0 4 5.1 58 1063 486 5.0 4 5.1 5.1 5.1 5.0 4 5.1 5.1 5.1 5.0 5.1 5.1 5.1 5.0 5.1 5.1 5.0 5.1 5.1 5.0 5.1 5.1 5.0 5.1 5.1 5.0 5.1 5.1 5.0 5.1 5.1 6.0 6.0 6.0 7.0 6.0 6.0 7.0 6.0 6.0 8 6.0 6.0 9 7.0 6.0 14.9 15.3 15.3 HCM 2000 Level of Service 15.3 15.3 Sum of lost time (s) 15.4 15.3 Sum of lost time (s) 15.4 15.3 Sum of lost time (s)		90.0	0.35		0.03	0.30			0.28			0.28	
2.0 2.8 2.0 2.5 2.0 133 1214 \$8 1063 486 6.0.04 6.0.17 0.03 0.05 60.17 0.47 0.48 0.86 0.18 0.62 1.0 0.47 0.48 0.04 1.32 1.0 1.0 1.0 1.00 1.00 1.0 0.3 6.88 0.1 1.49 1.0 0.3 6.88 0.1 1.49 1.0 0.3 6.88 0.1 1.49 1.0 1.1 89.2 10.9 14.9 1.0 1.3 1.49 1.6 1.49 1.0 1.5 1.0 1.49 1.6 1.0 1.5 1.0 1.49 1.6 1.0 0.5 1.0 1.44 1.44 1.0 0.5 1.0 1.44 1.44 1.0 0.5 1.0 1.44 1.44 <t< td=""><td></td><td>4.4</td><td>5.1</td><td></td><td>4.4</td><td>2.0</td><td></td><td></td><td>4.9</td><td></td><td></td><td>4.9</td><td></td></t<>		4.4	5.1		4.4	2.0			4.9			4.9	
133 1214 58 1063 486 C0.04 C0.17 0.03 0.05 0.47 0.48 0.86 0.18 0.62 187 10.9 2.04 10.8 13.2 1.0 1.00 1.00 1.00 1.00 1.1 0.3 6.88 0.1 1.6 1.2 1.1 89.2 10.9 14.9 B B F B F B F B B B C B B C B B C B B C B B B B		2.0	2.8		2.0	2.5			2.0			2.0	
60.04 60.17 0.03 0.05 0.017 0.47 0.48 0.86 0.18 0.62 1.87 10.9 2.04 10.8 13.2 1.00 1.00 1.00 1.00 1.00 1.10 1.00 1.0			1214		28	1063			486			208	
0.47 0.48 0.86 0.18 0.017 18.7 10.9 20.4 10.8 13.2 1.0 0.3 6.88 0.1 1.00 1.00 1.00 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0			c0.17		0.03	0.05							
18.7 0.48 0.86 0.18 0.62 18.7 10.9 20.4 10.8 13.2 1.0 0.3 6.88 0.1 1.00 1.0 0.3 6.88 0.1 1.6 1.0 1.1 89.2 10.9 14.9 B	Perm								c0.17			0.16	
187 109 204 108 132 100 130 688 01 1.6 197 11.1 892 109 14.9 1 892 109 14.9 1 12.0 26.6 14.9 1 8		74.0	0.48		98.0	0.18			0.62			0.56	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		18.7	10.9		20.4	10.8			13.2			13.0	
10 03 688 0.1 1.6 19.7 11.1 89.2 10.9 14.9 19.8 F B B B B B B B B B B B B B B B B B B		1.00	1.00		1.00	1.00			1.00			1.00	
19.7 11.1 89.2 10.9 14.9 B B F B B B C B B A V V V V V V V V V V V V V		1.0	0.3		8.89	0.1			1.6			8.0	
B F B B B B B B B B		19.7	11.1		89.2	10.9			14.9			13.7	
12.0 26.6 14.9 B C B C B A B A B A B A B A B A	of Service	В	В		ш	В			В			В	
B C B B C B B	ach Delay (s)		12.0			26.6			14.9			13.7	
V 15.3 HCM 2000 Level of Service	ach LOS		В			ပ			В			В	
slay 15.3 HCM 2000 Level of Service Capacity ratio 0.57 8.0m of lost time (s) 1.0m of lost time (s)	ection Summary												
Capacity ratio 0.57 10.57 10.57 10.57 10.58 10.0 Level of Service 15 10.0 Level of Service 15	2000 Control Delay			15.3	H	3M 2000	Level of 5	Service		В			
h (s) 42.3 Sum of lost time (s) Utilization 52.8% ICU Level of Service 15	2000 Volume to Capacity ra	atio		0.57									
Utilization 52.8% ICU Level of Service	ed Cycle Length (s)			42.3	S	im of lost	time (s)			14.4			
ils Period (min) 15	ction Capacity Utilization			52.8%	2	U Level o	f Service			⋖			
11-11	sis Period (min)			15									
	Critical Lane Group			2									

KHA HCM Signalized Intersection Capacity Analysis

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Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

	^	†	/	ţ	—	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	30	1386	20	280	646	322	
v/c Ratio	0.32	0.97	0.70	0.40	0.84	1.06	
Control Delay	57.5	49.6	9.96	23.5	33.7	99.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	57.5	49.6	9.96	23.5	33.7	99.2	
Queue Length 50th (ft)	20	-498	35	108	330	~240	
Queue Length 95th (ft)	21	099#	66#W	506	#547	#417	
Internal Link Dist (ft)		276		1076	315	328	
Tum Bay Length (ft)	20		20				
Base Capacity (vph)	101	1430	71	1447	772	304	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.30	0.97	0.70	0.40	0.84	1.06	
Intersection Summary							
 Volume exceeds capacity, queue is theoretically infinite. 	ty, queue is	theoretic	ally infini	ie.			
Queue shown is maximum after two cycles.	m after two	cycles.					
# 95th percentile volume exceeds capacity, queue may be longer	exceeds cap	acity, qu	eue may	be longer	ζ.		
Queue shown is maximum after two cycles.	m after two	cycles.					
Wollimo for 05th porceptilo augus is motored by unstroam signal	i orionia oli	- motoro	the contract of L	anio moo	-		

KHA Queues

Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

ક (મું ક (મું ક	EB	FRT	CBD	WBL	WBT	MAD	NRI	H	NRP	SBI	SBT	SRP
-	ŀ	-	בטר			אטא	יייר	- <u>R</u>	101	2		<u>.</u>
-	-	₩₽		F	₩₽			4			4	
-	78	1250	22	46	481	25	34	189	372	167	114	15
-	78	1250	22	46	481	25	34	189	372	167	114	15
	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	4.4	5.1		4.4	4.9			4.9			4.9	
ne Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
	00.	1.00		1.00	0.99			0.92			0.99	
It Protected 0	0.95	1.00		0.95	1.00			1.00			0.97	
rot)	0//	3529		1770	3487			1701			1799	
	0.95	1.00		0.95	1.00			96:0			0.38	
Satd. Flow (perm) 1.7	770	3529		1770	3487			1645			869	
Peak-hour factor, PHF 0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	30	1359	27	20	523	22	37	205	404	182	124	16
	0	-	0	0	7	0	0	22	0	0	2	0
ane Group Flow (vph)	30	1385	0	20	573	0	0	289	0	0	320	0
	Prot	M		Prot	NA		Perm	NA		Perm	NA	
Phases	വ	2		-	9			00			4	
Permitted Phases							∞			4		
Actuated Green, G (s)	3.7	42.1		3.4	42.0			46.1			46.1	
(S	3.7	42.1		3.4	42.0			46.1			46.1	
	0.03	0.40		0.03	0.40			0.43			0.43	
	4.4	5.1		4.4	4.9			4.9			4.9	
/ehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
(hdh)		1401		99	1381			715			303	
	0.02	c0.39		00.03	0.16							
Perm								0.36			c0.46	
	0.49	0.99		0.89	0.41			0.82			1.06	
	50.2	31.7		51.1	23.1			26.4			29.9	
	00.	1.00		1.02	1.01			1.00			1.00	
ıtal Delay, d2	2.3	21.4		78.7	6:0			7.3			67.5	
	52.5	53.2		131.1	24.2			33.7			97.5	
evel of Service	۵	۵		ш	ပ			ပ			ш	
Approach Delay (s)		53.1			32.7			33.7			97.5	
pproach LOS		Ω			ပ			S			ш.	
ntersection Summary												
HCM 2000 Control Delay			49.4	ĭ	HCM 2000 Level of Service	Level of 3	Service		۵			
HCM 2000 Volume to Capacity ratio	oj te		1.02									
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)			14.4			
ntersection Capacity Utilization		_	101.3%	೨	ICU Level of Service	f Service			G			
Analysis Period (min)			15									

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Balboa Transit Station 12: Grand Ave & Culver St

Horizon Year with Reduced LU Timing Plan: AM Peak Period 55 187 2596 2188 434 0 702 0 0 377 0 1 0 0 0 0.37 080 049 0.55 SBL 239 239 0.77 0.77 0.0 0.0 149 218 186 677 677 9.5 0.3 9.8 9.8 108 1182 211 EBT 1772 0.68 4.8 0.5 5.3 153 m181 70 0.50 51.8 0.0 51.8 48 m49 Control Delay

Queue Delay

Total Delay

Total Delay

Queue Length 50th (ft)

Queue Length 95th (ft)

Ium Bay Length (ft)

Tam Bay Length (ft)

Base Capacity (vpt)

Starvation Cap Reducin

Spillback Cap Reducin

Soriage Cap Reducin

Soriage Cap Reducin Lane Group Lane Group Flow (vph) v/c Ratio

Intersection Summary Molume for 95th percentile queue is metered by upstream signal.

Balboa Transit Station 12: Grand Ave & Culver

12: Grand Ave & Cuiver St	ดี	ı		ı				IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
•	•	†	٠	ţ	4	٠	•	
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR	
ane Configurations	×	44	4	4₽		×		
Fraffic Volume (vph)	64	1630	0	203	120	172	48	
	64	1630	0	203	120	172	48	
•	061	1900	1900	1900	1900	1900	1900	
9	4.4	5.1		4.9		4.9		
_ane Util. Factor	1.00	0.95		0.95		1.00		
	1.00	1.00		0.97		16.0		
Flt Protected (0.95	1.00		1.00		96:0		
Satd. Flow (prot) 1	0//	3539		3437		1740		
	0.95	1.00		1.00		96:0		
Satd. Flow (perm) 1	1770	3539		3437		1740		
Peak-hour factor, PHF (26.0	0.92	0.92	0.92	0.92	0.92	0.92	
	2	1772	0	547	130	187	52	
RTOR Reduction (vph)	0	0	0	15	0	10	0	
ane Group Flow (vph)	2	1772	0	999	0	229	0	
	Prot	N	Prot	NA		Prot		
hases	വ	2	-	9		4		
Permitted Phases								
Actuated Green, G (s)	7.5	77.8		66.1		18.2		
s)	7.5	77.8		66.1		18.2		
	0.07	0.73		0.62		0.17		
Clearance Time (s)	4.4	5.1		4.9		4.9		
/ehicle Extension (s)	2.0	4.2		4.1		2.0		
ane Grp Cap (vph)	125	2597		2143		298		
	0.04	c0.50		0.19		00.13		
//s Ratio Perm								
	95.0	89.0		0.31		0.77		
	47.7	7.5		9.3		41.9		
	1.04	0.50		0.91		1.00		
ncremental Delay, d2	Ξ:	0.5		0.4		10.2		
	9.09	4.3		8.9		52.1		
evel of Service	Ω	⋖		⋖		٥		
pproach Delay (s)		0.9		8.9		52.1		
Approach LOS		V		A		٥		
ntersection Summary								
HCM 2000 Control Delay			10.7	Ĭ	HCM 2000 Level of Service	Level of S	Service	В
HCM 2000 Volume to Capacity ratio	atio		0.73					
Actuated Cycle Length (s)			106.0	જ	Sum of lost time (s)	time (s)		14.4
ntersection Capacity Utilization			72.8%	೨	ICU Level of Service	f Service		O

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Balboa Transit Station 13: Lee St & Grand Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

•	NBL	107	09:0	41.1	0.0	41.1	40	92	337		545	0	0	0	0.20
ţ	WBT	619	0.23	2.5	0.0	2.5	38	70	1401		2909	0	17	0	0.23
/	WBL	140	99.0	29.0	0.0	29.0	92	149		400	274	0	0	0	0.51
†	EBT	1917	0.82	12.0	0.1	12.1	340	#800	211		2347	78	0	0	0.83
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Synchro 9 Report Page 24 KHA Queues

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 13: Lee St & Grand Ave

## EBT EBR WW 1718		†	<u> </u>	/	ţ	€	•	
178 46 129 625 51 48 178 46 129 625 51 48 178 46 129 625 51 48 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1000	Movement	EBT	EBR	WBL	WBT	NBL	NBR	
1778	-ane Configurations	4₩		F	‡	>		
1778	raffic Volume (vph)	1718	46	129	625	21	48	
1900 1900 1900 1900 1900 1900 1900 1900	uture Volume (vph)	1718	46	129	625	22	48	
4.9	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.97 0.93 0.95 1.00 0.97 0.95 1.00 0.97 0.95 1.00 0.97 0.95 1.00 0.97 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Fotal Lost time (s)	4.9		4.4	5.4	4.9		
1.00 1.00 0.93 3.525 1770 3.839 1.697 1.00 0.95 1.00 0.97 3.525 1770 3.839 1.697 1.00 0.92 0.92 0.92 0.92 1.00 0.92 0.92 0.92 0.92 1.00 0.94 0.92 0.92 0.92 1.00 0.97 0.92 0.92 0.92 1.00 0.94 0.92 0.92 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.92 0.92 1.00 0.93 1.00 0.94 1.00 0.94 1.00 0.96 1.00 0.90	ane Util. Factor	0.95		1.00	0.95	1.00		
100 0.95 1.00 0.97 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.95 1.00 0.97 1.00 0.97 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	Į.	1.00		1.00	1.00	0.93		
35.55 1770 35.39 1697 100 0.97 100 0.95 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1770 35.39 1697 1697 1697 1697 1697 1697 1697 169	It Protected	1.00		0.95	1.00	0.97		
100 055 100 097 100 052 092 092 092 092 092 092 092 092 092 09	Satd. Flow (prot)	3525		1770	3539	1697		
3525 1770 3539 1697 1 092 092 092 092 092 092 1) 1 1867 50 140 679 65 50 1) 1 1916 0 140 679 65 0 1) 1 1916 0 140 679 65 0 1) 1 1916 0 140 679 65 0 1) 1 1916 0 140 679 65 0 1) 1 1916 0 140 679 65 0 1 1 0 88 8 1 1 1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 87.1 8 8 8 1 1 2 8 8 8 1 1 3 9 9 9 9 9 1 1 3 9 9 9 9 1 1 1 1 4 6 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	It Permitted	1.00		0.95	1.00	0.97		
1867 692 692 692 692 693 679 679 685 52 1867 50 140 679 65 52 62 1916 0 140 679 65 62 NA	satd. Flow (perm)	3525		1770	3539	1697		
1867 50 140 679 55 52 1 10 0 0 42 0 1 1916 0 140 679 65 0 1 10 6 8 65 0 1 10 8 8 1 2 12 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.7 87.1 86 12.8 0.08 12.9 0.08 13.0 44 54 13.0 44 54 13.0 46 5 14.6 5 10.8 0.19 0.04 13.0 46.5 0.09 13.0 46.6 0.23 0.47 13.0 46.6 0.23 0.47 13.0 46.6 0.23 0.47 13.0 46.6 0.23 0.47 13.0 46.6 0.23 0.47 13.0 10.0 100 10.1 10.0 100 10.1 10.0 100 10.2 59.4 2.3 47.5 10.5 87.5 B 10.5 87.5 B 10.5 87.5 III. HCM 2000 Level of Service 10.2 Sum of lost time (s) 10.1 10.2 Sum of lost time (s) 10.1 10.2 Sum of lost time (s) 10.1 10.2 Sum of lost time (s) 10.1 10.2 Sum of lost time (s) 10.1 10.2 Sum of lost time (s)	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
1) 1916 0 140 679 65 0 NA Prot NA Pro	dj. Flow (vph)	1867	20	140	629	22	52	
) 1916 0 140 679 65 0 NA Prot NA Prot S 2 1 1 6 8 1 0 8 8 1 1 6 8 8 1 8 6 1 12.7 87.1 8.6 1 2.7 87.1 8.6 1 2.0 82 0.08 1 2.0 82 0.08 2 344 5.4 4.9 2 344 5.4 4.9 2 344 2.0 2 344 2.0 2 344 2.0 2 344 2.0 2 344 2.0 2 344 2.0 2 344 2.0 2 4 4 5.4 3 4.7 5 8 9 0.2 6 8 0.2 6 8 0.2 6 8 0.3 6 8 0.3 7 11.7 HCM 2000 Level of Service Capacity ratio 73.7% ICU Level of Service 1 0.5 8 0.5 8 mm of lost time (\$) 1 0.1 0.7 8 mm of lost time (\$) 1 0.1 0.7 8 mm of lost time (\$) 1 0.2 8 0.3 8 mm of lost time (\$) 1 0.3 17% ICU Level of Service	ROR Reduction (vph)	-	0	0	0	45	0	
NA Prot NA Prot NA Prot NA Prot NA Prot NA Prot NA NA Prot NA NA NA NA NA NA NA NA NA NA NA NA NA	ane Group Flow (vph)	1916	0	140	619	92	0	
2 1 6 8 70.5 12.7 87.1 86 70.5 12.7 87.1 86 6.67 0.12 0.82 0.08 4.9 4.4 5.4 4.9 2.0 4.4 2.0 2.34 2.12 2.907 137 6.0.54 6.0.08 0.19 0.04 0.82 0.06 0.23 0.47 13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.00 2.5 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.3 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 10.5 1.05 Service 1.05 Service 1.05 Service 1.05 Service 1.06 Service 1.076 Service 1.077% ICU Level of Service	urn Type	M		Prot	NA	Prot		
70.5 12.7 87.1 8.6 70.5 12.7 87.1 8.6 0.67 0.12 0.82 0.08 4.9 4.4 5.4 4.9 4.0 2.0 4.4 5.0 2.344 212 2907 137 0.34 212 2907 137 0.54 0.08 0.19 0.04 13.0 44.6 2.1 46.5 10.0 1.00 1.00 1.00 10.2 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 10.5 47.5 B D A D 10.2 10.5 47.5 B B D A D 10.2 10.5 47.5 B B D A D 10.2 0.9 10.5 47.5 B D A D 10.6 0.75 B D A D 10.7 11.7 HCM 2000 Level of Service 10.80 Sum of lost time (s) 10.80 Sum of lost time (s) 10.81 0.860 Sum of lost time (s) 10.81 0.860 Sum of lost time (s)	Protected Phases	2		-	9	œ		
70.5 12.7 87.1 8.6 7.0 6.7 12.7 87.1 8.6 7.0 6.5 7.0 12.7 87.1 8.6 7.0 6.5 7.0 12.7 87.1 8.6 7.0 6.5 7.0 12.0 82.2 12.4 4.9 1.3 7.6 1.3 13.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Permitted Phases							
70.5 112.7 87.1 8.6 4.9 4.4 5.4 4.9 4.0 2.0 4.4 4.9 4.0 2.0 4.4 2.0 2.34 2.12 2907 137 6.054 6.028 0.19 6.04 6.050 1.00 1.00 1.00 1.02 5.9 0.2 0.9 1.02 5.9 0.2 0.9 1.02 5.9 0.2 0.9 1.02 5.9 0.2 0.9 1.02 5.9 0.2 0.9 1.02 5.9 0.2 0.9 1.03 1.05 47.5 B D A D D A D A D A D A D A D A D A D A	Actuated Green, G (s)	70.5		12.7	87.1	9.8		
0.67 0.12 0.82 0.08 4.9 4.4 5.4 4.9 4.0 2.0 4.4 2.0 2.344 2.12 2.907 1.37 c0.54 c0.08 0.19 c0.04 0.82 0.06 0.23 0.47 13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.00 1.00 2.5 5.9 0.2 0.9 10.2 5.04 2.3 47.5 B D A D 10.2 5.04 2.3 47.5 B D A D 10.2 1.05 47.5 B D A D 10.2 1.05 47.5 B D A D 10.2 1.05 47.5 B D A D 10.2 1.05 47.5 B D A D 10.2 1.05 47.5 B D A D 10.2 1.05 47.5 B D A D 10.3 1.05 47.5 B D A D 10.4 0.56 Capacity ratio 0.76 Sum of lost time (s) Utilization 7.3.7% ICU Level of Service	Effective Green, g (s)	70.5		12.7	87.1	9.8		
4.9 4.4 5.4 4.9 4.0 2.0 4.4 2.0 2.344 2.12 2.907 2.344 2.12 2.907 2.345 0.08 0.19 0.04 0.82 0.66 0.23 0.47 13.0 4.46 2.1 46.5 0.60 1.00 1.00 1.00 1.02 5.9 0.2 0.9 1.0.2 5.9 0.2 0.9 1.0.2 5.0.4 2.3 47.5 B D A D D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.2 10.5 47.5 B D A D 1.0.3 17.7 HCM 2000 Level of Service 1.37% ICU Level of Service	Actuated g/C Ratio	19.0		0.12	0.82	0.08		
2344 2.0 2344 2.12 2907 137 2354 2.12 2907 137 20.54 0.08 0.19 0.004 0.82 0.66 0.23 0.47 13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.00 1.02 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.04 2.3 47.5 B D A D 10.2 8.04 2.3 47.5 B D A D 10.2 8.04 0.05 10.5 47.5 10.6 Sum of lost time (s) 1.00 10.0 S	Clearance Time (s)	4.9		4.4	5.4	4.9		
2344 212 2907 137 c0.54 c0.08 0.19 c0.04 0.82 0.66 0.23 0.47 13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.00 1.02 5.9 0.2 0.9 1.02 5.9 0.2 0.9 1.02 5.04 2.3 47.5 B D A D 1.05 A	/ehicle Extension (s)	4.0		2.0	4.4	2.0		
0.54	ane Grp Cap (vph)	2344		212	2907	137		
0.82 0.66 0.23 0.47 13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.00 1.0.2 5.9 0.2 0.9 10.2 50.4 2.3 47.5 B D A D 10.2 10.5 47.5 B D A D 10.2 10.5 47.5 B D A D 10.5 47.5 B D A D 10.6 Sum of lost time (s) 10.60 Sum of lost time (s) 10.61 2.84 2.84 2.84 2.84 2.84 2.84 2.84 2.84	/s Ratio Prot	c0.54		80.00	0.19	c0.04		
0.82 0.66 0.23 0.47 13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.00 1.01 1.01 1.00 1.02 5.9 0.2 0.9 10.2 5.04 2.3 47.5 B D A D 10.2 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D D 10.5 47.	/s Ratio Perm							
13.0 44.6 2.1 46.5 0.60 1.00 1.00 1.2.5 5.9 0.2 0.9 10.2 5.4 2.3 47.5 B D A D 10.2 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 B D A D 10.5 47.5 Capacity ratio 0.76 In (s) 106.0 Sum of lost time (s) Utilization 7.3.7% ICU Level of Service	/c Ratio	0.82		99.0	0.23	0.47		
0.60 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Jniform Delay, d1	13.0		44.6	2.1	46.5		
2.5 5.9 0.2 0.9 10.2 50.4 2.3 47.5 10.2 B A D 10.2 B D A 10.5 47.5 10.6 Sum of lost time (s) 10.6 Sum of lost vice 10.7% ICU Level of Service 13.7% ICU Level of Service	Progression Factor	09:0		1.00	1.00	1.00		
10.2 50.4 2.3 47.5 B D A D A D 10.2 10.5 47.5 B B D A D A D A D A D A D A D A D A D A D A	ncremental Delay, d2	2.5		5.9	0.2	6:0		
B D A D 10.2 10.5 47.5 B D (A Capacity ratio 0.76	Jelay (s)	10.2		50.4	2.3	47.5		
10.2	evel of Service	В		Ω	V	۵		
B B D 11.7 HCM 2000 Level of Service (capacity ratio 0.76 Sum of lost time (s) 106.0 Sum of lost time (s) 100.1 Particular 13.7% ICU Level of Service	opproach Delay (s)	10.2			10.5	47.5		
How the first state of the first	pproach LOS	В			В	۵		
slay 11.7 HCM 2000 Level of Service Capacity ratio 0.76 Sum of lost time (s) ' h (s) 106.0 Sum of lost time (s) ' Utilization 3.7% ICU Level of Service	ntersection Summary							
Capacity ratio 0.76 Sum of lost time (s) ' (s) 106.0 Sum of lost time (s) ' Utilization 73.7% ICU Level of Service	ICM 2000 Control Delay			11.7	ĮΞ	3M 2000 I	evel of Service	В
h (s) 106.0 Sum of lost time (s) 137% ICU Level of Service	HCM 2000 Volume to Capaci	ity ratio		97.0				
Utilization 73.7% ICU Level of Service	ctuated Cycle Length (s)			106.0	S	Im of lost	time (s)	14.2
14	ntersection Capacity Utilizati	ion		73.7%	⊇	U Level o	Service	Q
	Analysis Period (min)			15				
	c Critical Lane Group							

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Balboa Transit Station 14: Grand Ave & Figueroa Blvd

Horizon Year with Reduced LU Timing Plan: AM Peak Period

	١	†	,	
Lane Group	EBL	EBT	WBT	
Lane Group Flow (vph)	130	1864	775	
v/c Ratio	0.72	0.53	0.27	
Control Delay	86.2	9.0	1.0	
Queue Delay	0.0	0.0	0.0	
Total Delay	86.2	9.0	1.0	
Queue Length 50th (ft)	125	0	14	
Queue Length 95th (ft)	192	0	21	
Internal Link Dist (ft)		909	773	
Tum Bay Length (ft)	06			
Base Capacity (vph)	259	3539	2922	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.50	0.53	0.27	
Intersection Summary				

Synchro 9 Report Page 26 KHA Oueues

Balboa Transit Station 14: Grand Ave & Figuer

Balboa Transit Station 14: Grand Ave & Figueroa Blvd	n Jeroa	Blvd				Hor	Horizon Year with Reduced LU Timing Plan: AM Peak Period
	•	†	ţ	4	٠	*	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	F	₩	44				
Traffic Volume (vph)	120	1715	699	44	0	0	
Future Volume (vph)	120	1715	699	44	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.3	5.3				
Lane Util. Factor	1.00	0.95	0.95				
Fit	1.00	1.00	0.99				
Fit Protected	0.95	1.00	1.00				
Satd. Flow (prot)	1770	3539	3206				
FIt Permitted	0.95	1.00	1.00				
Satd. Flow (perm)	1770	3539	3506				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	130	1864	727	48	0	0	
RTOR Reduction (vph)	0	0	-	0	0	0	
Lane Group Flow (vph)	130	1864	774	0	0	0	
Turn Type	Prot	N	N				
Protected Phases	2	2	9				
Permitted Phases							
Actuated Green, G (s)	15.4	150.0	124.9				
Effective Green, g (s)	15.4	150.0	124.9				
Actuated g/C Ratio	0.10	1.00	0.83				
Clearance Time (s)	4.4	5.3	5.3				
Vehicle Extension (s)	5.0	4.4	4.4				
Lane Grp Cap (vph)	181	3539	2919				
v/s Ratio Prot	c0.07	c0.53	0.22				
v/s Ratio Perm							
v/c Ratio	0.72	0.53	0.27				
Uniform Delay, d1	65.2	0.0	2.7				
Progression Factor	1.00	1.00	0.28				
Incremental Delay, d2	10.7	9.0	0.2				
Delay (s)	75.9	9.0	0.				
Level of Service	ш	∢	Υ				
Approach Delay (s)		2.5	1:0		0:0		
Approach LOS		⋖	⋖		A		
Intersection Summary							
HCM 2000 Control Delay			4.2	HCI	M 2000 L	HCM 2000 Level of Service	А
HCM 2000 Volume to Capacity ratio	ratio		0.58				
Actuated Cycle Length (s)			150.0	Sun	Sum of lost time (s)	me (s)	12.7
Intersection Capacity Utilization	_		21.8%	3	ICU Level of Service	Service	A
Analysis Period (min)			15				
c Critical Lane Group							

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KHA Queues

Synchro 9 Report Page 28

Balboa Transit Station 15: Grand Ave & Mission Bay Dr

Horizon Year with Reduced LU Timing Plan: AM Peak Period

0	0	90:0
59	0	0.86
0	0	99.0
, 0	0	0.55
, 0	0	0.83
, 0	0	0.76
Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio
	Spillback Cap Reductin 0 0 0 0 0	Spillback Cap Reductin 0 0 0 0 Storage Cap Reductin 0 0 0 0

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Transit Station
15: Grand Ave & Mission Bay Dr
Timing Plant AM Peak Period

EBL EFI WET WER SBL SBR 274 1512 493 881 827 91 274 1512 493 881 827 91 1900 1900 1900 1900 1900 5.7 4.9 57 5.7 4.9 4.0 1.00 0.95 0.95 0.88 0.97 1.00 1.00 0.95 0.95 0.88 0.97 1.00 1.70 3539 3539 2787 3433 1583 0.95 1.00 1.00 0.95 1.00 1.70 3539 3539 2787 3433 1583 0.95 1.00 1.00 0.95 0.92 298 1643 536 928 99 99 1.70 3539 3539 2787 3433 1583 0.95 0.00 1.00 0.00 0.95 1.70 3539 3539 2787 3433 1583 0.95 0.00 1.00 0.00 0.95 1.70 3539 3539 2787 3433 1583 0.95 0.00 0.00 0.00 298 1643 536 0.20 0.20 0.92 298 1643 536 0.20 0.30 0.00 298 1643 536 0.20 0.30 0.00 298 1643 536 0.20 0.31 1.00 200 0.56 0.27 0.21 0.31 1.00 5.1 42.2 20.6 20.6 23.0 75.0 5.1 42.2 20.6 20.6 23.0 75.0 5.1 42.2 20.6 20.6 23.0 75.0 5.1 42.2 20.6 20.6 23.0 75.0 5.1 42.2 20.6 20.6 23.0 75.0 5.1 42.2 20.6 20.6 23.0 75.0 5.1 42.2 20.6 20.6 23.0 75.0 5.2 1.2 6.9 0.01 4.2 1.7 0.2 4.3 1.3 3.3 3.3 5.8 2.2 1.2 6.9 0.1 4.1 1.7 0.2 4.3 71.5 37.0 0.1 D B C E D A C E C C C C Sumoflost time (s) Ilization 73.6% ICUL tevel of Service 15 27.6% ICUL tevel of Service		<	1	 	√	مر	•	
FBI FBI WBI WBR SBI SBR			•				•	
Vicinic Vici	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
(vph) 274 1512 493 881 827 91 (vph) 1700 1700 1700 1700 1700 1700 1700 170	Lane Configurations	r	44	₩	لولو	14	¥.	
(vph) 274 1512 493 881 827 91 (vph) 1900 1900 1900 1900 1900 (v) 5.7 4.9 5.7 5.7 4.9 100 (v) 5.7 6.7 6.7 6.7 6.0 1900 (v) 5.0 100 1900 1900 1900 (v) 5.0 100 100 0.85 100 (v) 6.0 100 100 0.85 100 (v) 70 100 100 100 0.95 100 (v) 84 1043 536 938 90 99 (v) 95 100 100 100 0.95 100 (v) 1770 3539 3539 2787 3433 1583 (v) 1770 3539 3539 2787 343 1583 (v) 1770 3539 3539 2787 343 1583 (v) 1770 3539 3539 2787 343 1583 (v) 1770 3539 3539 2787 349 (v) 1770 353 354 282 100 (v) 1770 378 278 278 278 (v) 151 422 20.6 20.6 230 750 (v) 151 402 20.6 230 750 (v) 151 402 20.6 230 750 (v) 151 402 20.6 230 750 (v) 151 402 20.6 230 750 (v) 151 402 20.6 230 750 (v) 151 402 20.6 230 750 (v) 151 402 20.6 20.6 230 750 (v) 171 20.9 20.1 20.0 20.6 20.6 20.6 20.6 20.6 20.6 20.6	Traffic Volume (vph)	274	1512	493	881	827	91	
1900 1900	Future Volume (vph)	274	1512	493	881	827	91	
(\$) 5.7 4.9 5.7 4.9 4.0 In	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
n	Total Lost time (s)	2.7	4.9	2.7	2.7	4.9	4.0	
100	Lane Util. Factor	1.00	0.95	0.95	0.88	16.0	1.00	
(yph) 1770 3539 3539 2787 3433 1583 m) (yph) 0 0 0 0 095 092 092 m (yph) 0 0 0 0 095 09 09 m (yph) 0 0 0 0 0 095 09 m (yph) 298 1643 536 263 899 99 m (yph) 356 151 422 20.6 20.6 23.0 75.0 m (s) 2.0 3.6 20.6 23.0 75.0 m (s) 5.7 4.9 5.7 5.7 4.9 m (s) 5.7 32 12.3 1.0 m (s) 6.8 13.4 23.3 21.3 1.0 m (s) 6.9 5.0 34 0.8 0.0 m (s) 2.0 3.6 2.0 3.6 m (s) 6.9 5.7 5.7 5.7 6.9 m (s) 6.9 5.7 5.7 6.9 m (s) 7.0 1.7 2.9 m (s) 6.9 5.7 5.7 6.9 m (s) 7.0 2.0 3.8 m (s) 7.0 2.0 3.8 m (s) 8.0 5.0 3.8 m (s) 8.0 5.0 5.0 0.1 m (s) 8.0 5.0 5.0 0.1 m (s) 9.0 5.0 5.0 m (s) 9.0 5.0 m (s) 9	Frt	1.00	1.00	1.00	0.85	1.00	0.85	
1770 3539 3539 2787 3433 1583 1770 3539 3539 2787 3433 1583 1770 3539 3539 2787 3433 1583 1770 3539 3539 2787 3433 1583 1770 3539 3539 2787 3433 1583 1770 3539 3539 2787 3433 1583 1770 3539 3539 2787 3433 1583 1770 3539 2787 3433 1583 1770 3539 2787 3433 1583 1770 3787 3787 3787 3787 3787 3787 3787 3	Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
my) 0.95 1.00 1.00 0.95 1.00 my) 1770 3539 2787 3433 1583 m (yph) 0.02 0.92 0.92 0.92 0.92 m (yph) 0.0 0.0 0.95 0.92 m (yph) 0.0 0.0 0.95 0.92 m (yph) 2.98 1643 536 958 99 99 m (yph) 2.98 1643 536 263 899 99 m (yph) 2.98 1643 536 263 899 99 m (yph) 2.98 1642 2.0 0.0 23 0.0 0.0 m (s) 15.1 4.2. 2.0 2.0 2.0 3.0 75.0 m (s) 2.0 3.4 2.0 2.0 3.4 99 m (s) 2.0 3.4 2.2 0.0 0.0 m (s) 2.0 3.4 0.2 0.0 m (s) 2.0 3.4 0.3 0.0 m (s) 2.0 3.8 0.3 0.0 m (s) 2.0 3.8 0.3 0.0 m (s) 2.0 3.8 0.3 0.0 m (s) 2.0 3.8 0.3 0.0 m (s) 2.0 3.8 0.3 0.0 m (s) 2.0 3.8 0.3 0.0 m (s) 2.0 2.0 3.0 m (s) 2.0 3.0 0.1 m (s) 2.0 2.0 3.0 m (s) 2.0 3.0 0.1 m (s) 2.0 2.0 0.0 m (s) 2.0 0	Satd. Flow (prot)	1770	3539	3539	2787	3433	1583	
March 1770 3539 3539 2787 3433 1583	Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
N, PHF 0.92 0.92 0.92 0.92 N, PHF 0.92 0.92 0.92 0.92 Nn (vph) 0 0.69 89 99 ses 5 2.6 4 4 es 1.6 (s) 15.1 4.2.2 20.6 23.0 75.0 es 7.6 (s) 2.0 2.0 23.0 75.0 20.0 es 7.7 (s) 2.0 2.0 23.0 75.0 20.0 es 7.0 3.0 2.0 2.0 3.1 3.0 3.0 (s) 5.7 (s) 4.9 5.7 (s) 4.9 <th< td=""><td>Satd. Flow (perm)</td><td>1770</td><td>3539</td><td>3539</td><td>2787</td><td>3433</td><td>1583</td><td></td></th<>	Satd. Flow (perm)	1770	3539	3539	2787	3433	1583	
298 1643 536 958 999 99 99 99 90 90 90	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
1643 556 263 899 99 1643 556 2643 899 99 17	Adj. Flow (vph)	298	1643	536	928	866	66	
1 1643 536 263 899 99 1 NA NA Prod Prod Free 2 6 6 4 Free 4 22 206 206 230 750 1 422 206 206 230 750 0.56 202 206 230 750 1 49 5.7 5.7 4.9 0 36 20 20 36 1 49 5.7 5.7 4.9 0 38 2.0 20 36 1 100 1.00 1.17 3.23 1.23 1.00 0 8 36 2 12 6 0.01 0 8 36 2 12 6 0.01 0 8 36 2 12 6 0.01 0 8 36 4 33 3 0 5	RTOR Reduction (vph)	0	0	0	969	0	0	
1 NA NA Prot Prot Free 2 6 6 4 Free 1 422 20.6 20.6 23.0 75.0 1 422 20.6 20.6 23.0 75.0 1 422 20.6 20.6 23.0 75.0 2 50 27 0.27 0.31 1.00 3 6 20 2.0 3.6 1 991 972 765 1052 1583 1 1991 972 765 1052 1583 1 1991 972 765 1052 1583 1 1991 972 765 1052 1583 1 1991 972 765 1052 1006 1 0.08 0.15 0.09 0.06 1 0.08 0.55 0.34 0.95 0.06 1 0.08 0.55 0.34 0.95 0.01 1 170 29.3 71.8 37.0 0.1 2 0 E D A 3 6 HCM 2000 Level of Service 3 5 HCM 2000 Level of Service 3 5 HCM 2000 Level of Service 3 5 HCM 2000 Level of Service 1 5 SUM of lost time (s) 7 3 6 HCM 2000 Level of Service	Lane Group Flow (vph)	298	1643	536	263	866	66	
2 6 6 4 4 Free 422 20.6 20.6 23.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75	Turn Type	Prot	NA	M	Prot	Prot	Free	
422 20.6 20.6 23.0 75.0 422 20.6 20.6 23.0 75.0 422 20.6 20.6 23.0 75.0 43 5.7 6.27 0.27 0.31 1.00 3.6 0.27 0.27 0.31 1.00 49 5.7 6.7 6.2 1.83 1991 972 765 1052 1583 0.0.4 0.15 0.09 0.0.2 10.8 0.5 0.34 0.85 0.06 11.0 0.33 0.55 0.34 0.85 0.06 13.4 23.3 21.8 24.4 0.0 11.0 29.3 71.5 3.0 0.1 B	Protected Phases	2	2	9	9	4		
1 422 206 206 230 750 1 422 206 206 230 750 0.55 0.27 0.27 0.31 100 0.56 0.27 0.27 0.31 100 0.56 0.37 0.27 0.31 100 0.56 0.37 0.27 0.35 0.36 0.26 0.36 0.08 0.25 0.34 0.85 0.06 0.08 0.55 0.34 0.85 0.06 0.08 0.55 0.34 0.85 0.06 0.100 1.17 3.23 1.18 24.4 0.0 0.101 1.7 3.23 1.23 1.00 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1 0.10 29.3 71.5 37.0 0.1	Permitted Phases						Free	
422 206 206 230 750 482 206 206 230 750 49 35 27 27 49 36 20 20 36 1991 972 765 1052 1583 1004 015 009 00.26 006 083 055 034 085 006 100 117 323 128 244 0.0 110 121 323 123 100 170 293 715 370 0.1 170 293 715 200 0.1 170 293	Actuated Green, G (s)	15.1	42.2	20.6	50.6	23.0	75.0	
0.056 0.27 0.21 1.00 1. 49 5.7 5.7 4.9 1. 49 5.7 5.7 4.9 1. 49 5.7 5.7 4.9 1. 60.46 0.15 0.09 6.0.26 1. 60.83 0.55 0.34 0.85 0.06 1. 60.83 0.55 0.34 0.85 0.06 1. 170 0.1.17 3.23 1.23 1.00 1. 170 29.3 71.5 37.0 0.1 1. 170 29.3 71.5 37.0 0.1 1. 170 29.3 71.5 37.0 0.1 1. 170 29.3 71.5 37.0 0.1 1. 170 29.3 71.5 37.0 0.1 1. 170 29.3 71.5 37.0 0.1 1. 170 29.3 71.5 37.0 0.1 20.8 56.4 33.3 20.8 56.4 33.3 7. 6	Effective Green, g (s)	15.1	42.2	50.6	20.6	23.0	75.0	
1 49 57 49 1 49 57 57 49 1 93 20 20 36 1 904 917 76 1052 1583 1 604 015 009 60.26 1 0.83 0.55 0.34 0.85 0.06 1 134 233 218 244 0.0 1 100 1.17 3.23 1.23 1.00 1 170 293 71.5 37.0 0.1 1 170 293 71.5 37.0 0.1 1 170 293 71.5 37.0 0.1 2 8 56.4 33.3 2 E C E D A 33.6 HCM 2000 Level of Service 0.93 75.0 Sum of lost time (s) 75.0 Sum of lost time (s) 75.1 Sum of lost time (s) 75.1 Sum of lost time (s) 75.2 Sum of lost time (s) 75.3 Sum of lost time (s) 75.3 Sum of lost time (s)	Actuated g/C Ratio	0.20	0.56	0.27	0.27	0.31	1.00	
3.6 2.0 3.6 3.1 4.0 3.1 3.6 1.0 1.0 3.6 3.1 1.0 1.0 1.0 1.0 1.0 1.0 3.1 1.0 2.9 3.1 1.8 2.4 4 0.0 3.1 1.0 1.0 1.1 3.2 3.1 2.3 1.0 1.0 3.2 1.2 6.9 0.1 3.4 2.2 1.2 6.9 0.1 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service	Clearance Time (s)	2.7	4.9	2.7	2.7	4.9		
7 0.046 0.15 0.09 0.026 0.06 0.06 0.08 0.05 0.04 0.05 0.04 0.05 0.06 0.06 0.06 0.06 0.06 0.06 0.06	Vehicle Extension (s)	2.0	3.6	2.0	2.0	3.6		
7	Lane Grp Cap (vph)	356	1991	972	765	1052	1583	
1 0.83 0.55 0.34 0.85 0.06 1 134 23.3 718 24.4 0.0 1 100 1.17 3.23 1.23 1.00 1 170 29.3 71.5 37.0 0.1 1 170 29.3 71.5 37.0 0.1 20.8 56.4 33.3 C E C C 6 C 7.50 Sum of lost time (s) 75.0 Sum of lost time (s) 73.6% ICU Level of Service 15	v/s Ratio Prot	0.17	c0.46	0.15	0.09	c0.26		
1 083 0.55 0.34 0.85 0.06 8 134 233 218 244 0.00 1.00 1.17 3.23 1.23 1.24 1.00 1.17 2.93 71.5 37.0 0.1 1.17 2.93 71.5 37.0 0.1 1.17 2.93 71.5 37.0 0.1 2.08 5.64 E D A C E C C E C 3.56 HCM 2000 Level of Service 0.93 7.50 Sum of lost time (s) 7.3.6% ICU Level of Service 1.5	v/s Ratio Perm						90:0	
3 134 233 118 44 0.0 1 100 1.17 3.23 1.23 1.00 1 17.0 29.3 71.5 37.0 0.1 1 17.0 29.3 71.5 37.0 0.1 2	v/c Ratio	0.84	0.83	0.55	0.34	0.85	90:0	
1.00 1.17 3.23 1.23 1.00 8 3.6 2.2 1.2 6.9 0.1 1.70 29.3 71.5 37.0 0.1 B C E D A 2.08 56.4 33.3 C C E C C 33.5 HCM 2000 Level of Service 0.93 75.0 Sum of lost time (s) 73.6% ICU Level of Service	Uniform Delay, d1	28.8	13.4	23.3	21.8	24.4	0.0	
3 3 5 2 12 6 9 0.1 1 170 293 715 37.0 0.1 208 564 33.3 C E C C 356 HCM 2000 Level of Service 750 Sum of lost time (s) 73.6% ICU Level of Service 15	Progression Factor	1.00	1.00	1.17	3.23	1.23	1.00	
170 293 715 330 0.1 B C E D A 208 564 333 C E C C 33.6 HCM 2000 Level of Service 0.93 75.0 Sum of lost time (s) 73.6% ICU Level of Service 15	Incremental Delay, d2	13.3	3.6	2.2	1.2	6.9	0.1	
2 B C E D A 2 C E C C 3 C E C 3 C E C 3 Sum of lost time (s) 7 3 6	Delay (s)	42.1	17.0	29.3	71.5	37.0	0.1	
208 56.4 33.3 C E C 35.6 HCM 2000 Level of Service 0.93 75.0 Sum of lost time (s) 73.6% ICU Level of Service 15	Level of Service	٥	В	ပ	ш	Ω	Α	
35.6 HCM 2000 Level of Service 0,93 Num of lost time (s) 73.6% ICU Level of Service 15	Approach Delay (s)		20.8	56.4		33.3		
35.6 HCM 2000 Level of Service 0,93 75.0 Sum of lost time (s) 73.6% ICU Level of Service 15	Approach LOS		S	ш		O		
35.6 HCM 2000 Level of Service 0.93 75.0 Sum of lost time (s) 73.6% ICU Level of Service 15	Intersection Summary							
0.93 75.0 Sum of lost time (s) 73.6% ICU Level of Service 15	HCM 2000 Control Delay			35.6	¥	:M 2000	Level of Service	D
h (s) 75.0 Sum of lost time (s) Utilization 73.6% ICU Level of Service 15	HCM 2000 Volume to Capacity	ratio		0.93				
Utilization 73.6% 15	Actuated Cycle Length (s)			75.0	S	m of lost	time (s)	16.3
4	Intersection Capacity Utilization	_		73.6%	೨	U Level o	f Service	Q
- Out-11 O	Analysis Period (min)			15				
c Critical Lane Group	c Critical Lane Group							

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Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Horizon Year with Reduced LU Timing Plan: AM Peak Period

 Lane Group
 EBL
 NBL
 NBT
 SBR

 Lane Group Flow (vph)
 892
 112
 1485
 SBR

 Lane Group Flow (vph)
 892
 112
 1485
 SBR

 Wic Ratio
 0.85
 0.11
 1482
 824

 Coulcule Delay
 32.1
 40.6
 21.2
 19.7
 8.2

 Coulcule Delay
 32.1
 40.6
 21.2
 19.7
 8.2

 Oueue Delay
 32.1
 40.6
 21.2
 19.7
 8.2

 Oueue Length Softh (ft)
 189
 5.8
 5.26
 2.9

 Oueue Length 95th (ft)
 2.47
 116
 6.35
 2.34
 8.4

 Inimemal Link DSth (ft)
 2.47
 116
 6.35
 2.34
 8.4

 Inimemal Link DSth (ft)
 2.05
 1.49
 7.49
 7.4

 Stanvation Cap Reductin
 0
 0
 0
 0
 0

 Stanvation Cap Reductin
 0
 0
 0
 0
 0
 0

 Storage Capacity (vph)
 <td

KHA Synchro 9 Report Oueues Page 30

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

			-	-			
	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	, Al		je.	₩	₩	*	
	069	131	103	1366	774	240	
<u>ج</u>	069	131	103	1366	774	240	
deal Flow (vphpl) 1	006	1900	1900	1900	1900	1900	
Fotal Lost time (s)	4.4		4.4	2.0	9.6	9.6	
ane Util. Factor	0.97		1.00	0.95	0.95	1.00	
J	86.0		1.00	1.00	1.00	0.85	
	96.0		0.95	1.00	1.00	1.00	
Satd. Flow (prot) 3	3385		1770	3539	3539	1583	
	96:0		0.95	1.00	1.00	1.00	
Satd. Flow (perm) 3	3385		1770	3539	3539	1583	
Peak-hour factor, PHF (0.92	0.92	0.92	0.92	0.92	0.92	
	750	142	112	1485	841	261	
RTOR Reduction (vph)	23	0	0	0	0	16	
	698	0	112	1485	841	164	
	Prot		Prot	NA	NA	Perm	
Protected Phases	4		2	7	9		
Permitted Phases						9	
Actuated Green, G (s)	22.7		8.9	42.9	31.1	31.1	
Effective Green, g (s)	22.7		8.9	42.9	31.1	31.1	
	0.30		0.09	0.57	0.41	0.41	
Clearance Time (s)	4.4		4.4	2.0	9.6	9.6	
/ehicle Extension (s)	2.0		2.0	4.0	4.8	4.8	
.ane Grp Cap (vph)	1024		160	2024	1467	929	
	c0.26		90.0	c0.42	0.24		
						0.10	
	0.85		0.70	0.73	0.57	0.25	
	24.5		33.1	11.8	16.9	14.3	
	1.00		0.91	1.54	1.00	1.00	
ncremental Delay, d2	6.4		8.3	1.9	1.6	6.0	
	31.0		38.4	20.2	18.5	15.2	
	ပ		۵	ပ	В	В	
	31.0			21.5	17.7		
Approach LOS	ပ			ပ	В		
ntersection Summary							
HCM 2000 Control Delay			22.7	ĭ	M 2000	HCM 2000 Level of Service	U
HCM 2000 Volume to Capacity ratio	atio		0.84				
Actuated Cycle Length (s)			75.0	S	Sum of lost time (s)	time (s)	14.4
ntersection Capacity Utilization			69.4%	⊇	ICU Level of Service	f Service	O
Analysis Period (min)			7				
,			2				

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KHA Queues

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Balboa Transit Station 17: Mission Bay Dr & Damon Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

	>	4	•	•	۶	→	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	92	64	1559	137	80	854	
v/c Ratio	0.64	0.34	0.63	0.12	0.36	0.28	
Control Delay	86.0	18.5	13.9	4.3	74.9	4.0	
Queue Delay	0.0	0.0	12.7	0.0	0.0	0.0	
Total Delay	86.0	18.5	26.7	4.3	74.9	4.0	
Queue Length 50th (ft)	88	0	397	19	81	175	
Queue Length 95th (ft)	146	46	521	46	m135	230	
Internal Link Dist (ft)	1203		376			749	
Tum Bay Length (ft)		75		160	185		
Base Capacity (vph)	361	373	2477	1129	224	3024	
Starvation Cap Reductn	0	0	922	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.25	0.17	1.00	0.12	0.36	0.28	
C no House							
Intersection Summary							

m Volume for 95th percentile queue is metered by upstream signal.

