# 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.

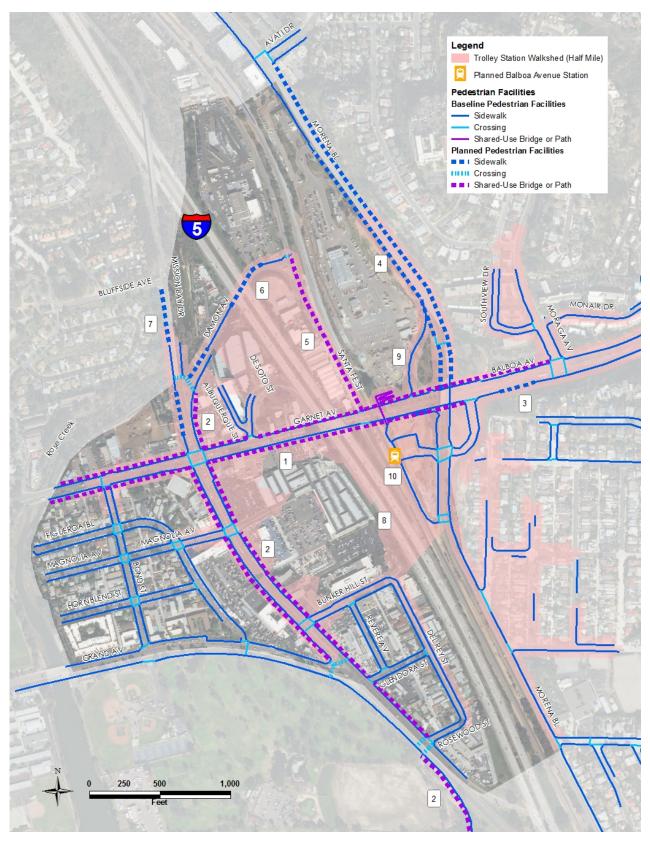


Figure E-1 Future Planned Pedestrian Network and Station Walkshed



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	Х	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

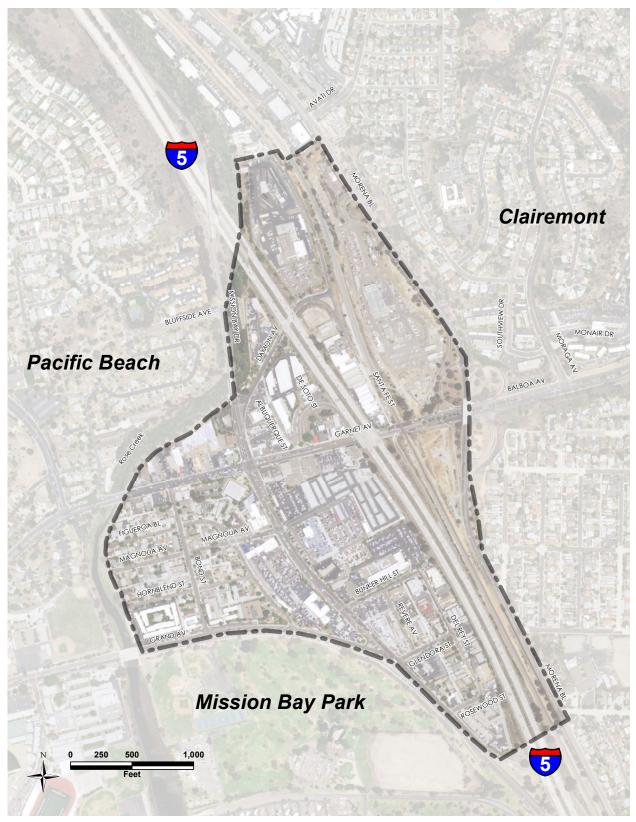


Figure 1-2 Specific Plan Area Boundary

# 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.

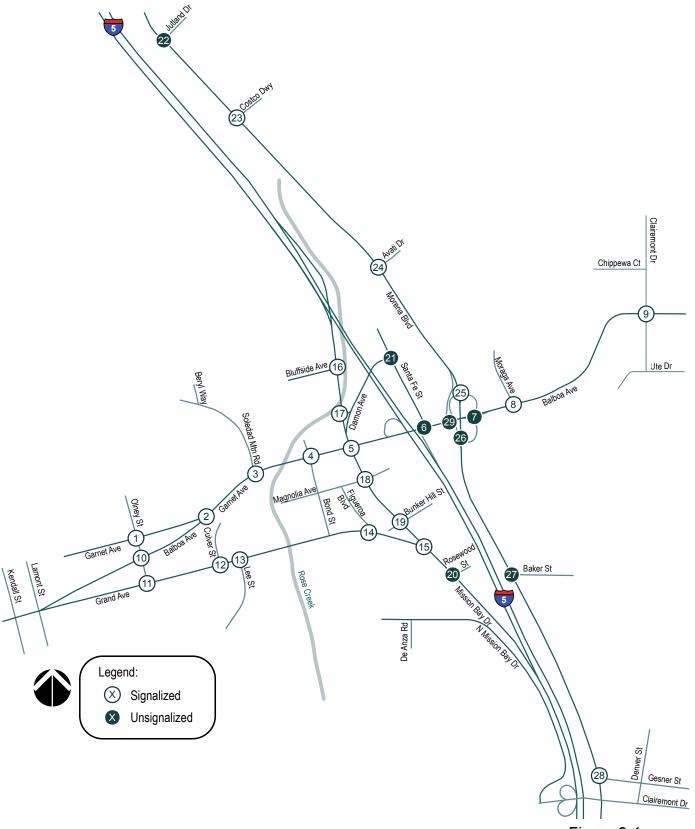


Figure 2-1 Specific Plan Area: Intersections

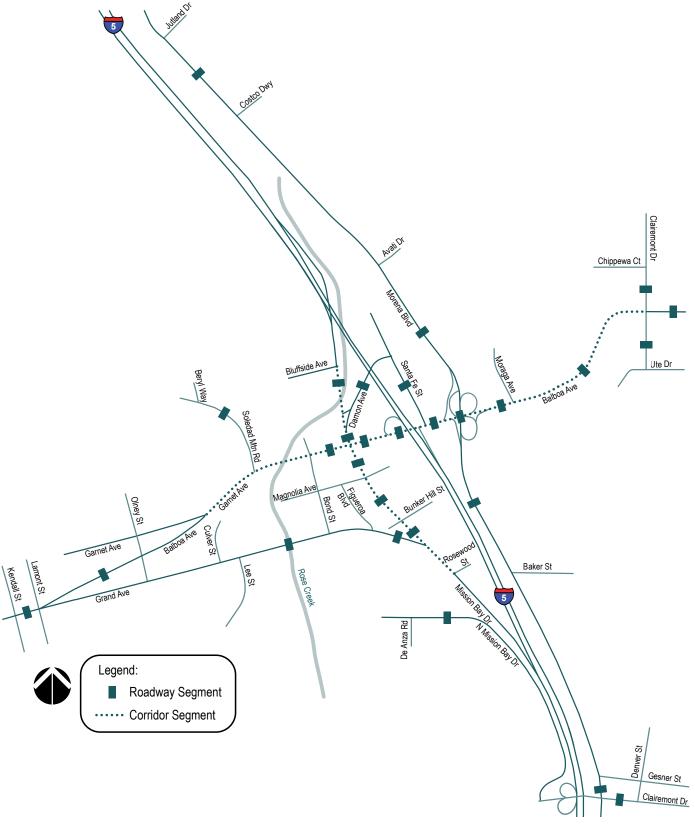


Figure 2-2 Specific Plan Area: Roadway Segments and Corridors

# 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	<ul> <li>Enhanced/High Visibility Crosswalk (x4)</li> <li>Raised Crosswalk/Speed Table (x4)</li> <li>Advanced Stop Bar (x4)</li> <li>Bulb out/Curb Extension (x4)</li> </ul>	0 point: < 4 features 1 point: 5-8 features 2 points: > 8 features
Intersection	Operation al Feature	<ul> <li>Pedestrian Countdown Signal (x4)</li> <li>Pedestrian Lead Interval (x4)</li> <li>No-Turn On Red Sign/Signal (x4)</li> <li>Additional Pedestrian Signage (x4)</li> </ul>	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.

<sup>\*</sup> 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>&gt;</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 <u>&lt;</u> 20.0	>10.0 and <u>&lt;</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>&lt;</u> 80.0	>35.0 and <u>&lt;</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:

<sup>(</sup>a) 2000 Highway Capacity Manual, Chapter 18, Page 6, Exhibit 18-4

<sup>(</sup>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 <sup>1</sup>	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.

<sup>1</sup>Cross 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 <sup>(a)</sup>
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:

<sup>(</sup>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	<ul> <li>2 WB lanes/ 1 EB lanes</li> <li>Continuous two-way left-turn lane</li> <li>On-street parking on both sides</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	30	4-Lane Major	No
Balboa Avenue to Soledad Mountain Rd	<ul> <li>2 WB lanes/ 2 EB lanes</li> <li>Raised center median</li> <li>On-street parking on both sides</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	35	4-Lane Major	Yes
Soledad Mountain Rd to Mission Bay Dr	<ul> <li>2 WB lanes/ 2 EB lanes</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	35	6-Lane Major	No
Mission Bay Dr to I-5 NB Off Ramp	<ul> <li>3 WB lanes/ 2 EB lanes</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	35	6-Lane Major	No
I-5 NB Off Ramp to Morena Blvd SB On Ramp	<ul> <li>3 WB lanes/ 2 EB lanes(1 Aux lane in EB direction)</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	35	6-Lane Major	No
Balboa Avenue (CA-2				
Morena Blvd SB Ramps to Morena Blvd NB Ramps	<ul> <li>2 WB lanes(1 Aux lane in WB direction)/ 2 EB lanes</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Sidewalk on north side</li> <li>Curb and gutter on both sides</li> </ul>	45	6-Lane Major	No
Morena Blvd NB Ramps to Clairemont Dr	<ul> <li>2 WB lanes/ 2 EB lanes</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Class II (Bike Lane) facility</li> </ul>	45	6-Lane Major	No

Table 4-1 Existing Roadway Network (Cont.)

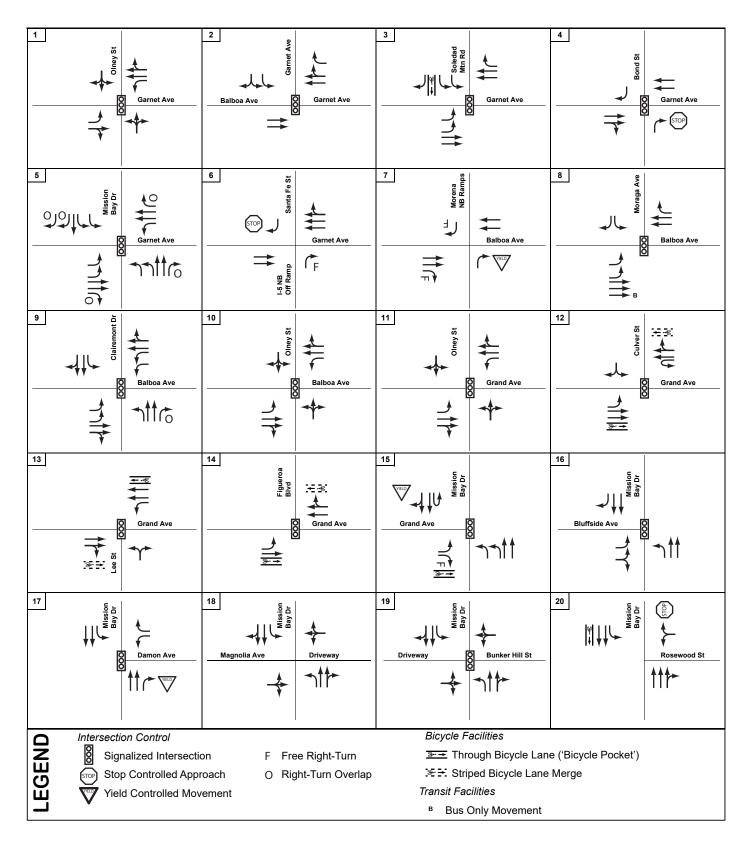
Roadway Segment	Current Cross Section	Speed Limit (mph)	Community Plan Classification	Built to Ultimate?
Mission Bay Driv	e			
Bluffside Ave to Rosewood St	<ul> <li>2 NB lanes/ 2 SB lanes</li> <li>Raised center median</li> <li>On-street parking on both sides</li> <li>Sidewalk, curb and gutter on both sides between the bridge over Rose Creek and Rosewood St</li> </ul>	35	4-Lane Major	Yes
Morena Boulevar	d			
Jutland Ave to Avati Dr	<ul><li>2 NB lanes/ 2 SB lanes</li><li>Continuous two-way left-turn lane</li><li>On-street parking on the west side</li></ul>	45	4-Lane Collector	Yes
Avati Dr to Balboa Ave	<ul><li>2 NB lanes/ 2 SB lanes</li><li>Continuous two-way left-turn lane</li><li>No on-street parking</li></ul>	45	4-Lane Major	Yes
Balboa Ave to Baker St	<ul> <li>1 NB lanes/ 2 SB lanes</li> <li>Raised center median</li> <li>On-street parking on the east side</li> <li>Sidewalk on the east side</li> <li>Curb and gutter on both sides</li> </ul>	45	4-Lane Major	Yes
Baker St to Clairemont Dr	<ul> <li>2 NB lanes/ 2 SB lanes</li> <li>Raised center median</li> <li>On-street parking on the east side</li> <li>Sidewalk on the east side</li> <li>Curb and gutter on both sides</li> </ul>	45	4-Lane Major	Yes
<b>Clairemont Drive</b>				
Chippewa Ct to Balboa Ave	<ul> <li>2 NB lanes/ 2 SB lanes</li> <li>Raised center median</li> <li>On-street parking on the west side</li> <li>Class II (Bike Lane) facility on east side</li> <li>Class III (Bike Route) facility on west side</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	35	4-Lane Major	Yes
Balboa Ave to Morena Blvd	<ul> <li>2 NB lanes/ 2 SB lanes</li> <li>Continuous two-way left-turn lane</li> <li>On-street parking on both sides</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	35	4-Lane Major	Yes
Damon Avenue				
Mission Bay Dr to Santa Fe St	<ul> <li>1 NB lane/ 1 SB lane</li> <li>On-street parking on both sides</li> <li>Class III (Bike Route) facility on both sides</li> <li>Sidewalk, curb and gutter on west side</li> </ul>	35	N/A*	Yes

Table 4-1 Existing Roadway Network (Cont.)

Roadway Segment	Current Cross Section   Lim		Community Plan Classification	Built to Ultimate?
Grand Avenue				
Olney St to Mission Bay Dr	<ul> <li>2 WB lanes/ 2 EB lanes</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Class II (Bike Lane) facility</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	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	<ul> <li>2 WB lanes/ 2 EB lanes</li> <li>Raised center median</li> <li>No on-street parking</li> <li>Class II (Bike Lane) facility</li> <li>Sidewalk, curb and gutter on both sides</li> </ul>	40	4-Lane Major	Yes

#### Notes:

<sup>\*</sup>This roadway segment is not classified in the Pacific Beach Community Plan



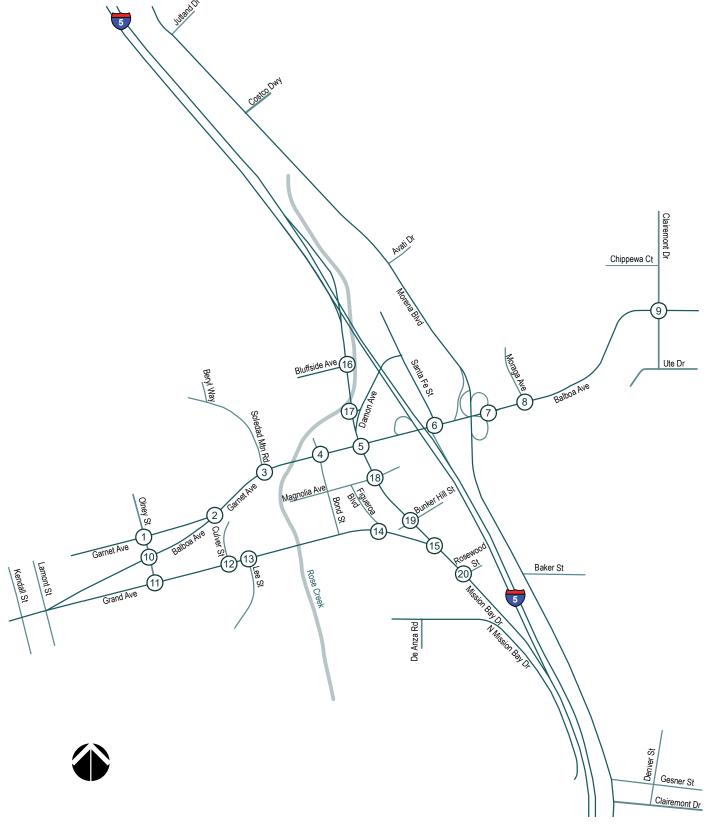
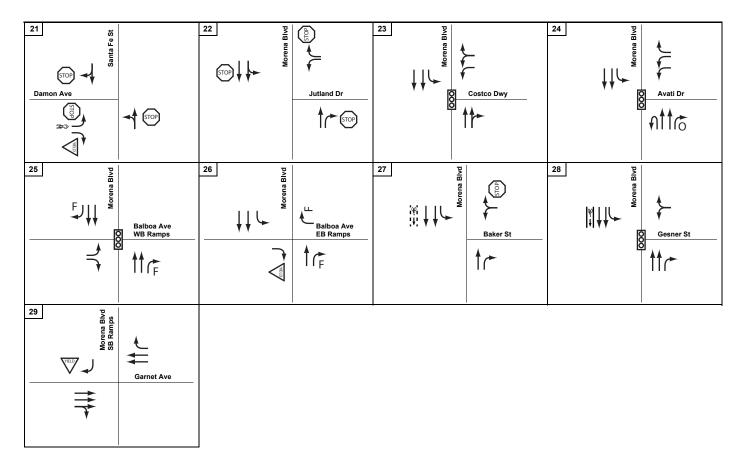
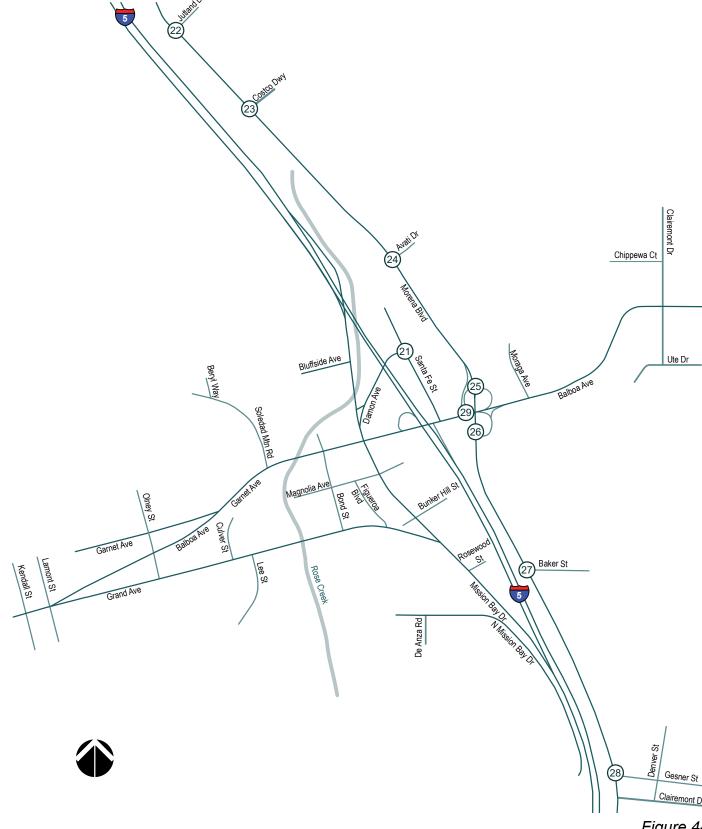


Figure 4-1 Existing Intersection Geometrics





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	\$ 57 / 176 ← 497 / 1212 ½ 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   286   740   Mission Bay Dr		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						

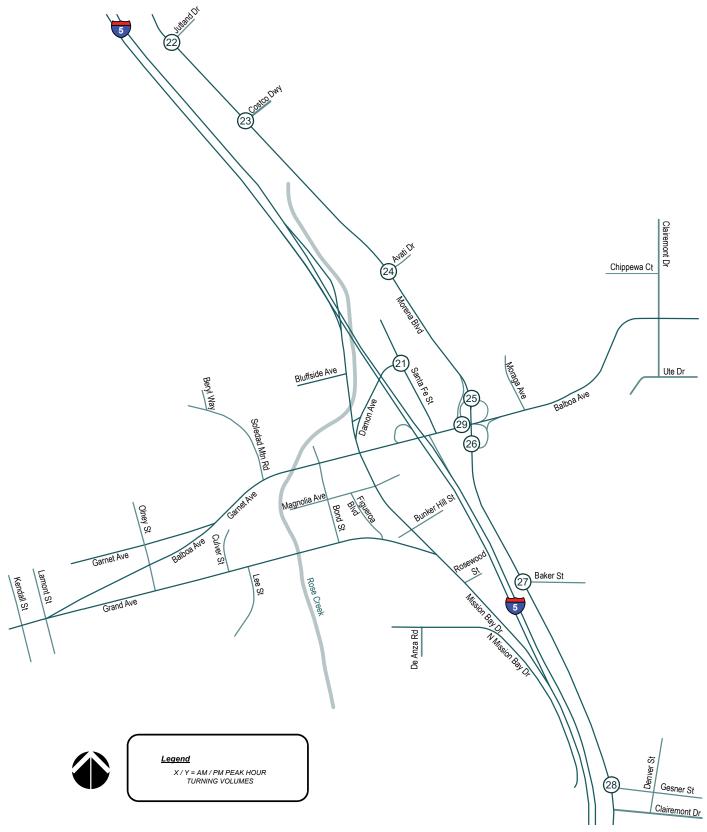


Figure 4-2
Existing Peak Period Volumes (Cont.)

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	
	Daiboa / 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	
'-	Grand 7.ve at Galver et	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	
-0	Ave	Signal	PM	16.1	В	

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

<sup>(</sup>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	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           All-Way Stop         PM         8.1           AM         12.7         PM         55.2           AM         9.6         PM         11.0           AM         9.1         PM         8.9           Alboa         Signal         AM         9.1           AM         9.1         PM         4.7           Alboa         Two-Way Stop         AM         96.7           PM         4.7         AM         96.7           PM         50.2         AM         35.1           AM         35.1         PM         17.6           AM         8.6         AM         8.6	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           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           PM         17.6	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	<sup>23</sup> Dwy	Signai	PM	11.0	В	
24	Marana Plud 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	Ture Mari	AM	96.7	F	
26	Ave Ramps	,	PM	50.2	F	
		0 111	AM	35.1	Е	
27	Morena Blvd at Baker St		PM	17.6	С	
28	Morena Blvd at Gesner St	C: I	AM	8.6	Α	
20	INDICIA DIVU AL GESTIEL SL	Signai	PM	7.5	А	
29	Balboa Ave at Morena Blvd	<b></b>	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.

<sup>(</sup>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.

<sup>(</sup>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.

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

<sup>(</sup>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.

<sup>(</sup>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.

<sup>(</sup>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)

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

<sup>(</sup>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 <sup>a</sup>		Demand (veh/hr/lane)		Meter Rate	Excess Demand (veh/hr)		Delay (min)		Queue (feet) <sup>d</sup>										
	GF	GP	HOV	GP	HOV	(veh/hr)	GP	HOVb	(veh/hr) <sup>c</sup>	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).

<sup>(</sup>a) Demand is the peak hour demand expected to use the on-ramp

<sup>(</sup>b) Assume 20 percent of demand utilizes the HOV lanes

<sup>(</sup>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.

<sup>(</sup>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.

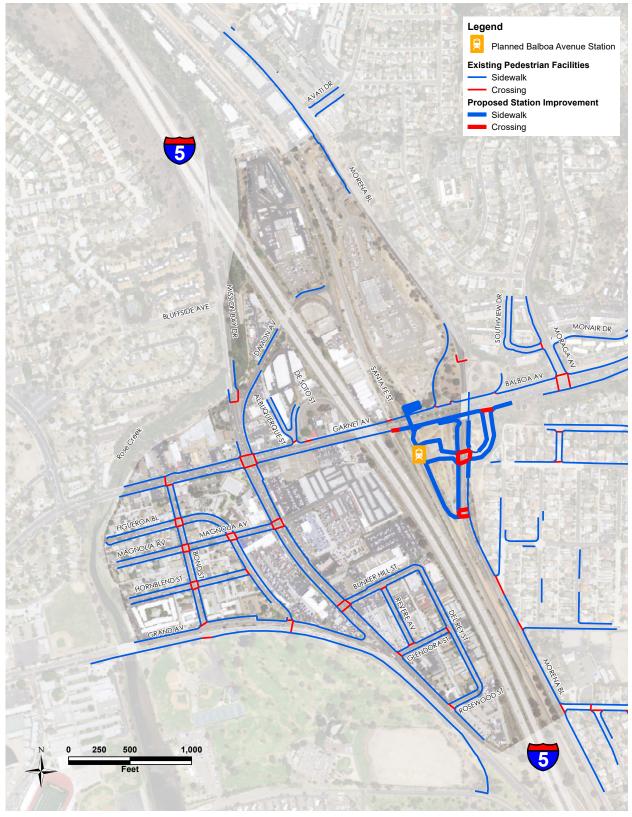


Figure 4-3 Existing Pedestrian Network

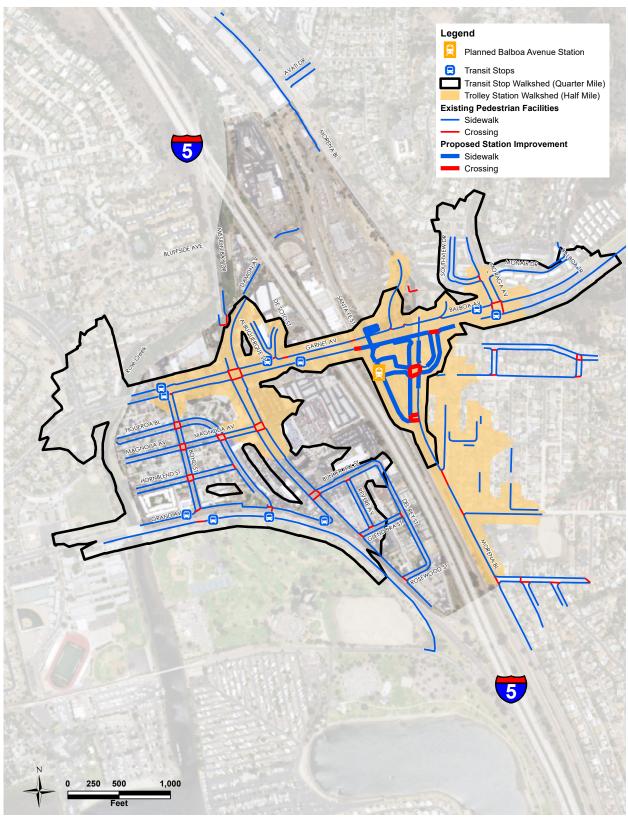


Figure 4-4 Existing Pedestrian Walkshed

#### **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).

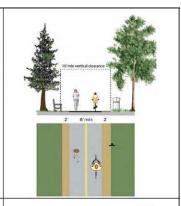
Two additional bicycle facilities, Cycle Track (referred to as a Class IV Bicycle Lane by the City of San Diego) and Bicycle Boulevard, have been adopted into the SANDAG Regional Bike Plan (RBP). A Class IV Cycle Track is a bicycle facility that is located within the roadway right-of-way but physically 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

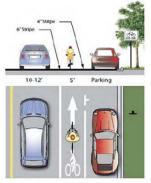
#### Class I - Bike Path

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.

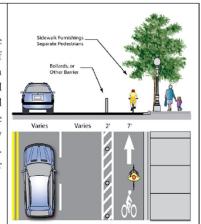


Source: SANDAG Regional Bicycle Plan, dated April 2010 (ALTA Planning)

Table 4-6 Additional Bicycle Facility Classifications

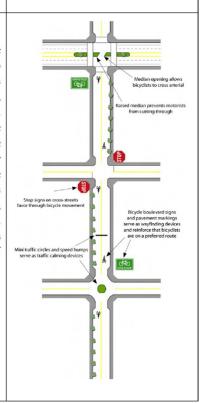
#### **Cycle Tracks**

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.

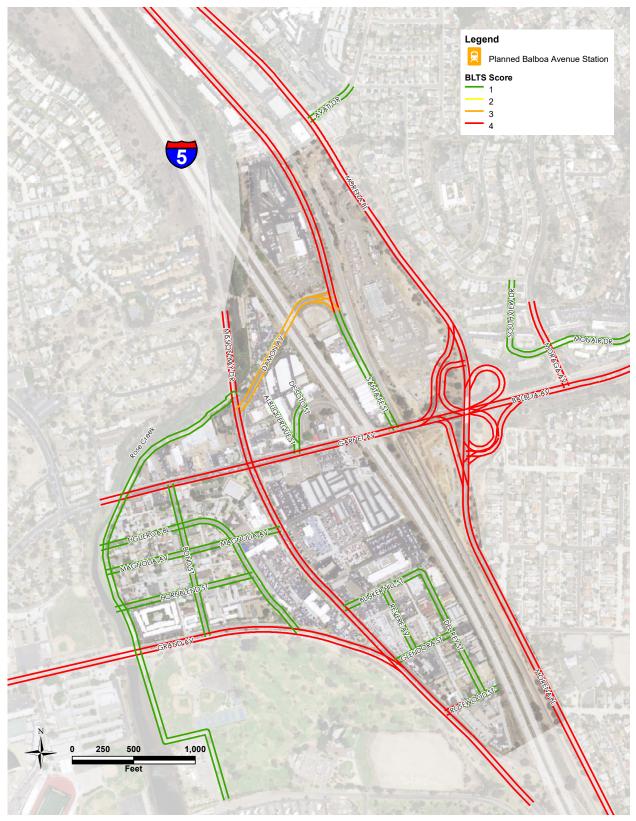


Figure 4-6
Existing BLTS Results

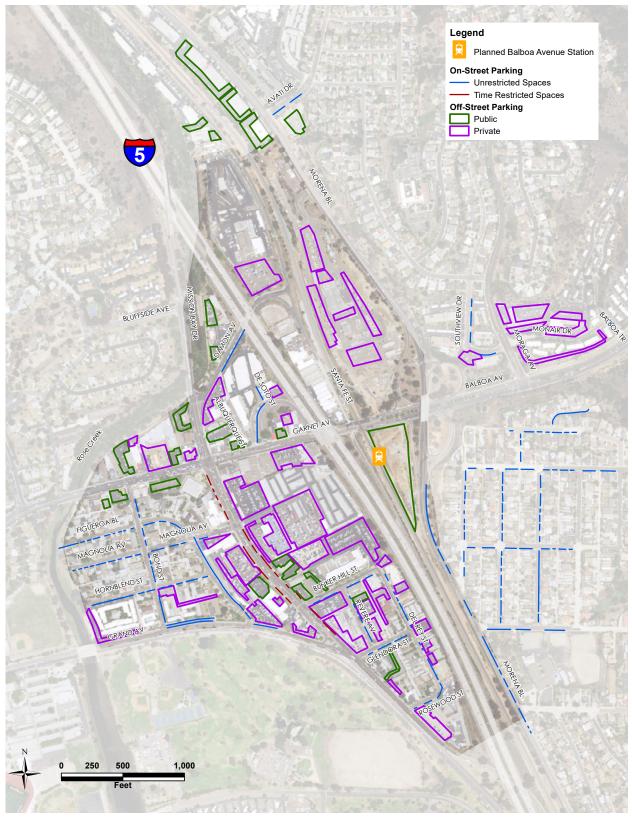


Figure 4-7 Existing Parking Supply

# 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

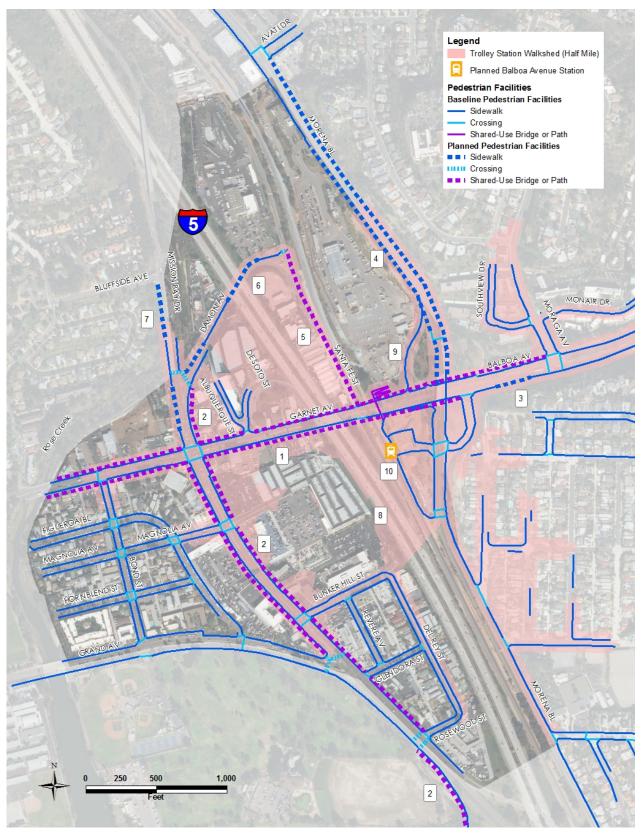


Figure 5-1
Future Planned Pedestrian Network and Station Walkshed

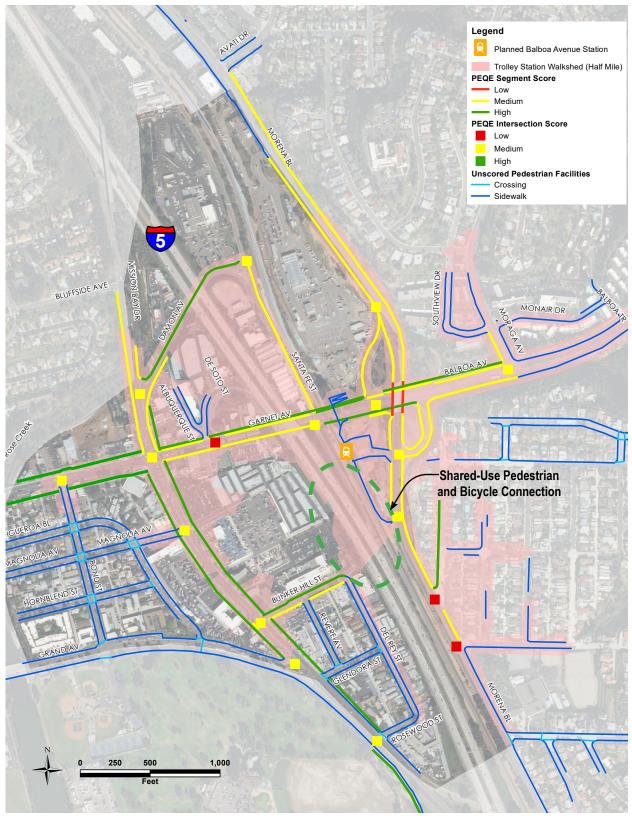


Figure 5-2 Future Planned PEQE Analysis Results

# 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%

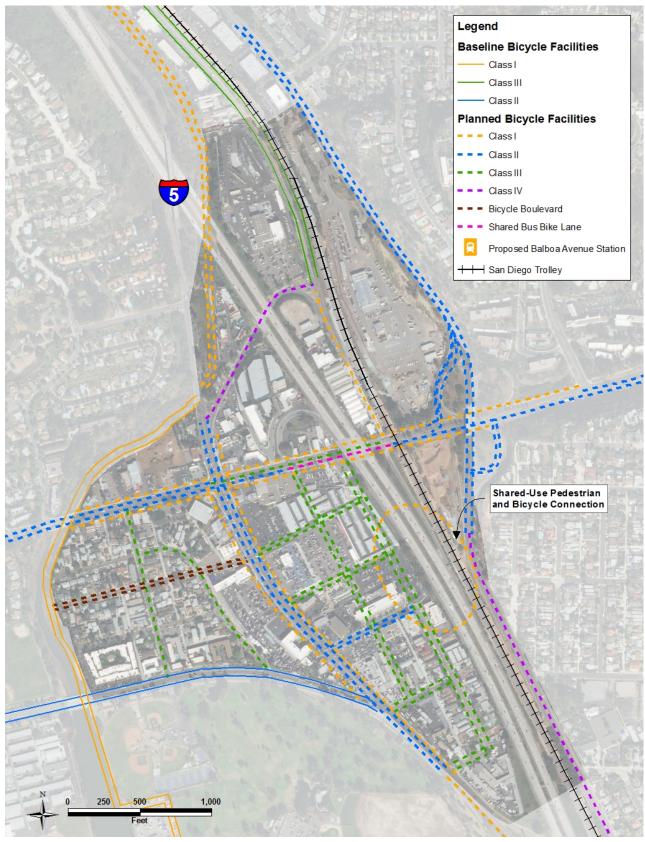


Figure 6-1 Future Planned Bicycle Facilities



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.** 

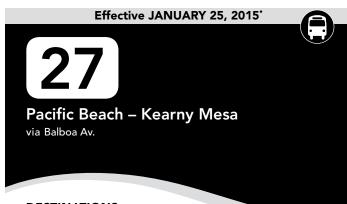
## **FUTURE NETWORK CHANGES**

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



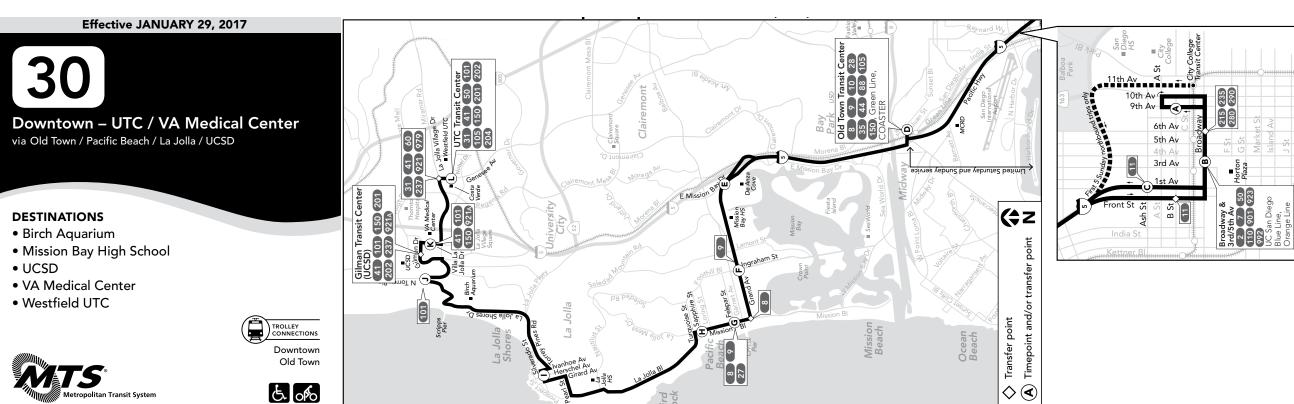
# **DESTINATIONS**

- 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

<sup>(</sup>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

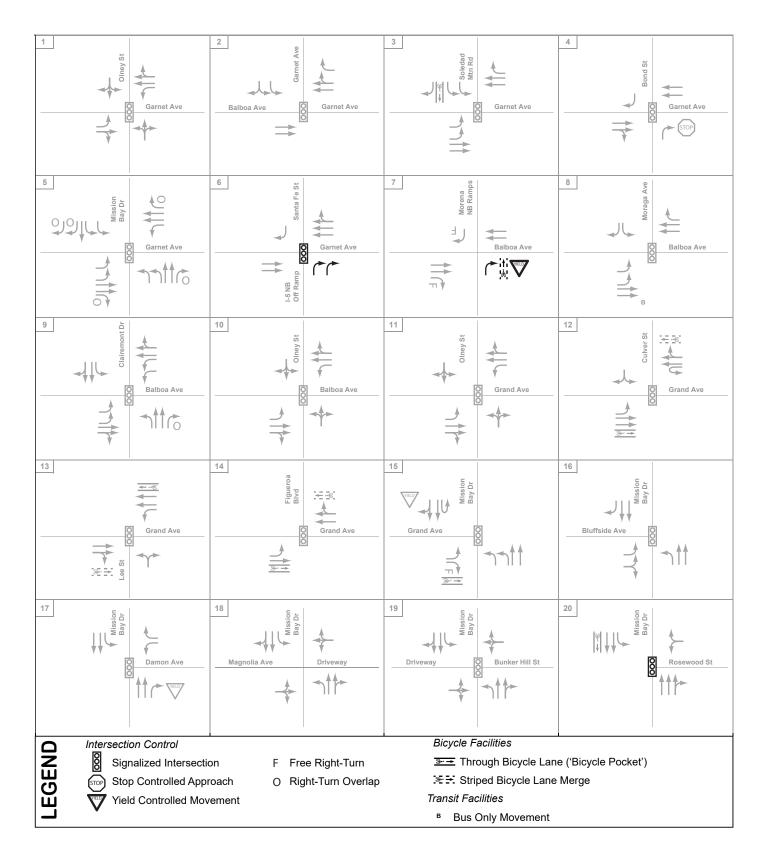
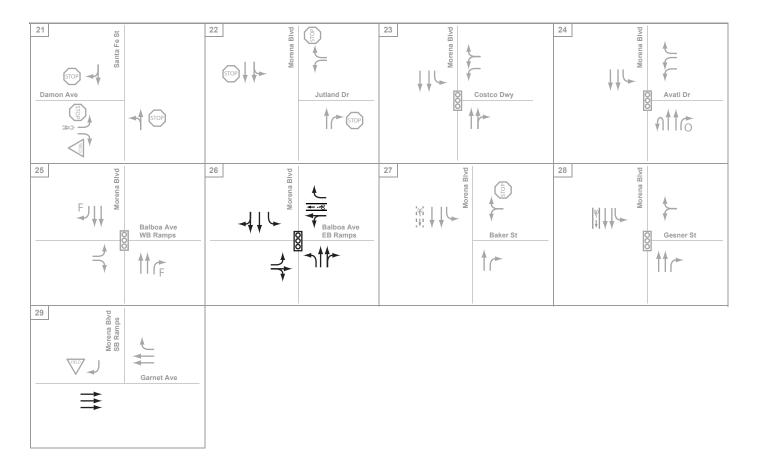
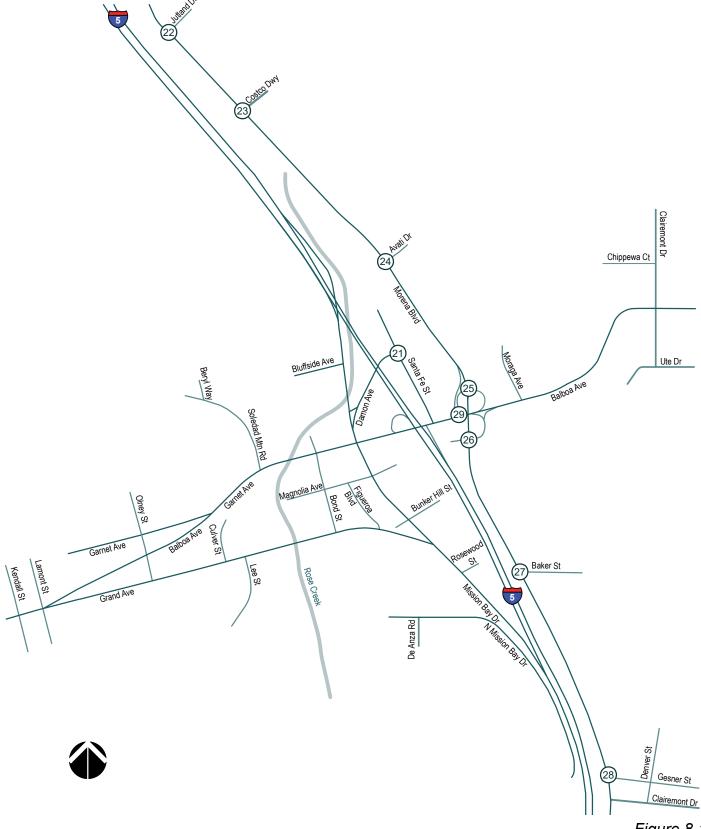




Figure 8-1 Future Adopted Community Plan Intersection Geometrics





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  ⇔ 314 / 677  Garnet Ave	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 /599 % 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.

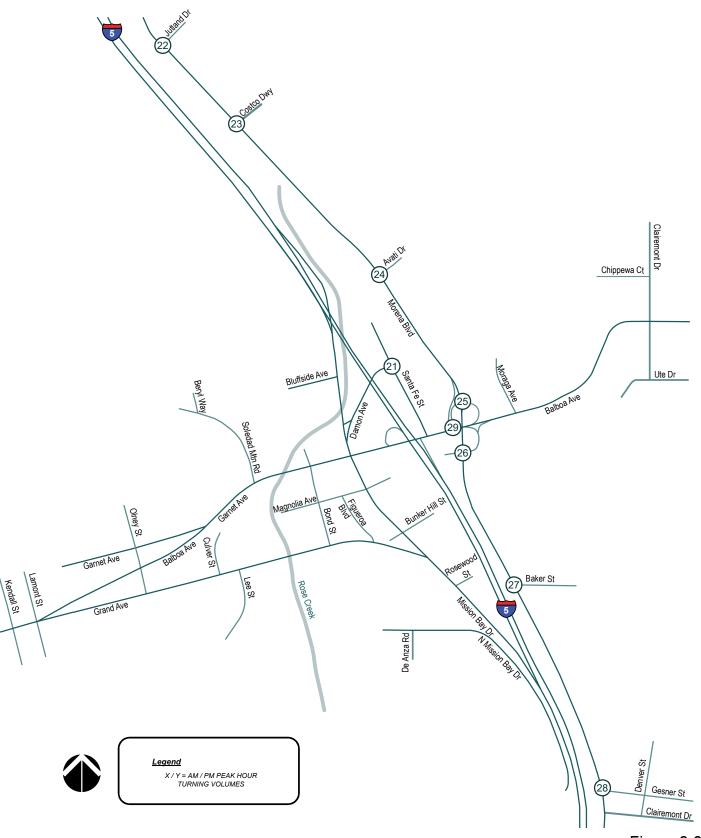


Figure 8-2 Future Adopted Community Plan Peak Period Volumes (Cont.)

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.

<sup>(</sup>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.

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

<sup>(</sup>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	E	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.

<sup>(</sup>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.

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

<sup>(</sup>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.

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

<sup>(</sup>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.

<sup>(</sup>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.

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

<sup>(</sup>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.

<sup>(</sup>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		-	•		<del>-</del>	<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)

<sup>(</sup>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	Е	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	Е	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		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	
1	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	
<b>5</b>	Garnet Áve	PM	70.5	Е	50.3	D	NO	through lane and second WB left-turn lane.  Add second SB through lane.	
7	7 Balboa EB Ramps & Balboa Ave	AM	75.2	F	4.5	Α	YES	Install a partial traffic signal at this intersection to control the EB and NB	
/		PM	113.1	F	8.3	А	ILS	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	NO	left-turn lane. Add a WB right-turn lane.	
22 N	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	mstan a tramic signar of roundabout.	

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

<sup>(</sup>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.

<sup>(</sup>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.

<sup>(</sup>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



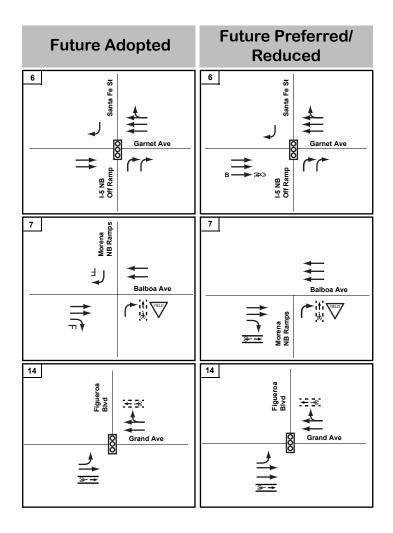


Figure 8-6 Preferred Specific Plan Projects: Mission Bay Drive at Grand Avenue



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')

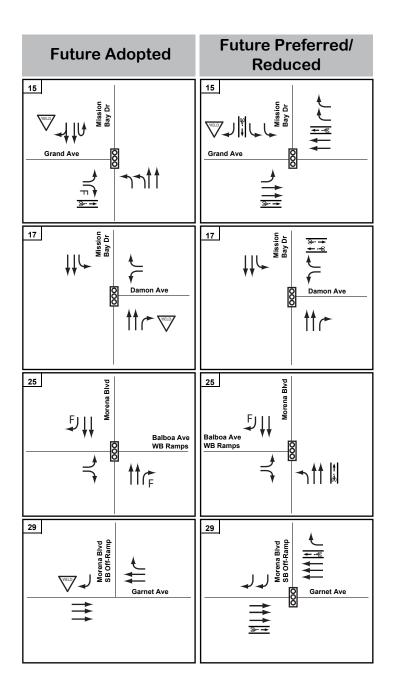
→ Striped Bicycle Lane Merge

→ 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	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.

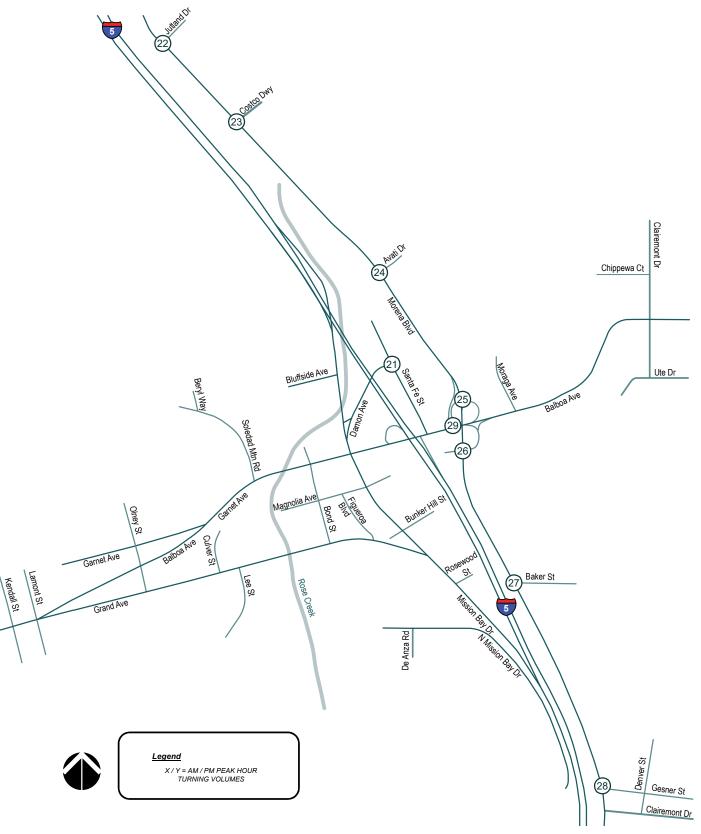


Figure 8-9 Future Preferred Specific Plan Peak Period Volumes (Cont.)

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	
4	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	E	
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	
O	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	
0	Ave	Signal	PM	16.3	В	15.2	В	
9	Balboa Ave at	Signal	AM	47.6	D	40.9	D	
9	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	Signal	PM	12.9	В	20.4	С	
11	Grand Ave at Olney St	Signal	AM	32.9	С	47.8	D	
11	Grand Ave at Onley St	Signal	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	Grand Ave at Lee St	Signal	PM	5.2	Α	5.8	Α	
14	Grand Ave at Figueroa	Signal	AM	14.9	В	4.6	Α	
14	Blvd	Oigilai	PM	3.0	Α	13.8	В	
15	Grand Ave at Mission	Signal	AM	34.5	С	36.7	D	
13	Bay Dr	Signal	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.

<sup>(</sup>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.

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

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

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

<sup>(</sup>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	Е	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.

<sup>(</sup>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.

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

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

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

<sup>(</sup>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	E	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.

<sup>(</sup>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.

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

<sup>(</sup>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.

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

<sup>(</sup>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		AM	157.9	13.9	Е	191.6	11.7	E
to Grand Avenue	Soulbound	III	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	11	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)

<sup>(</sup>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	Е	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

		Numbe		Meter		Future Pref	erred			Existing	9		
On Ramp	Peak Hour	_	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.

<sup>(</sup>a) Peak-hour volumes were estimated using SANDAG forecast model outputs.

<sup>(</sup>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.

<sup>(</sup>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.

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

<sup>(</sup>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.

<sup>(</sup>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			
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 a 134/66 a	C 163 / 316  Womena Blvd	□ 13 / 11  □ 190 / 588  Jutland Dr  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	C 42 / 55  Morena Blvd	56 / 75 2 99 / 376 Costco Dwy  0 26 / 75 2 99 / 376  0 25 / 75 2 99 / 376	\$52 / 1254 \$2 / 1268 \$ 21 / 68 Morena Bivd	\$ 37 / 53  2 230 / 190  Avati Dr  1 6 / 6 / 6 / 6 / 6 / 6 / 6 / 6 / 6 / 6
25   DA   DA   DA	280 /90 ≈ 1439 /1268 ⇔	26   Page 1   Page 2   Page 2   Page 3   Page 3	\$ 440 / 530 \$ 77 / 30 \$ 140 / 300 <b>Balboa EB Ramps</b> \$ 99 08 1 \$ 99 0 05 1	4 290 / 840 0 21 / 46 Morena Blvd	© 35 / 27  2 27 / 15  Baker St	## 342 / 906   ## 47 / 103   ## Morena Bivd	67 49 / 40 / 40 / 40 / 40 / 40 / 40 / 40 /
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.

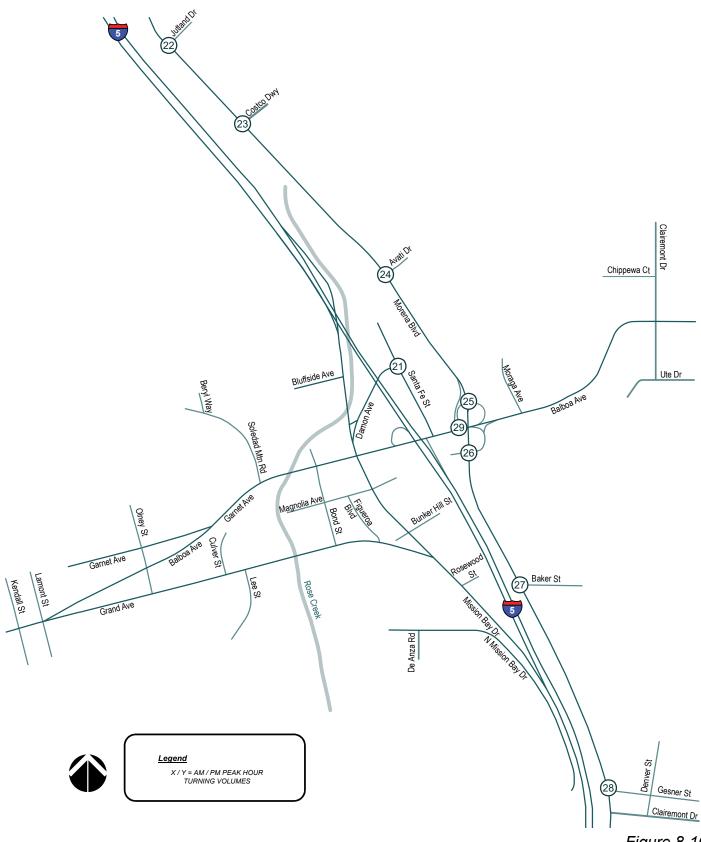


Figure 8-10 Future Reduced Specific Plan Peak Period Volumes (Cont.)

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	А	
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	
45	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.

<sup>(</sup>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.

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

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

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

<sup>(</sup>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	Oigilai	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.

<sup>(</sup>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.

<sup>(</sup>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.

<sup>(</sup>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	ting				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	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	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	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	35,300	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.

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

<sup>(</sup>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.

<sup>(</sup>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	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	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.

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

<sup>(</sup>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.

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

<sup>(</sup>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	E
to Grand Avenue	Soutbourid		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	I Facinolina		PM	337.3	19.5	D	375.9	17.5	D
Clairemont Drive	Mostbound	11	AM	292.9	22.6	С	291.0	22.8	С
to Olney Street	Westbound	ll -	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.

<sup>(</sup>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	re Red	uced					Exist	ing				
	Freeway Segment	Dir	Number of Lanes	Peak- Volun		Spe (mpl	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	O	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 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	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.

<sup>(</sup>a) Peak-hour volumes were estimated using SANDAG forecast model outputs.

<sup>(</sup>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.

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

<sup>(</sup>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.

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

<sup>(</sup>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	VEQ	Install a traffic signal or roundabout.
22	Jutland Dr	PM	81.3	F	10.4 / 13.8	B/B	YES	install a traine signal of roundabout.

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

<sup>(</sup>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.

<sup>(</sup>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	Е	5 Lane Major Arterial	0.827	D	NO
Magnolia Ave to Bunker Hill St	37,700	4 Lane Major Arterial	0.943	Е	5 Lane Major Arterial	0.838	D	NO
Bunker Hill St to Grand Ave	35,300	4 Lane Major Arterial	0.883	Е	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.

<sup>(</sup>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

		<b>-</b>		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	E		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.

<sup>(</sup>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.

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

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

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

<sup>(</sup>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.

<sup>(</sup>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.

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

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

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

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

<sup>(</sup>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.

<sup>(</sup>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.

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

<sup>(</sup>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: <b>Bold</b> 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 Arterial Lane Major	40,000 40,000	ADT (b)	V/C Ratio (c)	LOS	Classification (a) Classification (a) Classification (a) Classification (a) Classification (a) Classification (b) Ratio (c) Classification (a) Classification (b) Classification (c) Classification (d) Ratio (c) Classification (d) Ratio (d) Classification (d) Cl														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	(a)		S	?		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 3 Lan Ticonderoga St 3 Lan Al Gesner St to Clairemont Dr 4 Lan Al Clairemont Drive Chippewa Court to Balboa 4 Lan Avenue Al	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	АМ	PM	АМ	PM	АМ	РМ		АМ	PM	АМ	PM		АМ	РМ	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
ىن	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	ing Conditi	ons	Fı	ıture Adopt	ed		Fut	ure 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) (13)		(veh/hr)	(11111)	(11) (15)		(veh/hr)	(11111)	(11) (15)	
LE CD & Mission Boy 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
I-5 NB & Mission Bay Drive	AM		0	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.

<sup>(</sup>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.