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 17: Mission Bay Dr & Damon Ave

																																					ervice B		13.8	8		
→	SBT	‡	786	786	1900	5.2	0.95	1.00	1.00	3539	1.00	3539	0.92	854	0	854	NA	9		128.2	128.2	0.85	5.2	3.5	3024	0.24		0.28	2.1	1.68	0.2	3.7	Þ	9.4	⋖		HCM 2000 Level of Service		t time (s)	ICU Level of Service		
۶	SBL	*	74	74	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	8	0	80	Prot	-		19.0	19.0	0.13	4.4	2.0	224	00.05		0.36	29.9	1.18	0.3	70.8	ш				ICM 2000		Sum of lost time (s)	CU Level		
•	NBR	*-	126	126	1900	2.0	1.00	0.85	1.00	1583	1.00	1583	0.92	137	21	116	Perm		2	105.0	105.0	0.70	2.0	3.8	1108		0.07	0.10	7.3	1.00	0.2	7.5	⋖				_		-	_		
•	NBT	*	1434		_				1.00	` '	1.00	3539	0.92	1559	0	1559	Z	2		105.0	-	0		3.8	2477	c0.44						~	В	12.8	В		14.9	0.59	150.0	29.9%	15	!
4	WBR	*-	29		_							`	0.92	64	26	5	Perm		4			0	4.4		128							63.6	ш									
•	WBL	*	82	88	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	92	0	92	Prot	4		12.2	12.2	0.08	4.4	2.0	143	00.05		0.64	8.99	1.00	7.2	74.0	ш	69.7	ш			pacity ratio	(1)	ization		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	FIt Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	,

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Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

→	SBT	1086	0.48	14.7	1.2	15.9	281	339	461		2257	879	0	0	0.79						
٠	SBL	37	0.44	84.3	0.0	84.3	36	75		20	107	0	0	0	0.35						lei
←	NBT	1232	0.53	10.8	0.0	10.8	332	464	804		2316	0	0	0	0.53		ė.		oe longer		eam sign
✓	NBL	28	0.58	104.5	0.0	104.5	28	m105		9	119	0	0	0	0.49		ally infinit		eue may		by upstr
ţ	WBT	16	0.05	36.9	0.0	36.9	6	30	271		315	0	0	0	0.05		theoretica	cycles.	acity, que	cycles.	metered
†	EBT	348	1.05	114.7	0.0	114.7	~348	#554	303		331	0	0	0	1.05		y, queue is	m after two	exceeds cap	m after two	ile queue is
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	 Volume exceeds capacity, queue is theoretically infinite. 	Queue shown is maximum after two cycles.	# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.	Molume for 95th percentile queue is metered by upstream signal

KHA Queues

Balboa Transit Station
Horizon Year with Reduced LU
18: Mission Bay Dr & Magnolia Ave
Timing Plan. AM Peak Period

9 151 8 2 5 53 1126 7 34 882 117 9 151 8 2 5 53 1126 7 34 882 117 9 151 8 2 5 5 3 1126 7 34 882 117 9 151 8 2 5 5 3 1126 7 34 882 117 9 151 8 2 5 5 3 1126 7 34 882 117 9 151 8 2 7 100 1900 1900 1900 1900 1900 9 4.9 100 100 100 100 0.95 100 0 20 0.92 0.92 0.92 0.92 0.92 0.92 0.	↑ BB ←
1900 1900 1900 1900 1900 1900 1900 1900	
100 100 095 100 096 100 096 100 096 100 096 100 097 10	1900
0.96 1.00 1.00 0.98 1.07 0.95 1.00 0.98 1.08 1.00 0.97 0.95 1.00 0.95 1.00 1.08 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1.09 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1.09 0.00 1.2 0.5 1.22 0.92 0.92 0.92 0.92 1.00 0.00 1.2 0.5 1.23 0.9 0.9 0.92 1.00 0.00 1.2 0.5 1.23 0.9 0.9 0.9 1.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0	1.00
1735 1770 3536 1770 3477 1700 3536 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1770 3477 1700 3538 1700 1700 1700 1700 1700 1700 1700 170	0.94
0.92 0.92 0.92 0.95 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	1702
1460 1770 3556 1770 3477 1460 1770 3556 1770 3477 1460 1770 3556 1770 3477 169 1770 3477 169 1770 3477 169 1770 3477 169 1770	0.83
092 092 092 092 092 092 092 092 092 092	汉
104 9 2 5 5 1244 8 31 999 0	0.92
Perm NA Prof NA Prof 1 1 6 5 1 1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 ≥
Perm NA Prof NA Prof S	327
4 4 1 6 6 5 32.0 7.4 97.4 6.3 32.0 7.4 97.4 6.3 32.0 7.4 97.4 6.3 32.0 7.4 97.4 6.3 32.0 7.4 97.4 6.3 4.9 4.4 5.0 2.0 311 87 2296 74 4.4 5.0 0.01 0.03 0.35 0.02 0.04 0.67 0.54 0.50 0.00 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 1.00 0.0 0.0 0.0 12.1 0.8 0	¥
4 320 7.4 97.4 6.3 32.0 7.4 97.4 6.3 32.0 7.4 97.4 6.3 6.3 6.2 1 0.05 0.65 0.05 0.04 4.9 4.4 5.0 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 0.01 0.03 0.03 0.05 0.05 0.00 0.00 1.23 0.70 1.00 0.0 1.23 0.70 1.00 0.0 1.23 0.70 1.00 0.0 1.23 0.70 1.00 0.0 1.23 0.70 1.00 0.0 1.23 0.70 1.00 0.0 1.2 0.0 1.0 0.0 1.2 0.0 1.0 0.0 0.0 1.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	œ
32.0 7.4 97.4 6.3 3.2 3.2 0.2 1 97.4 6.3 3.2 0.2 1 0.05 0.65 0.64 4.9 4.4 5.0 4.4 5.0 4.4 4.4 5.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.1 0.0 1.2 0.0 1.3	
32.0 7.4 97.4 6.3 6.3 6.2 6.5 0.04 4.4 6.8 6.5 0.04 4.4 6.2 0.2 0.3 7.2 0.4 4.4 6.2 0.04 6.0 0.04 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	32.0
021 0.05 0.65 0.04 4.9 4.4 5.0 4.4 2.0 2.0 3.11 87 2296 74 2.0 311 87 2296 74 2.0 0.01 0.03 0.35 0.02 0.04 0.67 0.54 0.50 0.00 12.1 0.8 1.9 46.8 98.5 10.6 72.2 D F B F 46.8 98.5 10.6 72.2 D F B F C D F B C D F C	32.0
49	0.21
20 20 3.7 2.0 311 87 2296 74 2 001 0.03 0.35 0.02 004 0.67 0.54 0.50 46.8 70.1 14.2 70.3 1.00 12.1 0.8 1.9 46.8 98.5 10.6 72.2 D F B F 46.8 98.5 10.6 72.2 D F B C HCM 2000 Level of Service C	4.9
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D B HCM 2000 Level of Service C Sum of lost time (s) 14.3 ICU Level of Service C	125.0
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15	

Synchro 9 Report Page 35

KHA Queues

Synchro 9 Report Page 36

Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Horizon Year with Reduced LU

	,	_	•	•	
Lane Group	WBT	NBT	SBL	SBT	
Lane Group Flow (vph)	133	1263	260	668	
v/c Ratio	0.51	0.57	1.10	0.30	
Control Delay	10.7	13.5	115.6	2.6	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	10.7	13.5	115.6	2.6	
Queue Length 50th (ft)	0	221	~168	71	
Queue Length 95th (ft)	32	314	m#324	m147	
Internal Link Dist (ft)	514	495		804	
Tum Bay Length (ft)			06		
Base Capacity (vph)	514	2207	236	2956	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.26	0.57	1.10	0:30	
Intersection Summary					
 Volume exceeds capacity, queue is theoretically infinite. 	ty, queue is	theoret	cally infin	ai	
Queue shown is maximum after two cycles.	m after two	cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.	exceeds ca	pacity, q	ieue may	oe longer.	
Queue shown is maximum after two cycles.	ım after two	cycles.			
m. Volume for 95th nercentile greatering is metered by instream signal	diam'r	c motorc	d by unct	am cional	

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

1900 1900 1900 1900 1900 1900 1900 1900
1498 0.92 0.92 0 125 8 8 4 4 4.4 4.4 0.06 4.9 2.0 87
NA 4 4 4.4 4.4 0.06 4.9 2.0 87
0.001 0.09 33.4 1.00 0.2 33.6 C 33.6 C C C

Intersection Summary Molume for 95th percentile queue is metered by upstream signal.

KHA HCM Signalized Intersection Capacity Analysis

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Synchro 9 Report Page 38

Balboa Transit Station 20: Mission Bay Dr & R

Horizon Year with Reduced LU

20: Mission Bay Dr & Rosewood St	& Rose	Mood	ť		Timing Plan: AM Peak Period
	`	-	٠	-	
	•	-		•	
Lane Group	WBL	NBT	SBL	SBT	
Lane Group Flow (vph)	13	1488	10	2568	
v/c Ratio	0.09	0.31	0.07	0.76	
Control Delay	20.5	1.9	36.6	2.9	
Oueue Delay	0.0	0.0	0.0	0:0	
Total Delay	20.5	1.9	36.6	2.9	
Queue Length 50th (ft)	-	0	2	2	
Queue Length 95th (ft)	17	133	m2	443	
Internal Link Dist (ft)	221	096		535	
Tum Bay Length (ft)			9		
Base Capacity (vph)	357	4728	142	3397	
Starvation Cap Reductn	0	0	0	24	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.04	0.31	0.07	0.76	

KHA Queues

Balboa Transit Station
20: Mission Bay Dr & Rosewood St Timing Plan: AM Peak Period

Movement WBL WBR NBT NBR SRT Lane Contiguations Y 4+b Y 4+b Y Lane Contiguations Y 1357 12 9 2383 Lane Contiguations (psh) 12 10 1357 12 9 2383 Lane Unit Factor 100 100 100 100 100 100 Lane Unit Factor 0.99 1.00 0.95 1.00 0.95 1.00 Fut Protected 0.99 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00	WEL WER NBT NBR WEL WER NBT NBR WEL WER NBT NBR WELL WER NBT NBR WELL WER NBT NBR 1900 1900 1900 1900 140 1900 1900 1900 1009 1000 1900 1009 1000 1900 1009 1000 1900 1009 1000 1900 1009 1000 1900 1009 1000 1900 1000 1000	WBR NBT NI 10 1357 10 1357 10 1357 10 1357 10 1900 1900 1900 1900 1900 1900 1900	<u></u>	SBT	
VM V+V+ V-V+	Main of the part of the par	10 1357 10 1357 1900 1900 19 4.0 0.91 1.00 1.00 5.079 1.00 5.079	-	**	
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0.89 1.00	0.89 1.00 0.99 1.00 1637 5.079 1637 5.079 1637 5.079 1637 5.079 1700 0.92 0.92 0.92 171 17 0 1487 0 171 0 1487 0 171 0 0.02 0.02 0.80 0.02 0.80 0.03 0.02 0.07 0.36 0.07 0.36 0.07 0.36 0.07 0.36 0.07 0.36 0.07 0.36 0.07 0.38 0.08 0.08 0.08 0.08 0.08	1.00 1.00 5079 1.00 5079 0.92 0.92 0.	00.1	0.95	
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hh) 11 0 1 0 0 0 hy) 2 0 1487 0 10 2568 Prot NA Prot NA 8 2 1 14 652 h) 1.4 60.2 1.4 65.6 h) 0.02 0.80 0.02 0.87 0.02 0.80 0.02 0.87 0.00 0.29 0.01 0.07 0.07 0.36 0.30 0.83 0.07 0.36 0.30 0.83 0.07 0.36 0.30 0.83 0.07 0.36 0.30 0.83 0.07 0.36 0.30 0.83 0.07 0.37 0.38 0.08 0.30 0.83 0.07 0.38 0.30 0.83 0.07 0.38 0.30 0.83 0.08 0.39 0.91 0.09 0.39 0.30 0.83 0.00 0.39 0.30 0.83 0.00 0.30 0.30 0.83 0.00 0.	hh) 11 0 11 0 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 1 1 1 0 1 1 1 1 0 1 1 1 1 0 1 1 1 1 0 1 1 1 0 1 1 1 0 0 1 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1	11 1475		2568	
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36.2 2.1 36.3 2.1 1.00 1.00 1.10 1.00 1.10 1.00 1.10 1.00 1.3.2 2.9 1.6 2.9 1.6 2.9 3.7 2.3 44.3 3.7 2.3 3.9 2.9 3.2 2.3 3.9 4.3 3.7 2.3 3.9 4.3 3.7 4.9 A A A A A A A A A A A A A A A A A A A	36.2 2.1 1.00 0.3 2 1.00 0.3 37.2 2.3 D A A 37.2 2.3 D A A Y 34 1		0.30	0.83	
100 100 114 102 2 110 0.3 2.9 1.6 37.2 2.3 44.3 3.7 D A D A A 37.2 2.3 3.9 N A HCM 2000 Level of Service ocapacity ratio 0.87 Sum of lost time (s) 116 In (s) 75.0 Sum of lost time (s) 15.3 5.0 Sum of lost time (s)	2 1.0 1.00 2 1.0 0.3 37.2 2.3 D A 37.2 2.3 D A A 4 Y 34 1 Pelay 34 1 h (s) 750 1		36.3	2.1	
2 1.0 0.3 2.9 1.6 3.12 2.3 44.3 3.7 D A D A D A A 3.72 2.3 44.3 3.7 A 3.7 3.9 A Y y y y y h (s) 2 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) h (s) 75.0 Sum of lost time (s)	2 1.0 0.3 37.2 2.3 D A A 37.2 2.3 D A A belay 3.4 (1.14	1.02	
37.2 2.3 44.3 3.7 D A D A 37.2 2.3 3.9 D A A W	372 2.3 D A 372 2.3 D A y y y y c(Capacity ratio 0.87		5.9	1.6	
37.2 2.3 3.9 37.2 2.3 3.9 4	37.2 2.3 37.2 2.3 Y Y x 3.4 1 (Capacity ratio 0.87		44.3	3.7	
37.2 2.3 3.9 Y Y Y Relay A HCM 2000 Level of Service Capacity ratio 0.87 Sum of lost time (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s) Th (s)	37.2 2.3 V y Pelay 3.4 11 h (s) 7.5 1		۵	A	
y y y x elay 3.4 HCM 2000 Level of Service 0.5apadiy ratio 16(s) 116(s) 150 11750 1217 151 151 151 151 151 151 151 151 151 1	y y 8.4 i belay 3.4 i o Capacity ratio 0.87 in even			3.9	
18	3.4 0.87			Α	
slay 3.4 HCM 2000 Level of Service Capacity ratio 0.87 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) Utilization 75.3% ICU Level of Service 15 15	3.4 0.87				
Capacity ratio 0.87 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) Utilization 75.3% ICU Level of Service 15	0.87		HCM 2000	Level of Service	A
h (s) 75.0 Sum of last time (s) Utilization 75.3% ICU Level of Service 15	75.0				
Utilization 75.3% ICU Level of Service 15	0.67		Sum of lost	time (s)	12.0
	Utilization 75.3%	zation	ICU Level o	f Service	Q
	Analysis Period (min) 15	15			

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Balboa Transit Station 21: Santa Fe St & Damon Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station Horizon Year with Reduced LU 22: Morena Blvd & Jutland Dr

ZZ: Morena Biva & Jutland Dr	ırıand	ב					IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	>	4	•	4	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	¥L.	*	R _		4.₩	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	190	13	257	391	4	163	
Future Volume (vph)	190	13	257	391	4	163	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	207	14	279	425	4	177	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	207	14	279	425	63	118	
Volume Left (vph)	207	0	0	0	4	0	
Volume Right (vph)	0	14	0	425	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.07	0.03	
Departure Headway (s)	7.0	2.8	9.9	4.9	6.2	6.2	
Degree Utilization, x	0.40	0.02	0.43	0.58	0.11	0.20	
Capacity (veh/h)	486	574	628	721	551	929	
Control Delay (s)	13.4	7.7	11.6	13.1	8.7	9.5	
Approach Delay (s)	13.0		12.5		9.2		
Approach LOS	В		В		A		
Intersection Summary							
Delay			12.1				
Level of Service			В				
Intersection Capacity Utilization	_		35.5%	⊇	ICU Level of Service	Service	٨
Analysis Period (min)			15				

Intersection Summary

KHA
HCM Unsignalized Intersection Capacity Analysis Page 41

 Balboa Transit Station

 23: Morena Blvd & Costco Dwy
 Timig Plant AM Peak Period

 23: Morena Blvd & Costco Dwy
 Timig Plant AM Peak Period

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 KHA Synchro 9 Report Dueues Page 42

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 23: Morena Blvd & Costco Dwy

	>	4	←	•	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	X.		₩		¥	₩	
Traffic Volume (vph)	66	29	653	121	42	287	
Future Volume (vph)	66	26	653	121	45	287	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.9		5.5		4.4	5.5	
Lane Util. Factor	0.97		0.95		1.00	0.95	
Frt	0.95		0.98		1.00	1.00	
Flt Protected	0.97		1.00		0.95	1.00	
Satd. Flow (prot)	3312		3456		1770	3539	
Flt Permitted	0.97		1.00		0.95	1.00	
Satd. Flow (perm)	3312		3456		1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	108	19	710	132	46	312	
RTOR Reduction (vph)	23	0	71	0	0	0	
Lane Group Flow (vph)	116	0	821	0	46	312	
Turn Type	Prot		¥		Prot	NA	
Protected Phases	∞		2		-	9	
Permitted Phases							
Actuated Green, G (s)	4.5		14.5		1.2	20.1	
Effective Green, g (s)	4.5		14.5		1.2	20.1	
Actuated g/C Ratio	0.13		0.41		0.03	0.57	
Clearance Time (s)	4.9		5.5		4.4	5.5	
Vehicle Extension (s)	2.0		2.8		2.0	2.8	
Lane Grp Cap (vph)	425		1431		9	2032	
v/s Ratio Prot	c0.03		c0.24		c0.03	60:0	
v/s Ratio Perm							
v/c Ratio	0.27		0.57		0.77	0.15	
Uniform Delay, d1	13.8		7.9		16.8	3.5	
Progression Factor	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1		0.5		40.0	0.0	
Delay (s)	13.9		8.4		29.7	3.5	
Level of Service	В		A		ш	Α	
Approach Delay (s)	13.9		8.4			10.3	
Approach LOS	В		⋖			В	
Intersection Summary							
HCM 2000 Control Delay			9.6	Н	M 2000 I	HCM 2000 Level of Service	А
HCM 2000 Volume to Capacity ratio	y ratio		0.52				
Actuated Cycle Length (s)			35.0	Su	Sum of lost time (s)	ime (s)	14.8
Intersection Capacity Utilization	L.		42.2%	⊴	ICU Level of Service	Service	A
Analysis Period (min)			15				
c Critical Lane Group							

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Balboa Transit Station 24: Morena Blvd & Avat

Horizon Year with Reduced LU

24: Morena Blvd & Avati Dr	Avati D	L				L	TOUIZOU TEAT WITH REDUCED LO Timing Plan: AM Peak Period
	>	√	←	•	٠	→	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	250	40	898	129	23	383	
v/c Ratio	0.34	0.11	0.52	80:0	0.12	0.22	
Control Delay	15.4	7.4	9.5	0.4	20.9	5.5	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	7.4	9.5	0.4	20.9	5.5	
Queue Length 50th (ft)	19	0	20	0	4	18	
Queue Length 95th (ft)	62	70	147	7	25	39	
Internal Link Dist (ft)	317		2205			3170	
Tum Bay Length (ft)		135		115	120		
Base Capacity (vph)	2691	1251	3222	1573	195	3184	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.03	0.27	0.08	0.12	0.12	
Intersection Summary							

Synchro 9 Report Page 44 KHA Queues

Balboa Transit Station

24: Morena Blvd & Avati Dr

Timing Plan: AM Peak Period

																																						В		15.3	A	
→	SBT	#	352	352	1900	%0	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	383	0	383	NA	2	2	22.8	22.8	0.55	5.7	5.0	1958	0.11		0.20	4.6	1.00	0.1	4.7	A	13.7	В		ervice				
٠	SBL	r	21	21	1900		4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	23	0	23	Prot	2		9.0	9.0	0.01	4.4	2.0	25	c0.01		0.92	20.3	1.00	142.7	163.0	ш				HCM 2000 Level of Service		time (s)	fService	
•	NBR	ĸ.	119	119	1900		4.9	1.00	0.85	1.00	1607	1.00	1607	0.92	129	20	79	vo+mq	7	9	25.3	25.3	0.61	4.9	2.0	986	0.02	0.03	0.08	3.2	1.00	0.0	3.2	⋖				3M 2000		Sum of lost time (s)	CU Level of Service	
←	NBT	‡	199	799	1900	-3%	0.9	0.95	1.00	1.00	3592	1.00	3592	0.92	898	0	898				17.5	17.5	0.42	0.9	5.2	1525	c0.24		0.57	0.6	1.00	0.8	9.8	A	0.6	A		Ĭ		S	2	
F	NBU	4	0	0	1900									0.92	0	0	0	Prot	,-																			11.1	0.52	41.2	37.7%	15
4	WBR	¥.	37	37	1900		4.9	1.00	0.85	1.00	1662	1.00	1662	0.92	40	32	8	Prot	7		7.8	7.8	0.19	4.9	2.0	314	0.00		0.02	13.6	1.00	0.0	13.6	В								
>	WBL	F	230	230	1900	-10%	4.9	0.97	1.00	0.95	3605	0.95	3605	0.92	250	0	250	Prot	7		7.8	7.8	0.19	4.9	2.0	682	c0.07		0.37	14.5	1.00	0.1	14.7	В	14.5	В			vratio		uc	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Grade (%)	Total Lost time (s)	Lane Util. Factor	Ĭ.	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

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Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Horizon Year with Reduced LU Timing Plan: AM Peak Period

| Lane Group | EBL EBR NBL NBT SBT SBR | Lane Group | EBL EBR NBL NBT SBT SBR | Lane Group Flow (vph) | 98 | 164 | 222 | 446 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 | 426 |

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Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

			-	-			
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	r	*-	F	‡	‡	R.	
Traffic Volume (vph)	8	151	280	1439	204	410	
Future Volume (vph)	06	151	280	1439	204	410	
Ideal Flow (vphpl)	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	0.95	1.00	
Tt.	1.00	0.85	1.00	1.00	1.00	0.85	
Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583	
Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	86	164	304	1564	222	446	
RTOR Reduction (vph)	0	141	0	0	0	0	
Lane Group Flow (vph)	86	23	304	1564	222	446	
Turn Type	Perm	Perm	Prot	NA	NA	Free	
Protected Phases			2	2	9		
Permitted Phases	4	4				Free	
Actuated Green, G (s)	6.4	6.4	12.9	31.5	14.6	45.9	
Effective Green, g (s)	6.4	6.4	12.9	31.5	14.6	45.9	
Actuated g/C Ratio	0.14	0.14	0.28	69:0	0.32	1.00	
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)	246	220	497	2428	1125	1583	
v/s Ratio Prot			0.17	c0.44	90.0		
v/s Ratio Perm	90.0	0.01				c0.28	
v/c Ratio	0.40	0.10	0.61	0.64	0.20	0.28	
Uniform Delay, d1	18.0	17.2	14.3	4.0	11.4	0.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.	0.2	2.2	9.0	0.1	0.4	
Delay (s)	19.1	17.5	16.6	4.6	11.5	0.4	
Level of Service	В	В	В	V	В	V	
Approach Delay (s)	18.1			9.9	4.1		
Approach LOS	В			⋖	∢		
Intersection Summary							
HCM 2000 Control Delay			7.1	H	3M 2000	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	city ratio		89.0				
Actuated Cycle Length (s)			45.9	S	Sum of lost time (s)	time (s)	12.0
Intersection Capacity Utilization	tion		51.4%	೨	ICU Level of Service	f Service	А
Analysis Period (min)			15				
c Critical Lane Group							

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KHA Queues

Balboa Transit Station 26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps	tion Balboa	Station	Entra	ance/Ba	alboa	EB Rai		lorizon	Horizon Year with Reduced LU Timing Plan: AM Peak Period
	4	†	ţ	4	•	•	٠	-	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	32	12	236	478	10	1217	54	331	
v/c Ratio	0.16	90:0	0.59	0.72	0.08	0.74	0.44	0.18	
Control Delay	30.8	28.4	30.2	12.9	33.9	20.0	45.5	6.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.8	28.4	30.2	12.9	33.9	20.0	45.5	6.7	
Queue Length 50th (ft)	13	4	92	56	4	245	23	34	
Queue Length 95th (ft)	37	19	165	129	19	#390	#73	74	
Internal Link Dist (ft)		96	647			1978		933	
Tum Bay Length (ft)					100		135		
Base Capacity (vph)	496	516	206	730	124	1714	124	1866	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	90:0	0.02	0.47	0.65	0.08	0.71	0.44	0.18	

Intersection Summary # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps

EBI EBI WBI WBI WBI WBI WBI NBI NBI NBI SBI 29 10 1 140 77 440 9 970 150 50 29 10 1 140 77 440 9 970 150 50 190		•	†	<u>/</u>	>	ţ	√	•	-	•	۶	→	•
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10	Lane Configurations	*	¢			₩	¥C_	F	₩\$		*	₩.	
10	Traffic Volume (vph)	59	9	-	140	11	440	6	970	150	20	258	47
1900 1900	Future Volume (vph)	59	10	-	140	11	440	6	970	120	20	258	47
100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100	Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
1,00	Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
100	Fit	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.98	
1839 1805 1583 1770 3468 1770 1900 0.97 1000 0.95 1000 0.95 1902 0.92 0.92 0.92 0.92 0.92 0.92 11	Fit Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
100	Satd. Flow (prot)	1770	1839			1805	1583	1770	3468		1770	3457	
1839 1805 1583 1770 3468 1770 170	Fit Permitted	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
11 1 152	Satd. Flow (perm)	1770	1839			1805	1583	1770	3468		1770	3457	
11 1 152 84 478 10 1054 163 54 11 0 0 236 162 10 134 0 0 11 0 0 236 162 10 134 0 0 4 8 8 8 8 2 2 5 8 9 135 152 0 1 5 9 135 135 0 1 301 2.0 5 9 135 135 0 1 301 2.0 6 9 9 135 135 0 1 301 2.0 7 9 9 9 135 135 0 1 0 0 7 9 9 9 135 135 0 1 0 8 9 135 135 0 1 0 0 9 9 135 135 0 1 0 0 9 9 135 135 0 1 0 0 100 30 31 30 30 30 30 100 312 32 18 1593 54 100 100 100 100 100 100 0 100 100 100 100 100 100 100 100 100 27/3 242 645 168 154.2 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1 0 0 0 316 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	32	=	-	152	84	478	10	1054	163	24	280	21
11 0 0 236 162 10 1204 0 54 14 8 8 8 5 2 1 14 8 8 8 5 2 1 14 8 8 8 5 2 1 15 8 8 8 5 2 1 15 8 8 8 8 1 15 8 8 8 8 1 15 8 8 8 8 1 15 8 8 8 8 1 15 8 9 135 135 0.7 30.1 2.0 15 9 0.021 0.21 0.01 0.04 0.03 10 0.01 0.04 0.04 0.04 0.04 10 0.04 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.05 0.05 0.05 0.05 10 0.04 0.05 0.05 0.05 0.05 10 0.05 0.05	RTOR Reduction (vph)	0	-	0	0	0	316	0	13	0	0	15	0
NA Split NA Perm Prof NA Prof NA Prof NA 39	Lane Group Flow (vph)	32	11	0	0	236	162	10	1204	0	54	316	0
4 8 8 5 2 1 3.9 13.5 13.5 0.7 30.1 2.0 3.9 13.5 13.5 0.7 30.1 2.0 0.06 0.21 0.21 0.01 0.46 0.03 0.06 0.21 0.21 0.01 0.46 0.03 0.07 0.07 3.0 3.0 3.0 3.0 0.01 0.01 3.2 18 1593 54 0.01 0.04 3.1 3.0 3.0 3.0 0.04 3.5 1.2 3.2 1.47 31.8 0.07 2.5 2.7 2.42 64.5 16.8 154.2 0.07 2.5 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 2.5 0.07 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.08 2.5 2.5 2.5 0.09 2.5 2.5 2.5 0.09 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5 2.5 0.00 2.5 2.5	Turn Type	Split	¥		Split	N	Perm	Prot	NA		Prot	N	
3.9	Protected Phases	4	4		∞	80		2	2		_	9	
3.9 13.5 13.5 0.7 30.1 2.0 3.9 13.5 13.5 0.7 30.1 2.0 0.06 0.2.1 0.2.1 0.0.1 0.40 0.03 0.3.0 3.0 3.0 3.0 3.0 3.0 0.10 0.04 3.2 3.2 14.7 3.18 0.10 0.10 0.63 0.50 0.56 0.76 0.03 0.04 3.5 1.2 32.3 2.1 1.25 0.4 2.6 C C E B 15.1 1.2 0.7 25.2	Permitted Phases						00						
3.9 135 135 0.7 301 2.0 0.06	Actuated Green, G (s)	3.9	3.9			13.5	13.5	0.7	30.1		2.0	31.4	
0.06 0.21 0.21 0.01 0.46 0.03 0.40 4.0 4.0 4.0 4.0 4.0 0.40 3.0 3.0 3.0 3.0 3.0 0.10 372 326 18 1593 54 4.0 0.01 0.63 0.50 0.56 0.76 1.00 0.10 0.63 0.50 0.56 0.76 1.00 0.10 1.00 1.00 1.00 1.00 1.00 0.10 3.3 2.1 2.1 122.5 0.4 3.5 1.2 32.3 2.1 122.5 0.5 C C E B F F 0.70 C C E B F 0.70 C C E B F 0.70 C C C E B F 0.70 C C C E B F 15.1 122.5	Effective Green, g (s)	3.9	3.9			13.5	13.5	0.7	30.1		2.0	31.4	
40	Actuated g/C Ratio	90:0	90:0			0.21	0.21	0.01	0.46		0.03	0.48	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.09 372 326 18 1593 54 1.00 0.013 0.10 0.035 0.003 2.91 2.37 23.0 32.2 14.7 31.8 2.96 2.73 2.42 64.5 16.8 154.2 2.96 2.52 64.5 16.8 154.2 2.96 2.52 64.5 16.8 154.2 2.96 2.52 64.5 16.8 154.2 2.96 2.52 64.5 16.8 154.2 2.96 2.55 2.0 17.1 2.97 HCM 2000 Level of Service C 2.1.9 HCM 2000 Level of Service C 2.28 1.20 16.0 2.29 1.20 1.00 1.00 2.55 1.20 1.00 3.07 2.55 1.20 1.50 1.50 1.50	Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
109 372 326 18 1593 54	Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
29.1 23.7 23.0 56.0 76.0 1.00 1.100 0.63 0.50 0.56 0.76 1.00 1.100 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap (vph)	105	109			372	326	18	1593		24	1657	
0.10 0.63 0.50 0.56 0.76 1.00 2.91 23.7 23.0 3.2.2 14.7 3.18 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.94 3.5 1.2 32.3 2.1 12.5 2.95 C C C E B F F 3.0.7 25.2 17.1 B F 21.9 HCM 2000 Level of Service C 0.70 65.5 Sum of lost time (s) 1.60 7.2.2% ICU Level of Service C 1.5	v/s Ratio Prot	c0.02	0.01			c0.13		0.01	c0.35		c0.03	0.09	
0.10	v/s Ratio Perm						0.10						
291 237 230 322 147 318 118 1190 1300 1300 1300 1300 1300 1300 1300	v/c Ratio	0.30	0.10			0.63	0.50	0.56	0.76		1.00	0.19	
100 100 100 100 100 100 100 100 100 100	Uniform Delay, d1	29.5	29.1			23.7	23.0	32.2	14.7		31.8	8.6	
20.4 3.5 1.2 3.2 3.2 1 2.9.6 2.0 4.5 16.8 2.0 C C E B B B B B B B B B B B B B B B B B	Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
296 273 242 645 168 7 6 6 7 168 7 168 7 168 7 168 7 168 7 168 7 168 7 168 7 168 7 168 7 169 7 171 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Incremental Delay, d2	1.6	0.4			3.5	1.2	32.3	2.1		122.5	0.1	
25.2 C C E B 30.7 25.2 17.1 C C B B 21.9 HCM 2000 Level of Service C 0.70 65.5 Sum of lost time (s) 16.0 72.2% ICU Level of Service C 15	Delay (s)	31.1	29.6			27.3	24.2	64.5	16.8		154.2	9.8	
30.7 25.2 17.1 C C B 21.9 HCM 2000 Level of Service 0.70 65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	Level of Service	ပ	ပ			ပ	ပ	ш	В		ш	⋖	
21.9 HCM 2000 Level of Service 0.70 65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	Approach Delay (s)		30.7			25.2			17.1			30.1	
21.9 HCM 2000 Level of Service 0.70 65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	Approach LOS		ပ			ပ			В			ပ	
21.9 HCM 2000 Level of Service 0.70 Sum of lost time (s) 77.2% ICU Level of Service	Intersection Summary												
0.70 65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	HCM 2000 Control Delay			21.9	H	3M 2000	Level of S	service		ပ			
65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	HCM 2000 Volume to Capaci:	ty ratio		0.70									
Utilization 72.2% ICU Level of Service 15 ICU Level of Service	Actuated Cycle Length (s)	,		65.5	S	m of lost	time (s)			16.0			
9	Intersection Capacity Utilization	on		72.2%	೨	U Level o	f Service			ပ			
Cettion I and Provin	Analysis Period (min)			15									
	c Critical Lane Group												

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Balboa Transit Station 27: Morena Blvd & Baker St

Horizon Year with Reduced LU Timing Plan: AM Peak Period

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	×		+	*	r	++	
Traffic Volume (veh/h)	27	35	783	22	21	290	
Future Volume (Veh/h)	27	32	783	22	21	290	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	29	38	851	24	23	315	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	1054	821			875		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1054	851			875		
tC, single (s)	8.9	6.9			4.1		
tC, 2 stage (s)							
fF (s)	3.5	3.3			2.2		
po dueue free %	98	87			67		
cM capacity (veh/h)	214	303			191		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	19	851	24	23	158	158	
Volume Left	29	0	0	23	0	0	
Volume Right	38	0	24	0	0	0	
CSH	257	1700	1700	191	1700	1700	
Volume to Capacity	0.26	0.50	0.01	0.03	0.09	60:0	
Queue Length 95th (ft)	25	0	0	2	0	0	
Control Delay (s)	23.9	0.0	0.0	8.6	0.0	0.0	
Lane LOS	ပ			⋖			
Approach Delay (s)	23.9	0.0		0.7			
Approach LOS	ပ						
Intersection Summary							
Average Delay			1.4				
Intersection Capacity Utilization	zation		51.5%	☲	U Level o	ICU Level of Service	A
Another Derived (min)							

KHA HCM Unsignalized Intersection Capacity Analysis

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 28: Morena Blvd & Gesner St

	>	←	•	٠	→	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	68	950	46	51	372	
v/c Ratio	0.23	0.39	0.04	0.18	0.14	
Control Delay	10.9	7.1	4.0	20.0	3.2	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.9	7.1	4.0	20.0	3.2	
Queue Length 50th (ft)	9	46	_	6	14	
Oueue Length 95th (ft)	88	146	14	36	31	
Internal Link Dist (ft)	1333	298			3361	
Turn Bay Length (ft)			95	95		
Base Capacity (vph)	1317	2458	1110	277	2885	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.39	0.04	0.18	0.13	
Intersection Summary						

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KHA Oueues

Balboa Transit Station 28: Morena Blvd & Gesner St

Horizon Year with Reduced LU Timing Plan: AM Peak Period

																																				В		14.7	~
→	SBT	‡	342	342	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	372	0	372	NA	9		22.5	22.5	0.63	0.9	4.2	2218	0.11		0.17	1.00	9.10	2.8	⋖	16.7	В		HCM 2000 Level of Service		time (s)	f Sprvice
٠	SBL	¥	47	47	_		1.00				0.95		0.92		0	51	Prot	_		1.1		_			54	c0.03			17.4			ш				HCM 2000		Sum of lost time (s)	CILL evel of Service
•	NBR	*-	42	42	1900	5.9	1.00	0.85	1.00	1583	1.00	1583	0.92	46	19	27	Perm		2	17.1	17.1	0.48	5.9	4.4	754		0.02	0.04	2.0	000	5.0	A						0,	_
←	NBT	₹	874	874	1900	5.9	0.95	1.00	1.00	3539	1.00	3539	0.92	950	0	950	Ϋ́	2		17.1	17.1	0.48	5.9	4.4	1685	c0.27		0.56	1001	0.6	7.3	⋖	7.2	A		10.4	0.54	35.9	44.6%
4	WBR		46	46	1900								0.92	53	0	0																							
\	WBL	>	33	33	1900	4.4	1.00	0.92	0.98	1679	0.98	1679	0.92	36	49	40	Prot	∞		3.0	3.0	0.08	4.4	2.0	140	c0.02		0.29	15.4	0.4	15.9	В	15.9	В			pacity ratio		zation
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	듄	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Tum Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1 Progression Eactor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization

KHA HCM Signalized Intersection Capacity Analysis

29: Garnet Ave & Balboa WB Ramps

Lane Group	EBT	WBT WBR		SBR	
Lane Group Flow (vph)	1516	1150	262	750	
v/c Ratio	0.30	0.54	0.32	0.70	
Control Delay	0.2	9.5	2.5	15.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	0.2	9.5	2.5	15.0	
Queue Length 50th (ft)	0	09	0	72	
Queue Length 95th (ft)	0	87	26	#136	
Internal Link Dist (ft)	265	362			
Turn Bay Length (ft)			300		
Base Capacity (vph)	5049	2408	887	1065	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.30	0.48	0.30	0.70	
Inforcection Summary					

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

	•	†	ļ	4	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	×		ليرايو	
Traffic Volume (vph)	0	1395	1058	241	0	069	
Future Volume (vph)	0	1395	1058	241	0	069	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.91	0.91	1.00		0.88	
Frt		1.00	1.00	0.85		0.85	
Flt Protected		1.00	1.00	1.00		1.00	
Satd. Flow (prot)		2082	2082	1583		2787	
Flt Permitted		1.00	1.00	1.00		1.00	
Satd. Flow (perm)		5085	5085	1583		2787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	1516	1150	262	0	750	
RTOR Reduction (vph)	0	0	0	152	0	38	
Lane Group Flow (vph)	0	1516	1150	110	0	712	
Turn Type		NA	NA	Perm		Prot	
Protected Phases		14	∞				
Permitted Phases				∞			
Actuated Green, G (s)		38.2	16.1	16.1		14.1	
Effective Green, g (s)		38.2	16.1	16.1		14.1	
Actuated g/C Ratio		1.00	0.42	0.42		0.37	
Clearance Time (s)			4.0	4.0		4.0	
Vehicle Extension (s)			3.0	3.0		3.0	
Lane Grp Cap (vph)		2082	2143	<i>L</i> 99		1028	
v/s Ratio Prot		0.30	c0.23			c0.26	
v/s Ratio Perm				0.07			
v/c Ratio		0.30	0.54	0.17		69.0	
Uniform Delay, d1		0.0	8.3	6.9		10.2	
Progression Factor		1.00	1:00	1:00		1.00	
Incremental Delay, d2		0.0	0.3	0.1		2.0	
Delay (s)		0.0	8.5	7.0		12.2	
Level of Service		A	V	A		m	
Approach Delay (s)		0.0	8.2		12.2		
Approach LOS		A	A		В		
Intersection Summary							
HCM 2000 Control Delay			5.7	H	M 2000 L	HCM 2000 Level of Service	А
HCM 2000 Volume to Capacity ratio	ratio		0.61				
Actuated Cycle Length (s)			38.2	ns s	Sum of lost time (s)	ime (s)	8.0
Intersection Capacity Utilization			51.2%	<u>3</u>	ICU Level of Service	Service	A
Analysis Period (min) c - Critical Lane Groun			<u>0</u>				

Critical Lane Group

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Horizon Year with Reduced LU Timing Plan: AM Peak Period

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Arterial Level of Service: EB Garnet Ave	Service: EB	Garnet Ave	4		*Reducti	on of si	*Reduction of signal delay for	ay for
					transit	- duene	ransit queue iump lane	
	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(iiii	Speed	SOT
Olassi Ct		20	101	100	0.04	000	7.7	П
omey or		3	1.7		1.0.	90:0		
Balboa Ave	_	8	23.5		36.1	0.19	18.5	Ω
Soledad Mtn Rd	=	32	27.4	10.8	38.2	0.23	21.7	Δ
Bond St	=	32	21.0	9.0	21.6	0.17	28.0	ပ
Mission Bay Dr	=	32	15.5		68.5	0.12	6.5	ш
l-5 Off-ramp ★	=	45	24.2	15.2 1	0.0	4.2).23	21.3	Ω
Balboa WB Ramps	=	45	7.1	0.4	ا ا چ	0.07	31.4	Ф
Moraga Ave★	=	45	22.2	C 4 2	3.4 27.4 2	5.6).20	26.8	O
Clairemont Dr	=	45	49.7	40.8	90.5	0.62	24.7	S
Total	=		202.7	166.7	369.4	1.92	18.7	D

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
	Class	Speed	Time	Delay	Time (s)	(III)	Speed	SOT
		AE	117	24 E	40.0	0.40	40 E	L
	F	2		9.	1.01	9	0.01	
	=	42	49.7	19.1	68.8	0.62	32.5	В
	=	45	22.2	12.7	34.9	0.20	21.0	Ω
	_	45	7.1	0.3	7.4	0.07	31.8	В
	_	45	24.2	20.2	74.7	0.23	11.2	ш
	_	32	15.5	6.0	16.4	0.12	27.2	ပ
	_	32	21.0	¢.)	28.5	0.17	21.2	Ω
	_	32	27.4	0.5	27.9	0.23	29.7	В
	ll l	30	23.5	8.9	32.4	0.19	20.6	D
1	=		205.3	131.9	337.2	1.97	21.0	۵

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(<u>m</u>	Speed	FOS
101		36	200	4.0	יוב ב	00.0	0.20	C
10 poomoco		8	0.03	2.	0.03	0.20	V. 74	,
		r.c	45.7	0 1		9	0 27	(
IMISSION DAY DI	Ē	S	- 2	٠. ٥	4.42	21.0	7:71	٥
Bunker Hill St	=	32	14.7	13.5	28.2	0.11	13.9	ш
Magnolia Ave	=	35	21.4	10.8	32.2	0.17	18.7	O
Garnet Ave	=	32	13.8	37.6	51.4	0.10	7.2	ш
Damon Ave	=	32	11.7	13.9	25.6	0.09	12.1	ш
Bluffside Av	=	35	20.1	21.2	41.3	0.16	13.7	Н
Total	=		121.0	107.6	228.6	0.94	14.7	Q

KHA Arterial Level of Service

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Balboa Transit Station

Horizon Year with Reduced LU Timing Plan: AM Peak Period

Dist
Travel
Signal
Running
Flow
Arterial

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	Ē	Speed	FOS
Dluffeida Av	Ξ	35	0.00	10.7	30.7	0.16	141	
Damon Ave	=	32	20.1	4.0	24.1	0.16	23.5	O
Garnet Ave	=	32	11.7	51.0	62.7	0.09	5.0	ш
Magnolia Ave	=	32	13.8	14.7	28.5	0.10	12.9	Ш
Bunker Hill St	=	35	21.4	2.6	24.0	0.17	25.1	В
Grand Ave	=	32	14.7	38.7	53.4	0.11	7.3	ш.
101	=	36	15.7	0.0	49.6	0.43	90 E	C
Total	=		117.4	133.6	251.0	0.89	12.8	Ш

KHA Arterial Level of Service

Horizon Year with Reduced LU Balboa Station

1: Olney St & Garnet Ave	t Ave						Timing Plan: PM Peak Period
	4	†	/	ţ	•	→	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	88	1069	8	1522	238	216	
v/c Ratio	0.75	0.95	0.07	0.71	0.83	0.56	
Control Delay	58.1	33.5	12.3	15.1	46.5	24.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	58.1	33.5	12.3	15.1	46.5	24.1	
Queue Length 50th (ft)	24	368	2	244	8	99	
Queue Length 95th (ft)	#113	#724	m4	363	#163	117	
Internal Link Dist (ft)		374		899	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	117	1127	11	2154	371	493	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.75	0.95	0.07	0.71	0.64	0.44	
:							

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Nolume for 95th percentile queue is metered by upstream signal.

Balboa Station 1: Olney St & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

	•	†	<i>></i>	/	ţ	✓	•	•	•	٠	→	\searrow
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	¢Ì		F	₩			4			4	
Traffic Volume (vph)	81	919	64	7	1370	30	143	70	9	46	32	118
Future Volume (vph)	8	919	64	7	1370	30	143	20	9	46	32	118
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			4.9			4.9	
Lane Util. Factor	1.00	1.00		1.00	0.95			00.			1.00	
- L	1.00	0.99		00.1	0.1			8 !			0.92	
Hit Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	1844		1770	3528			1797			1693	
Flt Permitted	0.10	1.00		0.10	1.00			0.63			0.88	
Satd. Flow (perm)	192	1844		182	3528			1176			1510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	666	70	00	1489	33	155	9/	7	53	35	128
RTOR Reduction (vph)	0	m	0	0	7	0	0	7	0	0	70	0
Lane Group Flow (vph)	88	1066	0	8	1520	0	0	236	0	0	1%	0
Tum Type	Perm	NA		Perm	NA		Perm	NA		Perm	M	
Protected Phases		2			9			œ			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)	40.9	40.9		40.9	40.9			16.3			16.3	
Effective Green, g (s)	40.9	40.9		40.9	40.9			16.3			16.3	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.24			0.24	
Clearance Time (s)	4.9	4.9		4.9	4.9			4.9			4.9	
Vehicle Extension (s)	3.4	3.4		5.9	5.9			2.0			2.0	
Lane Grp Cap (vph)	117	1125		111	2153			786			367	
v/s Ratio Prot		c0.58			0.43							
v/s Ratio Perm	0.46			0.04				c0.20			0.13	
v/c Ratio	0.75	0.95		0.07	0.71			0.83			0.53	
Uniform Delay, d1	9.4	12.1		5.3	8.9			24.0			22.1	
Progression Factor	1.00	1.00		1.40	1.30			9.0			1.00	
Incremental Delay, d2	35.4	16.8		-	1.7			16.7			0.8	
Delay (s)	44.8	28.9		8.5	13.3			40.7			22.8	
Level of Service	٥	ပ		A	В			Ω			ပ	
Approach Delay (s)		30.1			13.3			40.7			22.8	
Approach LOS		ပ			В			Ω			ပ	
Intersection Summary												
HCM 2000 Control Delay			22.2	Ξ	3M 2000	HCM 2000 Level of Service	Service		ပ			
HCM 2000 Volume to Capacity ratio	ity ratio		0.91									
Actuated Cycle Length (s)			0.79	ઝ	Sum of lost time (s)	time (s)			8.6			
Intersection Capacity Utilization	ou		100.2%	೨	U Level o	ICU Level of Service			G			
Analysis Period (min)			12									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 1

KHA Oueues

Lane Group EBT WBT SBL Lane Group EBT WBT WBT SBL Lane Group Flow (vph) 420 1274 774 1021 Alc Rain 0.23 0.65 0.50 0.90 Control Delay 9.1 6.3 1.2 29.6 Oueue Delay 9.1 6.3 1.2 29.6 Oueue Delay 9.1 6.3 1.2 29.6 Oueue Length Solft (ft) 45 6.7 23.1 Oueue Length Solft (ft) 45 6.7 23.1 Oueue Length Solft (ft) 45 6.7 23.9 Base Capacity (wpt) 936 3.29 899 Irun Bay Length (ft) 936 3.29 899 Slange Cap Reductn 0 0 0 Robit Capacity (wpt) 1833 1967 1441 1138 Slonge Cap Reductn 0 0 0 0 Reduced v/s Ration 0 0 0 0 <	Balboa Ave & Garnet Ave	irnet Av	e e			Timing Plan: PM Peak Period
EBT WBT WBR 420 1274 714 023 0.65 0.50 9.1 6.3 1.2 0.0 0.0 0.0 9.1 6.3 1.2 45 67 0 6 8 128 0 7 936 329 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		t	Į.	√	و	
420 1274 714 716 719 719 719 719 719 719 719 719 719 719	ane Group	EBT	WBT	WBR	SBL	
023 065 050 9,1 63 12 0,0 0,0 0,0 9,1 6,3 12 45 67 0 68 128 0 0 936 329 1853 1967 1441 0 0 0 0 0 0 0 23 065 050	ane Group Flow (vph)	420	1274	714	1021	
9,1 6,3 1,2 0,0 0,0 9,1 6,3 1,2 45 6,7 0 68 1,28 0 1 936 3,29 1853 1967 1441 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	/c Ratio	0.23	0.65	0.50	0.00	
0.0 0.0 0.0 9.1 6.3 1.2 45 6.7 1.2 68 128 0 1 936 329 11853 1967 1441 0 0 0 0 0 0	Control Delay	9.1	6.3	1.2	29.6	
9.1 6.3 1.2 45 67 0 68 128 0 0 936 329 1441 1853 1967 1441 0 0 0 0 0 0	Sueue Delay	0.0	0.0	0.0	0.0	
45 67 0 68 128 0 936 329 11853 1967 1441 0 0 0 0 0 0 0 0 0 0 0 0	otal Delay	9.1	6.3	1.2	29.6	
68 128 0 936 329 1853 1967 1441 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (ft)	45	19	0	231	
936 329 11853 1967 1441 1 0 0 0 0 0 0 0 0 0 0 0 0 0 23 0.65 0.50	Jueue Length 95th (ft)	89	128	0	m248	
1883 1967 1441 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nternal Link Dist (ft)	936	329		866	
1853 1967 1441 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.23 0.65 0.50	um Bay Length (ft)					
0 0 0 0 0 0 0 0 0 0.23 0.65 0.50	Sase Capacity (vph)	1853	1967	1441	1138	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	starvation Cap Reductn	0	0	0	0	
0 0 0 0 0 0 0 0.23 0.45 0.50	spillback Cap Reductn	0	0	0	0	
0.23 0.65 0.50	storage Cap Reductn	0	0	0	0	
	Reduced v/c Ratio	0.23	9.0	0.50	0.00	