<sup>(</sup>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

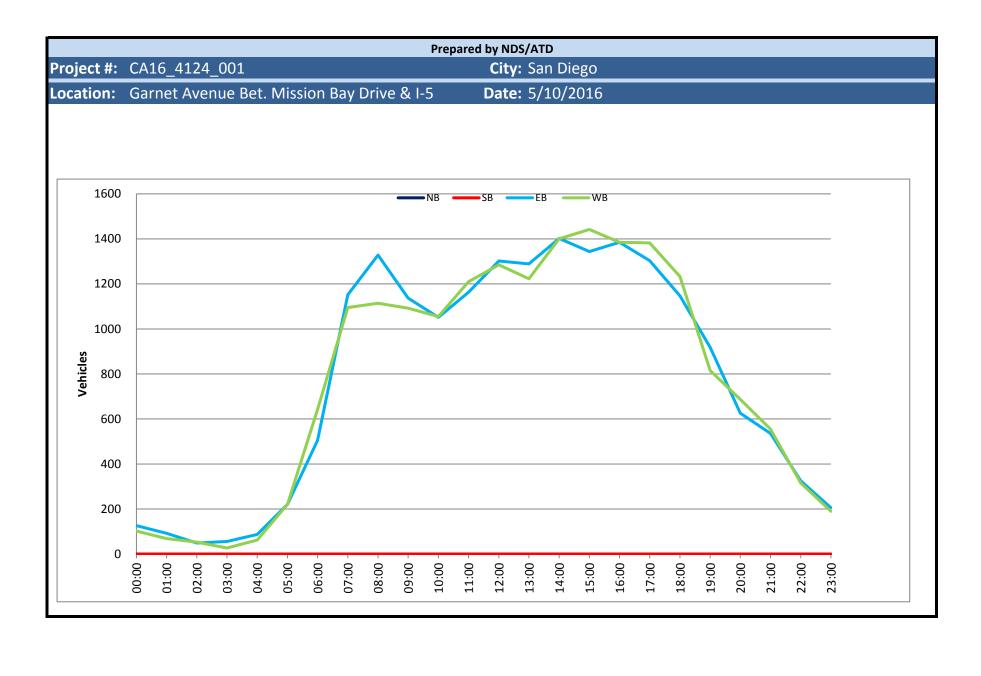
TRAFFIC COUNT AND FREEWAY DATA

## **VOLUME**

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

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

	DAILY TOTA	ALC.		NB		SB		ЕВ	WB						To	otal
	DAILTIOIA	NL3		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			343	1302	313	1285	655	2587
01:00		25		20		45		13:00			323		340		663	
01:15		18		21		39		13:15			333		304		637	
01:30 01:45		28 21	92	12 16	69	40 37	161	13:30 13:45			312 321	1289	280 299	1223	592 620	2512
02:00		12	32	13	0.5	25	101	14:00			313	1203	285	1223	598	2312
02:15		5		11		16		14:15			389		361		750	
02:30		14	40	12		26	402	14:30			342	4.400	386	4.404	728	2002
02:45 03:00		18 17	49	17 6	53	35 23	102	14:45 15:00			358 324	1402	369 366	1401	727 690	2803
03:00		9		8		17		15:15			317		350		667	
03:30		14		4		18		15:30			334		355		689	
03:45		16	56	9	27	25	83	15:45			369	1344	371	1442	740	2786
04:00 04:15		16		14		30 38		16:00 16:15			334		352		686	
04:15		24 22		14 12		34		16:30			355 356		371 326		726 682	
04:45		25	87	22	62	47	149	16:45			340	1385	336	1385	676	2770
05:00		30		27		57		17:00			343		343		686	
05:15		42		47		89		17:15			348		362		710	
05:30 05:45		65 84	221	57 90	221	122 174	442	17:30 17:45			342 270	1303	341 336	1382	683 606	2685
06:00		90	221	74	221	164	772	18:00			316	1303	360	1302	676	2003
06:15		108		143		251		18:15			300		307		607	
06:30		134	505	202	642	336	4447	18:30			285	4447	262	4222	547	2200
06:45 07:00		173 191	505	223 252	642	396 443	1147	18:45 19:00			246 247	1147	304 219	1233	550 466	2380
07:15		297		291		588		19:15			255		184		439	
07:30		331		282		613		19:30			232		222		454	
07:45		333	1152	270	1095	603	2247	19:45			184	918	190	815	374	1733
08:00 08:15		331 338		308 277		639 615		20:00 20:15			177 152		192 171		369 323	
08:30		326		261		587		20:30			167		184		351	
08:45		333	1328	268	1114	601	2442	20:45			130	626	140	687	270	1313
09:00		293		294		587		21:00			152		169		321	
09:15		276		269		545 516		21:15 21:30			148		161		309 247	
09:30 09:45		264 304	1137	252 277	1092	516 581	2229	21:45			118 118	536	129 96	555	214	1091
10:00		264	1137	252	1032	516	2223	22:00			99	330	83	333	182	1031
10:15		243		274		517		22:15			84		97		181	
10:30		272	1052	259	1055	531	2107	22:30			60	225	70	215	130	640
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 TOTA	AIS.		NB		SB		EB	WB						To	otal
	- BAILT TOTA	NEO .		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		07:15			4 - 6 Peak Hour 4 - 6 Pk Volume				16:15		16:00 1385		16:00 2770
Pk Hr Factor			1333 0.986		1151 0.934		0.966	Pk Hr Factor				1394 0.979		1385 0.933		0.954

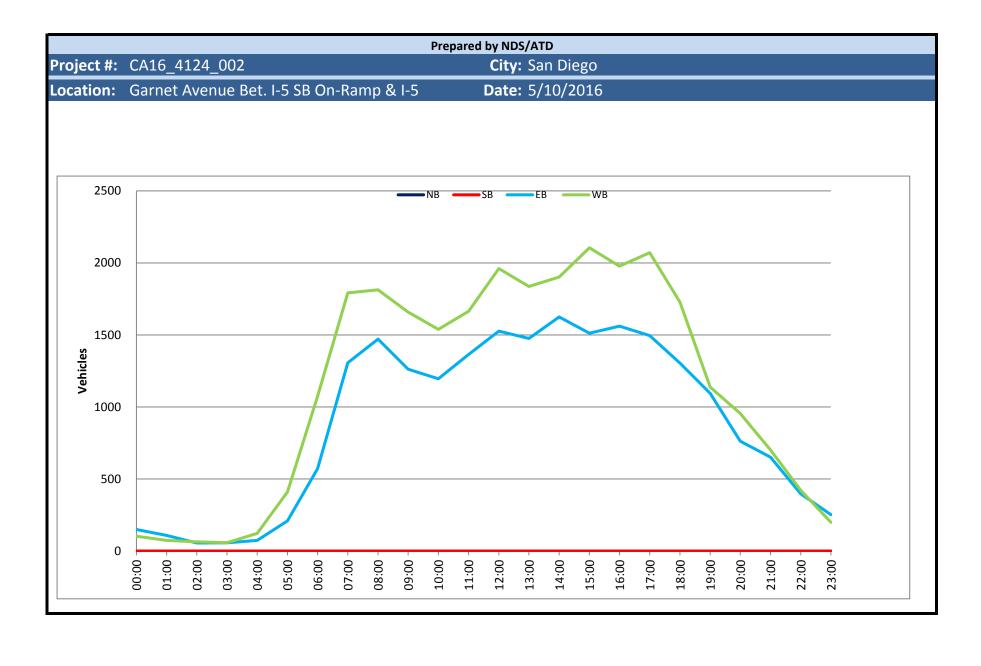


## **VOLUME**

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

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

	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		21,485	27,372						48,	,857
<b>AM Period</b>	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		TO	TAL
00:00		43		33		76		12:00			353		469		822	
00:15		41		29		70		12:15			388		502		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 13:15			390		497		887	
01:15 01:30		21 33		22 19		43 52		13:30			383 355		462 438		845 793	
01:30		25	108	18	74	43	182	13:45			348	1476	439	1836	787	3312
02:00		13		25		38		14:00			368	2170	440	1000	808	3312
02:15		5		10		15		14:15			442		482		924	
02:30		16		15		31		14:30			406		513		919	
02:45		22	56	14	64	36	120	14:45			409	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	30	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		21	74	45	123	66	197	16:45			379	1561	478	1978	857	3539
05:00		25		61		86		17:00			382		590		972	
05:15		46		91		137		17:15			393		492		885	
05:30		57	200	110	444	167	620	17:30			403	4.405	480	2074	883	25.66
05:45		81 98	209	149 152	411	230 250	620	17:45 18:00			317	1495	509	2071	826	3566
06:00 06:15		98 121		228		349		18:15			355 337		451 422		806 759	
06:30		149		343		492		18:30			338		418		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		376		485		861		19:30			273		293		566	
07:45		393	1307	477	1792	870	3099	19:45			218	1095	247	1138	465	2233
08:00		366		511		877		20:00			218		275		493	
08:15 08:30		382 359		470 436		852 795		20:15 20:30			188 197		225 241		413 438	
08:45		364	1471	396	1813	760	3284	20:45			160	763	214	955	374	1718
09:00		307	14/1	471	1013	778	3204	21:00			194	703	208	333	402	1710
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		299		367		666		22:00			117		114		231	
10:15		278		401		679		22:15			103		133		236	
10:30		306	1106	366	1520	672	2725	22:30 22:45			77 100	207	91 94	422	168	910
10:45 11:00		313 340	1196	405 413	1539	718 753	2735	23:00			100 81	397	84 68	422	184 149	819
11:15		320		386		706		23:15			66		19		85	
11:30		359		394		753		23:30			59		62		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%
				NB		SB		EB	WB						I	otal
	DAILY TOTALS			0		0		21,485	27,372							,857
AM Dock Have			07.20		11.45		07:20	PM Peak Hour				14.00		15.00		
AM Peak Hour AM Pk Volume			07:30 1517		11:45 1954		07:30 3460	PM Pk Volume				14:00 1625		15:00 2105		14:15 3632
Pk Hr Factor			0.965		0.954		0.986	Pk Hr Factor				0.919		2105 0.943		0.983
7 - 9 Volume	0 0		2778		3605		6383	4 - 6 Volume	0	0		3056		4049		7105
7 - 9 Peak Hour			07:30		07:30			4 - 6 Peak Hour				16:00		17:00		16:15
7 - 9 Peak Hour			1517		1943			4 - 6 Pk Volume				1561		2071		3610
Pk Hr Factor			0.965		0.951		0.986	Pk Hr Factor				0.971		0.878		0.928
I K III I actor	0.000		0.503		0.531		0.500	. X III Tuctor	0.000	0.00		0.371		0.070		3.320



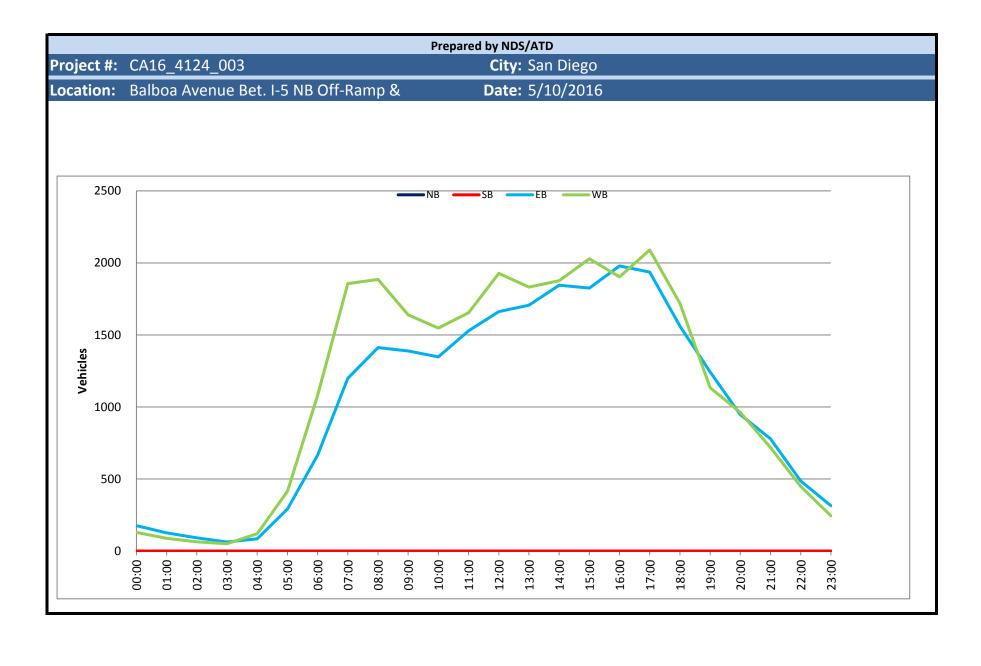
## **VOLUME**

# 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
	DAILI	IOIALS			0		0		24,660	27,413					52,	,073
AM Period	NB	SB	EB		WB		ТО	TAL	PM Period	NB	SB	ЕВ	WB		TO	TAL
00:00			54		53		107		12:00		4	01	468		869	
00:15			48		33		81		12:15			20	466		886	
00:30			41	476	25	420	66	205	12:30			11	511	4007	922	2500
00:45			33	176	18	129	51	305	12:45			30 1662		1927	912	3589
01:00 01:15			33 28		23 28		56 56		13:00 13:15			47 30	480 474		927 904	
01:30			34		21		55		13:30			17	425		842	
01:45			31	126	16	88	47	214	13:45			13 1707	453	1832	866	3539
02:00			23		16		39		14:00			26	430		856	
02:15			29		11		40		14:15		5	03	487		990	
02:30			20		15		35		14:30			60	510		970	
02:45			20	92	22	64	42	156	14:45			<u>56 1845</u>		1877	906	3722
03:00			16		7		23		15:00			42	544		986	
03:15 03:30			15 12		12 13		27 25		15:15 15:30			48 47	513 498		961 945	
03:45			20	63	19	51	39	114	15:45			47 88 1825	474	2029	962	3854
04:00			15	- 55	14	<u> </u>	29	117	16:00			82	498	_0_5	980	3034
04:15			18		27		45		16:15			18	469		987	
04:30			22		33		55		16:30		4	91	475		966	
04:45			30	85	47	121	77	206	16:45			88 1979	461	1903	949	3882
05:00			44		63		107		17:00			98	596		1094	
05:15			48		95		143		17:15			03	471		974	
05:30 05:45			75 125	292	108 149	415	183 274	707	17:30 17:45			13 22 1936	487 536	2090	1000 958	4026
06:00			116	292	168	415	284	707	18:00			<u>22 1930</u> 05	458	2090	863	4020
06:15			165		225		390		18:15			11	406		817	
06:30			168		336		504		18:30			95	412		807	
06:45			216	665	350	1079	566	1744	18:45			50 1561	443	1719	793	3280
07:00			228		376		604		19:00			38	329		667	
07:15			297		469		766		19:15			45	259		604	
07:30			329	4400	518	4056	847	2055	19:30			00	294	4400	594	2275
07:45 08:00			345 343	1199	493 537	1856	838 880	3055	19:45 20:00			<u>59 1242</u> 83	251 280	1133	510 563	2375
08:00 08:15			339		487		826		20:15			os 23	226		449	
08:30			354		463		817		20:30			29	242		471	
08:45			376	1412	398	1885	774	3297	20:45			12 947	214	962	426	1909
09:00			332		470		802		21:00			07	206		413	
09:15			335		367		702		21:15			06	199		405	
09:30			330		410		740		21:30			81	174		355	
09:45			392	1389	393	1640	785	3029	21:45			85 779	139	718	324	1497
10:00 10:15			353 305		379 394		732 699		22:00 22:15			46 27	120 136		266 263	
10:30			343		369		712		22:30			96	108		203	
10:45			347	1348	406	1548	753	2896	22:45			17 486	84	448	204	934
11:00			368		396	<u> </u>	764		23:00			93	74		167	
11:15			331		386		717		23:15			34	70		154	
11:30			421		401		822		23:30			58	54		122	
11:45			409	1529	471	1654	880	3183	23:45			70 315	47	245	117	560
TOTALS				8376		10530		18906	TOTALS			16284		16883		33167
SPLIT %				44.3%		55.7%		36.3%	SPLIT %			49.19	6	50.9%		63.7%
					ND		CD		F0.	WD						to!
	DAILY	TOTALS			NB 0		SB		24 660	WB						otal
					U		0		24,660	27,413					3Z,	,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
																-



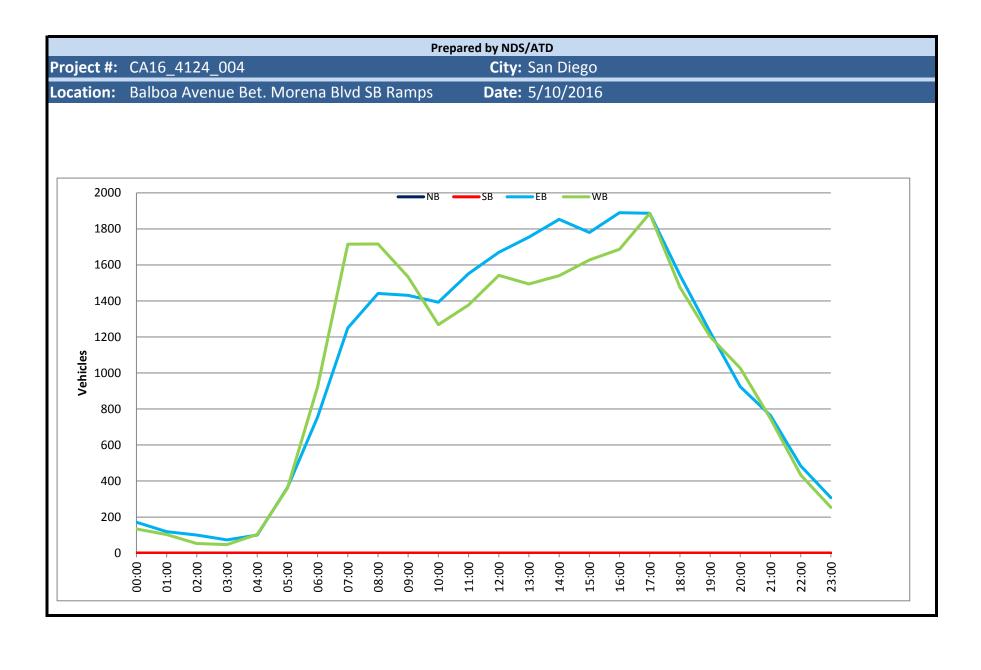
## **VOLUME**

# 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 TOTALS			NB		SB		ЕВ	WB	_					To	otal
	DAILT TOTALS			0		0		24,833	24,24	6					49,	,079
AM Period	NB SB	EB		WB			TAL	PM Period	NB	SB	ЕВ		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 01:15		30 25		24 37		54 62		13:00 13:15			445 462		383 381		828 843	
01:30		34		26		60		13:30			421		353		774	
01:45 02:00		30 25	119	16 15	103	46 40	222	13:45 14:00			426 441	1754	377 364	1494	803 805	3248
02:15		31		9		40		14:15			484		398		882	
02:30		22	100	12	F2	34	152	14:30			469	1053	400	1540	869	2202
02:45 03:00		22 16	100	17 6	53	39 22	153	14:45 15:00			459 442	1853	378 419	1540	837 861	3393
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	73	12	47	33	120	16:00			459	1700	404	1027	863	3407
04:15		20		24		44		16:15			492		426		918	
04:30 04:45		24 35	100	29 39	104	53 74	204	16:30 16:45			454 485	1890	446 411	1687	900 896	3577
05:00		49	100	53	101	102	201	17:00			477	1030	488	1007	965	3377
05:15 05:30		62 94		84 106		146 200		17:15 17:30			494 500		435 480		929 980	
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 07:30		303 336		448 477		751 813		19:15 19:30			341 292		280 334		621 626	
07:45		362	1250	461	1715	823	2965	19:45			261	1227	276	1201	537	2428
08:00 08:15		349 346		458 441		807 787		20:00 20:15			268 224		305 243		573 467	
08:30		354		428		782		20:30			224		255		479	
08:45		393	1442	389	1716	782	3158	20:45			208	924	224	1027	432	1951
09:00 09:15		349 337		427 344		776 681		21:00 21:15			208 200		219 211		427 411	
09:30		335		389		724		21:30			178		171		349	
09:45 10:00		410 358	1431	373 313	1533	783 671	2964	21:45 22:00			178 143	764	145 121	746	323 264	1510
10:15		318		328		646		22:15			126		135		261	
10:30		356	4202	298	4260	654	2664	22:30			100	404	90	422	190	047
10:45 11:00		361 364	1393	329 311	1268	690 675	2661	22:45 23:00			115 93	484	87 77	433	202 170	917
11:15		344		330		674		23:15			77		71		148	
11:30 11:45		422 422	1552	349 388	1378	771 810	2930	23:30 23:45			64 73	307	57 49	254	121 122	561
TOTALS		744	8750	500	9334	010	18084	TOTALS			73	16083	73	14912	122	30995
SPLIT %			48.4%		51.6%		36.8%					51.9%		48.1%		63.2%
				NB		SB		EB	WB							
	DAILY TOTALS			0		<u> </u>		24,833	24,24	_						otal ,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			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 7 - 9 Pk Volume			1442		07:15 1844			4 - 6 Peak Hour				16:45 1956		17:00 1886		17:00 3773
Pk Hr Factor	0.000 0.000		0.917		0.966		0.981	Pk Hr Factor	0.000	0.0	000	0.978		0.966		0.963

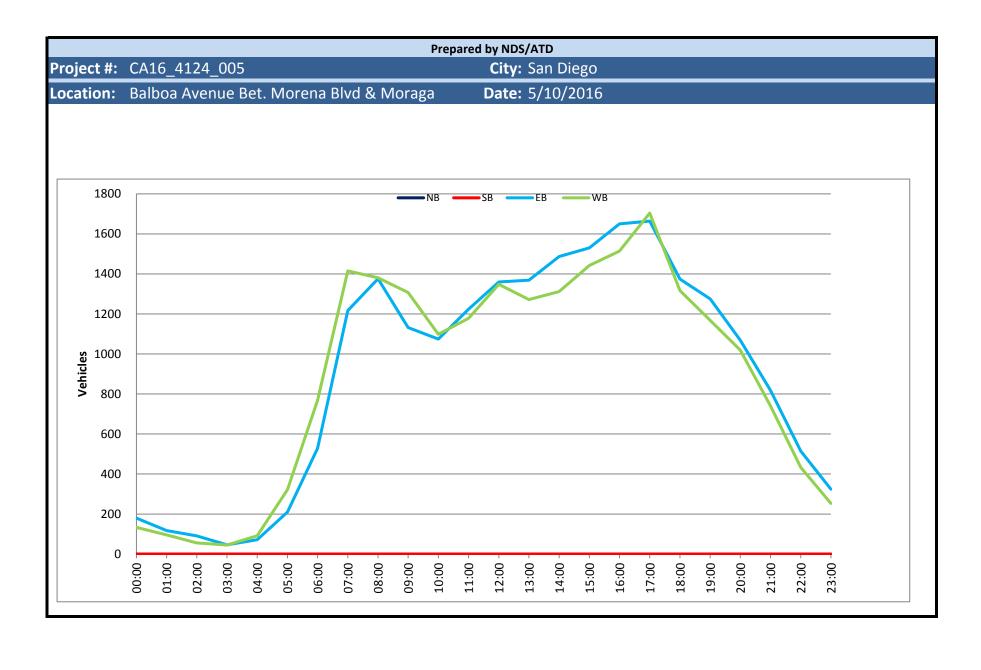


## **VOLUME**

# Balboa Avenue Bet. Morena Blvd & Moraga Ave

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

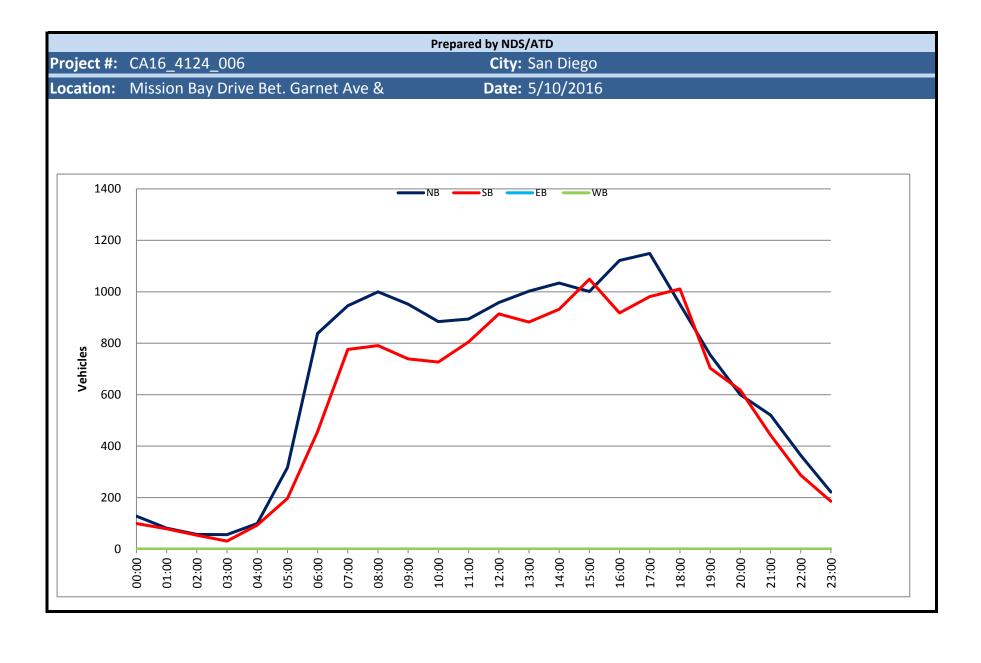
M Period NB SB EB WB 10TAL PM PERIOD NB		DAILY TOTALS			NB		SB		ЕВ	WB					To	otal
00:00		DAILT TOTALS			0		0		21,702	21,413					43,	115
00:15   54   34   88   12:15   322   314   633   600	AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB E	В	WB		ТО	TAL
00:30   36   26   62   12:30   334   335   351   696   698   2018   0:00   27   24   51   13:00   33:0   35:0   324   674   0:100   27   24   51   13:00   35:0   324   674   0:115   32   32   32   32   32   32   32   3																
00.45   31   130   20   131   51   130   32   1318   693   2704   674																
Di150				180		133		313						13/18		2708
01:15 01:30 32 33 65 13:35 352 321 673 01:30 03:40 03:45 28 117 16 90 44 213 13:40 312 13:02 377 1272 040 20:10 20				100		133		313						1540		2700
02:00 02:00									13:15						673	
02:00   25   23   48																
02:15   29   7   36				117		96		213						1272		2641
02:90 02:90 02:90 02:90 02:90 02:90 02:90 02:90 02:90 03:00 03:15 03:15 03:15 03:15 03:15 03:16 03:15 03:17 03:30 07 187 127 123 129 03:00 03:00 03:15 14 10 04 10 13 11 11 12 13 13 13 13 14 10 13 13 13 13 13 13 13 13 13 13 13 13 13					23 7											
02-05   19   91   15   56   34   147   14-45   397   1487   326   1312   723   2799					, 11											
03:15   14   10   24   15:15   391   368   759   03:45   03:45   10   46   17   45   27   91   15:30   389   362   751   03:45   04:06   15:30   350   14:27   751   04:15   15   11   26   16:00   395   354   749   04:15   15   21   36   16:15   430   386   816   04:30   04:30   22   28   50   16:30   383   401   784   15:00   04:35   20   72   32   92   52   164   16:45   442   16:50   373   13:44   815   3164   05:00   33   49   87   87   87   87   87   87   87   8	02:45			91		56		147	14:45					1312	723	2799
03:40 7 12 19 15:30 389 362 751 275 297 204:00 406 153 350 1442 756 2972 04:00 155 11 2 6 16:00 395 354 749 82 82 16:00 395 354 749 82 17:00 445 442 1650 383 401 784 60:430 62:00 395 354 749 82 17:00 445 442 1650 383 401 784 60:430 62:00 395 354 749 82 17:00 445 442 16:00 395 386 816 60:430 62:00 395 386 816 816 60:430 82 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 17:00 445 447 892 82 82 82 82 82 82 82 82 82 82 82 82 82																
03:45   10   46   17   45   27   91   15:45   406   1530   350   1042   756   2975																
04:00				46		45		91						1///2		2972
04:15 04:30 22 28 36 16:35 383 401 784 16:45 04:45 20 72 32 92 52 164 16:45 442 16:50 373 15:14 815 3164 05:00 333 49 82 17:00 445 447 16:50 373 15:14 815 3164 05:00 333 49 82 17:00 445 447 18:80 400 838 05:30 5:66 94 150 17:30 412 438 400 838 05:30 5:45 81 210 104 322 185 532 17:45 369 16:64 419 1704 788 35:80 06:15 124 16:1 285 18:15 399 329 688 06:15 124 16:1 285 18:15 399 329 688 06:30 127 285 18:15 399 329 688 06:30 127 285 18:15 399 329 688 06:30 127 329 18:00 25 18:00				+0		73		<i>J</i> 1						1772		2312
O4.45   20 72 32 92 52 164 16:45   442 1669 373 1514 815 3164   65:00   33 49 82   17:00   445 447   892   65:15   40 75   115   17:15   438 400 838   850   65:30   56 94   150   17:30   412 438   850   65:45   81 210 104 322 185 532 17:45   369 1664 419 1704 788 3368   66:10   124   161   285   18:15   359   329   688   66:15   124   161   285   18:15   359   329   688   66:30   127   237   364   18:30   332   297   629   66:45   190   528 245 768   435 1296   18:45   310 1374 326 1317   366 2591   37.35   37.																
05:00																
05:15   05:30   56   94   150   17:30   412   438   400   838   60:30   65:45   81   210   104   322   185   532   17:45   369   16:44   419   1704   788   3368   66:50   87   125   212   18:00   373   36:55   738   66:15   124   161   285   18:15   359   329   688   66:30   127   237   364   18:30   332   297   629   66:45   190   528   245   768   435   1296   18:45   310   1374   326   1317   636   2691   70:700   232   333   379   711   19:30   319   332   287   679   70:705   303   3379   711   19:30   319   332   651   70:748   3360   1217   393   1415   743   2632   19:45   360   1275   268   16:8   574   2443   68:45   360   1275   268   16:8   574   2443   68:45   368				72		92		164						1514		3164
05:30																
OS-845																
D6:00				210		322		532						1704		3368
66:30																
66:45																
07:00				F20		7.00		1200						1217		2601
O7:15				528		768		1296						131/		2691
07:30																
08:00   334   357   691   20:00   300   303   603   08:15   338   357   695   20:15   20:30   262   250   512   20:30   262   250   512   20:30   262   250   512   20:30   262   250   263																
08:15 08:30         338 345         357 336 359 359 368         695 350 368         20:15 20:30         273 262 20:45         243 242 243 243 244 262 250         516 252 250 250         512 278 298 298 298 298 298 298 298 298 298 29				1217		1415		2632						1168		2443
08:30   345   336   681   20:30   262   250   512   20:45   20:45   234   1069   223   1019   457   2088   20:40   20:45   20:45   234   1069   223   1019   457   2088   20:40   20:45   20																
O8:45   359   1376   331   1381   690   2757   20:45   234   1069   223   1019   457   2088   09:00   304   352   656   21:00   224   219   443   430   09:15   278   298   576   21:15   222   210   432   432   09:30   273   325   598   21:30   196   168   364   364   369   277   1132   332   1307   609   2439   21:45   176   818   143   740   319   1558   10:00   259   269   528   22:00   156   122   278   10:30   270   254   524   22:30   111   90   201   10:45   290   1074   290   1098   580   2172   22:45   112   515   87   433   199   948   11:00   293   260   553   23:00   100   77   177   11:15   275   298   573   23:15   23:15   84   71   155   11:45   333   1224   338   1178   671   2402   23:45   70   324   48   253   118   577   TOTALS   7267   7891   15158   TOTALS   70   324   48   253   118   577   70   344   345   345   345   345   345   345   35:24   280   PM Pk Volume   1376   1502   2840   PM Pk Volume   3314   3218   6532   7.9 Pk Volume   2593   2796   5389   4.6 Pvolume   3314   3218   6532   7.9 Pk Volume   1376   1502   2840   4.6 Pk Volume   1376   1502   2840   4.6 Pk Volume   1377   1704   3395   4.6 Pk Volume   1376   1502   2840   4.6 Pk Volume   1377   1704   3395   4.6 Pk Volume   1376   1502   2840   4.6 Pk Volume   1377   1704   3395   4.6 Pk Volume   1376   1502   2840   4.6 Pk Volume   1377   1704   3395   4.6 Pk Volume   1376   1502   2840   4.6 Pk Volume   1377   1704   3395   13																
09:00   304   352   656   21:00   224   219   443   20:00   20:00   224   219   443   20:00:00:00:00:00:00:00:00:00:00:00:00:0				1376		1381		2757						1019		2088
09:30				10,0		1301		2,0,						1013		2000
09:45																
10:00				4400		400=		2.400						<b>-</b> 40		10
10:15				1132		1307		2439						/40		1558
10:30																
11:00																
11:15	10:45		290	1074	290	1098		2172	22:45		11	2 515	87	433	199	948
11:30																
11:45   333   1224   338   1178   671   2402   23:45   70   324   48   253   118   577     TOTALS																
TOTALS   T				1224		1178		2402						253		577
SPLIT %         51.6%         48.4%         64.89           DAILY TOTALS         NB SB EB WB 0 0 0 21,702 21,413         Total 43,115           AM Peak Hour AM Pk Volume Pk Hr Factor 0.958 0.958 0.955 0.956 Pk Hr Factor 0.976 0.953 0.952 0.956 Pk Hr Factor 0.976 0.953 0.952 0.956 Pk Hr Factor 0.976 0.953 0.952 0.956 0.9			333		330		5/1				,				110	
DAILY TOTALS         NB SB EB WB 0 0 0 21,702 21,413         Total 43,115           AM Peak Hour AM Pk Volume Pk Hr Factor 0.958 0.958 0.955 0.956 Pk Hr Factor 0.958 0.955 0.956 Pk Hr Factor 0.976 0.953 0.955 0.956 Pk Hr Factor 0.976 0.953 0.952 0.952 0.956 Pk Hr Factor 0.976 0.953 0.952 0.956 0.958 0.955 0.956 Pk Hr Factor 0.976 0.953 0.952 0.956 0.958 0.959 0.9																
DAILY IOTALS         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       0.976       0.953       0.952         7 - 9 Volume       0       0       2593       2796       5389       4 - 6 Volume       0       0       3314       3218       6532         7 - 9 Peak Hour       08:00       07:15       07:30       4 - 6 Peak Hour       16:45       17:00       16:45         7 - 9 Pk Volume       0       1376       1502       2840       4 - 6 Pk Volume       0       0       1737       1704       3395	SPLII %			47.9%		52.1%		35.2%	SPLII %			51.6%		48.4%		64.8%
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       0.976       0.953       0.952         7 - 9 Volume       0       0       2593       2796       5389       4 - 6 Volume       0       0       3314       3218       6532         7 - 9 Peak Hour       08:00       07:15       07:30       4 - 6 Peak Hour       16:45       17:00       16:45         7 - 9 Pk Volume       0       1376       1502       2840       4 - 6 Pk Volume       0       1737       1704       3395		DAILY TOTALS			NB		SB		EB	WB					To	tal
AM Pk Volume       1376       1502       2840       PM Pk Volume       1737       1704       3395         Pk Hr Factor       0.958       0.955       0.956       Pk Hr Factor       0.976       0.953       0.952         7 - 9 Volume       0       2593       2796       5389       4 - 6 Volume       0       3314       3218       6532         7 - 9 Peak Hour       08:00       07:15       07:30       4 - 6 Peak Hour       16:45       17:00       16:45         7 - 9 Pk Volume       0       1376       1502       2840       4 - 6 Pk Volume       0       0       1737       1704       3395		- DAILT TOTALS			0		0		21,702	21,413					43,	115
AM Pk Volume       1376       1502       2840       PM Pk Volume       1737       1704       3395         Pk Hr Factor       0.958       0.955       0.956       Pk Hr Factor       0.976       0.953       0.952         7 - 9 Volume       0       2593       2796       5389       4 - 6 Volume       0       3314       3218       6532         7 - 9 Peak Hour       08:00       07:15       07:30       4 - 6 Peak Hour       16:45       17:00       16:45         7 - 9 Pk Volume       0       1376       1502       2840       4 - 6 Pk Volume       0       0       1737       1704       3395	AM Peak Hour			08:00		07:15		07:30	PM Peak Hour			16:45		17:00		16:45
7 - 9 Volume       0       2593       2796       5389       4 - 6 Volume       0       3314       3218       6532         7 - 9 Peak Hour       08:00       07:15       07:30       4 - 6 Peak Hour       16:45       17:00       16:45         7 - 9 Pk Volume       0       1376       1502       2840       4 - 6 Pk Volume       0       0       1737       1704       3395								2840	PM Pk Volume							3395
7 - 9 Peak Hour       08:00       07:15       07:30       4 - 6 Peak Hour       16:45       17:00       16:45         7 - 9 Pk Volume       0       1376       1502       2840       4 - 6 Pk Volume       0       0       1737       1704       3395	Pk Hr Factor			0.958		0.955		0.956	Pk Hr Factor			0.976		0.953		0.952
<b>7 - 9 Pk Volume</b> 0 0 1376 1502 <b>2840 4 - 6 Pk Volume</b> 0 0 1737 1704 <b>3395</b>	7 - 9 Volume	0 0		2593		2796				0	0	3314		3218		6532
																16:45
I Pk Hr Factor 0.000 0.000 0.958 0.955 0.956 I Pk Hr Factor 0.000 0.000 0.976 0.953 0.953																3395
0.555	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

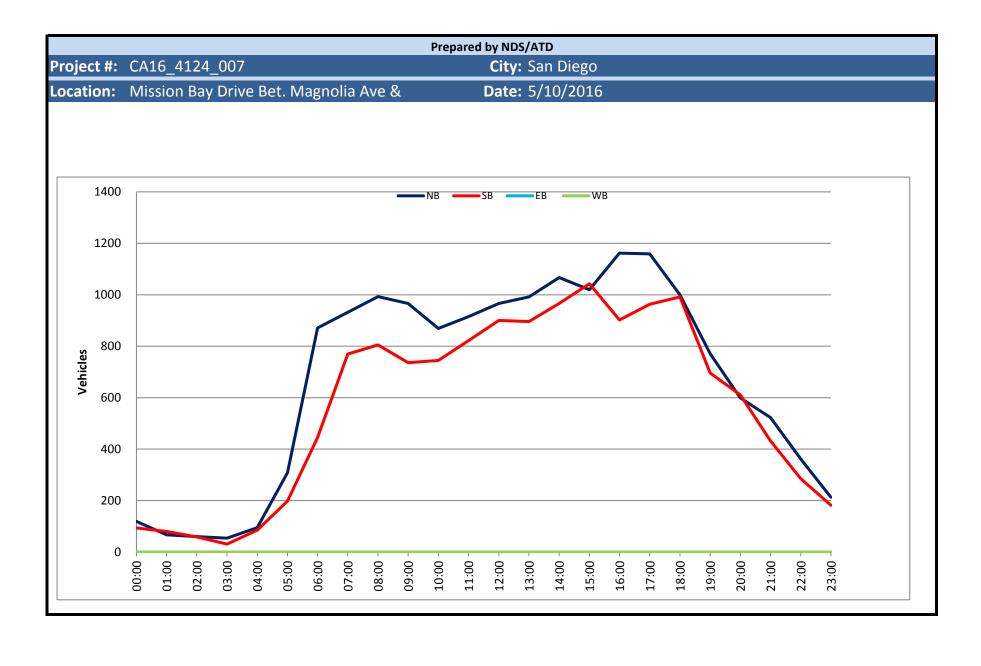
	D	AILY 1		15		NB		SB		EB		WB						Т	otal
	וט	AILT I	IUIA	ILO		15,931		13,771		0		0						29	,702
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB	W	/B	TO	OTAL
00:00	42		35					77		12:00	230		212					442	
00:15	41		25					66		12:15	257		241					498	
00:30 00:45	29 16	128	19 20	99				48 36	227	12:30 12:45	226 245	958	245 216	914				471 461	1872
01:00	30	120	25	33				55	221	13:00	244	336	209	314				453	10/2
01:15	9		18					27		13:15	242		234					476	
01:30	24		14					38		13:30	258		213					471	
01:45	18	81	22	79				40	160	13:45	258	1002	226	882				484	1884
02:00 02:15	9 18		18 8					27 26		14:00 14:15	<ul><li>245</li><li>273</li></ul>		227 219					472 492	
02:30	18		13					31		14:30	265		242					507	
02:45	12	57	15	54				27	111	14:45	251	1034	244	932				495	1966
03:00	12		8					20		15:00	249		279					528	
03:15 03:30	15 15		9					24		15:15 15:30	258		257					515	
03:45	15 14	56	8 6	31				23 20	87	15:45	236 258	1001	255 258	1049				491 516	2050
04:00	15	50	15	<u> </u>				30	3,	16:00	290		226	_0 13				516	_030
04:15	20		22					42		16:15	290		244					534	
04:30	23	00	17	00				40	400	16:30	268	4400	211	040				479	20.10
04:45 05:00	41 42	99	39 33	93				80 75	192	16:45 17:00	274 309	1122	237 222	918				511 531	2040
05:00 05:15	52		33 38					90		17:00 17:15	309 287		236					523	
05:30	93		39					132		17:30	274		265					539	
05:45	130	317	87	197				217	514	17:45	279	1149	258	981				537	2130
06:00	144		90					234		18:00	256		262					518	
06:15 06:30	200 239		125 116					325 355		18:15 18:30	225 243		242 260					467 503	
06:45	255	838	125	456				380	1294	18:45	243	951	247	1011				474	1962
07:00	251		179					430	123 .	19:00	187	332	181					368	1301
07:15	250		224					474		19:15	202		172					374	
07:30	220	0.46	172	776				392	4722	19:30	181	755	165	700				346	4.450
07:45 08:00	225 260	946	201 168	776				426 428	1722	19:45 20:00	185 150	755	185 179	703				370 329	1458
08:15	233		213					446		20:15	149		157					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					276 261	
09:15	247		171					418		21:30	125		124 111					236	
09:45	239	952	210	739				449	1691	21:45	110	521	81	443				191	964
10:00	196		188					384		22:00	112		87		_		_	199	
10:15	212		166					378		22:15	91		82					173	
10:30 10:45	246 230	884	194 179	727				440 409	1611	22:30 22:45	76 85	364	62 56	287				138 141	651
11:00	203	004	180	121				383	1011	23:00	66	304	70	20/				136	031
11:15	220		187					407		23:15	65		41					106	
11:30	223		220					443		23:30	50		48					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%
	6	A II V I	COTA	15		NB		SB		ЕВ		WB						Т	otal
	ע	AILY 1	OTA	1L3		15,931		13,771		0		0						29	,702
AM Peak Hour		08:00		11:45					11:45	PM Peak Hour		17:00		15:00					17:00
AM Pk Volume		1000		916					1877	PM Pk Volume		1149		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	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	0.000		0.947	Pk Hr Factor		0.930		0.925	0.	000	0.00	0	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
		AILI		(L)		16,083		13,738		0		0							29,	821
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB		WB		ТО	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 02:00	17 9	67	17 19	80				34 28	147	13:45 14:00	254 242	992	235 229	896					489 471	1888
02:15	20		8					28		14:15	289		220						509	
02:30 02:45	19 12	60	15 17	59				34 29	119	14:30 14:45	284 252	1067	251 266	966					535 518	2033
03:00	10	00	8	39				18	119	15:00	258	1007	281	900					539	2033
03:15	16		10					26		15:15	271		270						541	
03:30 03:45	17 11	54	10 3	31				27 14	85	15:30 15:45	220 271	1020	242 250	1043					462 521	2063
04:00	16		15	31				31		16:00	282	1020	215	10.13					497	2003
04:15 04:30	16		18 14					34		16:15 16:30	294 265		258 199						552 464	
04:30	22 41	95	14 38	85				36 79	180	16:45	321	1162	230	902					551	2064
05:00	39		33	<u>-</u>				72		17:00	306		207						513	
05:15 05:30	53 83		35 38					88 121		17:15 17:30	293 275		241 267						534 542	
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 07:15	283 224		178 213					461 437		19:00 19:15	189 203		200 175						389 378	
07:30	195		185					380		19:30	194		151						345	
07:45	230	932	194	770				424	1702	19:45	185	771	170	696					355	1467
08:00 08:15	265 223		163 216					428 439		20:00 20:15	157 153		176 161						333 314	
08:30	235		212					447		20:30	141		144						285	
08:45 09:00	270 270	993	214 178	805				484 448	1798	20:45 21:00	148 151	599	130 122	611					278 273	1210
09:15	218		187					405		21:15	141		118						259	
09:30	238	066	169	726				407	1702	21:30	129	F22	114	422					243	٥٢٢
09:45 10:00	240 202	966	202 191	736				442 393	1702	21:45 22:00	102 109	523	78 76	432					180 185	955
10:15	204		165					369		22:15	93		85						178	
10:30 10:45	234 229	869	205 184	745				439 413	1614	22:30 22:45	71 89	362	66 58	285					137 147	647
11:00	195	503	170	, 13				365	1014	23:00	67	302	70	200					137	047
11:15 11:30	225		198 232					423 472		23:15 23:30	60 44		42 43						102 87	
11:30 11:45	240 255	915	232	822				472 477	1737	23:45	44 42	213	43 27	182					87 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 11 3/ 3	COTA	I.C.		NB		SB		EB		WB							To	otal
	— D	AILY 1	TOTA	1L5		16,083		13,738		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				0.983
7 - 9 Volume 7 - 9 Peak Hour		1925 08:00		1575 08:00					3500 08:00	4 - 6 Volume 4 - 6 Peak Hour		2321 16:45		1865 17:00						4186 16:45
7 - 9 Pk Volume		993		805						4 - 6 Pk Volume		1195		963						2140
Pk Hr Factor		0.919		0.932	0.000	0	0.000		0.929	Pk Hr Factor		0.931		0.902	(	0.000		0.000		0.971

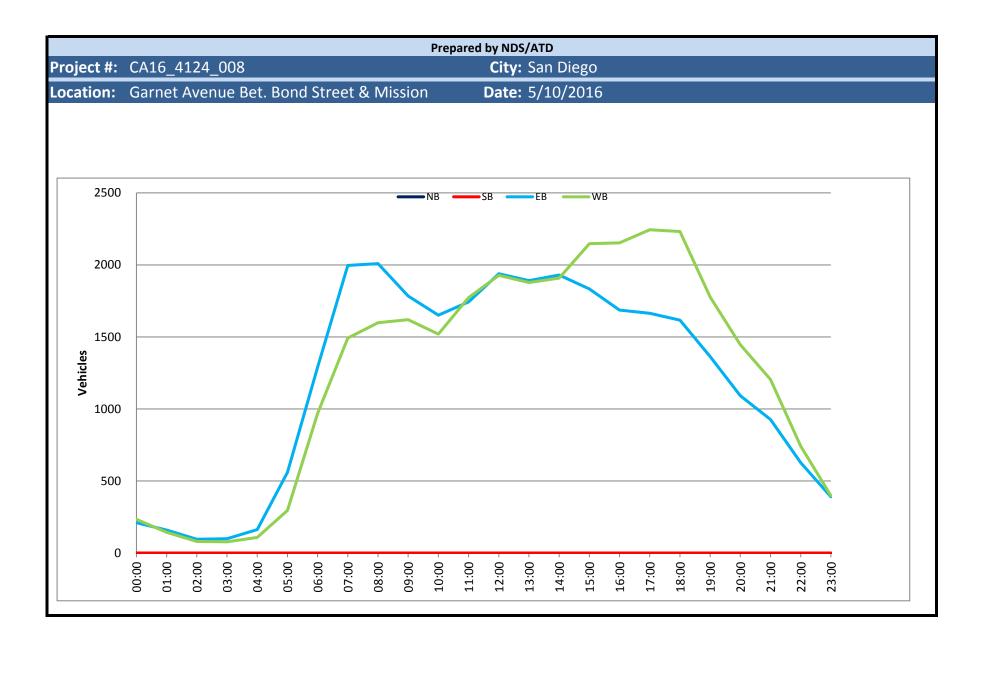


## **VOLUME**

# Garnet Avenue Bet. Bond Street & Mission Bay Dr

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

	DAILY TOTALS			NB		SB		EB	WB						To	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		13:30			513 423		465 453		976 876	
01:35		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	2070	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	2003	395	1333	815	3000	21:00			256	1032	356	1117	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 10:45		446 422	1651	378 394	1520	824 816	3171	22:30 22:45			124 149	627	168 166	742	292 315	1369
11:00		427	1031	387	1320	814	31/1	23:00			131	027	117	742	248	1309
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%
				NB		SB		EB	WB						Id	otal
	DAILY TOTALS			0		0		28,722	29,972							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	0 0		4005		3091		7096	4 - 6 Volume	0	0		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	0	0.967		0.971		0.973

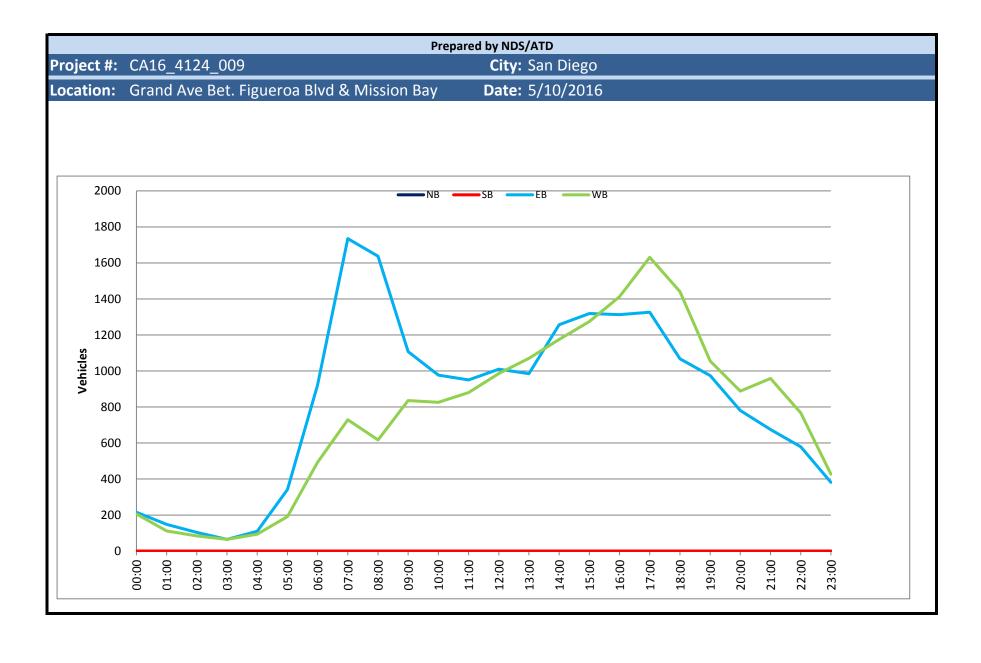


## **VOLUME**

# Grand Ave Bet. Figueroa Blvd & Mission Bay Dr

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

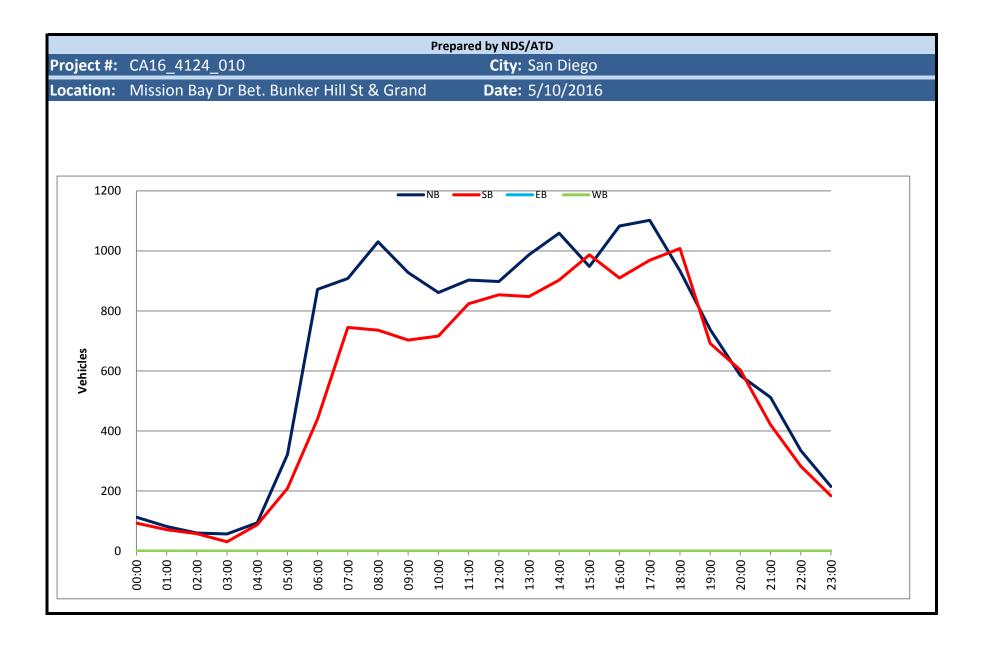
DAILY TOTALS         18,219           AM Period         NB         SB         EB         WB         TOTAL         PM Period         NB         SB         EB         WB           00:00         66         61         127         12:00         257         282           00:15         54         48         102         12:15         234         235           00:30         57         59         116         12:30         269         229           00:45         39         216         38         206         77         422         12:45         250         1010         240         98	38,202 TOTAL  539 469 498 490 1996 473 489 524
00:00       66       61       127       12:00       257       282         00:15       54       48       102       12:15       234       235         00:30       57       59       116       12:30       269       229         00:45       39       216       38       206       77       422       12:45       250       1010       240       98	539 469 498 5 490 1996 473 489
00:15       54       48       102       12:15       234       235         00:30       57       59       116       12:30       269       229         00:45       39       216       38       206       77       422       12:45       250       1010       240       98	469 498 5 490 1996 473 489
00:30       57       59       116       12:30       269       229         00:45       39       216       38       206       77       422       12:45       250       1010       240       98	498 490 1996 473 489
<b>00:45</b> 39 216 38 206 <b>77 422 12:45</b> 250 1010 240 98	490 1996 473 489
	473 489
<b>01:00</b> 36 32 68 <b>13:00</b> 233 240	489
01:00     36     32     68     13:00     233     240       01:15     35     30     65     13:15     236     253	
01:30 38 25 63 13:30 248 276	J _ 1
<b>01:45</b> 39 148 25 112 64 260 <b>13:45</b> 268 985 301 10	0 569 2055
<b>02:00</b> 46 27 <b>73 14:00</b> 241 271	512
<b>02:15</b> 30 34 64 <b>14:15</b> 374 316	690
02:30     16     12     28     14:30     332     294       02:45     13     104     11     84     23     199     14:45     310     13:77     304     11	626
02:45     12     104     11     84     23     188     14:45     310     1257     294     11       03:00     15     15     30     15:00     296     310	5 604 2432 606
03:15 24 11 35 15:15 326 317	643
<b>03:30</b> 16 19 <b>35 15:30</b> 371 329	700
<b>03:45</b> 10 65 20 65 <b>30 130 15:45</b> 326 1319 319 12	5 645 2594
<b>04:00</b> 15 11 <b>26 16:00</b> 345 341	686
04:15     23     12     35     16:15     320     358	678
04:30     35     30     65     16:30     337     338       04:45     37     110     41     94     78     204     16:45     311     1313     375     14	675
04:45     37     110     41     94     78     204     16:45     311     1313     375     14       05:00     51     33     84     17:00     308     401	2 686 2725 709
05:00     31     33     34     17:00     308     401       05:15     77     29     106     17:15     366     424	790
<b>05:30</b> 108 46 <b>154 17:30</b> 354 409	763
<b>05:45</b> 106 342 84 192 <b>190</b> 534 <b>17:45</b> 298 1326 397 16	
<b>06:00</b> 157 85 <b>242 18:00</b> 309 348	657
<b>06:15</b> 188 109 <b>297 18:15</b> 239 378	617
06:30     268     133     401     18:30     267     367       06:45     369     369     369     369     369     369	634
06:45     309     922     166     493     475     1415     18:45     253     1068     348     14       07:00     359     203     562     19:00     248     294	1 601 2509 542
07:00       359       203       562       19:00       248       294         07:15       396       197       593       19:15       235       277	512
<b>07:30</b> 495 174 669 <b>19:30</b> 245 239	484
<b>07:45</b> 485 1735 155 729 640 2464 <b>19:45</b> 246 974 245 10	
<b>08:00</b> 405 133 <b>538 20:00</b> 225 231	456
<b>08:15</b> 454 136 590 <b>20:15</b> 198 216	414
08:30     421     173     594     20:30     180     224	404
08:45     357     1637     175     617     532     2254     20:45     178     781     217     83       09:00     323     207     530     21:00     175     244	3 395 1669 419
09:00     323     207     350     21:00     173     244       09:15     296     196     492     21:15     173     207	380
<b>09:30</b> 240 198 438 <b>21:30</b> 166 241	407
<b>09:45</b> 249 1108 235 836 484 1944 <b>21:45</b> 161 675 266 99	
<b>10:00</b> 254 188 442 <b>22:00</b> 152 225	377
<b>10:15</b> 263 207 <b>470 22:15</b> 133 207	340
10:30 241 191 432 <b>22:30</b> 152 161	313
10:45 219 977 240 826 459 1803 22:45 142 579 174 70	
11:00     215     201     416     23:00     122     121       11:15     235     237     472     23:15     105     116	243 221
11:30 233 237 472 23:13 103 116 116 11:30 277 209 486 23:30 81 108	189
11:45 223 950 233 880 456 1830 <b>23:45</b> 74 382 82 43	
TOTALS 8314 5134 13448 TOTALS 11669 136	
<b>SPLIT %</b> 61.8% 38.2% <b>35.2% SPLIT %</b> 47.1% 52	9% 64.89
ND CD FD WD	Total
DAILY TOTALS    NB   SB   EB   WB	Total 38,202
	_
AM Peak Hour 07:30 11:45 <b>07:00</b> PM Peak Hour 15:15 17	
AM Pk Volume       1839       979       2464       PM Pk Volume       1368       10         Pk Us Forder       0.000 <th></th>	
Pk Hr Factor         0.929         0.868         0.921         Pk Hr Factor         0.922         0.	
<b>7 - 9 Volume</b> 0 0 3372 1346 <b>4718 4 - 6 Volume</b> 0 0 2639 30	
<b>7 - 9 Peak Hour</b> 07:30 07:00 <b>07:00 4 - 6 Peak Hour</b> 16:45 17	
<b>7 - 9 Pk Volume</b> 0 0 1839 729 <b>2464 4 - 6 Pk Volume</b> 0 0 1339 16	
Pk Hr Factor         0.000         0.000         0.929         0.898         0.921         Pk Hr Factor         0.000         0.000         0.915         0.915	52 <b>0.93</b> 6



# Mission Bay Dr Bet. Bunker Hill St & Grand Ave

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

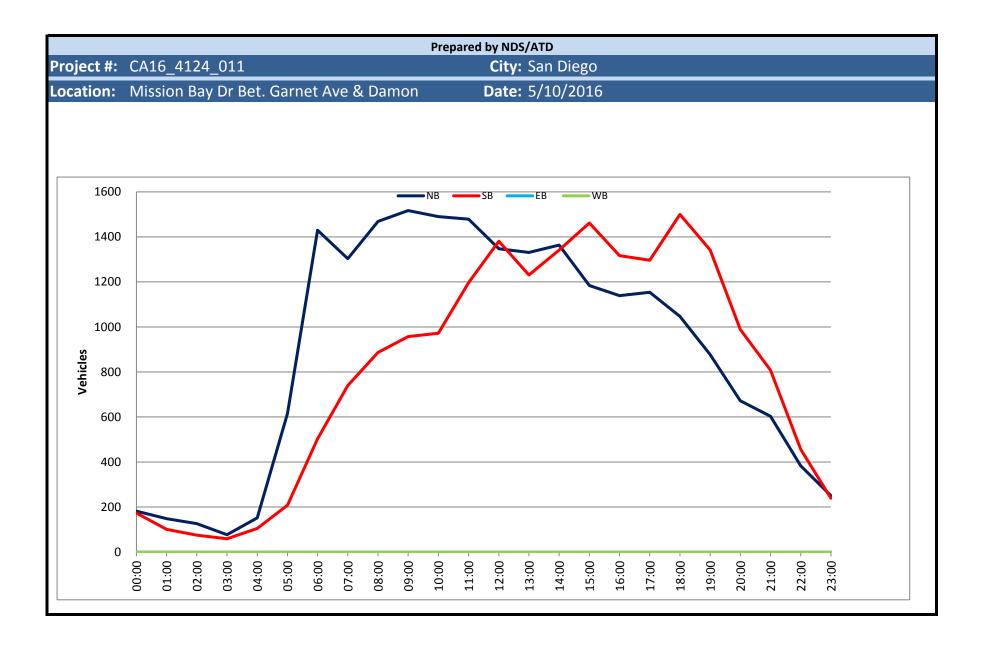
	ח	AILY 1	ΓΩΤΔ	IS.		NB		SB		EB		WB						To	otal
	U	-\IL I		ILJ		15,626		13,376		0		0						29,	,002
<b>AM Period</b>	NB		SB		EB	WB		ТО	TAL	PM Period	NB		SB		EB	WB		ТО	TAL
00:00	36		30					66		12:00	224		203					427	
00:15	32 28		21 24					53		12:15 12:30	229 209		218					447 436	
00:30 00:45	28 17	113	24 18	93				52 35	206	12:30 12:45	236	898	227 206	854				442	1752
01:00	26		24					50		13:00	239		176					415	1701
01:15	13		20					33		13:15	231		237					468	
01:30 01:45	22 21	82	13 14	71				35 35	153	13:30 13:45	252 265	987	<ul><li>212</li><li>223</li></ul>	848				464 488	1835
02:00	9	02	19	/1				28	133	14:00	253	367	213	040				466	1633
02:15	19		8					27		14:15	298		203					501	
02:30	18	60	13	<b>5</b> 0				31	440	14:30	258	4050	230	000				488	1062
02:45 03:00	14 10	60	<u>18</u> 5	58				32 15	118	14:45 15:00	250 247	1059	257 257	903				507 504	1962
03:15	12		9					21		15:15	234		248					482	
03:30	20		9					29		15:30	208		225					433	
03:45	15	57	8	31				23	88	15:45	259	948	257	987				516	1935
04:00 04:15	15 17		14 15					29 32		16:00 16:15	<ul><li>273</li><li>257</li></ul>		216 232					489 489	
04:30	27		17					44		16:30	272		236					508	
04:45	35	94	42	88				77	182	16:45	281	1083	226	910				507	1993
05:00	46		34					80		17:00	276		219					495	
05:15 05:30	52 86		38 38					90 124		17:15 17:30	279 282		221 278					500 560	
05:45	138	322	99	209				237	531	17:45	265	1102	251	969				516	2071
06:00	157		84					241		18:00	274		264					538	
06:15	197		113					310		18:15	213		256					469	
06:30 06:45	244 274	872	110 133	440				354 407	1312	18:30 18:45	229 218	934	<ul><li>251</li><li>237</li></ul>	1008				480 455	1942
07:00	254	072	161	110				415	1312	19:00	190	<u> </u>	196	1000				386	13 12
07:15	205		217					422		19:15	176		177					353	
07:30	194	000	179	745				373	1652	19:30 19:45	190 182	720	146	692				336	1420
07:45 08:00	255 266	908	188 154	745				443 420	1653	20:00	144	738	173 167	092				355 311	1430
08:15	231		188					419		20:15	160		156					316	
08:30	252		183					435		20:30	143		151					294	
08:45 09:00	281 264	1030	211 162	736				492 426	1766	20:45 21:00	138 142	585	129 124	603				267 266	1188
09:15	198		185					383		21:15	139		115					254	
09:30	240		159					399		21:30	125		102					227	
09:45	226	928	197	703				423	1631	21:45	106	512	80	421				186	933
10:00 10:15	207 204		166 168					373 372		22:00 22:15	94 94		76 82					170 176	
10:30	225		201					426		22:30	72		70					142	
10:45	225	861	181	716				406	1577	22:45	75	335	55	283				130	618
11:00	191		172					363		23:00	67		67					134	
11:15 11:30	218 236		202 234					420 470		23:15 23:30	57 43		43 43					100 86	
11:45	258	903	216	824				474	1727	23:45	48	215	31	184				79	399
TOTALS		6230		4714					10944	TOTALS		9396		8662					18058
SPLIT %		56.9%		43.1%					37.7%	SPLIT %		52.0%		48.0%					62.3%
	D	AILY 1	ГОТА	LS		NB		SB		EB		WB							otal
						15,626		13,376		0		0						29,	,002
AM Peak Hour		08:00		11:30					11:30	PM Peak Hour		16:45		17:30					17:15
AM Pk Volume		1030		871					1818	PM Pk Volume		1118		1049					2114
Pk Hr Factor		0.916		0.931					0.959	Pk Hr Factor		0.991		0.943					0.944
7 - 9 Volume		1938		1481					3419	4 - 6 Volume		2185		1879					4064
7 - 9 Peak Hour 7 - 9 Pk Volume		08:00 1030		07:00 745						4 - 6 Peak Hour 4 - 6 Pk Volume		16:45 1118		17:00 969					17:00 2071
Pk Hr Factor		0.916		0.858					0.897	Pk Hr Factor		0.991		0.871					0.925
. K III I detoi		5.510		0.030	0.00		5.000		0.037			0.551		0.071	0.00		0.000		0.525



# Mission Bay Dr Bet. Garnet Ave & Damon Ave

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

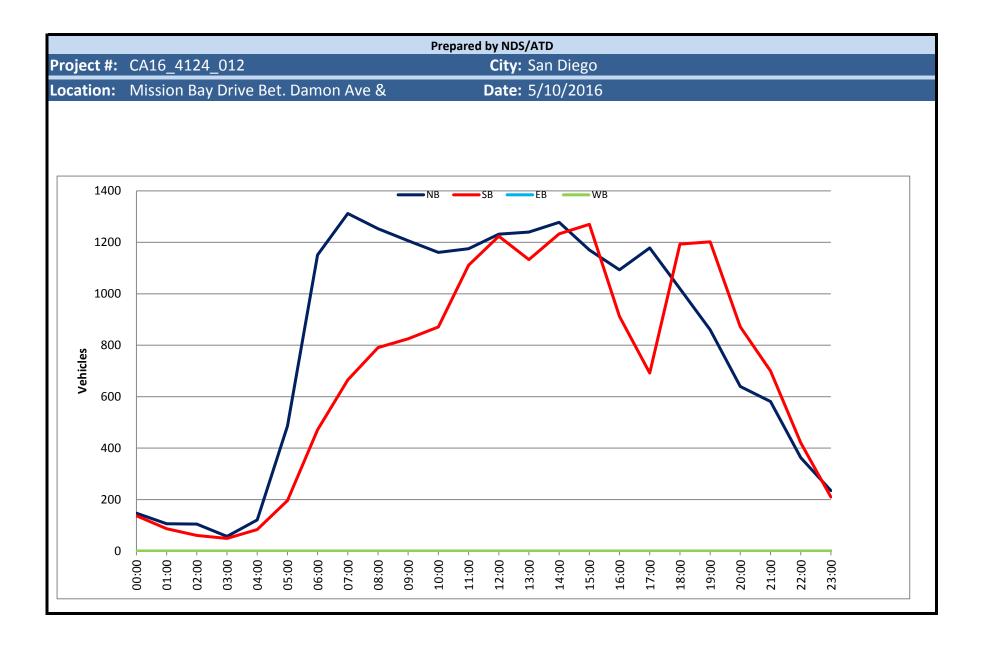
	D	AILY T	OTA	15		NB		SB		EB		WB						To	otal
	וט	AILT I	UIA	ILO		21,340	:	19,340		0		0						40,	,680
AM Period	NB		SB		EB	WB		TO	ΓAL	PM Period	NB		SB		EB	WE	3	ТО	TAL
00:00	50		51					101		12:00	297		373					670	
00:15	57		43					100		12:15	334		336					670	
00:30	49		46					95		12:30	369		315					684	
00:45	26	182	33	173			_	59	355	12:45	347	1347	357	1381				704	2728
01:00	42		30					72		13:00	354		277					631	
01:15 01:30	40 25		27 21					67 46		13:15 13:30	337 322		330 313					667 635	
01:45	41	148	23	101				64	249	13:45	318	1331	311	1231				629	2562
02:00	37	110	19	101				56	2 13	14:00	332	1331	298	1231				630	2302
02:15	25		18					43		14:15	333		330					663	
02:30	37		25					62		14:30	357		354					711	
02:45	27	126	13	75				40	201	14:45	342	1364	360	1342				702	2706
03:00	18		20					38		15:00	310		378					688	
03:15	21		12					33		15:15	294		345					639	
03:30 03:45	16 22	77	13 14	59				29 36	136	15:30 15:45	304 276	1184	372 367	1462				676 643	2646
04:00	21	//	18					39	130	16:00	268	1104	322	1402				590	2040
04:15	39		23					62		16:15	304		357					661	
04:30	41		35					76		16:30	266		319					585	
04:45	51	152	29	105				80	257	16:45	301	1139	319	1317				620	2456
05:00	74		21					95		17:00	296		318					614	
05:15	106		33					139		17:15	267		318					585	
05:30	213	C4.5	64	200				277	022	17:30	300	4454	356	1206				656	2450
05:45 06:00	222	615	90 90	208				312 332	823	17:45 18:00	291 275	1154	304	1296				595	2450
06:00	242 301		132					433		18:15	281		357 382					632 663	
06:30	440		121					561		18:30	250		398					648	
06:45	447	1430	160	503				607	1933	18:45	241	1047	363	1500				604	2547
07:00	447		179					626		19:00	242		377					619	
07:15	397		167					564		19:15	220		375					595	
07:30	221		187					408		19:30	226		310					536	
07:45	238	1303	207	740			_	445	2043	19:45	189	877	280	1342				469	2219
08:00 08:15	300 392		217 229					517 621		20:00 20:15	170 171		<ul><li>274</li><li>231</li></ul>					444 402	
08:30	421		223					644		20:30	160		279					439	
08:45	356	1469	218	887				574	2356	20:45	171	672	205	989				376	1661
09:00	380		236					616		21:00	169	-	234					403	
09:15	400		237					637		21:15	182		212					394	
09:30	365		222					587		21:30	141		187					328	
09:45	372	1517	262	957				634	2474	21:45	111	603	175	808				286	1411
10:00	345 370		253					598		22:00	120		140					260	
10:15 10:30	395		236 242					606 637		22:15 22:30	101 87		118 104					219 191	
10:45	380	1490	242	972				621	2462	22:45	75	383	94	456				169	839
11:00	368	50	257	J. <u>L</u>				625	_ 102	23:00	71		73					144	333
11:15	369		303					672		23:15	67		62					129	
11:30	373		309					682		23:30	64		57					121	
11:45	369	1479	328	1197				697	2676	23:45	49	251	47	239				96	490
TOTALS		9988		5977					15965	TOTALS		11352		13363					24715
SPLIT %		62.6%		37.4%					39.2%	SPLIT %		45.9%		54.1%					60.8%
						NB		SB		ЕВ		WB						I	otal
	D	AILY T	OTA	LS		21,340		19,340		0		0							,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		1627	0		n		4399	4 - 6 Volume		2293		2613	(	)	0		4906
7 - 9 Peak Hour		08:00		08:00						4 - 6 Peak Hour		16:15		16:00					16:15
7 - 9 Pk Volume		1469		887						4 - 6 Pk Volume		1167		1317					2480
Pk Hr Factor		0.872		0.968					0.915	Pk Hr Factor		0.960		0.922					0.938



# Mission Bay Drive Bet. Damon Ave & Bluffside Ave

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

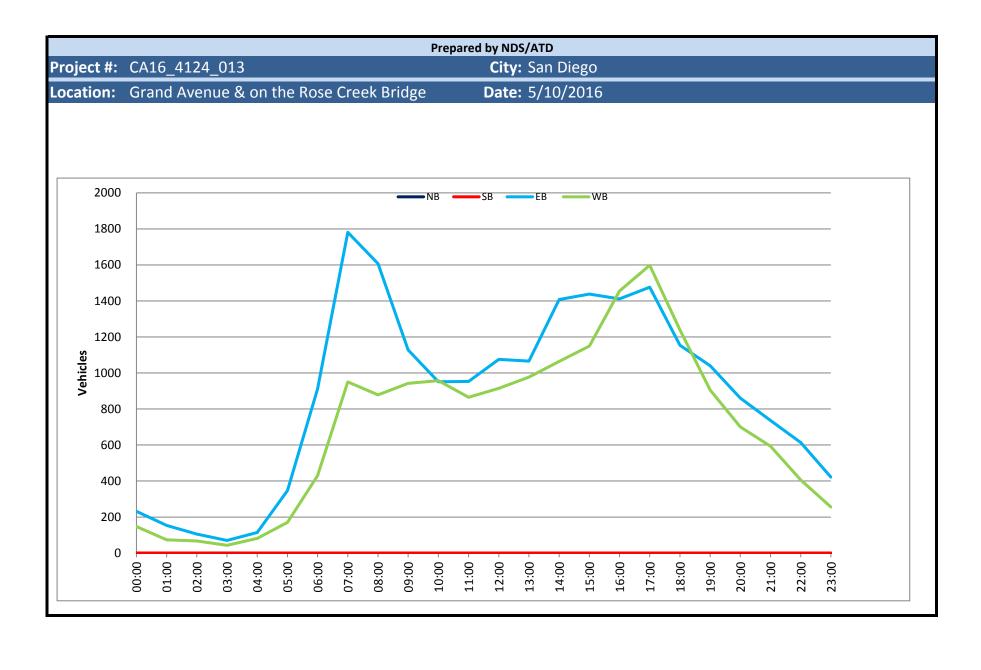
	ח	AILY 1		115		NB		SB		EB		WB						To	otal
	D,	AILT		ILO		19,170		16,410	)	0		0						35	,580
AM Period	NB		SB		EB	WB		ТО	TAL	PM Period	NB		SB		EB	W	В	TC	TAL
00:00	52		43					95		12:00	257		331					588	
00:15	44		37					81		12:15	299		295					594	
00:30 00:45	32 19	147	41 16	137				73 35	284	12:30 12:45	349 327	1232	271 327	1224				620 654	2456
01:00	23	147	25	137				48	204	13:00	314	1232	236	1224				550	2430
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	37	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					432 408	
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	<ul><li>248</li><li>237</li></ul>	1020	344 328	1193				592 565	2213
07:00	339	1131	163	4/1				502	1022	19:00	238	1020	343	1193				581	2213
07:15	328		158					486		19:15	219		351					570	
07:30	318		160					478		19:30	211		260					471	
07:45	327	1312	184	665				511	1977	19:45	192	860	248	1202				440	2062
08:00 08:15	345 330		208 196					553 526		20:00 20:15	166 158		228 205					394 363	
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		21:15	165		179					344	
09:30 09:45	291 304	1206	203 220	825				494 524	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	361	123	700				222	1201
10:15	288		209					497		22:15	102		113					215	
10:30	316		224					540		22:30	88		94					182	
10:45	290	1161	225	871				515	2032	22:45	74	363	91	421				165	784
11:00 11:15	290 302		244 276					534 578		23:00 23:15	69 63		66 63					135 126	
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%
						NB		SB		EB		WB						_I	otal
	D	AILY 1	OTA	ILS		19,170		16,410		0		0							,580
ANA Dealette		00.20		11.20										10.20					
AM Peak Hour AM Pk Volume		06:30 1385		11:30 1217					11:45 2380	PM Peak Hour PM Pk Volume		12:30 1321		18:30 1366					14:30 2586
Pk Hr Factor		0.946		0.919					0.960	Pk Hr Factor		0.946		0.973					2586 0.986
7 - 9 Volume		2565		1456	0		0		4021	4 - 6 Volume		2271		1604	(	)	0		3875
7 - 9 Peak Hour		07:30		08:00						4 - 6 Peak Hour		17:00		16:00					16:00
7 - 9 Pk Volume		1320		791						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		000	0.000		0.948
														_					



# Grand Avenue & on the Rose Creek Bridge

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

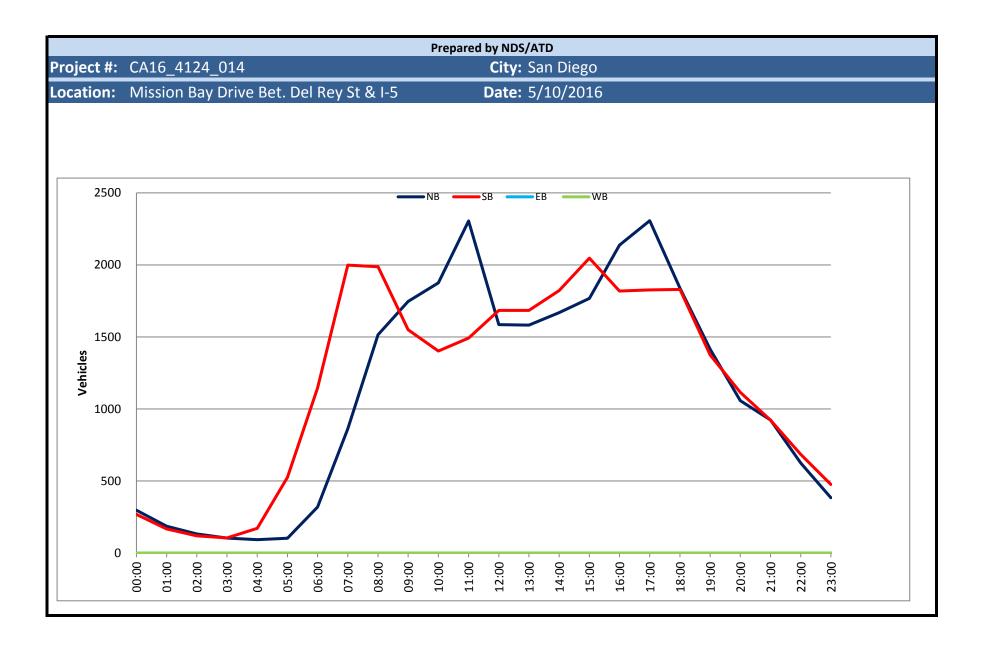
	DAILY.	TOTALS			NB		SB		EB	WB						To	otal
	DAILI	IOIALS			0		0		21,054	16,861						37,	,915
AM Period	NB	SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00			72		53		125		12:00			267		226		493	
00:15			59		45		104		12:15			258		232		490	
00:30			59	222	25	4.47	84	270	12:30			284	4076	230	045	514	1001
00:45 01:00			42 36	232	24 18	147	66 54	379	12:45 13:00			267 252	1076	227 210	915	494 462	1991
01:00			38		20		58		13:15			252		222		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 02:45			19 12	105	16 10	67	35 22	172	14:30 14:45			353 351	1408	266 257	1064	619 608	2472
03:00			15	103	12	07	27	1/2	15:00			310	1400	258	1004	568	2472
03:15			27		10		37		15:15			342		298		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 04:15			17 26		17 14		34 40		16:00 16:15			362 347		322 359		684 706	
04:15			34		14 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			78		24		102		17:15			404		423		827	
05:30			109	2.47	48	470	157	<b>547</b>	17:30			397	4.476	412	4500	809	2074
05:45 06:00			108 153	347	70 76	170	178 229	517	17:45 18:00			321 323	1476	384 361	1598	705 684	3074
06:00			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	905	447	1945
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 09:30			294 244		206 231		500 475		21:15 21:30			188 170		156 130		344 300	
09:45			261	1128	274	942	535	2070	21:45			172	736	141	593	313	1329
10:00			237		298		535		22:00			168		131		299	
10:15			264		249		513		22:15			149		107		256	
10:30			232		199		431		22:30			149		94		243	1000
10:45			218	951	211	957	429	1908	22:45 23:00			148	614	<u>74</u> 57	406	222	1020
11:00 11:15			218 243		195 200		413 443		23:00 23:15			137 113		57 74		194 187	
11:30			267		226		493		23:30			87		61		148	
11:45			225	953	244	865	469	1818	23:45			85	422	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%
	DAILY.	TOTALS			NB 0		SB 0		21.054	WB							otal
									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				3388		1828		5216	4 - 6 Volume				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	0.000		0.939		0.966		0.953



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

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

	ח	AILY 1	ΓΩΤΛ	15		NB		SB		EB		WB						To	otal
	D,	AILI		ILO		26,832		28,219		0		0						55,	,051
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB	WI	3	TO	TAL
00:00	71		85					156		12:00	423		397					820	
00:15	96		67					163		12:15	381		442					823	
00:30 00:45	74 56	297	66 50	268				140 106	565	12:30 12:45	369 412	1585	410 435	1684				779 847	3269
01:00	55	237	51	200				106	303	13:00	393	1303	378	1001				771	3203
01:15	53		44					97		13:15	403		440					843	
01:30	44	100	43	1.67				87	252	13:30	406	1502	425	1.004				831	2266
01:45 02:00	34 48	186	29 31	167				63 79	353	13:45 14:00	380 428	1582	441 412	1684				821 840	3266
02:15	35		44					79		14:15	427		454					881	
02:30	28		19					47		14:30	398		495					893	
02:45	22	133	25	119				47	252	14:45	416	1669	461	1822				877	3491
03:00 03:15	25 29		31 30					56 59		15:00 15:15	405 451		493 501					898 952	
03:30	22		28					50		15:30	427		535					962	
03:45	28	104	16	105				44	209	15:45	485	1768	518	2047				1003	3815
04:00	20		24					44		16:00	479		482					961	
04:15	22		38					60		16:15	536		442					978	
04:30 04:45	31 20	93	45 65	172				76 85	265	16:30 16:45	557 565	2137	466 429	1819				1023 994	3956
05:00	24	93	68	1/2				92	203	17:00	584	2137	468	1019				1052	3930
05:15	24		112					136		17:15	610		455					1065	
05:30	30		138					168		17:30	586		455					1041	
05:45	25	103	208	526				233	629	17:45	527	2307	448	1826				975	4133
06:00 06:15	49 70		206 263					255 333		18:00 18:15	478 454		453 447					931 901	
06:30	92		326					418		18:30	470		468					938	
06:45	109	320	351	1146				460	1466	18:45	437	1839	462	1830				899	3669
07:00	245		385					630		19:00	369		399					768	
07:15	184 178		486 577					670 755		19:15 19:30	349 339		314					663	
07:30 07:45	255	862	551	1999				806	2861	19:45	357	1414	315 346	1374				654 703	2788
08:00	312	002	496	1333				808	2001	20:00	285		315	1371				600	2700
08:15	422		497					919		20:15	303		295					598	
08:30	374	4546	511	4000				885	2504	20:30	228	4050	265	4446				493	2474
08:45 09:00	408 527	1516	484 388	1988				892 915	3504	20:45 21:00	242 219	1058	241 264	1116				483 483	2174
09:15	320		384					704		21:15	230		246					476	
09:30	360		374					734		21:30	267		220					487	
09:45	539	1746	404	1550				943	3296	21:45	208	924	192	922				400	1846
10:00	437		347					784		22:00	173		192					365	
10:15 10:30	384 466		348 374					732 840		22:15 22:30	182 139		184 174					366 313	
10:45	588	1875	333	1402				921	3277	22:45	131	625	135	685				266	1310
11:00	498		324					822		23:00	116		168					284	
11:15	553		389					942		23:15	98		126					224	
11:30 11:45	589 665	2305	382 397	1492				971 1062	3797	23:30 23:45	72 98	384	104 78	476				176 176	860
TOTALS	003	9540	331	10934				1002	20474	TOTALS	36	17292	70	17285				170	<b>34577</b>
SPLIT %		46.6%		53.4%					37.2%			50.0%		50.0%					62.8%
JI EII 70		10.070		33.470					37.2/0					30.070					
	D	AILY 1	ГОТА	LS		NB		SB		EB		WB							otal
						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		0		6365	4 - 6 Volume		4444		3645	(	)	0		8089
7 - 9 Peak Hour		08:00		07:30						4 - 6 Peak Hour		16:45		17:00					16:45
7 - 9 Pk Volume		1516		2121						4 - 6 Pk Volume		2345		1826					4152
Pk Hr Factor		0.898		0.919	0.00	0	0.000		0.953	Pk Hr Factor		0.961		0.975	0.0	000	0.000		0.975

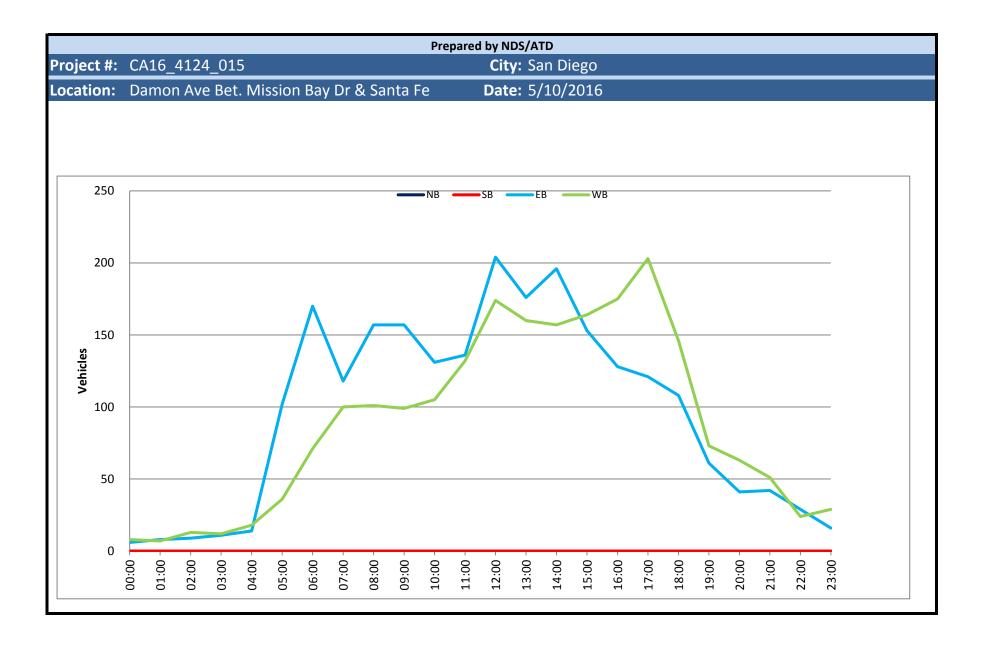


# **VOLUME**

# Damon Ave Bet. Mission Bay Dr & Santa Fe St

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

	DAILY TOTALS			NB		SB		ЕВ	WB						To	otal
	DAILT TOTALS			0		0		2,294	2,121						4,	415
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		0		0		0		12:00			44		40		84	
00:15		3		4		7		12:15			57		58 27		115	
00:30 00:45		2	6	2 2	8	3 4	14	12:30 12:45			49 54	204	37 39	174	86 93	378
01:00		1	<u> </u>	1	0	2	14	13:00			52	204	43	1/4	95	370
01:15		4		1		5		13:15			34		28		62	
01:30		1		5		6	,	13:30			48		47		95	
01:45		2	8	0	7	2	15	13:45			42	176	42	160	84	336
02:00 02:15		0		1		1 2		14:00 14:15			53 38		41 32		94 70	
02:30		5		3		8		14:30			54		32 49		103	
02:45		3	9	8	13	11	22	14:45			51	196	35	157	86	353
03:00		3		2		5		15:00			37		43		80	
03:15		5		5		10		15:15			46		43		89	
03:30		2	11	5	12	7	22	15:30			32	152	41	1.6.4	73	217
03:45 04:00		<u>1</u> 1	11	<u>0</u> 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	32	16:45			27	128	52	175	79	303
05:00		11		4		15		17:00			36		63		99	
05:15		19		9		28		17:15			32		69 36		101	
05:30 05:45		26 46	102	6 17	36	32 63	138	17:30 17:45			27 26	121	36 35	203	63 61	324
06:00		33	102	8	30	41	130	18:00			27	121	36	203	63	324
06:15		61		13		74		18:15			27		39		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	110	32	100	80	210	20:00			8	<u> </u>	25	73	33	154
08:15		35		17		52		20:15			13		14		27	
08:30		29		24		53		20:30			7		16		23	
08:45		45	157	28	101	73	258	20:45			13	41	8	63	21	104
09:00 09:15		39 33		28 18		67 51		21:00 21:15			10 12		14 12		24 24	
09:30		33		33		66		21:30			13		14		27	
09:45		52	157	20	99	72	256	21:45			7	42	11	51	18	93
10:00		28		24		52		22:00			11		13		24	
10:15		39		40		79		22:15			8		5		13	
10:30		29	424	16 25	405	45	226	22:30			7	20	4	2.4	11	F.2
10:45 11:00		35 25	131	25 24	105	60 49	236	22:45 23:00			<u>3</u>	29	<u>2</u> 9	24	5 13	53
11:00		25 39		40		79		23:15			4 5		<i>5</i> 7		12	
11:30		30		30		60		23:30			4		8		12	
11:45		42	136	38	132	80	268	23:45			3	16	5	29	8	45
TOTALS			1019		702		1721	TOTALS				1275		1419		2694
SPLIT %			59.2%		40.8%		39.0%	SPLIT %				47.3%		52.7%		61.0%
	DAILY TOTALS			NB		SB		EB	WB							otal
				0		0		2,294	2,121						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	0	0	275		201		476	4 - 6 Volume	0	0		249		378		627
7 - 9 Peak Hour			08:00		07:30			4 - 6 Peak Hour				16:00		16:30		16:30
7 - 9 Pk Volume			157		110			4 - 6 Pk Volume				128		227		351
Pk Hr Factor	0.000 0.0	000	0.818		0.809		0.819	Pk Hr Factor	0.000	0.000		0.762		0.822		0.869
																<del>-</del>



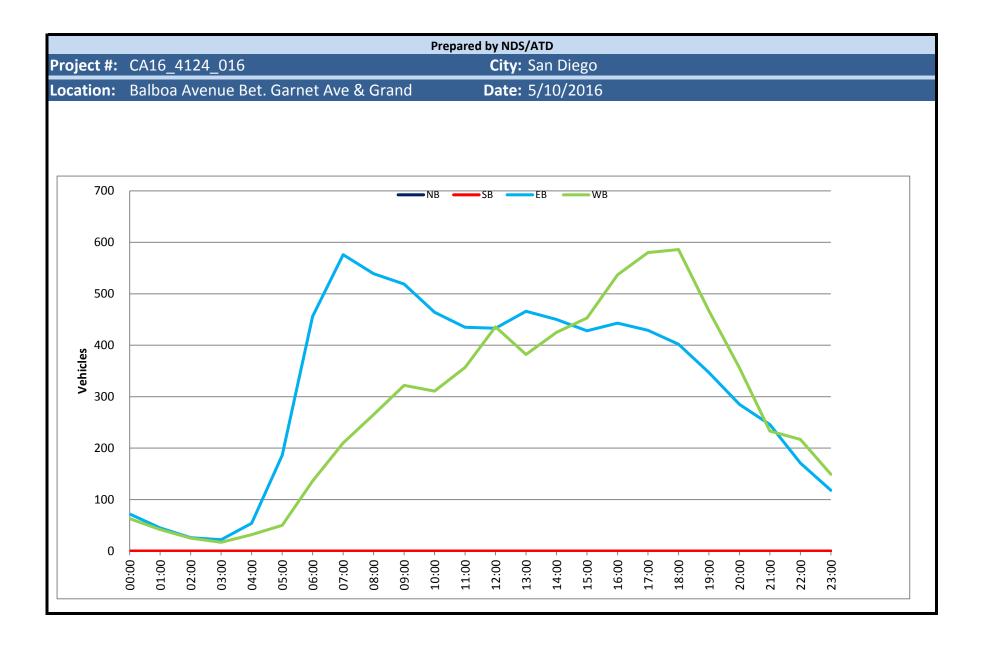
#### Prepared by NDS/ATD

### **VOLUME**

#### Balboa Avenue Bet. Garnet Ave & Grand Ave

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

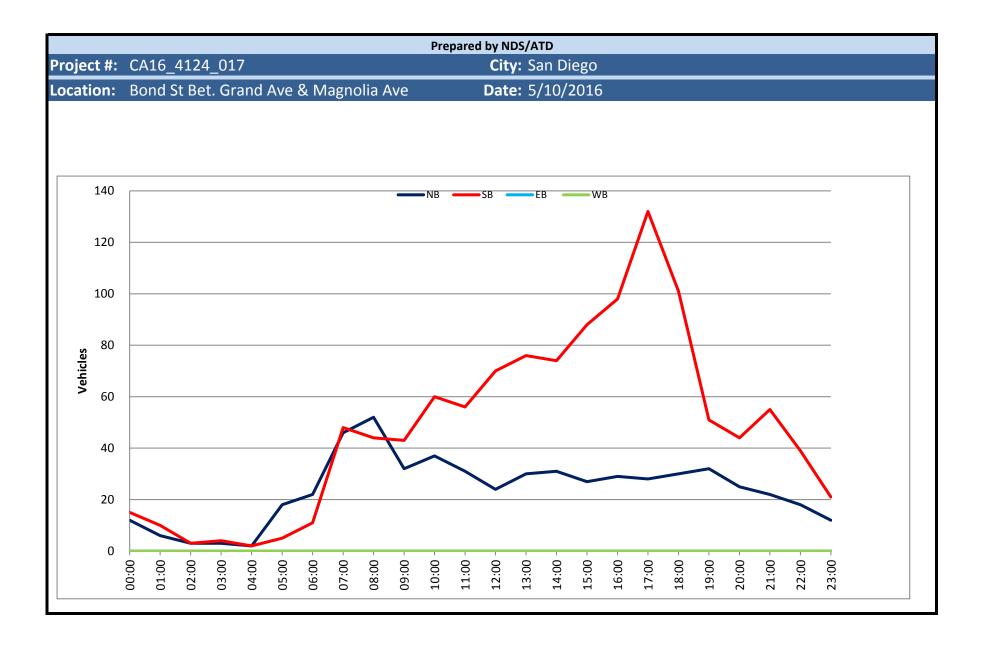
### Period   NB   SB   EB   WB   TOTAL   PM Period   NB   SB   EB   WB   TOTAL   ### Octoor   Color		DAILY T	OTALS			NB 0		SB 0		EB 7,612		/B						otal ,263
00.00	AM Period	NR	SR	FR					ΤΔΙ				FR		WR			
00-15		טאו	שנ						IAL		ND	30						IAL
00:05																		
Oct																		
01:15 6 6 12 18 13:35 121 95 226 246 20:35 100 13 6 6 19 8 13:30 114 488 202 20:45 100 45 11 42 21 87 13:45 124 466 102 392 226 848 20:20 20:20 7 8 8 15 14:40 112 466 102 392 226 848 20:20 20:20 7 13 10 14:40 111 114 122 20 9 20:20 114 125 20:20 90:20 126 20:20 126					72		63		135					433		436		869
01:30																		
01:45																		
02:00					45		42		87					466		382		848
02:30 7 3 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 6 3 9 15:00 94 103 197 03:30 4 1 3 7 7 15:30 100 124 222 226 03:30 4 1 3 3 7 7 15:30 100 124 228 134 452 256 881 04:40 12 3 15 15:45 112 22 22 256 88.1 04:40 12 3 15 16:00 108 141 22 22 24 26 27 17 17 18 29 20:44 28 28 29 27 18 28 29 29 29 29 29 29 29 29 29 29 29 29 29									<u> </u>									
02-45   5 26 3 25 8 51 14-45   106 450 113 425 219 875 03:00 6 6 3 9 9 15:00 94 103 197 03:15 6 6 4 10 15:15 112 92 204 03:45 6 22 7 17 17 13 39 15:40 100 124 52 24 814 12 30:45 112 92 104 104:15 100 4.00 112 3 15:15 112 92 813 4 15 256 881 04:00 104:00 112 3 15:15 16:00 1108 141 249 104:15 100 4.00 112 3 15:15 16:00 1108 141 249 104:15 100 4.00 111 1 12 2 3 34 86 16:55 119 15:5 119 15:6 275 104:00 104:00 112 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				7				18							107			
03:00   6				7														
03:15					26		25		51					450		425		875
03:40								_										
03:45   6   22   7   17   13   39   15:45   122   428   134   453   256   881																		
04:15   04:30   11   12   23   16:30   121   116   237   204.45   21   54   13   32   34   86   16:45   95   443   124   537   219   980   05:00   18   9   27   17:00   88   133   221   230   05:15   33   12   45   17:15   112   169   281   05:30   68   14   82   17:30   113   144   257   05:45   67   186   15   50   82   236   17:45   116   429   134   580   250   100   06:15   06:10   101   30   131   18:15   103   156   259   06:45   125   456   44   136   169   592   18:45   100   402   144   586   206   69:45   125   456   44   136   169   592   18:45   100   402   144   586   206   69:45   125   456   44   136   169   592   18:45   100   402   144   586   207:00   133   133   56   44   136   169   592   18:45   100   402   144   586   207:00   133   133   56   54   137   139   237					22		17	13	39					428		453		881
Qui																		
O4:45																		
DS:00					Γ4		22		96					442		F27		000
05:15					54		32		86					443		537		980
05:30																		
Decido										17:30								
On-15	<del></del>				186		50		236					429		580		1009
06:30																		
06:45																		
07:00					456		136		592					402		586		988
07:15					+30		130		332					402		300		300
O745						61				19:15			83		118		201	
08:00																		
08:15 08:30 120 771 191 20:30 70 84 154 155 08:45 119 539 77 265 196 804 20:45 69 285 84 356 153 641 09:00 132 85 217 21:15 68 72 140 09:15 128 63 191 21:15 68 54 122 09:30 57 47 104 09:45 131 519 90 322 221 841 21:45 53 246 60 233 113 479 10:00 99:45 131 519 90 322 221 841 21:45 53 246 60 233 113 479 10:00 99 87 186 22:00 52 54 106 10:15 135 76 211 22:15 47 54 101 10:15 135 76 211 22:15 47 54 101 10:45 1135 76 211 22:30 43 51 15 99 10:45 113 80 22:30 43 51 99 10:45 115 65 180 22:30 43 51 94 11:00 99 79 178 23:00 29 45 74 11:15 113 80 193 23:15 22 38 60 11:45 133 435 115 357 248 792 23:45 38 118 33 149 71 267 11:45 133 435 115 357 248 792 23:45 38 118 33 149 71 267 170 170 170 170 170 170 170 170 170 17					576		210		786					347		467		814
08:30																		
08:45																		
09:15				119	539		265		804	20:45				285		356		641
09:30																		
131   519   90   322   221   841   21:45   53   246   60   233   113   479																		
10:00					510		222		0/1					246		222		470
10:15					319		322		041					240		233		4/3
10:45																		
11:00	10:30			115		65		180		22:30			43		51		94	
11:15					464		311		775					171		217		388
11:30																		
11:45																		
TOTALS   3394   1830   5224   TOTALS   4218   4821   9039					435		357		792					118		149		267
DAILY TOTALS         NB SB EB WB Total 14,263           AM Peak Hour AM Pk Volume Pk Hr Factor         06:30 11:45 11:45 11:45 11:45 PM Peak Hour PM Pk Volume Pk Hr Factor         13:15 17:15 17:1 17:1 17:1 17:1 17:1 17:1														4218		4821		9039
DAILY TOTALS         0         0         7,612         6,651         14,263           AM Peak Hour AM Pk Volume Pk Hr Factor         06:30         11:45         11:45         PM Peak Hour PM Pk Volume Pk Pk Pk Pk Volume Pk Pk Pk Pk Volume Pk Pk Pk Pk Pk Pk Volume Pk Pk Volume Pk Pk Volume Pk V	SPLIT %				65.0%		35.0%		36.6%	SPLIT %				46.7%		53.3%		63.4%
DAILY TOTALS         0         7,612         6,651         14,263           AM Peak Hour         06:30         11:45         11:45         PM Peak Hour         13:15         17:15         17:15           AM Pk Volume         593         440         895         PM Pk Volume         481         595         1050           Pk Hr Factor         0.921         0.957         0.902         Pk Hr Factor         0.970         0.880         0.93           7 - 9 Volume         0         0         1115         475         1590         4 - 6 Volume         0         872         1117         1985           7 - 9 Peak Hour         07:00         08:00         08:00         4 - 6 Peak Hour         16:00         17:00         17:00           7 - 9 Pk Volume         0         576         265         804         4 - 6 Pk Volume         0         443         580         1005						NB		SB		EB	W	/B					To	otal
AM Pk Volume       593       440       895       PM Pk Volume       481       595       1050         Pk Hr Factor       0.921       0.957       0.902       Pk Hr Factor       0.970       0.880       0.93         7 - 9 Volume       0       1115       475       1590       4 - 6 Volume       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       0       576       265       804       4 - 6 Pk Volume       0       0       443       580       1005		DAILY T	OTALS															
Pk Hr Factor         0.921         0.957         0.902         Pk Hr Factor         0.970         0.880         0.93           7 - 9 Volume         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         0         576         265         804         4 - 6 Pk Volume         0         0         443         580         1009	AM Peak Hour				06:30		11:45		11:45	PM Peak Hour				13:15		17:15		17:15
7 - 9 Volume       0       1115       475       1590       4 - 6 Volume       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       0       576       265       804       4 - 6 Pk Volume       0       0       443       580       1009	AM Pk Volume				593		440		895	PM Pk Volume				481		595		1050
7 - 9 Peak Hour       07:00       08:00       08:00       4 - 6 Peak Hour       16:00       17:00       17:00         7 - 9 Pk Volume       0       576       265       804       4 - 6 Pk Volume       0       443       580       1009	Pk Hr Factor				0.921		0.957		0.902					0.970		0.880		0.934
<b>7 - 9 Pk Volume</b> 0 576 265 <b>804 4 - 6 Pk Volume</b> 0 443 580 <b>1009</b>																		1989
																		17:00
I PK HT FACTOR 0.000 0.000 0.894 0.860 0.910 I PK HT FACTOR 0.000 0.000 0.915 0.858 0.894																		1009
0.051	Pk Hr Factor	0.000	0.000		0.894		0.860		0.910	PK Hr Factor	0.0	000	0.000	0.915		0.858		0.898



# Bond St Bet. Grand Ave & Magnolia Ave

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

	D	AILY T	ΓΟΤΑ	<b>ALS</b>		NB 572		SB 1,150	EB 0		WB 0							otal 722
AM Period	NB		SB		EB	WB		TOTAL	PM Period	NB		SB		EB	W	D		TAL
00:00	4		3		LD	VVD		7	12:00	5		18		ED	VV	Ь	23	TAL
00:15	1		3					4	12:15	8		18					26	
00:30	2	4.0	6	4.5				8	12:30	4	2.4	16	70				20	0.4
00:45 01:00	5 1	12	3	15				8 <u>27</u> 2	12:45 13:00	7 8	24	18 19	70				25 27	94
01:00	2		5					7	13:15	7		17					24	
01:30	2		2					4	13:30	4		14					18	
01:45	1	6	2	10			_	3 16	13:45	11	30	26	76				37	106
02:00 02:15	0 2		3 0					3	14:00 14:15	7		21 25					28 32	
02:30	1		0					1	14:30	9		14					23	
02:45	0	3	0	3				0 6	14:45	8	31	14	74				22	105
03:00	0		1					1	15:00	11		20					31	
03:15 03:30	0 3		0 3					0 6	15:15 15:30	5 6		30 20					35 26	
03:45	0	3	0	4				0 7	15:45	5	27	18	88				23	115
04:00	1		0	<del>-</del>				1	16:00	10		30					40	
04:15	0		0					0	16:15	7		17					24	
04:30	0	2	1	2				1	16:30 16:45	7 5	29	23 28	00				30	127
04:45 05:00	<u>1</u> 4	2	0	2				4	17:00	10	29	33	98				33 43	127
05:15	3		1					4	17:15	10		40					50	
05:30	5		0					5	17:30	4		30					34	
05:45	6	18	4	5			_	10 23	17:45	4	28	29	132				33	160
06:00 06:15	4 8		3					7 10	18:00 18:15	5 8		21 23					26 31	
06:30	6		4					10	18:30	7		33					40	
06:45	4	22	2	11				6 33	18:45	10	30	24	101				34	131
07:00	9		14					23	19:00	7		17					24	
07:15 07:30	11 13		11 15					22 28	19:15 19:30	10 5		12 10					22 15	
07:45	13	46	15 8	48				21 94	19:45	10	32	10	51				22	83
08:00	10		10					20	20:00	8		15					23	
08:15	15		10					25	20:15	7		10					17	
08:30	15 12	<b>F</b> 2	11	4.4				26	20:30	8	25	7	4.4				15	60
08:45 09:00	12 7	52	13 10	44				25 96 17	20:45 21:00	2	25	12 13	44				14 15	69
09:15	5		7					12	21:15	5		14					19	
09:30	9		12					21	21:30	9		15					24	
09:45	11	32	14	43				25 75	21:45	6	22	13	55				19	77
10:00 10:15	4 10		14 12					18 22	22:00 22:15	4 9		16 8					20 17	
10:30	15		19					34	22:30	3		7					10	
10:45	8	37	15	60				23 97	22:45	2	18	8	39				10	57
11:00	7		15					22	23:00	5		8					13	
11:15 11:30	7 6		13 9					20 15	23:15 23:30	2		4 6					6 10	
11:30 11:45	6 11	31	9 19	56				30 87	23:30	4 1	12	6 3	21				4	33
TOTALS		264	13	301				565	TOTALS		308	3	849					1157
SPLIT %		46.7%		53.3%				32.8%	SPLIT %		26.6%		73.4%					67.2%
						NB		SB	EB		WB						To	otal
	D	AILY 1	OTA	ALS		572		1,150	0		0							722
AM Peak Hour		07:45		11:45				10:15	PM Peak Hour		14:15		17:00					16:45
AM Pk Volume		53		71				101	PM Pk Volume		35		132					160
Pk Hr Factor		0.883		0.934				0.743	Pk Hr Factor		0.795		0.825					0.800
7 - 9 Volume		98		92				190	4 - 6 Volume		57		230					287
7 - 9 Peak Hour		07:45		07:00				08:00			16:30		17:00					16:45
7 - 9 Pk Volume		53		48				96	4 - 6 Pk Volume Pk Hr Factor		32		132					160
Pk Hr Factor		0.883		0.800	0.000	0.	.000	0.923	PK HI FACTOR		0.800		0.825	U	.000	0.000		0.800



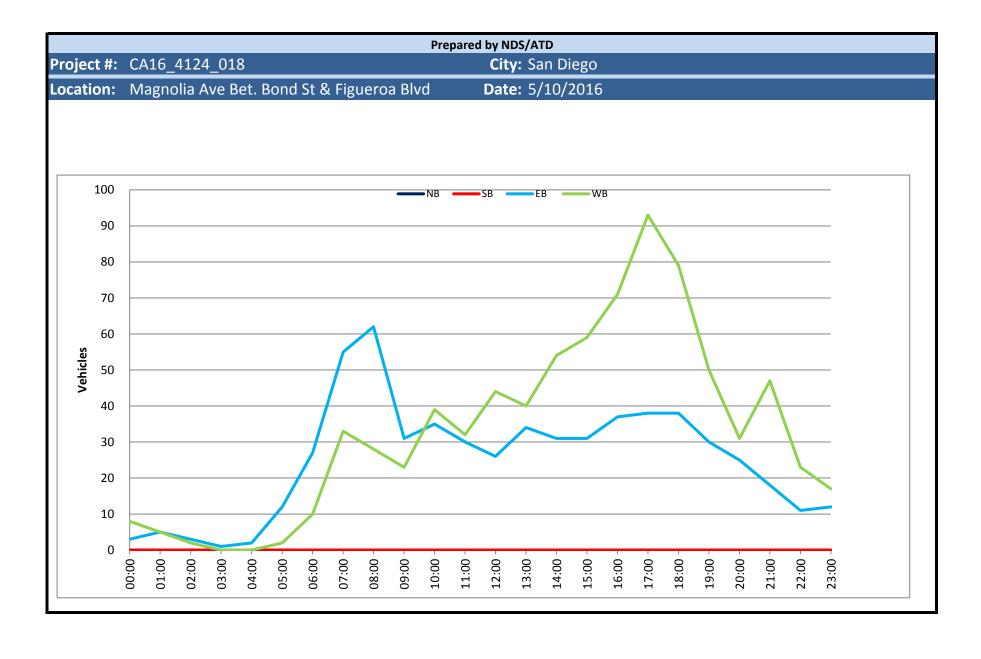
#### Prepared by NDS/ATD

## **VOLUME**

# Magnolia Ave Bet. Bond St & Figueroa Blvd

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

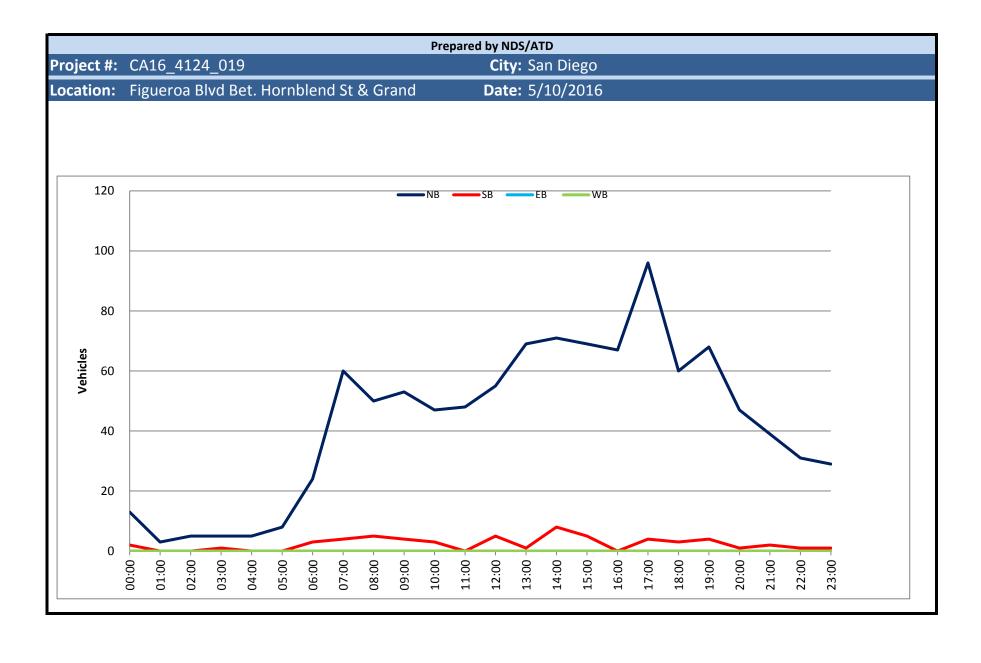
AM Period NB SB EB WB TOTAL PM Period SB EB WB TOTAL 0.00.00		DAILY TOTALS			NB		SB		EB	WE	<u> </u>					То	otal
00.00		DAILI IOTALS			0		0		597	790	)					1,3	<b>387</b>
00.00	AM Period	NB SB	FB		WB		TO	TAL	PM Period	NB	SB	FB		WB		TO	TAL
DOIS		35								ND .	35						17 (2
00:30 0 0 4 4 12:30 14 12:30 14 16 10 26 10 44 16 16 10 10 10 10 10 10 10 10 10 10 10 11 1 1 13:00 15 11 1 16 16 10 11 1 10 10 11 1 10 10 11 1 10 10 11 1 10 10			1									_					
01:15			0		4		4					4					
01:15   2   3   5   13:15   11   7   18   01:30	00:45		2	3	0	8	2	11	12:45			10	26	10	44	20	70
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SPLIT %         59.4%         40.6%         32.3%         SPLIT %         35.3%         64.7%         67.79           DAILY TOTALS         NB SB EB WB 0 0 0 597 790         Total 1,387           AM Peak Hour AM Pk Volume			12	30	10	32		62				3	12	4	17		29
SPLIT %         59.4%         40.6%         32.3%         SPLIT %         35.3%         64.7%         67.79           DAILY TOTALS         NB SB EB WB 0 0 0 597 790         Total 1,387           AM Peak Hour AM Pk Volume						182		448	TOTALS						608		939
DAILY IOTALS         0         597         790         1,387           AM Peak Hour         07:45         11:45         07:30         PM Peak Hour         18:15         17:00         17:00           AM Pk Volume         63         44         93         PM Pk Volume         42         93         131           Pk Hr Factor         0.788         0.846         0.802         Pk Hr Factor         0.875         0.894         0.963           7 - 9 Volume         0         0         17         61         178         4 - 6 Volume         0         75         164         239           7 - 9 Peak Hour         07:45         07:15         07:30         4 - 6 Peak Hour         16:45         17:00         17:00           7 - 9 Pk Volume         0         63         34         93         4 - 6 Pk Volume         0         39         93         131	SPLIT %								SPLIT %								67.7%
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# Figueroa Blvd Bet. Hornblend St & Grand Ave

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

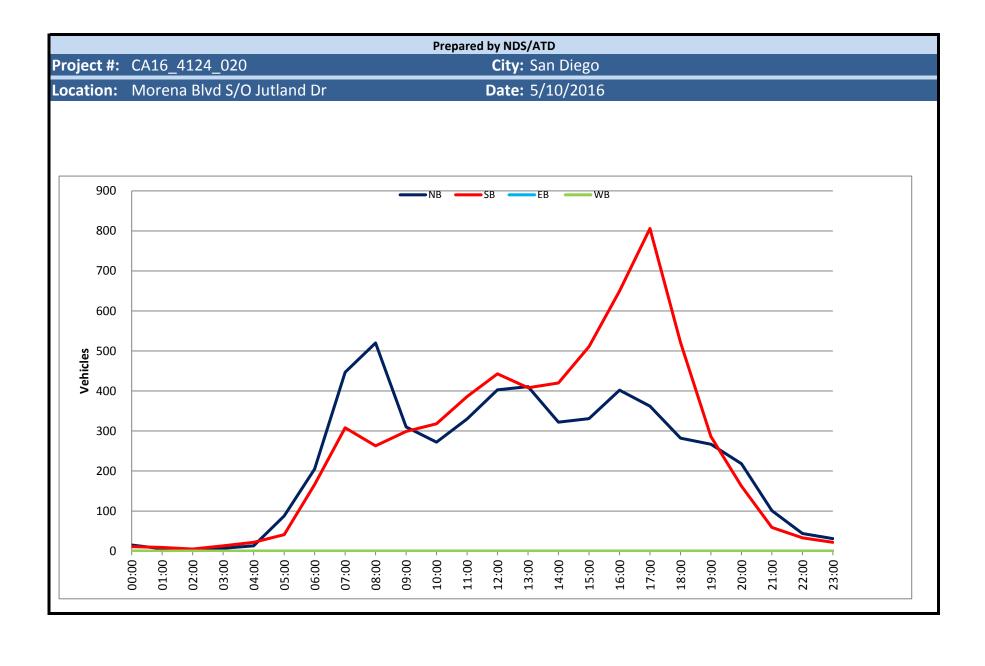
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02:15	0		0					0	14:15	24		2					26	
02:30	3		0					3	14:30	16		2					18	
02:45	0	5	0					0 5	14:45	15	71	2	8				17	79
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05:00	3		0	<u> </u>				3	17:00	20		2					22	
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06:00	2		1					3	18:15	15		0					15	
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07:00	12		1				1	.3	19:00	18		0					18	
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11:15	13		0				1	.3	23:15	13		0					13	
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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					4 - 6 Pk Volume		96		4					100
Pk Hr Factor		0.833		0.417	0.000	0.	.000	0.842	Pk Hr Factor		0.889		0.500	0.000		0.000		0.862



# Morena Blvd S/O Jutland Dr

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

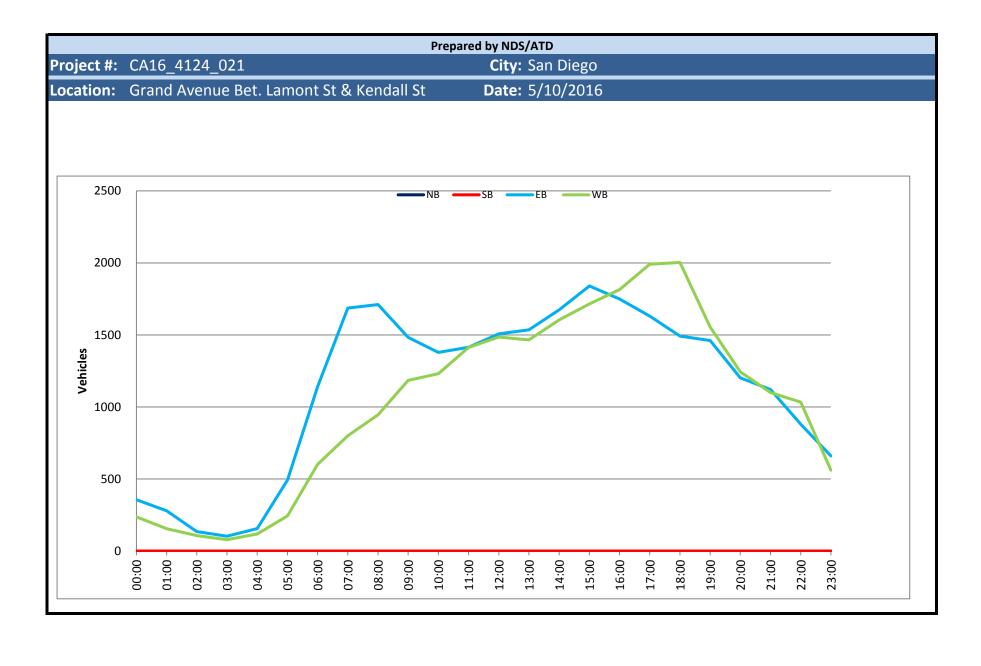
	ח	AILY 1		15		NB	SB		EB		WB						To	otal
		AILI		IL3		5,392	6,162		0		0						11,	,554
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00:15	3		2				5		12:15	81		106					187	
00:30	7		6				13		12:30	121		116					237	
00:45	2	15	0	11			2	26	12:45	128	403	102	443				230	846
01:00	0		2				2		13:00	117		113					230	
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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		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
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04:00	4	-	2				6		16:00	101		138	<b>-</b>				239	
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 05:30	24 17		/ 12				31 29		17:15 17:30	96 85		183 203					279 288	
05:45	40	88	19	41			59	129	17:45	82	362	203 178	806				260	1168
06:00	34	- 00	21	71			55	123	18:00	83	302	190	800				273	1100
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			121	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	50	306			204	733	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			192	783	20:45	49	218	29	162				78	380
09:00	110		74				184		21:00	32		18					50	
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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
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10:30	73		91				164		22:30	7		8					15	
10:45	68	272	81	318			149	590	22:45	10	44	4	33				14	77
11:00	69		94				163		23:00	15		8					23	
11:15	82		91				173		23:15	6		4					10	
11:30	82 97	220	95 106	206			177	716	23:30 22:45	6	21	3	22				9 11	53
11:45 TOTALS	31	330	100	386			203	716 <b>4059</b>	23:45 TOTALS	4	31	/	4221				11	
IUIALS		2218		1841				4059			3174		4321					7495
SPLIT %		54.6%		45.4%				35.1%	SPLIT %		42.3%		57.7%					64.9%
						NB	SB		EB		WB						_ Io	otal
	D	AILY 1	OTA	ILS		5,392	6,162		0		0							,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				1538	4 - 6 Volume		764		1456					2220
7 - 9 Peak Hour		07:45		07:00					4 - 6 Peak Hour		16:00		17:00					16:45
7 - 9 Pk Volume		572		308					4 - 6 Pk Volume		402		806					1173
Pk Hr Factor		0.836		0.811	0.000	0.000		0.805	Pk Hr Factor		0.931		0.833	0.0	000	0.000		0.860