Balboa Station 2: Balboa Ave & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Movement EBL EBL WBR SBL SBR								
Horist book Horist book	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
(yph) 0 386 514 1315 798 142 (yph) 0 0 386 514 1315 798 142 (yph) 1900 1900 1900 1900 1900 0 1900 1900 19	Lane Configurations		*	₩	*	1		
(iph) 0 386 514 1315 798 142 b) 1900 1900 1900 1900 1900 c) 5 0.91 0.91 0.97 c) 0.95 0.91 0.91 0.97 c) 0.95 0.91 0.91 0.97 c) 1.00 0.96 0.98 c) 1.00 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.96 c) 1.00 0.33 c) 1.00 0.3	Traffic Volume (vph)	0	386	514	1315	798	142	
pl) 1900 1900 1900 1900 1900 1900 (s) 5.0 5.0 4.0 4.9 1900 (s) 5.0 10.0 1091 091 091 (s) 6.0 100 092 085 0.98 (s) 7.0 100 0.96 (s) 7.0 100 100 0.96 (s) 8.33 3105 1441 3388 (s) 8.4 100 100 0.96 (s) 8.4 100 100 0.99 (s) 8.5 10 100 100 0.96 (s) 8.5 10 100 100 1900 (s) 8.5 10 100 100 100 (s) 8.5 10 100 1.13 (s) 8.6 10.9 10 1.13 (s) 8.6 10.9 10.0 1.13 (s) 8.7 10.0 1.00 1.13 (s) 8.8 10.9 10.0 1.13 (s) 8.8 10.9 10.0 1.13 (s) 8.9 8.3	Future Volume (vph)	0	386	514	1315	798	142	
(\$) 5.0 5.0 4.0 4.9 or of the control of the contr	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
or 095 094 097 100 092 088 098 100 100 100 100 096 m) 3539 3105 1441 3388 m) 100 100 100 096 m) 3539 3105 1441 3388 m) 3539 3105 1441 3388 m) 3539 3105 1441 3388 m) 420 659 092 092 092 ww(vph) 0 420 559 1429 867 154 mw(vph) 0 0 340 0 2 0	Total Lost time (s)		2.0	2.0	4.0	4.9		
100 092 085 098	Lane Util. Factor		0.95	0.91	0.91	0.97		
100	だ		1.00	0.92	0.85	0.98		
(c) 10 13339 3105 1441 3388 mm) 1339 3105 1441 3388 mm) 13539 3105 1441 3388 mm) 147	Fit Protected		1.00	1.00	1.00	96:0		
m) 100 100 096 m) 3539 3105 1441 3388 m) 6 420 692 092 092 092 092 092 m) 6 420 559 1429 867 154 m) 7 6 420 559 1429 867 154 m) 8 6 420 593 714 999 0 m) 8 7 74 999 0 m) 8 8 7 135.1 670 220 m) 9 8 1 35.1 670 220 m) 9 9 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Satd. Flow (prot)		3539	3105	1441	3388		
m) 3539 3105 1441 3388 m) 3539 3105 1441 3388 m (b) 2 092 092 092 092 m (vph) 0 420 559 429 092 m (vph) 0 0 420 934 714 999 0 m (vph) 0 0 420 934 714 999 0 m (vph) 0 0 420 934 714 999 0 m (vph) 0 420 934 714 999 0 m (vph) 0 420 934 714 999 0 m (vph) 0 420 934 714 999 0 m (vph) 0 420 934 714 999 0 m (vph) 0 420 934 714 999 0 m (s) 35.1 35.1 67.0 22.0 m (s) 5.0 5.2 100 0.33 m (s) 5.0 5.2 100 0.33 m (s) 5.0 5.0 100 0.33 m (s) 6.0 5.0 0.90 m (s) 6.0 1.0 1.13 m (s) 8.6 10.9 0.0 21.4 m (s) 8.8 10.9 0.0 21.4 m (s) 8.8 1.2 4.5 m (s) 8.9 12.3 1.2 4.5 m (s) 8.9 12.3 1.2 4.5 m (s) 8.9 8.3 A C mmany mmany mmany mmany m (c) capacity ratio 0 7.0 Sum of lost time (s) pacity Utilization 0 7.0 Sum of lost time (s) m (s) 6.70 Sum of lost time (s) m (s) 6.70 Sum of lost time (s) m (s) 6.70 Sum of lost time (s)	Fit Permitted		1.00	1.00	1.00	96.0		
γ, PHF 0.92 0.92 0.92 0.92 γ, (γρh) 0 420 559 1429 867 154 νν (γρh) 0 0 340 0 22 0 νν (γρh) 0 420 934 714 999 0 νν (γρh) 0 420 934 714 999 0 es 2 2 4 4 6 6 6 es 2 2 4 4 6 6 6 6 6 6 6 6 6 7 6 6 6 6 7 2 6 6 6 6 6 2 0 6	Satd. Flow (perm)		3539	3105	1441	3388		
mu(vph) 0 420 559 1429 867 154 mv(vph) 0 0 340 0 22 0 mv(vph) 0 0 340 17 154 es 2 2 4 free Prot es 3 2 4 4 999 0 n A NA Free Prot es 3 2 4 4 999 0 n G(s) 35.1 35.1 67.0 22.0 atio 0.52 0.52 1.00 0.33 atio 0.52 0.50 1.00 0.33 atio 0.52 0.50 1.00 0.33 atio 0.52 0.50 1.00 0.33 atio 0.52 0.50 1.00 0.33 atio 0.53 1.5 1.2 4.9 ctor 1.00 1.00 1.13 lay, d2 0.3 1.5 1.2 86 e A B A C v(s) 8.9 12.3 1.2 886 e A B A C v(s) A A A A A A A A A A A A A A A A A A A	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
by (vph) 0 0 340 0 22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	0	420	226	1429	867	154	
we (vpb) 0 420 934 714 999 0 ss 2 2 4 4 es 2 2 4 4 es 2 2 4 4 es 3 2 5 4 free Prot es 3 2 5 4 free Prot es 3.1 35.1 67.0 22.0 ation 0.52 0.52 1.00 0.33 es 5.0 5.0 1.00 0.33 es 6.1 6.1 5.2 free 4 free A 4 free Prot free A 4 free C 4 free A 4 free Prot free A 4 RTOR Reduction (vph)	0	0	340	0	22	0		
es 2 2 4 4 es 8 4 4 es 8 4 4 es 8 2 2 4 4 es 8 4 4 es 8 2 2 4 4 es 8 4 4 es 8 2 2 4 4 es 8 4 4 es 8 4 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6	Lane Group Flow (vph)	0	420	934	714	666	0	
es 2 2 4 4 es 5 2 4 4 es 5 2 2 4 4 es 6 5 35.1 35.1 67.0 22.0 atio 0.52 0.52 1.00 0.33 atio 0.52 0.52 1.00 0.33 es (5) 5.0 5.0 4.9 es (7) 6.1 6.1 6.1 es (1) 6.1 6.1 1112 es (1) 6.2 0.20 co.29 d1 884 1626 1441 1112 es (1) 6.3 0.5 0.00 d1 886 109 0.0 21.4 es (1) 0.10 1.00 1.13 es (2) 0.3 1.5 1.2 886 es (3) 1.5 1.2 886 es (4) 8.3 1.5 1.2 886 es (4) 8.3 1.5 1.2 886 es (4) 8.3 1.5 1.2 886 es (4) 8.3 1.5 1.2 886 es (4) 8.3 1.5 1.2 886 es (5) 8.9 1.2 886 es (6) 8.9 1.3 1.2 886 es (6) 8.9 1.3 1.2 886 es (6) 8.9 1.3 1.2 886 es (7) 8.9 1.3 1.2 886 es (8) 1.3 1.2 886 es (9) 1.3 1.5 1.2 886 es (9) 1.3 1.5 1.2 886 es (9) 1.3 1.5 1.2 886 es (10 0.70 1.00 1.00 1.00 1.00 1.00 1.00 1.	Tum Type		NA	NA	Free	Prot		
es Free 1, 13, 13, 13, 13, 13, 13, 13, 13, 13,	Protected Phases		2	2		4		
A, G (s) 35.1 35.1 67.0 22.0 1.g (s) 5.0 5.2 1.00 0.33 1.g (s) 5.0 5.0 4.9 1.g (s) 6.1 6.1 5.2 1.g (s) 6.1 6.1 6.1 1.g (s) 6.1 6.1 6.1 1.g (s) 6.1 6.1 6.1 1.g (s) 6.1 1.g (s) 6.1 6.1 1.g (s) 6.1 6.1 1.g (s) 6.1 6.1 1.g (s) 6.1 1.g (s) 6.1 6.1 1.g (s) 6.1	Permitted Phases				Free			
alio	Actuated Green, G (s)		35.1	35.1	0.79	22.0		
atio 0.52 0.52 1.00 0.33 a(s) 5.0 5.0 4.9 a(s) 6.1 6.1 b.1 6.1 1.112 (wh) 1854 1626 1441 1112 (wh) 0.12 c0.30 0.50 a(1 0.02 0.02) a(1 0.02 0.07 0.00 21.4 ctor 1.00 1.00 1.13 a(s) 8.6 10.9 0.0 21.4 a(s) 8.9 12.3 1.2 28.6 a A B A C a (s) 8.9 12.3 1.2 28.6 a A B A C a (s) 8.9 12.3 1.2 28.6 a A B A C a (s) 8.9 12.3 1.2 28.6 a A B A C a (s) A B A C b A B A C a C a (s) A B A C b A B A C c C a (s) A B A C a C a (s) A B A C b A B A C c C a (s) A B A C c C a (s) A B A C c C a (s) A B A C c C a (s) A B A C a (s) A B A C c C a (s) A	Effective Green, g (s)		35.1	35.1	0.79	22.0		
on (s) 5.0 5.0 4.9 on (s) 6.1 6.1 6.1 6.1 cyph) 1854 1426 1441 1112 cyph) 0.12 c0.30 c0.29 c12 c0.30 0.50 d1 8.6 10.9 0.0 2.14 ctor 1.00 1.00 1.00 1.13 lay, d2 0.3 1.5 1.2 4.5 e A B A C y (s) 8.9 8.3 28.6 e A B A C y (s) 8.9 8.3 28.6 e A A B A C y (s) 8.9 8.3 28.6 e C C C C C C C C C C C C C C C C C C C	Actuated g/C Ratio		0.52	0.52	1.00	0.33		
(vph) 6.1 6.1 5.2 (vph) 1884 1626 141 1112 (vph) 1854 1626 141 1112 (vph) 112 0.50 0.20 0.029 (vph) 0.1 0.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.13 4.5 4.5 8.6 9.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6<	Clearance Time (s)		2.0	2.0		4.9		
(vph) 1854 1626 1441 1112 012 0.030 0.029 013 0.57 0.50 0.90 014 8.6 10,9 0.0 21.4 ctor 1.00 1.00 1.00 1.13 lay, d2 0.3 1.5 1.2 28.6 e A B A C y (s) 8.3 28.6 Into Delay 14.5 HCM 2000 Level of Service Interpolation 6.37% ICU Level of Service Interpolation 6.37% ICU Level of Service Interpolation 6.37% ICU Level of Service Interpolation 6.37% ICU Level of Service Interpolation 6.37% ICU Level of Service Interpolation 6.37% ICU Level of Service Interpolation 6.37% ICU Level of Service	Vehicle Extension (s)		6.1	6.1		5.2		
0.12 0.30 0.029	Lane Grp Cap (vph)		1854	1626	1441	1112		
d1 0.23 0.57 0.50 d1 8.6 10.9 0.0 27.14 ctor 1.00 1.00 1.03 2.14 ctor 1.00 1.00 1.01 lay, d2 0.3 1.5 1.2 4.5 e	v/s Ratio Prot		0.12	c0.30		c0.29		
d1 0.23 0.57 0.50 0.90 d1 8.6 10.9 0.0 21.4 ctor 1.00 1.00 1.01 1.03 e	v/s Ratio Perm				0.50			
d1 8 6 10,9 0.0 21.4 ctor 1.00 1.00 1.13 lay, d2 0.3 1.5 1.2 28.6 e	v/c Ratio		0.23	0.57	0.50	0.00		
ctor 100 100 1.13 lay, d2 0.3 1.5 1.2 4.5 e A B A C y (s) 8.9 8.3 28.6 mmany tro Delay 14.5 HCM 2000 Level of Service 1.70 length (s) 67.0 Sum of lost time (s) 67.0 pacity Utilization 6.37% ICU Level of Service 1.70 from 1.0 Sum of lost time (s) 67.0 Sum of lost time (min) 1.5 trop of 1.0 Sum of lost time (s) 67.0 Sum o	Uniform Delay, d1		9.8	10.9	0.0	21.4		
lay, d2 0.3 1.5 1.2 4.5 a A 1.3 1.2 2.6 b A B A C y (s) 8.9 8.3 28.6 mmany Into Locapadity ratio 0.70 benedy Utilization 6.70 To Sum of lost time (s) 14.5 HCM 2000 Level of Service 6.70 Sum of lost time (s) 15. Into Level of Service 6.70 Sum of lost time (s) 15. Into Level of Service	Progression Factor		1.00	1.00	1.00	1.13		
8 9 12.3 86 8 8 9 12.3 1.2 286 9 (s) 8 9 8.3 286 Indianary Included	Incremental Delay, d2		0.3	1.5	1.2	4.5		
A B A C	Delay (s)		8.9	12.3	1.2	28.6		
y(s) 8.9 8.3 28.6 mmany A A C mmany 14.5 HCM 2000 Level of Service irol Legal 14.5 HCM 2000 Level of Service Length (s) 67.0 Sum of lost time (s) peacity Utilization 67.0 Sum of lost time (s) peacity Utilization 63.7% ICU Level of Service (min) 15 15	Level of Service		∢	В	⋖	ပ		
A A C mmany Itrol Delay The home 2000 Level of Service Itrol Delay The home 2000 Level of Service The home 2000 Level of	Approach Delay (s)		8.9	8.3		28.6		
14.5 HCM 2000 Level of Service 0.70 Sum of lost time (s) 63.7% ICU Level of Service 15	Approach LOS		⋖	A		ပ		
14.5 HCM 2000 Level of Service 0.70 Sum of lost time (s) 6.3.7% ICU Level of Service 1.5	Intersection Summary							
0.70 Sum of lost time (s) 6.7.0 Sum of lost time (s) 63.7% ICU Level of Service 15	HCM 2000 Control Delay			14.5	H	3M 2000	Level of Service	В
67.0 Sum of lost time (s) 63.7% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.70				
63.7% ICU Level of Service 15	Actuated Cycle Length (s)			0.79	S	m of lost	time (s)	6.6
	Intersection Capacity Utilizat	ion		63.7%	⊴	U Level o	f Service	В
	Analysis Period (min)			15				

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 3

KHA Queues

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 3: Garnet Ave & Soledad Mtn Rd

	•	1	ţ	4	٠	*	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Group Flow (vph)	95	1260	1854	549	492	118	
v/c Ratio	0.58	0.48	0.78	0.39	0.81	0.34	
Control Delay	81.7	8.3	27.7	3.4	1.79	19.4	
Oueue Delay	0.0	0.0	0.3	0.0	0.0	0.0	
Total Delay	81.7	8.3	28.1	3.4	67.7	19.4	
Queue Length 50th (ft)	46	221	825	129	231	27	
Oueue Length 95th (ft)	78	311	943	138	282	82	
Internal Link Dist (ft)		724	908		594		
Turn Bay Length (ft)	200			200	225	225	
Base Capacity (vph)	165	2643	2380	1399	830	350	
Starvation Cap Reductn	0	0	139	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.58	0.48	0.83	0.39	0.55	0.34	
:							
Intersection Summary							

Synchro 9 Report Page 5

KHA Oueues

Balboa Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Movement ERI ERI WBF SB SBR Lare Conquadralors YA ↑↑								
1159 1706 505 453 109 1159 1706 505 453 109 1159 1706 505 453 109 1159 1706 505 453 109 1159 1706 505 453 109 100 1900 10	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
1159 1706 505 453 109 1169 1706 505 453 109 1900 1900 1900 1900 1900 5.5 4.9 5.4 5.4 5.4 5.4 1.00 1.00 1.00 0.97 1.00 1.00 1.00 1.00 0.95 1.00 2.5 35.39 1583 34.33 1583 2.5 35.39 1583 34.33 1583 2.5 35.39 1583 34.33 1583 2.5 35.39 1583 34.33 1583 2.5 35.39 1583 34.33 1583 2.5 3.9 2.9 0.92 0.92 2.5 2.6 2.9 0.92 2.5 2.5 2.0 3.0 2.5 3.9 2.0 3.0 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	Lane Configurations	*	44	‡	*-	¥.	¥L.	
1159 1706 505 453 109 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	87	1159	1706	202	453	109	
1900 1900	Future Volume (vph)	87	1159	1706	202	453	109	
1 5.5 4.9 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
10.95 0.95 1.00 0.97 1.00 1.00 1.00 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.95 1.00 0.92	Total Lost time (s)	4.4	5.5	4.9	5.4	5.4	5.4	
100 100 0.085 1.00 0.085 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00	
3 1500 100 100 0.95 1.00 3 1539 1539 1583 3433 1583 1 100 100 100 0.95 1.00 1 100 100 0.95 1.00 1 100 100 0.92 0.92 0.92 1 100 100 0.92 0.92 0.92 1 100 100 0.92 0.92 0.92 1 100 100 0.90 0.90 0.92 1 100 100 0.90 0.90 1 100 100 0.90 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 100 0.90 1 100 0.90	Frt	1.00	1.00	1.00	0.85	1.00	0.85	
3.539 3.539 1.583 3.539 1.583 3.539 3.539 1.583 3.433 1.583 3.539 3.539 1.583 3.433 1.583 3.539 3.539 3.639 3.639 3.639 3.633	Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
100 100 100 0.95 1.00 3539 3539 1583 3433 1583 1260 1854 549 492 118 1260 1854 549 492 118 1260 1854 549 492 118 1260 1854 549 492 118 1261 1854 549 492 118 1262 184 549 492 49 1283 1583 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 1084 975 0.05 0.18 1085 0.07 0.014 0.03 1080 0.01 0.00 1090 0.02 0.01 0.00 1090 0.04 0.04 0.05 122 21.1 618 E 145.0 Sum of lost time (s) 145.0 1.00 1.00	Satd. Flow (prot)	3433	3539	3539	1583	3433	1583	
3539 3539 1583 3433 1583 1260 1854 549 492 092 092 092 092 092 092 092 092 092 0	Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
1260 1854 649 092 092 092 092 092 092 092 092 092 093 09	Satd. Flow (perm)	3433	3539	3539	1583	3433	1583	
1260 1854 549 492 118 0 0 0 0 69 1260 1854 549 492 118 1260 1854 549 492 118 1260 1854 549 492 118 1260 1854 549 492 118 127 6 0 6 69 1083 97.5 123.3 2.8 2.8 2.8 8 1083 97.5 123.3 2.8 2.8 2.8 8 1083 97.5 123.3 2.8 2.8 2.8 8 10.05 0.07 0.08 0.18 0.18 1 5.5 4.9 5.4 5.4 5.4 5.4 5.4 5.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
1260 1854 549 492 49 11260 1854 549 492 49 11 NA NA pm+ov Prot custom 1 08.3 97.5 123.3 25.8 25.8 1108.3 97.5 123.3 25.8 25.8 1108.3 97.5 123.3 25.8 25.8 1108.3 97.5 123.3 2.8 25.8 125 4.9 5.4 5.4 5.4 126 2.0 2.0 2.0 3.0 128 0.36 0.05 0.07 0.014 0.03 128 0.36 0.05 0.07 0.014 0.03 129 0.38 0.39 0.81 0.17 120 110 146 176 1.00 1.00 120 120 11 0 17 3 0.3 122 21.1 618 E D 122 21.1 618 E D 122 21.1 618 E D 122 21.1 618 E D 122 21.1 618 E D 125 21.1 618 E D 126 0.80 0.80 0.80 0.80 0.80 0.80 127 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8	Adj. Flow (vph)	95	1260	1854	549	492	118	
1260 1854 549 492 499 11 NA NA PM+ov Prof custom 2 6 6 7 7 7 4 4 102 2 6 6 7 7 7 4 103 375 1233 25.8 25.8 1083 375 1233 25.8 25.8 1083 375 1233 25.8 25.8 1083 375 1233 25.8 25.8 1084 375 1233 25.8 25.8 1085 249 5.4 5.4 5.4 5.4 15.5 49 5.0 30 15.6 80 2.0 2.0 3.0 15.6 80 2.0 2.0 3.0 15.6 80 2.0 2.0 3.0 15.8 20 0.07 0.014 0.03 10.8 0.38 0.39 0.81 0.17 10.146 1.76 1.00 1.00 10.6 2.1 0.1 73 0.3 10.6 2.1 0.1 73 0.3 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.2 21.1 61.8 12.3 5.0 9 145.0 Sum of lost time (s) 145.0 Sum of lost time (s) 145.1 5.0 1.00 1.00 1.00 1.00 1.00 1.00 1.	RTOR Reduction (vph)	0	0	0	0	0	69	
1 NA NA pm+ov Prot custom 2 6 7 7 4 2 6 6 1 08.3 97.5 123.3 25.8 25.8 1 108.3 97.5 123.3 25.8 25.8 1 108.3 97.5 123.3 25.8 25.8 1 108.3 97.5 123.3 25.8 25.8 1 108.3 97.5 123.3 25.8 25.8 1 108.3 97.5 123.3 25.8 25.8 2 6 8 0 2.0 2.0 3.0 2 7 8 0.0 2.0 3.0 2 8 0.0 2.0 3.0 3 0.3 0.2 0.0 3.0 3 0.3 0.3 0.3 4 0.48 0.78 0.39 0.81 0.77 4 0.48 0.78 0.39 0.81 0.77 5 16.3 2.4 57.2 50.6 5 10.0 4.3 6.45 50.9 6 2.1 1.0 1.0 1.0 7 2 16.3 2.4 57.2 50.6 7 3 0.3 0.3 7 4 6 1.0 1.0 1 4 1.7 1.0 1.0 1 6 2 1 0.1 7.3 0.3 8 2 6 0 4.3 6.45 50.9 8 2 6 0 4.3 6.45 50.9 8 2 6 0 4.3 6.45 50.9 8 2 6 0 4.3 6.45 50.9 8 2 6 0 4.3 6.45 50.9 8 2 6 0 4.3 6.45 50.9 8 2 6 0 8.3 0.3 1 45.0 8.0 8.0 10.0 10.0 10.0 10.0 10.0 10.0	Lane Group Flow (vph)	95	1260	1854	549	492	49	
2 6 7 7 4 4 108.3 97.5 123.3 25.8 25.8 108.3 97.5 123.3 25.8 25.8 108.3 97.5 123.3 25.8 25.8 10.07 0.67 0.85 0.18 0.18 10.55 4.9 5.4 5.4 5.4 10.56 4.0 2.0 2.0 3.0 10.6 2.1 0.0 1.00 10.6 2.1 0.1 7.3 0.3 10.6 2.1 0.1 7.3 0.3 10.7 0.6 2.1 0.1 0.0 10.8 0.8 0.8 0.8 0.8 0.8 0.8 10.9 0.8 0.9 0.8 0.8 10.0 1.0 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.0 1.00 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.1 0.0 10.0 2.1 0.1 0.0 0.3 10.0 2.0 0.1 0.0 0.3 10.0 2.0 0.1 0.0 0.3 10.0 0.1 0.0 0.0 0.3 10.0 0.1 0.0 0.0 0.3 10.0 0.1 0.0 0	Tum Type	Prot	NA	NA	vo+mq		custom	
108.3 97.5 123.3 25.8 25.8 10.0 108.3 97.5 123.3 25.8 25.8 25.8 25.8 25.8 25.8 25.8 25.8	Protected Phases	2	2	9	7	7	4	
1083 975 1233 258 258 1083 975 1233 258 258 1083 975 1233 258 258 10.076 0.087 0.18 0.18 1 5.5 4.9 5.4 5.4 5.4 5.4 1 5.5 8.0 2.0 2.0 3.0 1 5.4 8.0 2.0 2.0 3.0 1 5.4 8.0 2.0 2.0 3.0 1 6.2 2.0 3.0 1 72 16.3 2.4 572 50.6 1 100 146 1.76 1.00 1.00 1 6.2 2.1 0.1 73 0.3 1 8.2 6.0 4.3 64.5 50.9 1 8.2 6.0 4.3 64.5 50.9 1 9.2 21.1 6.18 1 9.2 21.1 6.18 1 9.2 21.1 6.18 1 9.2 21.1 6.18 1 9.3 20.0 1.00 1 145.0 Sum of lost time (s) 1 145.0 Sum of lost time (s) 1 145.0 Sum of lost time (s) 1 145.0 Sum of lost time (s) 1 145.0 Sum of lost time (s) 1 145.0 Sum of lost time (s)	Permitted Phases		7		9		7	
1083 975 1233 558 258 1075 067 085 018 018 15.5 8.0 2.0 2.0 3.0 15.6 8.0 2.0 2.0 3.0 15.6 8.0 2.0 2.0 3.0 15.6 8.0 2.0 2.0 3.0 15.6 8.0 2.0 2.0 3.0 14.6 17.8 10.0 10.0 2.1 0.1 7.3 0.3 12.2 21.1 6.18 12.2 21.1 6.18 12.2 21.1 6.18 12.5 21.1 6.18 12	Actuated Green, G (s)	7.0	108.3	97.5	123.3	25.8	25.8	
1 5.5 4.9 6.67 0.88 0.18 0.18 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.6 4.9 2.0 2.0 2.0 1 5.6 4.9 2.0 2.0 2 0.0 2.0 2.0 2 0.0 2.0 2 0.0 2.0 2 0.0 2.0 2 0.0 2.0 2 0.0 2.0 2 0.0 2.0 2 0.0 0.0 0.0 2 0.0 2.0 2 0.0 0.0 0.1 2 0.0 0.1 2 0.0 0.1 2 0.0 0.1 2 0.0 0.1 2 0.0 0.1 2 0.0 0.1 2 0.0 0.1 2 0.0 0.0 0.1 2 0.0	Effective Green, g (s)	7.0	108.3	97.5	123.3	25.8	25.8	
1 5.5 4.9 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Actuated g/C Ratio	0.05	0.75	0.67	0.85	0.18	0.18	
5.6 8.0 2.0 3.0 5.6 8.0 2.0 3.0 5.2643 2379 1405 610 281 8.0.36 c.0.52 0.07 c.0.14 0.03 9.0.48 0.78 0.39 0.81 0.17 9.1.04 1.76 1.30 1.00 9.06 2.1 0.1 73 0.3 9.1.8 26.0 4.3 64.5 50.9 1.2. 21.1 A FINE D 1.2. 21.1 A FINE D 1.2. 21.1 A FINE D 1.2. 21.1 A FINE C 1.3. 24.0 HCM 2000 Level of Service 0.80 1.45.0 Sum of lost time (s) 6.8.7% ICU Level of Service 1.5. 1.5. 1.5. 1.00 1.00 1.00 1.00 1.00	Clearance Time (s)	4.4	5.5	4.9	5.4	5.4	5.4	
2643 2379 1405 610 281 8 0.36 c.0.52 0.07 c.0.14 0.03 0.48 0.78 0.39 0.81 0.17 7.2 16.3 2.4 57.2 50.6 1.100 1.46 1.76 1.00 1.00 0.6 2.1 0.1 7.3 0.03 7.8 2.4 6.1 7.3 0.03 1.4 0.4 1.7 1.00 1.2 21.1 61.8 B C A E D 1.2 21.1 61.8 B C A E D 1.8 0.90 1.9 0.90 1.	Vehicle Extension (s)	2.0	9.6	8.0	2.0	2.0	3.0	
8 0.36 c0.52 0.007 c0.14 0.03 10.48 0.78 0.39 0.81 0.17 17.2 16.3 2.4 57.2 50.6 1.100 1.46 1.75 1.00 1.00 1.06 2.1 0.1 7.3 0.3 1.0 3.4 6.5 5.9 1.2 2.1 6.8 8 64.5 5.9 1.2 21.1 6.18 24.0 HCM 2000 Level of Service 0.80 1.45.0 Sum of lost time (s) 6.87% ICU Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service 1.5 5.0 HCM 2000 Level of Service	Lane Grp Cap (vph)	165	2643	2379	1405	610	281	
0.48 0.78 0.39 0.81 0.17 1.20 146 1.76 1.00 1.00 0.66 2.1 0.1 7.3 0.3 1.22 21.1 61.8 B C HCM 2000 Level of Service 0.80 1.45.0 Sum of lost time (s) 6.87% ICU Level of Service 1.51	v/s Ratio Prot	c0.03	0.36	c0.52	0.07	c0.14	0.03	
1 0.48 0.78 0.39 0.81 0.17 7.2 16.3 2.4 57.2 50.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	v/s Ratio Perm				0.28			
72 163 24 572 506 0 100 146 176 100 100 0 6 21 0.1 73 0.03 0 7.8 260 4.3 64.5 50.9 12.2 21.1 61.8 B C A E D 24.0 HCM 2000 Level of Service 0.80 Sum of lost time (s) 6.87% ICU Level of Service 1.55	v/c Ratio	0.58	0.48	0.78	0.39	0.81	0.17	
100 146 176 1.00 1.00 1 0.6 2.1 0.1 7.3 0.3 1 0.6 2.1 0.1 7.3 0.3 1 0.6 2.1 0.1 7.3 0.3 2 0.4 3 64.5 50.9 1 0.2 21.1 61.8 D 2 0.8 C R E D 2 0.8 C R E D 1 0.8 C R E D 2 0.8 C R E D 1 0.8 C R E D 2 0.8 C R E D 3 0.8 C R E D 3 0.8 C R E D 4 0.8 C R E	Uniform Delay, d1	67.5	7.2	16.3	2.4	57.2	50.6	
0.6 2.1 0.1 73 0.3 7.8 26.0 4.3 64.5 50.9 1.2 21.1 61.8 D B C E 24.0 HCM 2000 Level of Service 0.80 145.0 Sum of lost time (s) 68.7% IOU Level of Service 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Progression Factor	1.00	1.00	1.46	1.76	1.00	1.00	
78 260 4.3 64.5 50.9 122 21.1 61.8 B C E 24.0 HCM 2000 Level of Service 0.80 145.0 Sum of lost time (s) 68.9 145.1 61.8	Incremental Delay, d2	3.0	9.0	2.1	0.1	7.3	0.3	
12.2 21.1 61.8 E D	Delay (s)	70.5	7.8	26.0	4.3	64.5	50.9	
12. 21.1 61.8 B C E E 24.0 HCM 2000 Level of Service 0.80 145.0 Sum of lost time (s) 68.7% ICU Level of Service 1.5	Level of Service	ш	Þ	ပ	⋖	ш	Ω	
24.0 HCM 2000 Level of Service 0.80 Sum of lost time (s) 6.87% ICU Level of Service 1.5	Approach Delay (s)		12.2	21.1		61.8		
24.0 HCM 2000 Level of Service 0.80 145.0 Sum of lost time (s) 68.7% ICU Level of Service 15.	Approach LOS		В	S		ш		
24.0 HCM 2000 Level of Service 0.80 Sum of lost time (s) 68.7% ICU Level of Service 15	Intersection Summary							
0.80 145.0 Sum of lost time (s) 68.7% ICU Level of Service 15	HCM 2000 Control Delay			24.0	Ŧ	CM 2000	Level of Service	2
145.0 Sum of lost time (s) 68.7% ICU Level of Service 15.	HCM 2000 Volume to Capac	city ratio		0.80				
68.7% ICU Level of Service	Actuated Cycle Length (s)			145.0	S	im of lost	time (s)	18.7
	Intersection Capacity Utiliza	tion		%2.89	2	U Level (of Service	U
	Analysis Period (min)			7				

KHA HCM Signalized Intersection Capacity Analysis

Balboa Station 4: Bond St & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

1900 0.0 A 0 006 0.03 0.03 1.00 0.0 145.0 1.00 4.9 7.3 7.3 7.9 C 43 43 49 11.00 00.86 11.00 11.00 11.00 11.00 14.7 2erm 0.92 0 0 1900 0.0 A 0.92 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 0.63 0.0 0.5 0.5 0.5 A 0.5 A 44.9 2065 2065 1900 4.9 0.95 1.00 3539 1.00 3539 0.92 2245 0 145.0 145.0 1.00 4.9 7.3 3539 c0.63 0 0 1900 0.92 87 0 0.5 0.67 145.0 65.1% 08 80 1733 145.0 145.0 1.00 4.9 7.3 7.3 3513 0.49 ↑↑ 1514 1514 1900 4.9 0.95 0.99 1.00 3513 3513 1.646 NA 2 0.49 0.0 0.4 0.4 0.4 A A A A † HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (inn)
c Critical Lane Group Lane Configurations
Traffic Volume (vph)
feater Volume (vph)
feater Volume (vph)
feater (vph)
Total Lost time (s)
Lane Util Fador
Fit Protected
Sald: Flow (prh)
Peak-hour factor, PHF
Adj. Flow (prh)
Lane Group Flow (vph) Turn Type
Protected Phases
Protected Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
vs Ratio Prot
vs Ratio Prot
vs Ratio Prot Progression Factor Incremental Delay, d2 Delay (s) Level of Service Approach Delay (s) Approach LOS Jniform Delay, d1

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 7

KHA Queues

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 5: Mission Bay Dr & Garnet Ave

	4	†	~	/	ţ	4	•	•	•	٠	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	510	684	482	335	737	384	703	537	361	296	208	829
v/c Ratio	0.93	0.82	0.62	1.02	08.0	0.55	1.07	0.45	0.40	0.74	1.07	0.64
Control Delay	73.6	59.7	33.9	111.5	57.4	27.7	109.3	40.0	18.0	73.5	110.8	29.8
Oueue Delay	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0	13.8	2.8
Total Delay	73.6	26.7	34.4	111.5	57.4	27.7	109.3	40.0	19.0	73.5	124.6	32.6
Queue Length 50th (ft)	239	336	335	~333	345	215	~377	500	163	141	~528	303
Queue Length 95th (ft)	#344	410	461	#533	424	303	#203	278	257	186	#156	382
Internal Link Dist (ft)		574			1151			461			376	
Turn Bay Length (ft)	299		120	410		325	265		100	200		265
Base Capacity (vph)	228	832	775	329	427	755	929	1183	868	523	476	1312
Starvation Cap Reductn	0	0	19	0	0	0	0	0	310	0	73	355
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.82	89.0	1.02	0.80	0.51	1.07	0.45	0.61	0.57	1.26	0.87

Synchro 9 Report Page 9

KHA Oueues

Balboa Station 5: Mission Bay Dr & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

	4	†	<i>></i>	/	ţ	✓	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	\$	*-	F	‡	*	£	‡	*	F	*	K.
Traffic Volume (vph)	469	629	443	308	879	353	647	464	332	272	467	763
Future Volume (vph)	469	629	443	308	678	353	647	464	332	272	467	763
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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
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
Fit 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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3539	1583	1770	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	510	684	482	335	737	384	703	537	361	296	208	829
RTOR Reduction (vph)	0	0	49	0	0	25	0	0	23	0	0	47
Lane Group Flow (vph)	510	684	433	335	737	332	703	537	338	296	208	782
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	M	vo+mq
Protected Phases	3	00	-	7	4	2	-	9	7	2	2	3
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	23.1	34.1	61.9	27.0	38.0	54.8	27.8	48.5	75.5	16.8	37.1	60.2
Effective Green, g (s)	23.1	34.1	61.9	27.0	38.0	54.8	27.8	48.5	75.5	16.8	37.1	60.2
Actuated g/C Ratio	0.16	0.24	0.43	0.19	0.26	0.38	0.19	0.33	0.52	0.12	0.26	0.42
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	546	832	675	329	927	268	929	1183	824	397	476	1157
v/s Ratio Prot	0.15	0.19	0.12	c0.19	c0.21	90.0	c0.20	0.15	0.08	0.09	c0.27	0.11
v/s Ratio Perm			0.15			0.15			0.14			0.17
v/c Ratio	0.93	0.82	0.64	1.02	0.80	0.55	1.07	0.45	0.41	0.75	1.07	89.0
Uniform Delay, d1	60.2	52.6	32.8	29.0	49.9	35.5	28.6	37.9	21.2	62.0	54.0	34.5
Progression Factor	0.84	0.98	1.26	1.00	1.00	1.00	9:	0.1	0.1	1.00	1.00	1.00
incremental Delay, dz	71.7	 	4. 6	54.3	0.7	0.0	24.8	0.5	0.1	0.5	60.3	7.1
Delay (s)	7.P	59.4	47.8	113.3	56.9	36.	113.4	38.3	21.3	98.0	114.3	35.7
Approach Delett (c)	٥	L C	۵	_	J 77	ם	_	J 27	ر	٥	L 77	ח
Approach Delay (s)		28.3			04.4			C./0			- L	
Approach LOS		u			u			ш			Ц	
Intersection Summary												
HCM 2000 Control Delay			64.0	Ĭ	CM 2000	HCM 2000 Level of Service	Service		ш			
HCM 2000 Volume to Capacity ratio	ty ratio		0.99									
Actuated Cycle Length (s)			145.0	ร	ım of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	uo		93.3%	೨	U Level	ICU Level of Service	0		ш			
Analysis Period (min)			15									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

o. I-o OII-ramp/Santa re ot & Garnet Ave	la re o	S G G	Z E	G.	IIIIIIII FINI FEAR FEILOU
	†	ţ	•	•	
Lane Group	EBT	WBT	NBR	SBR	
Lane Group Flow (vph)	1423	2208	890	203	
v/c Ratio	0.85	0.44	98.0	0.32	
Control Delay	18.2	0.3	25.1	6.7	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	18.2	0.3	25.1	6.7	
Queue Length 50th (ft)	174	0	127	27	
Queue Length 95th (ft)	#271	0	# 238	99	
Internal Link Dist (ft)	1151	265			
Turn Bay Length (ft)					
Base Capacity (vph)	1724	5044	1040	679	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.83	0.44	0.86	0.32	
:					

Intersection Summary
95th percentile volume exceeds capacity, queue may be bnger.
Queue shown is maximum after two cycles.

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KHA Oueues

Balboa Station 6: I-5 Off-ramp/Santa Fe St & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

	•	†	>	\	ţ	√	•	•	•	٠	→	`
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩			4413				J. Ja			*-
Traffic Volume (vph)	0	1309	0	0	1948	84	0	0	819	0	0	187
Future Volume (vph)	0	1309	0	0	1948	84	0	0	819	0	0	187
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
Lane Util. Factor		0.95			0.91				0.88			1.00
표		1:00			0.99				0.85			0.86
Flt Protected		1.00			1.00				1.00			1.00
Satd. Flow (prot)		3539			5054				2787			1611
Flt Permitted		1.00			1.00				1.00			1.00
Satd. Flow (perm)		3539			5054				2787			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1423	0	0	2117	91	0	0	830	0	0	203
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	22	0	0	41
Lane Group Flow (vph)	0	1423	0	0	2208	0	0	0	898	0	0	162
Turn Type		Ä			ΑN				Prot			Perm
Protected Phases		00			2 4				2			
Permitted Phases												9
Actuated Green, G (s)		23.3			49.3				18.0			18.0
Effective Green, g (s)		23.3			49.3				18.0			18.0
Actuated g/C Ratio		0.47			1.00				0.37			0.37
Clearance Time (s)		4.0							4.0			4.0
Vehicle Extension (s)		3.0							3.0			3.0
Lane Grp Cap (vph)		1672			5054				1017			588
v/s Ratio Prot		c0.40			0.44				c0.31			
v/s Ratio Perm												0.10
v/c Ratio		0.85			0.44				0.85			0.28
Uniform Delay, d1		11.5			0.0				14.4			11.0
Progression Factor		1.00			0.1				0.1			1.00
Incremental Delay, d2		4.4			0.1				7.1			0.3
Delay (s)		15.9			0.1				21.5			11:3
Level of Service		2			₹ ;				د			2
Approach Delay (s)		15.9			0.1			21.5			11.3	
Approach LOS		a			A			ပ			В	
Intersection Summary												
HCM 2000 Control Delay			9.3	오	:M 2000	HCM 2000 Level of Service	ervice		∢			
HCM 2000 Volume to Capacity ratio	y ratio		0.85									
Actuated Cycle Length (s)			49.3	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization	L		71.5%	⊴	J Level o	ICU Level of Service			ပ			
Analysis Period (min)			15									
 c Critical Lane Group 												

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 7: Balboa EB Ramps & Garnet Ave

	†	<u> </u>	/	ļ	•	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	ŧ	¥		*		ĸ	
Traffic Volume (veh/h)	1268	98	0	1457	0	337	
Future Volume (Veh/h)	1268	98	0	1457	0	337	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1378	935	0	1584	0	366	
Pedestrians							
Lane Width (ft)							
Walking Speed (#1/s)							
Percent Blockage							
Right turn flare (veh)							
	None			None			
Median storage veh)							
Upstream signal (ft)	442			634			
pX, platoon unblocked					69.0		
vC, conflicting volume			1378		2170	689	
vC1, stage 1 conf vol							
vCz, stage z com vol vCu, unblocked vol			1378		1797	689	
tC, single (s)			4.1		8.9	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		100	9	
cM capacity (veh/h)			493		46	388	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
Volume Total	689	689	935	792	792	366	
Volume Left	0	0	0	0	0	0	
Volume Right	0	0	935	0	0	366	
cSH	1700	1700	1700	1700	1700	388	
Volume to Capacity	0.41	0.41	0.55	0.47	0.47	0.94	
Queue Length 95th (ft)	0	0	0	0	0	260	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	65.5	
Lane LOS						.	
Approach Delay (s)	0.0			0:0		65.5	
Approach LOS						LL.	
Intersection Summary							
Average Delay			9.6				
Intersection Capacity Utilization	_		62.6%	⊴	J Level o	ICU Level of Service	В
Analysis Period (min)			12				

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KHA Oueues

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Balboa Station 8: Garnet Ave & Moraga Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

∢ _	WBR	6	0.1.	'n	0.0	'n		24		250	16/				0.12
4	WBF	6	0.1	'n	0	'n	_	5		25(79	_	Ī	_	0.1
<u>و</u> ر	R SBL				0.0 0			4 83	201	0 155		0 0	0 0	0 0	2 0.13
•	SBR				0.0						698	0	0	0	0.36

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 8: Garnet Ave & Moraga Ave

																																				В		16.5	В		
`	SBR	R.	287	707	5.6	00.1	0.85	1.00	1583	1.00	1583	0.92	312	234	78	Perm		4	9.2	9.2	0.14	5.6	2.0	214		0.05	0.36	26.7	00.	0.4	27.1	ပ				HCM 2000 Level of Service		e (s)	envice		
٤	SBLS	<u>,</u>	%			_					1770 1				104	Prot Pe	4		9.2			9.6			90:00							ပ	27.2	ပ		M 2000 Lev		Sum of lost time (s)	ICU Level of Service		
4	WBR	*-	% %	1900	6.5	1.00	0.85	1.00	1583	1.00	1583	0.92	93	46	44	Perm		9	32.0	32.0	0.47	6.5	3.9	744		0.03	90.0	8.6	1.00	0.0	9.8	A				HC		Sur	101		
ţ	WBT	‡	1170	1900	6.5	0.95	1.00	1.00	3539	1.00	3539	0.92	1272	0	1272	¥	9		32.0	32.0	0.47	6.5	3.9	1665	c0.36		0.76	14.9	1.00	2.3	17.1	В	16.6	В		15.1	69:0	0.89	91.6%	15	
†	EBT	ŧ	1251	1900	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	1360	0	1360	¥	2		47.5	47.5	0.70	5.7	4.8	2472	0.38		0.55	2.0	1:00	0.4	5.4	V	11.0	В							
^	EBL	F	340	1900	4.4	0.97	1.00	0.95	3433	0.95	3433	0.92	370	0	370	Prot	2		10.3	10.3	0.15	4.4	2.0	519	c0.11		0.71	27.4	1.00	3.8	31.3	O					ity ratio	,	ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Ideal Flow (vohol)	Total Lost time (s)	Lane Util. Factor	표	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Station 9: Clairemont Dr & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

ane Group	\	†	/	ţ	✓	—	4	٠	→	
i	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
ane Group Flow (vph)	382	1136	579	1203	77	425	466	376	676	
/c Ratio	96:0	66.0	1.05	0.94	69.0	0.72	0.74	1.04	0.87	
Control Delay	6.86	8.69	107.4	26.8	95.2	62.7	38.4	112.6	53.3	
Dueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	6.86	8.69	107.4	26.8	95.2	62.7	38.4	112.6	53.3	
Dueue Length 50th (ft)	180	535	-291	543	69	195	303	-366	408	
Queue Length 95th (ft)	#314	#777	#457	#780	#153	254	436	#629	494	
ntemal Link Dist (ft)		3203		930		1350			098	
rum Bay Length (ft)	240		220		200		100	120		
Base Capacity (vph)	396	1153	552	1283	123	832	634	360	1278	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	96:0	66.0	1.05	0.94	0.63	0.51	0.74	1.04	0.73	

intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 9: Clairemont Dr & Garnet Ave

	١	†	<u> </u>	/	ţ	1	•	—	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£.	4₽		F	₩.		r	‡	*-	*	₩	
Traffic Volume (vph)	351	966	46	533	947	160	71	391	429	346	602	253
Future Volume (vph)	351	966	46	533	947	160	71	391	429	346	602	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	
표	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	96:0	
FIt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3514		3433	3462		1770	3539	1583	1770	3382	
FIt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3514		3433	3462		1770	3539	1583	1770	3382	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	1083	23	579	1029	174	77	425	466	376	654	275
RTOR Reduction (vph)	0	2	0	0	6	0	0	0	09	0	33	0
Lane Group Flow (vph)	382	1134	0	579	1194	0	77	425	406	376	968	0
Turn Type	Prot	N		Prot	NA		Prot	NA	vo+mq	Prot	NA	
Protected Phases	2	2		-	9		æ	∞	-	7	4	
Permitted Phases									∞			
Actuated Green, G (s)	16.2	46.1		22.6	51.8		8.9	23.4	46.0	28.7	43.2	
Effective Green, g (s)	16.2	46.1		22.6	51.8		8.9	23.4	46.0	28.7	43.2	
Actuated g/C Ratio	0.12	0.33		0.16	0.37		90.0	0.17	0.33	0.20	0.31	
Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Vehicle Extension (s)	2.0	3.5		2.0	3.0		2.0	2.4	2.0	2.0	2.6	
Lane Grp Cap (vph)	395	1152		551	1275		112	288	517	361	1039	
//s Ratio Prot	0.11	c0.32		c0.17	0.34		0.04	0.12	0.13	c0.21	c0.27	
//s Ratio Perm									0.13			
v/c Ratio	0.97	86:0		1.05	0.94		69.0	0.72	0.79	1.04	98.0	
Uniform Delay, d1	61.9	46.9		29.0	42.8		64.5	52.5	42.8	55.9	45.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	36.1	22.7		52.4	12.8		13.1	4.0	7.1	58.6	7.5	
Delay (s)	98.1	69.5		111.4	92.9		9.77	9.69	20.0	114.5	53.4	
evel of Service	ш	ш		ш	ш		ш	ш	٥	ш	۵	
Approach Delay (s)		7.97			73.7			56.4			71.0	
Approach LOS		ш			ш			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			70.9	Ĭ	3M 2000	HCM 2000 Level of Service	ervice		ш			
HCM 2000 Volume to Capacity ratio	ity ratio		1.01									
Actuated Cycle Length (s)			140.6	S	Sum of lost time (s)	time (s)			20.5			
ntersection Capacity Utilization	io		%8'06	2	U Level o	CU Level of Service			ш			
Analysis Doriod (min)			7									

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Balboa Station 10: Olney St & Balboa Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

→	SBT	290	0.48	15.3	0.0	15.3	53	132	244		1141	61	0	0	0.27	
←	NBT	443	0.73	21.7	0.0	21.7	93	216	328		1163	6	0	0	0.38	
ţ	WBT	265	0.44	15.3	0.0	15.3	53	157	936		1413	0	0	0	0.42	
•	WBL	151	0.89	79.1	0.0	79.1	41	#182		120	170	0	0	0	0.89	
†	EBT	425	0.46	17.3	0.0	17.3	20	106	1172		1469	0	0	0	0.29	
•	EBL	39	0.20	27.5	0.0	27.5	10	42		120	211	0	0	0	0.18	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Oueue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Oueue shown is maximum after two cycles.