#### Grand Avenue Bet. Lamont St & Kendall St

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

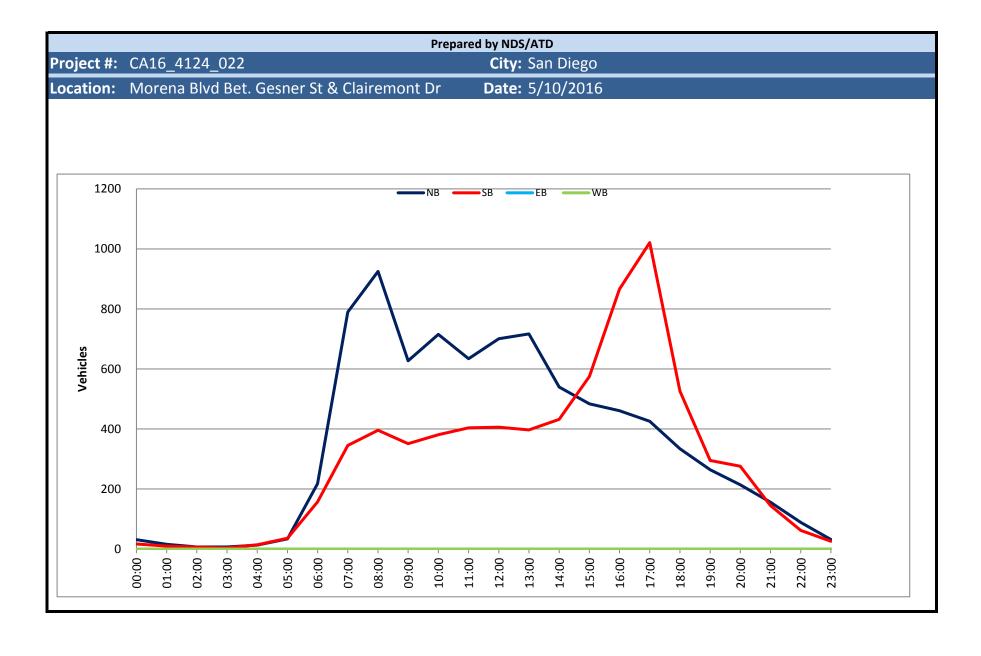
	DAILY TOTAL	LS		NB 0		SB 0		EB 27,091	WB 24,687							otal ,778
AM Period	NB SB	EB		WB			TAL	PM Period	NB	SB	ЕВ		WB			TAL
00:00	IND 3D	123		85		208	TAL	12:00	IND	30	384		369		753	IAL
00:15		89		49		138		12:15			366		365		731	
00:30		89	256	50	207	139	500	12:30			376	4500	354	4.405	730	2000
00:45 01:00		55 <b>7</b> 9	356	53 55	237	108 134	593	12:45 13:00			382 372	1508	397 358	1485	779 730	2993
01:00		51		34		85		13:15			412		370		782	
01:30		74		30		104		13:30			361		354		715	
01:45		75	279	36	155	111	434	13:45			391	1536	383	1465	774	3001
02:00 02:15		41 41		40 36		81 77		14:00 14:15			415 468		377 410		792 878	
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 21		13 20		42		15:15 15:30			445 451		426 349		871 800	
03:30 03:45		18	103	25 25	79	41 43	182	15:45			451 495	1840	349 497	1715	992	3555
04:00		31		12		43		16:00			437		489		926	5555
04:15		26		13		39		16:15			426		419		845	
04:30		37	156	40	110	77	274	16:30 16:45			446	1750	426	1014	872	2564
04:45 05:00		62 70	156	53 29	118	115 99	274	17:00			441 406	1750	480 448	1814	921 854	3564
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 06:15		200 273		92 148		292 421		18:00 18:15			343 375		477 490		820 865	
06:30		344		161		505		18:30			390		535		925	
06:45		323	1140	200	601	523	1741	18:45			384	1492	501	2003	885	3495
07:00		443		180		623		19:00			347		428		775	
07:15 07:30		408 422		222 219		630 641		19:15 19:30			379 367		410 376		789 743	
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 08:45		434 369	1711	255 259	946	689 628	2657	20:30 20:45			269 303	1202	283 300	1244	552 603	2446
09:00		400	1/11	299	340	699	2037	21:00			293	1202	259	1244	552	2440
09:15		366		240		606		21:15			271		261		532	
09:30		361	4.400	302	440=	663	2660	21:30			274		275	1100	549	2224
09:45 10:00		356 321	1483	344 310	1185	700 631	2668	21:45 22:00			283 232	1121	305 287	1100	588 519	2221
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 11:15		324 327		327 316		651 643		23:00 23:15			205 159		171 145		376 304	
11:15		380		362		742		23:15			159		145 134		304 291	
11:45		384	1415	408	1413	792	2828	23:45			139	660	112	562	251	1222
TOTALS			10336		7116		17452	TOTALS				16755		17571		34326
SPLIT %			59.2%		40.8%		33.7%	SPLIT %				48.8%		51.2%		66.3%
	DAUVIOIA			NB		SB		EB	WB						To	otal
	DAILY TOTA			0		0		27,091	24,687							,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			3397		1746		5143	4 - 6 Volume				3381		3805		7186
7 - 9 Peak Hour 7 - 9 Pk Volume			07:45 1755		08:00			4 - 6 Peak Hour 4 - 6 Pk Volume				16:00 1750		17:00		17:00 2622
Pk Hr Factor			1755 0.966		946 0.913		0.964	Pk Hr Factor				1750 0.981		1991 0.903		3622 0.930
I K III FACLUI	0.000	3.000	0.300		0.313		0.304	1 K III I detto	0.000	0.000		0.301		0.303		0.930



#### Morena Blvd Bet. Gesner St & Clairemont Dr

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

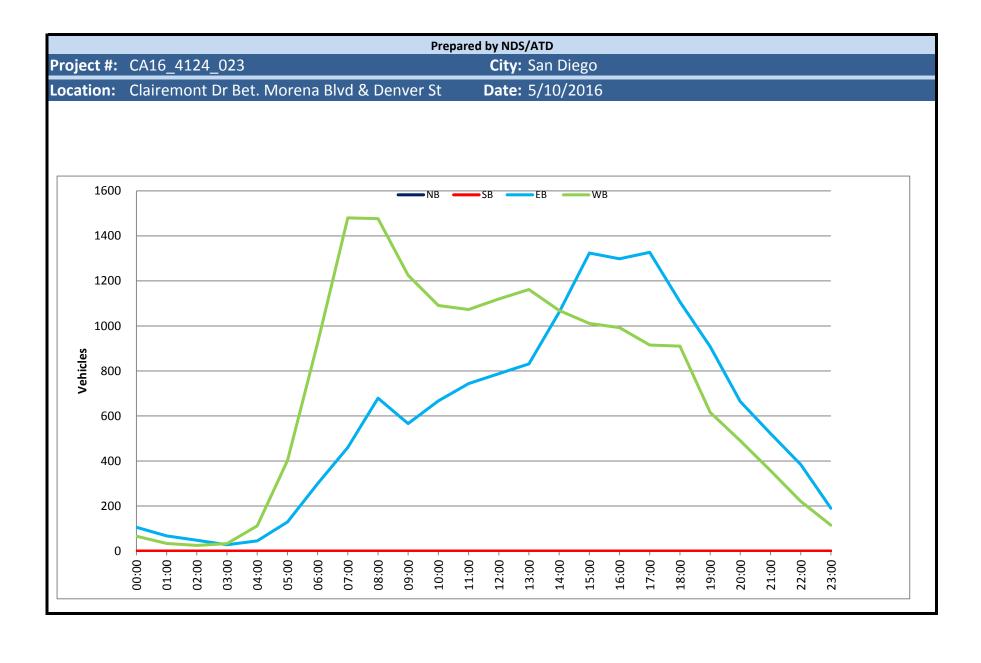
	D	AILY 1	ΓΟΤΑ	\LS		NB		SB		EB		WB							otal
						8,435		7,149		0		0						15,	,584
AM Period	NB		SB		EB	WB			TAL	PM Period	NB		SB		EB	W	3		TAL
00:00 00:15	13 5		4 6					17 11		12:00 12:15	185 165		88 108					<ul><li>273</li><li>273</li></ul>	
00:30	7		3					10		12:30	179		106					285	
00:45	6	31	4	17				10	48	12:45	172	701	104	406				276	1107
01:00 01:15	3 2		3					4 5		13:00 13:15	145 189		107 98					252 287	
01:30	6		4					10		13:30	195		102					297	
01:45	5	16	2	10				7	26	13:45	188	717	90	397				278	1114
02:00 02:15	3 1		2 5					5 6		14:00 14:15	189 149		105 112					294 261	
02:30	1		0					1		14:30	103		119					222	
02:45	2	7	2	7				2	14	14:45 15:00	99	540	96	432				195 231	972
03:00 03:15	0 2		0					2		15:15	120 98		111 132					231	
03:30	3		0					3		15:30	142		154					296	
03:45	2	7	2	4				4	11	15:45 16:00	124	484	178	575				302	1059
04:00 04:15	1 3		5 0					6 3		16:00	118 114		208 188					326 302	
04:30	4		4					8		16:30	117		249					366	
04:45	<u>5</u>	13	5	14				10	27	16:45 17:00	112	461	221	866				333	1327
05:00 05:15	5 7		5 5					10 12		17:00 17:15	114 113		294 248					408 361	
05:30	5		6					11		17:30	112		259					371	
05:45 06:00	17 21	34	20 30	36				37 51	70	17:45 18:00	87 88	426	220 174	1021				307 262	1447
06:00	27		27					54		18:15	77		141					218	
06:30	60		48					108		18:30	73		110					183	
06:45 07:00	110 143	218	52 60	157				162 203	375	18:45 19:00	96 68	334	101 77	526				197 145	860
07:15	173		72					245		19:15	69		64					133	
07:30	218		83					301		19:30	71		61					132	
07:45 08:00	256 251	790	130 84	345				386 335	1135	19:45 20:00	56 63	264	93 81	295				149 144	559
08:15	239		91					330		20:15	51		73					124	
08:30	224		108	225				332	1001	20:30	56		65	2=6				121	100
08:45 09:00	211 134	925	113 97	396				324 231	1321	20:45 21:00	53	214	57 55	276				101 108	490
09:15	105		88					193		21:15	38		37					75	
09:30	161	607	85	254				246	070	21:30	41	456	32	4.45				73	204
09:45 10:00	227 213	627	81 96	351				308 309	978	21:45 22:00	24 22	156	21 22	145				45 44	301
10:15	188		104					292		22:15	35		13					48	
10:30	158	745	103	204				261	1000	22:30	17 15	00	15	63				32	454
10:45 11:00	156 152	715	78 109	381				234 261	1096	22:45 23:00	15 15	89	12 8	62				27 23	151
11:15	153		88					241		23:15	6		4					10	
11:30	176	624	97 110	404				273	1020	23:30	6	22	7 7	26				13	Ε0
11:45 TOTALS	153	634 4017	110	404 2122				263	1038 <b>6139</b>	23:45 TOTALS	5	32 4418	/	26 5027				12	58 <b>9445</b>
SPLIT %		65.4%		34.6%					39.4%	SPLIT %		46.8%		53.2%					60.6%
	D	AILY 1	ΓΟΤΑ	\LS		NB		SB		EB		WB							otal
						8,435		7,149		0		0						15,	,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 7 - 9 Peak Hour		1715 07:45		741 07:45					2456 07:45	4 - 6 Volume 4 - 6 Peak Hour		887 16:00		1887 16:45					2774 16:45
7 - 9 Pk Volume		970		413						4 - 6 Pk Volume		461		10.43					1473
Pk Hr Factor		0.947		0.794	0.000	)	0.000		0.896	Pk Hr Factor		0.977		0.869		000	0.000		0.903



#### Clairemont Dr Bet. Morena Blvd & Denver St

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

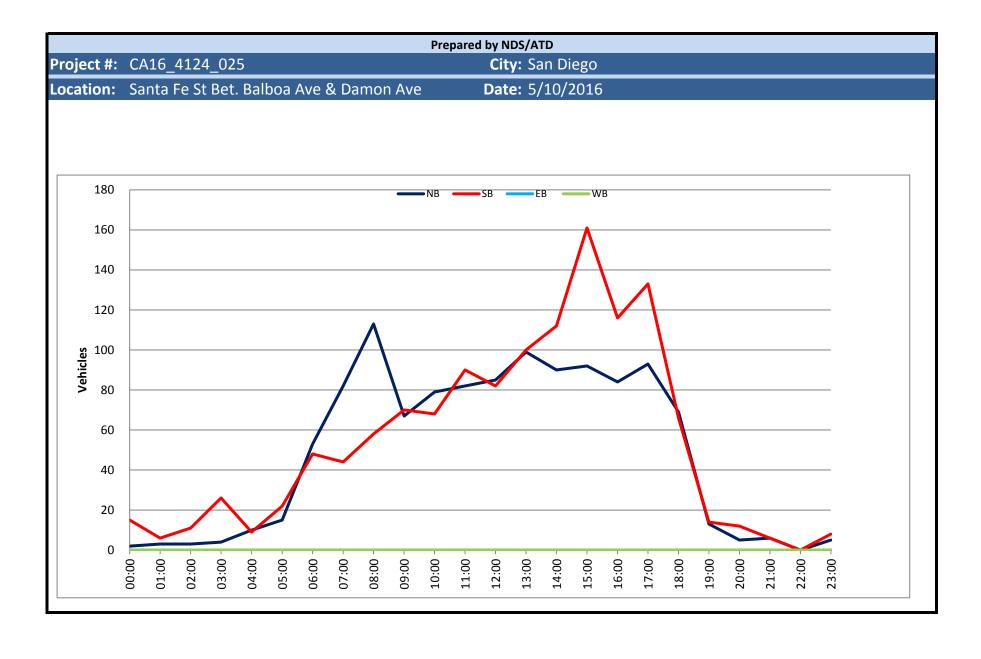
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILI TOTALS			0		0		14,242	16,920						31,	162
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		37		14		51		12:00			207		276		483	
00:15		27		24		51		12:15			176		295		471	
00:30		24		17		41		12:30			183		282		465	
00:45		18	106	11	66	29	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		19		13:30			197 176		284 303		479	
01:35		18	67	6	34	24	101	13:45			235	831	290	1162	525	1993
02:00		14	0.	3	<u> </u>	17		14:00			162	001	280	1101	442	1333
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 7		14		15:00			314		242		556	
03:15 03:30		9		8		16 12		15:15 15:30			343 336		216 249		559 585	
03:45		9	28	10	33	19	61	15:45			331	1324	304	1011	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 05:45		32 51	129	124	402	156	531	17:30 17:45			320	1327	239 252	915	559	2242
06:00		60	129	144 134	402	195 194	221	18:00			303 277	1527	234	915	555 511	2242
06:15		71		193		264		18:15			282		252		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	460	403	4.400	531	4040	19:30			218	000	156	646	374	4504
07:45 08:00		127 130	460	360 397	1480	487 527	1940	19:45 20:00			201 180	908	144 124	616	345 304	1524
08:00		156		343		499		20:15			162		124		288	
08:30		192		377		569		20:30			174		121		295	
08:45		201	679	360	1477	561	2156	20:45			148	664	119	490	267	1154
09:00		176		327		503		21:00			137		110		247	
09:15		146		271		417		21:15			133		91		224	
09:30		141	<b>5</b> 66	317	4005	458	4704	21:30			131	<b>500</b>	87	257	218	070
09:45		103	566	310	1225	413	1791	21:45			121	522	69	357	190	879
10:00 10:15		178 155		245 297		423 452		22:00 22:15			111 98		63 63		174 161	
10:30		134		284		418		22:30			109		51		160	
10:45		200	667	265	1091	465	1758	22:45			66	384	44	221	110	605
11:00		163		272		435		23:00			47		41		88	
11:15		175		264		439		23:15			59		24		83	
11:30		201		277	4.0	478		23:30			43		27		70	6.5.
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%
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		14,242	16,920						31,	162
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			0.953		0.951		0.947	Pk Hr Factor				0.942		0.959		0.938
7 - 9 Volume	0 0		1139		2957		4096	4 - 6 Volume	0	0		2625		1908		4533
7 - 9 Peak Hour			08:00		07:15		08:00	4 - 6 Peak Hour				16:30		16:00		16:15
7 - 9 Pk Volume			679		1533		2156	4 - 6 Pk Volume				1364		993		2301
Pk Hr Factor	0.000 0.000		0.845		0.951		0.947	Pk Hr Factor	0.000	0.00	0	0.942		0.930		0.973
																-



#### Santa Fe St Bet. Balboa Ave & Damon Ave

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

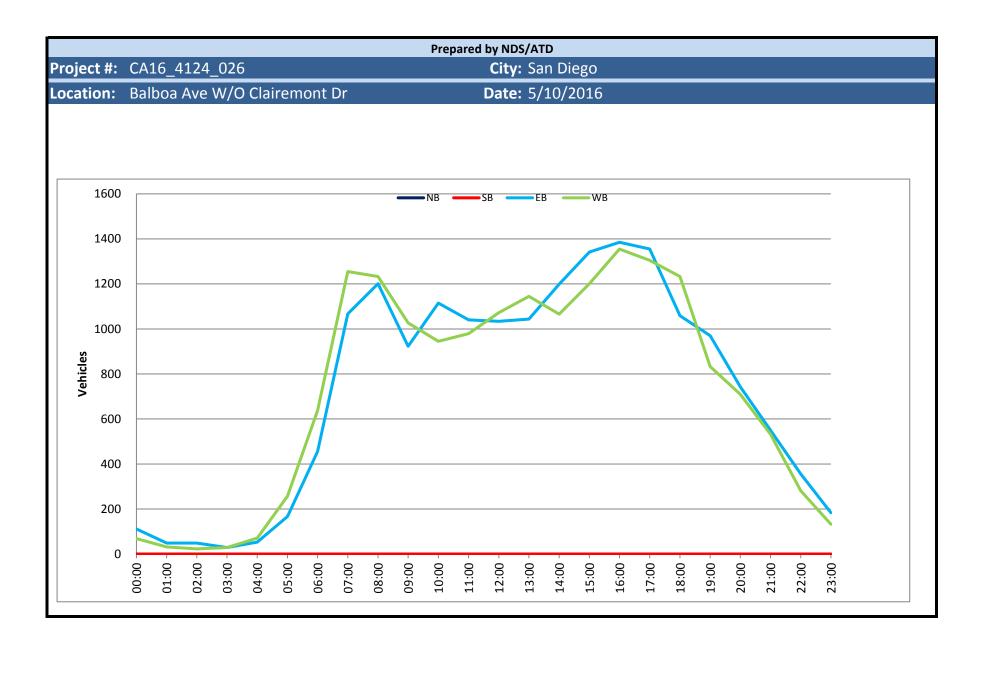
	ח	AILY 1	TOT A	VI S		NB	SB		EB		WB						To	tal
		AILI		(L)		1,154	1,277	7	0		0						2,4	<b>431</b>
AM Period	NB		SB		EB	WB	TC	TAL	PM Period	NB		SB		ЕВ	WB		TO	TAL
00:00	0		4				4		12:00	15		18					33	
00:15 00:30	1 0		3 1				4		12:15 12:30	22 20		20 29					42 49	
00:45	1	2	4	15			5	17	12:45	28	85	15	82				43	167
01:00	1		3				4		13:00	21		20					41	
01:15 01:30	1		1				2		13:15 13:30	20 30		28 23					48 53	
01:45	0	3	0	6			0	9	13:45	28	99	23 29	100				55 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	
02:45	2	3	8	11			10	14	14:45	21	90	25	112				46	202
03:00	0		12				12		15:00	18		46					64	
03:15 03:30	3		6 7				9		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	
04:30	5	10	7	9			12	19	16:45	28	84	29	116				46 57	200
05:00	0		0				0		17:00	20		42					62	
05:15	3		7				10		17:15 17:20	27		46					73	
05:30 05:45	6 6	15	6 9	22			12 15	37	17:30 17:45	21 25	93	32 13	133				53 38	226
06:00	12		3				15		18:00	19		21					40	
06:15	13		6				19		18:15	29		24					53	
06:30 06:45	12 16	53	31 8	48			43 24	101	18:30 18:45	20 1	69	17 4	66				37 5	135
07:00	18		13				31		19:00	4		5					9	
07:15	14		10				24		19:15	6		5					11	
07:30 07:45	26 24	82	9 12	44			35 36	126	19:30 19:45	0 3	13	3 1	14				3 4	27
08:00	35	<u> </u>	8				43	120	20:00	4		8					12	
08:15	17		11				28		20:15	1		1					2	
08:30 08:45	33 28	113	18 21	58			51 49	171	20:30 20:45	0 0	5	3 0	12				3 0	17
09:00	30		26				56		21:00	2		3					5	17
09:15	17		19				36		21:15	2		2					4	
09:30 09:45	11 9	67	9 16	70			20 25	137	21:30 21:45	1 1	6	1 0	6				2 1	12
10:00	20	- 07	13	70			33	137	22:00	0		0					0	12
10:15	27		23				50		22:15	0		0					0	
10:30 10:45	15 17	79	13 19	68			28 36	147	22:30 22:45	0 0		0 0					0 0	
11:00	22	13	21	UO			43	14/	23:00	4		2					6	
11:15	15		30				45		23:15	0		1					1	
11:30 11:45	23 22	82	24 15	90			47 37	172	23:30 23:45	0 1	5	0 5	8				0 6	13
TOTALS	<i>- L L</i>	513	13	467			37	980	TOTALS		641	<u> </u>	810				U	1451
SPLIT %		52.3%		47.7%				40.3%			44.2%		55.8%					59.7%
JI LII /0		32.3/0		77.7/0				TU.3/0	31 E11 /0		++.∠/0		JJ.070					33.1/0
	D	AILY 1	OTA	\LS		NB	SB		EB		WB							otal
						1,154	1,277	1	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	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	0.000			0.838	Pk Hr Factor		0.866		0.810	0.000	)	0.000		0.839



# Balboa Ave W/O Clairemont Dr

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

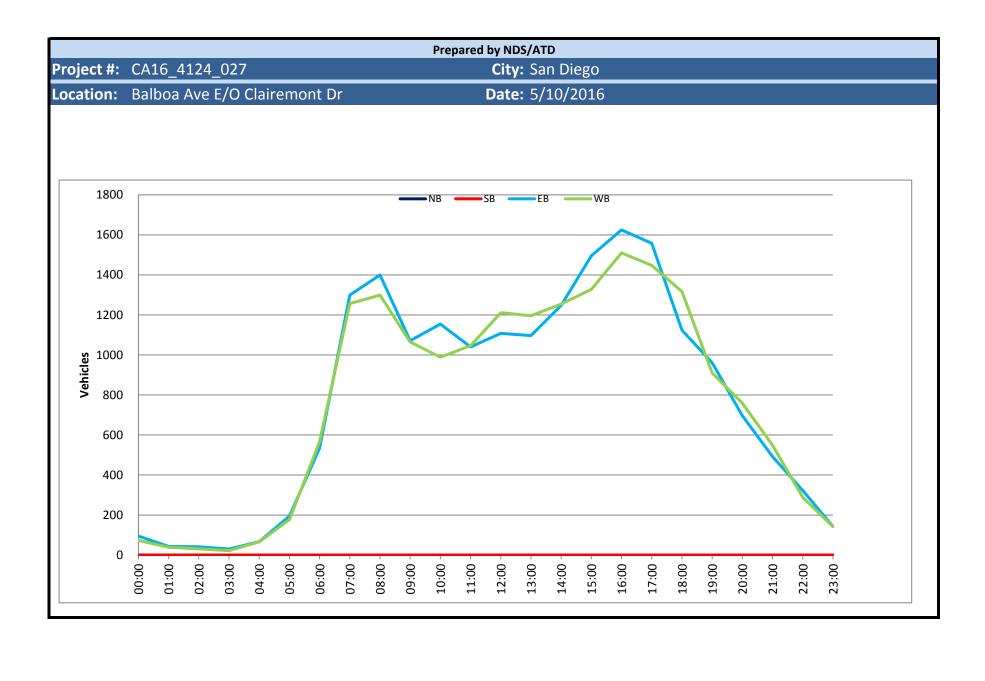
	DAILV	ΓΟΤΑLS			NB		SB		ЕВ	WB	_					To	otal
	DAILI	IOIALS			0		0		17,480	17,423						34,	,903
AM Period	NB	SB	EB		WB			TAL	PM Period	NB	SB	EB		WB			TAL
00:00 00:15			47 33		21 18		68 51		12:00 12:15			249 284		245 277		494 561	
00:30			17		11		28		12:30			241		269		510	
00:45			14	111	19	69	33	180	12:45			260	1034	281	1072	541	2106
01:00			14 13		10		24		13:00 13:15			237 277		276		513	
01:15 01:30			10		5 10		18 20		13:30			268		262 312		539 580	
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 02:30			17 11		6 4		23 15		14:15 14:30			292 350		270 253		562 603	
02:45			7	49	8	23	15	72	14:45			312	1199	298	1066	610	2265
03:00			10		6		16		15:00			299		298		597	
03:15			2		7		9		15:15			367		321		688	
03:30 03:45			7 10	29	8 8	29	15 18	58	15:30 15:45			328 348	1342	288 294	1201	616 642	2543
04:00			10		8	23	18	30	16:00			335	1312	310	1201	645	23 13
04:15			11		16		27		16:15			358		339		697	
04:30			9	гa	21	71	30	124	16:30 16:45			362	1205	387	1255	749	2740
04:45 05:00			23 29	53	26 41	71	49 70	124	17:00			330 321	1385	319 305	1355	649 626	2740
05:15			35		55		90		17:15			351		350		701	
05:30			39		84		123		17:30			336		323		659	
05:45			64	167	77 89	257	141	424	17:45 18:00			347	1355	327	1305	674	2660
06:00 06:15			72 91		89 141		161 232		18:15			258 254		322 300		580 554	
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 07:15			205 263		258 337		463 600		19:00 19:15			240 249		248 208		488 457	
07:30			289		322		611		19:30			249		208		454	
07:45			310	1067	338	1255	648	2322	19:45			235	970	169	833	404	1803
08:00			295		288		583		20:00			225		214		439	
08:15 08:30			325 275		285 322		610 597		20:15 20:30			197 177		183 141		380 318	
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 09:30			221		231 280		452		21:15 21:30			143		123		266 291	
09:45			224 227	923	256	1027	504 483	1950	21:45			157 120	550	134 111	532	231	1082
10:00			253		247		500		22:00			95		115		210	
10:15			309		238		547		22:15			108		61		169	
10:30			256	1115	231	945	487	2060	22:30 22:45			97 56	256	56 49	201	153 105	637
10:45 11:00			297 265	1113	229	<i>3</i> 43	526 495	2060	23:00			66	356	49	281	108	037
11:15			257		262		519		23:15			41		30		71	
11:30			275	1040	219	070	494	2010	23:30			37	404	40	433	77	247
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	ΓΟΤΑLS			NB		SB		EB	WB							otal
					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 7 - 9 Peak Hour				2268 07:30		2488 07:15		4756 07:30	4 - 6 Volume 4 - 6 Peak Hour				2740 16:00		2660 16:30		5400 16:00
7 - 9 Peak Hour				1219		1285			4 - 6 Pk Volume				1385		1361		2740
Pk Hr Factor	0.000			0.938		0.950		0.946	Pk Hr Factor	0.000			0.956		0.879		0.915
									-								



# Balboa Ave E/O Clairemont Dr

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

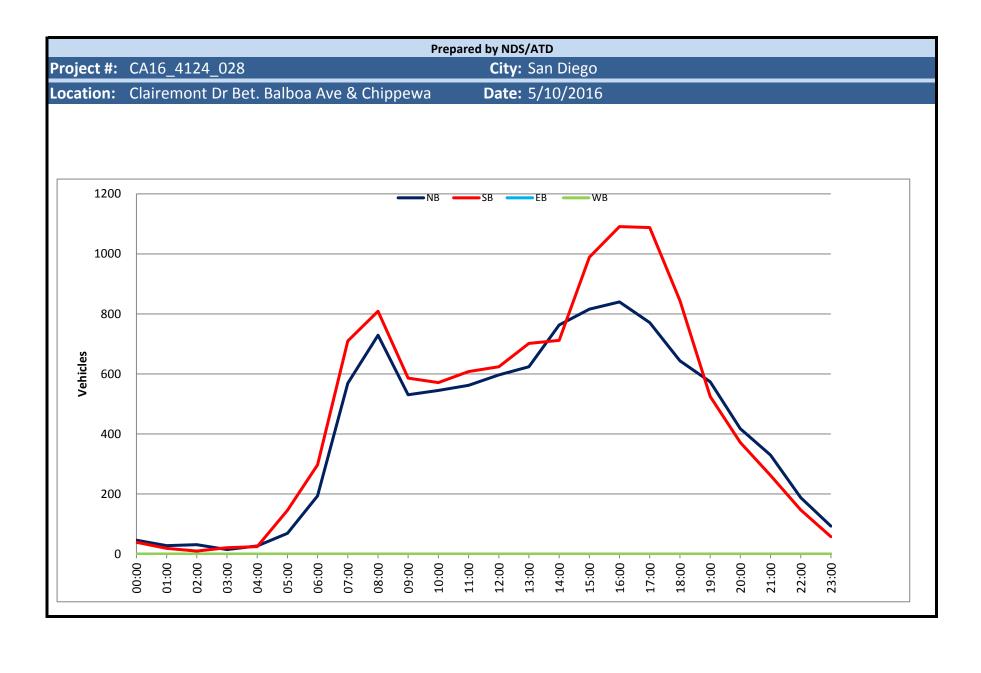
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILTTOTALS			0		0		18,841	18,542						37,	,383
<b>AM Period</b>	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		33		27		60		12:00			266		260		526	
00:15 00:30		27 20		20 9		47 29		12:15 12:30			<ul><li>275</li><li>274</li></ul>		313 309		588 583	
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 01:30		10 8		7 12		17 20		13:15 13:30			269 280		312 288		581 568	
01:45		9	43	8	39	17	82	13:45			279	1097	310	1196	589	2293
02:00		14		6		20		14:00			273		299		572	
02:15 02:30		11 9		8 6		19 15		14:15 14:30			333 338		303 331		636 669	
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 03:30		3 6		4 6		7 12		15:15 15:30			362 359		329 337		691 696	
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 04:30		11		15 16		26		16:15 16:30			398 407		364		762 842	
04:30		18 28	67	16 28	66	34 56	133	16:45			413	1625	435 374	1510	787	3135
05:00		34	<u> </u>	35		69		17:00			372		363		735	
05:15		46		39		85		17:15			402		382		784	
05:30 05:45		48 67	195	56 47	177	104 114	372	17:30 17:45			391 393	1558	366 337	1448	757 730	3006
06:00		76	133	82	177	158	372	18:00			329	1550	344	1440	673	3000
06:15		103		129		232		18:15			264		332		596	
06:30 06:45		156 199	534	152 203	566	308 402	1100	18:30 18:45			281 250	1124	369 272	1317	650 522	2441
07:00		244	334	306	300	550	1100	19:00			247	1124	228	1317	475	2441
07:15		326		305		631		19:15			245		271		516	
07:30		363	1299	305	1257	668 707	2556	19:30 19:45			<ul><li>242</li><li>227</li></ul>	961	206	910	448 432	1871
07:45 08:00		366 337	1299	341 316	1257	653	2556	20:00			208	901	205 220	910	432	18/1
08:15		350		310		660		20:15			194		179		373	
08:30		345	1400	335	1200	680	2600	20:30			142	607	175	750	317	1456
08:45 09:00		368 319	1400	338 275	1299	706 594	2699	20:45 21:00			153 140	697	185 150	759	338 290	1456
09:15		252		262		514		21:15			119		132		251	
09:30		255	1071	288	1005	543	2426	21:30			121	402	150	F 40	271	1041
09:45 10:00		245 250	1071	240 266	1065	485 516	2136	21:45 22:00			112 100	492	117 100	549	229	1041
10:15		304		233		537		22:15			94		74		168	
10:30		277		243		520		22:30			83		74		157	
10:45 11:00		323 261	1154	247 239	989	570 500	2143	22:45 23:00			46 48	323	40 45	288	86 93	611
11:15		264		283		547		23:15			34		31		65	
11:30		270	. <del></del>	265	40	535		23:30			32		37		69	
11:45		245	1040	259	1046	504	2086	23:45			29	143	29	142	58	285
TOTALS			6969		6630		13599	TOTALS				11872		11912		23784
SPLIT %			51.2%		48.8%		36.4%	SPLIT %				49.9%		50.1%		63.6%
	DAUVTOTALO			NB		SB		EB	WB						To	otal
	DAILY TOTALS			0		0		18,841	18,542							,383
AM Peak Hour			07:30		07:45		07:45	PM Peak Hour				15.45		16.20		16:30
AM Pk Volume			1416		1302		07:45 2700	PM Pk Volume				15:45 1650		16:30 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			4 - 6 Peak Hour				16:00		16:30		16:30
7 - 9 Pk Volume			1416		1302			4 - 6 Pk Volume				1625		1554		3148
Pk Hr Factor	0.000 0.00	JU	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

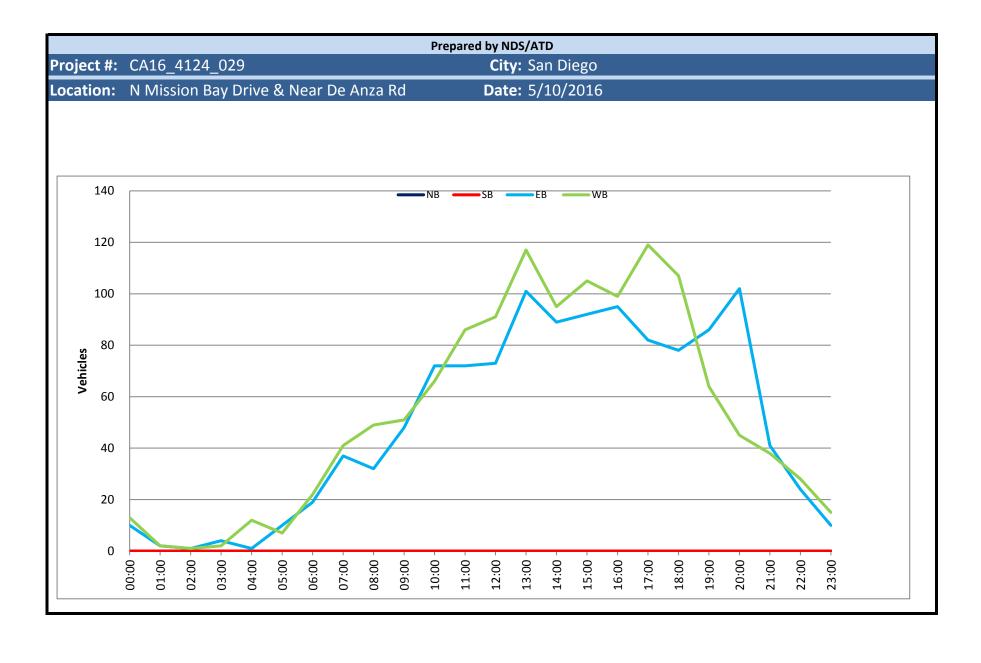
	D	AILY 1		15		NB		SB		EB		WB						To	otal
	U	AILY I	IOTA	ILO		10,004	1	1,255		0		0						21,	,259
AM Period	NB		SB		EB	WB		TOT	AL	PM Period	NB		SB		EB	WB		TO	TAL
00:00	19		12					31		12:00	136		158				<u> </u>	294	
00:15	12		6					18		12:15	154		157					311	
00:30	8		14					22		12:30	155		157					312	
00:45	7	46	7	39				14	85	12:45	152	597	152	624				304	1221
01:00	5		5					10		13:00	146		184					330	
01:15	8 9		3					11		13:15	173		185					358	
01:30 01:45	6	28	4	19				16 10	47	13:30 13:45	144 161	624	172 161	702				316 322	1326
02:00	10	20	5	13				15	77	14:00	141	024	165	702				306	1320
02:15	7		2					9		14:15	184		170					354	
02:30	11		2					13		14:30	248		170					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 2	15	5 5	21				12 7	36	15:30 15:45	179 252	816	<ul><li>272</li><li>234</li></ul>	989				451 486	1805
04:00	4	13	3	21				7	30	16:00	245	010	244	303		- <u> </u>	- <u> </u>	489	1803
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	7		22					29		17:00	224		258				<del></del>	482	
05:15	14		27					41		17:15	176		268					444	
05:30	22	60	46	1.16				68	245	17:30	197	774	296	1000				493	4050
05:45 06:00	26 38	69	51 38	146				77 76	215	17:45 18:00	174	771	266	1088				440	1859
06:00	39		58					97		18:15	164 151		239 218					403 369	
06:30	50		87					137		18:30	178		196					374	
06:45	67	194	114	297				181	491	18:45	151	644	191	844				342	1488
07:00	115		161					276		19:00	163		144					307	
07:15	142		193					335		19:15	137		147					284	
07:30	151		197					348		19:30	144		120					264	
07:45	161	569	159	710					1279	19:45	130	574	114	525				244	1099
08:00 08:15	173 172		167 197					340 369		20:00 20:15	123 116		109 96					232 212	
08:30	178		231					409		20:30	98		89					187	
08:45	206	729	214	809					1538	20:45	81	418	78	372				159	790
09:00	153		158					311		21:00	69		74					143	
09:15	138		126					264		21:15	98		67					165	
09:30	127		160					287		21:30	103		57					160	
09:45	113	531	142	586					1117	21:45	60	330	64	262				124	592
10:00 10:15	134		123					257		22:00 22:15	57 59		53 37					110 96	
10:30	146 138		145 165					291 303		22:30	39 44		29					73	
10:45	127	545	138	571					1116	22:45	28	188	28	147				56	335
11:00	114	<u> </u>	127	<u> </u>				241		23:00	29		12	,				41	555
11:15	163		155					318		23:15	26		18					44	
11:30	136		152					288		23:30	19		19					38	
11:45	149	562	174	608				323	1170	23:45	19	93	9	58				28	151
TOTALS		3346		3841					7187	TOTALS		6658		7414					14072
SPLIT %		46.6%		53.4%				•	33.8%	SPLIT %		47.3%		52.7%					66.2%
						NB		SB		ЕВ		WB						To	otal
	DA	AILY 1	OTA	ILS		10,004	1	1,255		0		0							,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	0		0		2817	4 - 6 Volume		1611		2179	0		0		3790
7 - 9 Peak Hour		08:00		08:00					08:00	4 - 6 Peak Hour		16:00		16:45					16:00
7 - 9 Pk Volume		729		809					1538	4 - 6 Pk Volume		840		1124					1931
Pk Hr Factor		0.885		0.876	0.00	0 0	0.000		0.915	Pk Hr Factor		0.857		0.930	0.0	00	0.000		0.973



# N Mission Bay Drive & Near De Anza Rd

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

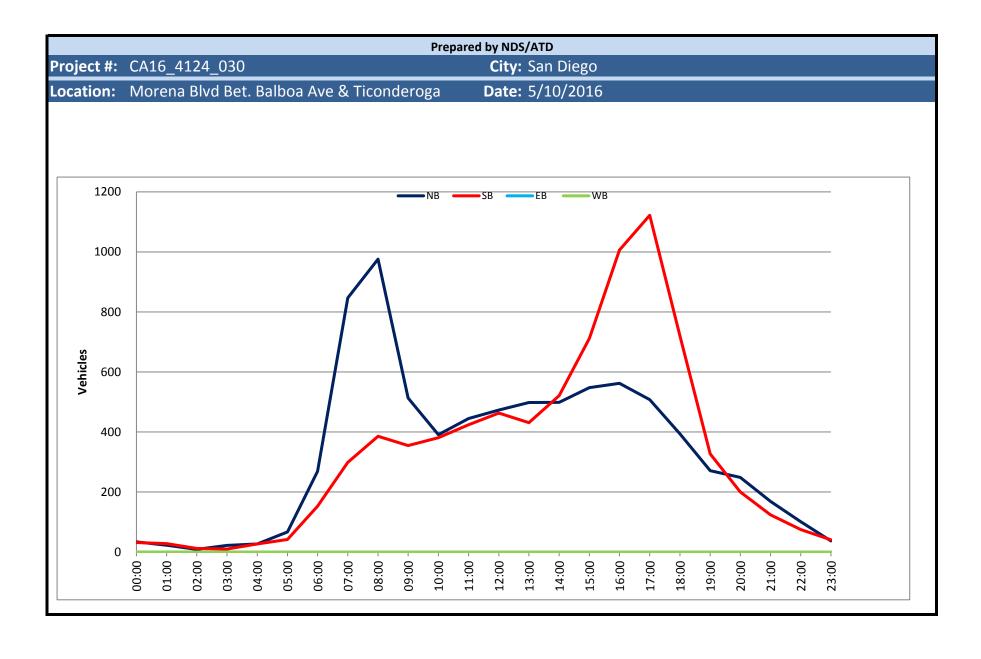
	DAILY TOTA	ıs		NB		SB		EB	WB						To	otal
	DAILI TOTA	LJ		0		0		1,181	1,275						2,4	456
AM Period	NB SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		0		1		1		12:00			18		30		48	
00:15		1		2		3		12:15			25		24		49	
00:30 00:45		8	10	9 1	13	17 2	23	12:30 12:45			15 15	73	21 16	91	36 31	164
01:00		1	10	1	15	2	23	13:00			24	7.5	31	<u> </u>	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 02:15		0		0 0		0		14:00 14:15			18 24		26 21		44 45	
02:30		0		0		0		14:30			30		24		54	
02:45		1	1	1	1	2	2	14:45			17	89	24	95	41	184
03:00		2		0		2		15:00			22		19		41	
03:15		2		1		3		15:15 15:30			19 25		35 20		54	
03:30 03:45		0	4	0	2	0	6	15:45			25 26	92	31	105	45 57	197
04:00		0	•	1		1	Ū	16:00			30		27	100	57	137
04:15		0		2		2		16:15			18		26		44	
04:30		0		2		2		16:30			23		24		47	
04:45 05:00		1 2	1		12	8 2	13	16:45 17:00			24 24	95	22 29	99	46 53	194
05:00		3		2		5		17:00 17:15			24 19		29 25		53 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 06:30		2		5		7 14		18:15 18:30			24 15		26 22		50 37	
06:45		9	19	5 7	22	10	41	18:45			15 14	78	20	107	3 <i>1</i>	185
07:00		6		7		13	'-	19:00			18	70	18	107	36	103
07:15		7		5		12		19:15			23		17		40	
07:30		11	<b></b>	13		24		19:30			28	0.0	11		39	150
07:45 08:00		13 8	37	16 13	41	29 21	78	19:45 20:00			17 39	86	18 14	64	35 53	150
08:00		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		8		13		21		21:00			14		11		25	
09:15 09:30		13 14		13 13		26 27		21:15 21:30			12 6		9 3		21 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	72	19	66	40	120	22:30			9	2.4	4	20	13	<b>5</b> 2
10:45 11:00		19 20	72	17 21	66	36 41	138	22:45 23:00			2	24		28	14 8	52
11:15		27		21		48		23:15			3		4		7	
11:30		15		21		36		23:30			0		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%
	DAILY TOTA	IS		NB		SB		EB	WB							otal
	DAILTIOTA			0		0		1,181	1,275						2,4	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	0.000	0.00	U	0.792		0.726		0.838



# Morena Blvd Bet. Balboa Ave & Ticonderoga St

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

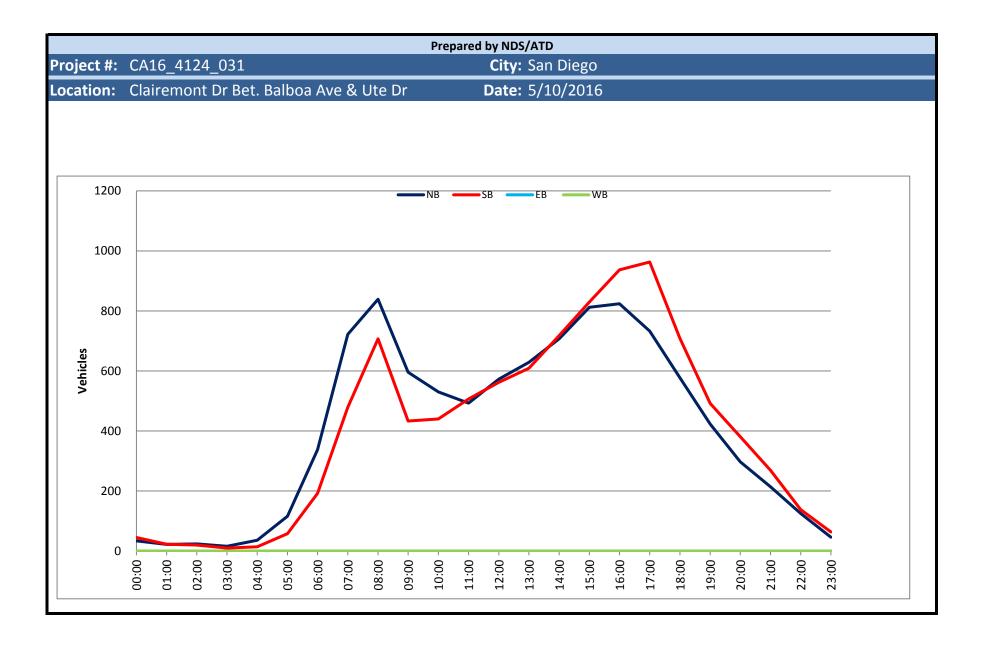
	ח	AILY 1	ΓΩΤΔ	AIS		NB	SB		EB		WB					To	otal
	U,	AILI		(L)		7,932	7,891		0		0					15,	823
AM Period	NB		SB		EB	WB	ТО	TAL	PM Period	NB		SB		EB	WB	TO	TAL
00:00	8		6				14		12:00	113		121				234	
00:15 00:30	12 8		12 11				24 19		12:15 12:30	133 116		111 114				244 230	
00:45	6	34	3	32			9	66	12:45	111	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				<ul><li>223</li><li>245</li></ul>	
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				274 323	
03:45	4 9	22	4	10			6 13	32	15:45	151	548	190 219	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	
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	<ul><li>265</li><li>265</li></ul>	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	321			115	338
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	370	95	360			263	1302	21:00	43	243	40	200			83	443
09:15	115		85				200		21:15	49		31				80	
09:30 09:45	107 123	513	93 82	355			200 205	868	21:30 21:45	48 29	169	19 34	124			67 63	293
10:00	113	313	93	333			206	000	22:00	36	109	19	124			55	293
10:15	98		91				189		22:15	31		26				57	
10:30	93 97	201	107	204			200	772	22:30 22:45	16	101	17 12	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 <b>5772</b>	23:45 TOTALS	/	37 4309	9	41 5742			16	78 <b>10051</b>
SPLIT %		62.8%		37.2%				36.5%	SPLIT %		42.9%		57.1%				63.5%
	D	AILY 1	ΓΩΤΔ	\IS		NB	SB		EB		WB						otal
	<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

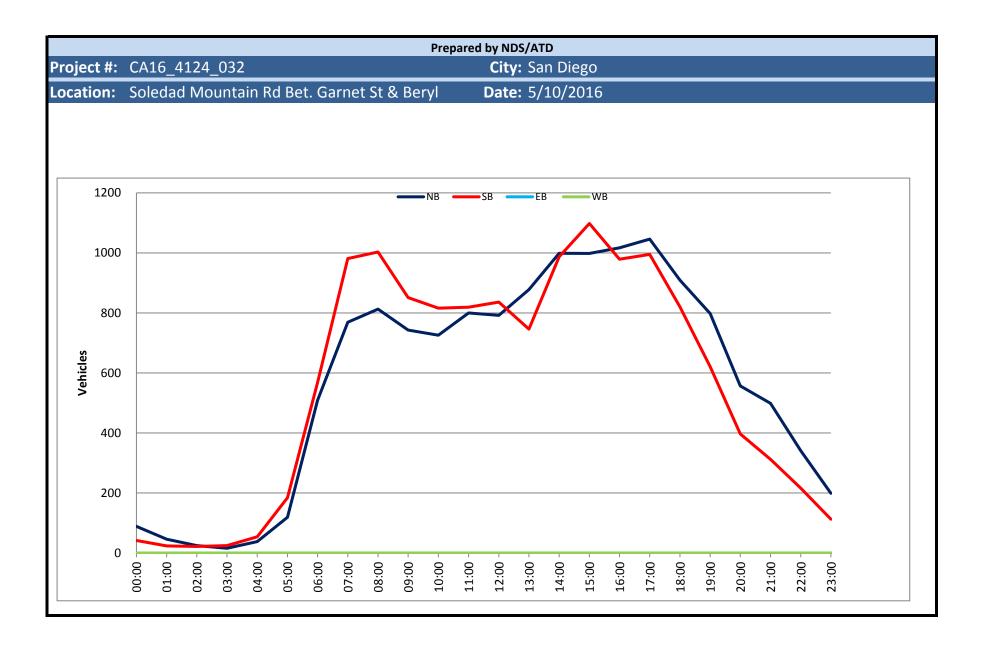
	D	AILY 1	ΓΩΤΔ	ıs		NB		SB		EB		WB							To	tal
		\IL!				9,726		9,599		0		0							19,3	<b>325</b>
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB	V	VB		TOT	ΓAL
00:00 00:15	5 11		18 9					23 20		12:00 12:15	147 117		135 139						82 56	
00:30	10		11					21		12:30	141		146						87	
00:45	8	34	7	45				15	79	12:45	168	573	142	562					10	1135
01:00 01:15	5 7		6 5					11 12		13:00 13:15	169 141		139 183						08 24	
01:30	5	22	8	20				13	1	13:30	156	620	135	500					91	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					<u>15</u> 00	1238
02:15	6		6					12		14:15	219		192					4	11	
02:30 02:45	5 4	24	3 5	20				8 9	44	14:30 14:45	172 172	707	163 207	718					35 79	1425
03:00	1		2					3		15:00	190	707	172	710				3	62	1123
03:15 03:30	2 5		2 2					4 7		15:15 15:30	159 180		216 248						75 28	
03:45	8	16	4	10				12	26	15:45	283	812	194	830					77	1642
04:00	4		3					7		16:00 16:15	229		199						28	
04:15 04:30	9 10		3 2					12 12		16:15 16:30	185 212		<ul><li>251</li><li>231</li></ul>						36 43	
04:45	13	36	6	14				19	50	16:45	198	824	256	937					54	1761
05:00 05:15	16 31		15 9					31 40		17:00 17:15	180 200		238 245						18 45	
05:30	31		16					47		17:30	186		246					4	32	
05:45 06:00	38 54	116	18 26	58				56 80	174	17:45 18:00	167 159	733	234	963					01 61	1696
06:15	52		37					89		18:15	139		192						31	
06:30	103	220	44 95	102				147	F20	18:30	146	<b>-77</b>	186	700					32	1205
06:45 07:00	129 165	338	85 147	192				214 312	530	18:45 19:00	133 105	577	128 112	708					61 17	1285
07:15	197		118					315		19:15	105		143					2	48	
07:30 07:45	176 184	722	115 99	479				291 283	1201	19:30 19:45	115 98	423	125 112	492					40 10	915
08:00	180	,	126	.,,				306	1201	20:00	86	123	113	132				1	99	313
08:15 08:30	189 244		173 215					362 459		20:15 20:30	86 64		79 105						65 69	
08:45	226	839	193	707				419	1546	20:45	61	297	84	381					45	678
09:00	180		107					287		21:00	65 63		78						43	
09:15 09:30	155 135		109 113					264 248		21:15 21:30	63 46		64 63						27 09	
09:45	126	596	104	433				230	1029	21:45	40	214	64	269				1	04	483
10:00 10:15	124 136		104 116					228 252		22:00 22:15	50 32		41 46						91 78	
10:30	134		116					250		22:30	24		27					į	51	
10:45 11:00	136 121	530	104 111	440				240 232	970	22:45 23:00	19 10	125	24 14	138					13 24	263
11:15	143		116					259		23:15	12		18					3	30	
11:30	108	402	140	E07				248	1000	23:30	16	A.C.	17 15	C A					33	110
11:45 TOTALS	121	493 3766	140	507 2928				261	1000 <b>6694</b>	23:45 TOTALS	8	46 5960	15	64 6671				4	23	110 <b>12631</b>
SPLIT %		56.3%		43.7%					34.6%			47.2%		52.8%						65.4%
J. 211 /0		20.370		.5.770					2					22.070						
	D	AILY 1	ГОТА	LS		NB 9,726		SB 9 599		EB 0		WB 0							To:	tal 325
						3,726		9,599				U							TO,	
AM Peak Hour		08:00		08:00					08:00	PM Peak Hour		15:45		16:45						15:45
AM Pk Volume Pk Hr Factor		839 0.860		707 0.822					1546 0.842	PM Pk Volume Pk Hr Factor		909 0.803		985 0.962						1784 0.935
7 - 9 Volume		1561		1186	0		0		2747	4 - 6 Volume		1557		1900		0	(	0		3457
7 - 9 Peak Hour		08:00		08:00						4 - 6 Peak Hour		16:00		16:45						16:00
7 - 9 Pk Volume Pk Hr Factor		839 0.860		707 0.822					1546 0.842	4 - 6 Pk Volume Pk Hr Factor		824 0.900		985 0.962						1761 0.970
Pk Hr Factor		0.860		0.822	0.000	U	0.000		0.842	FK TII FACTOI		0.900		0.902	U.	.000	0.0	000		0.970



# Soledad Mountain Rd Bet. Garnet St & Beryl St

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

	ח	AILY 1	ΓΩΤΔ	ıs		NB		SB		ЕВ		WB						1	otal
	U,	~!L! !				13,726		13,509		0		0						27	7,235
AM Period	NB		SB		ЕВ	WB		TO	TAL	PM Period	NB		SB		EB	W	В	T	OTAL
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	
00:45	12	89	10	42				22	131	12:45	186	792	192	836				378	
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	
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	1006
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	
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	
07:00	198	309	193 230	308				428	10//	19:00	248	909	195 194	820				442	
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	
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	
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	173 198		201 208					374 406		22:15 22:30	81 85		66 53					147 138	
10:30	198	726	208	816				411	1542	22:45	67	341	53 46	216				1138	
11:00	191		179					370		23:00	60	<u>-</u>	45					105	
11:15	198		207					405		23:15	47		22					69	
11:30 11:45	213 198	800	225 208	819				438 406	1619	23:30 23:45	40 52	199	27 19	113				67 71	312
11:45 TOTALS	TAQ	4693	208	5389					10082	TOTALS	32	9033	13	8120				/1	17153
SPLIT %		46.5%		53.5%					37.0%	SPLIT %		52.7%		47.3%					63.0%
	ם	AILY 1	ΓΩΤΔ	IS		NB		SB		EB		WB						7	otal
	<i>Di</i>	-TIL I				13,726		13,509		0		0						27	7,235
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	0.0	000	0.00	JU	0.977



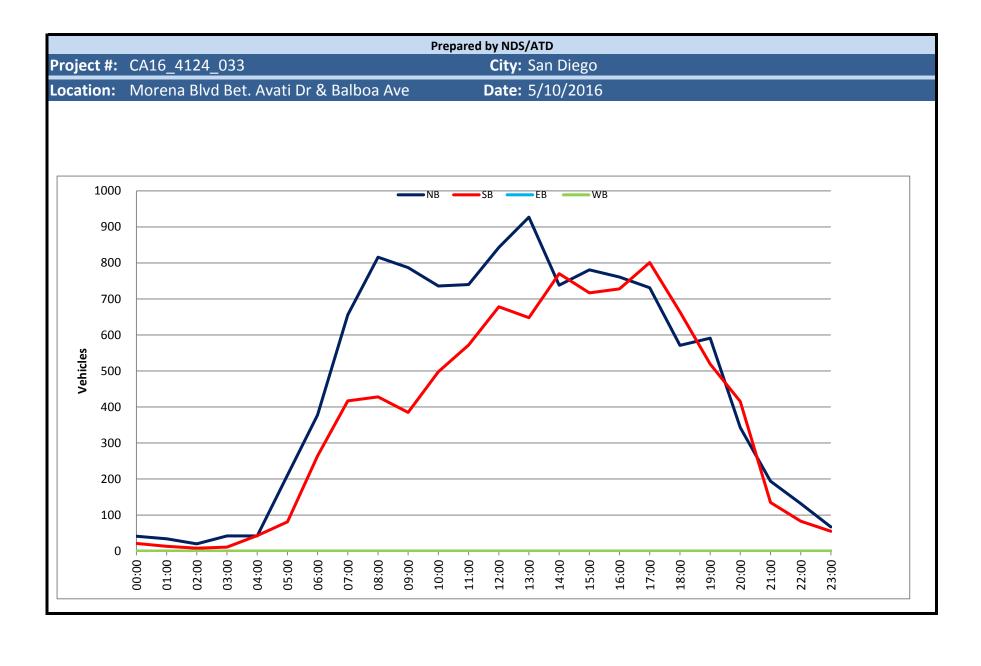
#### Prepared by NDS/ATD

## **VOLUME**

# Morena Blvd Bet. Avati Dr & Balboa Ave Ramps

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

	ח	AILY 1	rot v	15		NB		SB		EB		WB						To	otal
	D,	AILI		ILJ		11,182		8,954		0		0						20,	136
AM Period	NB		SB		EB	WB		TO	TAL	PM Period	NB		SB		EB	WB		TO	TAL
00:00	7		7					14		12:00	207		172					379	
00:15 00:30	12 12		2 9					14 21		12:15 12:30	214 218		180 158					394 376	
00:45	10	41	3	21				13	62	12:45	204	843	168	678				370	1521
01:00	7		2					9		13:00	234		169					403	
01:15 01:30	9 9		3					12 13		13:15 13:30	222 236		166 150					388 386	
01:45	9	34	4	13				13	47	13:45	235	927	163	648				398	1575
02:00	3		1					4		14:00	188		177					365	
02:15 02:30	4 6		3					7 8		14:15 14:30	205 163		185 238					390 401	
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		2 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		183					378	
04:15 04:30	10 12		10					20		16:15 16:30	196 195		164					360 374	
04:45	16	42	13 17	43				25 33	85	16:45	175	761	179 202	728				377	1489
05:00	21		14					35		17:00	199		236					435	
05:15	42		13 27					55		17:15	189		204					393	
05:30 05:45	56 92	211	27 27	81				83 119	292	17:30 17:45	186 157	731	187 174	801				373 331	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	0,0	94					201	0.12	19:00	174	0.1	149					323	
07:15	135		98					233		19:15	145		125					270	
07:30 07:45	186 228	656	107 118	417				293 346	1073	19:30 19:45	146 126	591	120 125	519				266 251	1110
08:00	238	030	94	117				332	1075	20:00	108	331	104	313				212	1110
08:15	191		113					304		20:15	100		130					230	
08:30 08:45	196 191	816	105 116	428				301 307	1244	20:30 20:45	72 63	343	104 77	415				176 140	758
09:00	211	010	99	720				310	1277	21:00	44	343	47	413				91	750
09:15	152		89					241		21:15	48		35					83	
09:30 09:45	178 246	787	96 101	385				274 347	1172	21:30 21:45	50 52	194	22 31	135				72 83	329
10:00	185	707	95	303				280	11/2	22:00	37	154	31	133				68	323
10:15	179		130					309		22:15	36		24					60	
10:30 10:45	170 202	736	136 137	498				306 339	1234	22:30 22:45	32 27	132	17 11	83				49 38	215
11:00	196	730	141	+30				337	1234	23:00	24	134	25	UJ				49	213
11:15	163		147					310		23:15	18		11					29	
11:30 11:45	184 197	740	159 125	572				343 322	1312	23:30 23:45	18 7	67	10 9	55				28 16	122
TOTALS	137	4503	123	2741				JLL	<b>7244</b>	TOTALS	,	6679	<u> </u>	6213				10	12892
										SPLIT %									
SPLIT %		62.2%		37.8%					36.0%	JFLII 70		51.8%		48.2%					64.0%
	D	AILY 1	ГОТА	LS		NB		SB		EB		WB							otal
						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 07:45		845 07:30					2317	4 - 6 Volume 4 - 6 Peak Hour		1492 16:15		1529 16:45					3021 16:30
7 - 9 Peak Hour 7 - 9 Pk Volume		07:45 853		07:30 432						4 - 6 Peak Hour 4 - 6 Pk Volume		16:15 765		16:45 829					16:30 1579
Pk Hr Factor		0.896		0.915	0.000	)	0.000		0.927	Pk Hr Factor		0.961		0.878	0.00		0.000		0.907



#### Morena Blvd N/O Balboa Ave

City: Pacific Beach

Project #: CA16\_4185\_001

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

7 - 9 Volume

7 - 9 Peak Hour

7 - 9 Pk Volume

Pk Hr Factor

07:45

0.851

07:30

0.879

SB NB EB **WB Total DAILY TOTALS** 11,271 12,663 23,934 **AM Period** EB **TOTAL PM Period** SB **TOTAL** NB SB **WB** NB EB **WB** 12:00 00:00 00:15 12:15 00:30 12:30 00:45 12:45 01:00 13:00 01:15 13:15 01:30 13:30 13:45 01:45 14:00 02:00 14:15 02:15 14:30 02:30 02:45 14:45 15:00 03:00 03:15 15:15 03:30 15:30 03:45 15:45 04:00 16:00 04:15 16:15 04:30 16:30 04:45 16:45 05:00 17:00 05:15 17:15 05:30 17:30 17:45 05:45 18:00 06:00 06:15 18:15 06:30 18:30 06:45 18:45 07:00 19:00 07:15 19:15 07:30 19:30 19:45 07:45 20:00 08:00 08:15 20:15 08:30 20:30 20:45 08:45 21:00 09:00 09:15 21:15 09:30 21:30 09:45 21:45 22:00 10:00 22:15 10:15 10:30 22:30 22:45 10:45 23:00 11:00 11:15 23:15 23:30 11:30 23:45 11:45 **TOTALS TOTALS SPLIT % SPLIT %** 64.9% 55.8% 44.2% 35.1% 42.4% 57.6% SB NB EB WB **Total DAILY TOTALS** 23,934 11,271 12,663 **AM Peak Hour** 11:30 11:45 11:45 **PM Peak Hour** 12:45 16:45 16:45 **PM Pk Volume AM Pk Volume** Pk Hr Factor 0.900 Pk Hr Factor 0.938 0.940 0.933 0.955 0.844

4 - 6 Volume

4 - 6 Peak Hour

4 - 6 Pk Volume

Pk Hr Factor

07:45

0.862

16:45

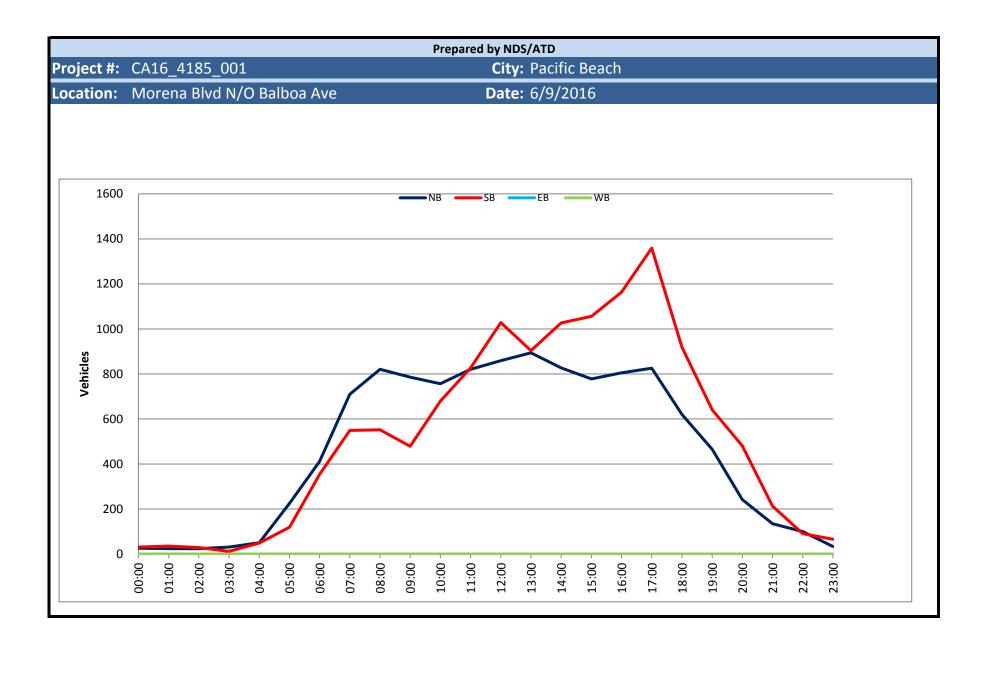
0.844

16:45

0.900

17:00

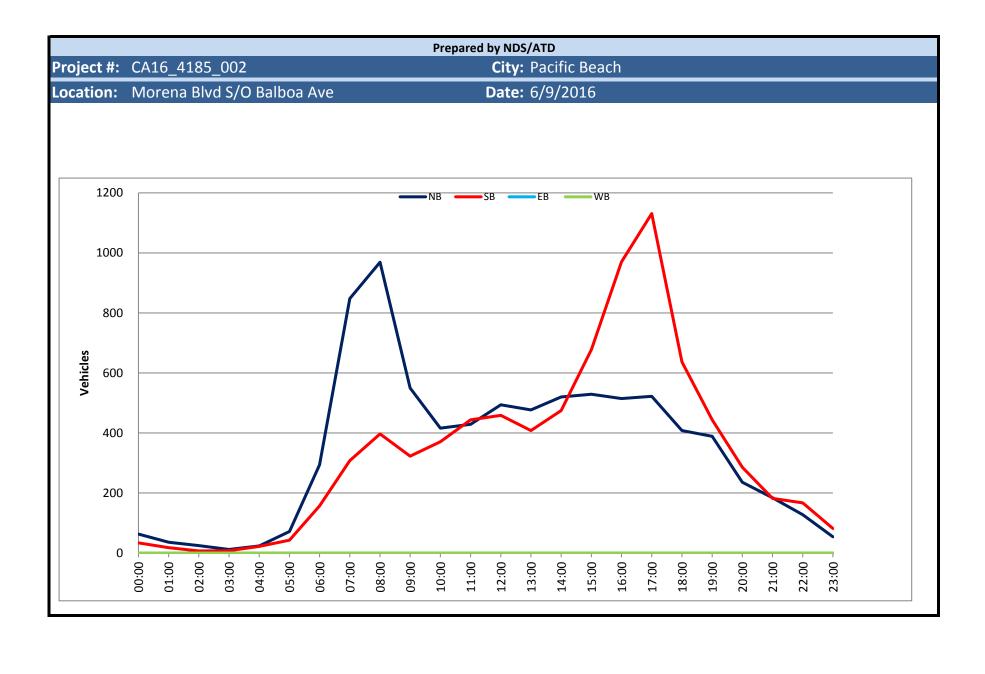
0.930



### Morena Blvd S/O Balboa Ave

Day: Thursday Date: 6/9/2016

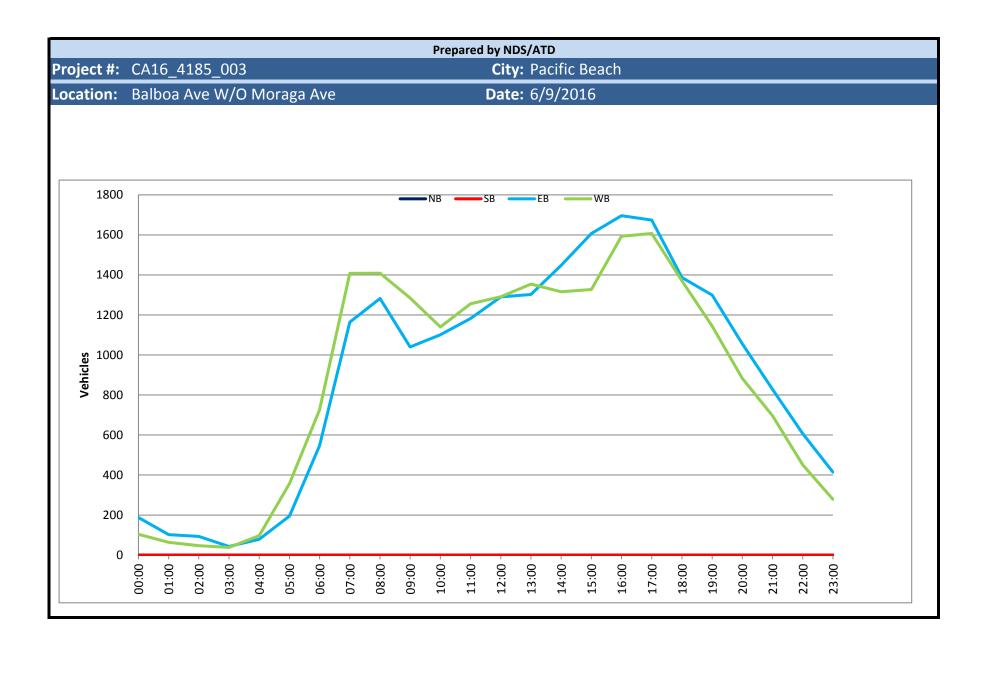
	D	AILY 1	ΓΩΤΔ	AIS		NB		SB		EB		WB						To	otal
				(L)		8,194		8,051		0		0						16	,245
<b>AM Period</b>	NB		SB		EB	WB		TO <sup>*</sup>	TAL	PM Period	NB		SB		EB	WE	3	TC	TAL
00:00	17		16					33		12:00	119		109					228	
00:15 00:30	20 16		5 6					25 22		12:15 12:30	142 118		102 117					244 235	
00:45	10	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 16:20	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		9					19	.0	17:00	118	<u> </u>	320	<u> </u>				438	2 100
05:15	21		7					28		17:15	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	12	27	73				68	113	18:00	104	322	192	1131				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			1	181	431	19:00	102	400	123	037				225	1043
07:15	218		65					283		19:15	108		102					210	
07:30	210	0.40	93 107	200				303	1156	19:30 19:45	100	200	104	444				204	ດລາ
07:45 08:00	282 270	848	107 78	308			-	389 348	1156	20:00	79 68	389	115 75	444				194 143	833
08:15	226		98					324		20:15	65		80					145	
08:30	230	0.00	99	207				329	1266	20:30	52	226	62	200				114	F22
08:45 09:00	243 190	969	122 82	397				365 272	1366	20:45 21:00	51 66	236	69 71	286				120 137	522
09:15	129		83					212		21:15	38		51					89	
09:30	108		75	222				183	0=0	21:30	36	404	33	100				69	2.55
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
10:00	111		104					215		22:15	35		51					86	
10:30	105		92					197		22:30	27		38					65	
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
11:00	92 98		107					205		23:15	20		38 21					41	
11:30	119		134					253		23:30	8		13					21	
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	A II V I	TOTA	US		NB		SB		EB		WB						To	otal
	- Di	AILY 1	IOTA	ILD.		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		3.000		2.323



### Balboa Ave W/O Moraga Ave

Day: Thursday Date: 6/9/2016

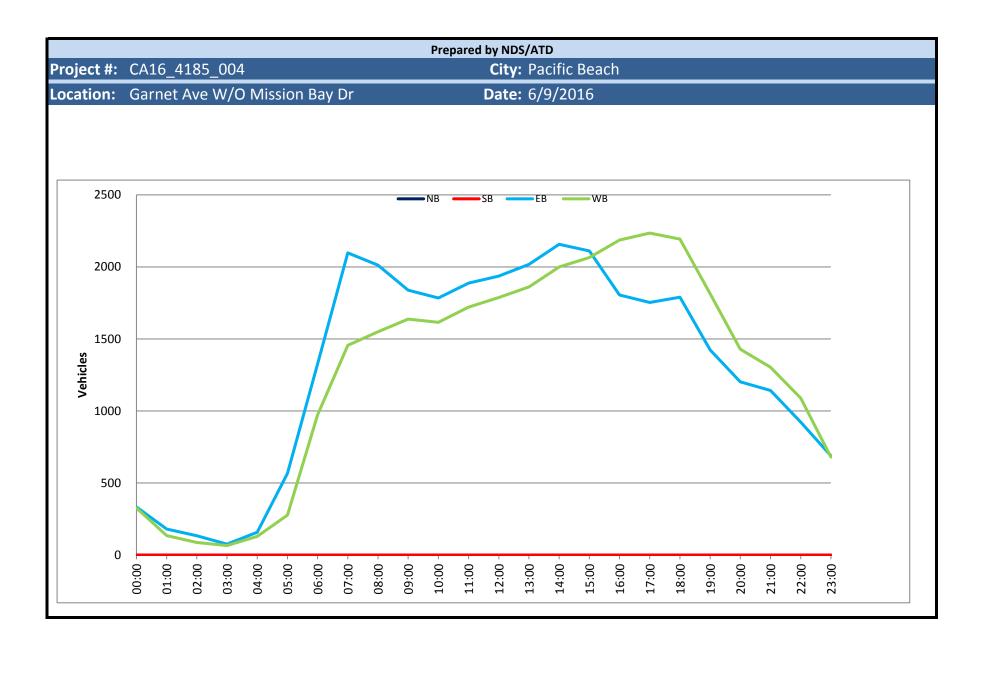
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		21,625	21,242						42,	,867
AM Period	NB SB	EB		WB		TO	TAL	PM Period	NB	SB	EB		WB		ТО	TAL
00:00		50		33		83		12:00			317		309		626	
00:15		61		29		90	'	12:15			330		344		674	
00:30		40		20		60	1	12:30			306		291		597	
00:45		37	188	22	104	59	292	12:45			337	1290	347	1291	684	2581
01:00		36		18		54		13:00			333		335		668	
01:15 01:30		21 23		17 16		38 39		13:15 13:30			283		326 344		609 680	
01:45		23 22	102	16 13	64	35	166	13:45			336 350	1302	344 349	1354	699	2656
02:00		28	102	9	04	37	100	14:00			327	1302	342	1334	669	2030
02:15		30		14		44		14:15			334		311		645	
02:30		24		13		37		14:30			411		342		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		10		12		22		15:30			423		357		780	
03:45		7	43	15	38	22	81	15:45			411	1607	316	1327	727	2934
04:00		16		19		35		16:00 16:15			412		361		773	
04:15 04:30		17 20		17 29		34 49		16:15			421 423		393 410		814 833	
04:45		26	79	32	97	58	176	16:45			440	1696	410	1593	869	3289
05:00		29	13	52	<i>J</i>	81	170	17:00			399	1030	402	1000	801	3203
05:15		52		72		124		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		103		148		251		18:15			350		381		731	
06:30		177		194		371		18:30			342		314		656	
06:45		172	547	256	726	428	1273	18:45			353	1387	293	1370	646	2757
07:00		214		299		513		19:00			364		332		696	
07:15 07:30		275 341		344 395		619 736		19:15 19:30			345 327		296 277		641 604	
07:45		334	1164	370	1408	704	2572	19:45			263	1299	239	1144	502	2443
08:00		329	1104	355	1400	684	2372	20:00			273	1233	256	1144	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			254		203		457	
09:15		251		317		568		21:15			211		197		408	
09:30		229	1010	315	400=	544	2225	21:30			179	000	158	606	337	1504
09:45		277	1040	307	1285	584	2325	21:45			184	828	138	696	322	1524
10:00 10:15		281		260		541 576		22:00 22:15			179		167		346	
10:15		252 276		324 273		549		22:30			155 152		109 98		264 250	
10:45		292	1101	283	1140	575	2241	22:45			121	607	96 77	451	198	1058
11:00		289	1101	285	±± <del>1</del> 0	574	T	23:00			119	507	79	191	198	1030
11:15		298		305		603		23:15			97		79		176	
11:30		296		317		613		23:30			111		71		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%
				NB		SB		EB	WB						To	otal
	DAILY TOTALS			0		0		21,625	21,242							,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			0.952		0.927		0.938	Pk Hr Factor				0.966		0.964		0.960
. K III I detel	0.000		0.33L		0.521		0.000		3.000	0.000		0.500		0.504		3.300



### Garnet Ave W/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

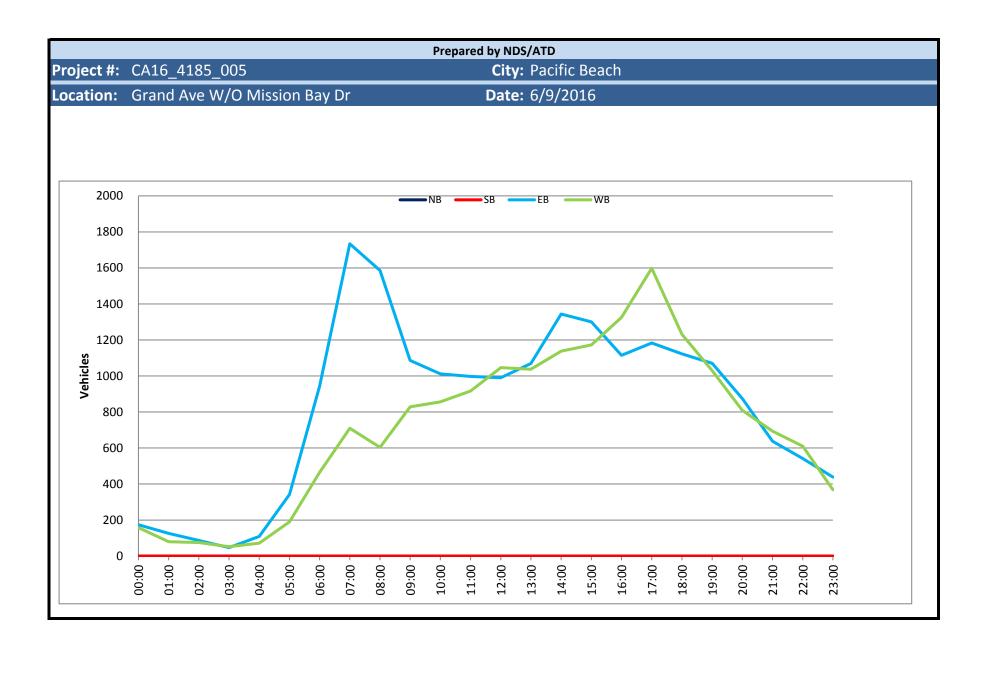
	DAILY TOTALS			NB		SB		EB	WB						To	otal
	DAILT TOTALS			0		0		31,342	30,616						61,	,958
AM Period	NB SB	ЕВ		WB		ТО	TAL	PM Period	NB	SB	ЕВ		WB		ТО	TAL
00:00		142		127		269		12:00			450		406		856	
00:15		100		122		222		12:15			509		472		981	
00:30		44		29		73		12:30			516		443		959	
00:45		48	334	49	327	97	661	12:45			461	1936	467	1788	928	3724
01:00		61		43		104 87		13:00			514		476		990	
01:15 01:30		42 39		45 22		61		13:15 13:30			481 519		474 451		955 970	
01:45		39	181	25	135	64	316	13:45			503	2017	460	1861	963	3878
02:00		44	101	29	133	73	310	14:00			545	2017	516	1001	1061	3070
02:15		36		15		51		14:15			534		490		1024	
02:30		34		15		49		14:30			567		510		1077	
02:45		20	134	28	87	48	221	14:45			511	2157	484	2000	995	4157
03:00		19		13		32		15:00			544		514		1058	
03:15		20		19		39		15:15			532		514		1046	
03:30		21	7.0	15	66	36	4.42	15:30			493	2444	514	2005	1007	4476
03:45 04:00		16 26	76	19	66	35 48	142	15:45 16:00			542 490	2111	523	2065	1065 1018	4176
04:00 04:15		43		22 23		48 66		16:15			435		528 566		1018	
04:30		43		34		76		16:30			460		565		1025	
04:45		47	158	51	130	98	288	16:45			420	1805	527	2186	947	3991
05:00		67	130	40	130	107	200	17:00			451	1005	552	2100	1003	3331
05:15		115		51		166		17:15			440		577		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	1326	356	972	750	2298	18:45			414	1790	543	2193	957	3983
07:00 07:15		468		383		851		19:00			399		504		903	
07:15 07:30		524 545		362 359		886 904		19:15 19:30			385 340		444 437		829 777	
07:45		560	2097	352	1456	912	3553	19:45			299	1423	428	1813	727	3236
08:00		481	2037	376	1430	857	3333	20:00			269	1423	374	1015	643	3230
08:15		498		369		867		20:15			308		384		692	
08:30		526		403		929		20:30			331		352		683	
08:45		507	2012	402	1550	909	3562	20:45			294	1202	319	1429	613	2631
09:00		490		413		903		21:00			313		319		632	
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		371 429		781 861		22:15 22:30			232		310		542 447	
10:30 10:45		433 462	1784	428 437	1615	899	3399	22:30 22:45			216 205	922	231 229	1089	447	2011
11:00		402	1/04	399	1013	826	3333	23:00			183	JLL	213	1003	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%
				NB		SB		EB	WB						I	otal
	DAILY TOTALS															
				0		0		31,342	30,616						61,	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			0.942		0.962		0.959	Pk Hr Factor				0.921		0.968		0.974
	3,00				002				3,030	0.000				2.000		



### Grand Ave W/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

	DAILY	TOTALS			NB		SB		EB	WB						To	otal
	DAILI	IOIALS			0		0		19,930	17,064						36,	,994
AM Period	NB	SB	EB		WB		ТО	TAL	PM Period	NB	SB	EB		WB		TO	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	222	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	<del></del>	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	17	11	<i>52</i>	33	33	16:00			290	1300	289	16	579	_ ,, _
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			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	4704	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		445	
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		173		410		23:00			122	<del>_</del>	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%
					ND		CD			W/D							tal
	DAILY	TOTALS			NB 0		SB 0		19 930	WB 17,064							otal ,994
					- 0		U		19,930	17,004						30,	JJ4
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				3320		1314		4634	4 - 6 Volume				2298		2923		5221
7 - 9 Peak Hour				07:15		07:00			4 - 6 Peak Hour				16:45		17:00		17:00
7 - 9 Pk Volume				1798		710			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

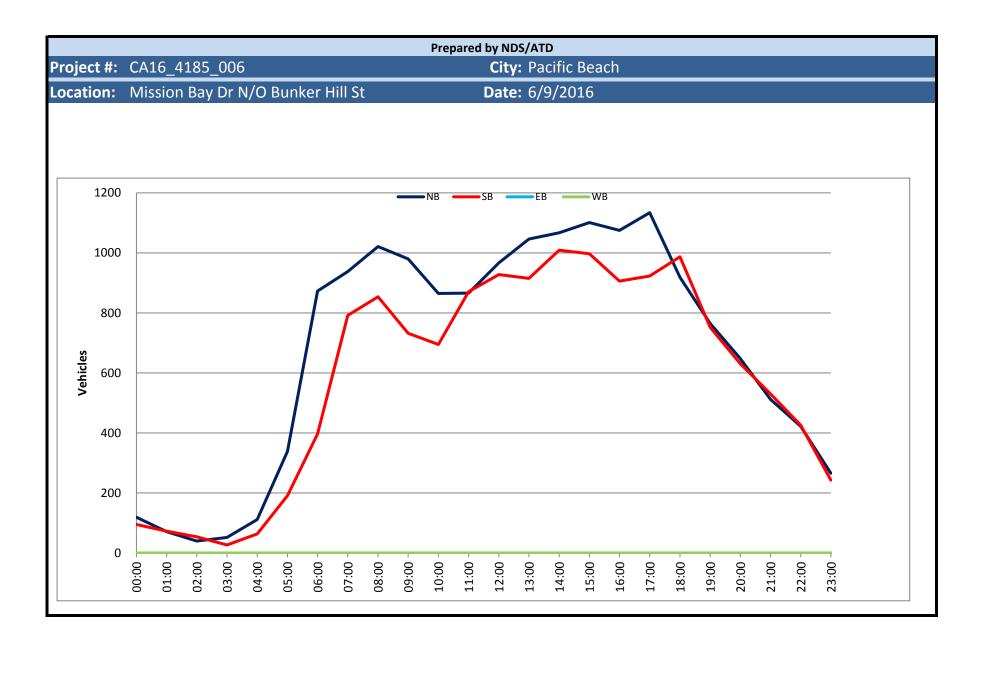
City: Pacific Beach

Project #: CA16\_4185\_006

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

SB **WB** NB EB **Total DAILY TOTALS** 16,198 14,092 30,290 **TOTAL** PM Period **AM Period** NB EB **WB** SB **WB TOTAL** SB NB EB 00:00 12:00 00:15 12:15 12:30 00:30 00:45 12:45 01:00 13:00 01:15 13:15 01:30 13:30 13:45 01:45 14:00 02:00 02:15 14:15 14:30 02:30 02:45 14:45 15:00 03:00 03:15 15:15 03:30 15:30 03:45 15:45 04:00 16:00 04:15 16:15 04:30 16:30 04:45 16:45 05:00 17:00 05:15 17:15 05:30 17:30 17:45 05:45 18:00 06:00 06:15 18:15 06:30 18:30 06:45 18:45 19:00 07:00 07:15 19:15 07:30 19:30 19:45 07:45 20:00 08:00 08:15 20:15 08:30 20:30 20:45 08:45 21:00 09:00 09:15 21:15 09:30 21:30 09:45 21:45 22:00 10:00 22:15 10:15 22:30 10:30 392 1560 22:45 170 848 10:45 865 179 695 23:00 11:00 11:15 23:15 23:30 11:30 453 1737 23:45 11:45 112 509 **TOTALS TOTALS SPLIT %** 43.6% 36.7% SPLIT % 51.8% 48.2% 63.3% 56.4%

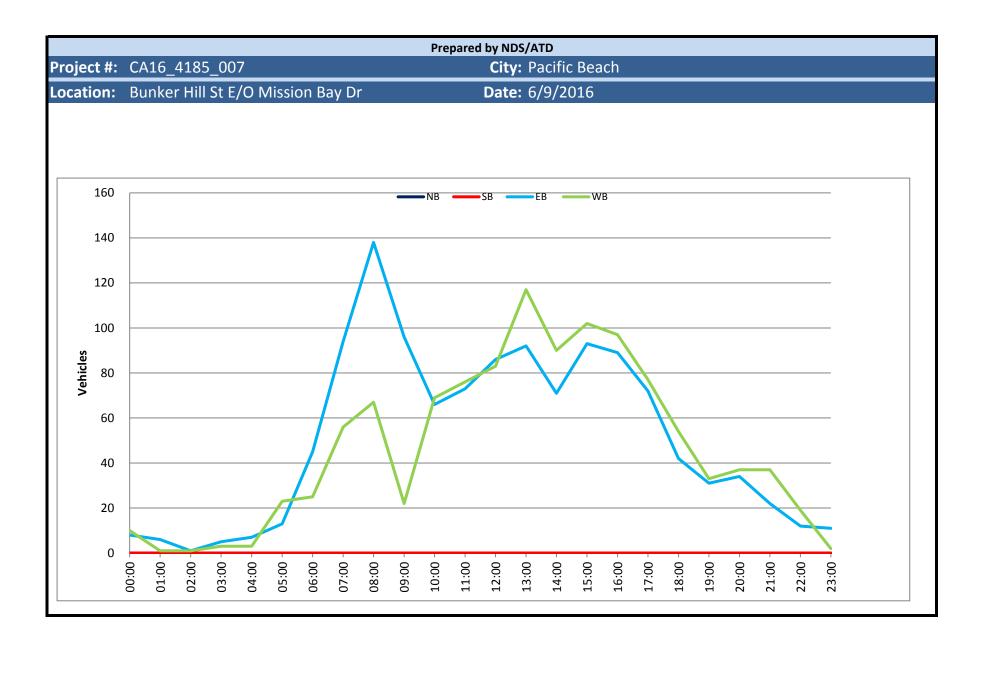
	DAILY TO	TALS	_	NB 5,198	SB 14,092	EB 0	WB 0				Total 30,290
				,,_55	,,,,						<b>3</b> 0,230
AM Peak Hour	08:30	11:45			08:00	PM Peak Hour	16:45	14:30			15:00
AM Pk Volume	1045	929			1875	PM Pk Volume	1142	1016			2098
Pk Hr Factor	0.947	0.922			0.905	Pk Hr Factor	0.949	0.981			0.979
7 - 9 Volume	1959	1646	0	0	3605	4 - 6 Volume	2209	1829	0	0	4038
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:45	17:00			17:00
7 - 9 Pk Volume	1021	854			1875	4 - 6 Pk Volume	1142	923			2057
Pk Hr Factor	0.925	0.882			0.905	Pk Hr Factor	0.949	0.974			0.974



### Bunker Hill St E/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

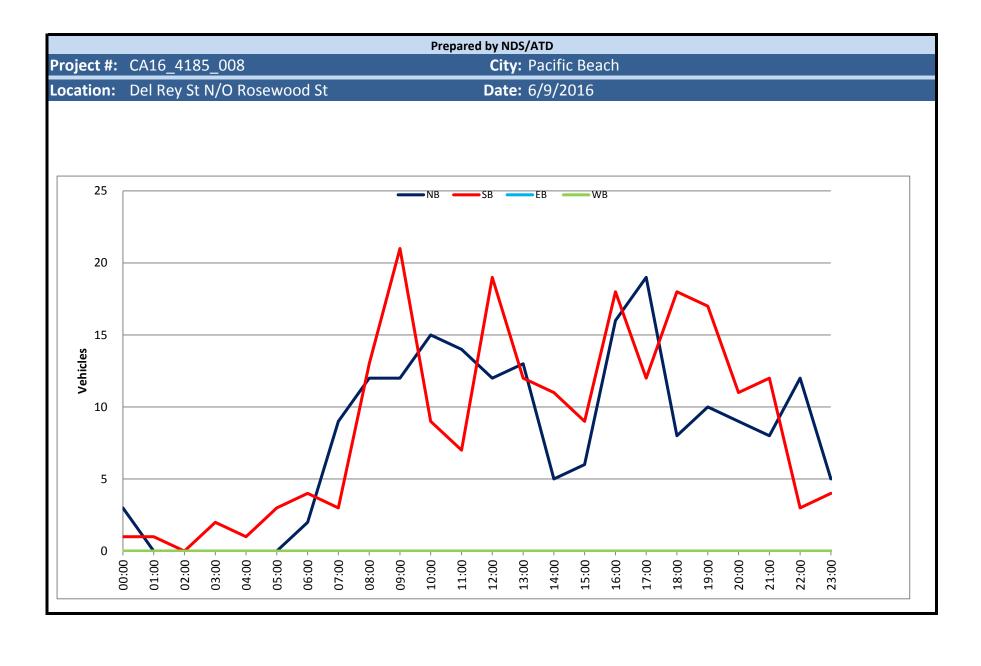
AM Period   NB   SB   EB   WB   TOTAL   PM Period   NB   SB   TOTAL   PM Period   NB   SB   EB   WB   TOTAL   PM Period   NB   SB   TOTAL   PM Period   NB   TOTAL   PM Period   TOTAL   TOTAL   TOTAL   TOTAL   TOTAL   TOTAL
00:00         2         4         6         12:00         19         21         40           00:15         3         4         7         12:15         23         24         47           00:30         3         1         4         12:15         22         22         24         47           00:45         0         8         1         10         1         18         12:45         22         86         16         83         38           01:00         4         0         4         13:00         20         21         41           01:15         1         0         1         13:15         21         35         56           01:30         1         1         1         2         13:30         30         38         68           01:45         0         6         0         1         0         1         14         14:00         12         22         31         17         40           02:15         0         0         0         1         14:00         12         22         43         40           02:15         0         0         0         14:14:30
00:15         3         4         7         12:15         23         24         47           00:30         3         1         1         18         12:30         22         22         24         47           00:45         0         8         1         10         1         18         12:45         22         86         16         83         38           01:00         4         0         4         13:00         20         21         41         41         13:15         21         23         56         60         60         11         1         13:15         21         22         22         31         74         44         40         13:15         21         23         56         60         60         1         0         7         13:45         21         92         23         117         44         40         20:30         30         38         68         68         68         40         20         21         43         40         20:20         21         21         92         23         117         44         44         40         20:20         20         21         41         41
00:30         3         1         4         12:30         22         22         24         44           00:45         0         8         1         10         1         18         12:45         22         86         16         83         38           01:00         4         0         0         4         13:00         20         21         41           01:35         1         0         1         13:15         21         35         56           01:35         0         6         0         1         0         7         13:45         21         92         23         117         44           02:00         0         1         1         14:00         12         28         40           02:15         0         0         0         0         14:15         21         22         43           02:30         1         0         1         14:30         18         19         37           02:30         1         0         1         14:45         20         71         21         90         41           03:00         2         0         2         15:50
00:45         0         8         1         10         1         18         12:45         22         86         16         83         38           01:00         4         0         4         13:00         20         21         35         56           01:30         1         1         1         2         13:30         30         38         68           01:35         0         6         0         1         0         7         13:45         21         92         23         117         44           02:00         0         0         1         1         14:00         12         28         40           02:15         0         0         0         1         14:15         21         22         43           02:30         1         0         0         1         14:130         18         19         37           02:45         0         1         0         1         0         2         14:45         20         71         21         90         41           03:00         2         0         2         15:00         15         16         31         55     <
01:00         4         0         4         13:00         20         21         41           01:15         1         0         1         13:15         21         35         56           01:30         1         1         1         2         13:30         30         38         68           01:45         0         6         0         1         0         7         13:45         21         92         23         117         44           02:00         0         1         1         14:00         12         28         40           02:15         0         0         0         1         11         14:00         12         22         43           02:30         1         0         1         1         14:35         20         71         21         90         37           02:45         0         1         0         1         14:45         20         71         21         90         37         90         37         90         37         90         37         90         33         90         15         16         31         90         15         16         31
01:30         1         1         1         2         13:30         30         38         68           01:45         0         6         0         1         0         7         13:45         21         92         23         117         44           02:00         0         1         1         14:00         12         28         40           02:15         0         0         0         0         14:15         21         22         43           02:30         1         0         1         14:30         18         19         37           02:45         0         1         0         1         14:30         18         19         37           03:00         2         0         2         15:10         15         16         31           03:01         1         1         2         15:15         17         22         39           03:30         1         1         1         2         15:35         17         2         39           03:45         1         5         1         3         2         8         15:45         37         93         33
01:45         0         6         0         1         0         7         13:45         21         92         23         117         44           02:00         0         1         1         14:00         12         28         40           02:30         1         0         0         1         14:30         18         19         37           02:45         0         1         0         1         0         2         14:45         20         71         21         90         41           03:00         2         0         1         0         2         15:00         15         16         31           03:05         1         1         1         2         15:00         15         16         31           03:30         1         1         1         2         15:30         24         31         55           03:345         1         5         1         3         2         8         15:45         37         93         33         102         70           04:00         1         1         0         1         16:00         26         13         39
02:00         0         1         1         14:00         12         28         40           02:15         0         0         0         14:15         21         22         43           02:30         1         0         0         1         14:30         18         19         37           02:45         0         1         0         1         0         2         14:45         20         71         21         90         41           03:00         2         0         2         15:00         15         16         31         11         1         2         15:15         17         22         39         33         102         70         31         35         31         35         31         35         31         35         31         35         32         8         15:45         37         93         33         102         70         40         40         40         41
02:15         0         0         14:15         21         22         43           02:30         1         0         1         14:30         18         19         37           02:45         0         1         0         1         14:30         18         19         37           03:00         2         0         1         0         2         14:45         20         71         21         90         41           03:00         2         0         1         0         2         15:00         15         16         31           03:15         1         1         1         2         15:15         17         22         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           04:00         1         0         1         16:00         26         13         39           04:15         0         0         0         16:15         26         23         49
02:45         0         1         0         2         14:45         20         71         21         90         41           03:00         2         0         2         15:00         15         16         31           03:15         1         1         1         2         15:15         17         22         39           03:30         1         1         1         2         15:30         24         31         55           03:45         1         5         1         3         2         8         15:45         37         93         33         102         70           04:00         1         0         1         16:00         26         13         39         04:15         26         23         49         04:30         2         2         2         4         16:30         18         35         53         04:45         19         89         26         97         45           05:00         2         2         4         6         17:00         22         21         43           05:15         3         2         5         17:15         18         22         40 </th
03:00         2         0         2         15:00         15         16         31           03:15         1         1         1         2         15:15         17         22         39           03:30         1         1         1         2         15:30         24         31         55           03:45         1         5         1         3         2         8         15:45         37         93         33         102         70           04:00         1         1         0         1         16:00         26         13         39         04:15         26         23         49         04:15         26         23         49         04:30         2         2         2         4         16:30         18         35         53         53         04:45         4         7         1         3         5         10         16:45         19         89         26         97         45         45         05:15         18         3         2         5         17:15         18         22         24         40         05:30         17:45         18         17:45         15         72
03:15         1         1         1         2         15:15         17         22         39           03:30         1         1         1         2         15:30         24         31         55           03:45         1         5         1         3         2         8         15:45         37         93         33         102         70           04:00         1         0         1         16:00         26         13         39         04:15         26         23         49         04:30         22         2         2         4         16:30         18         35         53         04:45         4         7         1         3         5         10         16:45         19         89         26         97         45         05:30         04:45         4         7         1         3         5         10         16:45         19         89         26         97         45         05:00         22         22         21         4         05:30         18         22         24         06:30         17:00         17         13         3         2         5         17:15         18
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04:00         1         0         1         16:00         26         13         39           04:15         0         0         0         16:15         26         23         49           04:30         2         2         2         4         16:30         18         35         53           04:45         4         7         1         3         5         10         16:45         19         89         26         97         45           05:00         2         4         6         17:00         22         21         43           05:15         3         2         5         17:15         18         22         40           05:30         4         11         15         17:30         17         13         30           05:45         4         13         6         23         10         36         17:45         15         72         21         77         36           06:00         5         0         5         18:00         10         25         35           06:15         16         2         18         18:15         9         12         21
04:15       0       0       0       16:15       26       23       49         04:30       2       2       2       4       16:30       18       35       53         04:45       4       7       1       3       5       10       16:45       19       89       26       97       45         05:00       2       4       6       17:00       22       21       43         05:15       3       2       5       17:15       18       22       40         05:30       4       11       15       17:30       17       13       30         05:45       4       13       6       23       10       36       17:45       15       72       21       77       36         06:00       5       0       5       18:00       10       25       35         06:15       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 </th
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         05:00       2       4       6       17:00       22       21       43         05:15       3       2       5       17:15       18       22       40         05:30       4       11       15       17:30       17       13       30         05:45       4       13       6       23       10       36       17:45       15       72       21       77       36         06:05       5       0       5       18:00       10       25       35         06:15       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         07:00       19       13       32       19:0
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05:15         3         2         5         17:15         18         22         40           05:30         4         11         15         17:30         17         13         30           05:45         4         13         6         23         10         36         17:45         15         72         21         77         36           06:00         5         0         5         18:00         10         25         35           06:15         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           07:00         19         13         32         19:00         16         9         25           07:15         19         12         31         19:15         6         4         10           07:30         23         15         38         19:30         2         9         11
05:30       4       11       15       17:30       17       13       30         05:45       4       13       6       23       10       36       17:45       15       72       21       77       36         06:00       5       0       5       18:00       10       25       35         06:15       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         07:00       19       13       32       19:00       16       9       25         07:15       19       12       31       19:15       6       4       10         07:30       23       15       38       19:30       2       9       11
05:45         4         13         6         23         10         36         17:45         15         72         21         77         36           06:00         5         0         5         18:00         10         25         35           06:15         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           07:00         19         13         32         19:00         16         9         25           07:15         19         12         31         19:15         6         4         10           07:30         23         15         38         19:30         2         9         11
06:00       5       0       5       18:00       10       25       35         06:15       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         07:00       19       13       32       19:00       16       9       25         07:15       19       12       31       19:15       6       4       10         07:30       23       15       38       19:30       2       9       11
06:15       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         07:00       19       13       32       19:00       16       9       25         07:15       19       12       31       19:15       6       4       10         07:30       23       15       38       19:30       2       9       11
06:45         11         45         12         25         23         70         18:45         7         42         7         54         14           07:00         19         13         32         19:00         16         9         25           07:15         19         12         31         19:15         6         4         10           07:30         23         15         38         19:30         2         9         11
07:00       19       13       32       19:00       16       9       25         07:15       19       12       31       19:15       6       4       10         07:30       23       15       38       19:30       2       9       11
07:15       19       12       31       19:15       6       4       10         07:30       23       15       38       19:30       2       9       11
<b>07:30</b> 23 15 <b>38 19:30</b> 2 9 11
<b>07:45</b> 33 94 16 56 49 150 <b>19:45</b> 7 31 11 33 18
08:00       29       21       50       20:00       11       7       18         08:15       29       16       45       20:15       6       13       19
08:30     33     14     47     20:30     8     14     22
<b>08:45</b> 47 138 16 67 63 205 <b>20:45</b> 9 34 3 37 12
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
<b>10:00</b> 16 11 27 <b>22:00</b> 1 8 9
<b>10:15</b> 20 23 43 <b>22:15</b> 1 4 5
10:30 18 17 35 22:30 4 0 4 10:45 66 18 60 20 135 22:45
10:45     12     66     18     69     30     135     22:45     6     12     7     19     13       11:00     21     15     36     23:00     5     2     7
11:15   15   50   25:50   11:15   3   0   3   3   11:15   3   0   3   3   11:15   3   12:15   3   3   12:15   3   12:15   3   3   12:15   3   12:15   3   3   12:1
<b>11:30</b> 20 16 <b>36 23:30</b> 3 0 3
11:45     15     73     20     76     35     149     23:45     0     11     0     2     0
TOTALS         552         356         908         TOTALS         655         748
SPLIT %         60.8%         39.2%         39.3%         SPLIT %         46.7%         53.3%
DALLY TOTALS NB SB EB WB Total
DAILY TOTALS    10   10   10   10   10   10   10   1
<b>AM Peak Hour</b> 08:15 11:45 <b>08:15 PM Peak Hour</b> 15:30 13:15
<b>AM Pk Volume</b> 149 87 <b>216 PM Pk Volume</b> 113 124
Pk Hr Factor         0.793         0.906         0.857         Pk Hr Factor         0.764         0.816
<b>7 - 9 Volume</b> 0 232 123 <b>355 4 - 6 Volume</b> 0 0 161 174
<b>7 - 9 Peak Hour</b> 08:00 07:30 <b>08:00 4 - 6 Peak Hour</b> 16:00 16:15
7 - 9 Pk Volume         0         138         68         205         4 - 6 Pk Volume         0         0         89         105           Pk Hr Factor         0.000         0.000         0.734         0.810         0.813         Pk Hr Factor         0.000         0.000         0.856         0.750
1 K 111 1 actor 0.000 0.734 0.010 0.015 1 K 111 1 actor 0.000 0.000 0.000 0.750



### Del Rey St N/O Rosewood St

Day: Thursday Date: 6/9/2016

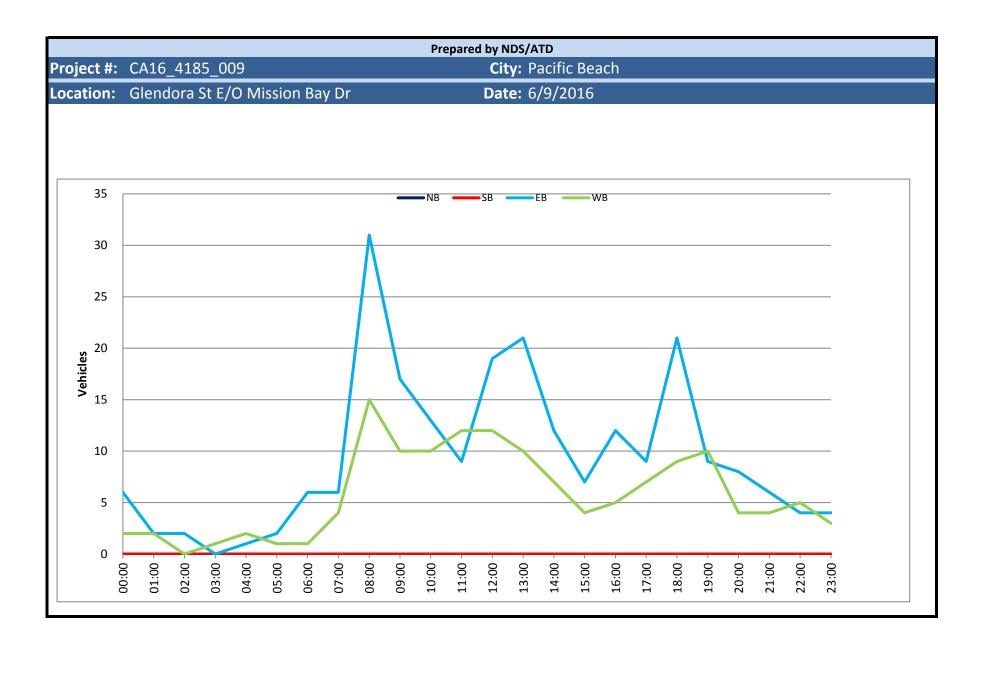
00:00 00:15 00:30	<b>NB</b>	C			190	211	0							401
00:00 00:15 00:30			SB	EB	WB	TOTAL	PM Period	NB	0	SB	ЕВ	W	/B	TOTAL
00:30	U		0	LD	WD	0	12:00	3		5		•		8
	1	(	0			1	12:15	4		5				9
	1		1			2	12:30	1	12	5	0			6
	0	3 (	0 1 1			1 4	12:45 13:00	4 0	12	4 1	9			8 31 2
	0	(	0			0	13:15	6		4				10
	0	(	0			0	13:30	7		4				11
	0		0 1			0 1	13:45	0	13	2 1	2			2 25
	0		0 0			0	14:00 14:15	0 3		3				3 6
	0		0			0	14:30	1		1				2
02:45	0	(	0			0	14:45	1	5	4 1	1			5 16
	0	(	0			0	15:00	3		5				8
	0	(	1 ^			0	15:15 15:30	0		2				2
	0	· · · · · · · · · · · · · · · · · · ·	1 2			1 2	15:45	1 2	6	2 9	)			4 15
	0	(	0			0	16:00	4		5				9
	0	-	1			1	16:15	7		8				15
	0	•	0			0	16:30	1	1.0	3	0			4
	0		0 1			0 1	16:45 17:00	3	16	2 1	8			6 34 4
	0	-	1			1	17:15	5		4				9
	0	(	0			0	17:30	4		1				5
	0		1 3			1 3	17:45	7	19	6 1	2			13 31
	0		2			2	18:00	1		3				4
	1 0		1 1			2	18:15 18:30	0 4		3 ∕I				3 8
		2 (	0 4			1 6	18:45	3	8	8 1	8			11 26
	0		2			2	19:00	3		4				7
	2	-	1			3	19:15	4		3				7
	2	) (	0			2	19:30	2	10	4	7			6
	5		0 <u>3</u> 4			5 12 6	19:45 20:00	2	10	6 1 3	/			7 27 5
	2	3	3			5	20:15	2		0				2
	5	-	1			6	20:30	2		7				9
			5 13			8 25	20:45	3	9	1 1	1			4 20
	6	9	9			15 6	21:00 21:15	2		3				5 4
	1 3		3 4			7	21:30	3		4				7
		.2	3 21			5 33	21:45	1	8	3 1	2			4 20
	4		1			5	22:00	0		0				0
	4	3	3			7	22:15	2		1				3
	5 2 1	.5 2	3 2 9			8 4 24	22:30 22:45	4 6	12	1 3	1			5 7 15
	2		<u>2</u> 9 3			<u>4 24</u> 5	23:00	0	14	0	•			0
	4	4	4			8	23:15	2		1				3
	3	`	0			3	23:30	0		2				2
			0 7			5 21	23:45	3	5	1 4				4 9
TOTALS	$\epsilon$	57	65			132	TOTALS		123	14	6			269
SPLIT %	50	.8%	49.2%			32.99	SPLIT %		45.7%	54	3%			67.1%
	DAH	V TO	TALC.		NB	SB	EB		WB					Total
	DAIL	10	TALS		190	211	0		0					401
AM Peak Hour	08	3:15	08:45			08:45	PM Peak Hour		17:00	12	:00			16:00
AM Pk Volume		L6	23			36	PM Pk Volume		19		9			34
Pk Hr Factor	0.	667	0.639			0.600	Pk Hr Factor		0.679	0.9	50			0.567
7 - 9 Volume		21	16	0	0	37	4 - 6 Volume		35	3		0	0	65
7 - 9 Peak Hour		7:45	08:00				4 - 6 Peak Hour		17:00		:00			16:00
7 - 9 Pk Volume		14 700	13			25	4 - 6 Pk Volume		19	1				34
Pk Hr Factor	0.	700	0.650	0.000	0.000	0.781	Pk Hr Factor		0.679	0.5	003	0.000	0.000	0.567



### Glendora St E/O Mission Bay Dr

Day: Thursday Date: 6/9/2016

	DAILY TOT	'AI C			NB		SB		EB		WB						То	otal
	DAILTIOT	ALS			0		0		227		140						30	67
AM Period	NB SB	3	EB		WB		ТО	TAL	PM Period	NB		SB	EB		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	2	2	3 3	8	12:30 12:45				3 7	19	4	12	3 11	31
01:00			1	0	1		2	0	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 02:15			0		0		0 0		14:00 14:15				2		1		3 5	
02:30			1		0		1		14:30				5		1		6	
02:45			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 03:45			0		0	1	0	1	15:30 15:45				1	7	0 1	4	3	11
04:00			0		0		0		16:00				4	,	0		4	
04:15			1		1		2		16:15				2		2		4	
04:30			0		0		0		16:30				1		1		2	
04:45			0	1	1	2	1	3	16:45				5	12	2	5	7	17
05:00 05:15			1		0		1 0		17:00 17:15				1 2		1 1		2	
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				2		2		4	
06:30 06:45			1	6	1 0	1	2 2	7	18:30 18:45				/ 9	21	2	9	9 11	30
07:00			0	- 0	0		0	,	19:00				<u> </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 08:15			6 7		2		8 8		20:00 20:15				3 1		2 1		5	
08:30			7		6		13		20:30				2		0		2	
08:45			11	31	6	15	17	46	20:45				2	8	1	4	3	12
09:00			7		3		10		21:00				4		0		4	
09:15			0		0		0		21:15				1		1		2	
09:30 09:45			4 6	17	3 1	10	7 10	27	21:30 21:45				1	6	1 2	4	2	10
10:00			2	17	3	10	5	21	22:00				0	0	1	4	1	10
10:15			2		1		3		22:15				2		2		4	
10:30			5		4		9		22:30				1		2		3	
10:45			2	13	2	10	6	23	22:45				1	4	0	5	1	9
11:00 11:15			3 1		2		5 2		23:00 23:15				0		U T		1	
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%
					NB		SB		ЕВ		WB						To	otal
	DAILY TOT	ALS			0		0		227		140							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			4 - 6 Peak Hour					16:00		16:45		16:45
7 - 9 Pk Volume				31		15			4 - 6 Pk Volume					12		7		18
Pk Hr Factor	0.000	0.000		0.705		0.625		0.676	Pk Hr Factor		0.000	0.0	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	3	Jutland Dr						
		N	ORTHBOU	ND	S	OUTHBOU	ND		EASTBOUI	ND	V	/ESTBOUN	ND			UTI	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
	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	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	46 37 43 45 35 39 47	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
_	8:45 AM  TOTAL VOLUMES : APPROACH %'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 START TIME :	730		270		120					l 462		20	TOTAL				
	PEAK HR VOL: PEAK HR FACTOR:	0	195 0.800	378	4	129 0.652	0	0	0.000	0	162	0 0.931	28	896 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	<b>ID</b>	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 FIN		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	VESTBOU	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	20 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				<b>Date</b>	0, 3, 2010	
NS/EW Streets:	М	orena Blvo	b	М	orena Blvd			Avati Dr			Avati Dr		
	NO	ORTHBOU	ND	SC	OUTHBOUN	ND	[	EASTBOUN	ID	W	ESTBOUN	ID	
LANEG	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 0	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	<b>I</b> 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
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		0.869			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	1orena Blv	d	M	lorena Blvd		Balboa	Ave EB F	Ramps	Balboa	Ave EB	Ramps						
	N	ORTHBOU	ND	S	OUTHBOUN	ND	E	ASTBOUN	ND .	W	/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	Е	В	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 NR	9 16 13 SL	55 63 79 ST	0 0 0	0 0 0	0 0 0	40 38 45	0 0 0	0 0 0	54 72 79 WR	384 425 460 TOTAL	NB	SB		:В <b>Г</b>	WB
TOTAL VOLUMES : APPROACH %'s :	0 0.00%	1458 80.24%	359	95	443 82.34%	0 0.00%	0	0	267 100.00%	0	0	532 5 100.00%	3154	0	0			0
PEAK HR START TIME : PEAK HR VOL :	0	799	219	50	240	0	0	0	141	0	0	262	TOTAL 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	<b>NS</b>		
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

_		745 AM																		
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:				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	83	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	orena Blvd			Gesner St			Gesner St								
	N	ORTHBOU	ND	S	OUTHBOUN	ND	F	ASTBOU	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	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	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%								
PEAK HR START TIME :	500 0	PM 416	43 <b> </b>	101	928	0	l 0	0	0	36	0	84	TOTAL						
PEAK HR VOL : PEAK HR FACTOR :	0	0.826	<del>4</del> 3	101	0.915	0	O	0.000	U	30	1.000	04	0.922						

**Project ID:** 16-4184-008 Day: Thursday

AM

City: Pacific Beach

**Date:** 6/9/2016

NS/EW Stree	ets: C	lairemont	Dr	Cla	airemont [	)r	Balboa Ave			Balboa Ave							
	١	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 AN 7:15 AN 7:30 AN	M 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 AN 8:00 AN	M 31 M 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
8:15 AN 8:30 AN 8:45 AN	<b>47</b>	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 %'		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 TIM		322	332	152	271	310	208	815	69	337	768	90	TOTAL 3813				
PEAK HR FACTO	R:	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 90	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	E	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	Santa Fe St				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	icii				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	acri				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 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	<b>ID</b>	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			UTI	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

<b>PEAK HR START TIME:</b>	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

Cityi	r acinc be	Jacii				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	<b>ID</b>		EASTBOUN	D	V	VESTBOUN	ID				UTURNS		
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	0	0	0	195	0	1	0	103	0	0	181	244	724					
5:30 PM 5:45 PM	0	0	0	219 153	0	1	0	97 114	0	0	168 179	263 264	748 711					
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

NORTHBOUN NT 1 6 12	UND  NR 0	SL 0	OUTHBOUN ST 1	SR	E EL	ASTBOUND	)	W	/ESTBOUNI	D		•		1 1	TURNS	
6		0	ST 1		FI									U	IUKNS	
	7			0	1	ET 1	ER 0	WL 1	WT 2	WR 0	TOTAL		NB	SB	ЕВ	WB
28 9 7 9 7	2 5 3 6 4 5	21 34 18 23 24 24 22	14 30 17 21 20 22 11	2 1 3 1 0 2 3	0 0 2 3 4 1	196 200 208 180 158 177 192	6 10 11 8 11 11 8	0 1 2 1 2 1 5	150 124 107 122 132 128 139	5 3 1 7 1 7	419 424 404 385 373 391 414					
5 NT 83 8% 48.26%	NR 34 5 19.77%	26 SL 192 54.08%	ST 147 41.41%	4 SR 16 4.51%	3 EL 14 0.89%	ET 1484 94.34%	ER 75 4.77%	1 WL 13 1.18%	WT 1041 94.81%	6 WR 44 4.01%	388 TOTAL 3198		NB 0	SB 0	EB 0	WB 0
700 AM	17	96	82	7	5	784	35	4	503	16	TOTAL 1632					
700 AM	55		55 17 96	55 17 96 82	55 17 96 82 7	55 17 96 82 7 5	55 17 96 82 7 5 784	55 17 96 82 7 5 784 35	55 17 96 82 7 5 784 35 4	55 17 96 82 7 5 784 35 4 503	55 17 96 82 7 5 784 35 4 503 16	55 17 96 82 7 5 784 35 4 503 16 1632	55 17 96 82 7 5 784 35 4 503 16 1632	55 17 96 82 7 5 784 35 4 503 16 1632	55 17 96 82 7 5 784 35 4 503 16 1632	55 17 96 82 7 5 784 35 4 503 16 1632

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

City: Pacific Beach

**Date:** 6/9/2016

City	racine bec	acri				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 4	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
<b>TOTAL VOLUMES:</b>	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%	

ı		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
<b>TOTAL VOLUMES:</b>	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.	raciiic 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.	N.T.	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
<b>TOTAL VOLUMES:</b>	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

<b>PEAK HR START TIME:</b>	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	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	<b>ID</b>	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> .	" DI 170.	<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	<b>ND</b>	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	Ма	gnolia Av	re	Ma	agnolia Av	⁄e						
		NO	ORTHBOU	ND	SC	OUTHBOUN	ND	E	ASTBOUN	ID	٧	VESTBOUN	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
	7:00 AM 7:15 AM 7:30 AM 7:45 AM	5 6 2 0	250 213 212 223	1 0 0	5 4 7 9	165 193 169 191	12 16 8 9	23 21 25 17	0 0 0	9 9 21 21	1 0 2 0	0 1 0 1	1 1 1 0	472 464 447 471		2 2 1 0	3 2 5 7	0 0 0
	8:00 AM 8:15 AM 8:30 AM 8:45 AM	6 8 6 11	224 226 230 232	0 0 3 4	11 7 8 11	171 180 199 171	22 14 8 13	23 17 16 18	2 1 1 2	18 19 23 29	0 4 3 2	0 1 0 0	0 1 3 1	477 478 500 494		3 7 2 6	8 3 5 8	0 0 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
F	PEAK 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	Т	14.05	54	A	16	W	832	7.53	75.29	5.67	6	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	<b>HOV Lane</b>
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	<b>HOV Lane</b>
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	<b>HOV Lane</b>
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

	•	<b>†</b>	<b>/</b>	<b>\</b>	ţ	√	•	•	•	۶	<b>→</b>	•
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	1821		1770	3523			1794			1807	
Flt Permitted	0.45	1.00		0.26	1:00			0.86			92.0	
Satd. Flow (perm)	835	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	59	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			∞			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			liming Plan: AM Peak Period
	†	ţ	4	و	
Lane Group	EBT	WBT	WBR	SBL	
Lane Group Flow (vph)	614	929	314	988	
v/c Ratio	1.03	0.48	0.22	0.59	
Control Delay	67.1	7.6	0.3	12.3	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	67.1	7.6	0.3	12.3	
Queue Length 50th (ft)	~104	40	0	66	
Queue Length 95th (ft)	#200	75	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					
A COLLEGE A					

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		C	0	1900							0.94	0	0	0																				vel of Service B		ne (s) 9.9	Service A
SBI	X	833		1900				3433			0.94	988		988	Prot	4		23.1	23.1		4.9	5.2	1496	c0.26					12.2		12.2	В		HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service
WBR		290		_	4.0			1441		ľ		628		314	Free		Free	53.0		1.00			1441					1.00 0.1									
WBT			323	_	5.0	0.91		3148						462	NA			20.0				6.1	,	0.15					12.7		8	A		11.1	0.54	53.0	48.6%
FBT	*	576	576	1900	5.0	0.95	1.00	3539	0.95	3377	0.94	613	0	614	NA	2		20.0	20.0	0.38	5.0	6.1	1274		c0.18	0.48	12.6	00.1	13.4	В	13.4	В					
FB	7		-	1900							IF 0.94			oh) 0				(\$										c	7				У	telay	o Capacity ratio	th (s)	, Utilization
Movement	I and Configurations	Traffic Volume (vnh)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fill 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)	//s Ratio Prot	//s Ratio Perm	//c Ratio	Jniform Delay, d1	Progression Factor	ncieniai pelay, uz Delav (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