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 10: Olney St & Balboa Ave

EBL EBL EBL WBL WBL WBL NBL NBL NBL NBL NBL NBL NBL SET 40	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL 3 3 351 40 139 525 24 20 341 46 20 3 351 40 139 525 24 20 341 46 20 1900	EBL rations (vp) 36 e (vph) 36 e (vph) 36 ohpl) 1900 1,4 dor 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	12 12 12 12 12 12 12 12 12 12 12 12 12 1	40 40 40 1900 0 0 0	WBL 139 139 139 139 130 100 0.95 1770 0.95 1770 151 151 151 161	↑↑ 525 525 525 526 1900 5.0 0.95 1.00 3.516 1.00 3.516 0.92 0.92 0.92	24 24 24 1900 0.92 26 0 0	20 20 20 1900	ABT 341 341 341 1900 4.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	1900 NBR	20 20	209	SBR 38
	March Marc	rations 7 8 6 (vph) 36 6 (vph) 36 96 (vph) 36 97 97 97 97 97 97 97 97 97 97 97 97 97	↑↑↑ 351 351 351 990 990 995 995 1.00 1.00 1.20 1.20 1.20 1.20 1.20 1.20	40 40 1900 0 0 0	139 139 14.4 1.00 1.00 0.95 1770 0.95 1770 151 151 151 151	415 525 525 525 525 526 5.0 0.95 1.00 3.516 1.00 3.516 0.92	24 24 24 1900 0 0 0	20 20 20 1900	341 341 1900 4.9 1.00 0.98 1.00	46 46 1900	20	209	38
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0.61 0.38 0.93 0.46 0.76 24.9 140 23.6 12.5 16.0 2 100 1.00 1.00 1.00 1.00 2 10.8 0.2 50.3 0.2 5.3 3.6 14.2 74 0 12.7 21.3 D B E B C D Capacity ratio 0.66 Service C Intilization 5.2.7 Sum of lost time (s) 14.4 It (s) 15.7 Service B	0.61 0.38 0.93 0.46 0.024 24.9 140 23.6 12.5 160 24.9 140 23.6 12.5 160 24.9 140 1.00 1.00 1.00 1.00 2 10.8 0.2 50.3 0.2 5.3 25.6 14.2 74.0 12.7 21.3 26 14.2 74.0 12.7 21.3 27 y y y y y y y y y y y y	0.02	.12		50.09	c0.17							
0.61 0.38 0.93 0.46 0.76 249 140 23.6 12.5 160 2 10.8 0.2 50.3 0.2 5.3 3 5 14.2 74.0 1.27 21.3 16.0 25.1 25.1 21.3 16.0 25.1 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 16.0 25.1 21.3 17 25.1 21.3 18 20.5 HCM 2000 Level of Service C 19 20.5 C 20.5 10 20.5 C 20.5 11 20.5 C 20.5 12 20.5 C 20.5 13 20.5 C 20.5 14 20.5 20.5 20.5 14 20.5 20.5 20.5 15 20.5 20.5 20.5 16 20.5 20.5 20.5 17 20.5 20.5 20.5 18 20.5 20.5 20.5 19 20.5 20.5 20.5 10 20.5 20.5 20.5 10 20.5 20.5 20.5 11 20.5 20.5 20.5 12 20.5 20.5 20.5 20.	0.61 0.38 0.93 0.46 0.76 249 140 2.36 12.5 16.0 1.00 1.00 1.00 1.00 1.01 1.02 1.03 0.2 5.3 1.02 1.03 0.2 5.3 1.03 0.2 5.0 0.2 1.04 1.27 2.1 1.05 E B C C C C C C C C C C C C C C C C C C								c0.24			0.16	
249 140 236 125 160 100 100 1000 1.00 2 108 0.2 50.3 0.2 5.3 35.6 14.2 74.0 12.7 21.3 D B E B C C 150 0.25.1 21.3 HG 25.1 21.3 y y y y y https://distribution 55.2 Sum of tost time (s) HK (s) 150 0.26 Sum of tost time (s) 14.4 HG (service B) 152 Sum of tost time (s) 153 0.5 HCM 2000 Level of Service B 154 Sum of tost time (s) 155 14.4	249 140 236 125 160 100 100 100 100 100 1.00 2 108 0.2 5.3 0.2 5.3 35.6 14.2 74.0 12.7 21.3 D B E B C C A Y A O Capacity ratio 0.66 Littlication 56.7% ICU Level of Service B Littlication 56.7% ICU Level of Service B	0.61	38		0.93	0.46			97.0			0.50	
1.00	1.00	24.9	14.0		23.6	12.5			16.0			14.4	
108	108	1.00	00.		1.00	1.00			1.00			1.00	
35.6 14.2 74.0 12.7 21.3 D B E B C C 21.3 16.0 25.1 21.3 P C 25.1 21.3 D B C C C C C C D C C C C C D C C C C C	356 142 740 127 21.3 D B E B C C T S S S S S S S S S S S S S S S S S S	ital Delay, d2 10.8	0.2		50.3	0.2			5.3			0.3	
D B E B C C	D B E B C C C C C D C C C C C C C C C C C C C	35.6	4.2		74.0	12.7			21.3			14.7	
16.0 25.1 21.3 Y y x belay 20.5 HCM 2000 Level of Service C 0 Capacity ratio 0.66 Sum of lost time (s) 14.4 Int (s) 15.7% ICU Level of Service B 1 14.4	Y 25.1 21.3 Y C C C C C Delay 20.5 HCM 2000 Level of Service C O Capacity ratio 0.66 Sum of lost time (s) 14.4 In (s) 52.4 Sum of lost time (s) 14.4 V Utilization 56.7% ICU Level of Service B 15 15 15 15	۵	В		ш	В			O			В	
y y y x 20.5 HCM 2000 Level of Service o Capacity ratio 0.66 Inf (s) 52.4 Sum of lost time (s) 1.4 Willization 56.7% ICU Level of Service 1.5 ICU Level of Service 1.5 ICU Level of Service 1.5 ICU Level of Service 1.5 ICU Level of Service	y y Pelay 20.5 HCM 2000 Level of Service o Capacity ratio 0.66 Vullization 56.7% ICU Level of Service 15		0.9			25.1			21.3			14.7	
20.5 HCM 2000 Level of Service 0.66 52.4 Sum of lost time (s) 56.7% ICU Level of Service 1.5	20.5 HCM 2000 Level of Service 0.66 5.24 Sum of lost time (s) 56.7% ICU Level of Service 15		В			ပ			ပ			В	
20.5 HCM 2000 Level of Service 0.66 52.4 Sum of lost time (s) 56.7% ICU Level of Service 1.5	20.5 HCM 2000 Level of Service 0.66 5.24 Sum of lost time (s) 56.7% ICU Level of Service 15	Intersection Summary											
0.66 52.4 Sum of lost time (s) 56.7% ICU Level of Service 15	0.66 52.4 Sum of lost time (s) 56.7% ICU Level of Service 15	HCM 2000 Control Delay		20.5	HCI	M 2000 L	evel of Si	ervice		ပ			
52.4 Sum of lost time (s) zation 56.7% ICU Level of Service	52.4 Sum of lost time (s) zation 56.7% ICU Level of Service 15	HCM 2000 Volume to Capacity ratio		99.0									
Utilization 56.7% ICU Level of Service	Utilization 56.7% ICU Level of Service 15	Actuated Cycle Length (s)		52.4	Sur	n of lost t	ime (s)			14.4			
		ntersection Capacity Utilization	2	%1.9	<u> </u>	Level of	Service			В			
	O-MI11 O	Analysis Period (min)		15									

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KHA Queues

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Balboa Station 11: Olney St & Grand Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

-	SBT	390	0.99	8.98	14.4	71.2	322	209	328		437	44	0	0	0.99
+	NBT :	355									618		0	0	0.57 (
ţ	WBT	1497	0.81	31.7	0.0	31.7	594	722	1076		1846	0	0	0	0.81
•	WBL	153	0.81	88.0	0.0	88.0	130	#233		20	208	0	0	0	0.74
†	EBT	1076	19.0	32.4	0.0	32.4	405	498	276		1602	0	0	0	19:0
•	EBL	41	0.49	82.3	0.0	82.3	32	9/		20	88	0	0	0	0.46
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Station Horizon Year with Reduced LU 11: Olney St & Grand Ave Timing Plan: PM Peak Period

Movement EBI EBI EBI EBI MBI	FBI FBI	Y	× 1	Pe 0 0				SBR 51 51 1900 000 0
Feb. Feb. Feb. Wel. Wel. Wel. Wel. Neb.	FBL EBIT (FB) (FB) (FB) (FB) (FB) (FB) (FB) (FB)			0 O Pe				51 51 1900 1900 0
National Part National Par	h(h) 38 934 h(h) 38 934 h(h) 38 934 h(h) 38 934 h(h) 1900 1900 100 099 100 099 100 099 100 099 1770 3509 095 100 1770 3509 095 100 1770 3509 095 100 1770 3509 095 100 1770 3509 095 100 1770 3509 095 100 1770 3509 095 101 1015 1015 1015 1015 1015 1015 1015			19 0 O				51 51 1900 0 0
h h 38 934 56 141 1155 223 29 171 126 97 212 1900 1900 1900 1900 1900 1900 1900 190	(vph) 38 934 (h) 38 934 (h) 38 934 (h) 38 934 (h) 100 099 (h) 100 099 (h) 100 099 (h) 100 099 (h) 1770 3509 (h) 17			96				1900 1900 0 0 0
1,000 38 934 56 141 1155 223 29 171 176 97 212 4	(c) 5.4 (vph) 4.98 9.34 (vph) 4.100 0.99 (vph) 4.4 5.1 (vph) 4.1 1015 (c) 5.5 4 6.1.1 (c) 5.5 5.4 6.1		-	0. Pe				1900 1900 0.92 0 0
1900 1900	1900 1900 1900 1900 1900 1900 1900 1900							0.92 55 0 0
14 5.1 4.4 4.9	(c) 5.4 5.1 1.00 0.95 1.00 0.99 1.00	, , 9, 9, 1		0.0 Pe				0.92
100 0.95 1.00 1.00 1	(c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d			0.0 Pe				0.92 0 0
100 099 100 098 095 095 099 100 099 100 098 099 099 099 099 099 099 099 099 0	(s) 5.4 61.1 (c) 0.05 (d) 0.02 (d) 0.04 (d) 0.05 (d) 0.05 (d) 0.05 (d) 0.05 (e) 0.05			0.0			, , ,	0.92 55 0 0
1770 3509 1770 3453 100 100 1099 100 100 1099 1770 3453 1640 1183 1803 1803 1909 1770 3453 1640 19183 180	(c) 5.4 61.1 (c) 6.95 (d) 6.95			Pe 0				0.92 55 0 0
1770 3509 1770 3453 1758 1803 1803 1804 1805 1804 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1800 1805 1805 1800 1805	(vph) 1770 3509			De la la la la la la la la la la la la la				0.92
1770 2400 0.95 1.00 0.93 0.05 1770 2452 1.00 0.95 1.00 0.95 1.00 1770 2452 0.92 0.92 0.92 0.92 0.92 0.92 41 1015 61 1.53 1.255 242 32 1.86 1.37 1.05 2.30 42 1073 0 1.53 1.486 0 0 3.37 0 0 3.85 54 1013 0 1.53 1.486 0 0 3.37 0 0 3.85 55 24 61.1 1.44 70.3 8 44.1 44.1 55 24 61.1 1.44 70.3 44.1 44.1 55 24 61.1 1.44 70.3 44.1 44.1 55 24 61.1 1.44 70.3 44.1 44.1 55 24 61.1 1.44 70.3 44.1 44.1 55 24 61.1 1.44 70.3 6.33 0.33 50 204 0.46 0.11 0.52 0.33 0.33 50 24 5.1 2.0 8.1 2.0 2.0 50 20 2.3 2.0 2.4 3.4 3.8 50 20 2.3 2.0 2.4 3.8 2.0 50 20 2.3 2.0 2.4 3.8 2.0 50 20 2.3 2.0 2.3 3.9 50 20 2.3 2.0 2.3 3.9 50 20 20 2.3 2.0 2.0 50 20 20 2.0 2.0 2.0 50 20 20 2.0 2.0 50 20 20 20 20 2.0 50 20 20 20 20 2.0 50 20 20 20 20 20 50 20 20 20 20 50 20 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 20 50 20 20 20 50 20 20 20 20 50 20 20 20 50 20 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20 20 50 20 20	(vph) 0.05 1.00 (vph) 0.05 (vph) 0.03 (vph) 0.03 (vph) 0.03 (vph) 0.03 (vph) 0.04 0.46 (vph) 0.02 0.03 (vph) 0.02 (vph) 0.03 (vph			Pe O				0.92 55 0
1770 3509 1770 3453 1640 1183 41 1015 61 153 1255 242 32 186 195 290 41 1015 61 153 1255 242 32 186 13 105 230 42 1 1013 0 153 1486 0 0 18 0 0 385 43 1 1013 0 153 1486 0 0 337 0 0 385 44 1 1073 0 153 1486 0 0 337 0 0 385 45 54 61.1 144 70.3 84.1 44.1 55 54 61.1 144 70.3 44.1 44.1 55 54 61.1 144 70.3 44.1 44.1 55 54 61.1 144 70.3 44.1 44.1 55 54 61.1 144 70.3 6.3 6.3 50 54 51 54 44 49 59 59 59 50 54 51 54 51 54 51 59 59 50 52 54 51 54 51 52 52 53 53 50 54 51 54 51 52 52 53 53 53 50 52 52 52 52 52 53 53 53	PHF 0.92 0.92 (0.9			Pe O:				0.92 55 0 0
PHF 692 692 692 692 692 692 692 692 692 692	PHF 0,92 0,92 (vph) 0 3 (vph) 0 0 3 (vph) 0 0 3 (vph) 0 0 1 (vph) 0 0 1 (vph) 0 0 1 (vph) 0 0 0 (vph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			O.		-		0.92 55 0 0
(yph) 41 1015 61 153 1255 242 32 186 137 105 230 (yph) 41 1073 0 153 1486 0 0 18 0 0 5 5 6 7 11 100 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 18 0 0 0 1 14 14 10 10 10 10 10 10 10 10 10 10 10 10 10	(vph) 41 1015 (vph) 41 1013 (vph) 41 1073 (vph) 41 1073 (vph) 71 1073 (vph) 71 1599 (v			Pe	186 18 337 NA	4		0 0
(vph) 0 3 0 0 11 0 0 18 0 0 (vph) Prot NA Prot NA Perm NA Perm Fot NA Prot NA Perm NA Perm 5 5 61.1 14.4 70.3 8 4 4 5(s) 5.4 61.1 14.4 70.3 44.1 4 4 5 5.4 61.1 14.4 70.3 44.1 4 4 5 5.4 61.1 14.4 70.3 44.1 4 4 5 5.4 61.1 14.4 70.3 44.1 4 4 5 5.0 60.1 60.1 60.3 6.3 4 4 5 5.1 4.4 4.9 4.9 4.9 4 4 5 5.0 6.1 1.0 1.0 1.0 1.0	(vph) 0 3 (vph) 41 1073 Prot NA 5 2 5 (\$) 5.4 61.1 5 (\$) 5.4 61.1 5 (\$) 5.4 61.1 5 0.04 0.46 1) 7.1 1599 (\$) 2.3 2.86 r 1.00 1.00 r 1.00 1.00 0.2 6.9 2.3 0.2 6.9 2.3 Prot 1.00 1.00 0.2 6.9 2.3 0.2 6.9 2.3 0.2 6.9 2.3 0.3 6.9 2.3 0.4 6.9 2.3 0.5 6.9 2.3 0.6 70.1 1.00			Pe	18 337 NA	4		0
(vph) 41 1073 0 153 1486 0 0 337 0 0 (vph) Prof NA Prof NA Perm O 0 (s) 5 2 1 6 8 4 4 (s) 5.4 61.1 14.4 70.3 84.1 4 4 0 0.04 0.11 0.52 0.33 44.1 4 </td <td>(c) Front NA 1 1073 Prot NA 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td> <td></td> <td></td> <td>Pe</td> <td>337 NA</td> <td>Pel</td> <td></td> <td>0</td>	(c) Front NA 1 1073 Prot NA 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			Pe	337 NA	Pel		0
Piot NA Prof NA Perm NA Perm NA Perm Signary Piot NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA NA NA NA NA NA NA NA NA NA NA NA NA	(s) 5.4 61.1 (s) 5.4 61.1 (s) 5.4 61.1 (s) 5.4 61.1 (s) 0.04 0.46 0.46 (s) 7.7 (s) 0.02 0.31 0.02 0.31 0.02 0.31 0.02 0.31 0.02 0.31 0.03 0.04 0.03 0.05 0.07 0.03 0.03 0.04 0.03 0.04 0.03 0.04 0.03 0.04 0.03 0.04 0.04	Prot 1	NA 6	Perm 8	NA	Perm	Z	
5 2 1 6 6 8 8 4 4 4 4 4 6 8 8 4 4 4 4 4 6 8 8 8 4 4 4 4	5 (\$) 5.4 61.1 (\$) 5.4 61.1 (\$) 5.4 61.1 (\$) 5.4 61.1 (\$) 5.4 61.1 (\$) 5.4 61.1 (\$) 7.1 1599 (\$) 6.2 2.8 6.7 (\$) 7.1 150 1.00 (\$) 6.2 2.8 6.9 2.3 (\$) 7.0 1.00 (\$) 6.9 2.3 (\$)	-	9	80	o		4	
5.4 61.1 14.4 70.3 8 4 <t< td=""><td>5.4 61.1 5.4 61.1 0.04 0.46 4.4 5.1 2.0 5.4 71 1599 0.02 0.31 0.58 0.67 63.2 28.6 1.00 1.00 6.9 2.3 70.1 30.8 E C C</td><td></td><td></td><td>∞</td><td>5</td><td></td><td></td><td></td></t<>	5.4 61.1 5.4 61.1 0.04 0.46 4.4 5.1 2.0 5.4 71 1599 0.02 0.31 0.58 0.67 63.2 28.6 1.00 1.00 6.9 2.3 70.1 30.8 E C C			∞	5			
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5.4 61.1 14.4 70.3 44.1 6.4 6.0 6.4 6.0 6.4 6.0 6.4 6.0 6.4 6.0 6.4 6.0 6.3 6.3 6.3 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4	5.4 61.1 0.04 0.46 4.4 20 5.4 2.0 5.4 71 1599 0.02 0.31 0.58 0.67 6.3.2 28.6 1.00 1.00 6.3.2 28.6 1.00 1.00 6.9.2 3 70.1 30.8 E C E C C	14.4	70.3		44.1		44.1	
0.04 0.46 0.11 0.52 0.33 0.55 0.33 0.55 0.34 0.55 0.35 0.55 0.35 0.55	0.004 0.46 4.4 5.1 2.0 2.0 1.1599 0.002 0.31 0.003 0.87 0.83.2 28.6 0.32 28.6 1.00 1.00 0.003 0.	14.4	70.3		44.1		44.1	
1	s) 4.4 5.1 2.0 5.4 1 1599 0.02 0.31 0.58 0.67 6.32 28.6 1.00 1.00 d2 6.9 2.3 70.1 30.8 E C E C Delay	0.11	0.52		0.33		0.33	
154 20 55 2.0 1599 190 1811 539 1031 0.009 0.043 0.21 106 0.67 0.81 0.82 0.63 107 0.81 0.82 0.63 0.63 108 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	5.4 1599 1599 1031 3 0.67 1.00 1.00 1.00 2.3 30.8 C	4.4	4.9		4.9		4.9	
1599 190 1811 539 539 539 539 531 53	1599 10.31 100 1.00 2.3 30.8 30.8 2.3 30.8 C	2.0	5.5		2.0		2.0	
0.31	0.31 0.67 2.86 1.00 2.3 30.8 30.8 32.3 C	190	1811		539		389	
0.067 0.81 0.82 0.63 0.63 0.63 0.64 0.84 0.86 0.88 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.65	0.67 28.6 1.00 3.3 3.8 3.8 3.3 C	60.00	c0.43					
0.67	2.8.6 2.3 30.8 32.3 C				0.21		c0.33	
286 584 266 380 100 100 100 100 100 100 100 100 308 788 309 39.6 C E C D D 40.6 HCM 2000 Level of Service D 1340 Sum of lost time (s) 14.4 15.28 10.0 Level of Service D	28.6 1.00 2.3 30.8 32.3 C	0.81	0.82		0.63		0.99	
100 100 100 100 100 100 100 100 100 100	1.00 2.3 30.8 3.0.8 32.3 C	58.4	26.6		38.0		44.7	
23 203 43 1.6 308 788 309 39.6 32.2 E C D D C E D D A0.6 HCM 2000 Level of Service D 134.0 Sum of lost time (s) 14.4 15.75 15.75 16.75 17.	2.3 30.8 32.3 C	1.00	1.00		1.00		1.00	
308 788 30.9 39.6 C E C D 32.3 35.3 39.6 C D 40.6 HCM 2000 Level of Service D 0.90 134.0 Sum of lost time (s) 14.4 15.7 15.2 17.4 17.4	30.8 32.3 C	20.3	4.3		1.6		45.9	
2.2 E C D 3.2.3 39.6 C D D 40.6 HCM 2000 Level of Service D 0.90 Sum of lost time (s) 14.4 15.2% ICU Level of Service F 15.15	32.3	78.8	30.9		39.6		87.7	
32.3 35.3 39.6 C D D D D D D D D D D D D D D D D D D D	32.3 C	ш	ပ		۵		ш	
C D D D 40.6 HCM 2000 Level of Service 0.90 Sum of lost time (s) 96.2% ICU Level of Service 15	O		35.3		39.6		87.7	
40.6 HCM 2000 Level of Service 0.90 134.0 Sum of lost time (s) 96.2% ICU Level of Service 15			D		٥		ட	
40.6 HCM 2000 Level of Service 0.90 Sum of lost time (s) 96.2% ICU Level of Service 15								
0.90 1340 Sum of lost time (s) 96.2% ICU Level of Service 15			ICM 2000 Level	of Service		Q		
134.0 Sum of lost time (s) 96.2% ICU Level of Service 15								
Utilization 96.2% ICU Level of Service 15			um of lost time	(s)	•	14.4		
Analysis Period (min) 15	Utilization		CU Level of Serv	rice		L.		
	Analysis Period (min) 15	15						

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Balboa Station Horizon Year with Reduced LU 12: Grand Ave & Culver St Timing Plan: PM Peak Period

	\	ì			
Lane Group	EBL	EBT	WBT	SBL	
Lane Group Flow (vph)	23	1280	1694	116	
v/c Ratio	0.23	0.45	0.63	0.62	
Control Delay	52.8	4.0	8.7	53.0	
Queue Delay	0.0	0.0	20.2	0.0	
Total Delay	52.8	4.0	28.9	53.0	
Queue Length 50th (ft)	15	107	172	99	
Queue Length 95th (ft)	41	177	465	119	
Internal Link Dist (ft)		1076	211	186	
Tum Bay Length (ft)	22				
Base Capacity (vph)	185	2851	2685	435	
Starvation Cap Reductn	0	0	1039	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.12	0.45	1.03	0.27	
Intersection Summary					

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Balboa Station Horizon Year with Reduced LU 12: Grand Ave & Culver St Timing Plan: PM Peak Period

sns (hq) (hq) (i)			WBU	WBT	WBR	SBL	SBR	
ons (hd) (hd) (s)		4	٩	;				
(hd.)		Ė	•	÷		>		
		1178	0	1489	2 5	97	28	
\@		000	1900	1900	1900	1900	1900	
		5.1		4.9		4.9		
		.95		0.95		1.00		
		00.		66.0		0.97		
		1.00		1.00		96:0		
		3539		3515		1733		
		00:		1.00		96:0		
Satd. Flow (perm) 11		539		3515		1733		
Peak-hour factor, PHF 0	0.92 0	0.92	0.92	0.92	0.92	0.92	0.92	
		1280	0	1618	92	98	30	
RTOR Reduction (vph)	0	0	0	2	0	14	0	
ane Group Flow (vph)		1280	0	1692	0	102	0	
	Prot	NA	Prot	NA		Prot		
Protected Phases	2	2	-	9		4		
Permitted Phases								
Actuated Green, G (s)	2.9 8	85.4		78.3		10.6		
s)		85.4		78.3		10.6		
	U	0.81		0.74		0.10		
	4.4	5.1		4.9		4.9		
/ehicle Extension (s)		4.2		4.1		2.0		
ane Grp Cap (vph)	48 28	2851		2596		173		
		c0.36		c0.48		90.00		
/s Ratio Perm								
		0.45		0.65		0.59		
Iniform Delay, d1 5	50.8	3.1		7.0		45.6		
		1.00		1.00		1.00		
ncremental Delay, d2		0.5		7.3		3.3		
Delay (s) 5	53.5	3.6		8.3		48.9		
evel of Service	Ο	A		A		۵		
Approach Delay (s)		4.5		8.3		48.9		
Approach LOS		A		A		Ω		
ntersection Summary								
HCM 2000 Control Delay			8.2	HC	HCM 2000 Level of Service	evel of S	Service	۷
HCM 2000 Volume to Capacity ratio	ţi		0.65					
Actuated Cycle Length (s)		_	106.0	Sur	Sum of lost time (s)	ime (s)		14.4
ntersection Capacity Utilization		വ	27.6%	J	ICU Level of Service	Service		В
Analysis Period (min)			15					
Critical Land Group								

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Balboa Station 13: Lee St & Grand Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Lane Group Flow (vph) 1357 We Ratio 0.50 Control Delay 7.7			
ip Flow (vph)		L WBT	NBL
ve		3 1696	50
			0.45
			43.8
Queue Delay 6.	0.0 0.0	0.0 0	0.0
Total Delay 13.			43.8
Queue Length 50th (ft) 21			17
Queue Length 95th (ft) 33	36 146		59
Internal Link Dist (ft) 211	_	1401	337
Tum Bay Length (ft)	400	0	
Base Capacity (vph) 2701	175	5 3173	424
Starvation Cap Reductn 1280		0 0	0
Spillback Cap Reductn	0	0 0	0
Storage Cap Reductn	0	0 0	0
Reduced v/c Ratio 0.95	95 0.59	9 0.53	0.12
Intersection Summary			

KHA Synchro 9 Report Oueues Page 24

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 13: Lee St & Grand Ave

																																					A		14.2	В		
•	NBR		28	28	1900								0.92	30	0	0																					HCM 2000 Level of Service		time (s)	Service		
•	NBL	>			_		1.00				0.98		0.92				Prot			2.6		0.04		2.0	70					Ì		63		63.2	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	*	1560	1560	1900	5.4	0.95	1.00	1.00	3539	1.00	3539	0.92	1696	0	1696	N	9		118.1	118.1	0.88	5.4	4.4					1.8	`	0.7	2.5	⋖	0.9	A							
-	WBL	*	95	95	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	103	0	103	Prot	-		12.5	12.5	0.09	4.4	2.0	165	90:0		0.62	58.5	1:00	5.2	63.7	ш				7.3	0.55	134.0	55.1%	15	
<u>/</u>	EBR		34	34	1900								0.92	37	0	0																										
†	EBT	₩₽	1214	1214	1900	4.9	0.95	1.00	1.00	3525	1.00	3525	0.92	1320		1356	₹	2		101.7	101.7	97.0	4.9	4.0	2675	0.38		0.51	6.3	1.00	0.7	7.0	V	7.0	A			y ratio	,	uc		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Station 14: Grand Ave &

Horizon Year with Reduced LU

יייי פימוטון				
14: Grand Ave & Figueroa Blvd	gueroa	Blvd		liming Plan: PM Peak Period
	1	t	ţ	
	i			
Lane Group	EBL	EBT	WBT	
Lane Group Flow (vph)	115	1251	1734	
v/c Ratio	0.72	0.35	0.58	
Control Delay	98.7	0.3	19.1	
Queue Delay	0.0	0.0	3.9	
Total Delay	98.7	0.3	23.0	
Queue Length 50th (ft)	127	0	5	
Queue Length 95th (ft)	194	0	917	
Internal Link Dist (ft)		909	773	
Tum Bay Length (ft)	06			
Base Capacity (vph)	249	3539	2999	
Starvation Cap Reductn	0	0	1159	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.46	0.35	0.94	
:				
Intersection Summary				

Synchro 9 Report Page 26 KHA Oueues

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 14: Grand Ave & Figueroa Blvd

Movement			ı					
e Configurations Fig. EB1 WB1 WBR SB1 SBR E Configurations Fig. Vehicle (ph) 106 1151 1530 65 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1	†	ţ	4	٠	`	
e Configurations	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
fire Volume (vph) 106 1151 1530 65 0 0 0 are Volume (vph) 106 1151 1530 65 0 0 0 are Volume (vph) 106 1151 1530 65 0 0 0 are Volume (vph) 106 1151 1530 65 0 0 0 are Volume (vph) 1900 1900 1900 1900 1900 at Elow (por) 100 095 095 095 at Elow (por) 1770 3539 3517 Flow (por) 115 1251 1663 71 0 0 at Elow (por) 115 1251 1663 71 0 0 broad Elow (por) 115 1251 1663 71 0 0 are Group Flow (vph) 0 0 0 broad Elow (por) 100 085 are Group Flow (vph) 115 1251 1449 cetcled Phases 5 2 6 are Group Flow (vph) 152 1730 1449 cetcled Phases 5 2 6 are Group Flow (vph) 160 3339 2997 are Group Flow (vph) 160 3339 2997 cetwe Green, g (s) 15.4 1700 1449 cetcled Phases 5 2 0.49 are Group Flow (vph) 100 33 0.49 are Group Flow (vph) 100 33 0.49 A 2000 Control Delay (s) 87.3 0.35 are Group Flow (vph) 100 33 0.49 A 2000 Control Delay (s) 87.3 0.35 are Section Summary are Section Summary are Section Summary are Section Capacity talio 0.60 are A 2000 Vell Length (s) 170.0 170.0 20.0 50.0 50.0 50.0 50.0 50.0 50.0 5	Lane Configurations	×	*	4 D				
Le Four (yph) 106 1151 1530 65 0 0 0 1 oc 1 into (yph) 100 190 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	106	1151	1530	99	0	0	
al Lost line (s) 44 5.3 5.3 400 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	106	1151	1530	92	0	0	
al Lost lime (s) 44 5.3 5.3 al Lost lime (s) 144 5.3 5.3 a Util. Factor 1.00 0.95 0.95 a Util. Factor 1.00 0.95 0.95 a Flow (port) 1770 3539 3517 a Flow (port) 1770 3539 3517 b Flow (port) 1770 3539 3517 b Flow (port) 1770 3539 3517 b Flow (port) 1770 3539 3517 b Flow (port) 175 1.251 1.63 71 0 0 0 a Group Flow (port) 1.15 1.251 1.733 0 0 0 a Group Flow (port) 1.15 1.251 1.733 0 0 0 a Flow (port) 1.15 1.251 1.733 0 0 0 b Flow (port) 1.15 1.251 1.733 0 0 0 a Flow (port) 1.15 1.251 1.733 0 0 0 b Flow (port) 1.15 1.251 1.733 0 0 0 a Flow (port) 1.15 1.251 1.733 0 0 0 b Flow (port) 1.15 1.251 1.733 0 0 0 a Flow (port) 1.15 1.251 1.733 0 0 0 b Flow (port) 1.15 1.251 1.733 0 0 0 a Flow (port) 1.20 1.44 4 a Flow (port) 1.20 1.30 0.85 a Flow (port) 1.20 0.35 0.58 a Flow (port) 1.20 0.3 0.4 a Flow (port) 1.20 0.3 0.6 a Flow (port) 1.20 0.60 0.3 a Flow (port) 1.20 0.60 0.3 a Flow (port) 1.20 0.60 0.3 a Flow (port) 1.20 0.60 0.30 0.60 a Flow (port) 1.20 0.60 0.60 0.6	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
e Utili, Factor 100 095 095 Tobected 0.95 1.00 1.00 d. Flow (prot) 1770 3539 3517 Tobected 0.95 1.00 1.00 d. Flow (prot) 1770 3539 3517 Flow (prot) 1770 3539 3517 Flow (prot) 1770 3539 3517 Flow (prot) 1770 3539 3517 Flow (prot) 1750 1.00 Flow (prot) 1.05 1.00 Flow (prot) 1.05 1.00 Flow (prot) 1.05 1.00 Flow (prot) 1.05 1.00 Flow (prot) 1.00 Flow (prot) 1.00	Total Lost time (s)	4.4	5.3	5.3				
100 100 0.99	Lane Util. Factor	1.00	0.95	0.95				
Active (perm) 1770 3539 3517 178 178 178 178 178 178 178 178 178 1	Ŧ.	1.00	1.00	0.99				
d Flow (pad) 1770 3539 3517 Flow (pad) 1770 3539 3517 Flow (pad) 1770 3539 3517 Flow (pad) 1770 3539 3517 Flow (pad) 1770 3539 3517 Flow (pad) 175 1551 1663 71 0 0 0 Pad Bad Bad Bad Bad Bad Bad Bad Bad Bad B	Fit Protected	0.95	1.00	1.00				
Permitted 0.95 1.00 1.00 1.170 353 3517 1.180 (April) 1.15 1.251 1.653 71 0 0 1.180 (April) 1.15 1.251 1.653 71 0 0 1.180 (April) 1.15 1.251 1.653 71 0 0 1.180 (April) 1.15 1.251 1.633 71 0 0 1.180 (April) 1.15 1.251 1.233 0 0 0 1.180 (April) 1.15 1.251 1.233 0 0 0 1.180 (April) 1.15 1.251 1.233 0 0 0 1.180 (April) 1.15 1.251 1.233 0 0 0 1.180 (April) 1.251 1.251 1.233 0 0 0 1.180 (April) 1.251	Satd. Flow (prot)	1770	3539	3517				
Leven (perm) 1770 3539 3517	Fit Permitted	0.95	1.00	1.00				
Kehour factor, PHF 0.92 0.93 0.93 0.94 0.93 0.93 0.94 0.93 0.93 0.94 0.93 0.93 0.94 0.93 <td>Satd. Flow (perm)</td> <td>1770</td> <td>3539</td> <td>3517</td> <td></td> <td></td> <td></td> <td></td>	Satd. Flow (perm)	1770	3539	3517				
Prov (ph)	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
PREDEDICTION (vph) 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	115	1251	1663	17	0	0	
e Group Flow (vph) 115 1251 1733 0 0 0 0 1 115 1751 1733 0 0 0 0 0 1 115 1751 1733 0 0 0 0 0 1 115 1751 1733 0 0 0 0 0 1 115 1751 1750 1449 1449 1449 154 1750 1449 1449 154 1750 1449 1449 154 1750 1449 1449 154 1750 1449 1449 154 1750 1449 1449 1449 1449 154 1750 1449 1449 1449 1449 1449 1449 1449 144	RTOR Reduction (vph)	0	0	-	0	0	0	
n Type	Lane Group Flow (vph)	115	1251	1733	0	0	0	
lected Phases 5 2 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Turn Type	Prot	NA	N				
mitted Phases attack Green, (s) 15.4 170.0 144.9 attack Green, (s) 15.4 15.3 5.3 attack Green, (s) 15.4 170.0 184.9 attack Green, (s) 15.4 170.0 170.0 attack Green, (s) 15.4 17.4 170.0 attack Green (s) 170.0 170.0 attack Oycle Length (s) 170.0 170.0 attack Oycle Length (s) 170.0 170.0 attack Green (min) 15.8 3% 170.0 170.0 attack Green (min) 15.8 3% 170.0 170.0 attack Green (min) 15.8 3% 170.0 170.0 attack Green (min) 15.8 3% 170.0 17	Protected Phases	2	2	9				
Lated Green, G (s) 15.4 170.0 144.9 Catche Green, g (s) 15.4 170.0 144.9 Lated G/C Ratio 0.09 1.00 0.85 arance Time (s) 2.0 4.4 4.4 4.4 arance Time (s) 0.0 0.35 2.997 2.0 4.4 4.4 Raid Permits 0.0 0.35 0.499 2.0 3.7 4.6 2.0 3.7 4.6 2.0 3.7 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.7 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6	Permitted Phases							
rctive Green, g(s) 15.4 1700 144.9 arated gr Ratio 0.09 1.00 0.85 Ratio Port 0.00 0.35 0.49 Ratio Port 0.00 0.35 0.49 Ratio Port 0.00 0.35 0.49 Ratio Port 0.00 0.37 0.40 Ratio Port 0.00 0.37 0.46 Ratio Port 0.00 0.00 Ratio Port 0.00	Actuated Green, G (s)	15.4	170.0	144.9				
Lated g/C Ratio 0.09 1.00 0.85 Carache Time (s) 4.4 5.3 5.3 Actic Expension (s) 2.0 4.4 4.4 4.4 Bride Expension (s) 2.0 4.4 4.4 4.4 4.4 Ratio Prot c.0.6 0.35 2.997 6.049 7.0<	Effective Green, g (s)	15.4	170.0	144.9				
arance Time (s) 4.4 5.3 5.3 arance Time (s) 4.4 5.3 5.3 arance Time (s) 2.0 4.4 4.4 4.4 4.4 4.4 4.4 4.4 5.3 5.3 4.4 5.3 5.3 4.4 5.3 5.3 4.4 5.3 5.3 4.4 5.4 4.4 4.4 4.4 4.4 4.4 4.4	Actuated g/C Ratio	0.09	1.00	0.85				
licie Exension (s) 2.0 4.4 4.4 et Grp Cap (wh) 160 3539 2997 Railo Perm 0.0.06 0.35 0.49 Railo Perm 0.72 0.35 0.49 Railo Perm 0.72 0.35 0.58 Railo Perm 0.72 0.35 0.58 Railo Perm 0.73 0.37 Railo Perm 0.74 0.37 Railo Perm 0.75 0.0 3.7 Railo Perm 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 4.60 Railo Perm 1.00 1.00 1.00 Railo	Clearance Time (s)	4.4	5.3	5.3				
e Grp Cap (wph) 160 3539 2997 Raido Pord Raido Pord Raido Pord Raido Pord Raido Marcol Raido M	Vehicle Extension (s)	2.0	4.4	4.4				
Raito Proti	Lane Grp Cap (vph)	160	3539	2997				
Rail o Perm Rail o Perm Rail o John 0.72 0.35 0.58 Rail o John 0.0 3.7 0.0 3.7 gression Factor 1.00 1.00 4.60 0.6 emental Delay, d2 12.1 0.3 0.6 0.0 emental Delay, d2 1.2.1 0.3 0.6 0.0 reaction Summary 7.6 17.4 0.0 0.0 resction Summary A B A A B A A A 2000 Volume to Capacity ratio 0.60 0.0 0.0 A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 17.0 reschion Capacity Utilization 18.3 ICU Level of Service 17.0 reschion Capacity Utilization 15. ICU Level of Service 1.2 reschion Capacity Utilization 15. ICU Level of Service 1.2	v/s Ratio Prot	90.00	0.35	c0.49				
Ratio 0.72 0.35 0.58 Grem Delay, d1 75.2 0.0 3.7 gression Factor 1.00 4.60 1.00 emental Delay, d2 12.1 0.3 0.6 et of Service F A B 0.0 reaction Delay (s) F A B A A reaction Summary A B A A B A reaction Summary A B A B A A A 2000 Control Delay A B A B A A A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 170.0 Sum of lost time (s) 170.0 reaction Capacity Utilization 58.3% ICU Level of Service 170.0 Sum of lost time (s) 170.0 resction Capacity Utilization 15 ICU Level of Service 170.0 Sum of lost time (s) 170.0	v/s Ratio Perm							
form Delay, d1 75.2 0.0 3.7 gression Factor 1.00 4.60 emental Delay, d2 12.1 0.3 0.6 ay (s) 87.3 0.3 17.4 0.0 el of Service F A B A sroach Delay (s) 7.6 17.4 0.0 A voach LoS A B A A A 2000 Control Delay 13.1 HCM 2000 Level of Service A A 2000 Control Delay 13.1 HCM 2000 Level of Service A A 2000 Control Delay 170.0 Sum of lost time (s) 12. resction Capacity Utilization 58.3% ICU Level of Service 12. resction Capacity Utilization 15 ICU Level of Service 12. resction Capacity Italization 15 ICU Level of Service 12.	v/c Ratio	0.72	0.35	0.58				
gression Factor 1.00 1.00 4.60 emental Delay, d2 12.1 0.3 0.6 ay (s) 87.3 0.6 0.0 sorach Delay (s) F A B 0.0 roach Delay (s) F A B 0.0 roach Delay (sorach Delay 13.1 HCM 2000 Level of Service A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12.	Uniform Delay, d1	75.2	0.0	3.7				
emental Delay, d2 12.1 0.3 0.6 y (s) 87.3 0.3 17.4 A B B Consider Control Delay (s) A B Control Delay (s) A Control Delay (s	Progression Factor	1.00	1.00	4.60				
ay (s) 87.3 0.3 17.4 de of Service F A B 0.0 norach Delay (s) A B A A reaction Summary A B A A reaction Summary 13.1 HCM 2000 Level of Service A M 2000 Control Delay 13.1 HCM 2000 Level of Service A M 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 170.0 reaction Capacity Utilization 58.3% ICU Level of Service 170.0 reaction Capacity Utilization 58.3% ICU Level of Service 170.0 reaction Capacity Utilization 15 ICU Level of Service 12.0	Incremental Delay, d2	12.1	0.3	9.0				
el of Service F A B 0.0 roach Delay (s) 7.6 17.4 0.0 roach Delay (s) 7.6 17.4 0.0 A B A B A A M A B A A M A B A A M A B A A M A B A A M A B A A M A B A A M A B A A M A B A A M A B A A M A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A DOO Level of Service A 2000 Control Length (s) 17.0 A 2000 Control Level of Service 17.0 A 2000 Control Level of Serv	Delay (s)	87.3	0.3	17.4				
roach Delay (s) 7.6 17.4 0.0 roach LOS A B A resclion Summary 13.1 HCM 2000 Level of Service M 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12. A 2000 Volume to Capacity ratio 170.0 Sum of lost time (s) 12.	Level of Service	ш.	⋖	В				
reaction Summary A B A A 2000 Control Delay 13.1 HCM 2000 Level of Service A 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 1.2 A section Capacity Utilization 58.3% ICU Level of Service 1.2 A yiss Period (min) 15 ICU Level of Service 1.2	Approach Delay (s)		7.6	17.4		0.0		
reaction Summary 13.1 HCM 2000 Level of Service M 2000 Control Delay 13.1 HCM 2000 Level of Service M 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. stection Capacity Utilization 58.3% ICU Level of Service 12. reaction Capacity Utilization 15 ICU Level of Service Chiral Level of Service	Approach LOS		⋖	В		⋖		
M 2000 Control Delay 13.1 HCM 2000 Level of Service M 2000 Volume to Capacity ratio 0.60 170.0 170.0 12. A saed Cover Length (s) 170.0 Sum of lost time (s) 12. 12. A saed Cover Length (s) 17.0 12. 12. 12. A saed Cover Length (s) 15. 15. 15. 17. A saed Cover Length (s) 15. 17. 17. 17. 17.	Intersection Summary							
M 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12. Lated Cycle Length (s) 170.0 Sum of lost time (s) 12. resection Capacity Utilization 58.3% ICU Level of Service 15. Critical Late Group	HCM 2000 Control Delay			13.1	H	:M 2000 L	evel of Service	В
Lated Cycle Length (s) 170.0 Sum of lost time (s) 12. srection Capacity Utilization 58.3% ICU Level of Service 15. pysis Period (min) 15. ICU Level of Service ICU Level of Service	HCM 2000 Volume to Capac	city ratio		09:0				
rsection Capacity Utilization 58.3% ICU Level of Service yis S Perdo (min) 15 Critical I are Groun	Actuated Cycle Length (s)	,		170.0	Su	m of lost	ime (s)	12.7
llysis Period (min) 15 Critical Lane Group	Intersection Capacity Utilizat	lion		58.3%	⊴	J Level of	Service	В
c. Critical are Group	Analysis Period (min)			15				
	c Critical Lane Group							

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KHA Queues

Synchro 9 Report Page 27

Balboa Station 15: Grand Ave & Mission Bay Dr

Horizon Year with Reduced LU Timing Plan: PM Peak Perlod

0.16 0.2 0.2 0 0 1583 0 178 0 0 279 0 0 1.09 SBL 1043 0.92 64.5 45.5 110.0 682 492 WBR 1228 0.70 16.0 0.4 16.4 263 283 174 135 0 0.77 WBT 1450 0.81 40.3 3.4 43.7 721 972 536 253 63 0 0.94 142 2160 0 294 0 49 0 0 0.67 0.62 0.53 20.7 0.2 20.9 382 467 95 0.75 108.1 0.0 105 #187 Control Delay
Oueue Delay
Total Delay
Oueue Length 50th (f)
Oueue Length 95th (f)
Internal Link Dist (f)
Tun Bay Length (f)
Base Capacity (typh)
Slarvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Storage Cap Reducth
Reduced v/c Ratio Lane Group Lane Group Flow (vph) v/c Ratio

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Balboa Station Horizon Year with Reduced LU 15: Grand Ave & Mission Bay Dr Timing Plan: PM Peak Period

	FBT FBT FBT FBT FBT FBT FBT FBT FBT FBT	WBT 1334 1900 5.7 1934 1900 5.7 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00	WBR FF FF FF FF FF FF FF	SBL 960 960 960 1900 4,9 0.97 1.00 0.95 3433 0.95 3433 1043 1043 1043 1043 1043 1043 1043	SBR 234 234 234 1900 4.0 1.00 0.85 1.00 1.883 1.00 2.92 0.92 0.92 0.92 0.92 1.700 1.700
1987 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	↑↑↑ 1058 1058 1058 1900 4.9 1000 4.9 1000 3539 1.00 3539 0.92 1150 0 11	1334 1334 1933 1900 5.7 0.95 1.00 3539 0.092 1450 0 1450 0 1450 6	1130 1130 1130 1900 1900 1900 1900 1900	960 960 1900 4.9 0.97 1.00 0.95 3433 0.95 3433 1043 1043 1043 1043 1043 1043 1043	7 234 234 4.0 100 0.85 1.00 1.100 1.583 0.92 254 Free Free
ph) (ph) (ph) (ph) (ph) (ph) (ph) (ph) (1058 1900 4.9 1900 4.9 0.95 1.00 3539 1.00 3539 1.00 0.92 1150 0.92 1150 0 0.92 1150 0 0.92 1150 0 0.92	1334 1900 5.7 0.95 1.00 3539 1.00 3539 0.92 1450 0.92 1450 0 86.3	1130 1130 1900 5.7 0.88 0.85 1.00 2.787 1.00 2.787 1.00 8.78 1.22 8.35 8.43	960 960 1900 14.9 0.97 1.00 0.95 3433 0.95 1043 1043 Prot	234 1900 1000 0.85 1.100 0.022 0.022 254 Free Free 7700
(vp) PHF 055 (vph) PNF 058 SS SS	1900 4.9 0.95 1.00 3539 1.00 3539 0.92 1150 0 1150 0 1150	1900 5.7 0.95 1.00 3539 1.00 3539 0.92 1450 0 1450 NA 6 6	1900 5.7 0.88 0.85 1.00 2.787 1.00 0.92 12.28 3.50 8.78 6	1900 4.9 1.00 0.95 3.433 3.433 0.95 0.95 0.92 1043 Prot 4	900 4.0 1.00 0.85 1.00 1.100 1.183 0.92 254 254 Free Free
PHF 0.5 (v(ph) PF 0.5 (v(ph) PF 0.5 (vph) PF	4.9 0.95 1.00 3539 1.00 3539 0.92 1150 0 1150 1150	5.7 0.95 1.00 3.539 1.00 3.539 0.92 1450 0 1450 0 86.3	5.7 0.88 0.85 1.00 2787 2787 0.92 12.28 350 878 Prot 6	4.9 0.97 1.00 0.95 3433 0.95 3433 0.92 1043 Prot 4	4.0 1.00 1.00 1.00 1.583 1.100 1.100 0.92 254 254 Free Free
11((vpl) PHF 0.8 s s s s s s s s s s s s s s s s s s s	0.95 1.00 3539 1.00 3539 1.00 0.92 1150 NA NA 2	0.95 1.00 3539 1.00 3539 0.92 1450 0 1450 0 86.3	0.88 0.85 1.00 2787 1.00 2787 0.92 1228 350 878 Prot 6	0.97 1.00 0.95 3.433 0.95 1.043 Prot 4 4	1.00 0.85 1.00 1.00 1.00 0.92 254 Free Free 7.00 7.00
1,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0	1.00 1.00 3539 1.00 3539 0.92 1150 NA 2 2	1.00 3539 1.00 3539 0.92 1450 0 1450 NA 6	0.85 1.00 2787 1.00 2787 0.92 1228 350 878 Prot 6	1.00 0.95 3433 3433 0.95 3433 0.92 1043 Prot 4	0.00 (
0.0 177 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	1.00 3539 1.00 3539 0.92 1150 0 1150 0 2 2	1.00 3539 1.00 3539 0.92 1450 0 1450 0 NA 6	1.00 2787 1.00 2787 0.92 350 878 Prot 6	9,95 3433 0,95 3433 0,92 1043 Prot 4 4	1100 1100 1100 1002 254 254 Free Free 700
177 0.05 0.07 177 0.07 ((vph) 0.07 ((vph) 0.07 (vph) 0.	3539 1.00 3539 0.92 1150 0 1150 NA 2	3539 1.00 3539 0.92 1450 0 1450 NA 6	2787 1.00 2787 0.92 1228 350 878 Prot 6	3433 0.95 3433 0.92 1043 Prot 4 4	1583 1100 1183 092 254 254 Free 700
00.0 00.0 00.0 00.0	1.00 3539 0.92 1150 0 1150 NA 2	1.00 3539 0.92 1450 0 1450 NA 6	1.00 2787 0.92 1228 350 878 Prot 6	0.95 3433 0.92 1043 0 1043 Prot 4 4	1100 1583 254 254 Free Free 700
17. 0.9 1.4	3539 0.92 1150 0 1150 NA 2 2	3539 0.92 1450 0 1450 NA 6	2787 0.92 1228 350 878 Prot 6	3433 0.92 1043 0 11043 Prot 4 4	1583 0.92 254 254 700 700
0.00 0.00	0.92 1150 0 1150 NA 2 2	0.92 1450 0 1450 NA 6	0.92 1228 350 878 Prot 6	0.92 1043 0 1043 Prot 4 4	0.92 25-4 0 0 25-4 Free 70-0 70-0
	1150 0 1150 NA 2 2 2	1450 0 1450 NA 6	1228 350 878 Prot 6	1043 0 1043 Prot 4 4 56.4	254 0 254 Free Free 700
	0 1150 NA 2 2 103.8	0 1450 NA 6 6	350 878 Prot 6	0 1043 Prot 4 4 56.4	254 Free Free 70.0
	NA 2 2 103.8	1450 NA 6 86.3	878 Prot 6 6 86.3	1043 Prot 4 56.4	254 Free Free 70.0
	NA 2 103.8	NA 6 86.3	Prot 6 86.3	Prot 4 56.4	Free Free 70.0
	103.8	6 86.3	6 86.3	56.4	Free 70.0
	103.8	86.3	86.3	56.4	Free 70.0 70.0
	103.8	86.3	86.3	56.4	70.0
_	000			V 7 3	70.0
s)	103.8	86.3	86.3	20.4	200
J	0.61	0.51	0.51	0.33	1.00
Clearance Time (s) 4.4	4.9	2.7	2.7	4.9	
/ehicle Extension (s) 2.0	3.6	4.6	4.6	3.6	
-ane Grp Cap (vph) 128	2160	17%	1414	1138	1583
	0.32	c0.41	0.32	c0.30	
//s Ratio Perm					0.16
v/c Ratio 0.74	0.53	0.81	0.62	0.92	0.16
Jniform Delay, d1 77.3	19.1	34.9	30.1	54.5	0:0
	1.00	1.01	1.12	0.97	1.00
ncremental Delay, d2 17.4	6.0	3.4	1.7	10.8	0.2
Delay (s) 94.7	20.0	38.7	35.3	63.6	0.2
evel of Service F	В	Ω	٥	ш	A
Approach Delay (s)	25.7	37.2		51.2	
Approach LOS	O	Q		Ω	
ntersection Summary					
HCM 2000 Control Delay		37.9	H	M 2000 L	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio		0.84			
Actuated Cycle Length (s)		170.0	Sur	Sum of lost time (s)	ne (s) 15.0
ntersection Capacity Utilization		81.6%	no!	ICU Level of Service	Service
Analysis Period (min)		15			
Critical Lane Group					

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Balboa Station 16: Mission Bay Dr & Bluffside Av

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Iffside Av Timi

*	SBR	662	0.84	25.7	0.0	25.7	202	#422		70	788	0	0	0	0.84	
→	SBT	1404	0.97	44.5	0.0	44.5	377	#232	743		1440	0	0	0	0.97	
+	NBT	1170	0.44	4.0	0.0	4.0	87	288	749		2664	0	0	0	0.44	
•	NBL	361	0.71	31.4	0.0	31.4	216	254		202	208	0	0	0	0.71	
•	EBL	464	0.92	54.7	0.0	54.7	110	#204	261	270	535	0	0	0	0.92	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

KHA Queues

Balboa Station
Horizon Year with Reduced LU
16: Mission Bay Dr & Bluffside Av
Timing Plan: PM Peak Period