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																	
	<b>*</b>	SBR	49	0.13	11.6	0.0	11.6	0	35		225	372	0	0	0	0.13	
	٠	SBL	289	0.81	65.5	0.0	62.5	788	334	294	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	
on edad M	4	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	

Grammer (γρ1)         112         1518         44         γ 10	Marromond	Ē	Ę	FOW	00/4/	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	-	‡	‡	<b>k</b> _	F	₩_	
112 1518 847 607 571 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         0.95         1.00         0.95         1.00           100         100         100         0.95         1.00         0.85           0.95         1.00         1.00         0.95         1.00         0.85           0.95         1.00         1.00         0.95         1.00         0.85           0.97         1.00         1.00         0.95         1.00         0.95           1.15         1.56         873         6.26         5.89         4.9         0.97           1.15         1.56         873         6.26         5.89         1.0         0.93         4.9           1.15         1.56         873         6.26         5.89         1.0         0.93         4.9 </td <td>Ideal Flow (vphpl)</td> <td>1900</td> <td>1900</td> <td>1900</td> <td>1900</td> <td>1900</td> <td>1900</td> <td></td>	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 0.96 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.0	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  0.95 100 100 0.95 100  3433 3539 1583 3433 1583  0.97 0.97 0.97 0.97 0.97 0.97  1 15 1565 873 626 589 10  1 15 1565 873 626 589 10  1 10 10 10 0 0 0 39  141 1074 895 1212 317 317  141 1074 895 1212 317 317  144 5.5 4.9 5.4 5.4 5.4 5.4  20 5.6 80 2.0 2.0 3.0  21 5.6 80 2.0 2.0 3.0  22 5.3 2533 2111 1336 725 334  0.03 0.04 0.25 0.09 1.00 1.00  0.36 0.62 0.41 0.47 0.81 0.03  0.37 0.44 5.5 0.10 0.10  0.38 0.62 0.44 0.47 0.81 0.03  0.39 0.40 0.03 0.00 1.00  0.30 0.41 0.5 8 0.5 6.2 470  1.00 1.00 0.32 0.09 1.00 1.00  0.2 1.1 0.5 0.5 6.5 6.2 470  1.5 3.6 6.5 6.5 6.7 4.0  1.5 3.6 6.5 6.7 4.0  1.5 3.6 6.5 6.7 4.0  1.5 3.6 1.0 0.00 1.00  1.5 3.6 0.5 6.7 4.1 0.00  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.5 6.7 4.0  1.5 3.6 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.6 0.7 0.7 0.7 0.00  1.5 3.7 0.7 0.7 0.7 0.00  1.5 8 A A B B A B B B A B B B A B B B A B B B B A B	FT	1.00	1.00	1.00	0.85	1.00	0.85	
3433 3539 3539 1583 3433 1583  095 100 100 0.05 100  115 1565 873 626 589 49  115 1565 873 626 589 10  116 1565 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  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  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  14.1 107.4 895 1212 31.7 31.7  14.1 107.4 895 1212 31.7 31.7  16.0 0.0 0.2 0.0 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	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 0.97  1.15 1.565 873 6.26 5.89 4.9  1.16 1.565 873 6.26 5.89 1.0  Prot NA NA pm+ov Prot custom 5 2 6 7 7 4  1.4.1 107.4 89.5 1.212 31.7 31.7  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 25.33 2.11 13.8 5.4  2.0 5.8 0.2 0.3 0.0  0.36 0.04 0.25 0.10 0.01 0.01  0.03 0.04 0.25 0.10 0.01 0.01  0.00 0.32 0.04 0.25 0.10 0.01  0.00 0.32 0.04 0.26 0.10 0.00  0.34 0.05 0.34 0.00  0.35 0.05 0.41 0.05 0.00  0.37 1.0 0.5 0.0 1.00 1.00  0.38 0.5 0.4 0.5 0.1 0.0 1.00  1.00 0.32 0.09 1.00 1.00 1.00  1.00 0.32 0.09 1.00 1.00 1.00  1.00 0.32 0.09 1.00 1.00 1.00  1.00 0.32 0.09 1.00 1.00 1.00  1.00 0.32 0.09 1.00 1.00 1.00 1.00  1.00 0.32 0.09 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (prot)	3433	3539	3539	1583	3433	1583	
3433 3539 3539 1583 3433 1583  197 097 097 097 097 097 097  1 15 1566 873 626 589 10  Prol NA NA Prot Cusion  5	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	
10   0   0   0   0   0   39	Adj. Flow (vph)	115	1565	873	626	289	49	
115   1565   813   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 2.0 3.0  322 2533 2111 1336 725 334  0.03 c.0.44 0.25 0.10 c.0.17 0.01  0.04 0.25 0.41 6.3 344  0.05 0.62 0.41 6.3 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 1.2 0.3 6.4 5.3 47.0  1.2 1.3 5.8 0.5 6.2 47.0  E B A A E D  E B A B E D	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 14.1 107.4 895 1212 31.7 31.7 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Protected Phases	2	2	9	7	7	4	
14.1 1074 895 1212 317 317 0.09 0.09 0.02 0.08 0.08 0.02 0.02 0.00 0.00 0.02 0.02	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 10.8 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 0.6 0.0 0.2 1.1 0.5 0.1 0.6 0.0 0.2 1.1 0.5 0.0 0.9 4.0 0.3 126 5.8 0.5 6.2.9 47.0 0.4 155 3.6 0.1 0.0 0.7 0.0 0.0 0.0 0.0 0.0 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 0.0 1.00 0.2 1.1 0.5 0.1 0.0 1.00 0.2 1.1 0.5 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 0.1 0.0 1.00 0.2 1.1 0.5 0.1 0.0 1.00 0.2 1.1 0.5 0.1 0.0 1.00 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 0.0 1.00 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 0.0 1.00 0.2 1.1 0.5 0.1 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  4.4 5.5 4.9 5.4 5.4 5.4 5.4  2.0 5.6 8.0 2.0 3.0  3.22 25.33 2111 1336 725 334  0.03 c.0.44 0.25 0.10 c.0.17 0.01  0.36 0.62 0.41 0.47 0.81 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 1.0 5.8 0.5 6.2 47.0  E B A A E D  E	Effective Green, g (s)	14.1	107.4	89.5	121.2	31.7	31.7	
14 5 5 49 54 54 54 2.0 5.6 8.0 2.0 2.0 3.0 3.2 2.3 2111 33.4 0.03 c.0.44 0.25 0.10 c.0.17 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 0.0 0.32 0.09 1.00 1.00 0.2 1.1 0.5 0.9 1.00 1.00 0.2 1.1 0.5 0.1 6.6 0.0 0.3	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 11.3 3.6 7.25 3.3 4 3.4 3.2 2.5 3.2 2.1 11.3 5.0 1.0 c.0.1 0.0 0.3 c.0.4 0.2 0.3 0.0 c.0.1 0.0 0.3 0.0 0.2 0.4 0.4 5.3 4.7 0.0 1.00 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 6.6 0.0 0.2 1.1 0.5 0.1 6.6 0.0 0.0 0.2 1.1 0.5 0.1 0.0 1.00 1.00 0.2 1.1 0.5 0.1 0.0 1.00 1.00 0.2 1.1 0.5 0.1 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0	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 6.2 47.0 E B A A E D 1.55 3.6 61.7 B A C E D 1.60 0.00 1.70 Sum of lost time (s) 1.8 1.80 Sum of lost time (s) 1.8 1.80 Sum of lost time (s) 1.8 1.81 CU Level of Service	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 6.2 47.0 E B A A E D 1.55 3.6 6.1.7 B A HCM 2000 Level of Service 156.0 2021y ratio 0.70 Sum of lost time (\$) 18.1 call of Service 156.0	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 E B A E D 15.5 3.6 61.7 B A A E D 15.5 3.6 61.7 B A C E D 15.5 3.6 61.7 B A C E D 15.5 3.6 61.7 C E B A C E D 15.5 3.6 61.7 C E B A C E D 15.5 3.6 61.7 C E D 15.5	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 47.0  E B A A E D  E 15.5 3.6 61.7  B A CM 2000 Level of Service  acity ratio 0.70 Sum of lost time (s) 18. 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Progression Factor	1:00	1:00	0.32	0.09	1.00	1.00	
639 120 58 05 629 47.0  E B A A E D  155 3.6 61.7  B A A E D  15 3.6 61.7  18 A HCM 2000 Level of Service  2adity ratio 0.70 Sum of lost time (s) 18.  2adity ratio 1.50.0 Sum of lost time (s) 18.  2adity ratio 1.50.0 Sum of lost time (s) 18.  2adity ratio 1.50.0 Sum of lost time (s) 18.	Incremental Delay, d2	0.2	<del></del>	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 23.00 Sum of lost time (s) 18.7 23.10 Sum of lost time (s) 18.7 23.11 ICU Level of Service 1.3 24.13 ICU Level of Service 1.3 25.13 ICU Level of Service 1.3	Level of Service	ш	В	⋖	⋖	ш	۵	
B A E  18.6 HCM 2000 Level of Service  20acty ratio 0.70 Sum of lost time (s) 18.  ration 6.73% ICU Level of Service 1.55.73%	Approach Delay (s)		15.5	3.6		61.7		
18.6 HCM 2000 Level of Service 3.2	Approach LOS		В	⋖		ш		
18.6 HCM 2000 Level of Service 22 acity ratio 0.70 Sum of lost time (s) 18. 23 cation 6.7.3% ICU Level of Service 15.3% ICU Level	Intersection Summary							
20dby ratio 0.70 Sum of lost time (s) 7.150 Sum of lost time (s) 7.13% ICU Level of Service 15.15%	HCM 2000 Control Delay			18.6	H	3M 2000	Level of Service	В
750.0 Sum of lost time (s) 2ation 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	im of lost	time (s)	18.7
	Intersection Capacity Utilizal	lion		67.3%	೨	U Level o	of Service	U
	Amely of Daried Amin's			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
		,		
	<b>†</b>	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><b>†</b></th> <th><b>/</b></th> <th><b>/</b></th> <th>ţ</th> <th>√</th> <th>•</th> <th>•</th> <th>•</th> <th>٠</th> <th>-</th> <th>•</th>		1	<b>†</b>	<b>/</b>	<b>/</b>	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 7.3 353.9 1611 0.045 0.02 0.01 0.045 0.02 0.01 0.045 0.02 0.01 0.045 0.02 0.07 0.03 0.00 0.7 0.03 0.00 0.7 0.03 0.00 0.7 0.03 0.00 0.7 0.03 0.00 0.7 0.03 0.00 0.7 0.03 0.00 0.0 0.00 0.7 0.03 0.00 0.0 0.00 0.7 0.03 0.00 0.00 0.7 0.03 0.00 0.00 0.7 0.03 0.00 0.00 0.7 0.03 0.00 0.00 0.00 0.00 0.00 0.00 0.00	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)  150.1 150 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 A A A A 0.7 0.3 0.0 A A A A 0.5 HCM 2000 Level of Service A 0.5 Sum of lost time (s) 7.9 15.0 Sum of lost time (s) 7.9 15.4 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>&gt;</i>	<b>/</b>	ţ	✓	•	•	•	٠	-	•
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
Oueue 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

	•	†	~	<b>&gt;</b>	ţ	4	•	-	•	٠	<b>→</b>	•
Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ž.	ŧ	₩	F	<b>‡</b>	₩.	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	80	_	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>	<b>/</b>	ţ	4	•	<b>—</b>	•	۶	<b>→</b>	•
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 volume 2149 1358 2085 3507 679 2760 3440 atgage 5 cont vol atgage 1 cont vol atgage 1 cont vol atgage 2 cont vol atgage 2 cont vol atgage 2 cont vol atgage 3 cont vol atgage 5 cont v	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         WB 1         WB 2         WB 3         NB 1         SB 1           6/9         6/79         806         806         538         254         56           0         0         0         0         0         0         0           0         0         0         0         0         0         0         0           1700         1700         1700         1700         1700         132         254         56           (ff)         0         0         0         170         170         116         8         14           (ff)         0         0         0         0         0         112         168         C           0.0         0         0         0         112         168         C         C           any         1.0         0         0         0         112         168         C         C	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					
(ff) 0.40 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 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 0.0 0.0 0.0 0.0 0.	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			20			

KHA HCM Unsignalized Intersection Capacity Analysis

Balboa Transit Station 7: Balboa EB Ramps & Balboa Ave

Existing Conditions Timing Plan: AM Peak Period

	1	†	<i>&gt;</i>	<b>/</b>	ļ	✓	•	•	•	٠	<b>→</b>	•
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	9	100	26
cM capacity (veh/h)	523			285			34	17	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	297	297	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						۵	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%	⊇	U Level o	ICU Level of Service			В			
Analysis Period (min)			15									

KHA HCM Unsignalized Intersection Capacity Analysis

Synchro 9 Report Page 11

**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													
100   100	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	##	<b>*</b> C_	F	4₽	
1906   1906   1906   1906   1909	Traffic Volume (vph)	208	815	69	337	168	06	139	322	332	152	271	31(
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   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   0.05   0.10   0.05   0.10   0.95   0.10     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   1.00   1.00   1.00   1.00   1.00   1.00     100   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   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     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   1.00   1.00   1.00   1.00     1.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100   0.95   0.97   0.95   1.00   0.95   1.00   0.95   1.00   0.95   0.90   0.90   0	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   1.00   0.95   1.00   0.95   1.00   0.95   0.00   0.00	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   2356     1343   3498   3433   3484   1770   3539   1583   1770   3256     14	Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1:00	0.95	1.00	
1995   100   0.95   100	Satd. Flow (prot)	3433	3498		3433	3484		1770	3539	1583	1770	3256	
He 087 087 087 087 087 087 087 087 087 087	Flt 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	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 0 3 0 0 4 0 0 0 69 0 0 69 1 175   Prot NA Prot	Adj. Flow (vph)	239	937	79	387	883	103	160	370	382	175	311	356
ph)         239         1013         0         387         982         0         160         370         313         175           Prof.         NA         Prof.         NA         Prof.         NA         pm+ov         Prof.           5         2         1         6         3         8         8         8           5         2         1         6         4         3         192         3           5         150         46.3         21.3         51.9         180         280         49.3         19.2           5         150         46.3         21.3         51.9         180         280         49.3         19.2           5         110         46.3         21.3         51.9         180         280         49.3         19.2           5         11         6.4         6.4         4.4 <td< td=""><td>RTOR Reduction (vph)</td><td>0</td><td>3</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></td<>	RTOR Reduction (vph)	0	3	0	0	4	0	0	0	69	0	115	_
(s) 150 46.3 21.3 51.9 180 280 49.3 19.2 81 17.7 81 180 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 280 49.3 19.2 81 18.0 24.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 28.0 49.3 19.2 81 18.0 29.3 19.2 81 18.0 29.3 19.3 19.3 19.3 19.3 19.3 19.3 19.3 1	Lane Group Flow (vph)	239	1013	0	387	982	0	160	370	313	175	552	
5	Turn 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 4.3 4.4 4.4 5.3 4.3 4.3 4.4 4.4 5.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4	Protected Phases	2	2		<del>-</del>	9		3	80	_	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 2.4 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Permitted Phases									∞			
s) 150 463 21.3 51.9 180 280 49.3 19.2 10.1 4.4 5.1 10.3 10.1 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.3 0.11 0.2 0.10 0.10 0.10 0.10 0.10 0.0 0.10 0.1	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 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0  3.82 1203 5.43 1343 2.85 736 5.79 252  0.07 0.29 0.011 0.28 0.09 0.10 0.09 0.10  0.63 0.84 0.71 0.73 0.68 0.50 0.54 0.69  5.71 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 1.0	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	5.7		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           0.84         0.71         0.73         0.68         0.50         0.54         0.71           4.08         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           5.6         3.7         2.1         6.0         0.4         0.6         6.5         54.9           1.00 <td< td=""><td>Lane Grp Cap (vph)</td><td>382</td><td>1203</td><td></td><td>543</td><td>1343</td><td></td><td>236</td><td>736</td><td>579</td><td>252</td><td>706</td><td></td></td<>	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 0.69 0.54 0.69 0.54 0.69 0.54 0.69 0.54 0.54 0.55 0.54 0.55 0.55 0.55 0.55	v/s Ratio Prot	0.07	c0.29		c0.11	0.28		0.0	0.10	0.09	c0.10	c0.17	
1084 071 073 0.68 0.59 0.54 0.69 408 83.7 35.4 55.5 47.1 33.7 54.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	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		99.0	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 4.2 5.0 0.1 6.0 0.7	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	5.5	
48.9 E D E D C E 48.9 43.1 44.4 C E  47.6 HCM 2000 Level of Service D 0.79 134.6 Sum of lost time (s) 20.5 15.0% ICU Level of Service D 15.	Delay (s)	59.4	46.4		57.4	37.5		61.5	47.5	34.3	61.4	22.5	
48.9 43.1 44.4  D	Level of Service	ш	٥		ш	Ω		ш	Ω	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 1.5	Approach Delay (s)		48.9			43.1			44.4			26.5	
47.6 HCM 2000 Level of Service 0.79 134.6 Sum of lost time (s) 76.0% ICU Level of Service 1.5	Approach LOS		٥			٥			O			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 1.5	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	<b>SM 2000</b>	Level of 9	Service		D			
134.6 Sum of lost time (s) 76.0% ICU Level of Service 15	HCM 2000 Volume to Capa	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 Dariod (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	oa Ave						Ilming Plan: AM Peak Period
	4	†	<b>/</b>	ļ	<b>←</b>	<b>→</b>	
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	
Oueue 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         EBL         EBR         WBI         WBI         WBI         WBI         NBI         NBI         NBI         NBI         NBI         NBI         NBI         NBI         NBI         AP         TAP		\	<b>†</b>	>	<b>/</b>	Ļ	/	•	-	•	٠	<b>→</b>	•
(chirch) 34 546 17 42 179 7 14 92 75 3 (chirch) 34 546 17 42 179 7 14 92 75 3 (chirch) 34 546 17 42 179 7 14 92 75 3 (chirch) 34 546 17 42 179 7 14 92 75 3 (chirch) 34 546 17 42 179 7 14 92 75 3 (chirch) 34 546 17 42 179 7 14 92 75 3 (chirch) 1900 1900 1900 1900 1900 1900 1900 190	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	
(vph) 34 546 17 42 179 7 14 92 75 3 1 1	Traffic Volume (vph)	34	546	17	42	179	7	14	92	75	33	122	5
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    10 0.095 1.00 0.95 1.00    11 170 35.23 170 35.19 175.2 1.00    11 1770 35.23 1770 35.19 170.0 1.00    11 1770 35.23 1770 35.19 170.0 1.00    11 1770 35.23 1770 35.19 170.0 1.00    11 1770 35.23 1770 35.19 170.0 1.00    11 1770 35.23 1770 35.19 170.0 1.00    11 1770 35.23 1770 35.19 170    12 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8    13 6.13 19 47 201 8 16 103 8 4 3    14 20 0 0 185 0 0 0    15 2 0 18	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   1.00   0.95   1.00   0.97   1.00     1770   3523   1.00   0.95   1.00   0.97   1.00     1770   3523   1.00   0.95   1.00   0.97   1.00     1770   3523   1.00   0.95   1.00   0.97   1.00     1770   3523   1.00   0.95   0.89   0.89   0.89   0.89   0.89     1770   3523   1.70   3519   1.00   1.80   0.89     1770   3523   1.00   0.95   0.89   0.89   0.89   0.89     1770   3523   1.00   0.95   0.89   0.89   0.89   0.89     1770   3523   1.00   0.95   0.90   0.90     187   18   18   1.00   1.00   1.00     187   12   0.3   0.06   0.35   0.24     188   1259   1.00   1.00   1.00     198   1259   1.00   1.00   1.00     198   1.00   1.00   1.00   1.00     199   1.00   1.00   1.00     198   1.00   1.00   1.00     198   1.00   1.00   1.00     198   1.00   1.00   1.00     198   1.00   1.00   1.00     199   1.00   1.00     198   1.00   1.00     198   1.00   1.00     198   1.00   1.00     199   1.00   1.00     199   1.00   1.00     199   1.00   1.00     199   1.00   1.00     199   1.00   1.00     199   1.00   1.00     199   1.00   1.00     199   1.00     199   1.00     199   1.00     199   1.00     100   1.00   1.0	Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
1,00   1,00   1,00   1,00   1,00   1,00   1,100   1,100   1,170   3523   1,710   3519   1,750   1,750   1,750   1,00   0,95   1,00	Ft	1.00	1.00		1.00	0.99			0.94			0.99	
(y) 1770 3523 1770 3519 1752 1770 3519 1770 35	Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
m) 095 100 095 100 097 m) 1770 3523 1770 3519 1700 m, 1770 3523 1770 3519 1700 m, 1770 3623 1770 3519 1700 m, (vph) 38 633 089 089 089 089 089 089 m, (vph) 38 630 0 10 1 18 0 0 m, (vph) 38 630 0 1 10 1 18 0 0 m, (vph) 38 630 0 1 10 1 10 1 10 1 10 1 10 1 10 1 1	Satd. Flow (prot)	1770	3523		1770	3519			1752			1851	
m)         1770         3523         1770         3519         1700           n, PHF         0.89         0.	Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.99	
yr, PHF         0.89	Satd. Flow (perm)	1770	3523		1770	3519			1700			1837	
National Part   National Par	Peak-hour factor, PHF	0.89	68'0	68.0	0.89	0.89	0.89	0.89	0.89	0.89	68.0	68'0	0.89
wi(yph)	Adj. Flow (vph)	38	613	19	47	201	00	16	103	84	co	137	9
Prof. NA	RTOR Reduction (vph)	0	2	0	0	2	0	0	18	0	0	<del>-</del>	0
es 5 2 1 6 6 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9	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 4 6 5 6 6 8 8 4 4 6 6 8 8 7 6 6 8 8 7 6 6 8 8 7 6 6 8 8 8 7 6 6 8 8 8 8	Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
es	Protected Phases	2	2		<del>-</del>	9			8			4	
1,0 (5), 2, 2, 15,8 3,5 17,2 10.5 1,1 (5), 2, 2, 15,8 3,5 17,2 10.5 1,1 (5), 2, 2, 15,8 3,5 17,2 10.5 1,2 (5), 4,4 5,1 4,4 5,0 0.2 2 (8), 4,4 5,1 4,4 5,0 0.2 2 (9), 4,4 5,1 4,4 5,0 0.2 2 (9), 4,4 5,1 4,4 5,0 0.3 2 (1,1 1,1 1,2 1,3 8,8 14,4 1,4 1,4 1,4 1,4 1,4 1,4 1,4 1,4 1,	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  (wh) 88 1259 140 1369 403  (wh) 0.02 c0.18 c0.03 0.06  d.1 20.4 11.1 19.3 8.8 14.4  ctor 1.00 1.00 1.00 1.00 1.00  (ay, d2 1.1 0.3 0.5 0.0 0.3  a C B B A B B  (c) B B A B  (c) B B A B B  (c) B B A B B  (d) B A B B A B  (e) B A B B A B  (f) B B A B B A B  (g) B A B B A B B B  (g) B A B B A B B B  (g) B A B B A B B B A B B B  (g) B A B B A B B B B B B B B B B B 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 2.0  0.25 0.18 0.03 0.06  0.02 0.18 0.03 0.06  0.04 0.01 1.00 1.00 1.00 1.00  lay, dZ 1.2 0.3 0.5 0.0 0.3  ctrol 1.00 1.00 1.00 1.00 1.00  lay, dZ 1.2 0.3 0.5 0.0 0.3  s C B B A B B  y (s) B A B B  y (s) C C C C C C C C C C C C C C C C C C C	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	
(vph) 88 1259 140 1369 403 (vph) 0.02 c0.18 c0.03 0.06 c0.11 0.43 0.50 0.34 0.15 0.46 ctor 1.00 1.00 1.00 1.00 1.00 lay, dz 1.2 0.14 11.1 19.3 8.8 14.4 ctor 1.00 1.00 1.00 1.00 0.3 ctor 1.2 0.16 1.0 0.3 ctor 1.2 0.16 8.8 14.7 ctor 1.2 1.2 1.4 HCM 2000 Level of Service B mmary trol Delay 12.4 HCM 2000 Level of Service B mrain of Capacidy ratio 0.47 Sum of lost time (s) 14.4 ctor 1.2 0.4 1.14 HCM 2000 Level of Service A mrain of Capacidy ratio 0.47 Sum of lost time (s) 14.4 ctor 1.2 0.4 1.15 Sum of lost time (s) 14.4 ctor 1.2 0.4 1.15 Sum of lost time (s) 14.4 ctor 1.2 0.4 1.15 Sum of lost time (s) 14.4 ctor 1.2 0.4 1.15 Sum of lost time (s) 14.4 ctor 1.2 0.4 1.15 Sum of lost time (s) 14.4	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	v/s Ratio Prot	0.02	c0.18		c0.03	90:0							
d1 204 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  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 0.5 0.0 0.3  ctor 1.2 0.3 0.3 0.3  ctor 1.2 0.3 0.3  ctor 1.2 0.3  cto	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 A B A B A B A B A B A B A B A B	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	
Iay, d2	Progression Factor	1.00	1.00		1.00	1:00			9.1			1.00	
216 114 198 88 147  (s) E B A B B  (v) 120 108 14.7  mmary  mentary  monocological properties of the p	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	
(\$)         12.0         10.8         14.7           mmary         B         B         B           frol Delay         12.4         HCM 2000 Level of Service         B           mre to Capacity ratio         0.47         Sum of lost time (s)         14.4           Length (s)         4.2         Sum of lost time (s)         14.4           froin         1.5         ICU Level of Service         A           froin         1.5         ICU 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 1.5	Intersection Summary												
0.47 44.2 Sum of lost time (s) 47.9% ICU Level of Service	HCM 2000 Control Delay			12.4	¥	3M 2000	Level of S	Service		В			
1 44.2 Sum of lost time (s) 2ation 47.9% ICU Level of Service 15. 15.	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 Period (min)	Intersection Capacity Utilizati	lon		47.9%	⊇	U Level o	f Service			V			
Midiyala Fallou (IIIII)	Analysis Period (min)			15									

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					1	Existing Conditions Timing Plan: AM Peak Period
	•	†	<b>/</b>	ţ	<b>←</b>	<b>→</b>	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	13	1412	26	583	423	193	
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	Movement	EBL	EBT	EBR	WBI	WRT	WRD	IBIN	NRT	NBR	SBL	CRT	CDD
1					-	WU	MON	INDL			-	5	SDN
12   1330	Lane Configurations	<b>y</b> -	₩		F	#			4			4	
12   1330	Traffic Volume (vph)	12	1330	=	53	497	22	10	98	305	128	21	4
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	12	1330	=	53	497	22	10	98	305	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	표	1.00	1.00		1.00	0.98			06:0			1.00	
1770   3535   1770   3485   1670   1670   1770   3535   1770   3485   1670   1677   1770   3535   1770   3485   1677   1677   1770   3485   1677   1677   1770   3485   1677   1677   1770	Fit Protected	0.95	1.00		0.95	1.00			1.00			0.97	
170   353   100   0.95   1.00   0.99   1.00   0.99   1.00   0.95   1.00   0.95   1.00   0.95   1.00   0.95   0.9	Satd. Flow (prot)	1770	3535		1770	3485			1670			1795	
1770   3535   1770   3485   1667     193   190   12   56   573   60   11   91   321   135     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			262	
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   113   1956   149   4.9     17   18   113   1956   100     18   17   113   1956   100     19   100   100   100   100     17   13   144   122   32.9     100   100   100   115   100     17   18   19   12   14     17   18   19   12   100     17   18   19   12   100     17   18   19   12   100     18   10   10   10     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	29	523	09	=	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	<del>-</del>	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>Turn 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>	Turn 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       1.0     1.0     0.4     2.4     1.0       6.95.5     2.0     2.4     1.0     2.4       6.95.6     3.5     1.70     8.5     1.0       6.95.7     3.5     1.70     8.5     1.0       6.95.6     2.2     2.4     1.0     2.4       6.95.7     3.5     1.70     35.3     1.1       6.95.8     1.0     1.0     1.0     2.4     1.0       8     1.0     1.0     1.0	Protected Phases	2	2		-	9			œ			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  1.10 1.00 0.90 1.15 1.00  6.5 2.4 4.3 14.4 35.3 11  E C B B D D  2.3 2.9 HCM 2000 Level of Service C  2.4 3.5 11.00  2.5 3.9 HCM 2000 Level of Service C  2.5 3.0	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 2.0 5.1 4.4 4.9 4.9 2.0 5.2 2.0 2.0 1.4 5.1 4.4 4.9 2.0 5.5 2.0 2.0 1.4 5.1 1.3 1956 483 2.0 0.1 0.20 0.17 0.19 2.1 1.20 0.29 0.65 2.20 21.3 47.9 12.2 32.9 2.0 1.0 0.90 1.15 1.00 2.4 4.3 14.4 35.3 1 2.5 2.4 4.3 14.4 35.3 2.5 2.3 4.4 3 14.4 35.3 2.5 2.3 10.0 0.00 2.5 2.3 10.0 0.00 2.4 4.3 14.4 35.3 2.4 3.5 1.00 2.4 3.5 2.4 3.4 3.4 3.4 3.4 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	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   1.4   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			11	
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 D 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 S D D D D D D D D D D D D D D D D	Level of Service	ш	ပ		٥	В			٥			ш	
2.29 HCM 2000 Level of Service 3.2.9 HCM 2000 Level of Service 0.87 106.0 Sum of lost time (\$) 2.24 ICU Level of Service 1.5 1.5 ICU Level of Service 1.5 ICU Level of Serv	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												
2acity ratio 0.87  106.0 Sum of lost time (s)  zation 90.2% ICU Level of Service 15	HCM 2000 Control Delay			32.9	Í	CM 2000	Level of :	Service		C			
n 106.0 Sum of lost time (s) zation 90.2% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.87									
Utilization 90.2% ICU Level of Service 15	Actuated Cycle Length (s)			106.0	S :	um of lost	time (s)			14.4			
Analysis Period (min) 15	Intersection Capacity Utiliza	tion		90.2%	2	:U Level c	of Service			ш			
	Analysis Period (min)			15									

KHA HCM Signalized Intersection Capacity Analysis

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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	<b>†</b>	ţ	و	
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					
med section commany					

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		
<b>`</b>	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	9.6	- 4		51.6	О		evel of S		time (s)	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	
<b>†</b>	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	<b>A</b>	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	뀨	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	Inclemental Delay, uz Dalay (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 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
	<b>†</b>	<b>&gt;</b>	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	
ų,	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	_	
<b>/</b>	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 <del>7</del>

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		
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		
۶	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																									_		
ţ	WBT				_							3523		718	0	741	A	9		131.3	_	_	5.3		3083	0.21			1.5					_	A		14.9	1.08	150.0	97.3%	15	
†	EBT	+		`	_							1863		1839		1839	A			150.0	_			4.4	1863	c0.99						ω	В	20.2	S							
^	EBL	*	99	99	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	96:0	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	ш				ay	apacity ratio	(s)	tilization		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	き	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)	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 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

																																					v		15.0	O		
•	SBR		105	105	1900								0.91	115	0	0																					Service					
<b>→</b>	SBT	4₽	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	t t	0	0	1900								0.92	0	0	0	Prot	2																			HCM 2000 Level of Service		Sum of lost time (s)	CU Level of Service		
<b>←</b>	NBT	##	705	705	1900	2.7	0.95	1.00	1.00	3539	1.00	3539	0.91	775	0	775	Ϋ́	9		49.8	49.8	99.0	2.7	4.6	2349	0.22		0.33	5.4	1:00	0.4	2.8	V	16.1	В		H		S	೨		
•	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	
<b>/</b>	EBR	K.	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									
4	EBL	<u>r</u>	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		53.6	O			ity ratio	,	ion		
	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	√s Ratio Perm	√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

To: Mission Bay Dr & Bluffside Av	& BIUITS	side A				IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	•	•	<b>←</b>	<b>→</b>	`	
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	2.0	
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	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 1.66 1.100 1.1583 0.95 2.71 7.8 1.13	
h) h		NBL 81 81 81 1100 4.4 11.00 0.95 1770 0.95 1770 0.95 85	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		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 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 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

Movement   Well   Wel	WEL WBR  64 45 64 45 64 45 1900 1900 4,4 4,4 1,00 085 1,00 085 1,00 085 1,00 085 1,00 085 1,00 086 1,0	NBT		SBT 714 714 714 714 714 1900 5.2 0.95 1.00 3539 1.00 3539 0.96 744 744 744 744 744 744 744 74
1	64 45 64 45 64 45 64 45 64 45 1900 1900 4.4 4.4 1.00 1.00 1.00 0.85 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 6.096 67 47 67 47 67 47 10 67 44 10 10.1 10.1 10.1 11.1	↑↑↑ 1297 1297 1900 5.0 0.95 1.00 0.95 1.00 0.96 1.00 0.96 1.351 0.96 1.351 0.96 1.351 0.96 1.351 0.96 1.351 0.97 0.96 0.96 1.351 0.99 0.96 0.96 0.96 0.96 0.96 0.96 0.96		714 714 714 714 1900 5.2 6.2 1.00 3539 1.00 3539 0.96 744 NA NA 6
64 45 1297 96 57 714 64 45 1297 96 57 714 9900 1900 1900 1900 1900 1900 4.4 4.4 5.0 5.0 4.4 5.2 100 0.85 1.00 1.00 0.95 1.00 10.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	64 45 64 45 1900 1900 4.4 4.4 1.00 100 1.00 0.85 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 6.096 67 47 0 67 47 1 10.1 10.1	1297 1297 1297 1000 5.0 0.95 1.00 3539 1.00 3539 0.96 1351 0.96 1351 2 2 2 110.9		714 1900 5.2 5.2 6.0 95 1.00 3539 0.96 744 NA NA 6 6
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44         44         50         50         44         5.2           100         100         995         100         100         0.95           100         0.85         1.00         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           0.70         1.00         1.00         0.96         0.96         0.96         0.96           67         3         1.351         1.00         59         7.44         0.96 <td< td=""><td>1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00</td><td>5.0 0.95 1.00 1.00 3539 1.00 3539 0.96 1351 NA NA 110.9</td><td></td><td>5.2 0.95 1.00 3.539 1.00 3.539 0.96 744 NA 6 6</td></td<>	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	5.0 0.95 1.00 1.00 3539 1.00 3539 0.96 1351 NA NA 110.9		5.2 0.95 1.00 3.539 1.00 3.539 0.96 744 NA 6 6
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Prof. Perm. NA Perm. Prof. NA  4 2 1 6  4 4 2 2  10.1 10.1 110.9 110.9 15.2 130.3  10.1 10.1 110.9 110.9 15.2 130.3  10.1 10.1 110.9 110.9 15.2 130.3  10.1 10.1 110.9 110.9 15.2 130.3  10.1 10.1 110.9 110.9 15.2 130.3  10.1 10.1 110.9 110.9 15.2 130.3  2.0 2.0 3.8 3.8 2.0 3.5  11.9 10.6 2616 1170 179 3074  2.0 2.0 3.8 3.8 2.0 3.5  11.0 10.0 0.2 0.0 0.3 0.24  67.8 654 82 54 62.7 1.6  10.0 0.2 0.0 0.1 1.29 2.73  10.0 0.2 0.0 0.1 0.2 2  10.0 0.2 0.2 81.3 4.6  E	Prot Perm 4 4 10.1 10.1	NA 2 110.9 110.9 0.74	,	NA 6 130.3 130.3
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0.07 0.07 0.74 0.74 0.087 4.4 4. 4. 5.0 5.0 4.4 5.2 2.0 2.0 3.8 3.8 2.0 3.25 1.19 106 2616 1170 179 3074 0.00 0.00 0.05 0.03 0.21 0.00 0.5 0.01 0.74 0.2 1.00 0.23 0.02 1.29 2.73 3.6 0.0 0.6 0.1 0.4 0.2 1.6 4 8.2 5.4 6.27 1.6 1.00 0.2 0.1 0.4 0.2 1.6 4 0.2 1.7.4 65.4 8.2 5.0 8.13 0.4 6.8 9 2.3 0.2 1.29 2.73 1.6 4 0.6 1.7.4 6.4 0.2 1.7.4 6.4 0.2 1.7.5 0.2 81.3 4.6 1.7.5 0.2 81.3 4.6 1.7.7 1.0 0.3 1.7.8 1.0 0.4 0.2 1.7.9 2.73 1.0.3 1.0 0.4 0.2 1.0.3 1.0 0.4 0.2 1.0.3 1.0 0.4 0.2 1.0.3 1.0 0.4 0.2 1.0.3 1.0 0.4 0.4 1.0.3 1.0 0.4 0.5 1.0.3 1.0 0.4 0.5 1.0.3 1.0		0.74		
44 44 5.0 5.0 5.0 4.4 5.2 2.0 3.8 3.8 2.0 3.5 119 106 2616 1170 179 3074 0.04 0.03 0.05 0.56 0.03 0.52 0.07 0.33 0.24 0.06 0.03 0.52 0.07 0.33 0.24 0.06 0.03 0.04 0.2 1.00 1.00 0.23 0.02 1.29 2.73 3.6 0.0 0.6 0.1 0.4 0.2 1.4 6.4 2.5 0.2 81.3 4.6 E	0.07		_	0.87
2.0         2.0         3.8         3.8         2.0         3.5           119         106         2616         1170         179         3074           0.04         0.03         0.05         0.01         0.21           0.05         0.03         0.05         0.07         0.33         0.24           6.78         6.54         8.2         5.4         8.27         1.6           1.00         1.00         0.02         1.29         2.73           3.6         0.0         0.6         0.1         0.4         0.2           71.4         65.4         2.5         0.2         81.3         4.6         A           E         A         A         F         A         B         B           E         A         A         F         A         B         B           8.9         +CM 2000 Level of Service         150.0         Sum of lost time (s)         17.5         17.5           150.0         Sum of lost time (s)         17.5         17.5         17.5         17.5	4.4	2.0		5.2
119 106 2616 1170 179 3074  3.04 0.03 0.21  0.05 0.03 0.52 0.07 0.33 0.24  6.78 654 82 54 6.27 1.6  1.00 0.00 0.23 0.22  1.00 0.00 0.2 1.29 2.73  1.00 0.00 0.2 1.29 2.73  1.00 0.20 0.2 1.29  1.00 0.20 0.2 1.29  1.00 0.20 0.2 1.29  1.00 0.20 0.2 1.29  1.00 0.20 0.3 0.2  1.00 0.20 0.3 0.2  1.00 0.20 0.3 0.2  1.00 0.20 0.3 0.3  1.00 0.20 0.3 0.3  1.00 0.20 0.3 0.3  1.00 0.3 0.3 0.3  1.00 0.3 0.3 0.3  1.00 0.3 0.3 0.3  1.0	2.0	3.8		3.5
20.04	119 106	2616		3074
0.00 0.00 0.05 0.05 0.024 0.08 0.03 0.05 0.03 0.05 0.03 0.024 0.08 0.03 0.024 0.09 0.03 0.02 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.03 0.03	c0.04	c0.38		0.21
0.56 0.03 0.52 0.07 0.33 0.24 6.78 6.54 8.27 1.6 1.00 1.03 0.02 0.7 1.5 1.04 0.27 1.4 6.54 2.5 0.2 81.3 4.6 1.8 A A F A B 1.0.3 1.0.				
64 82 54 627 16 100 100 023 002 1.29 2.73 3 6 00 06 0.1 29 2.73 11.4 65.4 2.5 0.2 81.3 4.6 E	0.56	0.52		0.24
1.00 1.00 0.23 0.02 1.29 2.73 3.6 0.0 0.6 0.1 0.4 0.2 7.74 654 2.5 0.2 81.3 4.6 6.8 2.3 7.3 7.4 6.8 9.2 2.3 7.3 7.4 6.8 9.2 2.3 7.0 8.3 7.0 8.2 7.0 8.	67.8	8.2		1.6
3.6 0.0 0.6 0.1 0.4 0.2 71.4 65.4 2.5 0.2 81.3 4.6 E	1.00	0.23		2.73
714 654 25 0.2 81.3 4.6  E	ital Delay, d2 3.6	9.0		0.2
68.9 2.3 A F A A F A A F A A F A A F A A F A A B B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B 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	71.4	2.5		4.6
68.9 2.3 10.3  E		V	A	V
## B  8.2 HCM 2000 Level of Service ratio 0.50 Sum of lost time (s) 54.2% ICU Level of Service 15	y (s)	2.3		10.3
8.2 HCM 2000 Level of Service 0.50 Sum of lost time (s) 54.2% ICU Level of Service 15	Approach LOS E	A		В
8.2 HCM 2000 Level of Service 150.0 Sum of lost time (s) 54.2% ICU Level of Service 15	Intersection Summary			
ratio 0.50 Sum of lost time (s) 150.0 Sum of lost time (s) 5.4.2% ICU Level of Service 15	HCM 2000 Control Delay	8.2	HCM 200	Level of Service
150.0 Sum of lost time (s) 54.2% ICU Level of Service 15	HCM 2000 Volume to Capacity ratio	0.50		
54.2% ICU Level of Service 15		150.0	Sum of lo	it time (s)
Analysis Period (min) 15		54.2%	ICU Level	of Service
	Analysis Period (min)	15		
Citical ane Group	Critical Lane Group	?		

KHA HCM Signalized Intersection Capacity Analysis

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KHA Oueues

Existing Conditions	Timing Plan: AM Peak Period
Balboa Transit Station	18: Mission Bay Dr & Magnolia Ave

	†	ţ	•	<b>—</b>	٠	<b>→</b>	
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	
Queue 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	111	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	0.05	0.27	0.36	0.34	0.46	
Intercontion Cummany							

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	†	~	<b>/</b>	ţ	4	•	<b>←</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		je-	₩.		¥	4₽	
Traffic Volume (vph)	74	9	89	6	<del>-</del>	2	31	912	7	37	721	57
Future Volume (vph)	74	9 0	83	9	- 500	2007	31	912	7	37	721	2007
Total Lost time (s)	0061	006	0061	0061	006	1900	7 4	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	1	0	32	947	0	38	799	0
Turn Type	Perm	Ν		Perm	N		Prot	NA		Prot	¥	
Protected Phases		80			4		-	9		2	2	
Permitted Phases	∞			4				9				
Actuated Green, G (s)		18.9			18.9		5.1	110.0		8.9	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							0.05	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			00.		1.20	0.48		00;	1.02	
Incremental Delay, d2		17.1			0.1		4.2	0.4		7.	0.3	
Delay (s)		90.6			57.8		۰.0	3.9		70.9	8.9	
Level of Service		٠,			ш e		_	Κ !		ш	<b>V</b> [	
Approach Delay (s)		90.6			27.8			6.7			9.7	
Approach LOS		_			ш			⋖			∢	
Intersection Summary												
HCM 2000 Control Delay			14.7	¥	3M 2000	HCM 2000 Level of Service	ervice		В			
HCM 2000 Volume to Capacity ratio	y ratio		0.43									
Actuated Cycle Length (s)			150.0	ઝ	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)			12									
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

	•	<b>†</b>	<b>/</b>	<b>/</b>	ţ	4	•	•	•	۶	-	`
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	
Frt					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	676	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					0.05			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			⋖		٥	A	
Approach Delay (s)		0.0			34.2			4.5			6.4	
Approach LOS		V			O			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	on		49.6%	⊇	J Level o	ICU Level of Service			A			
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				<b>Existing Conditions</b> Timing Plan: AM Peak Period	ω pl
	<b>&gt;</b>	4	<b>←</b>	•	٠	<b>→</b>		
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 %	92	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)	<b>∞</b>	0	0	0	<del>,</del>	0	0	
Control Delay (s)	41.7	0.0	0.0	0.0	12.1	0.0	0.0	ı
Lane LUS	ш !				<b>В</b>			
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

	•	<b>/</b>	•	<b>←</b>	<b>→</b>	•	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
-ane Configurations	F	¥.		₩	¢		
Sign Control	Stop			Stop	Stop		
Fraffic Volume (vph)	66	31	19	06	59	89	
-uture Volume (vph)	66	31	19	06	29	89	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly flow rate (vph)	106	33	20	46	31	73	
Direction, Lane #	EB 1	EB 2	NB 1	SB 1			
Volume Total (vph)	106	33		104			
/olume 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	807	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	A			
ntersection Summary							
Delay			7.8				
Level of Service			A				
Intersection Capacity Utilization	E.		24.6%	⊇	ICU Level of Service	f 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
	<b>/</b>	4	<b>←</b>	•	۶	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	ĸ.	*	¥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

																																				A		14.8	A		
<b>→</b>	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	А		HCM 2000 Level of Service		me (s)	Service		
٠	SBL	×	32	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.84	38	0	38	Prot	<del>-</del>		2.1	2.1	0.05	4.4	2.0	94	c0.02		0.40	18.0	1:00	1.0	19.0	Ф				:M 2000 L		Sum of lost time (s)	ICU Level of Service		
•	NBR		128	1900								0.84	152	0	0																					H		Su	0		
•	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	B	10.1	В		9.6	0.47	39.3	39.5%	15	
4	WBR		46	1900								0.84	22	0	0																										
<b>&gt;</b>	WBL	N. A.	104	1900	4.9	0.97	0.95	0.97	3332	0.97	3332	0.84	124	45	137	Prot	80		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			city ratio		ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Flt 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         0.19           w Call         15.2         78         9.4         0.6         18         5.7           Queue Delay         15.2         78         9.4         0.6         18         5.5           Queue Length Schi (ft)         18         0         4         0         3         16           Queue Length Schi (ft)         18         19         13         9         2.1         34           Queue Length Schi (ft)         18         19         13         10         3         16           Tun Bay Length (ft)         317         2205         18         18         33           Tun Bay Length (ft)         307         1397         3592         1569         1481         359           Slara-dation Cap Reductin         0         0         0         0         0         0         0           Schrige Cap Reductin         0         0         0 </th <th></th>	
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 18.0 18.0 18.0 18.0 18.0 18.0	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

	•	/	F	_	•	٠	<b>→</b>	
Movement	WBL	WBR	NBN	NBT	NBR	SBL	SBT	
Lane Configurations	ř.	W.	4	*	*-	×	**	
raffic Volume (vph)	223	33	0	714	119	17	312	
-uture Volume (vpn)	573	33	0	/14	61.1	-	312	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
Grade (%)	%0I-	-		%۶-	•		% 1	
otal Lost time (s)	4.9	4.9		0.9	4.9	4.4	2.7	
ane Util. Factor	0.97	1.00		0.95	1.00	00.1	0.95	
	00:1	0.85		00.1	0.85	00.1	00.1	
-It Protected	0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3605	1662		3592	1607	1770	3539	
-It Permitted	0.95	1.00		1.00	1:00	0.95	1.00	
satd. Flow (perm)	3005	7001		3242	100/	0//1	3539	
Peak-hour factor, PHF	0.93	0.93	0.92	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	240	32	0	768	128	18	335	
REDICTION (vph)	0	78	0	0	21	0	0	
ane Group Flow (vph)	240	7	0	768	77	18	335	
urn Type	Prot	Prot	Prot	NA	V0+mq	Prot	NA	
Protected Phases	7	7	<del>-</del>	9	7	2	2	
Permitted Phases					9		2	
Actuated Green, G (s)	8.1	8.1		16.5	24.6	6.0	22.1	
Effective Green, g (s)	8.1	8.1		16.5	24.6	6.0	22.1	
Actuated g/C Ratio	0.20	0.20		0.40	09:0	0.02	0.54	
Clearance Time (s)	4.9	4.9		0.9	4.9	4.4	5.7	
/ehicle Extension (s)	2.0	2.0		5.2	2.0	2.0	5.0	
ane Grp Cap (vph)	715	329		1452	896	36	1916	
/s Ratio Prot	c0.07	0.00		c0.21	0.02	0.01	60:00	
//s Ratio Perm					0.03			
/c Ratio	0.34	0.02		0.53	0.08	0.46	0.17	
Jniform Delay, d1	14.0	13.2		9.2	3.4	19.7	4.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	
ncremental Delay, d2	0.1	0.0		0.7	0.0	3.1	0.1	
Delay (s)	14.1	13.2		6.6	3.4	22.8	4.8	
evel of Service	В	В		⋖	A	ပ	A	
Approach Delay (s)	14.0			0.6			5.7	
Approach LOS	В			A			Α	
ntersection Summary								
HCM 2000 Control Delay			9.1	I	HCM 2000 Level of Service	Level of 3	Service	A
HCM 2000 Volume to Capacity ratio	city ratio		0.47					
Actuated Cycle Length (s)	,		40.8	S	Sum of lost time (s)	time (s)		15.3
ntersection Capacity Utilization	ion		35.2%	$\subseteq$	ICU Level of Service	of Service		A
Analysis Period (min)			15					

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HCM Signalized Intersection Capacity Analysis Page 43

KHA Queues

25: Morena Blvd & Balboa WB Ramps	3alboa	WB R	amps				Timing Plan: AM Peak Period
	•	~	<b>←</b>	•	<b>→</b>	*	
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	39	0	∞	0	
Queue Length 95th (ft)	28	18	70	0	18	0	
Internal Link Dist (ft)			933		2205		
Tum Bay Length (ft)		20		120		100	
Base Capacity (vph)	878	836	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   1583   100   1583   100   1583   100   1583   100	1.00		1.00			1.00	0.85
1770   1583   3539   1583   1533	1770 1583 1770 1683 1770 1683 1700 1689 088 088 088 088 088 088 088 088 088 0			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         2.0         2.0         3.0         3.3         4         A	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     8.0   7.0   7.0     8.	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	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 0.01 208 0.02  0.05 0.01 0.43 0.21  1.22 11.7 3.7 0.0  1.00 1.00 1.00  2 0.5 0.1 1.8 0.0  1.2  1.2  0.0  2 0.5 0.1 1.8 A A A A A A A A A A A A A A A A A A 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   2006   1583   2006   1583   2006   1583   2007   2008   20096   1583   2000   2008   20096   1583   2000   20096	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 0.43 11 (16) 12 3.36	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 8 1.0 0.43 1.0 0.4	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 0.07 0.043 0.21 0.021 0.05 0.05 0.01 0.03 0.04 0.05 0.01 0.03 0.04 0.05 0.05	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 1.25 B 1.25 B 1.26 A 1.27 A 1.38 A 1.38 A 1.38 A 1.48 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 1.00 2 0.5 0.1 12.7 11.8 B 12.2 B B 2 B 3.3 1	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	122 117 100 1.00 2 0.5 0.1 12.7 11.8 B 12.2 B 12.2 B 3.3 etay 3.3 o Capacity ratio 0.43 in (s) 3.36 in (s) 3.3 in (s) 3.3	0.07		0.43			0.11	0.27
100 100 100 100 100 100 100 100 100 100	2 0.5 1.00 1.00 2 0.1 2.7 1.18 B B 1.2.2 B B A 1.2.2 B A 1.2	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 12.2 B B B B B 12.2 C B B B B B B B B B B B B B B B B B B B	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  y  y  y  y  y  y  y  y  y  y  y  y	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
	<b>\</b>	4	<b>←</b>	•	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	¥		+	<b>R</b>	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

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Balboa Transit Station 28: Morena Blvd & Gesner St

Existing Conditions Timing Plan: AM Peak Period

C	<b>\</b>	← [	•	<b>≯</b> §	<b></b> 5	
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	
on Committee						
Itersection Summary						

Synchro 9 Report Page 48 KHA Queues

Balboa Transit Station Existing Conditions 28: Morena Blvd & Gesner St

varions ume (vph) une (vph) (vphp)	WBR 47 47 1900	<b>→ NBT</b> ***  ***  ***  ***  ***  ***  ***	NBR	Je Se €	\$BT	
ons phi) phi) phi) s) s) PHF (vph)	WBR 47 47 1900	NBT	NBR	SBL	SBT	
ons ph) ph) ) ) ) ) ) ) ) ) ) ) ) ) )	47 47 1900	\$852	١	ŀ		
(vph)  (vph)  (vph)  (vph)	47 47 1900	895	<b>R</b> _	×	**	
ph) ) PHF ((vph) (vph)	1900	862	40	46	351	
PHF (vph)	1900		40	46	351	
(vph)		1900	1900	1900	1900	
PHF (vph)		5.9	5.9	4.4	0.9	
) PHF (vph) (vph)		0.95	1.00	1.00	0.95	
) PHF (vph)		1.00	0.85	1.00	1.00	
PHF (vph) (vph)		1.00	1.00	0.95	1.00	
m) or, PHF on (vph) w (vph)		3539	1583	1770	3539	
m) or, PHF on (vph) ow (vph)		1.00	1.00	0.95	1.00	
or, PHF on (vph) w (vph)		3539	1583	1770	3539	
n (vph) w (vph)	0.85	0.85	0.85	0.85	0.85	
	22	1053	47	24	413	
	0	0	6	0	0	
	0	1053	38	54	413	
Ā		¥	Perm	Prot	NA	
		2		-	9	
Permitted Phases			2			
		22.9	22.9	3.7	30.9	
(S		22.9	22.9	3.7	30.9	
J		0.49	0.49	0.08	99:0	
		2.9	5.9	4.4	0.9	
		4.4	4.4	5.0	4.2	
(vph)		1742	779	140	2351	
v/s Ratio Prot c0.03		c0.30		c0.03	0.12	
Perm			0.02			
		09.0	0.05	0.39	0.18	
		8.5	6.1	20.3	3.0	
		1.00	1.00	1:00	1.00	
Incremental Delay, d2 0.3		0.8	0.0	9.0	0.1	
19		9.3	6.2	21.0	3.0	
		⋖	⋖	ပ	Α	
Approach Delay (s) 19.2		9.2			5.1	
Approach LOS B		A			А	
Intersection Summary						
HCM 2000 Control Delay		9.8	H	M 2000 I	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio		0.52				
Actuated Cycle Length (s)		46.5	Sul	Sum of lost time (s)	time (s)	14.7
Intersection Capacity Utilization		45.0%	ಠ	ICU Level of Service	Service	A
Analysis Perod (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

Daiboa 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	Sinnal	Travel	Diet	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	Œ	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	=	35	27.4	12.8	40.2	0.23	20.6	
Bond St	=	35	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	A
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		8:0	16.3	0.12	27.4	O
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	COS
Grand Ave	=	32	37.4	5.9	43.3	0.31	25.9	В
Bunker Hill St	=	35		4.6	18.9	0.11	20.1	O
Magnolia Ave	=	32		4.3	25.7	0.17	23.5	O
Garnet Ave	=	35		32.2	46.0	0.10	8.0	ш
Damon Ave	=	32		2.7	14.4	0.09	21.6	O
Bluffside Av	=	35		15.4	35.5	0.16	15.9	Ο
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	Arrerial Level of Service

	1.6 C	5.9 D	18.2 C			sed LOS	16.6 D	2.5 C	5./ F	7.3 D	6.3 B	1.2 E	
			0.93				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	<u>ن</u> م			20.0						
:	35	32		: SB Mission Bay Dr	How	Speed	35	35	35	35	35	35	

Synchro 9 Report	Page 1
KHA	Onenes

Balboa Transit Station

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	1	†	<i>&gt;</i>	<b>\</b>	ţ	✓	•	•	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	ţ		F	4₽			\$			<del>(</del>	
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 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
	•	<b>†</b>	ţ	4	٠	*	
Movement	EBE	EBT	WBT	WBR	SB	SBR	
Lane Configurations		‡	4₽	¥L.	*		
Traffic Volume (vph)	0	433	657	1033	790	7	
Future Volume (vph)	0	433	657	1033	190	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	929	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	92.0		
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		∢	В	V	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

	^	<b>†</b>	ţ	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		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	
Intercoction Cumman							

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 79 19
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 5.4 100 1100 1100 1100 98 98 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 96 96 96 96 96 96 96 96 96 96 96 96 96
74 1199 1 74 1199 1 74 1199 1 74 1199 1 74 155 100 75 100 77 1249 1 77 1		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 0,95 100 1,00 1,00 0,95 100 3,433 3539 3 3,433 3539 3 0,96 0,96 0 77 1249 1 77 1249 1 141 125.3 10 141 125.3 10 141 125.3 10 5 2 2 2 14.1 125.3 10 14.1 125.		1900 5.4 0.97 1.00 0.95 3433 0.95 3433 0.96 576 576 Prot 1	1900 5.4 0.85 11.00 11.60 98 98 98 19 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 0.85 1.00 1.00 1.00 1.883 1.99 1.9 1.9 1.9 1.9
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	1,00 1,583 1,00 1,583 0,96 98 98 19 19 19
3433 3539 3 3433 3539 3 0.96 0.96 0 77 1249 1 77 1249 1 7 1253 10 14.1 125.3 10 0.08 0.74 0 4.4 5.5 2.0 5.6 2.0 5.6 2.0 5.6		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 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			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		U	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

WEL WET WRR NBL  0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2243 0 0 0 2351 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 2361 0 0 0 0 0 0 0 0 2361 0	0 0 0 1900	NBR SBL	SBT	SRR
figurations		ĸ.		5
tume (vph)         0         1699         53         0         2243         0         0           tume (vph)         0         1690         53         0         2243         0         0           time (s)         49         49         49         49         0         0           time (s)         49         49         49         49         0         0           time (s)         49         49         49         49         49         0         0           time (s)         6         6         700         100 </td <td></td> <td></td> <td></td> <td>*-</td>				*-
Nume (vph) 0 1699 53 0 2243 0 0 0 4 (vphpl) 1900 1900 1900 1900 1900 1900 1900 190		29 0	0	0
time (s) 1900 1900 1900 1900 1900 1900 1900 190			0	0
Factor   4.9   4.9   4.9   4.9		1900 1900	1900	1900
Factor 0.95 0.95 100 100 100 100 100 100 100 100 100 10		4.9		
ted 100 100 100 100 100 100 100 100 100 10		1.00		
ted (100) 100 100 100 100 100 100 100 100 100		98.0		
w (prot)         3523         3539           w (pem)         3523         3539           w (pem)         3523         3539           r (actor, PHF         0.95         0.97		1.00		
Hed   1,00   1,00     W (perm)   1,00   1,00     W (perm)   1,00   1,00     W (perm)   1,00   1,00     W (perm)   0   1,788   56   0,95   0,95   0,95     W (perm)   0   1,788   56   0   2,361   0   0     W		1611		
w (perm)         3523         3539           riacior, PHF         0.95         0.97		1.00		
reactor, PHF         0.95         0.97         0.95         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.97         0.92         0.92		1611		
(vph)         0         1788         56         0         2361         0           eduction (vph)         0         0         0         0         0         0           p. Educov (vph)         0         1844         0         0         2361         0           p. Prases         2         A         6         A         A         A           p. Prases         1700         1700         1700         A         <	0.95	0.95 0.95	0.95	0.95
ruckion (vph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0	0
up Flow (vgh)         0         1844         0         0         2361         0           Phases         2         6         7         3         2         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         4         9         9         4         9         9         9         9         9         1         9 <td>0</td> <td>0 0</td> <td>0</td> <td>0</td>	0	0 0	0	0
Phases   NA     Phases   2     Phases   2     Phases   2     Phases   2     Phases   170.0     Green, g (s)   170.0			0	0
Phases 2 Phases 1 Phases 1 Phases 1700 Geen, G (s) 1700 Frod (s) 173 Cap (vph) 3523 Prod (s) 173 Cap (vph) 652 Perm 052 Perm 055 Perm 053 Perm 063 Perm 064 Perm 065 Perm 0		Perm		Perm
Phases   170.0     Green, G (s)   1.00     Alexision (s)   7.3     Alexision (s)   0.52     Perm   0.52     Perm   0.52     Perm   0.52     Perm   0.54     Delay, d2   0.5     LOS   A     LOS   A     O'Control Delay (si)   0.5     O'Con				
Green, G (s) 1700 Green, G (s) 1700 Green, g (s) 1700 Green, g (s) 1700 Total Resison (s) 7.3 Cap (sph) 3523 Perm 0.52 Perm 0.53 Perwise 0		2		9
Green, g (s) 1700 g/C Ratio 100 s Time (s) 49 49 49 49 49 49 49 49 49 49 49 49 49 4		170.0		
g/C Ratio 1.00 9 (C Ratio 1.00 9 (1.00	,	170.0		
Time (s) 4.9  Alersion (s) 7.3  Alersion (s) 7.3  Alersion (s) 35.3  Prof 0.52  Perm 0.53  Perm 0.5		1.00		
Alersion (\$) 7.3   7.3     Cap (uph) 35.23     Cap (uph) 35.23     Perm 0.52     Perm 0.52     Delay, d1 0.0     In Delay, d2 0.5     Delay (\$) 0.5     Octor of the permitted of the permi		4.9		
Cap (uph)         3523           Prof         0.52           Perm         0.52           Perm         0.52           Delay, d1         0.0           on Factor         1.00           tal Delay, d2         0.5           cievice         A           Delay (s)         0.5           LOS         A           no Summary         0.5           O'Andume to Capacity ratio         0.70		7.3		
Prof. 0.52 Perm 0.52 Delay, d1 0.0 on Factor 1.00 and Eactor 1.00 LOS Delay (\$\$ 0.5 LOS A A Delay (\$\$ 0.5 A A OCANTO Delay 0.6 OVANUME to Capacity ratio 0.70		1611		
Perm         0.52           belay, d1         0.0           on Factor         1.00           lal Delay, d2         0.5           service         0.5           Delay (s)         0.5           LOS         A           an Summary         0.6           O Control Delay         0.6           O Vodure to Capacity ratio         0.70				
0.52  0.00  on Factor 0.00  tal Delay, d2 0.5  erivice A  Delay (s) 0.5  O.5  Delay (s) 0.5  O.5  O.5  O.5  Delay (s) 0.5  O.5  O.5  O.5  O.5  O.5  O.5  O.5		0.02		
00 100 02 0.5 0.5 0.5 A 0.5 A 0.5 A 0.5 A 0.5 Oelsy an oo		0.02		
100 0.5 0.5 0.5 A A A A A A Delay 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0		
d2 0.5 0.5 0.5 A A A A A A A A A A A A A A A A A A A		1.00		
0.5 A 0.5 A 0.5 A A 0.5 A A 0.5 Delay 0.6		0.0		
A 0.5 0.5 A A A A A A A A A A A A A A A A A A A		0.0		
0.5 A A A Delay 0.6 0.70		A		
A mmary 0.6 irol Delay 0.70 mre to Capacity ratio 0.70	0.0		0.0	
0.6	⋖		⋖	
0.70				
		А		
170.0		7.9		
Utilization 69.3		ပ		
Analysis Period (min) 15				

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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>&gt;</i>	<b>/</b>	ţ	1	•	•	•	٠	<b>→</b>	•
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

	•	†	>	•	ţ	4	•	-	•	٠	<b>→</b>	•
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

Monomental		1	<b>†</b>	~	<b>/</b>	ţ	✓	•	-	•	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.		*				<b>K</b>			*-
1437 514 0 1578 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 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	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 (1) 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 8	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 0.5 5.7 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 F B	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						ഥ	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	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	II level 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	501	155	925	0	0	0	0.11		
4	WBR	63	0.12	6.1	0.0	6.1	<b>∞</b>	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	Intercoction Summan	mersecuon sammary

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Balboa Transit Station 8: Balboa Ave & Moraga Ave

Existing Conditions Timing Plan: PM Peak Period

																																				В		16.5	O	
•	SBR	<b>k</b> _	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	00.1	30.7					HCM 2000 Level of Service		time (s)	Service	
بو ر	WBR SBL	# %	91 100		_		1.00 1.00		_	•		1583 1770	86.0 86.0	=		60 102	Perm Prot	4			37.3 10.5			3.9 2.0	746 234	90:00					115 320		31	O		HCM 2000 L		Sum of lost time (s)	ICU Level of Service	
ļ	WBT WI	<b>‡</b>	1279		_		0.95					3539 15		1305		1305	NA Pe	9			37.3 3	0	6.5		1668 7				17.5 1		20.7		19.5	В		16.3	89:0	79.1	65.1%	15
†	EBT	*	$\stackrel{\smile}{\sim}$	_	_		0.95					3539	0.98	1400		1400	¥				57.3			4.8		c0.40		0			4.0		1	В						
•	Movement EBL	Lane Configurations	Traffic Volume (vph) 356	Ę	-	· ·	Lane Util. Factor 0.97		Flt Protected 0.95	rot)	FIt Permitted 0.95	Satd. Flow (perm) 3433	Peak-hour factor, PHF 0.98	Ř		Lane Group Flow (vph) 363		Protected Phases 5	Permitted Phases	_	(S	J	Clearance Time (s) 4.4	Vehicle Extension (s) 2.0	Lane Grp Cap (vph) 642		Perm				Inclemental Delay, uz 0.7	Service	(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

Synchro 9 Report Page 15

Balboa Transit Station 9: Clairemont Dr & Balboa Ave

Existing Conditions Timing Plan: PM Peak Period

	^	<b>†</b>	<b>/</b>	ļ	•	<b>—</b>	•	٠	<b>→</b>	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	395	1187	427	1171	98	319	320	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	20.9	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

sns (hph) (th)	•											
		†	<u>/-</u>	<b>&gt;</b>	ţ	√	•	<b>←</b>	•	٠	<b>→</b>	•
, — ·	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
— ·	E.	4₽		1	₩		F	#	<b>X</b>	*	4₽	
· - ·	379	1083	22	410	1020	104	83	306	336	250	504	291
- '	379	1083	22	410	1020	104	83	306	336	250	204	291
	06	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
Lane Util. Factor 0.	16.0	0.95		16.0	0.95		1.00	0.95	1.00	1.00	0.95	
	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.95	
	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
rot)	3433	3513		3433	3490		1770	3539	1583	1770	3345	
	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm) 34	3433	3513		3433	3490		1770	3539	1583	1770	3345	
Jr, 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
	395	1128	26	427	1062	108	98	319	320	260	525	303
	0	7	0	0	4	0	0	0	37	0	43	0
Lane Group Flow (vph) 3	395	1185	0	427	1167	0	98	319	313	260	785	0
	Prot	MA		Prot	NA		Prot	NA	vo+mq	Prot	NA	
Protected Phases	2	2		-	9		က	∞	-	7	4	
Permitted Phases									∞			
Actuated Green, G (s) 2:	22.1	59.3		23.3	59.8		12.0	24.4	47.7	26.7	39.1	
Effective Green, g (s) 2:	22.1	59.3		23.3	59.8		12.0	24.4	47.7	26.7	39.1	
	0.14	0.39		0.15	0.39		0.08	0.16	0.31	0.17	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		2.0	2.4	2.0	2.0	2.6	
Lane Grp Cap (vph) 4	464	1357		521	1359		138	295	491	307	852	
	0.12	c0.34		c0.12	0.33		0.05	0.09	0.10	c0.15	c0.23	
//s Ratio Perm									0.10			
//c Ratio 0.	08.0	0.87		0.82	98.0		0.62	0.57	0.64	0.85	0.92	
Uniform Delay, d1 6.	63.6	43.6		63.1	43.0		9.89	59.7	45.5	61.4	55.7	
Progression Factor 1.	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
d2	8.3	6.7		9.3	9.6		6.2	1.0	2.0	18.3	15.1	
7	71.8	50.3		72.3	48.6		74.7	60.7	47.5	79.7	70.8	
Level of Service	ш	۵		ш	Ω		ш	ш	Ω	ш	ш	
Approach Delay (s)		55.7			55.0			56.2			72.9	
Approach LOS		ш			٥			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			59.2	H	:M 2000	HCM 2000 Level of Service	Service		ш			
HCM 2000 Volume to Capacity ratio	ig.		0.89									
Actuated Cycle Length (s)			153.5	Su	Sum of lost time (s)	time (s)			20.5			
Intersection Capacity Utilization			87.8%	೨	U Level o	ICU Level of Service			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	•	,	_	<b>→</b>	
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	1	22	22	0061								0.97	23	0	0																										
<b>→</b>	SBT	4	66	66	0061	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	A		
•	NBT	4	177	171	0061	4.9	1.00	0.97	1.00	1810	0.97	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	0061								16:0	16	0	0	Perm		∞																		Service					
✓	WBR		10	9	1900								16:0	10	0	0																					HCM 2000 Level of Service		t time (s)	ICU Level of Service		
ţ	WBT	₩	222	227	061	2.0	0.95	1.00	1.00	3530	1.00	3530	16.0	574	<del>-</del>	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	⋖	10.9	В		CM 2000		Sum of lost time (s)	:U Level		
<b>/</b>	WBL	F	110	110	006	4.4	1.00	1.00	0.95	1770	0.95	1770	0.97	113	0	113	Prot	-		6.7	6.7	0.14	4.4	2.0	245	c0.06		0.46	19.2	1.00	0.5	19.7	В				I		S	≅		
~	EBR		78	88	0061								0.97	53	0	0																					12.9	0.48	48.4	47.6%	15	
<b>†</b>	EBT	₩	373	373	961	5.1	0.95	0.99	1.00	3502	1.00	3502	0.97	382	2	409	M	2		15.4	15.4	0.32	5.1	2.8	1114	0.12		0.37	12.7	1.00	0.2	12.9	В	13.5	В							
^	EBL	*	16	16	0061	4.4	1.00	1.00	0.95	1770	0.95	1770	0.97	16	0	16	Prot	2		6.0	6.0	0.02	4.4	2.0	32	0.01		0.50	23.5	1.00	4.4	27.9	S					ity ratio		ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	I otal 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)	<ul> <li>c Critical Lane Group</li> </ul>

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

<b>→</b>	SBT	224	0.98	105.8	0.0	105.8	191	#361	328		234	0	0	0	96:0	
<b>←</b>	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	
<b>/</b>	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	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.

Queue shown is maximum after two cycles.

Balboa Transit Station 11: Olney St & Grand Av

i i. Oilley of & Olar	מושום אים									200		2
	4	<b>†</b>	<u> </u>	<b>/</b>	ţ	4	•	•	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥	4₽		F	44			\$			<del>(</del>	
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
Adi. 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	က	0
Lane Group Flow (vph)	16	1050	0	144	1439	0	0	176	0	0	221	
urn Type	Prot	M		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		-	9			∞			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.8	75.2		15.2	87.8			29.5			29.5	
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		80.00	c0.41							
//s Ratio Perm								0.11			c0.21	
//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	Ξ			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			٥			ш	
Approach Delay (s)		20.1			18.2			46.2			106.5	
oproach LOS		ပ			В			٥			ı	
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	NS.	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 <del>à</del>	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) 1	006	1900	1900	1900	1900	1900	1900	
	4.4	5.1		4.9		4.9		
Lane Util. Factor	1.00	0.95		0.95		1.00		
Frt	1.00	1.00		66.0		96:0		
Flt Protected (	0.95	1.00		1.00		96:0		
rot)	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	
	Prot	¥	Prot	NA		Prot		
Protected Phases	2	2	<del></del>	9		4		
Permitted Phases								
Actuated Green, G (s)	2.8	113.1		106.1		10.9		
S)	2.8	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	A		⋖		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					
<ul> <li>c Critical Lane Group</li> </ul>								

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

	t	-			
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	
Queue 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					

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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	<b>~</b>	
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	¥	*	4₽				
Traffic Volume (vph)	19	1183	1573	30	0	0	
Future Volume (vph)	19	1183	1573	90	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				
Ff	1.00	1.00	1.00				
Flt Protected	0.95	1.00	1.00				
Satd. Flow (prot)	1770	1863	3529				
Flt 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	NA				
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	c0.67	0.48				
v/s Ratio Perm							
v/c Ratio	0.59	19.0	0.54				
Uniform Delay, d1	77.6	0.0	2.3				
Progression Factor	1.00	1.00	0.19				
Incremental Delay, d2	2.1	1.9	0.3				
Delay (s)	87.8	1.9	0.7				
Level of Service	ш	A	A				
Approach Delay (s)		5.9	0.7		0.0		
Approach LOS		V	A		A		
Intersection Summary							
HCM 2000 Control Delay			3.0	H	1 000C M	HCM 2000 Level of Service	Ą
HCM 2000 Volume to Canacity ratio	ratio		0.7.0	=	7007		
Actuated Cycle Length (s)	latio		170.0	S	Sum of lost time (s)	lime (s)	12.7
Intersection Capacity Utilization			%2.99	□	ICU Level of Service	Service	U
Analysis Period (min)			72				
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>&gt;</i>	•	<b>←</b>	<b>→</b>	
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					
<b>→</b>	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	Z :	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	<del>-</del>		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	<b>V</b>			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

Synchro 9 Report Page 29

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
<b>→</b>	SBT		0.83					#396	743		1480	0	0	0	0.83
<b>←</b>	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	
<b>/</b>	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

<b>→</b>	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	
<b>←</b>	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	
<b>\</b>	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 1.00 100 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 0.91 187 82 1375 187 82 1375 198 82 1375 105 9 31.0 141.1 105 9 31.0 14
100 100 095 085 100 100 100 095 100 1583 1770 3539 091 097 091 187 82 1375 158 82 1375 158 82 1375 159 82 1375 150 93 100 118 083 105 31.0 141.1 105,9 31.1 105,9 31.1 105,9 31.1 105,9 31.1 105,9 31.1 105,9 31.1
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 2000 Level of Service 17.1 0.3 3.3 17.1 18.6 0.7 17.1 0.3 3.3 17.1 0.3 3.3 17.1 0.3 3.3 17.1 0.3 3.3 18.1 0.3 3.3 19.1 0.3 3.3 10.3 0.3 0.3 3.3 10.3 0.3 0.3 0.3 10.3 0.3 0.3 0.3 10.3 0.3 0.3
091 091 091 187 82 1375 35 0 0 152 82 1375 Perm Prot NA 1059 31.0 141.1 1059 31.1 10
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 5 6.3 3 10.0 5 6.3 9 13.4 59.6 4.0 13.4 59.6 4.0 13.4 59.6 4.0 13.4 59.6 0.0 15.0 0.7 A A D A A D A A A D A A A B A A A CLUevel of Service  Sum of lost time (\$) ICU Level of Service
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)
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         NBI         SBI         SRI           Lane Group         EBT         WBT         NBI         NBI         SBI           Lane Group         EBT         WBT         NBI         SBI         SBI           Lane Group Flow (vph)         178         15         55         1120         39         944           Vac Ratio         0.83         0.10         0.56         0.35         0.04         0.35           Courie Delay         79.6         43.9         108.6         4.5         71.9         9.3           Obeue Length Bay         0.0         0.0         0.0         0.1         0.0         0.3           Obeue Length 55th (ft)         1.38         8         4.5         1.15         9.6           Obeue Length 55th (ft)         2.20         32         109         288         m65         260           Obeue Length 55th (ft)         3.03         2.71         804         461         1.155           Obeue Length 55th (ft)         3.03         2.71         804         461         1.155           Lum Bay Length (ft)         3.45         2.66         1.37         2.20         1.67	18: Mission Bay Dr & Magnolia Ave	& Magr	nolia A	ķ				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         0.0         719           796         439         1086         45         719           138         8         64         54         719           220         32         109         288         m65           303         271         804         65         66           45         13         270         167         2           6         13         273         107         167         2           7         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		†	ţ	•	+	٠	<b>→</b>	
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 4.5 719 796 439 1086 4.5 719 796 439 1086 4.5 719 138 8 64 54 42 220 32 109 288 m65 303 271 894 65 36 137 2720 167 2 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 303 271 680 0 0 0 0 0 0 0 0 0 0 0 0 0 0	v/c Ratio	0.83	0.10	0.55	0.41	0.46	0.36	
79,6 43,9 1086 4,5 719 138 8 4 54 42 220 32 109 288 m65 303 271 604 345 265 137 2720 167 2 0 0 0 0 0 0 0 0 0	Control Delay	9.62	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 10 0 0 0 10 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 86 345 265 137 2720 167 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 50 345 265 137 2720 167 0 0 0 410 0 0 0 0 0 0	Queue Length 95th (ft)	220	32	109	288	m65	260	
65 50 137 2720 167 107 107 107 107 107 107 107 107 107 10	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)			9		20		
0 0 0 410 0 0 0 0 0 0 0 0 0 0 0.52 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 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	410	0	982	
0 0 0 0 0 0 0 0 0 0 0 0 0 0.52 0.06 0.40 0.48 0.23	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

Movement ane Configurations raffic Volume (vph) ruture Volume (vph) deal Flow (vphp)) otal Lost time (s)	EBL	EBT	CDD						000	5	-	
e Configurations fic Volume (vph) rre Volume (vph) I Flow (vphpl) II Lost time (s)			EBK	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
fic Volume (vph) Ire Volume (vph) Il Flow (vphpl) Il Lost time (s)		4			4		F	₩		¥	4₽	
ire Volume (vph) il Flow (vphpl) il Lost time (s)	23	က	115	7	_	7	53	1072	က	37	793	113
I Flow (vphpl)	23	က	115	7	<del></del>	7	53	1072	33	37	793	113
I Lost time (s)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
		4.9			4.9		4.4	2.0		4.4	2.0	
ane Util. Factor		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	æ	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	Ν		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		∞			4		<del>-</del>	9		2	2	
Permitted Phases	∞			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	Þ		ш	⋖	
Approach Delay (s)		93.3			6.79			8.5			10.4	
Approach LOS		ш			ш			A			В	
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	<b>→</b>	
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

Advancement   EBL   EBT	1 EBR 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	118 118 1900 0.96 123		MBR NBL 38 0 38 0 1900 1900 40 0 0 0 0 0 1 Prot 1	NB1 100 100 100 100 100 100 100 1	1900 0.96 45 45 45 45 45 45 45 45 45 45 45 45 45	85 85 85 85 1900 1.00 1.00 0.95 1770 0.95 1770 0.95	\$BT 860 860 1900 5.0 0.95 1.00	SBR 0 0 1900
1900		118 118 1900 0.96 123				1900 0.96 45 45	85 85 85 1900 1.00 1.00 0.95 1770 0.95 1770 0.96 89	860 860 1900 5.0 0.95 1.00	0001
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		118 118 1900 0.96 0.96				1900 0.96 45	85 85 85 1900 1.00 1.00 0.95 1770 0.95 1770 0.96 89	860 860 1900 5.0 0.95 1.00	0 0 1900
0.096		118 1900 0.96 123				1900	85 1900 4.4 1.00 1.00 0.95 1770 0.95 1770 0.95 89	860 1900 5.0 0.95 1.00	1900
0.000		1900 0.96 123 0				1900	1900 4.4 1.00 1.00 0.95 1770 0.95 1770 0.96 89	1900 5.0 0.95 1.00	1900
960000		0.96		0.9		0.96	1.00 1.00 0.95 1770 0.95 1770 0.96	5.0 0.95 1.00 1.00	
0.0000		0.96		0.9 Pr		0.96	1.00 1.00 0.95 1770 0.95 0.96 89	1.00	
0.0000000000000000000000000000000000000		0.96		0.9		0.96	1.00 0.95 1770 0.95 1770 0.96 89	1.00	
0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.96		0:0 Fg		0.96	0.95 1770 0.95 1770 0.96 89	1.00	
000000000000000000000000000000000000000		0.96		0.9 Pg		0.96	0.95 0.95 1770 0.96 89		
0.0000000000000000000000000000000000000		0.96		0.9 Pr		0.96	0.95 1770 0.96 89	3539	
0.0000000000000000000000000000000000000		0.96		0.9 Pr		0.96	96:0	1.00	
0000		123		0.9 Pr		0.96 45	96.0	3539	
0 0 0 4		0 173	134 29 NA	Ā		45	68	96:0	0.96
0 0 4		_	134 NA	준		_		968	0
0 4			NA .	P		، د	0	0	0
4	4	0	NA.	Prot		0	86	868	0
4	4	Perm		<b>←</b>	z		Prot	NA	
Permitted Phases 4 ctuated Green, G (s) ffective Green, a (s)			4		9		2	2	
ctuated Green, G (s)		4							
(flective Green, a (s)			7.2		52.5		8.0	6.79	
			7.2		52.5		8.0	6.79	
Actuated g/C Ratio			80:0		0.65		0.09	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	
			۵		A		ပ	⋖	
Approach Delay (s) 0.0	0		36.8		6.9			4.8	
Approach LOS	-		D		A			A	
ntersection Summary									
HCM 2000 Control Delay	8.2	HC	M 2000 Lev	HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio	0.45								
Actuated Cycle Length (s)	82.0	Sur	Sum of lost time (s)	le (s)		14.3			
ntersection Capacity Utilization	54.1%	2	ICU Level of Service	ervice		¥			
Analysis Period (min)	15								

KHA HCM Signalized Intersection Capacity Analysis

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Reisting Openitions	Existing Collulions	liming Plan: PM Peak Period	
Balhoa Transit Station	יים	Bay Dr &	

-	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
<b>√</b>	. 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	
<b>←</b>	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
<b>/</b>	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

lysis

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
	<b>&gt;</b>	-	٠	<b>→</b>	
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	<b>←</b>	•	٠	<b>→</b>	
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	77	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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KHA Oueues

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     4,0   0.94   0.94   0.94   0.94   0.94   0.94     5,0   0.94   0.94   0.94   0.94   0.94   0.94     5,0   0.94   0.94   0.94   0.94   0.94   0.94     5,0   0.94   0.94   0.94   0.94   0.94   0.94     5,0   0.94   0.94   0.94   0.94   0.94   0.94     5,0   0.95   1.00   0.95   1.00     5,0   0.95   1.00   0.95   1.00     5,0   0.95   1.00   0.94   0.94     5,0   0.94   0.94   0.94   0.94   0.94     5,0   0.95   1.94   0.94   0.94     5,0   0.95   1.94   0.94   0.94     5,0   0.95   0.95   0.95     5,0   0.95	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	だ	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   9.11   158   2059     1900   0.10   0.01   0.05   0.05     1900   0.10   0.00   0.10     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   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   1.00   0.5     1900   1.00   0.5   0.5     1900   1.00   0.5   0.5     1900   1.00   0.5   0.5     1900   1.00   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1900   0.5   0.5     1	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 6.38 294 1378 911 158 26.9 6.00 0.17 0.02 0.03 6.03 6.00 0.01 0.01 0.01 0.05 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	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 Property of the control o	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 0.00 0.5 0.0 0.5 0.6     1.62 15.2 10.8 4.5 20.1 6.7     8 8 8 8 A C A A A A A A A A A A A A A A	Permitted Phases					9		2	
8.5   8.5   17.8   26.4   26.6     4.9   4.9   6.0   4.9   6.5     4.9   4.9   6.0   4.9   6.5     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     6.30   203   0.045   0.13   0.03     6.31   0.01   0.01   0.05   0.05     6.32   0.03   0.045   0.13   0.37   0.58     6.32   0.03   0.045   0.13   0.37   0.58     6.3   0.01   0.01   0.05   0.0     7.3   0.01   0.01   0.01     8   B   A   C   A     9.2   A     16.0   0.50   0.50     16.1   0.50   0.50     16.2   0.50   0.50     16.3   0.50   0.50     16.4   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     16.5   0.50   0.50     17.3   0.50     18.5   0.50   0.50     19.5	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 0.5 0.6 1.0.4 1.0	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 1 0.17 0.02 0.03 c.0.34 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	c0.06	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   16.0 8 A C A A A A B A C A A A A A B 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	0.1	
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 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		10.8	4.5	20.1	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	В		Э ,	∢	ی	¥	
A A A  L  L  Slay  8.9 HCM 2000 Level of Service Capacity ratio 0.60  h (s)  Vilization 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			Υ			A	
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 (1.6)  h (s) 45.7 Sum of lost time (s)  Utilization 52.3% ICU Level of Service 15	HCM 2000 Control Delay			8.9	Ξ	CM 2000	Level of 3	Service	A
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	ıtion		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

		I	I		I		
	۸	~	•	•	<b>→</b>	•	
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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KHA Oueues

Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

Existing Conditions Timing Plan: PM Peak Period

	•	†	~	<b>&gt;</b>	ţ	4	•	•	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*		₩.					‡	*-		*	*-
Traffic Volume (vph)	111	0	205	0	0	0	0	731	197	0	722	629
Future Volume (vph)	11	0	202	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							0.2	0.1		0.5	0.0
Delay (s)	=======================================		12.2					4.9	4.0		4.9	0.9
Level of Service	Ω		В					V	V		V	A
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		A			
HCM 2000 Volume to Capacity ratio	ty ratio		09.0									
Actuated Cycle Length (s)			33.1	S	Sum of lost time (s)	time (s)			8.0			
Intersection Capacity Utilization	uc		39.3%	⊇	J Level o	ICU Level of Service			A			
Analysis Period (min)			15									
<ul> <li>c Critical Lane Group</li> </ul>												

KHA HCM Signalized Intersection Capacity Analysis

Existing Conditions Timing Plan: PM Peak Period Balboa Transit Station 26: Morena Blvd & Balboa EB Ramps

EBL   EBT		WBL WBT 0 0 0 0 0 0 0 0,000 0.095 0.95 0 0 0	541 541 541 541 541 541 541	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	↑ 404 404 404 Free 0.95 425 425	NBR 119 119 125	SBL 138 138 0.95	SBT 800 800 Free 0% 0.95 842	SBR 0
Institute of the control of the cont		> 0	544 514 541 541	0.95	404 404 404 Free 0% 0.95 425	119 119 0.95 125	138 138 0.95 145	800 800 Free 0% 0.95 842	00
hahh) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		> 0	514 514 0.95 541	0.00	404 404 Free 0% 0.95 425 None	119 119 125	138 138 145	800 800 Free 0% 0.95 842	0 0
Phh) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		> 0	514 0.95 541	0.95	404 Free 0.95 425 None	0.95	138 0.95 145	800 Free 0% 0.95 842	0
(s)		> 0	0.95 541	0.95	Free 0.95 425 None	0.95	145	6.95 0.95 842	
(s)		S	0.95 541	0.95	0% 0.95 425 None	125	145	0.95	
(s)			0.95 541	0.95	0.95 425 None	125	145	842	
(s)			241	0	Vone	125	145	842	0.95
(s)					None				0
(s) (s) (x) (x) (x) (x) (x) (x) (x) (x) (x) (x					None				
(s) (s) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d					None				
ah)  (1) (2) (3) (4) (4) (4) (5) (4) (5) (6) (7) (7) (7) (8) (7) (8) (8) (9) (9) (10) (10) (10) (10) (10) (10) (10) (10					None				
turn flare (keth)  an storage veh)  eam signal (ft)  eam signal (ft)  eam signal (ft)  eam signal (ft)  stage   cord vol				None					
an type an storage veh) an as storage veh) an storage veh) an as storage veh) and as storage (f) and as storage (f) as a stage					None				
ans torage veh)  reann signal (it)  reannn signal (it)  reannn signal (it)  reannn signal								None	
eam signal (ft)  Alaboran unblocked  Orificing volume  1557 1557  Stage 1 conf vol  Stage 2 conf vol  unblocked vol  75 6.5  Stage (\$) 3.5 4.0  House free % 100 100  apacity (velvfn) 4 97  Aton, Lane # EB 1 WB 1  The Left 0 0  The Left 0 0  The Left 0 0  The Left 0 0  The Capacity (1946) (\$) 94 303  To Locial (\$) 94 303  To Locial (\$) 94 502									
lation unblocked  1557 1557  1589 2 conf vol  1589 2 corf vol  1589 2 corf vol  1589 3 1557  1587 1557  1587 1557  1587 1557  1588 (s) 3.5 4.0  1589 (s) 3.5								696	
asage 1 control 1557 1557 1557 1557 1557 1557 1557 155									
stage I cont vol stage 2 conf vol unblocked vol 1557 1557 ngle (s) 7.5 6.5 stage (k) 3.5 4.0 stage (k) 4 97 stage (k) 100 100 spacity (velvh) 4 97 stage (k) 100 100 spacity (velvh) 541 97 ne Left 0 0 ne Right 340 541 ne to Capacity 0.59 0.94 ne to Capacity 0.59 0.99 stage 150 100 100 100 100 100 100 100 100 100		1136 1557	425	842			425		
stage c. com voir in the composed of the compo									
radio (s) 7.7 6.57 7.		1136 1557	425	842			425		
stage (s) 3.5 4.0  eueu free % 100 100  apacity (veVr/n) 4 97  me Total 340 541  ne Left 0 0  ne Right 581 (6.50  ne Le capacity 0.59 9.94  ne Le capacity 581 (f) 94 303  rol Delay (s) 19,6 50.2			6.9	4.1			4.1		
3.5 4.0 letue free % 100 100 apacity (velvfn) 4 97 floor, Lane # EB 1 WB 1 ne Total 340 541 ne Left 0 0 ne Right 340 541 ne to Capacity 0.59 0.94 ne to Capacity 54 (fl) 94 303 rol Delay (s) 19,6 50.2			5						
bene free % 100 100  apacity (velvh) 4 97  filon_Lane # EB 1 WB 1  me Total 340 541  me Left 0 0  me Right 340 541  me to Capacity 0.59 0.94  me to Capacity 5h (ft) 94 303  rot Delay (s) 19,6 50.2	3.3	3.5 4.0	3.3	2.2			2.2		
apacity (veh/h) 4 97  ition. Lane # EB 1 WB 1  ne Total 340 541  ne Left 0 0  ne Left 340 541  ne to Capacity 340 541  ne to Capacity 340 541  ne to Capacity 94 303  rot Delay (\$) 19,6 50.2	Ì	100 100	9	100			87		
iton, Lane #         EB 1         WB 1           ne Total         340         541           ne Left         0         0           ne Right         340         541           ne to Capacity         381         578           ne to Capacity         0.59         0.94           ne Length 95lk (ft)         94         303           no Delay (s)         196         502			218	789			1131		
ne Total 340 541 ne Left 0 0 ne Right 340 541 set o Capacity 0.59 0.94 set Length 95th (ft) 94 303 rol Delay (s) 19,6 50.2		NB 2 SB 1	SB 2	SB3					
ne Left 0 0  ne Right 340 541  541 578  ne to Capacity 0.59 0.94  se Length 95h (ft) 94 303  rol Delay (s) 19,6 50.2		125 145	421	421					
ne Right 340 541 581 578 ne to Capacity 0.59 0.94 se Length 95h (ft) 94 303 rol Delay (s) 19,6 50.2		0 145	0	0					
581 578 ne to Capacity 0.59 0.94 Le Length 95th (ft) 94 303 roi Delay (s) 19.6 50.2			0	0					
0.59 0.94 94 303 19.6 50.2			1700	1700					
94 303 19.6 50.2		0	0.25	0.25					
19.6 50.2			0	0					
		0.0	0.0	0.0					
ပ		A							
y (s) 19.6 50.2	0.0	1.3							
Approach LOS C F									
Intersection Summary									
	14.5								
Intersection Capacity Utilization 59.8%	29.8%	ICU Level of Service	of Service			В			
Analysis Period (min) 15	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	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	¥		+	¥.	¥	44	
Traffic Volume (veh/h)	12	23	465	14	44	1012	
Future Volume (Veh/h)	12	23	465	14	44	1012	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	13	24	495	15	47	1077	
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	1128	495			510		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1128	495			510		
tC, single (s)	8.9	6.9			4.1		
tC, 2 stage (s)							
IF (s)	3.5	3.3			2.2		
p0 queue free %	93	95			96		
cM capacity (veh/h)	189	520			1051		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	37	495	15	47	538	538	
Volume Left	13	0	0	47	0	0	
Volume Right	24	0	12	0	0	0	
CSH	322	1700	1700	1051	1700	1700	
Volume to Capacity	0.11	0.29	0.01	0.04	0.32	0.32	
Queue Length 95th (ft)	10	0	0	4	0	0	
Control Delay (s)	17.6	0.0	0.0	9.8	0.0	0.0	
Lane LOS	S			A			
Approach Delay (s)	17.6	0.0		0.4			
Approach LOS	ပ						
Intersection Summary							
Average Delay			9.0				
Intersection Capacity Utilization	ation		41.1%	₫	J Level o	ICU Level of 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
	•	+	4	٠	<b>→</b>	
Lane Group	WBL	NBT	NBR	SBL	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	
<b>→</b>	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	
<b>←</b>	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
<b>√</b>	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

	Allelia	MOL.	לחווווו	S S S S S	- I SAG	2	Alelia	AIGHA
	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	Δ
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

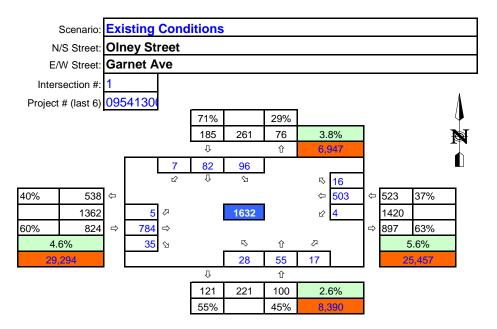
		EXISTING		PRE	FERRED MO	DEL	
ROADWAY SEGMENT	Existing Model Volume	Adjustment	Adjusted Existing Model Volume	Preferred Model Volume	Adjustment	Adjusted Adopted Model Volume	Change in Volume
Balboa Avenue							
Garnet Avenue to Grand Avenue	19,700	0	19,700	13,200	0	13,200	-6,500
Garnet Avenue							
Bond Street to Mission Bay Drive	58,600	0	58,600	52,200	0	52,200	-6,400
Mission Bay Drive to I-5 SB On-Ramp	46,800	0	46,800	43,000	0	43,000	-3,800
I-5 SB On-Ramp to I-5 NB Off-Ramp	63,000	0	63,000	60,500	0	60,500	-2,500
Balboa Avenue (CA-274)							
I-5 NB Off-Ramp to Morena Boulevard SB Ramps	76,000	0	76,000	71,500	0	71,500	-4,500
Morena Boulevard SB Ramps to Morena Boulevard NB Ramps	50,400	0	50,400	45,700	0	45,700	-4,700
Morena Boulevard NB Ramps to Moraga Avenue	49,700	-7,000	42,700	46,800	-7,000	39,800	-2,900
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							
Kendall Street to Lamont Street	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
Figueroa Boulevard to Mission Bay Drive	33,700	5,000	38,700	32,900	5,000	37,900	-800
Mission Bay Drive							
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
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	23,900	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 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	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							
De Anza Road to Mission Bay Drive	2,100	0	2,100	2,500	0	2,500	400

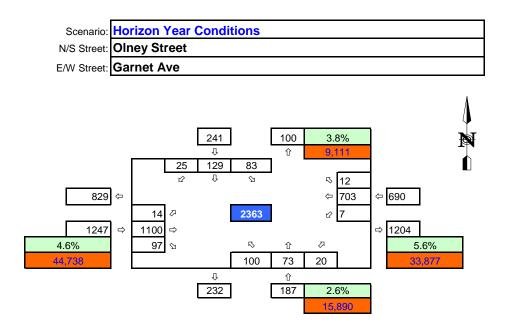
		EXISTING			REDUCED MODEL		
ROADWAY SEGMENT	Existing Model Volume	Adjustment	Adjusted Existing Model Volume	Reduced Model Volume	Adjustment	Adjusted Adopted Model Volume	Change in Volume
Balboa Avenue							
Garnet Avenue to Grand Avenue	19,700	0	19,700	13,200	0	13,200	-6,500
Garnet Avenue							
Bond 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

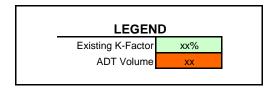
## APPENDIX D

FUTURE YEAR VOLUME ESTIMATES

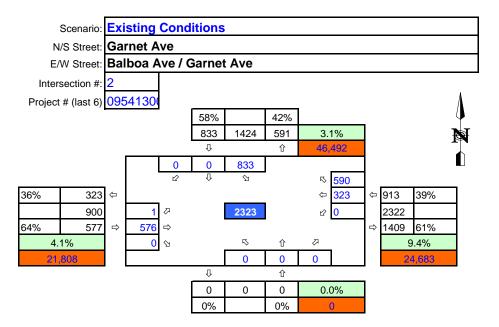
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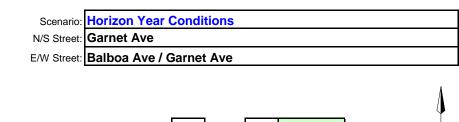


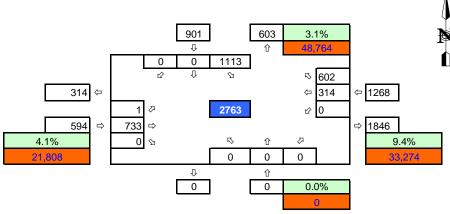


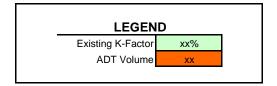


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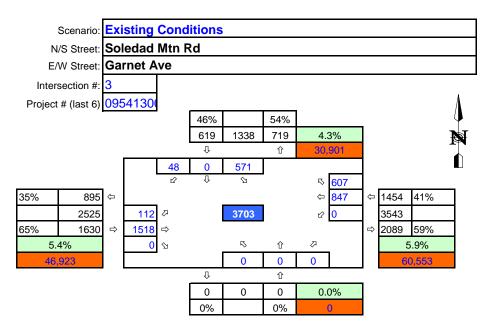


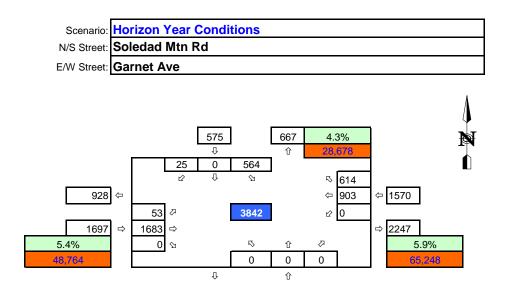






### Int 3 AM Peak Volumes

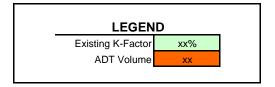




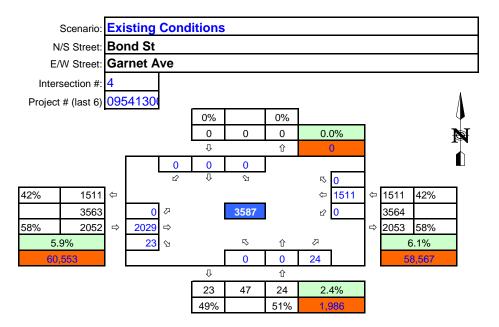
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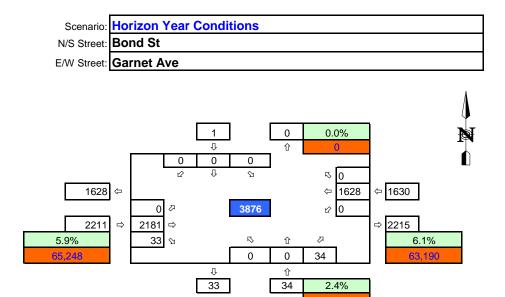
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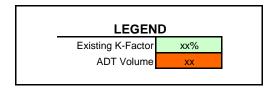
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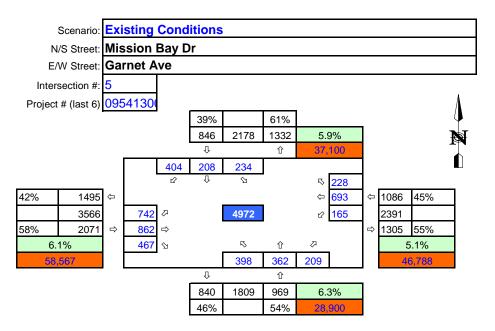
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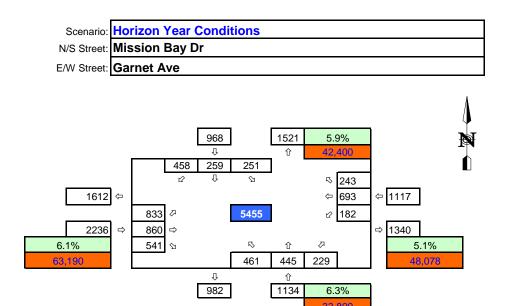


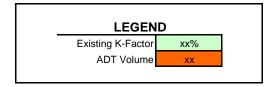




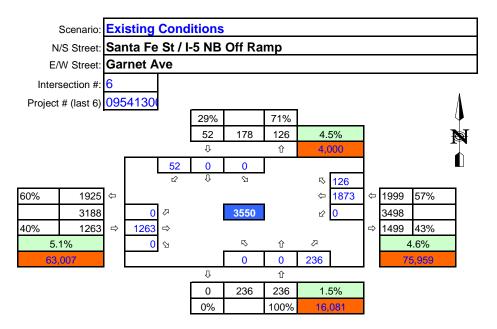
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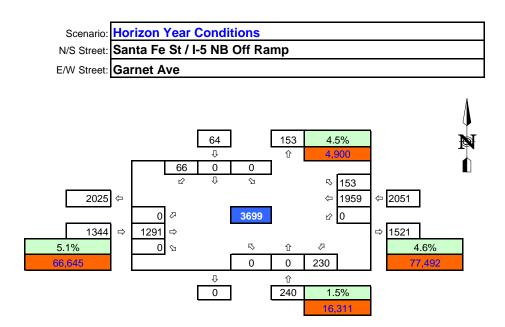


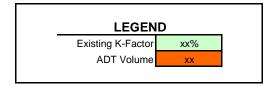




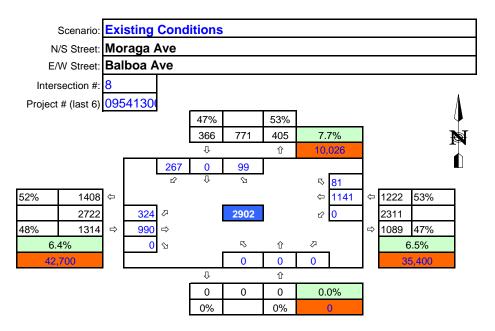
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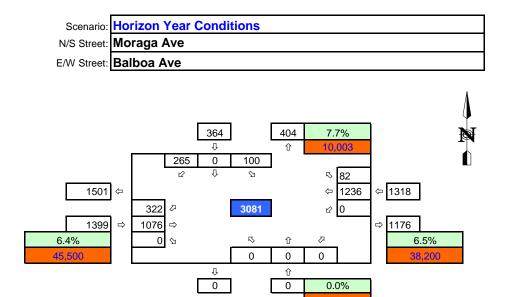


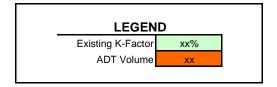




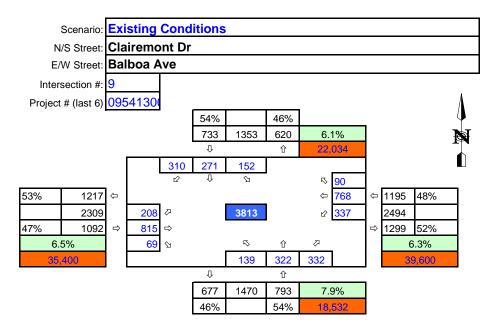
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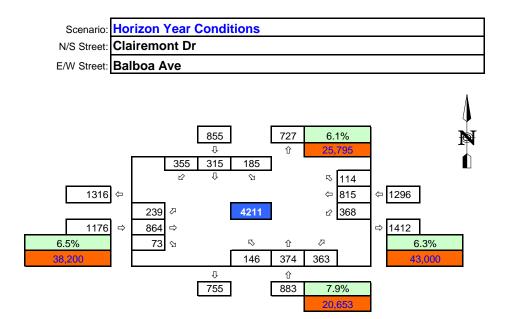


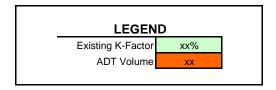




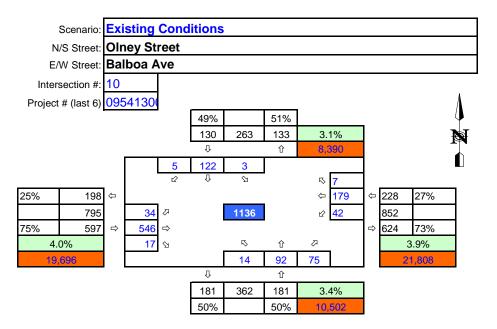
### Int 9 AM Peak Volumes

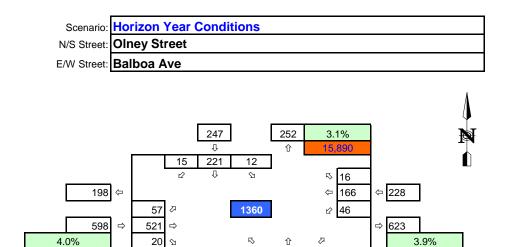






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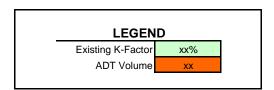
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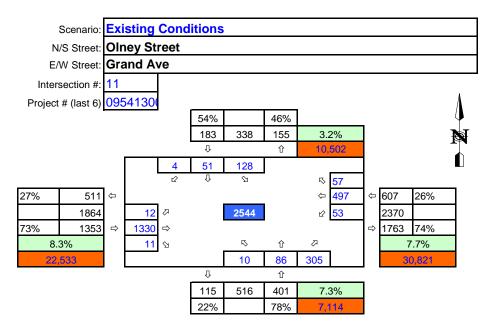
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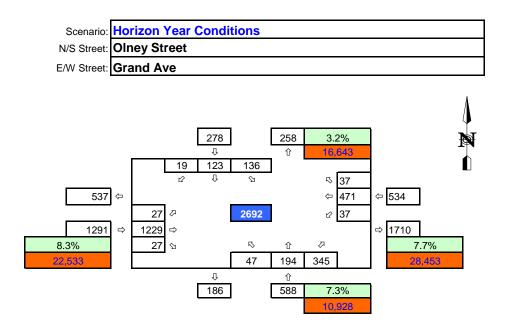
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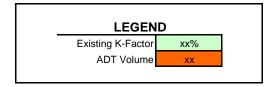


19,696

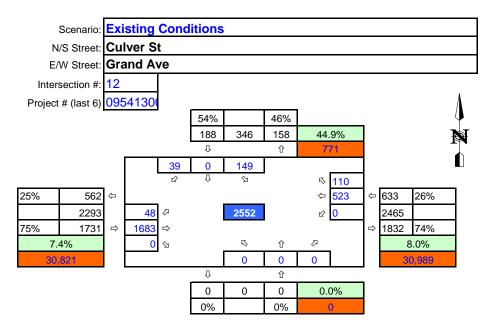
### Int 11 AM Peak Volumes

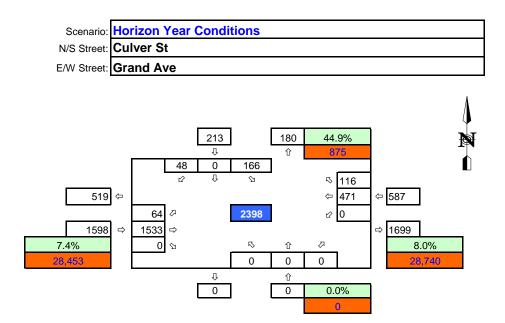


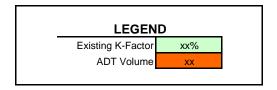




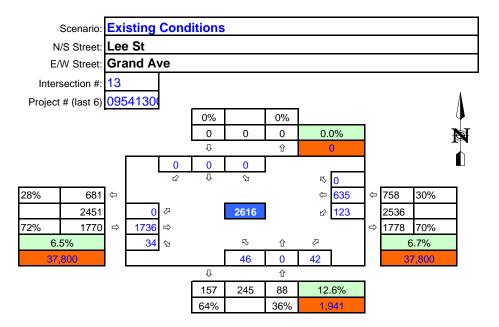
### Int 12 AM Peak Volumes

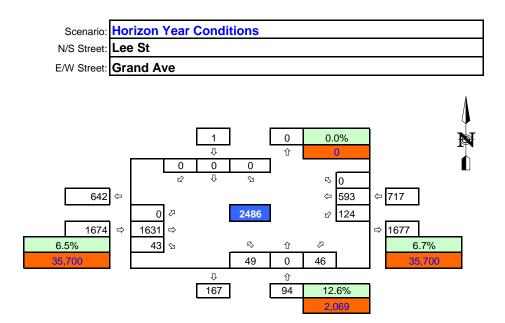


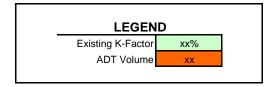




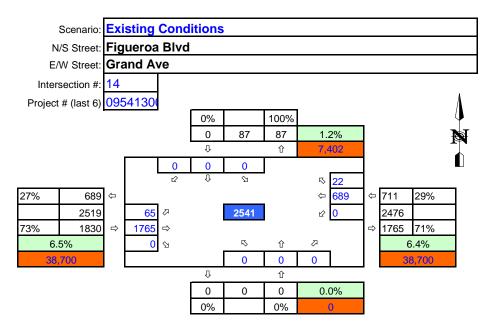
## Int 13 AM Peak Volumes

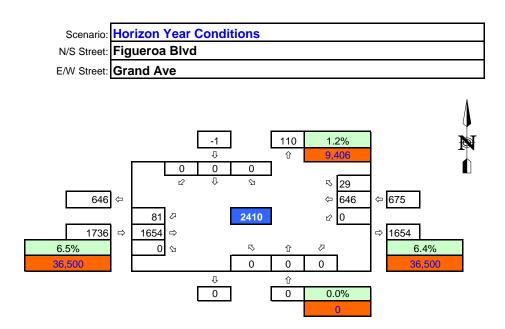


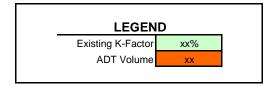




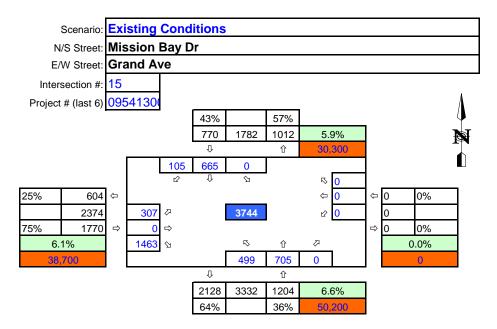
## Int 14 AM Peak Volumes

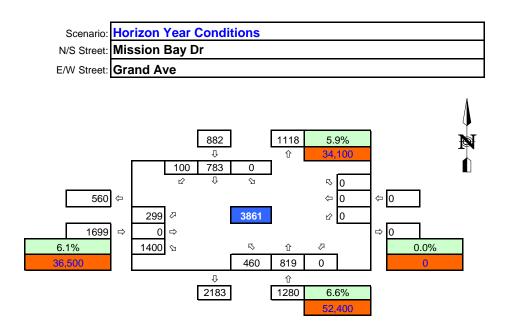


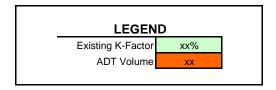




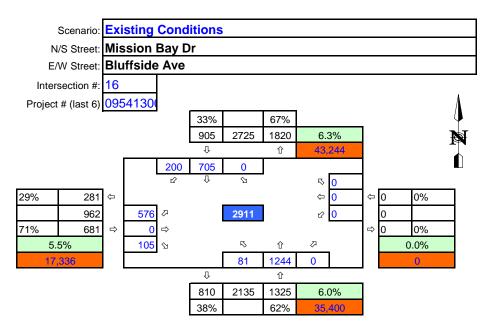
## Int 15 AM Peak Volumes

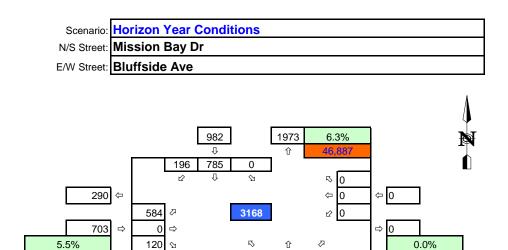






## Int 16 AM Peak Volumes





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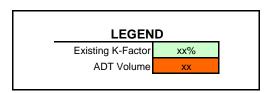
905

1389

1483

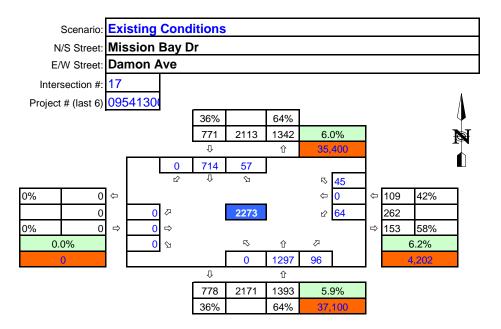
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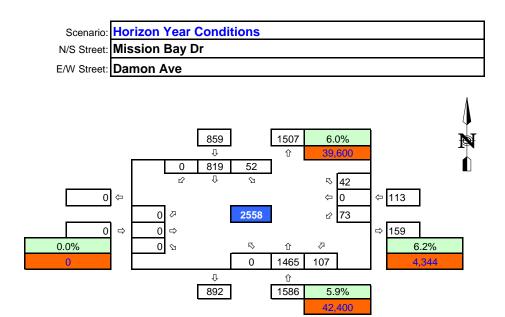
6.0%