Movement EB EBR NB NBT SBR SBR NB NBT SBR SBB		^	<i>></i>	•	←	-	`	
No. 1976 1292 609 300 155 332 1076 1292 669 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 100 1900 1900 100 100 1900 1900 1900	Movement	EBF	EBR	NBL	NBT	SBT	SBR	
300 155 332 1076 1292 609 300 155 332 1076 1292 609 44	ane Configurations	N.		F	ŧ	‡	W.	
1900 1900	raffic Volume (vph)	300	155	332	1076	1292	609	
44	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 1.00 0.95 0.95 1.00 0.95 0.95 1.00 0.95 0.95 1.00 0.95 0.95 1.00 0.95 0.97 0.95 1.00 1.00 0.95 0.97 0.95 1.00 1.00 0.97 0.95 1.00 1.00 1.00 1.00 0.97 0.95 0.92	otal Lost time (s)	4.4		4.4	5.0	9.6	5.6	
0.095 1.00 0.085 0.097 0.095 1.00 1.00 0.085 3.330 1770 3559 3559 1583 HF 0.092 0.092 0.092 0.092 0.092 ph) 82 0 0 0 0 0 1404 ph) 412 0 0 0 0 1404 0.144 Prot Prot NA NA Perm 4 4 6.10 3.46 3.46 5) 11.6 24.4 64.0 34.6 34.6 5) 11.6 24.4 64.0 34.6 34.6 5) 2.0 4.0 4.8 34.6 5) 2.0 5.0 5.0 5.0 0.01 0.091 0.71 0.44 0.97 0.80 dz 21.14 3.1 0.44 0.97 0.80 dz 21.14 3.1 0.44 0.97 0.80 dz 21.14 3.1 0.4 18.5 10.0 dz 21.14 3.1 0.1 0.0 dz 21.14 3.1 0.1 0.0 dz 21.14 3.1 0.1 0.0 dz 21.14 3.1 0.0 dz 21.14	ane Util. Factor	0.97		1.00	0.95	0.95	1.00	
170 170	, -	0.95		1.00	1.00	1.00	0.85	
3320 1770 3539 3539 1883	It Protected	0.97		0.95	1.00	1.00	1.00	
170 170	satd. Flow (prot)	3320		1770	3539	3539	1583	
Harmonia Harmonia	It Permitted	0.97		0.95	1.00	1.00	1.00	
HF 092 092 092 092 092 092 092 092 092 092	atd. Flow (perm)	3320		1770	3539	3539	1583	
326 168 361 1170 1404 662 412	eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
ph) 82 0 0 0 144 ph) 412 0 361 1170 1404 518 Prot Prof NA Perm 4 5 2 6 6 6 7 116 244 640 346 346 8) 1116 244 640 346 346 8) 1116 244 640 346 346 8) 1116 244 640 346 346 11 44 029 075 041 041 11 453 508 264 1440 644 11 453 508 264 140 644 11 00 091 071 044 097 080 12 214 3.1 044 097 080 12 214 3.1 04 185 103 12 276 3.9 43.2 32.5 12 276 3.9 43.2 32.5 12 276 3.9 43.2 32.5 12 277 3.9 5.8 50 10 Capacity ratio 0.87 10 Capacity ratio 0.87 10 Capacity ratio 0.87 10 Capacity ratio 0.87 10 Capacity ratio 0.87 11 0 0.97 11 0 0.97 12 0 0.97 13 0 0.97 14 0 0.97 15 0 0.080 17 0.090 18 0 0.91 18 0 0.90 19 0 0.91 19 0 0.97 10 0.980 10 0.990 10 0.9	dj. Flow (vph)	326	168	361	1170	1404	662	
pb) 412 0 361 1170 1404 518 Prot Prot NA NA Perm 4 5 2 6 6 (s) 116 244 640 346 346 s) 1116 244 640 346 346 s) 0114 0 29 075 041 041 444 50 56 56 56 s) 20 0 20 0 35 040 do 2 21 4 50 0 33 040 do 2 21 4 3.1 04 185 10.3 do 2 21 4 3.1 04 185 10.3 do 2 21 4 3.1 04 185 10.3 Dolay ny ny ny no capacity ratio 0.87 Dolay no capacity ratio 0.87 No capacity	TOR Reduction (vph)	82	0	0	0	0	144	
Prot Prot NA NA Perm	ane Group Flow (vph)	412	0	361	1170	1404	518	
(s) 11.6 24.4 64.0 34.6 6 5) 11.6 24.4 64.0 34.6 34.6 5) 11.6 24.4 64.0 34.6 34.6 6.0.14 0.29 0.75 0.41 0.41 4.4 4.4 5.0 5.6 5.6 5) 2.0 4.0 4.8 5.6 5) 2.0 4.0 4.8 6.4 6.0.12 0.20 0.33 0.40 6.0.12 0.20 0.33 0.40 6.0.12 0.20 0.33 0.40 6.0.12 0.20 0.31 0.00 6.0.12 0.20 0.31 0.00 6.0.12 0.07 0.41 0.97 0.80 6.0.10 0.91 0.71 0.44 0.97 0.80 6.0.10 0.91 0.71 0.44 0.97 0.80 6.0.12 0.71 0.44 0.97 0.80 6.0.12 0.71 0.44 0.97 0.80 6.0.12 0.72 0.39 2.22 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.91 1.00 6.0.13 0.40 0.81 0.80 6.0.13 0.40 0.81 0.80 6.0.14 0.81 0.80 6.0.15 0.80 6.0.15 0.80	urn Type	Prot		Prot	N	NA	Perm	
(s) 11.6 24.4 64.0 34.6 34.6 (s) 11.6 24.4 64.0 34.6 34.6 (s) 11.6 24.4 64.0 34.6 34.6 34.6 (s) 11.6 24.4 64.0 34.6 34.6 34.6 (s) 11.6 24.4 64.0 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6	Protected Phases	4		2	2	9		
(\$) 11.6 24.4 64.0 34.6 34.6 \$) 11.6 24.4 64.0 34.6 34.6 11.1 24.4 64.0 34.6 34.6 10.14 0.29 0.75 0.41 0.41 4.4 4.4 5.0 5.6 5.6 5.0 2.0 4.0 4.8 4.8 1.4 4.3 5.0 2.0 4.0 64.4 1.0 0.0 0.0 0.3 0.0 0.3 2.1 3.2 27.1 3.9 24.8 2.2 2.1 3.9 24.8 2.2 2.1 3.9 24.8 2.2 2.1 3.9 2.4 0.0 0.0 d. 2 21.4 3.1 0.4 18.5 10.3 E C A D C 57.6 3.9 4.8 2.5 E C A D C 1.00 0.90 0.91 1.00 1.00 d. 2 21.4 3.1 0.4 18.5 10.3 E C A D C 57.6 3.9 4.8 2.2 Delay 1.0 0.90 0.91 1.00 1.00 1.00 d. 3.1 0.4 18.5 10.3 E A D C A D C 57.6 3.9 8.0 1.0 Capacity ratio 0.87 1.0 0.87 1.0 0.87 1.0 0.87 1.0 0.97 1.0 0.97 1.0 0.97 1.0 0.97 1.0 0.90 1.0 0.90 1.0 0.91	Permitted Phases						9	
S	ctuated Green, G (s)	11.6		24.4	64.0	34.6	34.6	
0.14 0.29 0.75 0.41 0.41 4,4 4.5 5.0 5.6 5.6 5) 2.0 4.0 4.8 5.6 5.6 1 453 5.08 2664 1440 644 0.0.12 0.0.20 0.33 0.40 0.91 0.71 0.44 0.97 0.80 0.92 27.1 0.44 0.97 0.80 0.92 27.1 0.44 0.97 0.80 0.90 0.91 1.00 1.00 0.90 0.90 0.91 1.00 0.90 0.90 0.91 1.00 0.90 0.90 0.91 1.00 0.90 0.90 0.91 1.00 0.90 0.90 0.91 1.00 0.90 0.90 0.90 0.90 0.90 0.90 0.90	:ffective Green, g (s)	11.6		24.4	64.0	34.6	34.6	
1,4	ctuated g/C Ratio	0.14		0.29	0.75	0.41	0.41	
S	Clearance Time (s)	4.4		4.4	2.0	9.6	2.6	
453 508 2664 1440 644 (0.12	'ehicle Extension (s)	2.0		2.0	4.0	4.8	4.8	
60.12 60.20 6.33 60.40 90.91 67.1 64.4 69.7 688 36.2 27.1 3.9 24.8 22.2 1.00 6.90 6.91 1.00 1.00 d2 21.4 3.1 6.4 18.5 10.3 57.6 27.6 3.9 4.32 32.5 E C A D C 57.6 9.5 39.8 E A D Interpretation 6.87 10 Capacity ratio 6.87 11 Capacity ratio 6.87 12 C Level of Service 13 C Level of Service 14 A D 15 C Level of Service 15 C Level of Service 16 C C C C C C C C C C C C C C C C C C C	ane Grp Cap (vph)	453		208	2664	1440	644	
0.91 0.71 0.44 0.97 0.83 0.83 0.84 0.82 0.87 0.80 0.80 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00	/s Ratio Prot	c0.12		c0.20	0.33	c0.40		
0.91 0.71 0.44 0.97 0.80 36.2 27.1 3.9 248 22.2 1.00 0.90 0.91 1.00 1.00 42 21.4 3.1 0.4 18.5 10.3 57.6 27.6 3.9 43.2 32.5 57.6 3.9 43.2 32.5 57.6 4 D C 57.6 9.5 39.8 E A D C Ocapacity ratio 0.87 9.4 Utilization 79.5% ICU Level of Service	/s Ratio Perm						0.33	
36.2 27.1 3.9 24.8 22.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	/c Ratio	0.91		0.71	0.44	0.97	0.80	
d2 21.4 3.1 0.0 1.00 d2 21.4 3.1 0.4 18.5 10.3 57.6 27.6 3.9 43.2 32.5 E C A D C 57.6 9.5 39.8 E A D C Pelay Thy Thy Thy Thy Thy Thy Thy T	Jniform Delay, d1	36.2		27.1	3.9	24.8	22.2	
d2 21.4 3.1 0.4 18.5 10.3 57.6 27.6 3.9 42 32.5 E	rogression Factor	1.00		0.00	0.91	1.00	1.00	
57.6 27.6 3.9 43.2 32.5 E	ncremental Delay, d2	21.4		3.1	0.4	18.5	10.3	
E C A D C 57.6 9.5 39.8 INY INY INY A D C A D C A D C A D C A D A D A D A D A D A D A D A D A D A D	elay (s)	97.6		27.6	3.9	43.2	32.5	
57.6 9.5 39.8 E A D May Delay 10 (Capacity ratio 0.87 10 (U Level of Service 0.87) 11 (U Level of Service 0.87) 12 (U Level of Service 0.87) 13 (U Level of Service 0.87)	evel of Service	ш		ပ	A	۵	U	
A D 189 30.6 HCM 2000 Level of Service (Capacity ratio 0.87 Sum of lost time (s) Utilization 79.5% ICU Level of Service 15	pproach Delay (s)	97.6			9.5	39.8		
1989 30.6 HCM 2000 Level of Service 1989 1985 10.0 Level of Service 1985 198	pproach LOS	ш			⋖	Ω		
stay 30.6 HCM 2000 Level of Service -Capacity ratio 0.87 Sum of lost time (s) h (s) 85.0 Sum of lost time (s) Utilization 79.5% ICU Level of Service 15 15	ntersection Summary							
Capacity ratio 0.87 h (s) 85.0 Sum of lost time (s) Utilization 79.5% ICU Level of Service 15	ICM 2000 Control Delay			30.6	Ħ	3M 2000	evel of Service	C
h (s) (s) (s) 850 Sum of lost time (s) (s) Utilization 79.5% ICU Level of Service 15	ICM 2000 Volume to Capac	ity ratio		0.87				
Utilization 79.5% ICU Level of Service 15 1CU Level of Service	ctuated Cycle Length (s)	and the		85.0	JS.	m of lost	time (s)	14.4
15	ntersection Capacity Utilizati	loi		79.5%	2	U Level o	f Service	Q
inglast and from the first and first	nalysis Period (min)			7				
	Critical Lane Groun			2				

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Balboa Station 17: Mission Bay Dr & Damon Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

on 3ay **Dr & Damon Ave** Timing

→	SBT	1496	0.53	1.0	0.5	1.5	9	m46	749		2842	793	0	0	0.73	
٠	SBL	107	0.33	47.5	0.0	47.5	06	m93		185	322	0	0	0	0.33	
•	NBR	242	0.24	6.7	6.0	10.6	62	125		160	686	466	0	0	0.49	
-	NBT	1323	0.63	24.6	32.8	57.4	484	625	376		2110	862	0	0	1.06	
1	WBR	207	9.0	40.6	0.0	40.6	102	188		75	436	0	0	0	0.47	
/	WBL	202	0.81	94.8	0.0	94.8	222	304	1218		391	0	0	0	0.52	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

KHA Synchro 9 Report
Oueues Page 32

Balboa Station
Horizon Year with Reduced LU
17: Mission Bay Dr & Damon Ave
Timing Plan: PM Peak Period

		/	✓	•	•	٠	→	
No. No.	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
186 190 1217 223 98 1376 186 190 1217 223 98 1376 1900 1000 100	Lane Configurations	r	¥	*	*-	r	*	
1900 12/1 23 38 13/10 190	Traffic Volume (vph)	186	190	1217	223	8 8	1376	
4,4 4,4 5,0 5,0 4,4 5,2 1,00 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00	r uture Volume (Vpm) Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 100 0.95 1.00 1.00 0.95 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 107 1496 1770 1981 107 1496 1781 1781 107 1496 1782 128 238 1014 1014 310 1366 1783 138 1014 1014 310 1366 1784 221 2110 944 322 2843 1790 100 100 0.76 0.12 170 170 0.73 0.75 0.76 170 170 0.70 0.71 0.75 170 170 1.00 0.76 0.75 170 170 1.00 0.76 0.76 170 170 1.00 0.76 0.76 170 170 1.00 0.76 0.76 170 170 1.00 0.76 0.76 170 170 0.76 0.76	Total Lost time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
100 0.85 1.00 0.85 1.00 100 0.85 1.00 1.00 0.95 1.00 1770 1.883 3.839 1.883 1.770 3.539 1770 1.883 3.839 1.883 1.770 3.539 1770 1.883 3.839 1.883 1.770 3.539 1770 1.883 3.839 1.883 1.770 3.539 1770 1.883 3.839 1.883 1.770 3.539 1770 1.883 3.839 1.893 1.770 3.539 1770 1.883 3.839 1.894 1.90 1.90 1770 1.883 1.894 1.904 1.904 1.906 1770 1.894 1.904 1.904 1.906 1770 1.904 1.904 1.906 1.906 1770 1.904 1.904 1.906 1.906 1770 1.904 1.906 1.906 1.906 1770 1.904 1.906 1.906 1.906 1770 1.907 1.906 1.906 1.906 1770 1.907 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1.906 1.906 1770 1.906 1.906 1770 1.906	Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1323 242 177 1496 1770 1323 147 107 1496 1770 1323 197 107 1496 1770 1323 197 107 1496 1780 1780 1780 1786 1780 1780 1780 1786 1780 1780 1780 1786 1780 1780 1780 1786 1780 1780 1780 1786 1780 1780 1780 1786 1780 1780 1780 1786 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1780 1881 1780 1780 1881 1780 1780 1882 1780 1780 1883 1780 1780 1884 1780 1780 1885 1	Frt	1.00	0.85	1.00	0.85	1.00	1.00	
1770 1583 5339 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 202 207 1323 242 107 1496 0	Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	
1770 1583 3539 1583 1770 3539 1583 1770 3539 1583 1770 3539 1583 1770 3539 1583 1770 3539 1583 1770 3539 1583 1770 3539 1583 1770 3539 1770 3539 1770 3539 1780	Satd. Flow (prot)	1770	1583	3539	1583	1770	3539	
1770 1583 3539 1583 1770 3539 1770 1583 3539 1583 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1732 242 107 1496 17	FIt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
F 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,95 0,9	Satd. Flow (perm)	1770	1583	3539	1583	1770	3539	
1202 207 1323 242 107 1496 10	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 0 95 0 45 0 0 hh) 202 112 1323 197 107 1496 Prot Perm NA Perm Prot NA 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj. Flow (vph)	202	207	1323	242	107	1496	
hb) 202 112 1323 197 107 1496 Prot Perm NA Perm Prot NA A 4 2 1 1 6 4 4 2 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	RTOR Reduction (vph)	0	95	0	45	0	0	
Prot Perm NA Perm Prot NA 4 4 2 1 6 5) 23.8 23.8 101.4 101.4 31.0 136.6 0 23.8 23.8 101.4 101.4 31.0 136.6 1 23.8 23.8 101.4 101.4 31.0 136.6 0 20 20 3.8 3.0 5.2 2.0 1 0.1 0.0 0.0 0.0 0.0 3.5 0.1 2.0 2.0 3.8 3.8 2.0 3.5 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.2 0.5 0.6 0.1 0.2 0.0 0.0 0.1 0.0 1.0 1.0 1.0 0.0 0.0 0.1 0.1 1.0 0.0 0.	-ane Group Flow (vph)	202	112	1323	197	107	1496	
4 2 1 6 5) 238 238 1014 1014 31.0 1366 6) 238 238 1014 1014 31.0 1366 1014 014 060 0.18 080 1014 014 060 0.18 080 20 20 38 38 20 3.5 20 20 38 38 20 3.5 0.11 0.07 0.12 0.4 5.2 0.11 0.07 0.12 0.4 5.7 1.00 0.07 0.12 0.4 0.2 1.00 1.00 1.00 0.1 0.1 0.1 1.10 1.00 1.00 0.1 0.1 0.1 0.1 2 1.1.7 0.7 1.4 0.5 0.1 0.2 2 1.2.7 1.4 0.5 0.1 0.2 8 2 2.2	Turn Type	Prot	Perm	M	Perm	Prot	NA	
Sign Sign	Protected Phases	4		2		-	9	
s) 238 238 1014 1014 31.0 136.6 1 238 238 1014 1014 31.0 136.6 0.14 0.14 0.60 0.60 0.18 0.36 0.80 4.4 4.4 5.0 5.0 4.4 5.2 3.5 2.0 2.0 3.8 3.8 2.0 3.5 2.4 4.4 5.0 5.0 4.4 5.2 2.0 2.0 3.8 3.2 2.843 2.0 3.5 2.0 2.0 2.1 0.4 0.2 2.843 2.0 3.5 0.0 0.0 0.1 0.0 0.0 0.0 0.4 2.2 2.843 2.0 0.4 2.2 3.4 2.2 3.4 2.2 3.4 3.2 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 4 4 4 4 4 4	Permitted Phases		4		2			
238 238 1014 1014 310 1366 414 414 0.60 0.60 0.18 0.80 44 41 0.60 0.60 0.18 0.80 20 20 3.8 3.8 2.0 3.5 21 21 21 0.44 322 2843 247 221 2110 944 322 2843 0.07 0.07 0.12 0.06 0.042 0.08 0.50 0.63 0.21 0.03 0.53 1.00 1.00 1.00 1.00 0.76 0.12 1.01 1.00 1.00 0.76 0.12 1.77 0.77 1.4 0.5 0.1 0.2 88 68 3.25 16.3 46.2 0.9 F	Actuated Green, G (s)	23.8	23.8	101.4	101.4	31.0	136.6	
0.14 0.14 0.60 0.60 0.18 0.80 1 4.4 4.4 5.0 5.0 4.4 5.2 2 0. 3.8 3.8 2.0 3.5 2 1 2110 944 322 2843 2 0.11 0.07 0.07 0.12 0.82 0.50 0.63 0.21 0.33 0.53 1.10 1.00 1.00 1.00 0.10 0.12 2 1.77 0.7 1.4 0.5 0.1 0.2 8 8.7 6.8 3 2.35 16.3 46.2 0.9 F E C B D A	Effective Green, g (s)	23.8	23.8	101.4	101.4	31.0	136.6	
44 44 50 50 44 52 20 20 38 38 20 3.5 247 221 210 94 3.5 2843 0.11 20 2.3 2.8 3.2 2843 0.11 0.07 0.1 0.6 0.42 0.82 0.50 0.63 0.21 0.33 0.53 710 67.6 2.21 15.8 60.5 5.7 1.00 1.00 1.00 0.76 0.12 2 1.7 0.7 1.4 0.5 0.1 0.2 8 8.3 2.8 1.6 0.9 9.9 9.9 8 7 8.3 3.4 4 4 4 4 9 8 6.2 9.6 9.9 9.9 9.9 9.9 10 1.00 1.00 0.76 0.12 0.9 9.9 9.9 9.9 9.9 <t< td=""><td>Actuated g/C Ratio</td><td>0.14</td><td>0.14</td><td>09.0</td><td>09:0</td><td>0.18</td><td>08:0</td><td></td></t<>	Actuated g/C Ratio	0.14	0.14	09.0	09:0	0.18	08:0	
2.0	Clearance Time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
247 221 2110 944 322 2843 (0.11	Vehicle Extension (s)	2.0	2.0	3.8	3.8	2.0	3.5	
0.11	-ane Grp Cap (vph)	247	221	2110	944	322	2843	
0.82 0.50 0.63 0.21 0.33 0.53 710 67.6 22.1 15.8 60.5 5.7 710 1.00 1.00 1.00 0.76 0.12 2 17.7 0.7 1.4 0.5 0.1 0.2 8 8.7 68.3 2.35 16.3 46.2 0.9 F E C B D A A 78.4 22.4 3.9 No Capacity ratio 0.64 1700 Sum of lost time (s) 1100 0.69 1100 0.69	//s Ratio Prot	c0.11		c0.37		90.0	c0.42	
70 82 0.50 0.63 0.21 0.33 0.53 71.0 67.6 22.1 15.8 60.5 5.7 71.0 1.00 1.00 1.00 0.76 0.12 2 17.7 0.7 1.4 0.5 0.1 0.2 8 7 68.3 23.5 16.3 46.2 0.9 F E C B D A 78.4 22.4 3.9 y y y y y 20.5 HCM 2000 Level of Service 0.69 1.0 Ultization 60.9% ICU Level of Service 0.09 1.0 Ultifization 60.9% ICU Level of Service 0.09 1.0 Ultilization 60.9% ICU Level of Service 0.09	//s Ratio Perm		0.07		0.12			
71.0 67.6 22.1 15.8 60.5 5.7 1.00 100 1.00 0.76 0.12 2 17.7 0.7 1.4 0.5 0.1 0.2 1.88.7 68.3 23.5 16.3 46.2 0.9 F E C B D A 78.4 22.4 3.9 F C C B C A 78.4 22.4 3.9 V Y Y Y Y Y Y Y Y Y Y Y Y	//c Ratio	0.82	0.50	0.63	0.21	0.33	0.53	
100 100 100 0.76 0.12 2 17.7 0.7 1.4 0.5 0.1 0.2 88.7 68.3 2.35 16.3 46.2 0.9 F F C B D A 78.4 22.4 3.9 F C A MC 2000 Level of Service Capacity ratio 0.64 In (5) In (1000 Sum of lost time (5) In (1000 Sum of lost tim	Jniform Delay, d1	71.0	9.79	22.1	15.8	60.5	5.7	
2 11.7 0.7 1.4 0.5 0.1 0.2 8.8 7 68.3 2.3.5 16.3 46.2 0.9 F	Progression Factor	1.00	1.00	1.00	1.00	97.0	0.12	
88.7 68.3 23.5 16.3 46.2 0.9 F E C B D A 78.4 22.4 3.9 F C C B C A 78.4 22.4 3.9 F C C B C A 78.5 C C B C C A 78.5 C C C C C C C C C C C C C C C C C C C	ncremental Delay, d2	17.7	0.7	1.4	0.5	0.1	0.2	
F E C B D A 78.4 22.4 3.9 F C B D A 3.9 Y Y Copacity ratio 0.64 In (s) 170.0 Sum of lost time (s)	Delay (s)	88.7	68.3	23.5	16.3	46.2	6:0	
Y A Y A Y A Pelay 20.5 HCM 2000 Level of Service Capacity ratio 0.64 HCM 2000 Level of Service In (s) 170.0 Sum of lost time (s) Utilization 60.9% ICU Level of Service In (s) ICU Level of Service	evel of Service	ш	ш	ပ	В	۵	۷	
y y 20.5 HCM 2000 Level of Service copacity ratio 0.64 Num of lost time (s) rUtilization 60.9% ICU Level of Service 15	Approach Delay (s)	78.4		22.4			3.9	
Col. 2000 Control Delay 20.5 HCM 2000 Level of Service Col. 2000 Control Delay 0.64 HCM 2000 Uservice Col. 2000 Control Delay 0.64 Inc. Listated Cycle Length (c) 170.0 Sum of lost time (s) Lersection Capacity Utilization 60.9% ICU Level of Service Analysis Pendic (min) 15 Citical Law Countrol	Approach LOS	ш		O			٨	
CM 2000 Control Delay 20.5 HCM 2000 Level of Service CM 2000 Volume to Capacity ratio 0.64 Num of lost time (s) ctrated Cycle Length (s) 170.0 Sum of lost time (s) resection Capacity Utilization 60.9% ICU Level of Service respection (min) 15 Critical Length (s)	ntersection Summary							
CM 2000 Volume to Capacity ratio 0.64 ctuated Cycle Length (s) 170.0 Sum of lost time (s) resection Capacity Utilization 60.9% ICU Level of Service haysis Pendod (min) 15 Critical Jane Groun	HCM 2000 Control Delay			20.5	H	M 2000	evel of Service	၁
cruated Cycle Length (s) 170.0 Sum of lost time (s) resection Capacity Utilization 6.0.9% ICU Level of Service analysis Pendo (finit) 15	HCM 2000 Volume to Capacity	vratio		0.64				
tersection Capacity Utilization 60.9% ICU Level of Service 14 analysis Period (min) 15 Critical Lane Groun	Actuated Cycle Length (s)			170.0	S	m of lost	time (s)	13.8
nalysis Period (min) 15 Critical Lane Groun	ntersection Capacity Utilizatio	5		%6.09	2	U Level o	f Service	8
	Analysis Period (min)			15				
	c Critical Lane Group							

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Balboa Station 18: Mission Bay Dr & Magnolia Ave/Driveway

Horizon Year with Reduced LU Timing Plan: PM Peak Period

→	SBT	1278	0.57	17.8	4.8	22.6	399	461	461		2232	871	0	0	0.94						
٠	SBL	34	0.42	94.1	0.0	94.1	38	78		20	167	0	0	0	0.20						æ
-	NBT	1450	09:0	10.2	0.2	10.4	262	222	804		2410	249	0	0	19.0		e.		be longer.		eam signa
•	NBL	96	0.78	113.9	0.0	113.9	66	m#175		9	136	0	0	0	0.71		ally infinit		eue may		by upstr
ţ	WBT	17	90.0	37.1	0.0	37.1	œ	32	271		294	0	0	0	90:0		theoretic	cycles.	pacity, qu	cycles.	s meterec
†	EBT	354	1.07	123.7	0.0	123.7	~397	#611	303		331	0	0	0	1.07		, queue is	after two	ceeds cal	after two	e queue i
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	 Volume exceeds capacity, queue is theoretically infinite. 	Queue shown is maximum after two cycles.	# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.	m Volume for 95th percentile queue is metered by upstream signal

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Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 18: Mission Bay Dr & Magnolia Ave/Driveway

190	## 198		₹	†	/► 8	\	↓	√	√ 9	← §	4	<u></u> ▶ 8	→ 5	~ [
1900 1900	1900 1900		EBL	FRI	EBK	WBL	WBI	WBK	NBL ME	NR 4	NBK	SBL	SBI	SBR
1900 1900	1900 1900		120	2 ∝	108	4	} ~	7	g	1331	~	3.1	4 L	230
1900 1900	1900 1900		120	- ∞	198	9	7 7		88	1331	n	31	946	230
49 49 44 5.0 44 5.0 100 100 100 095 100 095 0.92 0.98 0.96 1.00 0.95 1.00 0.95 0.98 0.98 0.95 1.00 0.95 0.	49 49 44 50 44 50 100 100 100 095 100 095 0.92 0.98 0.96 1.00 0.95 1.00 0.95 0.98 0.98 0.95 1.00	-	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1100 100 100 095 1100 095 0092 0992 0992 0993 0988 0996 1000 1000 0995 1100 0995 1100 0995 1100 0995 1100 0998 0998 0998 0998 1000 0995 1100 0995	100 100 100 155 100 095 100 095 092 092 093 098 098 100 100 097 098 100 100 097 100 098 100 009 100 000 000 000 000 000 000 000			4.9			4.9		4.4	2.0		4.4	2.0	
0.92 0.94 1.00 1.00 0.97 0.98 0.95 1.00 0.95 1.00 1679 0.83 0.95 1.00 0.95 1.00 0.87 0.83 0.95 1.00 0.95 1.00 1.491 1.41 1.770 35.38 1.770 34.35 1.092 0.92 <td>0.92 0.94 1.00 1.00 1.00 0.97 0.98 0.98 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.</td> <td></td> <td></td> <td>1.00</td> <td></td> <td></td> <td>1.00</td> <td></td> <td>1.00</td> <td>0.95</td> <td></td> <td>1.00</td> <td>0.95</td> <td></td>	0.92 0.94 1.00 1.00 1.00 0.97 0.98 0.98 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.			1.00			1.00		1.00	0.95		1.00	0.95	
0.98 0.98 1.00 0.95 1.00 1679 1709 1770 3538 1770 3435 0.87 0.92 0.92 0.92 0.92 1.00 1491 1441 1770 3538 1770 3435 1 0.92 0.92	0.98 0.98 1.00 0.95 1.00 1679 1.00 1.770 35.38 1.770 3435 0.87 0.92 0.			0.92			0.94		1.00	1.00		1.00	0.97	
1679 1709 1770 35.38 1770 34.35 1491 1700 1770 35.38 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.35 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 34.05 1770 17	1679 1709 1770 3538 1770 3435 1491 1770 3538 1770 3435 1770 3435 1491 1770 3538 1770 3435 1770			86.0			86.0		0.95	1.00		0.95	1.00	
087 0887 088 0.95 1.00 0.95 1.00 1491 1471 1770 35.38 1770 3435 9 215 7 2 8 96 1447 3 34 1028 1 33 0 6 0 0 0 0 1 126 0 0 0 12 126 0 0 0 0 1 126 0 0 0 0 12 126 0 0 0 0 12 126 0 0 0 0 0 12 126 0 0 0 0 0 0 12 126 0 0 0 12 126 0 0 0 12 126 0 0 0 12 0 0 0 12 126 0 0 0 12 12 2 0 0 0 12 12 0 0 0	087 088 0.95 1.00 0.95 1.00 1491 1471 1770 35.38 1770 3435 9 215 7 2 8 96 1447 3 34 1028 1 33 0 6 6 0 0 0 0 1 1 33 0 6 6 0 0 0 0 1 12 1 33 0 6 6 0 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0			1679			1709		1770	3538		1770	3435	
1491	1491			0.87			0.83		0.95	1.00		0.95	1.00	
10,000	10.92 0.92			1491			1441		1770	3538		1770	3435	
9 215 7 2 8 96 1447 3 34 1028 33 0 0 6 6 0 0 0 0 0 12 321 0 0 111 0 96 1450 0 34 1266 1 NA Perm NA Prot NA Prot NA Prot NA Stantant NA Prot NA	9 215 7 2 8 96 1447 3 34 1028 33 0 0 6 6 0 0 0 0 172 33 0 0 111 0 96 1450 0 34 1266 340 4 4 1 6 5 2 340 340 119 1149 68 1098 340 340 119 1149 68 1098 020 020 007 0.68 0.04 0.65 4.9 4.9 4.4 5.0 4.4 5.0 2.0 2.0 0.07 0.68 0.04 0.65 4.9 2.0 3.7 2.0 3.7 2.0 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.1 8 128 128 128 128 2.8 123 2391 70 2218 2.8 0.04 0.05 0.01 2.0 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 3.7 2.0 3.7 2.0 3.7 3.7 2.0		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
33 0 0 6 0	33 0 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		130	6	215	7	7	∞	96	1447	3	34	1028	250
321 0 0 11 0 96 1450 0 34 1 NA	321 0 0 11 0 96 1450 0 34 1		0	33	0	0	9	0	0	0	0	0	12	0
NA Perm NA Prof NA Prof NA 8	NA Perm NA Prof NA Prof NA 8		0	321	0	0	11	0	96	1450	0	34	1266	0
8 4 4 1 6 5 340 340 340 340 119 1149 1149 688 118 118 119 119 1149 680 119 119 1149 680 119 119 1149 680 119 119 119 119 119 110 110 110 110 11	8 4 4 1 6 5 340 340 11.9 114.9 68 11 340 0.20 0.20 0.07 0.68 0.04 0.02 2.0 2.0 2.0 3.0 4.4 2.9 28 288 1.23 2.391 7.0 2 2.0 2.0 0.01 0.05 0.04 0.0 1.08 0.04 0.78 0.61 0.02 0.0 1.00 0.01 0.08 0.60 1.00 1.00 1.42.4 5.8 1.04.4 1.19 11.9 11.9 1.42.4 5.8 1.04.4 1.19 1.19 1.19 1.19 1.19 1.19 1.19 1	Ъ	erm	M		Perm	NA		Prot	NA		Prot	NA	
340 4 340 119 1149 68 1340 20 20 20 0.20 0.20 0.07 0.68 0.04 49 0.20 0.20 0.07 0.68 0.04 49 0.20 0.20 0.07 0.68 0.04 49 0.20 0.02 0.07 0.68 0.004 2.0 2.0 2.0 3.7 2.0 2.0 2.0 2.0 3.7 2.0 2.0 2.0 2.0 3.7 2.0 2.0 2.0 3.7 2.0 0.01 0.02 0.04 0.08 0.04 0.08 0.04 0.08 0.04 0.08 0.04 0.09 0.100	340 4 340 1119 1149 68 1340 20 20 20 0.20 0.07 0.68 0.004 49 0.20 0.07 0.68 0.004 20 0.20 0.07 0.68 0.004 20 20 20 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.			8			4		-	9		22	2	
340 340 119 1149 68 1340 2340 2340 2340 2340 2340 234 244 5.0 44 4.9 4.4 5.0 4.4 7.0 5.0 4.1 7.0 4.4 5.4 8.4 7.7 8.15.1 7.9 9.1 1.0 4.4 5.4 8.4 7.8 15.1 7.9 9.1 1.9 4.4 5.4 8.4 8.4 10.4 4.4 10.4 1.9 4.4 5.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8	340 340 119 1149 68 1340 200 200 0.07 0.68 0.004 49 49 44 5.0 44 4 5.0 44 4 5.0 44 4 5.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.1 3.1 3.2 3.3 1.3 3.3 3.3 1.3 3.3 3.3 1.3 1.3 HCM 2000 Level of Service C 3.3 3.1.5 HCM 2000 Level of Service C 7.3 3.1.5 HCM 2000 Level of Service C 7.3 3.1.5 HCM 2000 Level of Service C 14.3 15.3 15.0 HCM 2000 Level of Service C 15.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 15.3 HCM 2000 Level of Service C 14.3 15.3 HCM 2000 Level of Service C 15.3 HCM 2000 Level o		œ			4				9				
340 340 119 1149 68 1 020 020 007 068 004 49 49 49 69 1 20 20 20 20 37 20 298 123 2391 70 002 004 078 061 049 680 548 778 151 799 142.4 548 104,4 10.1 81.8 142.4 548 154 10.1 81.8 142.4 548 159 F 142.4 548 159 76.3% ICU Level of Service D 150 Sum of lost time (s) 143	340 340 119 1149 68 1 20 020 007 068 004 49 49 49 69 60 20 20 20 37 068 004 44 20 20 20 37 068 60.02 0.01 0.05 0.41 0.02 1.08 0.04 0.78 0.61 0.49 680 548 778 15.1 799 142.4 548 104.4 10.1 81.8 F D F B F 142.4 548 104.4 10.1 81.8 7.0 0.73 Sum of lost time (s) 14.3 7.6.3% ICU Level of Service C 7.6.3% ICU Level of Service D			34.0			34.0		11.9	114.9		8.9	109.8	
0.20 0.20 0.07 0.68 0.04 4.9 4.9 4.4 5.0 4.4 2.0 2.0 2.0 3.7 2.0 2.0 3.7 2.0 3.7 2.0 2.0 2.0 3.7 2.0 1.08 0.04 0.78 0.61 0.02 6.80 54.8 77.8 15.1 799 142.4 54.8 104.4 10.1 81.8 F D F B F 142.4 54.8 104.4 10.1 81.8 7.5 31.5 HCM 2000 Level of Service C 0.73 176.0 Sum of lost time (s) 143	0.20 0.20 0.07 0.68 0.04 4.9 4.9 4.4 5.0 4.4 2.98 2.88 1.23 2.391 7.0 6.0.22 0.01 0.05 0.04 0.02 1.08 0.04 0.78 0.61 0.02 1.00 1.00 1.00 1.08 0.60 1.10 1.44 0.08 1.04 0.18 0.60 1.10 1.42.4 5.48 1.51 7.9 F			34.0			34.0		11.9	114.9		8.9	109.8	
49 49 44 50 44 20 20 3.7 2.0 3.7 2.0 296 28 123 2.91 70 70 60.22 0.01 0.05 0.041 0.02 10.8 0.04 0.78 0.61 0.49 10.0 1.00 1.08 0.60 1.00 14.4 0.0 2.0 0.79 1.19 14.4 5.48 1.04 1.01 8.18 1.4.4 5.48 1.59 F F 142.4 5.48 1.59 F F 0.73 HCM 2000 Level of Service C C 0.73 Sum of lost time (s) 14.3 14.3 15.9 F B F 170.0 Sum of lost time (s) 14.3 14.3 15.3% 1.0 1.43 15.3	49 49 44 50 44 20 20 37 20 37 298 28 123 239 70 20 37 20 37 20 20 22 0.01 70 70 60 20 0.01 0.02 0.04 0.02 68 0 0.01 0.78 0.61 0.49 0.04 100 1.00			0.20			0.20		0.07	89.0		0.04	0.65	
2.0 2.0 3.7 2.0 298 128 123 2391 70 60.22 0.01 c0.05 c0.41 0.02 1.08 0.04 0.78 0.61 0.49 68.0 54.8 77.8 15.1 79.9 1.00 1.00 20.7 0.9 1.9 142.4 54.8 104.4 10.1 81.8 F D F B F 142.4 54.8 104.4 10.1 81.8 F D F B F A 54.8 104.4 10.1 81.8 F D F B F A D B F B A A D B B A A D B B A A A A A A A B B B	20 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.7 2.0 3.2 3.9 3.1 3.2 3.9 3.1 3.2 3.9 3.1 3.2 3.2 3.1 3.2 3.2 3.1 3.2 3.2 3.1 3.2 3.2 3.1 3.2 3.2 3.1 3.2 3.2 3.1 3.1 3.2 3.2 3.1 3.2 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1			4.9			4.9		4.4	2.0		4.4	2.0	
298 288 123 2391 70 c0.22 0.01 0.05 0.04 0.02 1.08 0.004 0.78 0.61 0.49 68.0 54.8 77.8 15.1 79.9 142.4 0.0 20.7 0.9 1.9 142.4 54.8 104.4 10.1 81.8 F D B F B F 142.4 54.8 15.9 F 142.4 54.8 15.9 7.00	298 288 123 2391 70 c0.22 0.001 0.005 0.041 0.02 1.08 0.004 0.78 0.61 0.04 68.0 54.8 77.8 15.1 79.9 142.4 0.0 1.00 1.07 0.0 142.4 54.8 104.4 10.1 81.8 F D F B F 142.4 54.8 104.4 10.1 81.8 F D F B F 142.4 54.8 104.4 10.1 81.8 7.0 0.7 0.7 0.7 0.0 0.0 0.0 0.0 1.0 0.7 0.7 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.7 0.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			2.0			2.0		2.0	3.7		2.0	3.7	
0.022 0.01 0.005 0.041 0.002 1.08 0.041 0.002 0.004 0.008 0.004 0.008 0.001 0.009 0.	0.022 0.011 0.005 0.041 0.002 1.08 0.004 0.78 0.61 0.049 68.0 54.8 77.8 15.1 79.9 1.00 1.00 1.00 1.00 1.44 0.08 1.04 1.10 1.42.4 54.8 1.04 1.10 F B F B F F 1.42.4 54.8 15.9 81.8 1.42.4 54.8 15.9 81.8 1.42.4 54.8 15.9 F 1.42.4 54.8 15.9 F 1.42.4 15.9 F 1.42.4 15.9 F 1.42.4 17.00 Level of Service C			298			288		123	2391		70	2218	
0.022 0.011 0.78 0.61 0.49 0.88 0.81 0.049 0.004 0.78 0.61 0.49 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.022 0.011 0.78 0.61 0.49 0.80 0.80 0.80 0.80 0.80 0.78 0.61 0.49 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8								c0.05	c0.41		0.02	0.37	
108 004 078 061 049 049 061 049 061 049 068 061 049 049 049 049 049 049 049 049 049 049	108 004 078 051 049 049 050 049 050 050 050 050 050 050 050 050 050 05			c0.22			0.01							
680 548 778 151 799 1100 1100 1100 1100 1100 1100 1100	680 548 778 151 799 710 710 710 710 710 710 710 710 710 710			1.08			0.04		0.78	0.61		0.49	0.57	
100 100 100 108 0.60 100 124 0.00 124 0.00 124 0.00 127 0.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1	1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00			0.89			54.8		77.8	15.1		79.9	16.9	
74.4 0.0 20.7 0.9 1.9 142.4 54.8 104.4 10.1 81.8 1 142.4 54.8 15.9 F D F B F 142.4 54.8 15.9 73.1.5 HCM 2000 Level of Service C 31.5 HCM 2000 Level of Service C 75.3% ICU Level of Service D 75.3% ICU Level of Service D	74.4 0.00 2.0.7 0.9 1.9 142.4 54.8 104.4 10.1 81.8 1 142.4 54.8 15.9 F 142.4 54.8 15.9 F 172.4 54.8 15.9 F 173.0 Sum of lost time (s) 14.3 15.1 HCM 2000 Level of Service C 170.0 Sum of lost time (s) 14.3 15.1 Id.3 Id.3 Id.3			1.00			1.00		1.08	09.0		1.00	1.00	
1424 548 104.4 10.1 81.8 F B F B F B F F B F F B B F F B B F F B B B F B	1424 54.8 104.4 10.1 81.8 F B F B F F F B F F F B F F F B F F F B F F F B F F F B F F F B F F F B F F B F F B F F B F F B F F B F F B F B F F B			74.4			0.0		20.7	6.0		1.9		
F D F B F F 142.4 54.8 15.9 B F F 142.4 54.8 15.9 B B F F 15.9 C 17.0 Sum of lost time (s) 14.3 15.3% I/U Level of Service D 15.3% I/U Level of Service D 15.3%	142.4 54.8 F B F F 15.9 F F 142.4 54.8 15.9 B B F F 170.0 Sum of lost time (s) 14.3 76.3% ICU Level of Service D 15.3			142.4			54.8		104.4	10.1		81.8	18.0	
1424 548 15.9 F D B B 31.5 HCM 2000 Level of Service C 0.73 Cum of lost time (s) 14.3 76.3% ICU Level of Service D 15	142.4 54.8 15.9 F D B B 15.9 31.5 HCM 2000 Level of Service C 0.73 170.0 Sum of lost time (s) 14.3 76.3% ICU Level of Service D 15.3%			ш			٥		ш	В		ш	В	
F D B 31.5 HCM 2000 Level of Service C 0.73 170.0 Sum of lost time (s) 14.3 76.3% ICU Level of Service D 15	F D B 31.5 HCM 2000 Level of Service C 0.73 Sum of lost time (s) 14.3 76.3% ICU Level of Service D			142.4			54.8			15.9			19.6	
31.5 HCM 2000 Level of Service 0.73 170.0 Sum of lost time (s) 76.3% ICU Level of Service 15	31.5 HCM 2000 Level of Service 0.73 170.0 Sum of lost time (s) 76.3% ICU Level of Service 15			ш			D			В			В	
31.5 HCM 2000 Level of Service 0.73 170.0 Sum of lost time (s) 76.3% ICU Level of Service 15	31.5 HCM 2000 Level of Service 0.73 Um of lost time (s) 76.3% ICU Level of Service 15													
0.73 170.0 Sum of lost time (s) 76.3% ICU Level of Service 15	0.73 1.70.0 Sum of lost time (s) 76.3% ICU Level of Service 15				31.5	윈	M 2000	Level of S	ervice		ပ			
170.0 Sum of lost time (s) 76.3% ICU Level of Service 15	170.0 Sum of lost time (s) 76.3% ICU Level of Service 15	20	i i		0.73									
ICU Level of Service	ICU Level of Service				170.0	Su	m of lost	time (s)			14.3			
15	15	_			76.3%	ਹ	J Level o	f Service			۵			
					15									

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Ü ď رابر ج. ح. Balboa Station

Horizon Year with Reduced LU Timing Plan: PM Peak Period

limin		
HIII St	→	TOO
sunker I	٠	īgo
way/t	←	TOIN
19: Mission Bay Dr & Driveway/Bunker Hil	ţ	TOW
19: Mission		I and Croun

																ger.
SBT	1082	0.42	8.2	0.3	8.5	236	m309	804		2605	0	745	0	0.58		y be long
SBL	187	06:0	79.0	0.0	79.0	125	m#208		06	208	0	0	0	06:0		rene ma
NBT	1320	99.0	17.8	0.2	17.9	365	299	492		1998	147	0	0	0.71		pacity, qu
WBT	284	0.84	38.3	Ξ:	39.4	11	#157	514		415	0	30	0	0.74		exceeds ca
Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	# 95th percentile volume exceeds capacity, queue may be longer.

Synchro 9 Report Page 36 KHA Queues

Oueue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 19: Mission Bay Dr & Driveway/Bunker Hill St

			-				-	-	-		۰	
Novement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		4			4		r	₩		*	₽	
raffic Volume (vph)	0	0	0	147	0	114	0	1172	42	172	995	0
uture Volume (vph)	0	0	0	14/	0	114	0	711/2	45	1/2	995	0
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)					4.9			2.0		4.4	2.0	
ane Util. Factor					1.00			0.95		1.00	0.95	
					0.94			0.99		1.00	1:00	
It Protected					0.97			1.00		0.95	1.00	
Satd. Flow (prot)					1705			3521		1770	3539	
It Permitted					0.83			1.00		0.95	1.00	
satd. Flow (perm)					1446			3521		1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	160	0	124	0	1274	46	187	1082	0
REDICTION (vph)	0	0	0	0	125	0	0	က	0	0	0	0
ane Group Flow (vph)	0	0	0	0	159	0	0	1317	0	187	1082	0
urn Type				Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		_	9		2	2	
Permitted Phases	4			4								
Actuated Green, G (s)					12.5			48.2		10.0	62.6	
Effective Green, g (s)					12.5			48.2		10.0	62.6	
Actuated g/C Ratio					0.15			0.57		0.12	0.74	
Clearance Time (s)					4.9			2.0		4.4	2.0	
/ehicle Extension (s)					2.0			3.2		2.0	3.2	
ane Grp Cap (vph)					212			1996		208	2606	
/s Ratio Prot								c0.37		00.11	0.31	
/s Ratio Perm					00.11							
/c Ratio					0.75			99.0		0.00	0.42	
Iniform Delay, d1					34.8			12.7		37.0	4.3	
Progression Factor					1.00			1.22		1.20	1.64	
ncremental Delay, d2					12.5			1.2		28.8	0.4	
Delay (s)					47.3			16.7		73.1	7.3	
evel of Service					۵			В		ш	⋖	
Approach Delay (s)		0.0			47.3			16.7			17.0	
Approach LOS		⋖			Ω			В			В	
ntersection Summary												
HCM 2000 Control Delay			19.9	H	HCM 2000 Level of Service	Level of S	Service		В			
HCM 2000 Volume to Capacity ratio	y ratio		0.71									
Actuated Cycle Length (s)			85.0	S	Sum of lost time (s)	time (s)			14.3			
ntersection Capacity Utilization	u.		70.3%	೨	CU Level of Service	f Service			ပ			
Analysis Period (min)			15									
Critical Lane Groun												

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Balboa Station 20: Mission Bay Dr & Rosewood St

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Lane Group Lane Group Lane Group Lane Group Lane Group Lane Group Lane Group Lane Group Vor Ratio Vor Ratio Variable Belay Lane Group Vor Ratio Variable Belay Loue Langth 50th (1) Loue Langth 50th (1) Loue Belay Loue

KHA Queues

Balboa Station
Horizon Year with Reduced LU
20: Mission Bay Dr & Rosewood St
Timing Plan: PM Peak Period

																																	А		12.0	U		
→	SBL SBT	7 A	2 1984		_						1770 3539	0.92 0.92		0 0	2 2157	Prot NA	1 6	1.2 75.5		_	4.0 4.0		24 3143	0.00 c0.61		_	41.4 1.4	1.1 0.9	D A	2.7	А		HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service		
↓	NBT NBR (44⊅		16	1900							0.92	2700 17	0 0	2717 0	NA F	2	70.3		U	4.0			0.53 0				8.0	¥	3.5	А			0.71	85.0 Sum (15	
	L WBR N	₩,		14	1900							0.92	15	0	0		8														D					64.8%		
•	Movement WBI	Lane Configurations	Traffic Volume (vph)	Ę		· ·	Lane Util. Factor 1.00	Flt Protected 0.99	Satd. Flow (prot) 1631	FIt Permitted 0.99	Satd. Flow (perm) 1631	Peak-hour factor, PHF 0.92		RTOR Reduction (vph) 15	Lane Group Flow (vph)	Turn Type Prot		_	s)	U		Vehicle Extension (s) 3.0	Lane Grp Cap (vph) 28	v/s Ratio Prot c0.00	v/s Ratio Perm			Incremental Delay, d2 1.2		y (s) 42		Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Balboa Station 21: Santa Fe St & Damon Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

																						A	
•	SBR			153	153	0.92	166															Service	
→	T SBT		p Stop		86 9	0	2 107															ICU Level of Service	
←	NBL NBT	,	Stop		9 08		87 72	SB 1	273	0	166	-0.33	4.3	0.32	804	9.3	9.3	۷		9.3	۷	42.4%	15
<i>></i>	EBR			9	99	0.92	71	NB 1	159	87	0				707		9.1	۷				4	
•	EBL	¥	Stop	108	108	0.92	117	EB 1	188	117	71	-0.07	4.8	0.25	693	9.4	9.4	A				ation	
	Movement	Lane Configurations	Sign Control	Traffic Volume (vph)	Future Volume (vph)	Peak Hour Factor	Hourly flow rate (vph)	Direction, Lane #	Volume Total (vph)	Volume Left (vph)	Volume Right (vph)	Hadj (s)	Departure Headway (s)	Degree Utilization, x	Capacity (veh/h)	Control Delay (s)	Approach Delay (s)	Approach LOS	Intersection Summary	Delay	Level of Service	Intersection Capacity Utilization	Analysis Period (min)

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Station Horizon Year with Reduced LU 22: Morena Blvd & Jutland Dr Timing Plan: PM Peak Period

ZZ. Moreria bivo & Juliario Di	Juliario	5	ı	ı	ı		IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	/	4	←	•	٠	→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	ĸ.	*	¥		4.₩	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	288	Ξ	175	260	17	316	
Future Volume (vph)	288	Ξ	175	260	17	316	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	639	12	190	283	9	343	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	629	12	190	283	132	229	
Volume Left (vph)	639	0	0	0	92	0	
Volume Right (vph)	0	12	0	283	0	0	
Hadj (s)	0.53	-0.67	0.03	-0.67	0.10	0.03	
Departure Headway (s)	7.3	6.1	7.1	6.4	7.3	7.2	
Degree Utilization, x	1.30	0.02	0.38	0.51	0.27	0.46	
Capacity (veh/h)	497	298	466	553	483	490	
Control Delay (s)	170.7	8.0	13.1	14.6	11.8	15.0	
Approach Delay (s)	167.7		14.0		13.8		
Approach LOS	ш		В		В		
Intersection Summary							
Delay			81.3				
Level of Service			ш				
Intersection Capacity Utilization	tion		%9.09	⊇	ICU Level of Service	f Service	В
Analysis Period (min)			15				

 Balboa Station
 Horizon Year with Reduced LU Z3: Morena Blvd & Costco Dwy
 Timing Plan: PM Peak Period Timing Plan: PM Peak Period Timing Plan: PM Peak Period Delay

 Lane Group
 WBL
 NBT
 SBL
 SBT

 Lane Group Flow (vph)
 491
 750
 60
 968

 W C Ralio
 0.52
 0.53
 0.06
 0.06

 Control Delay
 1.34
 6.7
 2.12
 10.1

 Oueue Delay
 0.0
 0.0
 0.0
 0.0

 Todal Delay
 1.34
 6.7
 2.12
 10.1

 Queue Length 50th (ft)
 3.3
 2.0
 1.0
 6.8

 Queue Length 50th (ft)
 3.3
 2.0
 1.0
 6.8

 Doueue Length 50th (ft)
 3.3
 2.0
 0.0
 0.0

 Nemeal Link Dst (ft)
 1.95
 3.17
 4.5
 1.32

 Internal Link Dst (ft)
 3.9
 1.0
 0.0
 0.0

 Starvalion Cap Reductin
 0
 0
 0
 0.0

 Starvalion Cap Reductin
 0
 0
 0

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Balboa Station Horizon Year with Reduced LU 23: Morena Blvd & Costco Dwy Timing Plan: PM Peak Period

WBL WBR NN 376 75 3 376 75 3 377 75 3 377 75 3 378 75 3 49 0.90 19 0.96 11 0.96 11 0.96 11 0.96 11 0.96 11 0.96 11 0.96 11 0.97 0.0 0.97 0.0 0.98 11 0.025 0.0 4.9 8 12.7 10 1.00 11 0.54 0.0 1.17 10 1.10 11 B B 13.1 10 Capacity ratio 0.1 (Capacity ratio 0.1 N(S) 33 Utilization 49.9 318 11 118 11 119 11 119 11 110 110 110 110 111 110 11	WBL WBR NBT NBR SBL SBT NAT NB NBT NBR SBL SBT NAT NB NBT NBT NBR SBL SBT 376 75 320 370 55 891 377 370 1900 1900 1900 1900 1900 49 55 320 370 55 891 097 097 1900 1900 1900 1900 1900 097 095 100 095 100 098 100 095 100 3382 325 170 3539 098 100 095 100 3382 325 170 3539 100 095 100 100 096 096 100 100 097 097 100 100 100 096 098 100 100 097 099 100 100 096 099 100 100 096 099 100 100 096 099 100 100 097 099 100 100 096 099 100 100 096 099 100 100 096 099 100 100 099 099 100 100 099 099 100 100 099 099 100 100 099 099 100 100 099 099 099 100 100 099 099 100 100 099 099 100 100 099 099 100 100 099 099 100 100 099 099 100 100 099 099 100 100 099 099 099 100 100 090 099 099 100 100 090		>	4	•	•	٠	→	
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1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	uture Volume (vph)	376	75	320	370	22	891	
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0.97 0.95 1.00 0.95 0.95 0.97 0.95 1.00 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	0.97 0.95 1.00 0.95 0.95 0.97 0.95 1.00 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	otal Lost time (s)	4.9		2.5		4.4	5.5	
0.97 0.92 1.00 1.00 0.94 0.95 1.00 0.96 0.96 1.00 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0	0.97 0.92 1.00 1.00 0.95 0.96 1.00 0.96 1.00 0.96 1.00 0.95 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.95 1.00 0.96 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	ane Utill. Factor	0.97		0.95		1.00	0.95	
0.96 1.00 0.95 1.00 0.95 1.00 0.96 0.96 0.96 0.96 0.96 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.96 1.00 0.95 1.00 0.95 1.00 0.96 0.96 0.96 0.96 0.96 0.96 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		0.97		0.92		1.00	1.00	
3382 3255 1770 3539 (a) 64 100 0,95 1,00 (b) 62 0,92 0,92 0,92 0,92 0,92 (b) 70 0,92 0,92 0,92 0,92 0,92 (d) 82 348 402 60 968 (e) 70 0,92 0,92 0,92 0,92 (e) 82 348 402 60 968 (e) 98 348 402 60 968 (e) 98 131 15 190 (e) 98 131 15 100 (e) 99 0.56 (e) 100 100 100 100 (e) 131 10.5 914 7.6 (e) 88 131 10.5 914 7.6 (e) 98 131 10.5 (e) 98 131 10.5 (e) 98 131 10.5 (e) 98 131 10.5 (e) 98 131	3382 3255 1770 3539 (9,6) (1,00) (0,95) (1,00) (0,95) (1,00) (0,95) (1,00) (0,95) (1,00) (0,95) (1,00) (0,95) (1,00) (1,	t Protected	96:0		1.00		0.95	1.00	
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1382 3255 1770 3539 14	1382 3255 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770	: Permitted	96:0		1.00		0.95	1.00	
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409 82 348 402 60 968 hh 455 0 268 0 0 h 455 0 268 0 0 h 455 0 268 0 0 s) 98 131 15 190 9,8 131 15 190 0,25 0,33 0,44 0,8 0,26 0,33 0,44 0,8 4,9 5,5 4,4 5,5 0,20 2,8 1,15 1,00 1,07 1,08 0,0 0,6 1,07 1,02 1,15 0,0 2,03 0,14 7,6 0,4 1,00 1,00 1,00 0,0 2,03 0,3 1,24 7,6 1,13 1,05 1,14 7,6 1,13 1,05 1,14 7,6 1,13 1,05 1,14 7,6	Mathematical Property Math	ak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
h) 36 0 268 0 0 0 h) 455 0 482 0 60 968 Prot NA Prot NA B 2 1 1 6 s) 98 131 15 190 025 033 0.04 0.48 4.9 5.5 44 5.5 0.21 0.28 0.31 0.05 0.38 0.01 0.05 0.38 0.01 0.05 0.04 0.05 0.03 0.05 0.01 0.05 0.03 0.05 0.01 0.00 0.05 0.01 0.00 0.05 0.01 0.00 0.05 0.01 0.00 0.05 0.01 0.00 0.05 0.01 0.00 0.05 0.02 0.03 0.03 0.03 0.03 0.03 0.04 0.04 0.05 0.04 0.05 0.04 0.06 0.04 0.00 0.05 0.00 0.00 0.05 0.00 0.00 0.00	hh) 36 0 268 0 0 0 h) 455 0 482 0 60 968 Prot NA Prot NA 8 2 1 1 1 6 9 8 131 15 190 025 0.33 0.04 0.48 49 5.5 44 5.5 020 2.8 44 5.5 021 2.8 44 5.5 021 2.8 44 5.5 021 2.8 44 5.5 021 2.8 44 5.5 022 0.3 0.04 0.48 024 0.44 0.90 0.56 025 0.10 0.10 0.10 026 0.10 0.10 0.10 027 0.10 0.10 0.10 027 0.10 0.10 0.10 028 0.3 0.2 0.2 03 0.15 0.15 0.4 04 0.90 0.56 054 0.14 0.90 0.56 054 0.15 0.10 0.10 065 0.14 0.00 066 0.15 0.10 066 0.16 0.10 066 0.16 0.10 066 0.16 0.10 066 0.16 0.10 066 0.16 0.10 066 0.16 0.10 066 0.10 0.10 066 0.10 0.10 0.10 066 0.10 0.10 0.10 067 0.10 0.10 0.10 068 0.10 0.10 0.10 069 0.10 0.10 0.10 0.10 060 0.10 0.10 0.10 0.10 0.10 060 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0	j. Flow (vph)	409	82	348	402	09	896	
h) 455 0 482 0 60 968 Pot NA Prof NA 8 2 1 1 6 9 8 131 15 190 0.25 0.33 0.04 0.48 4.9 5.5 4.4 5.5 0.20 2.8 2.0 2.8 845 1087 67 1715 0.54 0.44 0.90 0.56 1.27 10.2 188 7.2 1.27 10.2 188 7.2 1.27 10.2 1.00 1.00 2 0.3 0.3 72.6 0.4 1.31 10.5 91.4 7.6 B B B F A 13.1 10.5 91.4 7.6 B B B F A 13.1 10.5 91.4 7.6 B B B F A 13.1 10.5 91.4 7.6 B B B F A 13.1 0.5 91.4 7.6 B B B F A 13.1 0.5 91.4 7.6 B B B F A 13.1 0.5 91.4 7.6 B B B F A 13.1 0.5 91.4 7.6 Capacity ratio 0.66	h) 455 0 482 0 60 968 Pot NA Prof NA 8 2 1 1 6 9 8 13.1 1.5 19.0 0 25 0.33 0.04 0.48 4 9 5.5 4.4 5.5 0 22 2.8 2.0 1 0 0.5 0.04 0.48 6 45 1087 6.7 1715 0 0.5 0.03 0.0.7 1 0 0.5 0.04 1 12.7 10.2 188 7.2 1 12.7 10.2 188 7.2 1 10.0 1.00 1.00 2 0.3 0.3 72.6 0.4 1 13.1 10.5 9.1 4 7.6 B B B B F A F B B 1 13.1 10.5 9.1 4 7.6 B B B B F A F B B F A F B B 1 13.1 10.5 9.1 4 1.5 1 10.5 9.1 1.5 1 10.5 9.1 1.5 1 10.5 9.1 1.5 1 10.5 9.1 1.5 1 10.5 9.	OR Reduction (vph)	36	0	268	0	0	0	
Prot NA Prot NA	Prot NA Prot NA Prot NA 8 2 1 6 5 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ne Group Flow (vph)	455	0	482	0	09	896	
8 2 1 6 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 2 0.3 0.3 0.48 2.0 2.8 8 45 1087 67 1715 0.15 0.03 0.27 1.27 10.2 188 7.2 1.20 0.3 0.3 0.3 7.2.6 0.4 1.31 10.5 91.4 7.6 1.31 10.5 91.4 7.6 8 B F A 13.1 10.5 91.4 7.6 9 A 13.1 10.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 14.5 91.4 7.6 15.5 91.4 7.6 16.5 91.4 7.6 17.5 91.4 7.6 18.5 91.4 7.6 18.5 91.4 7.6 19.5 91.4	8 2 1 6 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 9 8 13.1 1.5 19.0 0.25 0.33 0.04 0.48 4.9 5.5 2.0 2.8 845 1087 67 1715 0.0.13 0.15 0.03 0.27 0.3 0.3 72.4 0.4 13.1 10.5 18.8 7.2 1.27 10.0 1.00 2 0.3 0.3 72.6 0.4 13.1 10.5 97.4 7.6 18 B B F A 13.1 10.5 97.4 7.6 18 B B F A 13.1 10.5 0.66 10.0	rn Type	Prot		¥		Prot	NA	
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0.25 0.33 0.04 0.48 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 845 1087 67 1715 0.13 0.15 0.03 0.27 0.54 0.44 0.90 0.56 1.27 10.2 18.8 7.2 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 1.31 10.5 91.4 7.6 B B B B B B B A A A A A A A A A A A A B A B A	0.25 0.33 0.04 0.48 4.9 5.5 4.4 5.5 2.0 2.8 2.0 2.8 8.45 1087 67 1715 c0.13 0.15 0.03 c0.27 0.54 0.44 0.90 0.56 1.27 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 7.2.6 0.4 1.31 10.5 91.4 7.6 B B F A 1.31 10.5 91.4 7.6 B B F A 1.31 10.5 1.2.5 B B B F A 1.31 10.5 1.2.5 bigs of Capacity ratio 0.66 th (s) 39.2 Sum of lost time (s) Unilization 4.5% ICU Level of Service	fective Green, g (s)	8.6		13.1		1.5	19.0	
4.9 5.5 4.4 5.5 2.0 2.8 8.45 1087 6.7 1715 0.0.13 0.15 0.03 0.027 0.54 0.44 0.90 0.56 1.27 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 1.3.1 10.5 9.14 7.6 B B B F A A 1.3.1 10.5 9.14 7.6 B B B F A A 1.3.1 10.5 9.14 7.6 B B B B F A A 1.3.1 0.5 9.14 7.6 B B B C B A A 1.3.1 0.5 9.14 7.6 B B B B C B A 1.3.1 0.5 9.14 7.6 B B B C B A 1.3.1 0.5 9.14 7.6 B B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.3.1 0.5 0.44 7.6 B C B B C B A 1.4 0.4 0.40 1.5 0.40 1.5 0.40 1.6 0.40 1.7 0.40 1.7 0.40 1.8 0	4.9 5.5 4.4 5.5 2.0 2.8 4.4 5.5 8.45 1087 6.7 1715 0.0.13 0.15 0.03 0.027 0.54 0.44 0.90 0.56 1.27 10.2 188 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 1.31 10.5 9.14 7.6 B B B B B 1.31 10.5 9.14 7.6 Y y y y y y y y y y y y y	tuated g/C Ratio	0.25		0.33		0.04	0.48	
20 28 2.0 2.8 845 1087 67 1715 0.013 0.15 0.03 0.27 0.024 0.44 0.90 0.56 127 10.2 1.88 7.2 100 1.00 1.00 1.00 2 0.3 7.26 0.4 13.1 10.5 91.4 7.6 B F A A I 13.1 10.5 91.4 7.6 B F B B B F B B B 11.5 91.4 7.6 B F A A B B B B B B B B Capacity ratio 0.66 Sum of lost time (s) Utilitization 49.5% ICU Level of Service	20 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.8 2.0 2.1 2.8 2.0 2.1 2.8 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.0 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1	earance Time (s)	4.9		5.5		4.4	5.5	
845 1087 67 1715 0.13 0.15 0.03 0.027 0.54 0.44 0.90 0.56 12.7 10.2 1.88 7.2 1.00 1.00 1.00 2 0.3 0.3 7.2.6 0.4 1.3.1 10.5 9.1.4 7.6 B B F A 13.1 10.5 9.1.4 7.6 A 13.1 0.5 9.1.4 7.6 B B F A 13.1 0.5 9.1.4 7.6 Capacity ratio 0.66 Capacity ratio 0.6	845 1087 67 1715 CO.13 0.15 0.03 CO.27 0.54 0.44 0.90 0.56 12.7 10.2 188 7.2 1.00 1.00 1.00 2 0.3 0.3 726 0.4 13.1 10.5 91.4 7.6 B B F A B 13.1 10.5 12.5 B B F A A 13.1 10.5 12.5 B B H CM 2000 Level of Service O.Capacity ratio 0.66 Int (s) 39.2 Sum of lost time (s) Intilization 4.5% ICU Level of Service 1.15 1.25 1.25 1.25	hicle Extension (s)	2.0		2.8		2.0	2.8	
a0.13 0.15 0.03 a0.27 0.54 0.44 0.90 0.56 12.7 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 1.31 10.5 91.4 7.6 B B F A.6 B B B B B B B B A 11.5 HCM 2000 Level of Service D 0.66 Service Conforting ation 0.66 Service Conforting ation 0.66 Conforting ation A 1.5% ICU Level of Service	co.13 0.15 0.03 co.27 0.54 0.44 0.90 0.56 12.7 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 7.26 0.4 13.1 10.5 91.4 7.6 B B B B F A 13.1 10.5 91.4 7.6 B B B B F A 13.1 10.5 91.4 7.6 B B B B B F A 13.1 10.5 91.4 7.6 B B B B B B B B B B B B B B B B B B B	ne Grp Cap (vph)	845		1087		<i>L</i> 9	1715	
0.54 0.44 0.90 0.56 1.27 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 13.1 10.5 9.14 7.6 B B F A 7.6 B B B F A 7.6 I 3.1 10.5 9.14 7.6 I 3.1 10.5 9.14 7.6 I 13.1 10.5 12.5 I B B F A 7.6 I 13.1 10.5 1.25 I B B F A 7.6 I 13.1 10.5 1.25 I B B F A 7.6 I 13.1 10.5 1.25 I B B B F A 7.6 I 13.1 10.5 1.25 I B B B F A 7.6 I 13.1 10.5 1.25 I B B B B B B B B B B B B B B B B B B B	0.54 0.44 0.90 0.56 12.7 10.2 18.8 7.2 1.00 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 13.1 10.5 9.4 7.6 B B F A 7.6 13.1 10.5 1.25 B B F H HCM 2000 Level of Service ocapacity ratio 0.66 th (s) 11.9 HCM 2000 Level of Service 0.66 th (s) 39.2 Sum of lost time (s) 1.00 1.15 Interval of Service 1.00 1.16 Name of Service 1.00 1.17 HCM 2000 Level of Service 1.00 1.18 0.66 1.19 HCM 2000 Level of Service 1.00 1.19 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.11 HCM 2000 Level of Service 1.00 1.12 HCM 2000 Level of Service 1.00 1.13 HCM 2000 Level of Service 1.00 1.14 HCM 2000 Level of Service 1.00 1.15 HCM 2000 Level of Service 1.00 1.15 HCM 2000 Level of Service 1.00 1.16 HCM 2000 Level of Service 1.00 1.17 HCM 2000 Level of Service 1.00 1.18 HCM 2000 Level of Service 1.00 1.18 HCM 2000 Level of Service 1.00 1.19 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Service 1.00 1.10 HCM 2000 Level of Servic	s Ratio Prot	c0.13		0.15		0.03	c0.27	
0.54 0.44 0.90 0.56 1.27 10.2 1.88 7.2 1.00 1.00 1.00 2 0.3 72.6 0.4 13.1 10.5 91.4 7.6 13.1 10.5 91.4 7.6 13.1 10.5 91.4 7.6 13.1 B F A A 13.1 10.5 91.4 7.6 13.1 10	0.54 0.44 0.90 0.56 1.27 10.2 1.88 7.2 1.00 1.00 1.00 2 0.3 72.6 0.4 1.3.1 10.5 91.4 7.6 1.3.1 10.5 91.4 7.6 1.3.1 10.5 1.2.5 1.3.1 10.5 1.2.5 1.3.1 10.5 1.3.5 1.3.1 10.5 1.3.6	s Ratio Perm							
12.7 10.2 18.8 7.2 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 1.31 10.5 91.4 7.6 B B F A A 1.31 10.5 12.5 B P CAPACIDATE OF SERVICE OF	127 102 188 7.2 100 1.00 1.00 1.00 2 0.3 0.3 72.6 0.4 13.1 10.5 91.4 7.6 B F A I 13.1 10.5 12.5 B B B Holay 11.9 HCM 2000 Level of Service oc. Capacity ratio 0.66 Sum of lost time (s) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Ratio	0.54		0.44		06:0	0.56	
100 100 100 2 0.3 0.3 72.6 0.4 13.1 10.5 91.4 7.6 B B F A 7.6 13.1 10.5 91.4 7.6 Y Y Y Capacity ratio 0.66 Int (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	100 100 100 2 0.3 0.3 72.6 0.4 13.1 10.5 97.4 7.6 B B B F A 13.1 10.5 97.4 7.6 F A 13.1 10.5 97.4 7.6 F A 13.1 10.5 97.4 7.6 F A 13.1 10.5 97.4 7.6 F A 13.1 10.5 97.4 12.5 B B B B B B B B B B B B B B B B B B B	niform Delay, d1	12.7		10.2		18.8	7.2	
2 0.3 0.3 72.6 0.4 13.1 10.5 91.4 7.6 B B F 12.5 B B B F 12.5 B C 12.5 B B B B B B B B B B B B B B B B B B B	2 0.3 0.3 72.6 0.4 13.1 10.5 91.4 7.6 13.1 10.5 12.5 12.5 13.1 10.5 12.5 14.2 12.5 15.1 10.5 12.5 16.2 12.5 17.4 11.9 12.5 18.2 11.9 12.5 18.3 2 Sum of lost time (s) 18.3 39.2 Sum of lost time (s) 19.4 15.5 ICU Level of Service 19.5 Interval of Service	ogression Factor	1.00		1.00		1.00	1.00	
13.1 10.5 91.4 7.6 B B F A 13.1 10.5 B B B T 12.5 B C Apacity ratio 0.66 C Apacity ratio 0.66 Utilitzation 49.5% ICU Level of Service	13.1 10.5 91.4 7.6 B B F A 13.1 10.5 12.5 B B B V y y Capacity ratio 0.66 It (s) 39.2 Sum of lost time (s) 1.6 It (s)	cremental Delay, d2	0.3		0.3		72.6	0.4	
B	B	elay (s)	13.1		10.5		91.4	7.6	
13.1 10.5 12.5 9	13.1 10.5 12.5 B B B B y y 11.9 HCM 2000 Level of Service c Capacity ratio 0.66 th (s) 39.2 Sum of lost time (s) th (s) 11.5 (CU Level of Service 1.45%	vel of Service	В		В		ш	А	
y B B y 11.9 HCM 2000 Level of Service c Capacity ratio 0.66 Sum of lost time (s) th (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	Y B B Y Y B B Y 11.9 HCM 2000 Level of Service O Capacity ratio 0.66 Sum of lost time (s) In (s) 39.2 Sum of lost time (s) Untilization 49.5% ICU Level of Service 1 15 16	proach Delay (s)	13.1		10.5			12.5	
How the service of Ser	11.9 HCM 2000 Level of Service Capacity ratio	proach LOS	В		В			В	
slay 11.9 HCM 2000 Level of Service Capacity ratio 0.66 Sum of lost time (s) h (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	slay 11.9 HCM 2000 Level of Service Capacity ratio 0.66 0.66 h (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service 15 15	ersection Summary							
Capacity ratio 0.66 h(s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	Capacity ratio	CM 2000 Control Delay			11.9	Н	M 2000 I	evel of Service	В
h (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	h (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	CM 2000 Volume to Capaci	ity ratio		99.0				
Utilization 49.5% ICU Level of Service	Utilization 49.5% ICU Level of Service	ctuated Cycle Length (s)			39.5	S	m of lost	time (s)	14.8
		ersection Capacity Utilizati	ion		49.5%	⊇	J Level o	f Service	А
		Analysis Period (min)			15				
c. Chilical Lane Group									

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Balboa Station 24: Morena Blvd & Avati Dr

Horizon Year with Reduced LU Timing Plan: PM Peak Period

→	SBT	1363	19.0	8.3	0.0	8.3	86	168	3170		2847	0	0	0	0.48	
٠	SBL	74	0.30	22.5	0.0	22.5	18	25		120	276	0	0	0	0.27	
•	NBR	208	0.16	6:0	0.0	6.0	0	12		115	1583	0	0	0	0.13	
—	NBT	710	0.47	11.5	0.0	11.5	75	125	2304		2604	0	0	0	0.27	
4	WBR	28	0.18	7.8	0.0	7.8	0	23		135	1032	0	0	0	90:0	
\	WBL	207	0.35	18.7	0.0	18.7	25	25	317		2193	0	0	0	60.0	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

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Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 24: Morena Blvd & Avati Dr

	\	4	F	←	4	٠	→	
Movement	WBL	WBR	NBN	NBT	NBR	SBL	SBT	
Lane Configurations	£	ĸ.	4	+	*	×	₩	
Traffic Volume (vph)	190	23	0	653	191	89	1254	
Future Volume (vph)	130	23	0	653	191	89	1254	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
Lane Util. Factor	76.0	1.00		0.95	1.00	1.00	0.95	
Frt	1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1583		3539	1583	1770	3539	
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	1583		3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	207	28	0	710	208	74	1363	
RTOR Reduction (vph)	0	48	0	0	87	0	0	
Lane Group Flow (vph)	207	10	0	710	121	74	1363	
Turn Type	Prot	Prot	Prot	NA	vo+mq	Prot	NA	
Protected Phases	7	7	-	9	7	2	2	
Permitted Phases					9		2	
Actuated Green, G (s)	7.5	7.5		18.6	26.1	3.6	26.9	
Effective Green, g (s)	7.5	7.5		18.6	26.1	3.6	26.9	
Actuated g/C Ratio	0.17	0.17		0.41	0.58	0.08	09.0	
Clearance Time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
Vehicle Extension (s)	5.0	2.0		5.2	2.0	2.0	5.0	
Lane Grp Cap (vph)	572	263		1462	918	141	2115	
	90:00	0.01		0.20	0.02	0.04	c0.39	
v/s Ratio Perm					0.02			
v/c Ratio	0.36	0.04		0.49	0.13	0.52	0.64	
Uniform Delay, d1	9.91	15.7		6.7	4.3	19.9	5.9	
Progression Factor	1.00	1.00		1.00	1.00	1:00	1.00	
Incremental Delay, d2	0.1	0.0		9.0	0.0	1.6	6.0	
Delay (s)	16.8	15.7		10.3	4.3	21.5	6.9	
Level of Service	В	В		В	⋖	ပ	Α	
Approach Delay (s)	16.5			8.9			7.6	
Approach LOS	В			V			A	
Intersection Summary								
HCM 2000 Control Delay			0.6	H	HCM 2000 Level of Service	evel of S	Service	⋖
HCM 2000 Volume to Capacity ratio	ratio		19:0					
Actuated Cycle Length (s)			45.0	Su	Sum of lost time (s)	time (s)		15.3
Intersection Capacity Utilization			25.9%	೨	ICU Level of Service	f Service		В
Analysis Period (min)			15					
 Critical Lane Group 								

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Balboa Station 25: Morena Blvd & Balboa WB Ramps

Horizon Year with Reduced LU Timing Plan: PM Peak Period

						_	_	_		_		_		_	
*	SBR	1054	0.67	2.2	0.0	2.2	0	0		100	1583	0	0	0	0.67
→	SBT	871	0.57	12.1	0.0	12.1	80	151	2304		1565	0	0	0	0.56
←	NBT	1378	99.0	8.4	0.0	8.4	06	193	882		2110	0	0	0	0.65
€	NBL	86	0.58	37.1	0.0	37.1	22	#82		200	169	0	0	0	0.58
>	EBR	282	0.52	7.3	0.0	7.3	7	49		20	757	0	0	0	0.37
•	EBL	163	0.42	16.9	0.0	16.9	32	69	439		619	0	0	0	0.24
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (ft)	Oueue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 25: Morena Blvd & Balboa WB Ramps

	4	<i>></i>	•	•	→	•	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	<u>_</u>	¥L.	F	‡	‡	R.	
Traffic Volume (vph)	150	259	8 8	1268	801	970	
rutule volume (vpm) Ideal Flow (vphpl)	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	0.95	1.00	
Ē	1.00	0.85	1.00	1.00	1.00	0.85	
Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	163	282	86	1378	871	1054	
RTOR Reduction (vph)	0	191	0	0	0	0	
Lane Group Flow (vph)	163	91	86	1378	871	1054	
Turn Type	Perm	Perm	Prot	NA	NA	Free	
Protected Phases			2	2	9		
Permitted Phases	4	4				Free	
Actuated Green, G (s)	9.5	9.2	3.2	25.4	18.2	42.6	
Effective Green, g (s)	9.5	9.2	3.2	25.4	18.2	42.6	
Actuated g/C Ratio	0.22	0.22	0.08	09.0	0.43	1.00	
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)	382	341	132	2110	1511	1583	
v/s Ratio Prot			90:0	0.39	0.25		
v/s Ratio Perm	0.09	90:0				29.00	
v/c Ratio	0.43	0.27	0.74	0.65	0.58	29:0	
Uniform Delay, d1	14.4	13.9	19.3	2.7	9.3	0:0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.4	20.0	0.7	0.5	2.2	
Delay (s)	15.2	14.3	39.3	6.4	8.6	2.2	
Level of Service	В	В	۵	⋖	A	A	
Approach Delay (s)	14.6			9.8	2.7		
Approach LOS	В			A	∢		
Interception Summany							
HCM 2000 Control Delay			7.8	H	0000 MC	HCM 2000 Level of Service	4
HCM 2000 Volume to Canacity ratio	ity ratio		000		2007		
Town 2000 Volume to Capac	ary ratio		40.4	ō	(a) of loct time (c)	time (c)	0.00
Actuated Cycle Length (S)			47.0	ಗ :	1SOLIO III	time (s)	12.0
Intersection Capacity Utilization	uo		20.0%	2	ICU Level of Service	rt Service	А
Analysis Period (min)			15				
 Critical Lane Group 							

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Balboa Station 26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps

Horizon Year with Reduced LU
Timing Plan: PM Peak Period

				_	_							_		_	
→	SBT	1011	0.63	11.6	0.0	11.6	103	151	887		1932	_	_	_	0.52
٠	SBL	141	0.70	34.5	0.0	34.5	59	#109		135	242	0	0	0	0.58
•	NBT	911	0.57	6.7	0.0	6.7	78	121	1978		1916	0	0	0	0.48
•	NBL	2	0.03	7.6	0.0	7.6	_	2		100	199	0	0	0	0.03
4	WBR	576	0.85	26.1	0.0	26.1	110	#281			740	0	0	0	0.78
ţ	WBT	326	0.73	25.1	0.0	25.1	88	#204	8/9		220	0	0	0	0.65
†	EBT	34	0.05	6.7	0.0	6.7	2	19	105		750	0	0	0	0.05
1	EBL	87	0.29	14.5	0.0	14.5	18	46			339	0	0	0	0.26
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Oueue Delay	Total Delay	Queue Length 50th (ft)	Queue Length 95th (ft)	Internal Link Dist (ft)	Tum Bay Length (ft)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 9 Report Page 48 KHA Queues

Balboa Station

Horizon Year with Reduced LU
26: Morena Blvd & Balboa Station Entrance/Balboa EB Ramps

Timing Plan: PM Peak Period

EBI EBI WBI WBI WBI WBI WBI NBI NBI SBI 80 27 5 300 30 530 5 688 180 130 80 27 5 300 30 530 5 688 180 130 1900 <th></th> <th>^</th> <th>†</th> <th><i>></i></th> <th>></th> <th>ţ</th> <th>✓</th> <th>•</th> <th>—</th> <th>•</th> <th>٠</th> <th>→</th> <th>•</th>		^	†	<i>></i>	>	ţ	✓	•	—	•	٠	→	•
figurations	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
time (ph) 89 27 5 300 30 530 5 658 180 130 time (ph) 80 27 5 300 30 530 5 658 180 130 (v(php)) 1900 190	Lane Configurations	*	¢Ť			4	*-	je.	₩.		*	₩.	
Nume (vipl) 80 27 5 300 30 530 658 180 130 Veyptp) 400 1900 <td>Traffic Volume (vph)</td> <td>8</td> <td>27</td> <td>2</td> <td>300</td> <td>9</td> <td>230</td> <td>2</td> <td>929</td> <td>180</td> <td>130</td> <td>919</td> <td>=</td>	Traffic Volume (vph)	8	27	2	300	9	230	2	929	180	130	919	=
time (s) 1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	8	27	2	300	30	530	2	929	180	130	919	1
time (s) 40 <	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Factor 100<	Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
ted 100 098 100 085 100 097 100 k (port) 170 192 120 096 100 097 100 ted 0.44 100 097 170 3425 170 3425 tractor, PHF 0.92 0.92 0.92 0.92 0.92 0.92 0.92 tractor, PHF 0.92 0.92 0.92 0.92 0.92 0.92 0.92 tractor, PHF 0.93 0.92 0.92 0.92 0.92 0.92 0.92 tractor, PHF 0.93 0.93 0.93 0.93 0.93 0.93 tractor, PHF 0.93 0.92 0.92 0.92 0.92 0.92 0.92 tractor, PHF 0.93 0.93 0.93 0.93 0.93 0.93 tractor, PHF 0.93 0.93 0.93 0.93 0.93 0.93 tractor, PHF 0.93 0.93 0.93 0.93 0.93 0.93 tractor 0.94 0.94 0.94 0.94 0.94 0.94 tractor 0.04 0.02 0.03 0.03 0.03 0.03 tractor 0.05 0.05 0.03 0.03 0.03 tractor 0.05 0.05 0.03 0.03 0.03 tractor 0.05 0.05 0.03 0.03 0.03 tractor 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.03 0.03 0.04 tractor 0.05 0.05 0.05 0.05 0.03 0.04 tractor 0.05 0.05 0.05 0.05 0.05 0.04 tractor 0.05 0.05 0.05 0.05 0.05 0.05 0.05 tractor 0.05 0.05 0.05 0.05 0.05 0.05 tractor 0.05 0.05 0.05 0.05 0.05 0.05 tractor 0.05 0.05 0.05 0.05 0.05 tractor 0.05 0.05 0.05 0.05 0.05 tractor 0.05 0.05 0.05 0.05 0.05 tractor 0.05 0.05 0.05 0.05 0.	Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
ted 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.04 1.00 0.02 1.00 0.	Ŧ	1.00	0.98			1.00	0.85	1.00	0.97		1.00	1.00	
(pm) 1770 1822 1782 1770 3425 1770 (pm) 824 100 102 100 224 1770 (pm) 828 1822 134 168 36 3425 1475 (pm) 828 1822 134 168 36 36 36 36 36 36 37 36 36 37 <td>Fit Protected</td> <td>0.95</td> <td>1.00</td> <td></td> <td></td> <td>96:0</td> <td>1.00</td> <td>0.95</td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td>	Fit Protected	0.95	1.00			96:0	1.00	0.95	1.00		0.95	1.00	
tied (9.44 1.00) 0.72 1.00 0.20 1.00 0.24 (9.24 1.00) 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (prot)	1770	1822			1782	1583	1770	3425		1770	3533	
(yeem) 828 1822 1343 1583 365 3425 443 riedor, PHF 0.92 0.93	Fit Permitted	0.44	1.00			0.72	1.00	0.20	1.00		0.24	1.00	
rector, PHF 0.92 0.93	Satd. Flow (perm)	828	1822			1343	1583	365	3425		443	3533	
(vph) 87 29 5 326 33 5/6 5 715 149 141 eduction(vph) 87 3 0 0 97 0 52 0 0 eduction(vph) 87 3 0 0 359 479 5 715 149 141 Phases 4 Perm NA Perm NA Perm Perm NA Perm Phases 4 Perm NA Perm NA Perm NA Perm Profeson (s) 166 166 166 166 166 205 205 205 Green (s) 166	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Ordiction (vph) 0 3 0 0 97 0 52 0 11 Ordiction (vph) Perm NA Perm NA Perm NA Perm IPhases Perm NA Perm NA Perm NA Perm IPhases 4 8 8 2 2 6 6 Phases 4 8 8 2 2 6 6 Green (s) 166	Adj. Flow (vph)	87	53	2	326	33	9/5	2	715	196	141	666	12
up Flow (vgh) 87 31 0 359 479 5 859 0 141 Phases 4 Perm NA Perm Perm Perm NA Perm Phases 4 8 8 2 6 6 Phases 4 8 8 2 6 6 Phases 166 166 166 166 166 20.5 20.5 20.5 Green, G(s) 166 166 166 166 166 166 20.5	RTOR Reduction (vph)	0	က	0	0	0	46	0	25	0	0	7	0
Phases	Lane Group Flow (vph)	87	31	0	0	329	479	2	826	0	141	1009	0
Phases	Turn Type	Perm	¥		Perm	Ν	Perm	Perm	NA		Perm	NA	
Phases	Protected Phases		4			∞			2			9	
Green, G(s) 166 166 166 166 205 205 205 205 Green, G(s) 166 166 166 166 166 205 205 205 205 Green, G(s) 166 166 166 166 205 205 205 205 Green, G(s) 166 166 166 166 205 205 205 205 205 205 205 205 205 205	Permitted Phases	4			∞		∞	2			9		
Green, g(s) 166 166 166 205 205 205 g(C Ratio 0.37 0.37 0.37 0.37 0.45 0.44 4.0 4.	Actuated Green, G (s)	16.6	16.6			16.6	16.6	20.5	20.5		20.5	20.5	
guC Ratio 0.37 0.37 0.37 0.45 0.45 0.45 0.45 0.45 o.45 o.45 o.45 o.45 o.45 o.45 o.45 o	Effective Green, g (s)	16.6	16.6			16.6	16.6	20.5	20.5		20.5	20.5	
Section Sect	Actuated g/C Ratio	0.37	0.37			0.37	0.37	0.45	0.45		0.45	0.45	
Academic Academic	Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Cap (wh) 304 670 494 582 165 155 201 1 Perid 0.02 0.02 0.02 0.03 <td>Vehicle Extension (s)</td> <td>3.0</td> <td>3.0</td> <td></td> <td></td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td></td>	Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Prof. 0.02 0.05 0.05 0.05 Perm 0.11 0.02 0.05 0.03 0.05 Delay, d1 10.1 9.2 0.73 0.82 0.05 0.70 0 Inal Delay, d2 1.0 1.	Lane Grp Cap (vph)	304	029			464	285	165	1556		201	1605	
Perm 0.11 0.27 cd.30 0.01 cd.32 Pelay dt 0.29 0.05 0.73 0.82 0.03 0.55 0.70 0 Pelay dt 1.01 9.02 0.73 1.29 6.8 9.05 0.70 0	v/s Ratio Prot		0.02						0.25			0.29	
12 12 12 13 12 12 12 12	v/s Ratio Perm	0.11				0.27	00.30	0.01			c0.32		
Delay d1 10.1 9.2 12.3 12.9 6.8 9.0 9.8	v/c Ratio	0.29	0.05			0.73	0.82	0.03	0.55		0.70	0.63	
on Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	10.1	9.2			12.3	12.9	8.9	0.6		8.6	9.4	
Interest	Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
10.6 9.2 17.6 22.1 6.9 9.4 20.4 20.8 A	Incremental Delay, d2	0.5	0.0			5.3	9.5	0.1	0.4		10.5	0.8	
10.2 20.3 A A C C 10.2 20.3 9.4 B C A A A C C 20.3 C A A A C C 20.3 C A A A C C 20.3 C A A A C C 20.3 C A A A A C C 20.3 C A A A C C 20.3 C A A A C C C C C C C C C C C C C C C	Delay (s)	10.6	9.2			17.6	22.1	6.9	9.4		20.4	10.2	
10.2 20.3 9.4 B	Level of Service	В	V			В	O	⋖	×		O	В	
13.4 HCM 2000 Level of Service B 0.75 45.1 Sum of lost time (s) 8.0 77.2% ICU Level of Service C 15	Approach Delay (s)		10.2			20.3			9.4			11.4	
13.4 HCM 2000 Level of Service 0.75 Sum of lost time (s) 71.2% ICU Level of Service 15	Approach LOS		В			O			A			В	
13.4 HCM 2000 Level of Service 0.75 Sum of lost time (s) 71.2% ICU Level of Service 15	Intersection Summary												
0.75 45.1 Sum of lost time (s) 71.2% ICU Level of Service 15	HCM 2000 Control Delay			13.4	Ŧ	3M 2000	Level of S	Service		В			
45.1 Sum of lost time (s) 71.2% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.75									
zation 71.2% ICU Level of Service 15	Actuated Cycle Length (s)	,		45.1	Su	im of lost	time (s)			8.0			
15	Intersection Capacity Utilizati	loi		71.2%	ੁ	U Level o	of Service			O			
Cellinal Law Crain	Analysis Period (min)			15									
	C Critical Lane Group												

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Balboa Station 27: Morena Blvd & Baker St

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	X -		+	R.	¥	₩	
Traffic Volume (veh/h)	15	27	380	23	46	840	
Future Volume (Veh/h)	15	27	380	23	46	840	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	16	29	413	25	20	913	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	970	413			438		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	970	413			438		
tC, single (s)	8.9	6.9			4.1		
tC, 2 stage (s)							
IF (s)	3.5	3.3			2.2		
bo dnene tree %	93	95			96		
cM capacity (veh/h)	240	288			1118		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	45	413	25	20	456	456	
Volume Left	16	0	0	20	0	0	
Volume Right	29	0	25	0	0	0	
cSH	388	1700	1700	1118	1700	1700	
Volume to Capacity	0.12	0.24	0.01	0.04	0.27	0.27	
Queue Length 95th (ft)	9	0	0	4	0	0	
Control Delay (s)	15.5	0.0	0.0	8.4	0.0	0.0	
Lane LOS	ပ			A			
Approach Delay (s)	15.5	0.0		0.4			
Approach LOS	ပ						
Intersection Summary							
Average Delay	:		8.0				
Intersection Capacity Utilization	ation		36.7%	<u> </u>	U Level o	ICU Level of Service	A
Alialysis Pellod (IIIII)							

KHA HCM Unsignalized Intersection Capacity Analysis

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 28: Morena Blvd & Gesner St

20. INDIGINA DIVA & COSIGI OF	000	5				mining range range care cried
	•	+	•	٠	→	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	134	439	20	112	982	
v/c Ratio	0.34	0.26	90:0	0.31	0.44	
Control Delay	8.6	10.4	4.7	17.6	5.5	
Oueue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.6	10.4	4.7	17.6	5.5	
Queue Length 50th (ft)	∞	38	0	21	49	
Queue Length 95th (ft)	43	9/	16	62	100	
Internal Link Dist (ft)	1333	298			3362	
Turn Bay Length (ft)			95	95		
Base Capacity (vph)	1295	1995	914	461	2876	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.22	0.05	0.24	0.34	
Intersection Summary						

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KHA Oueues

Balboa Station 28: Morena Blv

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Year \	Timin
Horizon Year V	
_	
	;;
	rena Blvd & Gesner St
	/d & G
Station	ena Bl\

																																					A		14.7	×.	
→	SBT	++	906	906	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	985	0	985	NA	9		21.3	21.3	0.59	0.9	4.2	2082	c0.28		0.47	4.2	1.00	0.3	4.5	A	6.2	Α		HCM 2000 Level of Service		time (s)	Service	
<u>ب</u> ب	NBR SBL	* *	46 103		1900 1900					ľ		1583 1770				19 112	Perm Prot	-	2		13.4 3.6	_		4.4 2.0	585 176	90:0			7.3 15.7		0.0 5.4	7.3 21.1	O V				HCM 2000 I		Sum of lost t	ICIT Level of Service	5
←	NBT N	‡	404		,								0.92 0		0		NA Pe				13.4	_			1310 E				8.2		0.3		A	8.3	Α		7.5	0.52	36.2	41.1%	
√ \	WBL WBR	≱-	38 86		1900 1900	4.4	1.00	16.0	86:0	1663	86.0	1663	0.92 0.92		81 0	53 0	Prot	œ		4.5	4.5	0.12	4.4	2.0	206	c0.03		0.26	14.3	1.00	0.2	14.6	В	14.6	В			ratio			
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Tum Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)		v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	

KHA HCM Signalized Intersection Capacity Analysis

29: Garnet Ave & Balboa WB Ramps

Lane Group	EBT	WBT	WBR	SBR	
Lane Group Flow (vph)	2313	1139	445	1152	
v/c Ratio	0.45	0.57	0.50	0.80	
Control Delay	0.3	20.5	3.7	22.6	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	0.3	20.5	3.7	22.6	
Queue Length 50th (ft)	0	164	0	260	
Queue Length 95th (ft)	0	204	52	#431	
Internal Link Dist (ft)	265	362			
Turn Bay Length (ft)			300		
Base Capacity (vph)	2082	2466	966	1448	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.45	0.46	0.45	08.0	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

	•	†	ţ	4	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	*-		لمرابع	
Traffic Volume (vph)	0	2128	1048	409	0	1060	
Future Volume (vph)	0	2128	1048	409	0	1060	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.91	0.91	1.00		0.88	
Frt		1.00	1.00	0.85		0.85	
Flt Protected		1.00	1.00	1.00		1.00	
Satd. Flow (prot)		2082	2082	1583		2787	
Flt Permitted		1.00	1.00	1.00		1.00	
Satd. Flow (perm)		5085	5085	1583		2787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	2313	1139	445	0	1152	
RTOR Reduction (vph)	0	0	0	270	0	29	
Lane Group Flow (vph)	0	2313	1139	175	0	1123	
Turn Type		NA	NA	Perm		Prot	
Protected Phases		14	∞				
Permitted Phases				8			
Actuated Green, G (s)		83.0	32.7	32.7		42.3	
Effective Green, g (s)		83.0	32.7	32.7		42.3	
Actuated g/C Ratio		1.00	0.39	0.39		0.51	
Clearance Time (s)			4.0	4.0		4.0	
Vehicle Extension (s)			3.0	3.0		3.0	
Lane Grp Cap (vph)		2082	2003	623		1420	
v/s Ratio Prot		0.45	c0.22			c0.40	
v/s Ratio Perm				0.11			
v/c Ratio		0.45	0.57	0.28		0.79	
Uniform Delay, d1		0.0	19.6	17.1		16.7	
Progression Factor		1.00	1:00	1:00		1.00	
Incremental Delay, d2		0.1	0.4	0.5		3.1	
Delay (s)		0.1	20.0	17.4		19.8	
Level of Service		A	ပ	Ω		В	
Approach Delay (s)		0.1	19.3		19.8		
Approach LOS		A	В		В		
Intersection Summary							
HCM 2000 Control Delay			10.6	일	:M 2000 L	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	atio		69.0				
Actuated Cycle Length (s)			83.0	ns :	Sum of lost time (s)	ime (s)	8.0
Intersection Capacity Utilization			64.0%	<u>ವ</u>	CU Level of Service	Service	m
Analysis Period (min)			15				
c Critical Lane Group							

Critical Lane Group

Balboa Station

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Arterial Level of Service: EB Garnet Ave	Service: EB G	Sarnet Ave			*Reductio	n of si	*Reduction of signal delay	y for
					transit	quene i	transit queue iump lane	1
	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	LOS
70	10	UG	404	200	2 24	000	0.0	L
omey or		3	1.71	0.00	0.01	0.0	9:5	ŀ
Balboa Ave	=	30	23.5	29.6	53.1	0.19	12.6	ш
Soledad Mtn Rd	=	32	27.3	8.3	35.6	0.23	23.2	O
Bond St	=	32	21.0	0.5	21.5	0.17	28.1	Ф
Mission Bay Dr	=	32	15.5	29.7	75.2	0.12	5.9	ш
l-5 Off-ramp [★]	=	45	24.2	18.2	12.0 42.4 36	.2 0.23	19.8	Δ
Balboa WB Ramps	=	45	7.1	1.0][][0.07	29.0	Ω
Moraga Ave★	=	45	22.2	#:ö	1.2 28.6 26.4	.4 0.20	25.7	O
Clairemont Dr	=	45	49.7	69.8	119.5	0.62	18.7	Ω
Total	=		202.6	227.0	429.6	1.92	16.1	Н

Arterial Level of Service: WB Garnet Ave

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	LOS
Ciairemoni Di	-	; }	14.7	56.6	71.5	0.13	8:0	-
Moraga Ave	=	45	49.7	19.3	0.69	0.62	32.4	В
Balboa WB Ramps	=	45	22.2	25.7	47.9	0.20	15.3	ш
Santa Fe St	=	45	7.1	0.3	7.4	20.0	31.8	Ш
Mission Bay Dr	=	45	24.2	57.4	81.6	0.23	10.3	ш.
Bond St	_	32	15.5	1.0	16.5	0.12	27.0	O
Soledad Mtn Rd	=	32	21.0	27.7	48.7	0.17	12.4	ш
Garnet Ave	=	32	27.3	1.2	28.5	0.23	29.0	Ω.
Olney St		30	23.5	15.1	38.6	0.19	17.3	D
Total	=		205.2	204.5	409.7	1.97	17.3	D

Arterial Level of Service: NB Mission Bay Dr

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	Œ	Speed	SOT
201		30	000	0.0	V 00	טט ט	0 00	C
TO DOOMOCOL		3	0.07	V.4	F.0.4	07:0	0.02)
		ro	0 1.7	007	0 70	0 7 0	40.0	
IMISSION DAY DI	Ē	S	0.01	2.0	0.10	21.0	2.CI	
Bunker Hill St	=	35	14.6	17.8	32.4	0.11	12.0	ш
Driveway	=	35	21.4	10.2	31.6	0.17	19.1	O
Garnet Ave	=	32	13.8	40.0	53.8	0.10	6.9	ш.
Damon Ave	=	35	11.7	24.6	36.3	0.09	8.6	ш.
Bluffside Av	=	32	20.1	4.0	24.1	0.16	23.5	O
Total	=		121.0	115.4	236.4	0.94	14.2	О

KHA Arterial Level of Service

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Balboa Station

Horizon Year with Reduced LU Timing Plan: PM Peak Period

Arterial Level of Service: SB Mission Bay Dr

Cross Street Dlaffside Av	Class	Speed 35	Time 20:0 20:1 11.7	1.0	Time (s) 64.5 21.1	(mi)	Speed	00
Dluffside Av	===	35	20.0 20.1 11.7	44.5 1.0	64.5 21.1	9.16		2
Didinalac viv	= =	32	20.1	1.0	21.1	2	0.7	L
	=	£ 1	20.1	1.0	21.1		 >	l
Damon Ave	=	L	11.7			0.16	26.8	ш
Garnet Ave	=	8		110.8	122.5	0.09	2.5	ш
Magnolia Ave	=	32	13.8	17.8	31.6	0.10	11.7	Ш
Driveway	=	35	21.4	8.2	29.6	0.17	20.4	O
Grand Ave	=	32	14.6	64.5	79.1	0.11	4.9	ш.
Resembed St		35	15.8	0.1	17.7	0.12	73.7	
Total	=		117.4	248.7	366.1	0.89	8.8	ш

KHA Arterial Level of Service

APPENDIX K

MITIGATED REDUCED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

Horizon Year with Reduced LU MITIGATED
Timing Plan: AM Peak Period Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Movement	1	†	^	/	ţ	1	•	—	•	٠	→	•
Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	++	W.	1	++	*	1	++	*	4	+	N. N.
Traffic Volume (vph)	692	929	533	214	528	242	4	221	263	250	329	378
Future Volume (vph)	692	929	533	214	528	242	440	221	263	220	329	378
deal 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	4.4	4.9	4.4	4.4	5.3	4.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
き	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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
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)	3433	3236	1583	3433	3539	1583	3433	3236	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	752	713	579	233	574	263	478	299	386	272	328	411
RTOR Reduction (vph)	0	0	72	0	0	62	0	0	49	0	0	31
Lane Group Flow (vph)	752	713	202	233	574	201	478	266	237	272	358	380
Turn Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	ΝA	vo+mq	Prot	NA	vo+mq
Protected Phases	က	∞	-	7	4	2	-	9	7	2	2	3
Permitted Phases			∞			4			9			2
Actuated Green, G (s)	29.0	43.8	65.8	13.1	27.9	42.5	22.0	44.9	58.0	14.6	37.1	96.1
Effective Green, g (s)	29.0	43.8	65.8	13.1	27.9	42.5	22.0	44.9	58.0	14.6	37.1	96.1
Actuated g/C Ratio	0.21	0.32	0.49	0.10	0.21	0.31	0.16	0.33	0.43	0.11	0.27	0.49
Clearance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
Vehide Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
Lane Grp Cap (vph)	737	1148	771	333	731	498	228	1177	089	371	511	1364
v/s Ratio Prot	c0.22	0.20	0.11	0.07	c0.16	0.04	c0.14	0.17	0.03	0.08	c0.19	90.0
v/s Ratio Perm			0.21			0.08			0.12			0.08
v/c Ratio	1.02	0.62	99.0	0.70	0.79	0.40	0.86	0.51	0.35	0.73	0.70	0.28
Uniform Delay, d1	23.0	38.6	26.1	29.0	20.7	36.3	54.9	36.2	25.8	58.3	4.0	20.4
Progression Factor	1.06	1.04	1.13	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	37.4	1.	1.5	5.1	6.1	0.2	11.8	1.6	0.1	6.3	7.8	0.0
Delay (s)	93.3	41.5	31.0	64.2	56.8	36.5	2.99	37.8	25.9	64.6	51.8	20.4
Level of Service	ш.	۵	ပ	ш	ш	Δ	ш	۵	ပ	ш	۵	O
Approach Delay (s)		97.6			53.4			45.4			42.7	
Approach LOS		ш			Ω			Ω			Ω	
Intersection Summary												
HCM 2000 Control Delay			51.0	ĭ	SM 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	city ratio		0.83									
Actuated Cycle Length (s)			135.0	ઝ	m of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	fion		%0:08	೦	U Level	CU Level of Service	_		_			
Analysis Period (min)			5									
 Critical Lane Group 												

Synchro 9 Report Page 1

Balboa Transit Station 7: Balboa EB Ramps & Balboa Ave

Horizon Year with Reduced LU MITIGATED
Timing Plan: AM Peak Period

### ### WBI WBI NBI NBI NBI NBI NBI NBI NBI NBI NBI N		Ť	~	>	,	F	Ĺ	
7.88 657 0 1299 0 210 7.88 657 0 1299 0 210 7.88 657 0 1299 0 210 7.89 657 0 1299 0 210 7.80 1900 1900 1900 1900 1900 7.80 1.00 0.95 1.00 0.91 7.00 1.00 0.85 1.00 0.96 7.00 1.00 0.85 1.00 0.86 7.00 1.00 0.85 1.00 0.86 7.00 1.00 0.85 1.00 0.86 7.00 1.00 0.85 1.00 0.86 7.00 1.00 0.85 1.00 0.86 7.00 1.00 0.85 1.00 7.83 18 3 141 0 0 7.38 7.9 17.7 17.7 39.7 14.0 7.9 17.6 0.28 0.27 7.9 1.6 0.28 0.27 7.9 1.6 0.28 0.27 7.9 1.6 0.28 0.27 7.9 1.6 0.0 0.3 7.9 1.00 0.3 7.00 0.3 7.00	Movement	EBT	EBR	WBL	WBT	NBL	NBR	
738 657 0 1299 0 210 738 657 10 1299 0 210 1900 1900 1900 1900 1900 6 40 40 40 40 40 100 0.85 1.00 0.91 1.00 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 1.00 0.86 1.00 1.00 0.86 1.00 1.00 0.86 1.00 1.00 0.86 1.00 1.00 0.86 1.00 0.	Lane Configurations	₩	¥.		444		R.	
1300 1900 1000	Traffic Volume (vph)	738	299	0	1299	0	210	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	738	657	0	1299	0	210	
100 40 40 40 40 40 100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 100	Total Lost fime (s)	4.0	4.0		4.0		4.0	
100 0.85	Lane Util. Factor	0.95	9.		0.91		1.00	
100 100 100 100 100 100 100 100 100 100	き	1.00	0.85		1.00		0.86	
1,00	Flt Protected	1.00	1.00		1.00		1.00	
1,00	Satd. Flow (prot)	3239	1583		5085		1611	
Siggo 1583 5085 1611	Flt Permitted	1.00	1.00		1.00		1.00	
F 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	3539	1583		5085		1611	
h) 802 714 0 1412 0 228 h) 802 318 0 140 0 73 h) 802 318 0 1412 0 173 h) NA Perm NA Prot 4 4 5 8 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
h) 0 396 0 0 73 h) 802 318 0 1412 0 155 h) NA Perm NA Prot 4 4 58 5 c) 177 177 397 140 h 177 177 397 140 h 177 177 397 140 h 197 705 5085 568 c0.23 c0.28 0.10 c0.23 c0.28 0.10 c0.21 0.45 0.28 0.27 c0.23 c0.28 0.27 c0.23 c0.28 0.27 c0.24 0.40 0.95 c0.25 0.45 0.09 9.5 c0.27 c0.28 0.3 0.45 0.00 0.3 c0.29 0.3 0.5 c0.29 0.00 0.3 c0.29 0.00 0.3 colapsity ratio (s) 440% colapsity ratio (s) 440% colapsity ratio (s) collication 440% collication 150	Adj. Flow (vph)	802	714	0	1412	0	228	
h) 802 318 0 1412 0 155 NA Perm NA Prot 58 5 4 4 4 58 5 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.7 17.7 39.7 140 17.8 1.0 0.35 17.8 1.0 0.0 9.5 17.9 7.6 0.0 9.5 17.0 1.00 1.00 0.3 2 0.3 0.5 0.0 0.3 2 0.3 0.5 0.0 0.3 2 0.3 0.5 0.0 0.3 4 A A A A A N A A A A N A A A A N A A A A	RTOR Reduction (vph)	0	386	0	0	0	73	
NA Perm NA Prot	Lane Group Flow (vph)	802	318	0	1412	0	155	
177 177 397 140 177 177 397 140 177 177 397 140 177 177 397 140 177 177 397 140 177 177 397 140 177 177 397 140 130 30 30 30 30 30 30	Turn Type	NA	Perm		Ν		Prot	
s) 17.7 17.7 39.7 14.0 17.7 17.7 39.7 14.0 17.7 17.7 39.7 14.0 14.6 0.45 0.45 1.00 0.35 1.0 3.0 3.0 3.0 1.5 7 705 5085 568 1.5 7 705 5085 568 1.5 7 8 0.28 0.10 1.5 1 0.45 0.28 0.10 1.5 1 0.45 0.02 0.27 1.5 1 0.45 0.02 0.27 1.5 1 0.45 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.0 9.5 1.5 1 0.4 0.4 0.4 0.4 0.4 0.4 0.5 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	Protected Phases	4			58		2	
177 177 397 140 177 177 397 140 177 177 397 140 177 177 397 140 177 175 397 140 187 140 0.35 1877 705 5085 568 1877 705 5085 568 1877 705 5085 568 1877 705 0.08 0.10 100 1.00 1.00 1.00 100 1.00 1.00 100 1.00 1.00 100 1.00 0.3 100 1.00 0.3 110 1.00 0.3 110 1.00 0.3 110 1.00 0.3 120 1.00 0.3 130 1.00 0.3 140 140 140 150 140 140 150 140 140 160 160 160 177 177 140 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180	Permitted Phases		4					
17.7 17.7 39.7 14.0	Actuated Green, G (s)	17.7	17.7		39.7		14.0	
0.45 0.45 1.00 0.35 1.00 1	Effective Green, g (s)	17.7	17.7		39.7		14.0	
40	Actuated g/C Ratio	0.45	0.45		1.00		0.35	
3.0 3.0 3.0 3.0 3.0 3.0	Clearance Time (s)	4.0	4.0				4.0	
1577 705 5085 568 c0.23	Vehicle Extension (s)	3.0	3.0				3.0	
c0.23 c0.28 0.10 0.51 0.45 0.28 0.27 7.9 7.6 0.00 9.2 2 0.3 0.5 0.0 0.3 8.1 8.1 0.0 9.5 A A A A A A 8.1 0.0 9.5 A A A A A A 8.1 0.0 9.5 A A A A A A 8.1 0.0 9.5 A A A A A 8.1 0.0 9.5 A A A A 8.1 0.0 9.5 A A A A 8.1 0.0 9.5 A A A A 8.1 0.0 9.5 A A A A 8.1 0.0 9.5 A A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5 A A A 9.0 0.0 9.5	Lane Grp Cap (vph)	1577	705		5085		268	
0.51 0.20 0.28 0.27 7.9 7.6 0.0 9.2 1.00 1.00 1.00 0.3 2 0.3 0.5 0.0 0.3 8.1 8.1 0.0 9.5 A A A A A 8.1 0.0 9.5 A A A A 9.0 0.0 9.5 A A A A 1.00 0.0 9.5 A A A A 1.00 0.0 9.5 A A A A 1.00 0.0 9.5 A A A 1.0	v/s Ratio Prot	c0.23			c0.28		0.10	
0.51 0.45 0.28 0.27 7.9 7.6 0.0 9.2 2 0.3 0.5 0.0 0.3 8.1 8.1 0.0 9.5 A	v/s Ratio Perm		0.20					
7.9 76 0.0 9.2 1.00 1.00 1.00 2 0.3 0.5 0.0 0.3 8.1 8.1 0.0 9.5 8.1 8.1 0.0 9.5 8.1 8.1 0.0 9.5 9.5 9.7 A A A A A A A A A A A A A A A A A A A	v/c Ratio	0.51	0.45		0.28		0.27	
100 100 100 100 2 0.3 0.5 0.0 0.3 8.1 8.1 0.0 9.5 A A A A A A A 8.1 0.0 9.5 A A A A A 8.1 0.0 9.5 A A A A A 9.0 9.5 A A A A 8.1 0.0 9.5 A A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A A A 9.0 9.5 A	Uniform Delay, d1	7.9	9.7		0.0		9.2	
2 0.3 0.5 0.0 0.3 8.1 8.1 0.0 0.3 A A A A A 8.1 0.0 9.5 A A A A Y V V V V V V V V V V V V	Progression Factor	1.00	1.00		1.00		1.00	
8.1 8.1 0.0 9.5 A A A A A A A A A A A A A A A A A A A	Incremental Delay, d2	0.3	0.5		0.0		0.3	
A A A A A A A A A A A A A A A A A A A	Delay (s)	8.1	8.1		0.0		9.5	
No. 10 10 10 10 10 10 10 10	Level of Service	⋖	⋖		×		⋖	
y y 4.6 HCM 2000 Level of Service o Capacity ratio 0.44 Sum of lost time (s) Utilization 44.0% ICU Level of Service 15	Approach Delay (s)	8.1			0.0	9.5		
4.6 HCM 2000 Level of Service 0.44 Sum of lost time (s) 39.7 Sum of lost time (s) 44.0% ICU Level of Service 15	Approach LOS	A			∀	⋖(
4.6 HCM 2000 Level of Service 0.44 39.7 Sum of lost time (s) 44.0% ICU Level of Service 15	Intersection Summary							
0.44 39.7 Sum of lost time (s) 44.0% ICU Level of Service 15	HCM 2000 Control Delay			4.6	¥	M 2000 I	evel of Service	A
39.7 Sum of lost time (s) 44.0% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.44				
Utilization 44.0% ICU Level of Service 15	Actuated Cycle Length (s)			39.7	Su	m of lost	ime (s)	8.0
15	Intersection Capacity Utiliza	tion		44.0%	☲	J Level o	Service	¥
Celifical Law Covins	Analysis Period (min)			15				
	Critical I and Groun			2				

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year with Reduced LU MITIGATED Timing Plan: AM Peak Period Balboa Transit Station 9: Clairemont Dr & Balboa Ave

285 285 1900 0.69 29.8 1.00 2.4 32.2 C C C D 341 341 341 341 341 1900 0.95 0.93 1.00 1.00 3298 371 144 144 2.6 779 c0.16 ΑĀ 20.2 20.2 0.24 5.3 12.8 12.8 0.15 2.0 264 264 20.13 210 210 210 900 900 11.00 770 770 0.95 0.95 0.95 0.95 0.95 0.86 35.5 1.00 23.4 58.9 E 20.5 C S 32.3 32.3 32.3 0.38 6.038 598 0.112 0.71 22.6 1.00 3.3 26.0 18.4 0.22 5.3 5.3 761 0.12 0.58 30.1 1.00 0.8 30.9 C C C o & 125 125 126 126 126 126 127 177 136 136 136 Prot 11.0 11.0 0.13 0.13 2.0 2.0 2.7 2.0 0.08 0.60 35.2 1.00 2.8 38.0 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 123 0.92 134 0 WBT 710 710 710 1900 6.4 6.4 6.4 972 1.00 4972 7.72 2.38 883 8833 NA 26.0 26.0 0.30 6.4 6.4 3.0 1511 0.18 0.58 25.2 1.00 0.6 0.6 C C C C 13.9 13.9 0.16 2.0 2.0 558 50.14 0.84 34.7 1.00 10.2 44.9 D 33.3 0.79 85.5 70.1% 99 99 61 20.6 20.6 0.24 5.7 3.5 3.5 12.11 0.72 29.8 1.00 2.1 31.9 C C EBT 746 746 746 746 1900 0.91 0.91 1.00 5028 5028 5028 811 9868 NA Intersection Summers
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Acturated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group 7.8 7.8 0.09 4.4 2.0 3.13 0.06 0.65 37.5 1.00 3.4 41.0 187 187 187 1900 1.00 0.95 203 0.95 0.95 0.95 0.95 203 Prot Fit Protected Said: Flow (prot) FIt Permitted Said: Flow (prot) FIt Permitted Said: Flow (perm) Pask-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph) Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s) Lane Group Flow (vph.) Actuated Green, G (s) Effective Green, g (s) Lane Grp Cap (vph) v/s Ratio Prot v/s Ratio Perm Level of Service Approach Delay (s) Approach LOS Actuated g/C Ratio Clearance Time (s) Protected Phases Permitted Phases Uniform Delay, d1 Lane Util. Factor Tum Type Delay (s)

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station 22: Morena Blvd & Jutland Dr

Horizon Year with Reduced LU MITIGATED Timing Plan: AM Peak Period

Lane Group Flow (ph) 390 13 257 391 4 163 Further Volume (oph) 190 13 257 391 4 163 Futter Volume (oph) 190 13 257 391 4 163 Futter Volume (oph) 190 13 257 391 4 163 Futter Volume (oph) 190 130 1900 1900 1900 Lane Util. Factor 1,00 100 100 100 100 Lane Util. Factor 1,00 100 100 100 100 Fit Protected 1,00 100 100 100 100 Sadd. Flow (pont) 1770 1583 1863 1583 3363 Flet Protected 1,00 100 100 100 100 Sadd. Flow (pont) 1770 1583 1863 1583 3363 Flet Protected Phases 8 2 2 4 177 Futtor RTOR Reduction (rph) 207 3 279 241 0 181 Futtor Group Flow (rph) 207 3 279 241 0 181 Futtor Group Flow (rph) 207 3 279 241 0 181 Futtor Group Flow (rph) 385 344 1056 897 1907 Actuated g/C Ratio 0,22 0,57 0,57 0,57 Clearance Time (s) 4,0 4,0 4,0 4,0 Clearance Time (s) 4,1 4,1 4,1 4,1 4,1 Clearance Time (s) 4,0 4,0 Clearance Time (s) 4,1 4,1 4,1 4,1 Clearance Time (s) 4,0 4,0 Clearan		-	/	-	•	٠	→	
190 13 257 391 4 163 190 13 257 391 4 163 190 13 257 391 4 163 190 13 257 391 4 163 190 1900 1900 1900 1900 100 100 100 100 0.98 100 0.98 100 0.98 100 0.98 100 0.98 1770 1583 1863 1583 3535 1770 1583 1863 1583 3535 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 1770 1583 1863 1583 3355 1770 1583 1863 1583 3355 1770 1583 1863 1583 181 81 211 211 211 207 3 279 241 0 137 207 3 279 241 0 137 208 213 211 211 211 209 205 0.05 0.05 200 205 0.07 0.05 200 205 0.07 0.09 200 205 0.07 0.00 200 201 0.05 0.07 200 201 0.0	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
190 13 257 391 4 163 190 13 257 391 4 163 190 190 1900 1900 1900 40 40 40 40 40 100 100 100 100 100 100 100 100 170 1583 1863 1583 3535 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1583 1863 1583 3363 170 1633 1583 1363 170 170 170 170 170 170 170 170 170 170 171 271 271 170 170 170 170 170 170 170 1	Lane Configurations	*	¥	*	*-		€\$	
1900 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	190	13	257	391	4	163	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	190	13	257	391	4	163	
100 100 100 100 0.95 1.00 1.00 1.00 0.95 1.00 0.85 1.00 0.85 1.00 0.95 1.00 0.85 1.00 0.95 1.00 0.85 1.00 0.95 1.00 0.85 1.00 0.95 1.00 0.95 0.770 1583 1863 1583 3.355 0.70 14 279 425 4 177 0.01 100 100 100 0.95 0.71 1 279 241 0 181 0.01 100 184 0 10 0.01 101 101 184 0 181 0.01 100 184 0 10 0.01 101 101 101 0.02 0.20 0.92 0.92 0.95 0.92 0.95 0.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
100 100 100 0.95 100 0.85 1.00 0.85 100 0.85 1.00 0.85 100 1.00 1.00 1.00 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1583 1863 1583 3.953 1770 1770 170 170 170 1770 170 170 170 170 170 170 170 173 174 47 48 3.8 142 143 174 47 48 3.8 142 143 174 47 48 3.8 145 170 0.03 170 0.04 170 0.05	Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	
100 0.85 100 0.85 100 100 1770 1583 1863 1583 3535 1583 3535 17770 1583 1863 1583 3535 1583 3535 1583 1863 1583 3535 1583 1863 1583 3535 1583 1863 1583 3535 1583 1863 1583 1863 1583 1863 1583 1863 1863 1863 1863 1863 1863 1863 18	Lane Util. Factor	9.	9.	1.00	8.		0.95	
105 100	Fr	1.00	0.85	1.00	0.85		1.00	
170 1583 1863 1583 3535 1770 1583 1863 1583 3535 1770 1583 1863 1583 3365 1770 1583 1863 1583 3365 1770 1583 1863 1583 3365 1770 1583 1863 1583 3365 1770 1583 1863 1363 1770 1583 1863 1363 1770 1583 1863 1364 1770 170 170 170 1770 170 170 170 1770 170 170 170 1770 170 170 170 1770 170 170 170 1770 170 170 170 173 174 47 48 38 184 174 47 48 38 185 187 187 187 197 190 106 07 0.09 197 197 197 197 197 197 197 197 198 198 198 38 198 198 198 38 198 198 198 198 198 198 198 198 198 198 198 198 198 198 198 198	Flt Protected	0.95	1.00	1.00	1.00		1.00	
1770 1583 1582 1583 1533	Satd. Flow (prot)	1770	1583	1863	1583		3535	
1770 1583 1863 1583 3363 1770 1583 1863 1583 3363 1770 1583 1863 1583 3363 1770 1582 093 093	Flt Permitted	0.95	1.00	1.00	1.00		0.95	
F 0.92 0.92 0.92 0.92 0.92 0.92 1.00 h) 207 14 279 425 4 177 h) 207 3 279 241 0 181 R	Satd. Flow (perm)	1770	1583	1863	1583		3363	
h) 207 14 279 425 4 177 b) 207 3 279 241 0 181 e) 207 3 279 241 0 181 e) 8 1 8 1 271 271 0 181 e) 8 1 8 1 271 271 271 e) 8 1 8 1 271 271 271 e) 8 2 6 6 e) 8 1 8 1 271 271 271 e) 30 30 30 30 30 e) 385 344 1056 897 1907 e) 100 006 007 e) 144 41 41 41 37 e) 100 06 07 e) 143 114 47 48 38 e) 8 4 65 HCM 2000 Level of Service e) 034 e) 142 48 A A elay e) 1586 101 event of Service e) 0358 e) 1697 e) 170 000 06 07 e) 170 000 070 e) 170 Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
h) 0 11 0 184 0 0 0 Prof Perm NA Perm	Adj. Flow (vph)	207	14	279	425	4	177	
hb) 207 3 279 241 0 181 Prot Perm NA Perm Perm NA Per	RTOR Reduction (vph)	0	Ξ	0	184	0	0	
Prot Perm NA Perm NA Perm NA	Lane Group Flow (vph)	207	3	279	241	0	181	
8 8 2 6 6 8 1 8.1 8.1 21.1 21.1 21.1 9 8.1 8.1 21.1 21.1 21.1 0.22 0.22 0.57 0.57 0.57 0.22 0.22 0.57 0.57 0.57 0.23 0.30 3.0 3.0 3.0 0.36 3.4 1056 897 1907 0.01 0.00 0.05 0.54 0.01 0.26 0.27 0.05 0.54 0.01 0.26 0.27 0.05 0.54 0.01 0.26 0.27 0.05 0.54 0.01 0.26 0.27 0.05 0.54 0.01 0.26 0.27 0.05 0.100 1.00 1.00 1.00 1.00 1.29 1.14 4.1 4.1 4.1 3.7 1.43 1.14 4.7 4.8 3.8 B A A A A A A A A A A A A A A A A A A A	Turn Type	Prot	Perm	NA	Perm	Perm	NA	
s) 8.1 8.1 21.1 21.1 21.1 21.1 21.1 21.1 2	Protected Phases	∞		2			9	
8) 8.1 8.1 21.1 21.1 21.1 21.1 21.1 21.1 2	Permitted Phases		∞		2	9		
8 1 8 1 21 1 21 1 21 1 21 1 21 1 21 1 2	Actuated Green, G (s)	8.1	8.1	21.1	21.1		21.1	
0.22 0.27 0.57 0.57 0.57 0.57 0.57 0.57 0.57 0.5	Effective Green, g (s)	8.1	8.1	21.1	21.1		21.1	
10	Actuated g/C Ratio	0.22	0.22	0.57	0.57		0.57	
30 30 30 30 30 30 30 30 38 344 1056 897 1907	Clearance Time (s)	4.0	4.0	4.0	4.0		4.0	
385 344 1056 897 1907 -0.12 0.15 0.00 0.01 1.29 1.14 4.1 4.1 3.7 1.00 1.00 1.00 1.00 2 1.14 0.0 0.6 0.7 0.1 1.15 1.14 4.7 4.8 3.8 B A A A A Y	Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
0.012 0.15 0.15 0.05 0.05 0.05 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.01 0.05 0.05	Lane Grp Cap (vph)	382	344	1056	897		1907	
0.54 0.00 co.0.15 0.005 0.54 0.01 0.28 0.27 0.009 12.9 11.4 4.1 4.1 3.7 1.00 1.00 1.00 1.00 1.00 2 1.4 0.0 0.6 0.7 0.0.1 14.2 11.4 4.7 4.8 3.8 B A A A A A A A A A A A A A A A A A A A	v/s Ratio Prot	c0.12		0.15				
0.54 0.01 0.26 0.27 0.09 1.00 1.00 1.00 1.00 1.00 2 1.4 0.0 0.6 0.7 0.1 1.00 1.4.3 11.4 4.7 4.8 3.8 14.2 4.8 A A A 14.2 4.8 3.8 B A A A A 14.2 4.8 3.8 B A A A A 14.2 4.8 3.8 Colpacity ratio 0.34 V (bilization 3.55% (O'U Level of Service 1.0 3.55% (O'U Le	v/s Ratio Perm		0.00		c0.15		0.05	
12.9 11.4 4.1 4.1 3.7 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio	0.54	0.01	0.26	0.27		0.09	
100 100 100 100 100 100 100 100 1143 114 4.7 48 3.8	Uniforn Delay, d1	12.9	11.4	4.1	4.1		3.7	
2 14 00 06 07 01 143 114 47 48 38 142 48 A A A 142 48 38 144 48 38 145 48 38 146 48 38 147 48 38 148 48 38 149 48 38 149 48 38 140 140 140 140 140 140 140 140 140 140	Progression Factor	1.00	1.00	1.00	1.00		1.00	
143 114 47 48 38 B A A A A 142 48 38 B A A A A 142 48 38 Y y y y (c) Capacity ratio (a) 37 2 Sum of lost time (s) (b) 35.5% (CU Level of Service (b) 15.5% (CU Level of Service (c) 15.5% (CU Level of Service	Incremental Delay, d2	1.4	0.0	9.0	0.7		0.1	
B	Delay (s)	14.3	11.4	4.7	4.8		3.8	
y A A y A A y A A heldsy 65 HCM 2000 Level of Service o Capacity ratio 0.34 Sum of lost time (s) y Utilization 35.5% ICU Level of Service 15 ICU Level of Service	Level of Service	Ω	ω	⋖	¥		V	
y y 65 HCM 2000 Level of Service of Servic	Approach Delay (s)	14.2		4.8			3.8	
6.5 HCM 2000 Level of Service 0.34 37.2 Sum of lost time (s) 35.5% ICU Level of Service 15	Approach LOS	В		V			A	
6.5 HCM 2000 Level of Service 0.34 Sum of lost time (s) 37.2 Sum of lost time (s) 35.5% ICU Level of Service 15	Intersection Summary							
0.34 Sum of lost time (s) 37.2 Sum of lost time (s) 35.5% ICU Level of Service 15	HCM 2000 Control Delay			6.5	유	:M 2000 I	evel of Service	٧
37.2 Sum of lost time (s) zation 35.5% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.34				
ilization 35.5% ICU Level of Service 15	Actuated Cycle Length (s)			37.2	Su	m of lost	time (s)	8.0
15	Intersection Capacity Utiliza	tion		35.5%	ಶ	J Level o	f Service	A
	Analysis Period (min)			15				
Ciritical and Circuin	c Critical Lane Group							

KHA HCM Signalized Intersection Capacity Analysis

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MOVEMENT SUMMARY

∀ Site: 1Roundabout
Roundabout

Site: 1 [AM - Future Reduced MITIGATED - Morena at Jutland - Copy]

Move	ment Perfo	ormance - Ve	ehicles								
Mo∨	OD	Demand		Deg.	Average	Level of	95% Back o		Prop.	Effective	Average
ID	Mo∨	Total ∨eh/h	HV %	Satn v/c	Delay	Service	Vehicles ∨eh	Distance	Queued	Stop Rate	Speed
South	Morena Blv		70	VIC	sec		ven	ft		per veh	mph
8	T1	279	2.0	0.501	7.6	LOS A	4.1	104.8	0.07	0.01	20.2
18	R2	425	2.0	0.501	7.6	LOS A	4.1	104.8	0.07	0.01	19.1
Appro	ach	704	2.0	0.501	7.6	LOSA	4.1	104.8	0.07	0.01	19.5
East:	Jutland Ave										
1	L2	207	2.0	0.265	7.2	LOSA	1.1	27.1	0.44	0.36	19.1
16	R2	14	2.0	0.265	7.2	LOSA	1.1	27.1	0.44	0.36	19.0
Appro	ach	221	2.0	0.265	7.2	LOSA	1.1	27.1	0.44	0.36	19.1
North:	Morena Blv	d									
7	L2	4	2.0	0.202	6.0	LOSA	0.8	19.9	0.36	0.26	22.5
4	T1	177	2.0	0.202	6.0	LOS A	0.8	19.9	0.36	0.26	21.4
Appro	ach	182	2.0	0.202	6.0	LOSA	0.8	19.9	0.36	0.26	21.5
All Veh	icles	1107	2.0	0.501	7.3	LOSA	4.1	104.8	0.19	0.12	19.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2016 Akcelik and Associates Pty Ltd | sidrasolutions.com Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Wednesday, July 26, 2017 5:46:53 PM Project: K\SND_TPTO\095413006 - Balboa Station\SIDRA\Morena at Jutland\Roundabout Mitigation Analysis.sip7

Horizon Year with Reduced LU MITIGATED
Timing Plan: PM Peak Period Balboa Station 5: Mission Bay Dr & Garnet Ave

lovement ane Configurations	В	EBT	ב		TOW						1	
ane Configurations			בסג	WBL		WBR	NBL	NBT	NBR	SBL	SBT	SBR
(day) samily)	44	44	*	14	₩	*	4	₩	ĸ	1	*	N. N.
I allic volulie (vpii)	469	629	443	308	8/9	323	647	494	332	272	467	763
uture Volume (vph)	469	629	443	308	8/9	323	647	494	332	272	467	763
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
ane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88
	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
It 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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
It 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)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	1863	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
(dj. Flow (vph)	510	684	482	335	737	384	703	537	361	296	208	829
TOR Reduction (vph)	0	0	34	0	0	8	0	0	46	0	0	49
ane Group Flow (vph)	510	684	448	335	737	303	703	537	315	296	508	780
um Type	Prot	ΑN	vo+mq	Prot	NA	vo+mq	Prot	Ϋ́	vo+mq	Prot	NA	vo+mq
Protected Phases	က	∞	_	7	4	2	_	9	1	5	2	3
emitted Phases			œ			4			9			2
Actuated Green, G (s)	22.6	38.1	64.7	15.6	31.1	47.0	56.6	46.8	62.4	15.9	35.7	58.3
Effective Green, g (s)	22.6	38.1	64.7	15.6	31.1	47.0	56.6	46.8	62.4	15.9	35.7	58.3
Actuated g/C Ratio	0.17	0.28	0.48	0.12	0.23	0.35	0.20	0.35	0.46	0.12	0.26	0.43
Searance Time (s)	4.4	4.9	4.4	4.4	4.9	4.4	4.4	4.9	4.4	4.4	5.3	4.4
(ehicle Extension (s)	2.0	4.1	2.0	2.0	4.3	2.0	2.0	4.5	2.0	2.0	3.3	2.0
ane Grp Cap (vph)	574	866	758	396	815	221	9/9	1226	731	404	492	1203
//s Ratio Prot	c0.15	0.19	0.12	0.10	c0.21	90.0	c0.20	0.15	0.05	0.09	c0.27	0.11
//s Ratio Perm			0.17			0.13			0.15			0.17
/c Ratio	0.89	0.69	0.59	0.85	0.30	0.55	1.04	0.44	0.43	0.73	1.03	0.65
Iniform Delay, d1	22.0	43.1	25.5	58.5	50.5	35.5	54.2	34.0	24.4	57.5	49.6	30.3
Progression Factor	0.83	0.95	1.24	1.00	1.00	9.	97.	1.00	1.00	1.00	1.00	1.00
ncremental Delay, d2	14.6	3.7	0.8	14.7	15.4	9.0	45.4	0.4	0.1	5.8	49.2	0.9
Jelay (s)	60.5	44.5	32.5	73.2	62.9	36.1	93.6	34.4	24.5	63.3	98.8	31.2
evel of Service	ш	۵	ပ	ш	ш	۵	ட	ပ	ပ	ш	ட	O
Approach Delay (s)		45.9			28.7			8.09			58.1	
Approach LOS		Ω			ш			ш			ш	
ntersection Summary												
CM 2000 Control Delay			55.9	H	SM 2000	HCM 2000 Level of Service	Service		ш			
1CM 2000 Volume to Capacity ratio	ratio		0.97									
Actuated Cycle Length (s)			135.0	ઝ	m of los	Sum of lost time (s)			19.0			
ntersection Capacity Utilization	_		91.0%	೨	U Level	CU Level of Service			ш			
Analysis Period (min)			15									
Critical Lane Group												

Synchro 9 Report Page 1

Balboa Station 7: Balboa EB Ramps & Garnet Ave/Balboa Ave

Horizon Year with Reduced LU MITIGATED Timing Plan: PM Peak Period

																																					A		8.0	В		
•	NBR	R.			~	4.0	1.00	0.86	1.00	1611	1.00	1611	0.92			341	Prot	2		16.6	16.6	0.31	4.0	3.0	499	c0.21		0.68	16.2	1.00	3.9	20.0	ပ				HCM 2000 Level of Service		Sum of lost time (s)	CU Level of Service		
√	L WBT NBL	444		1457		4.0	0.91	1.00	1.00	5085	1.00	5085		1584	0 0 0	1584	AN	58		53.5	53.5	1.00			5085	0.31		0.31	0.0	1.00	0.0	0.0		0.0 20.0	A			_			21	
<u>ب</u> مر	- EBR WBI	R.	860	980	_			0.85			1.00			935) 430	505	۱ Pem							3.0	1 855			2 0.59		Ì	1.1		¥				7.2	0.71		62.6%	15	
Ť	EBJ		e (vph) 1268	,	•			1.00				em) 3539		h) 1378	tion (vph)	low (vph) 1378	NA									60.39			y, d1 9.3		Jelay, d2 1.4			/(s) 10	S	ummary	ontrol Delay	HCM 2000 Volume to Capacity ratio	le Length (s)	ntersection Capacity Utilization	od (min)	ane Group
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	deal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ή	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Vc	Actuated Cycle Length (s)	Intersection C	Analysis Period (min)	c Critical Lane Group

KHA HCM Signalized Intersection Capacity Analysis

Horizon Year with Reduced LU MITIGATED
Timing Plan: PM Peak Period Balboa Station 9: Clairemont Dr & Balboa Ave

FBI FBI WBI		4	†	/	>	ţ	√	•	-	•	۶	-	•
No. 1, No. 1,	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	怒	SBT	SBR
1996	Lane Configurations	£	441		£.	4413		je-	#	*	¥	₩	
1906 499 533 947 160 71 331 1907 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 0.99 1.00 0.98 1.00 0.95 100 0.95 1.00 0.98 1.00 0.95 100 0.95 1.00 0.98 1.00 0.95 100 0.95 1.00 0.98 1.00 0.95 100 0.95 1.00 0.98 1.00 0.95 100 0.95 1.00 0.98 1.00 0.95 100 0.95 1.00 0.98 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 100 0.95 1.00 0.95 1.00 0.95 100 0.95 0.92 0.92 0.92 0.92 0.92 100 0.95 0.92 0.92 0.92 0.92 100 0.95 0.92 0.92 0.92 0.92 100 0.95 0.92 0.92 0.92 0.92 100 0.95 0.92 0.92 0.92 0.92 100 0.95 0.92 0.92 0.92 0.92 100 0.95 0.92 0.92 0.92 0.92 100 0.95 0.95 0.92 0.92 100 0.95 0.95 0.95 0.95 100 0.95 0.95 0.	Traffic Volume (vph)	351	966	49	533	947	160	71	391	429	346	602	253
1900 1900	Future Volume (vph)	351	966	49	533	947	160	71	391	459	346	602	253
14 57 44 64 44 53 10 0.97 0.97 0.91 1.00 0.95 1.00 0.98 1.00 0.95 1.00 1.00 0.98 1.00 0.95 1.00 1.00 0.98 1.00 0.95 1.00 1.00 0.99 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.96 0.96 0.96 0.96 0.17 1.00 0.10 0.00 0.00 0.17 1.00 0.10 0.00 0.00 0.00 1.00 0.10 0.00 0.00 1.00 0.98 0.94 0.76 0.63 0.71 1.00 0.10 0.00 0.00 1.00 0.98 0.94 0.76 0.63 0.71 1.00 0.99 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90 0.90 0.90 1.00 0.90	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
10	Total Lost time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
100 0.99 100 0.98 100 10	Lane Util. Factor	0.97	0.91		0.97	0.91		9.	0.95	1.00	1.00	0.95	
1985 100	끒	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	96.0	
170 353 343 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 1770 3539 3433 4975 174 47 47 47 47 47 47 4	Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
10 95	Satd. Flow (prot)	3433	2020		3433	4975		1770	3539	1583	1770	3382	
1433 5050 3433 4975 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770	Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
F 0.92 0.9	Satd. Flow (perm)	3433	5050		3433	4975		1770	3539	1583	1770	3382	
March Marc	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
h) 0 0 4 0 0 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	382	1083	23	579	1029	174	11	425	466	376	654	275
hb) 382 1132 0 579 1187 0 77 425 b) Prot NA P	RTOR Reduction (vph)	0	4	0	0	16	0	0	0	28	0	32	0
Prot NA Prot	Lane Group Flow (vph)	382	1132	0	579	1187	0	77	425	408	376	897	0
5 2 1 6 3 8 16 342 22.8 39.9 8.8 216 16.4 34.2 22.8 39.9 8.8 216 16.4 34.2 22.8 39.9 8.8 216 16.4 34.2 22.8 39.9 8.8 216 1 6.1 3.7 4.4 6.4 4.4 5.3 2.0 3.5 2.0 3.0 2.0 2.0 2.0 4.2 1356 6.14 1559 122 600 2.0 2.0 3.5 2.0 3.0 2.0 2.0 2.0 2.0 2.0 3.5 4.1 1.59 0.76 0.63 0.71 4.9 9.0 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.0 4.1 2.2 2.2 2.2 7.6 3.5 3.5 3.5 3.0<	Turn Type	Prot	NA		Prot	NA		Prot	NA	vo+mq	Prot	NA	
s) 16.4 34.2 22.8 39.9 8.8 216 16.4 34.2 22.8 39.9 8.8 216 16.4 34.2 22.8 39.9 8.8 216 2.0 3.5 2.0 3.0 2.0 2.0 3.5 2.0 3.0 2.4 4.4 5.7 4.4 6.4 5.3 2.0 3.0 2.0 2.4 4.2 1356 614 1559 172 600 2.4 4.3 614 1559 172 600 2.4 4.3 614 1559 172 600 2.5 60.8 0.8 0.8 0.1 0.0 1.0 1.0 1.0 2.5 60.8 0.8 1.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 48.6 74.5 41.7 65.3 55.3 2.5 60.8 48.6 74.5 41.7 65.3 55.3 2.5 60.8 48.6 74.5 41.7 65.3 55.3 2.5 60.8 10.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.5 60.8 10.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	Protected Phases	2	2		-	9		က	∞	-	7	4	
164 342 228 399 88 216 164 342 228 399 88 216 164 342 228 399 88 216 44 5.7 44 6.4 4.4 5.3 20 35 20 30 20 24 442 1356 614 1559 122 600 0.11 0.02 0.017 0.24 0.04 0.12 0.86 0.84 0.94 0.76 0.63 0.71 1.00 1.00 1.00 1.00 1.00 1.54 4.7 22.9 2.2 7.6 3.5 1.55 4.7 22.9 2.2 7.6 3.5 1.56 4.8 74.5 41.7 65.3 3.3 1.57 5.40 E.23 E.23 E.33 1.58 0.90 E.48 E.53 E.33 1.59 0.90 E.48 E.53 E.33 1.50 0.90 E.48 E.33 E.33 1.50 0.90 E.48 E.33 E.33 E.33 E.33 1.50 0.90 E.48 E.33 E.33 E.33 E.33 E.33 1.50 0.90 E.48 E.38 E.39 E.39 E.33 E.	Permitted Phases									∞			
164 342 228 399 88 216 163 027 0.18 0.31 0.07 0.17 44 5.7 4.4 6.4 4.4 5.3 2.0 3.5 2.0 3.0 2.0 2.4 442 1356 614 1559 122 600 0.11 0.02 0.017 0.24 0.04 0.12 0.28 0.84 0.94 0.76 0.63 0.71 1.00 1.00 1.00 1.00 1.00 1.00 1.55 4.4 43.9 516 39.4 57.7 49.9 1.00 1.00 1.00 1.00 1.00 1.00 2. 155 4.7 22.9 2.2 76 3.5 3.9 E	Actuated Green, G (s)	16.4	34.2		22.8	39.9		8.8	21.6	44.4	28.9	41.7	
0.13 0.27 0.18 0.31 0.07 0.17 4.4 5.7 4.4 6.4 4.6 5.3 2.0 3.5 2.0 3.0 2.0 3.5 2.0 3.0 4.2 1356 6.14 1559 122 600 0.11 0.0.2 0.0.17 0.24 0.04 0.12 0.86 0.84 0.94 0.76 0.63 0.71 1.00 1.00 1.00 1.00 1.00 1.00 1.5 4.4 3.9 5.16 3.94 5.77 49.9 1.00 1.00 1.00 1.00 1.00 1.00 2. 155 4.7 229 2.2 76 3.5 6.98 48.6 74.5 41.7 65.3 53.3 E D E D E D D D D D D D D D D D D D D	Effective Green, g (s)	16.4	34.2		22.8	39.9		8.8	21.6	44.4	28.9	41.7	
44 5/ 44 64 44 53 2.0 3.5 2.0 3.0 2.4 5.8 42 0.1 0.2 0.1 0.2 0.1 0.2 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.1 0.2 0.1	Actuated g/C Ratio	0.13	0.27		0.18	0.31		0.07	0.17	0.35	0.23	0.33	
20 35 20 30 24 442 1356 614 1559 122 600 614 1559 122 600 614 1559 122 600 614 1559 122 600 615 122 60	Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
442 1356 614 1559 122 600	Vehicle Extension (s)	2.0	3.5		2.0	3.0		2.0	2.4	2.0	2.0	2.6	
0.11 60.22 60.17 0.24 0.04 0.12 0.86 0.84 0.94 0.76 0.63 0.71 2.44 43.9 51.6 39.4 57.7 49.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap (vph)	442	1356		614	1559		122	009	225	401	1107	
0.86 0.84 0.94 0.76 0.63 0.71 544 43.9 51.6 39.4 57.7 49.9 1.00 1.00 1.00 1.00 1.00 1.00 1.05 4.7 22.9 2.2 7.6 3.5 6.98 48.6 74.5 41.7 65.3 53.3 E D E D E D E D 54.0 52.3 HCM 2000 Level of Service 127.0 C.00 C.00 C.00 C.00 C.00 C.00 C.00 C	v/s Ratio Prot	0.11	c0.22		c0.17	0.24		0.04	0.12	0.13	00.21	c0.27	
0.86 0.84 0.94 0.76 0.63 0.71 5.44 43.9 51.6 39.4 5.77 49.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	v/s Ratio Perm									0.13			
100 100	v/c Ratio	98.0	0.84		0.94	97.0		0.63	0.71	0.74	0.94	0.81	
1.00	Uniforn Delay, d1	54.4	43.9		51.6	39.4		27.7	49.9	36.4	48.3	39.2	
155 47 229 22 76 35 85 85 85 85 85 85 85 85 85 85 85 85 85	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
698 486 745 417 653 533 E D E D E D 540 523 483 D D D D N N N N N N N N N N N N N	Incremental Delay, d2	15.5	4.7		22.9	2.2		9.7	3.5	4.5	29.0	4.5	
E D E D E D P E	Delay (s)	8.69	48.6		74.5	41.7		65.3	53.3	40.8	77.3	43.7	
b	Level of Service	ш	Δ		ш	Δ		ш	Δ	Δ	ш	Δ	
D D D 7 Pletay 52.3 HCM 2000 Level of Service 0.90 Sum of lost time (s) 127.3 Sum of lost time (s) (b) 1127.3 Sum of lost time (s) 1127.3 Su	Approach Delay (s)		54.0			52.3			48.3			53.4	
52.3 HCM 2000 Level of Service 0.90 (2.50 Sum of last time (s) 82.0% (CU Level of Service 15.00 (cu Le	Approach LOS								Ω			Ω	
52.3 HCM 2000 Level of Service 0.30 0.30 Sum of lost time (s) 82.0% ICU Level of Service 15	Intersection Summary												
ratio 0.90 127.3 Sum of lost time (s) 82.0% ICU Level of Service 15	HCM 2000 Control Delay			52.3	Н	3M 2000	Level of S	ervice		Ω			
127.3 Sum of lost time (s) 82.0% ICU Level of Service 15	HCM 2000 Volume to Capacity	ratio		0.00									
82.0% ICU Level of Service 15	Actuated Cycle Length (s)			127.3	ઝ	m of lost	time (s)			20.5			
Analysis Period (min) 15	Intersection Capacity Utilization	_		82.0%	೦	U Level o	f Service			ш			
	Analysis Period (min)			15									
c Critical Lane Group	c Critical Lane Group												

Synchro 9 Report Page 3

Balboa Station 22: Morena Blvd & Jutland Dr

Horizon Year with Reduced LU MITIGATED Timing Plan: PM Peak Period

KHA HCM Signalized Intersection Capacity Analysis

MOVEMENT SUMMARY

♥ Site: 1 [PM - Future Reduced MITIGATED - Morena at Jutland - Copy - Copy - Copy]

Roundabout Roundabout

Mover	nent Perfo	rmance - Ve	ehicles								
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	f Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South:	Morena Blv	d									
8	T1	190	2.0	0.341	5.6	LOSA	2.1	54.2	0.12	0.03	21.5
18	R2	283	2.0	0.341	5.6	LOSA	2.1	54.2	0.12	0.03	20.2
Approa	ich	473	2.0	0.341	5.6	LOSA	2.1	54.2	0.12	0.03	20.7
East: J	utland Ave										
1	L2	639	2.0	0.714	16.7	LOSC	6.6	167.7	0.68	0.59	15.3
16	R2	12	2.0	0.714	16.7	LOSC	6.6	167.7	0.68	0.59	15.9
Approa	ich	651	2.0	0.714	16.7	LOSC	6.6	167.7	0.68	0.59	15.3
North:	Morena Blv	d									
7	L2	18	2.0	0.627	19.3	LOS C	3.7	94.0	0.76	0.90	16.9
4	T1	343	2.0	0.627	19.3	LOSC	3.7	94.0	0.76	0.90	15.2
Approa	ıch	362	2.0	0.627	19.3	LOSC	3.7	94.0	0.76	0.90	15.3
All Veh	ides	1486	2.0	0.714	13.8	LOS B	6.6	167.7	0.52	0.49	16.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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APPENDIX L

ACTIVE TRANSPORTATION ANALYSIS DATA

PEQE Intersection Analysis

	TOTAL	PEQE		1.Physical F	eature			Pedestrian	2.Operat	ional Feature				
			High Visibility	Raised	Advanced			Countdown	Pedestrian	No-Turn on Red	Additional		3.ADA Curb	4. Traffic
Intersection	SCORE	RATING	Crosswalk	Crosswalk	Stop Bar	Bulb out	Score	Signal	Lead Interval	Sign/Signal	Ped Signs	Score	Ramp	Control
Garnet / Bond	4	Medium	0	0	0	0	0	0	0	0	0	0	2	2
Garnet / Mission Bay	2	Low	0	0	0	0	0	0	0	0	1	0	0	2
Garnet / De Soto St	1	Low	0	0	0	0	0	0	0	0	0	0	0	1
Garnet / I-5 NB Off-Ramp	4	Medium	2	0	2	0	0	0	0	2	0	0	2	2
Garnet / Morena Ramp	4	Medium	1	0	0	0	0	1	0	0	0	0	2	2
Balboa / Moraga	4	Medium	0	0	1	0	0	?	0	0	0	0	2	2
Morena / Station Entrance	6	Medium	4	0	4	0	1	4	4	0	0	1	2	2
Morena / Bus Entrance	4	Medium	2	0	1	0	0	2	2	0	1	0	2	2
Morena / Paul Jones	1	Low	0	0	0	0	0	0	0	0	0	0	0	1
Morena / Ticonderoga St	1	Low	0	0	0	0	0	0	0	0	0	0	0	1
Mission Bay Drive/Rosewood	5	Medium	4	0	4	0	1	4	0	0	0	0	2	2
Mission Bay Drive/ Grand	4	Medium	0	0	4	0	0	4	0	0	0	0	2	2
Mission Bay Drive/ Bunker Hill	4	Medium	0	0	4	0	0	4	0	0	0	0	2	2
Mission Bay Drive/ Magnolia	4	Medium	0	0	4	0	0	4	0	0	0	0	2	2
Mission Bay Drive/ Damon	4	Medium	0	0	0	0	0	4	0	0	0	0	2	2
Morena / North Morena Ramps	4	Medium	2	0	2	0	0	2	0	0	0	0	2	2
Damon / Santa Fe	3	Low	2	0	2	0	0	0	0	0	0	0	2	1

PEQE Segement Analysis

FID	Shape *	ld	Material	Curb_Typ	o Width 1	Type		Horizontal	Lighting	Cloar7ono	Seg_Score	Length	Notes
0	Polyline	iu (5 - 5	Sidewalk	speeu 1	0	1	0	2	613.5366	notes
1	Polyline	(4	Sidewalk	1	0	1	2	4	132.6586	
2	Polyline	(4	Sidewalk	1		1	2	4	734.2015	
3	Polyline	(5	Sidewalk	1	0 0	1	0	2	363.899	
3 4	Polyline	(4	Sidewalk	1	1	1	2	5	361.025	
	,								1	2			
5	Polyline	(4	Sidewalk	1	1	1		5	365.1695	
6 7	Polyline	(10	Sidewalk	1	1		2 2	5	340.8117 249.8485	
	Polyline	(4	Sidewalk	1	0	1 1	0	4		
8 9	Polyline	(5	Sidewalk	1	0	1		2	591.8562	
	Polyline	(5	Sidewalk	1	1		2	5	497.5172	
10	Polyline	(5	Sidewalk	1	1	1	2	5	810.3281	
11	Polyline	(6	Sidewalk	1	1	1	2	5	291.3238	
12	Polyline	(5	Sidewalk	2	1	1	2	5	273.5769	
13	Polyline	(5	Sidewalk	1	1	1	2	5	540.6052	
14	Polyline	(5	Sidewalk	2	1	1	2	5	291.2747	
15	Polyline	(10	Sidewalk	0	0	1	2	0	477.4729	
16	Polyline	(Rolled	4	Sidewalk	0	2	1	2	5	1324.814	
17	Polyline	(•	Н	4	Sidewalk	1	2	1	2	6	365.7419	
18	Polyline	(5	Sidewalk	0	2	1	2	5	122.687	
19	Polyline	(4	Sidewalk	2	2	1	2	7	347.4627	
20	Polyline	(6	Sidewalk	1	1	1	2	5	797.7506	
21	Polyline	() Concrete	Н	5	Sidewalk	1	1	1	2	5	550.3903	
22	Polyline	(Concrete	Н	5	Sidewalk	1	1	1	2	5	487.44	
23	Polyline	(Concrete	G	6	Sidewalk	1	1	1	2	5	327.5811	
24	Polyline	(Concrete	G	6	Sidewalk	1	1	1	2	5	629.5068	
25	Polyline	() Concrete	G	4	Sidewalk	2	2	1	2	7	321.7241	
26	Polyline	() Concrete	Н	7	Sidewalk	0	0	1	2	0	63.3038	
27	Polyline	() Concrete	Н	4	Sidewalk	0	0	1	2	3	232.0944	
28	Polyline	() Concrete	Rolled	4	Sidewalk	0	2	1	2	5	364.4785	
29	Polyline	() Concrete	G	4	Sidewalk	0	2	1	2	5	507.5938	
30	Polyline	() Concrete	G	4	Sidewalk	0	2	1	2	5	253.7783	
31	Polyline	() Concrete	Н	4	Sidewalk	2	1	1	2	5	426.9293	
32	Polyline	(0	Sidewalk	1	1	1	2	5	532.324	
33	Polyline	(0	Sidewalk	2	1	1	2	6	655.6618	
34	Polyline	(0	Sidewalk	1	1	1	2	5	250.6415	
35	Polyline	(0	Crossing	0	0	1	0	0	0	
36	Polyline	(0	Crossing	0	0	1	0	0	0	
37	Polyline	(0	Crossing	0	0	1	0	0	0	
38	Polyline	(0	Crossing	0	0	1	0	0	0	
39	Polyline	(0	Crossing	0	0	1	0	0	0	
40	Polyline	(0	Crossing	0	0	1	0	0	0	
41	Polyline	(0	Crossing	0	0	1	0	0	0	
42	Polyline	Ċ		G	6	Sidewalk	1	1	1	2	5	74.92536	
43	Polyline	(6	Crossing	0	0	1	0	0	0	
44	Polyline	(O	0	Crossing	0	0	1	0	0	0	
45	Polyline	(0	Crossing	0	0	1	0	0	0	
46	Polyline	(0	Crossing	0	0	1	0	0	0	
47	Polyline	(0	Crossing	0	0	1	0	0	0	
48	Polyline	(0	Crossing	0	0	1	0	0	0	
49	Polyline	(0	Crossing	0	0	1	0	0	0	
50	Polyline	(0	Crossing	0	0	1	0	0	0	
51	Polyline	(0	Crossing	0	0	1	0	0	0	
52	Polyline	(G	6	Sidewalk	1	1	1	2	5	60.77096	
53	Polyline	(G	0	Crossing	0	0	1	0	0	00.77090	
53 54	,	(0	Crossing	0	0	1	0	0	0	
55	Polyline												
	Polyline	(0	Crossing	0	0	1	0	0	0	
56	Polyline	(0	Crossing	0	0	1	0	0	0	
57	Polyline	(0	Crossing	0	0	1	0	0	0	
58	Polyline	(0	Crossing	0	0	1	0	0	0	
59	Polyline	(0	Crossing	0	0	1	0	0	0	
60	Polyline	(0	Crossing	0	0	1	0	0	0	
61	Polyline	(5	Crossing	0	0	1	0	0	0	
62	Polyline	(Н	5	Crossing	0	0	1	0	0	0	
63	Polyline	(0	Crossing	0	0	1	0	0	0	
64	Polyline	(0	Crossing	0	0	1	0	0	0	
65	Polyline	(0	Crossing	0	0	1	0	0	0	
66	Polyline	(J		0	Crossing	0	0	1	0	0	0	

FID Shape * Id Material Curb_Type Width1 Type Speed Horizontal Lighting ClearZone Seg.	g_Score	Length Notes
67 Polyline 0 0 Sidewalk 0 2 1 2	5	654.8924
68 Polyline 0 0 Sidewalk 1 1 1 2	5	454.0467
69 Polyline 0 0 Sidewalk 0 0 1 2	0	6.78426
70 Polyline 0 0 Sidewalk 0 1 1 2	4	552.8071
71 Polyline 0 0 Sidewalk 0 0 1 2	0	23.51617
72 Polyline 0 0 Sidewalk 0 1 1 2	4	378.1876
73 Polyline 0 0 Sidewalk 1 2 1 2	6	680.6621
74 Polyline 0 0 Sidewalk 1 1 1 2	5	224.9515
75 Polyline 0 0 Sidewalk 2 1 1 2	5	544.1328
76 Polyline 0 0 Crossing 0 0 1 0	0	0
77 Polyline 0 0 Crossing 0 0 1 0	0	0
78 Polyline 0 0 Crossing 0 0 1 0	0	0
79 Polyline 0 0 Crossing 0 0 1 0	0	0
80 Polyline 0 0 Crossing 0 0 1 0	0	0
81 Polyline 0 0 Crossing 0 0 1 0	0	0
82 Polyline 0 0 Crossing 0 0 1 0	0	0
83 Polyline 0 0 Crossing 0 0 1 0	0	0
84 Polyline 0 0 Crossing 0 0 1 0	0	0
85 Polyline 0 0 0 1 0	0	0
86 Polyline 0 0 0 1 0	0	0
87 Polyline 0 0 0 1 0	0	0
88 Polyline 0 0 0 1 0	0	0
89 Polyline 0 0 Crossing 0 0 1 0	0	0
90 Polyline 0 0 Sidewalk 0 0 1 2	0	97.93259
91 Polyline 0 Concrete H 5 Sidewalk 1 1 1 2	5	236.249
92 Polyline 0 0 Sidewalk 2 2 1 2	7	513.8151
93 Polyline 0 0 0 1 0	0	0
94 Polyline 0 0 Sidewalk 1 0 1 2	4	320.2853
95 Polyline 0 Asphalt Rolled 4 Sidewalk 1 1 1 2	5	679.1614
96 Polyline 0 0 2 1 1 2	6	1164.958
97 Polyline 0 0 2 0 1 2	5	1203.657
98 Polyline 0 0 1 0 1 0	2	381.4426
99 Polyline 0 0 0 2 1 2	5	255.0287
100 Polyline 0 0 0 1 2	3	241.8959
101 Polyline 0 0 Shared-Use 0 0 0 0	8	0
102 Polyline 0 0 Shared-Use 0 0 0 0	8	0
103 Polyline 0 0 Shared-Use 0 0 0 0	8	0
104 Polyline 0 0 Shared-Use 0 0 0 0	8	0
105 Polyline 0 0 Shared-Use 0 0 0 0	8	0
106 Polyline 0 0 Shared-Use 0 0 0 0	8	0
107 Polyline 0 0 Shared-Use 0 0 0 0	8	0
108 Polyline 0 0 Shared-Use 0 0 0 0	8	0
109 Polyline 0 0 Shared-Use 0 0 0 0	8	0
110 Polyline 0 0 0 2 1 2	5	0
111 Polyline 0 0 0 0 0 0	8	0
112 Polyline 0 0 0 0 0	8	0
113 Polyline 0 0 0 0 0 0	8	0

				EBNB_Lan WBS	B_LarEBNE	B_Par WBSB								T_WBSB_R								Are EBNB_Cro WBSB_CroF_Class		3-	Miles FID		OBJECTID FUNCLAS
35	MORENA BL		Lane	2	2	0	0	•) 47	52 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		9765240e	0	0.04408	1 Polyline	12 C
25 35	MORENA IRA MORENA BL	MORENA Lane MORENA Lane	Lane Lane	1	1	0	0	0 () 99) 47	99 Low 52 Low	Low	0	0		None	None	N/A N/A	N/A N/A	None None		Yes Yes		55a1a218 16d4c8b7	0	0.02165 0.01546	7 Polyline 8 Polyline	25 L 37 C
30	GRAND AV		Lane	2	2	0	7	5 !		45 Low	Low	0	0 None	None	None Straight	None Straight	Stop	N/A	None	None None	Yes		bbea67b0	99	0.01346	9 Polyline	42
35	MORENA BL		Lane	2	2	0	0	0 (52 Low	Low	0	0	None	None	None	N/A	N/A	None	None	Yes		1955858d	0	0.03536	10 Polyline	44 C
35	MORENA BL		Lane	2	2	0	0	-) 42	47 Low	Low	0	0		None	None	Signal	N/A	None	None	Yes		edf82af0-4	0	0.04148	11 Polyline	48 C
20	DEL REY ST		None	1	1	8	8	0 () 25	25 Low	Low	0	0 None	None	None	None	N/A	Uncontro	ol None	None	Yes		3a4d98d3	198	0.09893	13 Polyline	54 L
25	MORENA IRA	MORENA Lane	Lane	1	1	0	0	0 (99	99 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes		a47fb390-	0	0.16957	16 Polyline	63 L
20	FIGUEROABL	FIGUEROA None	None	1	1	7	7	0 () 25	25 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes	N/a N/a	306f956f-!	198 Trail conne	0.09497	17 Polyline	71 L
35	MORENA BL		Lane	2	2	0	0	0 (,	47 Low	Low	0	0		None	None	N/A	Signal	None	None	Yes		d8a3b9e5	0	0.06361	19 Polyline	81 C
20	GLENDOR ST		None	1	1	7	7	0 (25 Low	Low	0		None	None	None	N/A	Stop	None		Yes		a5b62665	198	0.03253	22 Polyline	95 L
35 25	MORENA BL		Lane	2	2	0	0	0 (·	47 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes		560d0f32-	0	0.03372	23 Polyline	106 C
20	MORENA IRA DAMON AV	MORENA Lane DAMON A	Lane Track	1	1	0	0	0 () 99) 31	99 Low 31 Low	Low	0	0 None 0 None	None None	None None	None None	N/A N/A	N/A N/A	None None	None None	Yes Yes		71511c9f- 08b4c264	0	0.03738 0.03301	25 Polyline 26 Polyline	109 L 116 L
30	DAMON AV	DAMON A	Track	1	1	0	0	0 (31 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes		80373fe9-	0	0.00839	27 Polyline	117 L
35	MORENA BL		Lane	2	2	0	0	0 (52 Low	Low	0	0	IVOITE	None	None	N/A	N/A	None	None	Yes		7bdfa84a-	0	0.02064	28 Polyline	126 C
20	HORNBLEIST		None	1	1	7	7	0 (25 Low	Low	0	0 None	None	None	None	Uncont		None	None	Yes		11051d14	198	0.05742	33 Polyline	146 L
20	HORNBLEIST	HORNBLE! None	None	1	1	7	7	0 () 25	25 Low	Low	0	0 None	None	None	None	N/A	Uncontro	ol None	None	Yes	N/A Uncontrol	5e65229c	198	0.0328	34 Polyline	148 L
30	GRAND AV	GRAND A\Lane	Lane	2	2	0	0	5 !	5 43	45 Low	Low	0	0 None	None	Straight	Straight	N/A	N/A	None	None	Yes		80b41365	0	0.14086	35 Polyline	173
20	DEL REY ST	DEL REY S' None	None	1	1	7	7	0 () 25	25 Low	Low	0	0 None	None	None	None		N/A	None	None	Yes		4070043a	198	0.10622	37 Polyline	188 L
30	GRAND AV	GRAND A\Lane	Lane	2	2	0	0	5 !	5 43	45 Low	Low	0	0 None	None	Straight	Straight			None	None	Yes		8ebbdf6d-	99	0.06878	39 Polyline	196
30	MISSION EDR		Lane	2	2	0	0	0 (45 Low	Low	0	0		None	None			None	None	Yes		54200b50	0	0.09295	40 Polyline	206
20	GLENDOR ST		None	1	1	7	7	0 (25 Low	Low	0	0 None	None	None	None			None	None	Yes		48c94d49	198	0.03117	41 Polyline	228 L
20	ROSEWOCST		None	1	1	99	99	-	25	25 Low	Low	0	0 None	None	None	None			None	None	Yes		70aaba7b	198 Not a roac		42 Polyline	254 L
20 20	ROSEWOCST REVERE AV		None None	1	1	7	7	0 () 25) 25	25 Low 25 Low	Low	0	0 None 0 None	None None	None None	None None			None None	None None	Yes Yes		248933bf- 03d40a68	198 198	0.03169 0.07547	43 Polyline 45 Polyline	255 L 310 L
20	DAMON AV	DAMON A	Track	1	1	0	0	0 (31 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes	Stop	54131aa6	0	0.07547	46 Polyline	327 L
30	GRAND AV		Lane	1	2	0	0	5 (45 Low	Low	0	0 None			None	WA	14/74	None	None	Yes	ж	21b94b85	0	0.03020	48 Polyline	346
35	MORENA BL		Lane	2	2	0	0	0 (47 Low	Low	0	0		None	None			None	None	Yes		db663336	0	0.21021	51 Polyline	399 C
35	MORENA BL		Lane	2	2	0	0	0 (47 Low	Low	0	0		None	None			None	None	Yes		f708c3ec-	0	0.04285	53 Polyline	403 C
20	HORNBLEIST	HORNBLE! None	None	1	1	7	7	0 () 25	25 Low	Low	0	0 None	None	None	None	N/a	N/a	None	None	Yes		258aa2ad-	198 Trail conne	0.09628	54 Polyline	527 L
35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0 () 42	47 Low	Low	0	0		None	None			None	None	Yes		b800cb1f-	0	0.03968	56 Polyline	540 C
20	SANTA FE ST	SANTA FE Route	Route	1	1	0	0	0 () 40	40 Low	Low	0	0 None	None	None	None			None	None	Yes		b43eb9f8-	0	0.27039	57 Polyline	553 L
20	ROSEWOCST		None	1	1	7	7	0 (40 Low	Low	0	0 None	None	None	None			None	None	Yes		4de62b10	198	0.03355	58 Polyline	590 L
20	GLENDOR, ST		None	1	1	7	7	0 (25 Low	Low	0	0 None		None	None			None	None	Yes		0e362b09	198	0.03517	60 Polyline	657 L
30	DAMON AV	DAMON A	Track	1	1	/	7		31	31 Low	Low	0	80 None	Single Rig		None	N/A	Signal	None	None	Yes	Signal	2b9c12fd-	198 Some red		61 Polyline	664 L
30	MISSION EDR		None	2	2	0	0	0 (36 Low	Low	0	0		None	None			None		Yes		38c326e9-	99	0.01728	63 Polyline	676
35 20	MORENA BL REVERE AV		Lane None	2	1	7	7	0 (47 Low 25 Low	Low	0	0 None	None	None None	None None			None None	None	Yes		93543dfe- 5ddffde9-	0 198	0.09044 0.03117	66 Polyline 67 Polyline	800 C 814 L
20	FIGUEROABL		None	1	1	7	7	-) 25	25 Low 25 Low	Low	0	0 None	None	None	None	None	N/a	None	None None	Yes Yes	Uncontrol N/A	47c11bdb	198	0.03117	70 Polyline	829 L
20	CONTINUE		None	1	1	7	7	0 (25 Low	Low	0	0 None	None	None	None	None	14/ 0	None		Yes	Oncontrol W/A	06e61c27-	198	0.003317	71 Polyline	855 L
20	HORNBLEIST		None	1	1	7	7	-) 25	25 Low	Low	0	0 None	None	None	None			None	None	Yes	Uncontrol N/A	026ebb5c	198	0.03165	72 Polyline	856 L
30	DAMON AV	DAMON A	Track	1	1	0	0	0 (31	31 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes		58fa043d-	0	0.00975	73 Polyline	861 L
0		Trail	Trail	0	0	0	0	8.5 8.5	5 0	0 Low	Low	0	0 None	None	None	None	N/A	N/A	None	None	Yes		28948366	0	0.81456	75 Polyline	863 Z
20	MAGNOLI. AV	MAGNOLI Boulevard	d Boulevard	1	1	7	7	0 (25	25 Low	Low	0	0 None	None	None	None	N/a	N/a	None	None	Yes		ede8f937-	198 Trail conne	0.09679	76 Polyline	831 L
20	MAGNOLI. AV	MAGNOLI Boulevard	d Boulevard	1	1	7	7	0 () 25	25 Low	Low	0	0 None	None	None	None	Signal		None	None	Yes	Signal	ffe800b7-1	198	0.03725	77 Polyline	374 L
20	MAGNOLI. AV	MAGNOLI Boulevard		1	1	7	7	0 (25 Low	Low	0	0 None	None	None	None		None	None	None	Yes	N/A Uncontrol	480d4d96	198	0.02935	78 Polyline	561 L
20	MAGNOLI. AV	MAGNOLI Boulevard		1	1	7	7) 25	25 Low	Low	0	0 None	None	None	None	None	N/a	None	None	Yes	Uncontrol N/A	be594c33	198	0.03179	79 Polyline	649 L
20	MAGNOLI AV	MAGNOLI Boulevard		1	1	/	7	-	25	25 Low	Low	0	0 0 Name	None	None	None	<null></null>		None	None	Yes	Stop	51087d0f-	198	0.03689	80 Polyline	846 L
20 20	MAGNOLI. AV FIGUEROABL	MAGNOLI Boulevard FIGUEROA Route	Route	1	1	7	7	0 () 25) 25	25 Low 25 Low	Low	0	0 None 0 None	None None	None None	None None			None None	None	Yes	Uncontrol Stop Stop	ab5f21c9- 9dc8c780-	198 198	0.04162 0.06076	81 Polyline 82 Polyline	848 L 394 L
20	FIGUEROABL		Route	1	1	7	7	0 () 25	25 Low 25 Low	Low	0	0 None	None	None	None	N/A	Stop	None	None None	Yes Yes	Stop Stop	a5fd231c-	198	0.06465	83 Polyline	468 L
20	BOND ST		Route	1	1	7	7	0 (25 Low	Low	0	0 None	None	None	None	Stop	Stop	None	None	Yes	Stop Stop	41d77407	198	0.00403	84 Polyline	471 L
20	BOND ST		Route	1	1	8	8	0 (25 Low	Low	0	0 None	None	None	None	Stop	Stop	None	None	Yes	Stop Stop	1f585ec2-	198	0.05834	85 Polyline	473 L
20	FIGUEROABL		Route	1	1	7	7	0 (25	25 Low	Low	0	0 None	None	None	None	N/A	N/A	None		Yes		b74ff540-l	198	0.03631	86 Polyline	493 L
20	FIGUEROABL		Route	1	1	7	7	0 (25	25 Low	Low	0	0 None	None	None	None	N/a	None	None	None	Yes	N/A Uncontrol	ee01040e	198	0.02979	87 Polyline	518 L
20	BOND ST		Route	1	1	7	7	0 (25 Low	Low	0	0 None	None	None	None	N/A	Stop	None	None	Yes	None Stop	adeba580	198	0.0667	88 Polyline	611 L
20	BOND ST		Route	1	1	7	7) 25	25 Low	Low	0	0 None	None	None	None	Stop	Uncontro		None	Yes	Stop	03479679	198	0.07451	89 Polyline	671 L
20	FIGUEROABL		Route	1	1	7	7		25	25 Low	Low	0	0 None	None	None	None			None		Yes		2729352c-	198	0.07643	90 Polyline	852 L
30	MISSION EDR	MISSION FLane	Lane	2	2	0	0		36	36 Low	Low	0	0		None	None	N/A	Signal	None		Yes		4a40c487-	0	0.0801	91 Polyline	7 4
30	MISSION EDR		Lane	2	2	7	7	0 (36 Low	Low	0	0		None	None			None		Yes		6eeb8143	198	0.0493	92 Polyline	773
30 30	MISSION EDR		Lane	2	2	0	7		36	36 Low	Low	0	0		None	None			None	None	Yes	Signal	f1a9759a-	99	0.02372	93 Polyline	756
30	MISSION E DR MISSION E DR		Lane Lane	2	2	7	7	0 (36	36 Low 36 Low	Low	0	0		None None	None None			None None	None None	Yes Yes	Signal	58a5104a 13298610	99 198	0.0702 0.03429	94 Polyline 95 Polyline	624 4 521 4
30	MISSION EDR		Lane	2	2	7	7	0 (36 Low	Low	0	0		None	None	Signal	N/A	None		Yes		bec6d592	198	0.03429	96 Polyline	472
30	MISSION EDR	MISSION ELane	Lane	2	2	0	7		36	36 Low	Low	0	0		None	None	N/A	Signal	None	None	Yes		72ec09ba-	99	0.10707	97 Polyline	111
35	BALBOA AV	BALBOA A Lane		2	2	0	0	9		49 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		4d839009	0	0.00179	98 Polyline	8 4
25	GARNET AV		Lane	3	3	0	0	0 (35 Low	Low	0	0		None	None	N/A	Signal	None		Yes		79de4533	0	0.02964	100 Polyline	149
25	GARNET AV		Lane	3	3	0	0	0 (35 Low	Low	0	0		None	None			None		Yes		2ae3f5e8-	0	0.09693	101 Polyline	377
20	SANTA FE ST	SANTA FE Trail	None	1	1	0	7	0 (25	25 Low	Low	0	0 None	None	None	None	Stop	N/A	None	None	Yes		328f7e32-	198	0.08142	102 Polyline	60 L
	SANTA FE ST	SANTA FE Trail	None	1	1	0	0	0 () 25	25 Low	Low	0	0 None	None	None	None	N/A	Uncontro	ol None	None	Yes		10c89c4a-	0	0.12108	103 Polyline	119 L
20	SANTA FE ST	SANTA FE Trail	None	1	1	0	0) 40	40 Low	Low	0	0 None	None	None	None			None	None	Yes		46ee3219	0	0.02722	104 Polyline	663 L
20		MORENA None	Track	2	2	8	0		47	52 Low	Low	0	0		None	None			None		Yes		cbb45d28	99	0.14264	105 Polyline	283 C
20 35	MORENA BL		Track	2	2	Q.	0	0 () 47	52 Low	Low	0	0		None	None			None	None	Yes		bb5c3a44	0	0.04421	107 Polyline	761 C
20 35 35	MORENA BL			2	2	0	-			25.1	1	_	0.11	N.I.				C' .	N.I.		1/	0' 1		100	0.0/072	100 5 1	
20 35 35 20	MORENA BL BUNKER HST	BUNKER HLane	Lane	1	1	0	0	6		25 Low	Low	0	0 None	None	None	None	Stop	Signal	None	None	Yes	Signal	0739d716	198	0.06879	108 Polyline	113 L
20 35 35 20 20	MORENA BL BUNKER HST BUNKER HST	BUNKER HLane BUNKER HLane	Lane Lane	1 1	1 1	0	0	6 6	5 25	25 Low	Low	0	0 None	None	None	None	Stop	Signal	None	None	Yes	Signal	0739d716 f4964da9-	198	0.0378	109 Polyline	625 L
20 35 35 20	MORENA BL BUNKER HST	BUNKER HLane BUNKER HLane	Lane	1 1 1 2	1 1 1 2	0 0 0	0	6 6						None			Stop N/A	Signal				Signal	0739d716			,	

SPEED RD20PR	EI RD20NAN RD20S	FX RD20FULLEBNB_E	Bik WBSB_BikEI	BNB_Lar WB	SSB_Lar EBN	B_Par WB	SSB_ParEBN	IB_BL_ WE	SB_BL EB	NB_SpeWB	SB_Sp EBNB_	Blo WBSB_I	BIc EBNB_RT_ W	BSB_RT_EBNB_F	RT_WBSB_	RT_EBNB_P	oc WBSB_F	Po EBNB_	_Cro WBSB_	CrcEBNB_N	vie WBSB_i	M∈Study_	_Are EBNB_Cro WBSB_CreF_Class	GlobalID P	arking_C Notes	Miles FID_	1 Shape	OBJECTID_FUNCLASS
35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0	47	52 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		9765240e	0	0.04408	1 Polyline	12 C
35	BALBOA AV	BALBOA A Lane		2	2	0	0	9	9	50	49 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		b8b1d6ff-	0	0.00227	112 Polyline	20 4
35	BALBOA AV	BALBOA A Lane		2	2	0	0	9	9	35	35 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		67ae63eb	0	0.00583	113 Polyline	22 4
35	BALBOA AV	BALBOA A Lane	Lane	2	2	0	0	9	9	50	49 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		4d755c76	0	0.12184	114 Polyline	47 4
35	BALBOA AV	BALBOA A Lane		2	2	0	0	9	9	50	49 Low	Low	0	0		None	None	Signal		None	None	Yes		1536b8f5-	0	0.07184	115 Polyline	83 4
35	BALBOA AV	BALBOA A Lane		2	2	0	0	9	9	50	49 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		98400f88-	0	0.08258	116 Polyline	105 4
40	GARNET AV	GARNET A Bus		2	2	0	0	Q .	Q	35	35 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		f989a973-	0	0.02379	117 Polyline	118 4
40	GARNET AV	GARNET ALane		2	2	0	0	o o	0	35	35 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		e7831090	0	0.04355	118 Polyline	404 4
40	GARNET AV	GARNET ALane		2	2	0	0	0	0	35	35 Low	Low	0	0		None	None	IN/ A	111/71	None	None	Yes		2d1f497f-I	0	0.04333	119 Polyline	715 4
40	GARNET AV	GARNET A Bus		2	2	0	0	0	0	35	35 Low	Low	0	0		None	None				None	Yes		efbc5a0a-	0	0.02011	120 Polyline	716 4
40	GARNET AV	GARNET ALane	Route	2	2	0	0	4	0	35	35 Low	Low	0	0		None	None			None None	None	Yes		5994d73f-	0	0.01073	121 Polyline	608 4
	GARNET AV	GARNET A Bus	Route	2	2	0	0	0	0					0				NI/A	NI/A									
40			Devete	2	2	0	0	0	9	35	35 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		41b2f85f-	0	0.00859	122 Polyline	120 4
40	GARNET AV	GARNET A Bus	Route	2	2	0	0	6	9	35	35 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		0c025638-	0	0.02402	123 Polyline	121 4
40	GARNET AV	GARNET A Bus	Route	2	2	0	0	6	9	35	35 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		58af9363-	0	0.01112	124 Polyline	405 4
40	GARNET AV	GARNET A Bus	Route	2	2	0	0	6	9	35	35 Low	Low	0	0		None	None			None	None	Yes		782ca079-	0	0.07295	125 Polyline	607 4
40	GARNET AV	GARNET A Lane	Route	2	2	0	0	6	9	35	35 Low	Low	0	0		None	None			None	None	Yes		0df2aa0a-	0	0.03064	126 Polyline	618 4
25	GARNET AV	GARNET A Bus	Route	2	2	0	0	6	9	35	35 Low	Low	0	0		None	None			None	None	Yes		8c2ab806-	0	0.00997	127 Polyline	665 4
25	GARNET AV	GARNET A Lane	Lane	3	3	0	0	6	0	35	35 Low	Low	0	0		None	None			None	None	Yes		de77b70b	0	0.07887	128 Polyline	834 4
25	GARNET AV	GARNET A Lane	Lane	3	3	0	0	10	0	35	35 Low	Low	0	0		None	None			None	None	Yes		eab15a99	0	0.03266	129 Polyline	652 4
35	MORENA BL	MORENA None	Track	2	2	8	0	12	0	47	52 Low	Low	0	0		None	None	N/A	N/A	None	None	Yes		eff2bbcb-	99	0.19203	130 Polyline	150 C
30	MISSION EDR	MISSION ELane	Lane	2	2	0	0	6	6	38	42 Low	Low	0	0		None	None			None	None	Yes		36be50dc	0	0.08559	131 Polyline	789 4
0		Trail	Trail	0	0	0	0	0	0	0	0		0	0											0	0	0	0
30	GRAND AV	GRAND A\Lane	Lane	2	2	0	0	5	5	43	45 Low	Low	0	0 None	None	Straight	Straight	t N/A	N/A	None	None	Yes	N/a	a50af843-	0	0.28495	29 Polyline	130 4
20	SANTA FE ST	SANTA FE Route	Route	1	1	0	8	0	0	40	40 Low	Low	0	0 None	None	None	None			None	None	Yes		34962242	0	0.44272	59 Polyline	654 L
0				0	0	0	0	0	0	0	0		0	0											0	0	0	0
20	SANTA FF ST	ANTA FE S Route	Route	1	1	0	8	0	0	40	40 Lov	/ Low	0	0 None	None	None	None			None	None	Yes		34962242	0	0.44272	59 Polyline	654 L
20	SANTA FE ST			1	1	0	8	0	0		40 Lov		0	0 None	None	None	None			None	None	Yes		34962242	0	0.44272	59 Polyline	654 L
20		ANTA FE S Track		1	1	0	0	0	0		40 Lov		0	0 None	None	None	None			None	None	Yes		46ee3219	0	0.02722		
35	MORENA BL			2	2	8	0	0	0		52 Lov		0	0	140110	None	None			None	None	Yes		cbb45d28	99	0.14264		
35	MORENA BL			2	2	8	0	0	0		52 Lov		0	0		None	None	Stop	N/A	None	None	Yes		b37469ce-	99	0.31808		
35	MORENA BL			2	2	8	0	0	0		52 Lov		0	0		None	None	жор	111/73	None	None	Yes		bb5c3a44	0	0.04421		
20	UNKER HIL ST			1	1	Λ	0	6	6		25 Lov			0 None	None	None	None	Stop	Signal	None	None	Yes	Signal	0739d716	198	0.06879		
20	UNKER HIL ST			1	1	0	0	6	6		25 Lov		0	0 None	None			stop	Siyi iai			Yes	Signal	f4964da9-	198	0.00879		
				1	1	0	0	0	0				0			None	None			None	None							
20		NKER HILL Lane		1	1	0	0	0	0		25 Lov		=	0 None	None	None	None	NI/A	Clamal	None	None	Yes		34463382	198	0.03219		
35		3ALBOA A\ Lane		2	2	0	0	9	9		49 Lov		0	0		None	None	N/A	Signal	None	None	Yes		27013e9e	0	0.05073		
35	BALBOA AV			2	2	0	0	9	9		49 Lov			0		None	None	N/A	N/A	None	None	Yes		b8b1d6ff-	0	0.00227		
35		3ALBOA A\ Lane		2	2	0	0	9	9		35 Lov			0		None	None	N/A	N/A	None	None	Yes		67ae63eb	0	0.00583		
35		3ALBOA A\ Lane		2	2	0	0	9	9		49 Lov			0		None	None	N/A	N/A	None	None	Yes		4d755c76	0	0.12184		
35	BALBOA AV			2	2	U	U	9	9		49 Lov		0	0		None	None	Signal		None	None	Yes		1536b8f5-	0	0.07184		
35		3ALBOA A\ Lane		2	2	0	0	9	9		49 Lov		0	0		None	None	N/A	N/A	None	None	Yes		98400f88-	0	0.08258		
40	GARNET AV			2	2	0	0	9	9		35 Lov		0	0		None	None	N/A	N/A	None	None	Yes		f989a973-	0	0.02379		
40	GARNET AV			2	2	0	0	9	9		35 Lov		0	0		None	None	N/A	N/A	None	None	Yes		e7831090	0	0.04355		
40	GARNET AV	GARNET A\ Lane	Lane	2	2	0	0	9	9		35 Lov	/ Low	0	0		None	None			None	None	Yes		2d1f497f-I	0	0.02811		
40	GARNET AV	GARNET A\ Lane	Lane	2	2	0	0	9	9	35	35 Lov	/ Low	0	0		None	None			None	None	Yes		efbc5a0a-ı	0	0.01075		
40	GARNET AV	GARNET A\ Lane	Route	2	2	0	0	6	0	35	35 Lov	/ Low	0	0		None	None			None	None	Yes		5994d73f-	0	0.07382		
40	GARNET AV	GARNET A\ Lane	Lane	2	2	0	0	6	9	35	35 Lov	/ Low	0	0		None	None	N/A	N/A	None	None	Yes		41b2f85f-ı	0	0.00859		
40	GARNET AV	GARNET A\ Lane	Lane	2	2	0	0	6	9	35	35 Lov	/ Low	0	0		None	None	N/A	N/A	None	None	Yes		0c025638-	0	0.02402		
40	GARNET AV	GARNET A\ Lane	Lane	2	2	0	0	6	9	35	35 Lov	/ Low	0	0		None	None	N/A	N/A	None	None	Yes		58af9363-	0	0.01112		
40	GARNET AV			2	2	0	0	6	9		35 Lov		0	0		None		:		None		Yes		-4422-942	0	0.07295		
40	GARNET AV			2	2	0	0	6	9		35 Lov		-	0		None				None				4b4f-857d		0.03064		
25	GARNET AV			2	2	0	0	6	9		35 Lov		0	0		None				None				4d17-8789	0	0.00997		
25	GARNET AV			2	2	0	0	6	0		35 Lov		0	0		None	None			None				-4baa-8e8a		0.07887		
25	GARNET AV			2	2	0	0	10	0		35 Lov			0		None				None				-4cdc-9f33		0.03266		
35	MORENA BL			2	2	Q		12	0		52 Lov			0		None			A N/A					4860-83c5		0.03200		
				2	2	0		-	4					0					n IV/A									
30	JISSION RY DK	SSION BAY Lane	Lane	2	2	0	U	6	0	38	42 Lov	/ Low	0	U		None	None	:		None	None	Yes	1	4412-ac68	0	0.08559		

ONE WAY CECCI ACC CREES 4	DD20DDELDD20MAA-DD200	CEV DDOOELILLEDING	DIL WEED 5	DILEDNID L MEDO	'D La EDI	D Dow MADOD 5	On EDAID 5	I WEE	DI EDND C:: 1	VDCD Co EDNO	DI - MIDCE	DIA EDAID DE	W/DCD DT FD:	D DT 1/2"	OCD DT 5	EDNID D	WIDOD 5	On EDNID O	MDCD C	- EDNID *	A. MIDOD	M. Chrl-	A. FDND ^	WDCD OF F C	as 1 Clak - IID D	dalama Ni-t d	Miles 1 FDND 0 1FDND 0 0
ONEWAY_SEGCLASS SPEED_1 4 35	RD20PRELRD20NAN RD20S MORENA BL	SFX_RD20FULLEBNB_ MORENA Lane	Bik WBSB_E Lane	3 SIKERNR_FAUMBS	2 PR_FBI FRM	Par WBSB_F	o Lai FRNR ^E	n WBSB_	BL EBNB_Spe\	VBSB_Sp _{EBNB} 52 Low	_BIo_WBSB_ Low	_BIcEBNB_RT_ 0		R_KI_WI		EBNB_Po None	None None	Po EBNB_C N/A	ro WBSB_Cr N/A	(EBNB_N None	/le WBSB_I None	M∈Study_/ Yes	AL_ERNR_CI	o wbsk_crcF_cla	ss_1 GlobalID_Par 9765240e	king Notes_1 0	Miles_1 EBNB_2_1EBNB_2_2 0.04408
F 5 25	MORENA IRA	MORENA None	None	1	1	0	0	0	0 47	99 Low	Low	0				None	None	N/A	N/A	None	None	Yes			55a1a218	0	0.02161
4 35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 47	52 Low	Low	0	0			None	None	N/A	N/A	None	None	Yes			16d4c8b7	0	0.01546
3 30	GRAND AV	GRAND A\Lane	Lane	2	2	0	7	5	5 43	45 Low	Low	0	0 Nor	e No	ne S	Straight	Straight	Stop	N/A	None	None	Yes			bbea67b0	99	0.03262
4 35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 47	52 Low	Low	0	0		١	None	None	N/A	N/A	None	None	Yes			1955858d	0	0.03536
4 35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 42	47 Low	Low	0				None	None	Signal	N/A	None	None	Yes			edf82af0-4	0	0.04148
5 20	DEL REY ST	DEL REY S' None	None	1	1	8	8	0	0 25	25 Low	Low	0				None	None	N/A	Uncontro		None	Yes			3a4d98d3	198	0.09893
F 5 25	MORENA IRA	MORENA Lane	Lane	1	1	0	•	0	0 99	99 Low	Low	0				None	None	N/A	N/A	None	None	Yes	NI/o	NI/o	a47fb390-	0 100 Trail same	0.16957
5 20 4 35	FIGUEROABL MORENA BL	FIGUEROA None MORENA I Lane	None Lane	2	2	0	•	0	0 25 0 42	25 Low 47 Low	Low	0		e No		None None	None None	N/A N/A	N/A Signal	None None	None None	Yes Yes	N/a	N/a	306f956f-! d8a3b9e5	198 Trail conne 0	0.06361
5 20	GLENDOR, ST	GLENDOR None	None	1	1	7	7	0	0 42	25 Low	Low	0		e No		None	None	N/A	Stop	None	None	Yes			a5b62665	198	0.03253
4 35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 42	47 Low	Low	0	0			None	None	N/A	N/A	None	None	Yes			560d0f32-	0	0.03372
F 5 25	MORENA IRA	MORENA None	None	1	1	0	0	0	0 99	99 Low	Low	0	0 Nor	e No	ne N	None	None	N/A	N/A	None	None	Yes			71511c9f-	0	0.07562
5 20	DAMON AV	DAMON A		1	1	0	0	0	0 31	31 Low	Low	0	0 1101	e No	ne N	None	None	N/A	N/A	None	None	Yes			08b4c264	0	0.03301
5 30	DAMON AV	DAMON A	Lene	1	1	0	0	0	0 31	31 Low	Low	0		e No		None	None	N/A	N/A	None	None	Yes			80373fe9-	0	0.00839
4 35 5 20	MORENA BL HORNBLEIST	MORENA Lane HORNBLE None	Lane None	2	1	7	7	0	0 47 0 25	52 Low 25 Low	Low	0		o No		None None	None	N/A Uncontr	N/A	None None	None	Yes			7bdfa84a- 11051d14	0 198	0.02064 0.05742
5 20	HORNBLEIST	HORNBLEINone	None	1	1	7	7	0	0 25	25 Low 25 Low	Low	0				None	None None	N/A	Uncontro		None None	Yes	N/A	Uncontrol	5e65229c-	198	0.0328
3 30	GRAND AV	GRAND A\Lane	Lane	2	2	0	0	5	5 43	45 Low	Low	0					Straight		N/A	None	None	Yes		01100111101	80b41365	0	0.14086
5 20	DEL REY ST	DEL REY S' None	None	1	1	7	7	0	0 25	25 Low	Low	0				None	None		N/A	None	None	Yes			4070043a	198	0.10622
3 30	GRAND AV	GRAND A\Lane	Lane	2	2	0	0	5	5 43	45 Low	Low	0	0 Nor	e No	ne S	Straight	Straight			None	None	Yes			8ebbdf6d-	99	0.06878
3 30	MISSION EDR	MISSION ENone	None	2	2	0	0	0	0 45	45 Low	Low	0				None	None			None	None	Yes			54200b50	0	0.09295
5 20	GLENDOR ST	GLENDOR None	None	1	1	7	/	0	0 25	25 Low	Low	0				None	None			None	None	Yes			48c94d49	198	0.03117
5 20 5 20	ROSEWOCST ROSEWOCST	ROSEWOC None ROSEWOC None	None None	1	1	99 9	9 7	0	0 25 0 25	25 Low	Low	0				None	None			None	None	Yes			70aaba7b 248933bf-	198 Not a roac 198	0.0244 0.03169
5 20	REVERE AV	REVERE A\ None	None	1	1	7	7	0	0 25	25 Low 25 Low	Low	0				None None	None None			None None	None None	Yes Yes			03d40a68	198	0.07547
5 20	DAMON AV	DAMON A	.40110	1	1	0	0	0	0 31	31 Low	Low	0				None	None	N/A	N/A	None	None	Yes	Stop		54131aa6	0	0.03626
3 30	GRAND AV	GRAND A\Lane	None	1	2	0	0	5	0 43	45 Low	Low	0					None			None	None	Yes			21b94b85	0	0.10386
4 35	Morena bl	MORENA Lane	Lane	2	2	0	0	0	0 42	47 Low	Low	0	0		N	None	None			None	None	Yes			db663336	0	0.21021
4 35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 42	47 Low	Low	0				None	None			None	None	Yes			f708c3ec-	0	0.04285
5 20	HORNBLEIST	HORNBLEINone	None	1	1	7	7	0	0 25	25 Low	Low	0		e No		None	None	N/a	N/a	None	None	Yes			258aa2ad	198 Trail conn	
4 35 5 20	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 42	47 Low	Low	0		o No		None	None			None	None	Yes			b800cb1f-	0	0.2131
5 20	SANTA FE ST ROSEWOCST	SANTA FE Route ROSEWOC None	Route None	1	1	7	7	0	0 40	40 Low 40 Low	Low	0				None None	None None			None None	None None	Yes Yes			b43eb9f8- 4de62b10	198	0.27039 0.03355
5 20	GLENDOR, ST	GLENDOR None		1	1	7	7	0	0 25	25 Low	Low	0				None	None			None	None	Yes			0e362b09	198	0.03517
5 30	DAMON AV	DAMON A		1	1	7	7	0	0 31	31 Low	Low	0			gle Righ		None	N/A	Signal	None	None	Yes		Signal	2b9c12fd-	198 Some red	
3 30	MISSION E DR	MISSION ENone	None	2	2	0	0	0	0 36	36 Low	Low	0	0		1	None	None		Ü	None	None	Yes		, i	38c326e9-	99	0.01728
4 35	MORENA BL	MORENA Lane	Lane	2	2	0	0	0	0 42	47 Low	Low	0	0		1	None	None			None	None	Yes			93543dfe-	0	0.09044
5 20	REVERE AV	REVERE A\None	None	1	1	7	7	0	0 25	25 Low	Low	0				None	None		A 11/	None	None	Yes		1.01/0	5ddffde9-	198	0.03117
5 20	FIGUEROABL	FIGUEROANone	None	1	1	/	7	0	0 25	25 Low	Low	0				None	None	None	N/a	None	None	Yes	Uncontro	OI N/A	47c11bdb	198	0.03317
5 20 5 20	CONTINUE HORNBLEIST	CONTINUI None HORNBLEI None	None None	1	1	7	7	0	0 25 0 25	25 Low 25 Low	Low	0				None None	None None			None None	None None	Yes Yes	Uncontro	al NI/A	06e61c27 026ebb5c	198 198	0.00331 0.03165
5 30	DAMON AV	DAMON A	None	1	1	0	0	0	0 31	31 Low	Low	0				None	None	N/A	N/A	None	None	Yes	Oncomin	JI IV/A	58fa043d-	0	0.00975
0 0		Trail	Trail	0	0	0	0 8	.5 8	3.5 0	0 Low	Low	0				None	None	N/A	N/A	None	None	Yes			28948366	0	0.81456 1 1
5 20	MAGNOLI. AV	MAGNOLI Boulev	ard Bouleva	rd 1	1	7	7	0	0 25	25 Low	Low	0	0 Nor	e No	ne N	None	None	N/a	N/a	None	None	Yes			ede8f937-	198 Trail conn	0.09679
5 20	MAGNOLI. AV	MAGNOLI Boulev			1	7	7	0	0 25	25 Low	Low	0		e No	ne N	None	None	Signal		None	None	Yes	Signal		ffe800b7-1	198	0.03725
5 20	MAGNOLI AV	MAGNOLI Boulev			1	7	7	0	0 25	25 Low	Low	0				None	None		None	None	None	Yes	N/A	Uncontrol	480d4d96	198	0.02935
5 20 5 20	Magnoli.av Magnoli.av	MAGNOLI Boulev			1	7	7	0	0 25 0 25	25 Low 25 Low	Low	0	0 1101			None	None	None <null></null>	N/a	None	None	Yes	Uncontro	Stop	be594c33 51087d0f-	198 198	0.03179 0.03689
5 20	MAGNOLI AV	MAGNOLI Boulev			1	7	7	0	0 25	25 Low 25 Low	Low	0				None None	None None	<ivuii></ivuii>		None None	None None	Yes Yes	Uncontro		ab5f21c9-	198	0.04162
5 20	FIGUEROABL	FIGUEROA Route		1	1	7	7	0	0 25	25 Low	Low	0				None	None			None	None	Yes	Stop	Stop	9dc8c780-	198	0.06076
5 20		FIGUEROA Route		1	1	7	7	0	0 25	25 Low	Low	0				None	None	N/A	Stop	None	None	Yes		Stop	a5fd231c-	198	0.06465
5 20	BOND ST	BOND ST Route	Route	1	1	7	7	0	0 25	25 Low	Low	0	0 Nor	e No	ne N	None	None	Stop	Stop	None	None	Yes	Stop	Stop	41d77407	198	0.04153
5 20	BOND ST	BOND ST Route		1	1	8		0	0 25	25 Low	Low	0				None	None	Stop	Stop	None	None	Yes	Stop	Stop	1f585ec2-	198	0.05834
5 20	FIGUEROABL	FIGUEROA Route		1	1	7		0	0 25	25 Low	Low	0				None	None	N/A	N/A None	None	None	Yes	NI/A	Uncentral	b74ff540-i	198	0.03631
5 20 5 20	FIGUEROABL BOND ST	FIGUEROA Route BOND ST Route		1	1	7	•	0	0 25 0 25	25 Low 25 Low	Low	0				None None	None None	N/a N/A	None Stop	None None	None None	Yes Yes	N/A None	Uncontrol Stop	ee01040e adeba580	198 198	0.02979 0.0667
5 20	BOND ST	BOND ST Route		1	1	7		0	0 25	25 Low 25 Low	Low	0				None	None	Stop	Uncontrol		None	Yes	Stop	Stop	03479679	198	0.07451
5 20	FIGUEROABL	FIGUEROA Route		1	1	7	•	0	0 25	25 Low	Low	0				None	None		220	None	None	Yes			2729352c-	198	0.07643
3 30		MISSION E Route	Route	2	2	0	0	0	0 36	36 Low	Low	0				None	None	N/A	Signal	None	None	Yes			4a40c487	0	0.0801
3 30	MISSION EDR	MISSION ERoute		2	2	7	7	0	0 36	36 Low	Low	0	0		1	None	None			None	None	Yes			6eeb8143	198	0.0493
3 30		MISSION ERoute		2	2	0	•	0	0 36	36 Low	Low	0				None	None			None	None	Yes	0:		f1a9759a-	99	0.02372
3 30	MISSION EDR	MISSION FRoute		2	2	0		0	0 36	36 Low	Low	0				None	None			None	None	Yes	Signal		58a5104a	99	0.0702
3 30 3 30	MISSION E DR MISSION E DR	MISSION E Route MISSION E Route		2	2	7	7	0	0 36	36 Low 36 Low	Low	0	-			None None	None None	Signal	N/A	None	None None	Yes Yes			13298610 bec6d592	198 198	0.03429 0.10787
3 30	MISSION EDR	MISSION EROUTE		2	2	0	7	0	0 36	36 Low	Low	0				None None	None	Signal N/A	Signal	None None	None	Yes			72ec09ba	99	0.01415
3 35	BALBOA AV	BALBOA A Lane	Lane	2	2	0	0	9	9 50	49 Low	Low	0				None	None	N/A	N/A	None	None	Yes			4d839009	0	0.00179
3 25	GARNET AV	GARNET A Lane	Lane	2	2	0	0	0	0 35	35 Low	Low	0				None	None	N/A		None	None	Yes			79de4533	0	0.02964
3 25	GARNET AV	GARNET A Lane	Lane	2	2	0	0	0	0 35	35 Low	Low	0			1	None	None			None	None	Yes			2ae3f5e8-	0	0.09693
5 20		SANTA FE Track	None	1	1	0	•	0	0 25	25 Low	Low	0				None	None	Stop	N/A	None	None	Yes			328f7e32-	198	0.08142
5 20	SANTA FE ST	SANTA FE Track	None	1	1	0		0	0 25	25 Low	Low	0				None	None	N/A	Uncontro		None	Yes			10c89c4a-	0	0.12108
5 20 4 35	SANTA FE ST	SANTA FE Track	None	1	1		-	0	0 40	40 Low	Low	0		e No		None	None			None	None	Yes			46ee3219	0	0.02722
4 35 4 35	Morena bl Morena bl	MORENA Track MORENA Track	None None	2	2	8		0	0 47	52 Low 52 Low	Low Low	0				None None	None None			None None	None None	Yes Yes			cbb45d28 bb5c3a44	99 0	0.14264 0.04421
5 20	BUNKER HST	BUNKER HLane	Lane	1	1	0	0	6	6 25	25 Low	Low	0		e No		None	None	Stop	Signal	None	None	Yes		Signal	0739d716	198	0.06879
5 20		BUNKER HLane	Lane	1	1		-	6	6 25	25 Low	Low	0				None	None		J	None	None	Yes			f4964da9-	198	0.0378
5 20	BUNKER HST	BUNKER HLane	Lane	1	1	0	0	6	6 25	25 Low	Low	0				None	None			None	None	Yes			34463382	198	0.03219
3 35	BALBOA AV	BALBOA A Lane	Lane	2	2	0	0	9	9 50	49 Low	Low	0	0		N	None	None	N/A	Signal	None	None	Yes			27013e9e	0	0.05073

ONEWAY_SEGCLASS SPEE	ED_1 RD	20PREI RD20NAN RD20S	SFX_RD20FULLEBNB_E	Bik WBSB_BikEBNE	B_Lan WBSB_	Lar EBNB_	_Par WBSB_Pa	EBNB_BL_\	VBSB_BL	BNB_Sp∈V	BSB_Sp EBNB	_Blo WBSB_	BIc EBNB_RT	T_WBSB_R	T. EBNB_R	T_WBSB_RT	EBNB_Po	oc WBSB_F	Po EBNB_C	ro WBSB_0	CrcEBNB_N	le WBSB_N	Study_Ar_EB	BNB_Cro WBSB_CroF_Class	_1 GlobalID_Pa	rking Note	es_1 Miles_1 EBNB_2_1EBNB_2_2
4	35	MORENA BL	MORENA Lane	Lane	2	2	0 0	0	0	47	52 Low	Low	(0 0	0		None	None	N/A	N/A	None	None	Yes		9765240e	0	0.04408
3	35	BALBOA AV	BALBOA A Lane	Lane	2	2	0 0	9	9	50	49 Low	Low	(0 0	0		None	None	N/A	N/A	None	None	Yes		b8b1d6ff-	0	0.00227
3	35	BALBOA AV	BALBOA A Lane	Lane	2	2	0 0	9	9	35	35 Low	Low	(0 0	0		None	None	N/A	N/A	None	None	Yes		67ae63eb	0	0.00583
3	35	BALBOA AV	BALBOA A Lane	Lane	2	2	0 0	9	9	50	49 Low	Low	(0 0	0		None	None	N/A	N/A	None	None	Yes		4d755c76	0	0.12184
3	35	BALBOA AV	BALBOA A Lane	Lane	2	2	0 0	9	9	50	49 Low	Low	(0 0	0		None	None	Signal	N/A	None	None	Yes		1536b8f5-	0	0.07184
3	35	BALBOA AV	BALBOA A Lane	Lane	2	2	0 0	9	9	50	49 Low	Low	(0 0	0		None	None	N/A	N/A	None		Yes		98400f88-	0	0.08258
3	40	GARNET AV	GARNET ALane	Lane	2	2	0 0	9	9	35	35 Low	Low		0 0	n		None	None	N/A	N/A	None	None	Yes		f989a973-	0	0.02379
3	40	GARNET AV	GARNET ALane	Lane	2	2	0 0	9	0	35	35 Low	Low		0 0	n		None	None	N/A	N/A	None	None	Yes		e7831090	0	0.04355
3	40	GARNET AV	GARNET ALane	Lane	2	2	0 0	9	9	35	35 Low	Low		0 0	n		None	None	19/74	11/71	None	None	Yes		2d1f497f-I	0	0.02811
3	40	GARNET AV	GARNET ALane	Route	2	2	0 0	0	0	35	35 Low	Low		0 0	-		None	None			None	None	Yes		efbc5a0a-	0	0.01075
3	40	GARNET AV	GARNET ALane	Route	2	2	0 0	7	0	35	35 Low	Low		0 (•		None	None			None	None	Yes		5994d73f-	0	0.07382
3	40	GARNET AV	GARNET ALane	Route	2	2	0 0	4	0	35	35 Low		`	0 0	•				N/A	N/A					41b2f85f-	0	0.00859
3	40	GARNET AV	GARNET ALane		2	2	0 0	4	9			Low		0 0	-		None	None None	N/A	N/A	None	None	Yes			0	0.02402
3	40			Route	2	2	0 0	0	9	35	35 Low				0		None		N/A N/A		None	None	Yes		0c025638-		
3		GARNET AV	GARNET ALane	Route	2	2	0 0	0	9	35	35 Low	Low		0 0	0		None	None	IV/A	N/A	None	None	Yes		58af9363-	0	0.01112
3	40	GARNET AV	GARNET ALane	Route	2	2	0 0	0	9	35	35 Low	Low		0 (-		None	None			None	None	Yes		782ca079-	0	0.07295
3	40	GARNET AV	GARNET ALane	Route	2	2	0 0	6	9	35	35 Low	Low		0 0	•		None	None			None	None	Yes		0df2aa0a-	0	0.03064
3	25	GARNET AV	GARNET A Lane	Route	2	2	0 0	6	9	35	35 Low	Low		0 (-		None	None			None	None	Yes		8c2ab806-	0	0.00997
3	25	GARNET AV	GARNET ALane	Lane	2	2	0 0	6	0	35	35 Low	Low		0 0	-		None	None			None	None	Yes		de77b70b	0	0.07887
3	25	GARNET AV	GARNET ALane	Lane	2	2	0 0	10	0	35	35 Low	Low	`	0 0	•		None	None			None	None	Yes		eab15a99	0	0.03266
4	35	MORENA BL	MORENA Track	None	2	2	8 0	12	0	47	52 Low	Low		0 0	-		None	None	N/A	N/A	None	None	Yes		eff2bbcb-	99	0.19203
3	30	MISSION E DR	MISSION ELane	Lane	2	2	0 0	6	6	38	42 Low	Low		0 0	-		None	None			None	None	Yes		36be50dc	0	0.08559
0	0				0	0	0 0	0	0	0	0			0 0	•											0	0.49163
3	30	GRAND AV	GRAND A\Lane	Lane	2	2	0 0	5	5	43	45 Low	Low			0 None			Straight	N/A	N/A	None	None	Yes	N/a	a50af843-	0	0.08366
5	20	SANTA FE ST	SANTA FE Route	Route	1	1	0 8	0	0	40	40 Low	Low	(0 0	0 None	None	None	None			None	None	Yes		34962242	0	0.13276
0	0				0	0	0 0	0	0	0	0		(0 0	0											0	0
5	20	SANTA FE ST	SANTA FE Route	Route	1	1	0 8	0	0	40	40 Low	Low	(0 0	0 None	None	None	None			None	None	Yes		34962242	0	0.13276
5	20	SANTA FE ST	SANTA FE Route	Route	1	1	0 8	0	0	40	40 Low	Low	(0 0	0 None	None	None	None			None	None	Yes		34962242	0	0.13276
1 1	1	1 1	1 1	1 1	1	1	1 1	1	1	1	1	1	1 1	1 1	1	1 1		1	1	1	1 1						
1 1	1	1 1	1 1	1 1	1	1	1 1	1	1	1	1	1	1 1	1 1	1	1 1		1	1	1	1 1						
1 1	1	1 1	1 1	1 1	1	1	1 1	1	1	1	1	1	1 1	1 1	1	1 1		1	1	1	1 1						
1 1	1	1 1	1 1	1 1	1	1	1 1	1	1	1	1	1	1 1	1 1	1	1 1		1	1	1	1 1						
1 1	1	1			1						1	1	1 1	1						1							
1 1	1	1			1						1	1	1 1	1						1							
1 1	1	1			1						1	1	1 1	1						1							
2 1	4	1			4						2	1	4 1	1						4							
2 1	4	1			4						2	1	4 1	1						4							
2 1	3	1			3						2	1	3 1	1						3							
2 1	4	1			4						2	1	4 1	1						4							
2 1	4	1			4						2	1	4 1	1						4							
2 1	4	1			4						2	1	4 1	1						4							
2 1	3	1			3						2	1	3	1						3							
2 1	3	1			3						2	1	3 1	1						3							
2 1	3	1			3						2	1	3 1	1						3							
2 1	3	1			3						2	1	3 1	1						3							
2 1	3	1			3									4	4					4							
2 1	3	1			3						2	1	3 1	1						3							
2 1	3	1			3						2	1	3	1						3							
2 1	3	1			3						2	1	3 1	1						3							
2 1	3	1		3	3						2 1	3	1						3								
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2 1	3	1			3						2 1	3	1						3								
2 1	3	1			3						- '	3	'	4					4								
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1 1	1	1 1 1	1 1			1	1	1	1	1	1 1	1	1		1	1	1	1	1								
	3	1	, ,		3				•	'	2 1								4								
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WBSB_Int WBSB_To Network	SSB_8_ WBSB_Set WE	B_7_ WBSB_	B_6_ WBS	BSB_5_ WBS	SB_4_ W	3SB_3_\WB	SB_3_ WE	'BSB_3_:V	3_2_·WBSB_	BSB_2_ WBS	VBSB_2_:WI	VBSB_2_ W	EBNB_Tot	_Seg EBNB_Int	AR_8_IEBNR_	NRT/TERN	NB_6_1EB	NB_5_1EB	NB_4_1EB 0	VB_3_4EB	1B_3_3EBN	NB_3_2 EBN	2_4EBNB_3_1E
	2				1	1	3 1	1						1					0	1	3 1	1	2
EVICTING	1				1	1	1	1						0					1	1	1	1	1
EXISTING	3				0	1	1	1	1	4	3	3		2					0	1	1	2	1
	3				0	1	3	1						3					0	1	3	1	2
	1				1									1					1			0	0
	2				0	1	1	1						1					0	1	1	1	1 0
	3				0	1	3	1						3					0	1	3	1	2
	1				1									1					1			0	0
	3				0	1	3	1						3					0	1	3	1	2
	1				0	1	'	1						0					0	'	1	0	0
	1				3									0					3			0	0
	3				0	1	3	1						3					0	1	3	1	0
	1				1									1					1			0	0
EXISTING	3				0	1	2	3						2					0	1	1	2	2
EXISTING	1				1	1	2	2						1					1	1	1	0	0
	2				0	1	1	1						4					4		'	0	0
	1				1									1					1			0	0
	1				1									1					1			0	0
	1				1									1					1			0	0
	1				0									0					0			0	0
EXISTING	2				0	1	1	1						2					0	1	1	2	1
	3				0	1	3	1						3					0	1	3	1	2
	1				1									1					1			0	0
EXISTING	3				0	1	3	1						3					0	1	3	1	2
EXISTING	1				1									1					1			0	0
	1				1									1					1			0	0
Shared-Us	1				4	1	1	1						0					0			0	0
Silai eu-Us	3				0	1	3	1						3					0	1	3	1	2
	1				1									1					1			0	0
	1				1									1					1			0	0
	1				1									1					1			0	0
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1 EXISTING	1 1	1	1	1	1	1	1	1	1					1 1	1	1	1	1	1	1	1	1	1
	1				1									1					1			0	0
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	1				1									1					1			0	0
	1				1									1					1			0	0
	1				1	4								1					1			0	0
	2 2				3	1	1	1						2					0	1	1	1	2
Shared-Us Shared-Us	2				3	1	1	1						2					0	1	1	1	2
	2				3	1	1	1						2					0	1	1	1	2
	2 2				3	1	1	1						2					0	1	1	1	2 2
	2				2	1	2	1						2					0	1	2	1	2
Shared-Us	4				0	1	4	1						3					0	1	4	1	2
	3				0	1	3	1						3					3	1	3	1	3
1 1	1 0	1	1	1	1	1	1	1	1	1	1	1	1	1 1	1	1	1	1	1	1	1	1	1
1 1	1 0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1 1	1 0	1	1	1	1	1	1	1	1	1	1	1	1	1 1	1	1	1	1	1	1	1	1	1
1 1	1 1	1	1	1	1	1	1	1	1	1	1	1	1	0 1	1	1	1	1	1	1	1	1	1
	1				0	1	1	1						1					0	1	1	1	1
	1				0	1	1	1						1					0	1 1	1	1	1
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_3EBNB_2_4EBNB_3_1EBNB_3_	2EBNB 3	3EBNB 3	4 EBNB 4	1EBNB 5 1EBNB	3 6 1EBNB 7	7 1EBNB 8	1EBNB S	ec EBNB Int	EBNB Tot	WBSB 2	WBSB 2	2 :WBSB	2 :WBS	B 2 ·WBS	B 3 WBS	B 3 :WBS	B 3 WBS	SB 3 ·WB	SB 4 WB	SB 5 WBS	SB 6 WB	SSB 7 W	BSB 8 W	BSB SerV	VBSB Int WB	SB To Netwo	ork EBNB Bik WBSB Bike
2 1		3		0				3							2	1	3	1	0					3			
2 1	l	4	1	0				3							2	1	4	1	0					4			Shared-Use
2 1		•		0				3							2	1	3	1	0					4			Shared-Use
2 1		4		0				4							2	1	4	1	0					4			01101 00 000
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2 1	! !	1	•	0				3							0	0	0	0	1					4			Shared-Use
2 1		1						3											4					4			Shared-Us Shared-Use
		3		0				3							0	0	0	0	4								
2 1		3	•	-											0	0	0	0	4					4			Shared-Use
2 1		•	•	0				3							0	0	0	0	4					4			Shared-Use
2 1		3		0				3							0	0	0	0	4					4			Shared-Us Shared-Use
2 1		J		0				3											4					4			Shared-Us Shared-Use
2 1		3	•	0				3							0	0	0	0	4					4			Shared-Us Shared-Use
2 1		3	•	0				3							2	1	3	1	4					4			Shared-Us Shared-Use
2 1	l	3	1	0				3							2	1	3	1	4					4			Shared-Us Shared-Use
2 1	l	3	1	0				3							2	1	3	1	4					4			Shared-Us Shared-Use
2 1	l	3	1	0				3							2	1	3	1	4					4			Shared-Us Shared-Use
2 1		3	1	0				3							2	1	3	1	4					4			Shared-Us Shared-Use
3 1	I	3	1	3				3							3	1	3	1	0					3			
3 1	l	3	1	3				3							3	1	3	1	0					3			
1 1	l	1		1 1	1	1		0 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
2 1		3	1	0		•		2	•		:	•	•	•	2	1	4	1	0	•	•	•	•	3			Shared-Us
1 1		1		0				1							1	1	1	1	0					1			Silarea OS
2 2		1		0				2							2	3	2	1	0					3		EXISTI	NG
0 0				4				4								3			4					4		EXISTI	
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