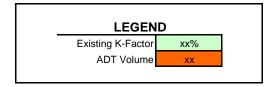


17,888

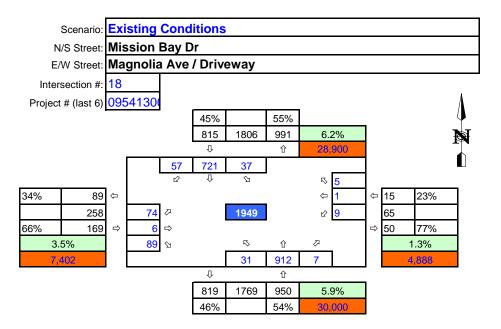
## Int 17 AM Peak Volumes

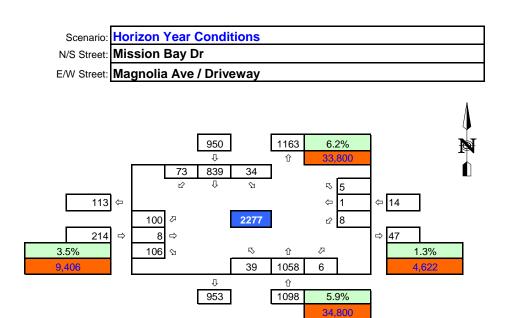


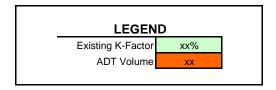




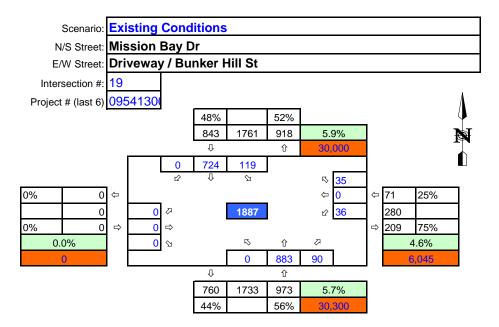
# Int 18 AM Peak Volumes



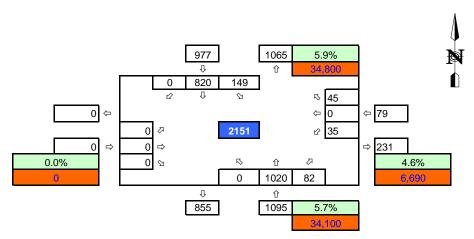


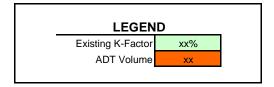


## Int 19 AM Peak Volumes

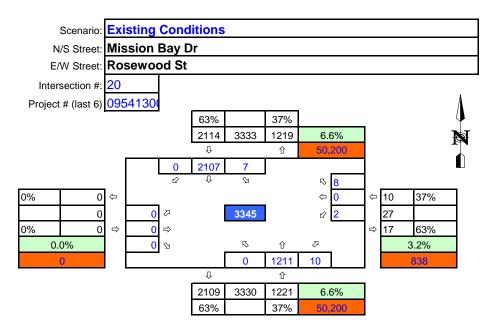


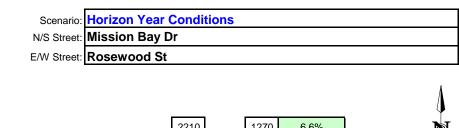


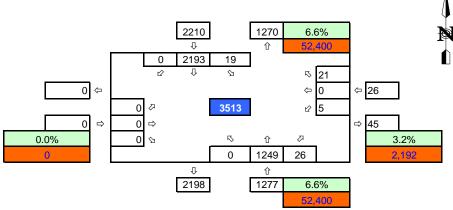


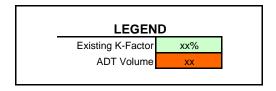


## Int 20 AM Peak Volumes

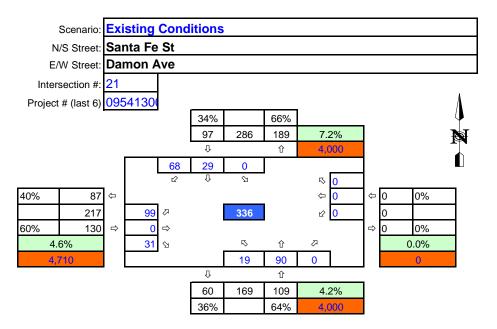


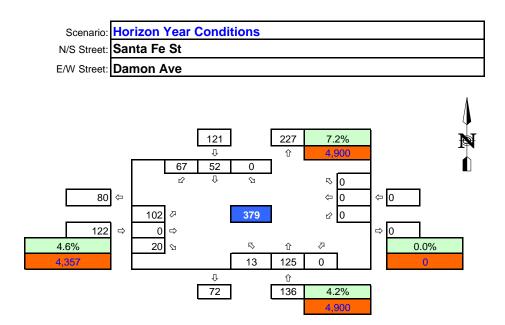


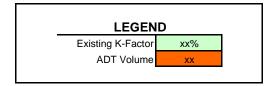




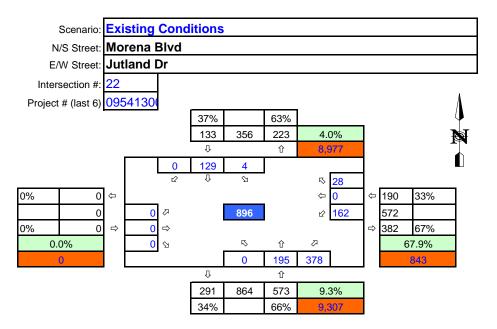
## Int 21 AM Peak Volumes

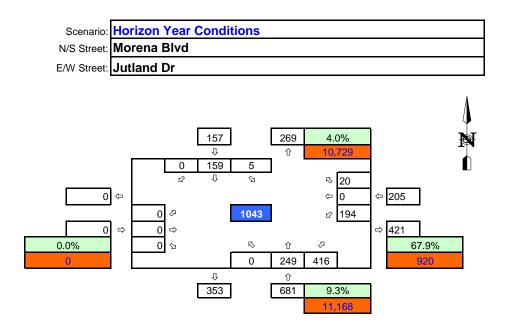


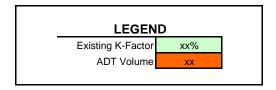




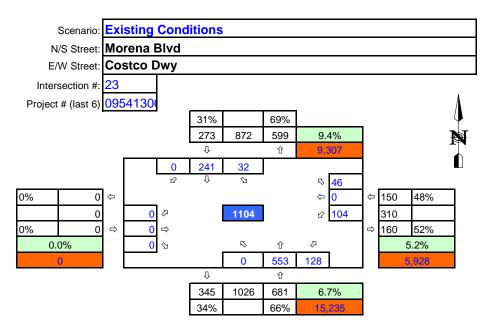
## Int 22 AM Peak Volumes

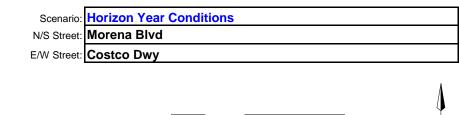


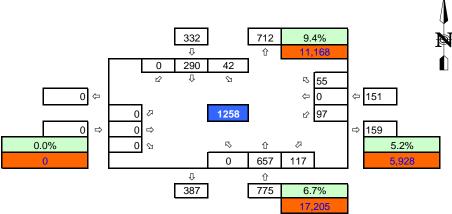


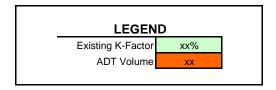


## Int 23 AM Peak Volumes

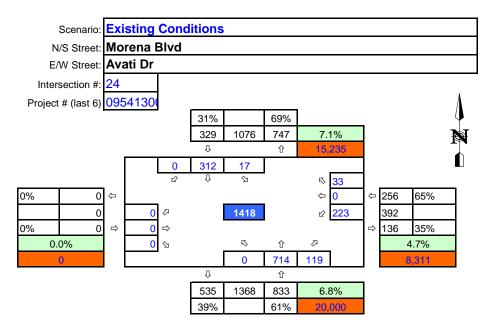


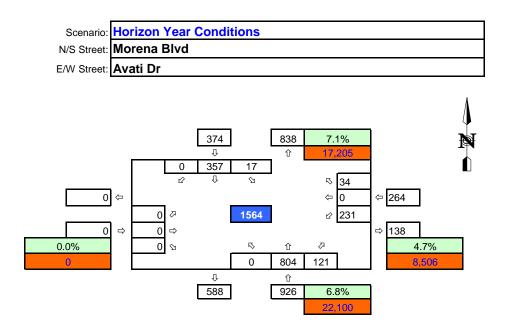


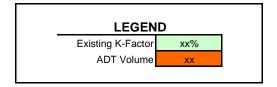




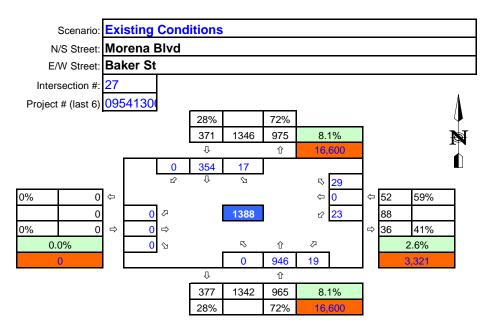
## Int 24 AM Peak Volumes

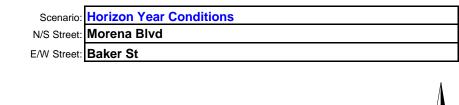


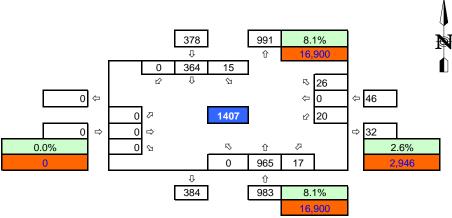


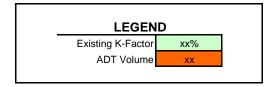


## Int 27 AM Peak Volumes

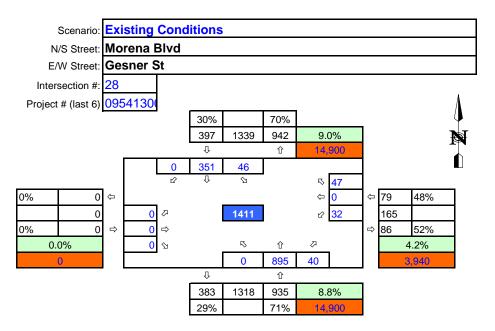


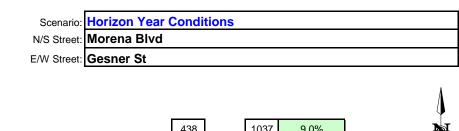


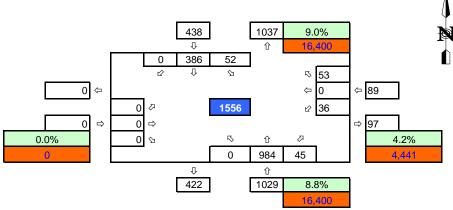


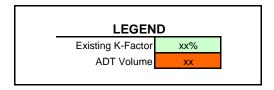


## Int 28 AM Peak Volumes

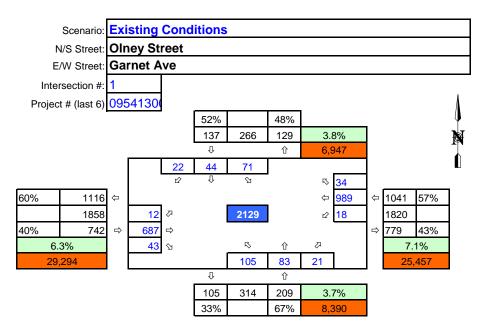


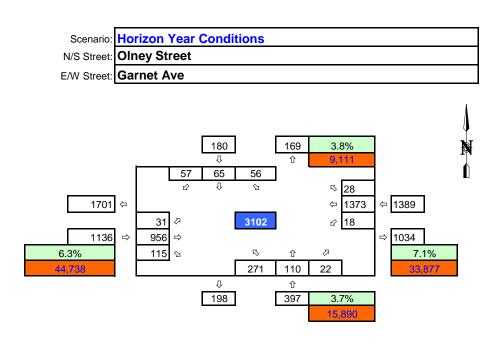


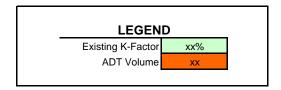




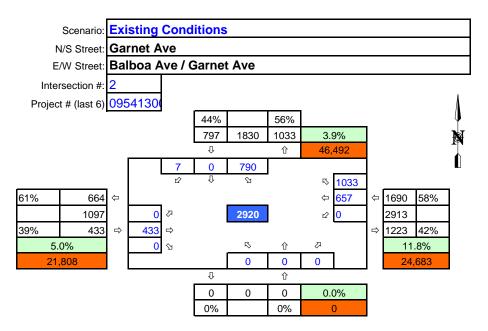
### Int 1 PM Peak Volumes

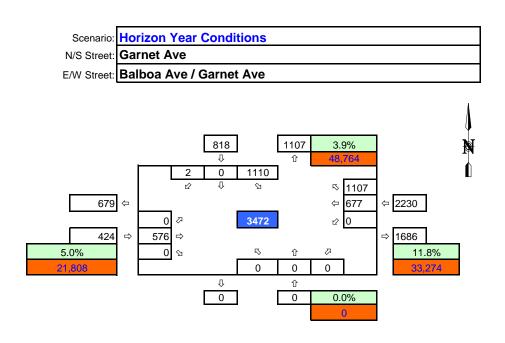


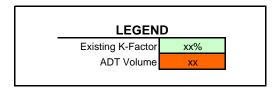




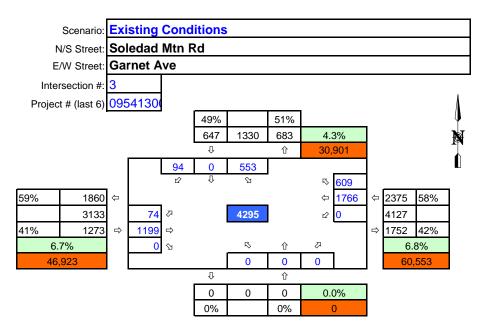
## Int 2 PM Peak Volumes

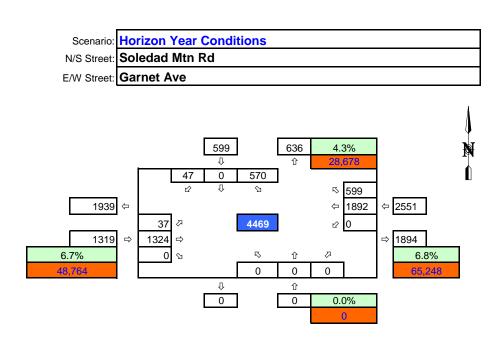




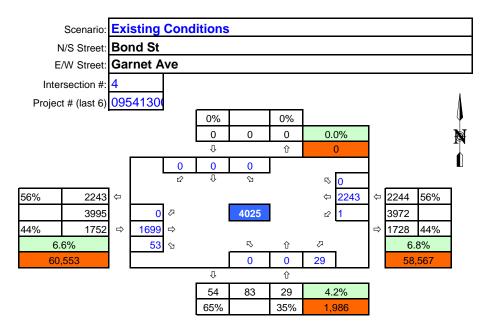


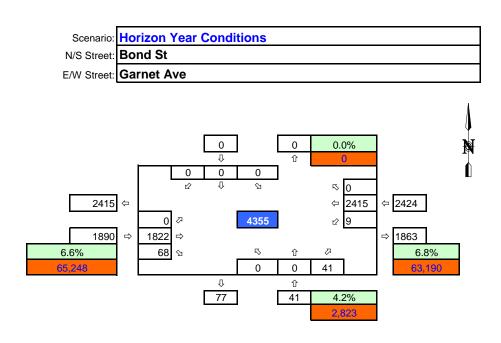
### Int 3 PM Peak Volumes



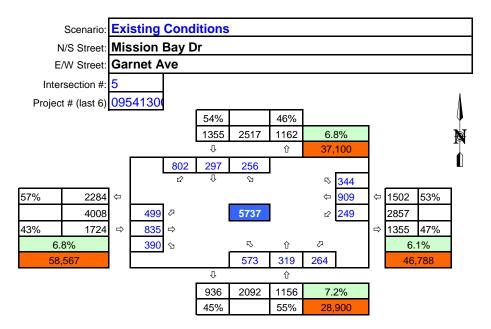


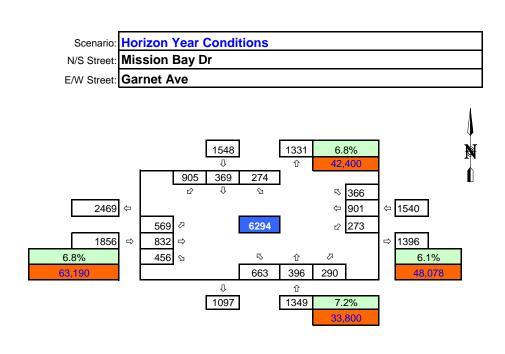
## Int 4 PM Peak Volumes

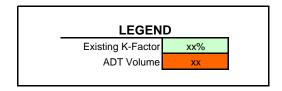




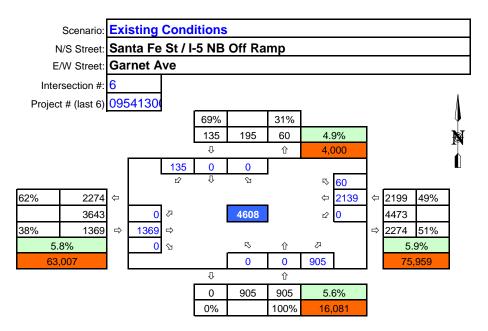
### Int 5 PM Peak Volumes

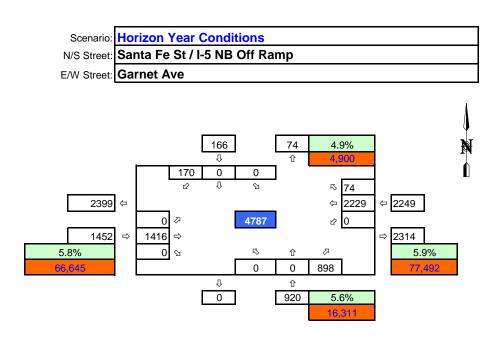


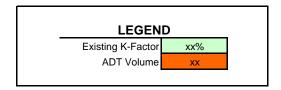




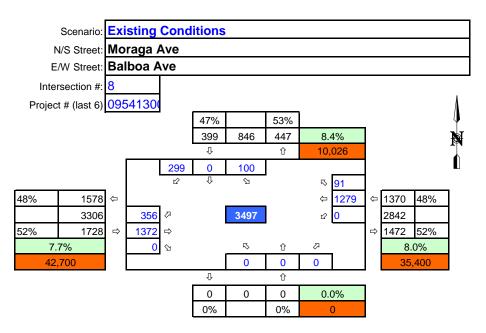
### Int 6 PM Peak Volumes

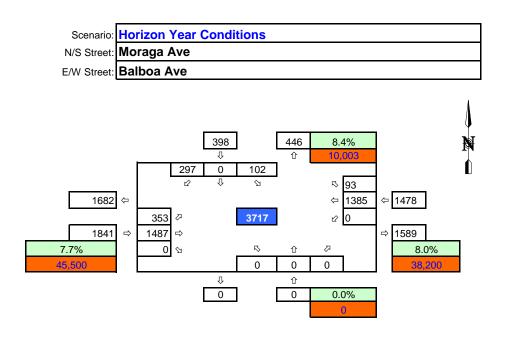


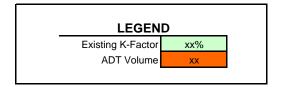




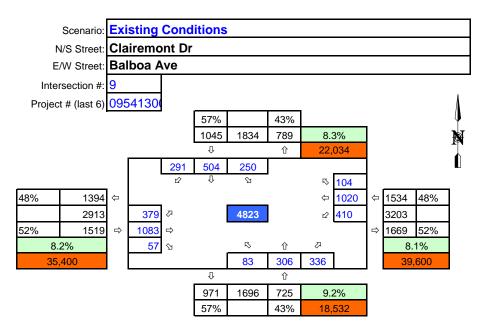
## Int 8 PM Peak Volumes

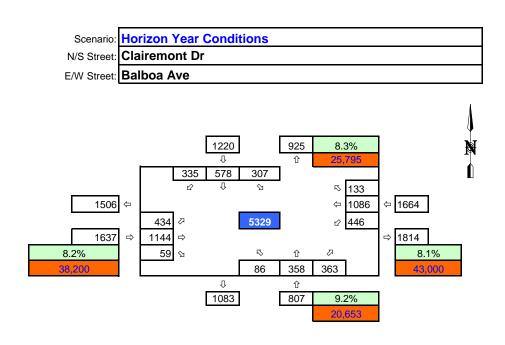


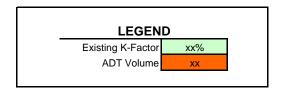




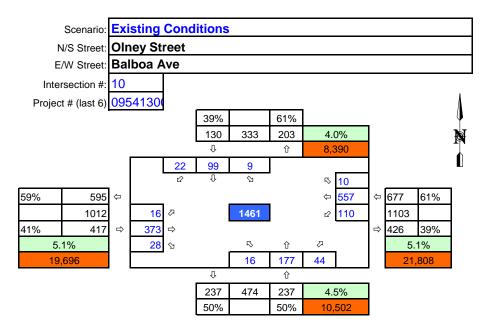
### Int 9 PM Peak Volumes

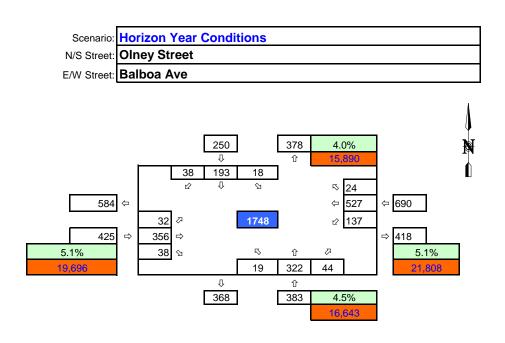


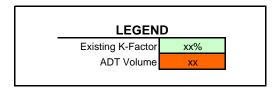




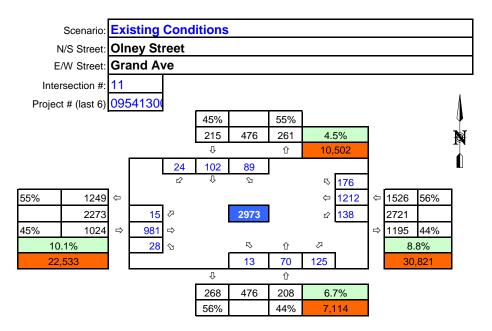
## Int 10 PM Peak Volumes

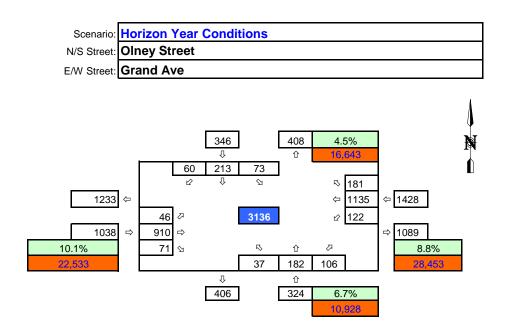


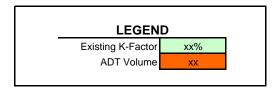




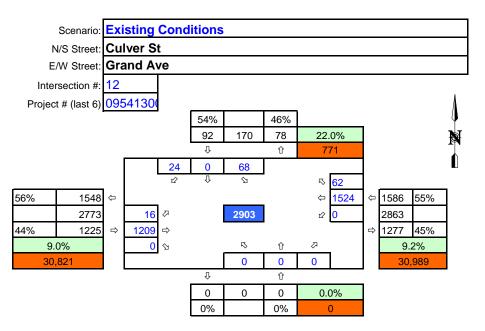
## Int 11 PM Peak Volumes

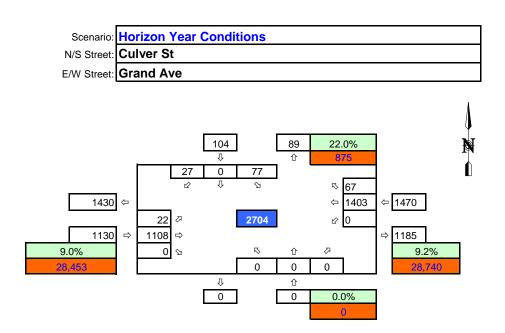


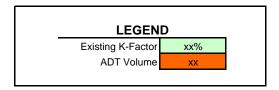




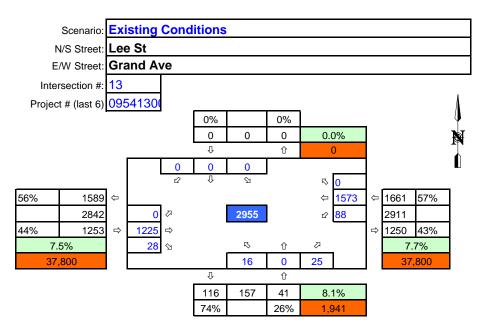
## Int 12 PM Peak Volumes

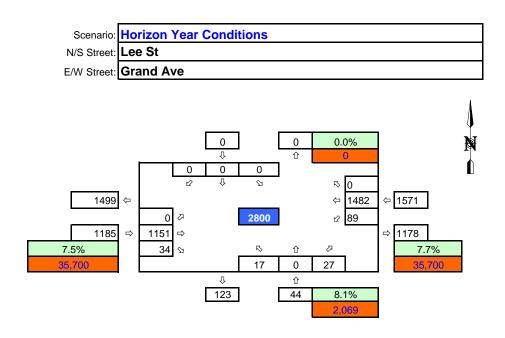


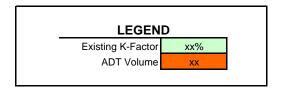




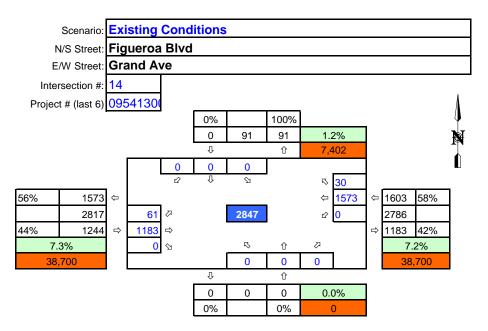
## Int 13 PM Peak Volumes

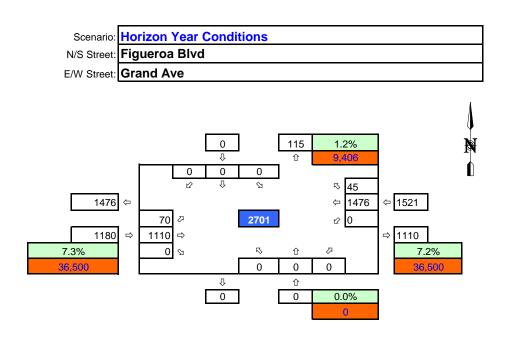




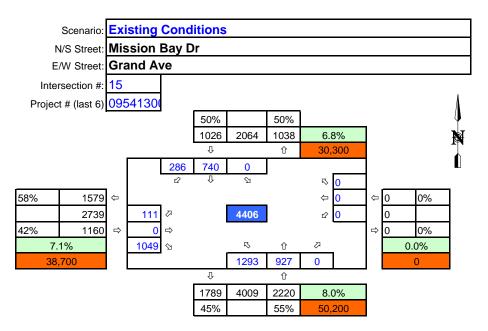


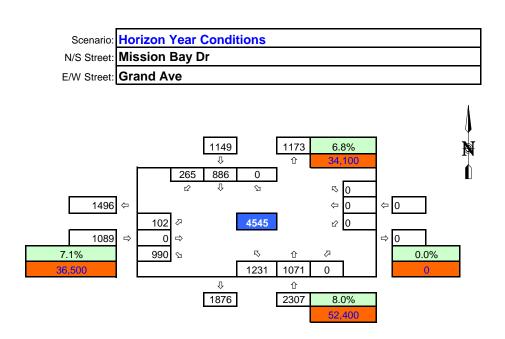
# Int 14 PM Peak Volumes

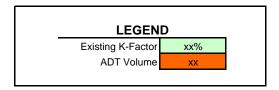




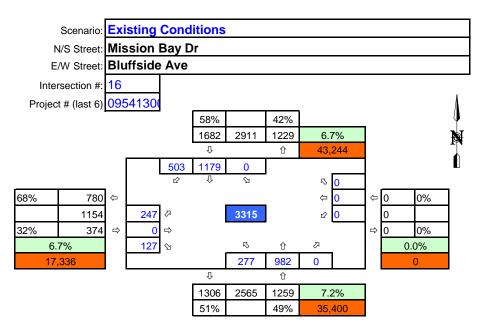
## Int 15 PM Peak Volumes

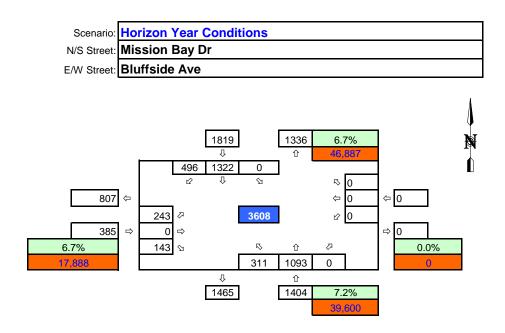




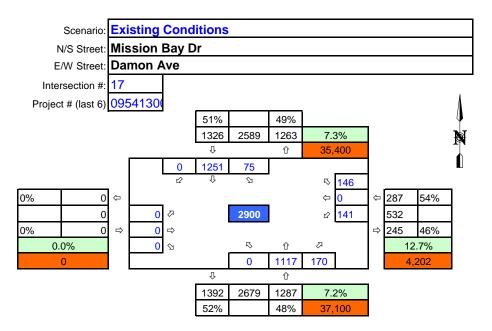


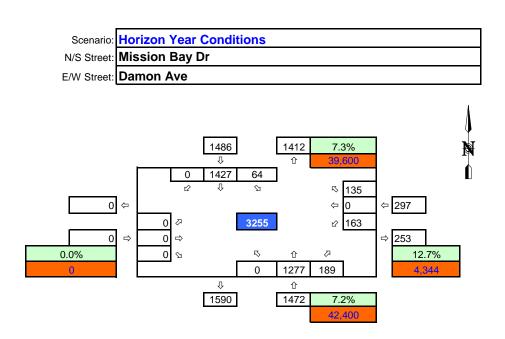
## Int 16 PM Peak Volumes

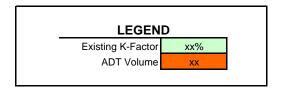




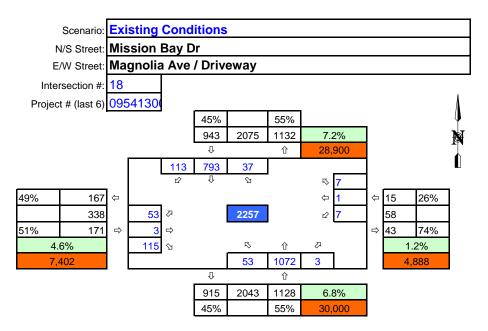
# Int 17 PM Peak Volumes

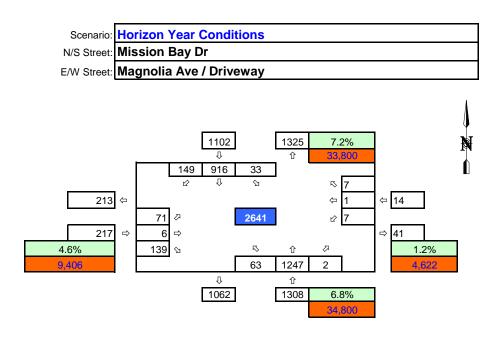


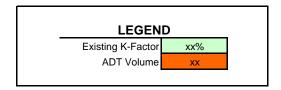




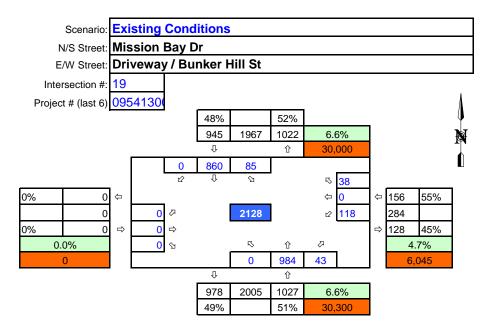
### Int 18 PM Peak Volumes

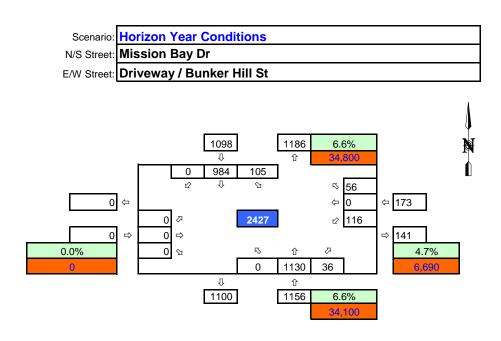




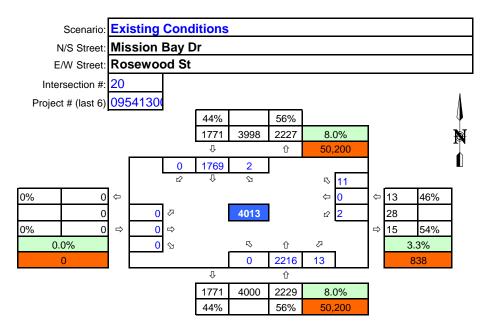


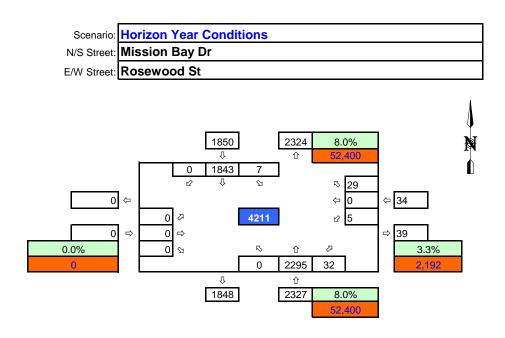
### Int 19 PM Peak Volumes

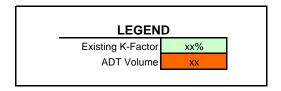




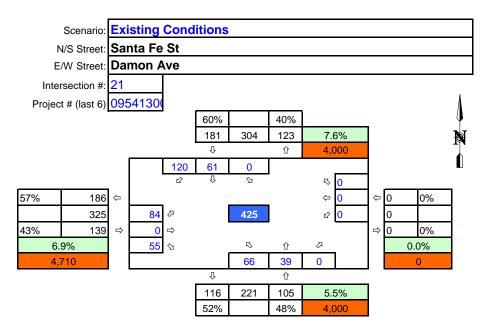
## Int 20 PM Peak Volumes

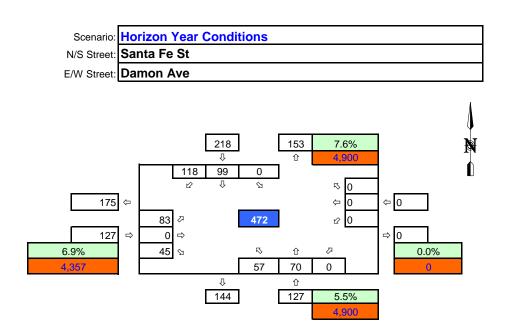


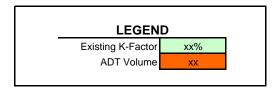




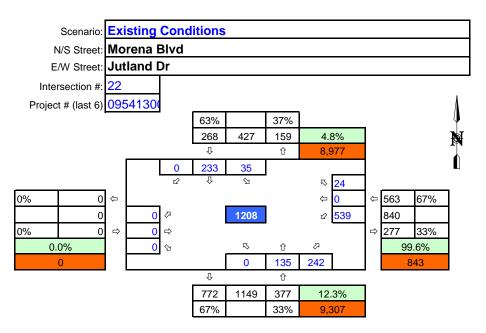
## Int 21 PM Peak Volumes

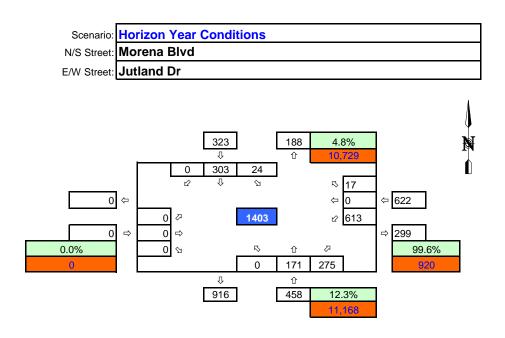


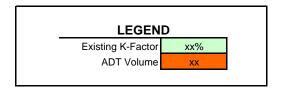




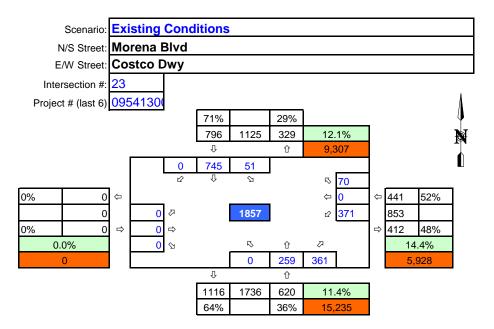
## Int 22 PM Peak Volumes

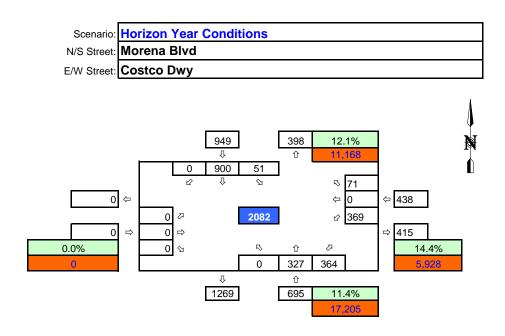


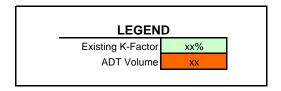




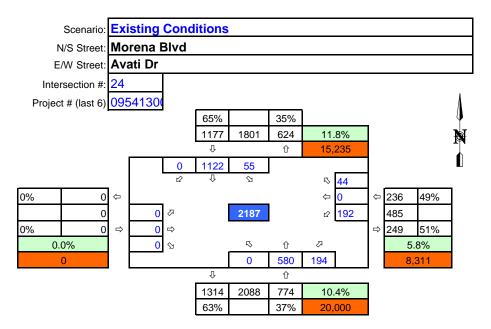
## Int 23 PM Peak Volumes

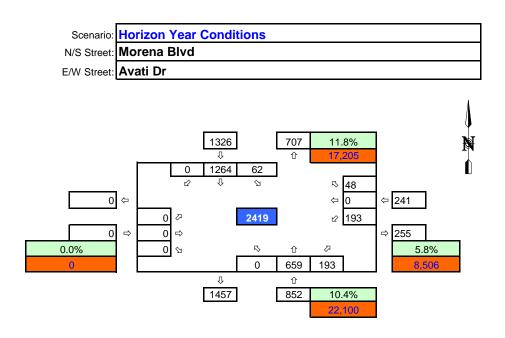


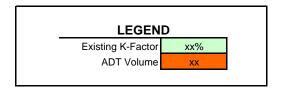




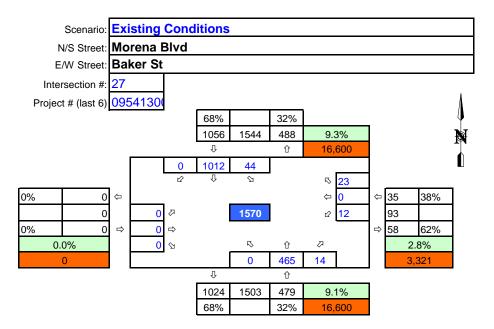
# Int 24 PM Peak Volumes

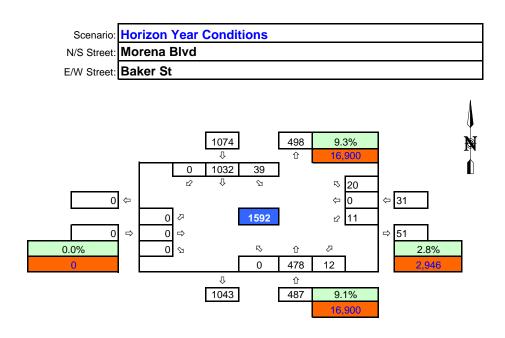


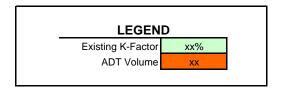




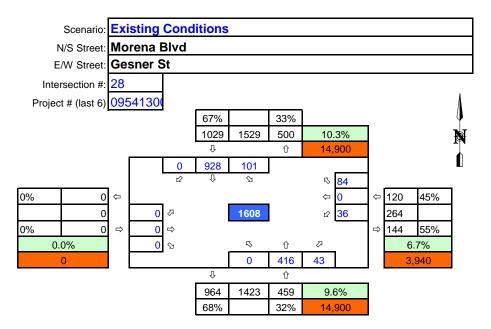
## Int 27 PM Peak Volumes

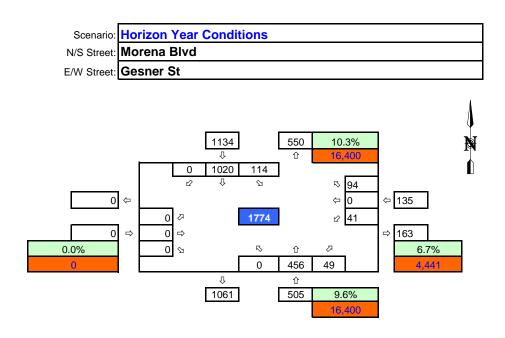


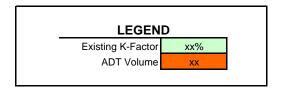




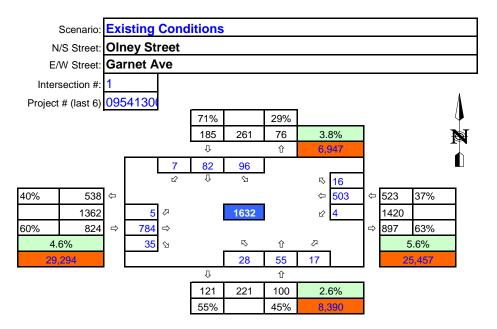
## Int 28 PM Peak Volumes

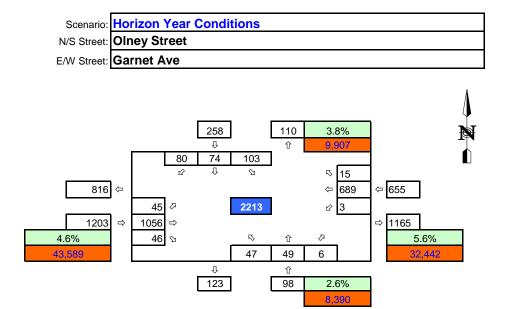


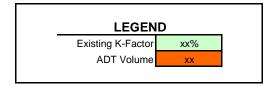




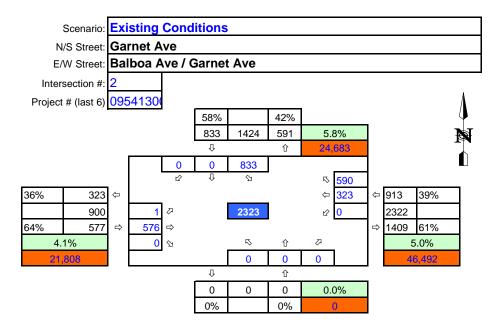
# Int 1 AM Peak Volumes



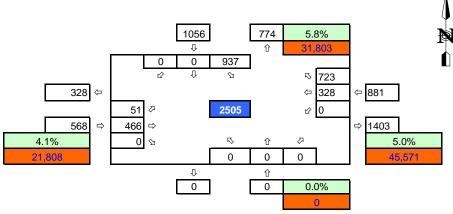


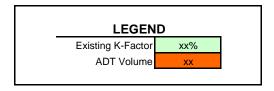


## Int 2 AM Peak Volumes

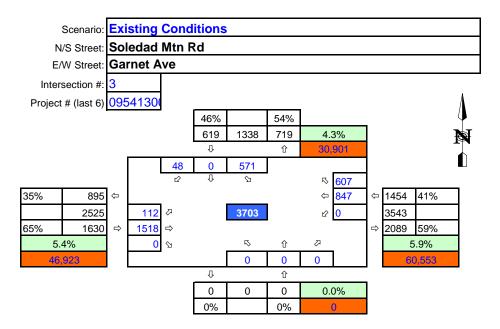


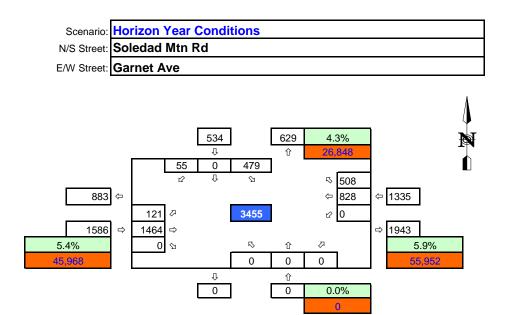


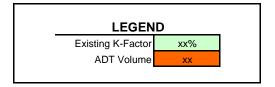




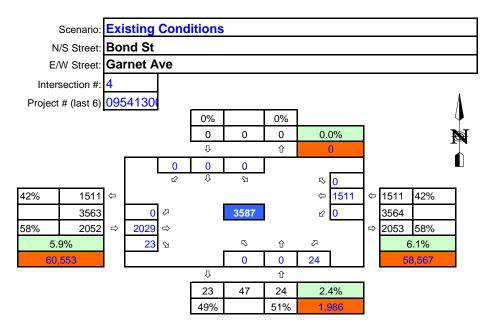
## Int 3 AM Peak Volumes

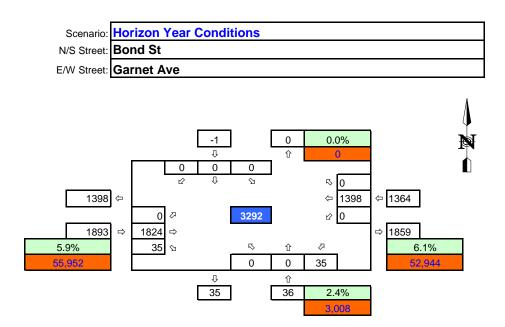


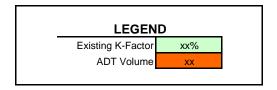




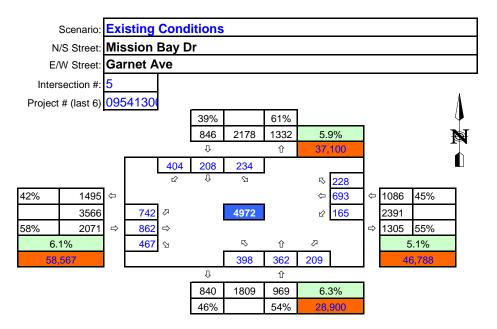
## Int 4 AM Peak Volumes

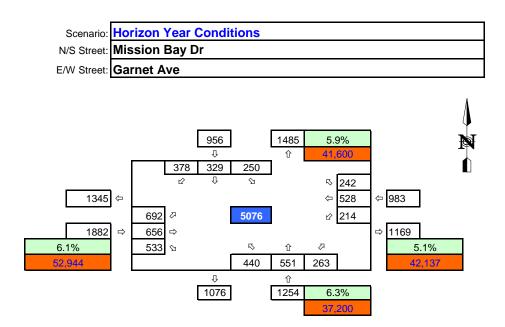


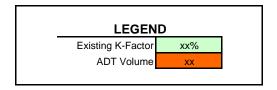




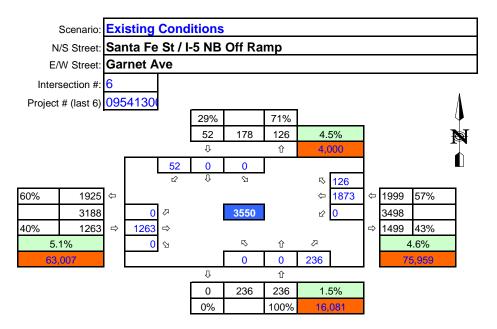
# Int 5 AM Peak Volumes

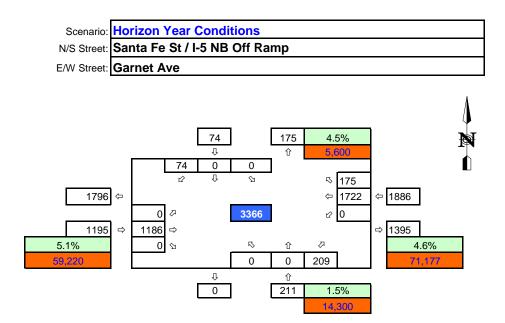


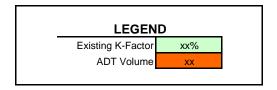




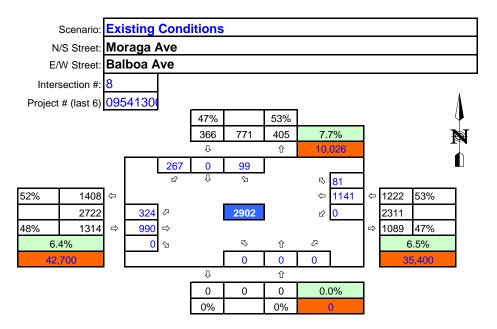
# Int 6 AM Peak Volumes

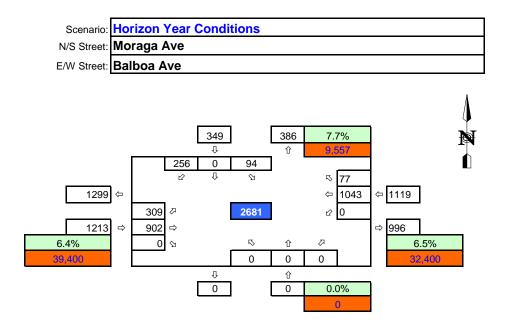


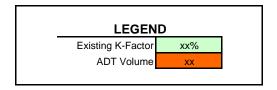




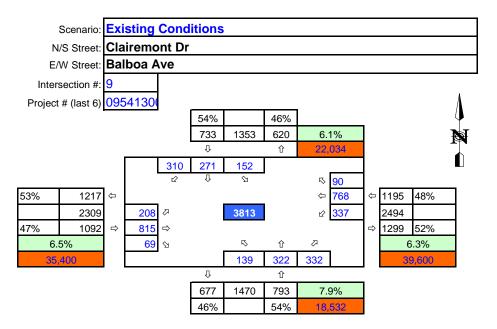
## Int 8 AM Peak Volumes

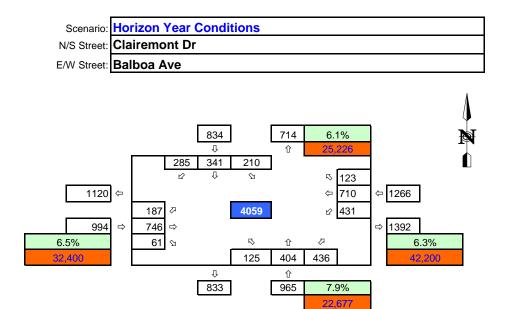


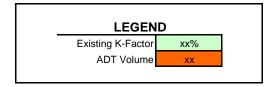




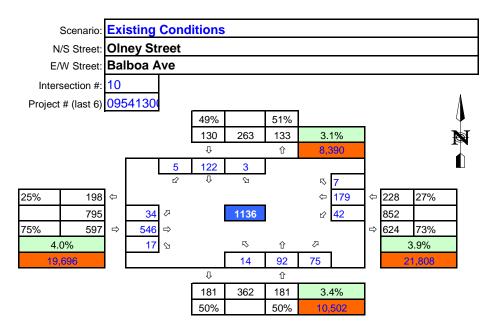
# Int 9 AM Peak Volumes

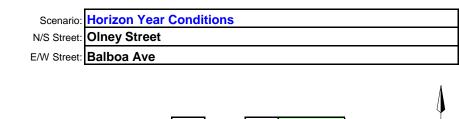


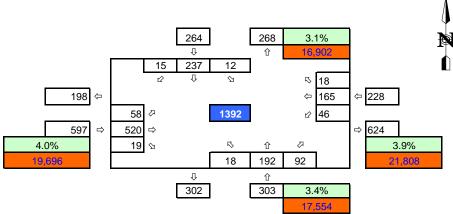


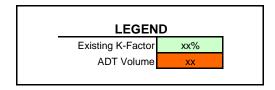


## Int 10 AM Peak Volumes

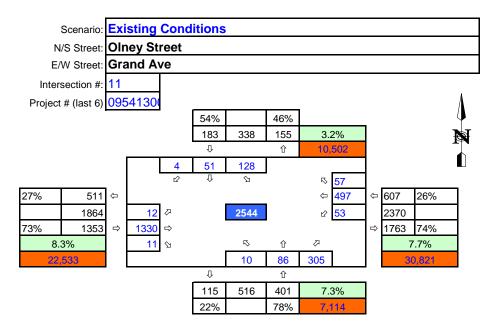


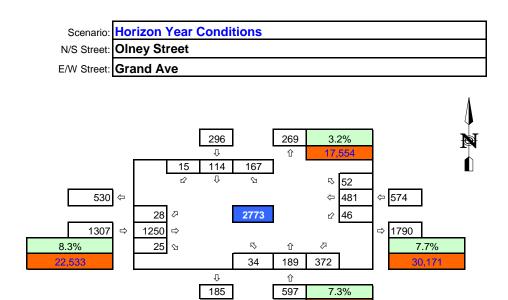


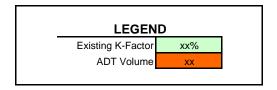




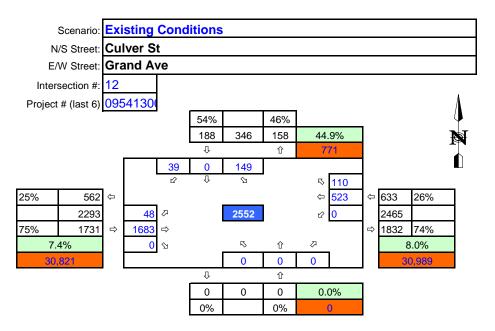
## Int 11 AM Peak Volumes

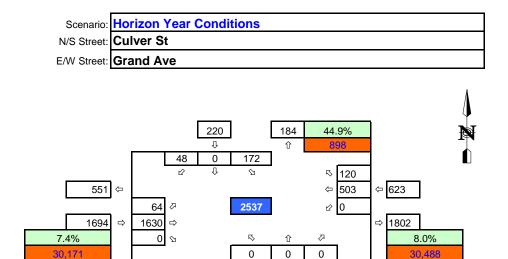






## Int 12 AM Peak Volumes

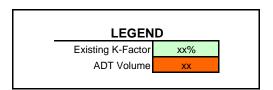




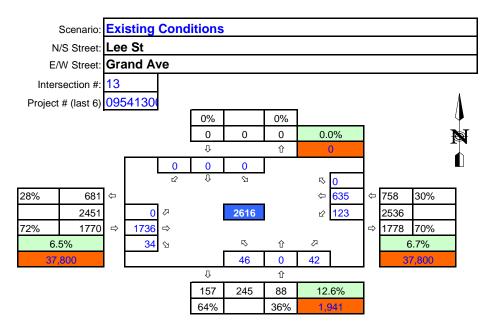
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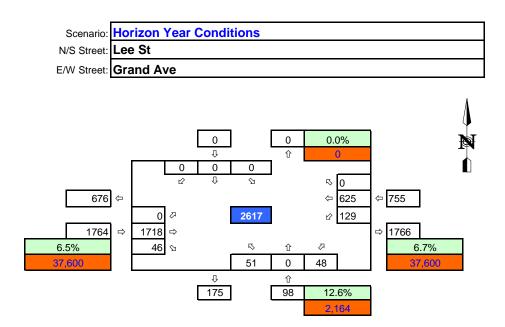
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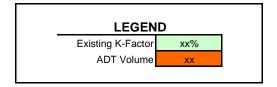
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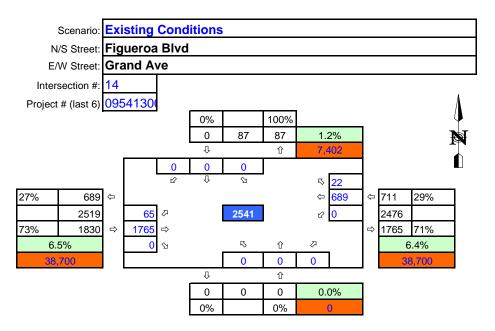
## Int 13 AM Peak Volumes

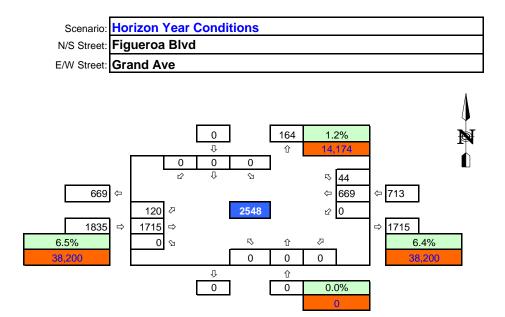


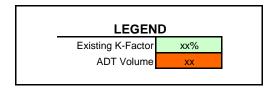




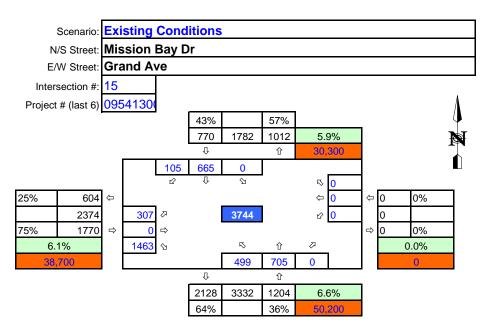
## Int 14 AM Peak Volumes

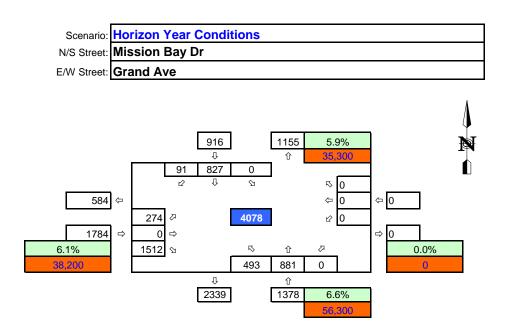


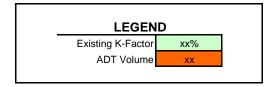




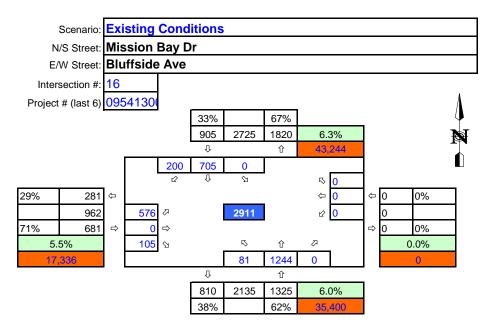
## Int 15 AM Peak Volumes

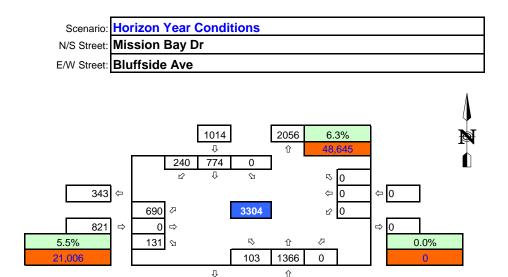






# Int 16 AM Peak Volumes

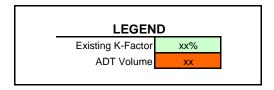




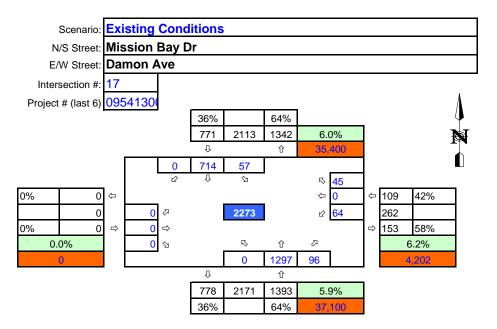
905

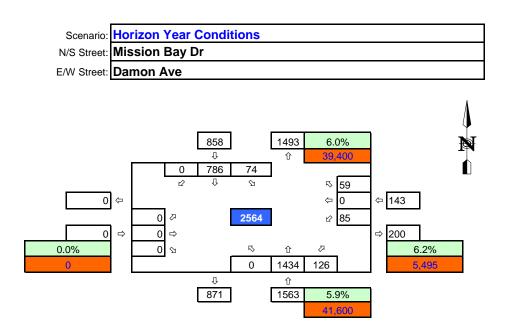
1469

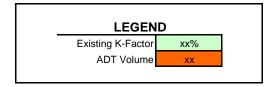
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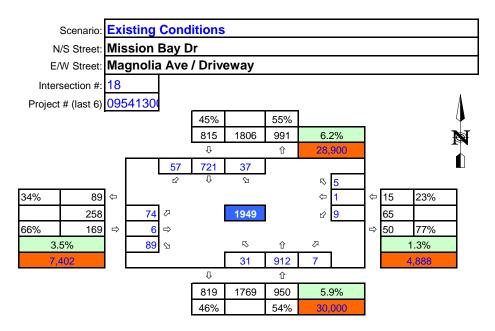
## Int 17 AM Peak Volumes

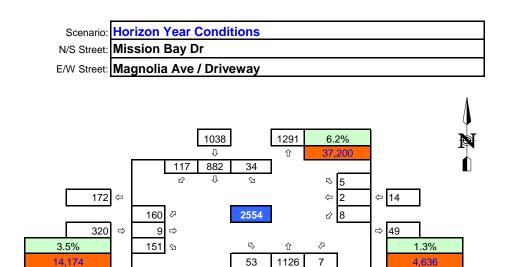






# Int 18 AM Peak Volumes

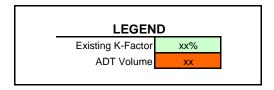




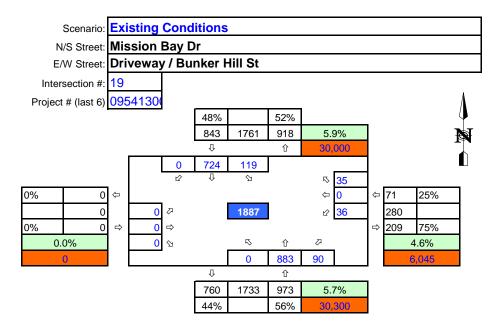
1181

5.9%

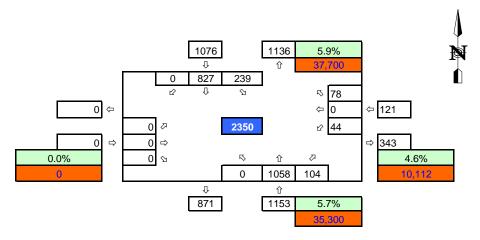
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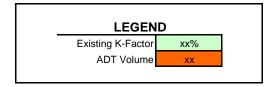


# Int 19 AM Peak Volumes

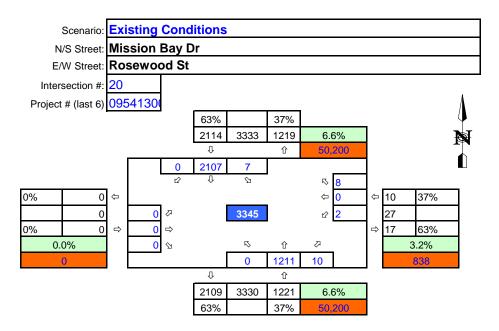


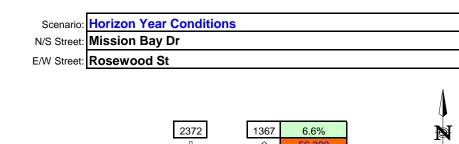


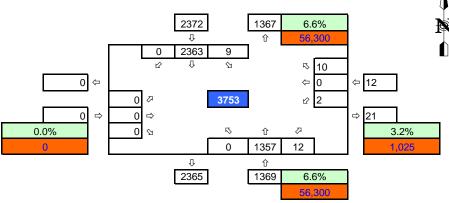


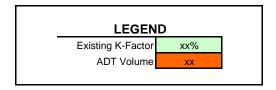


## Int 20 AM Peak Volumes

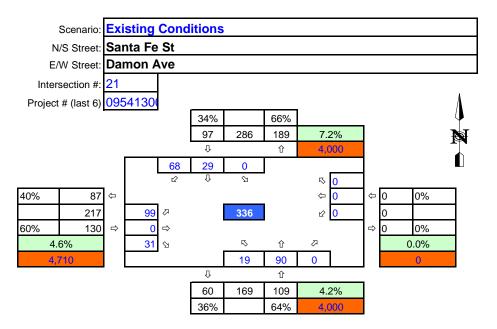


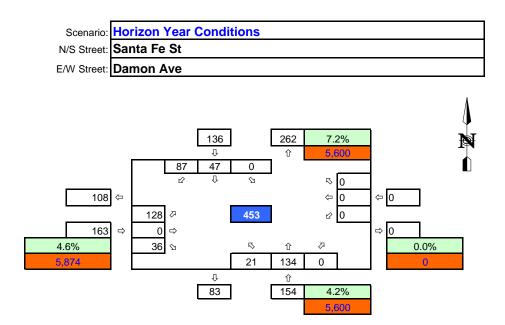


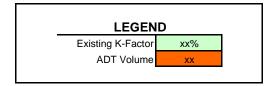




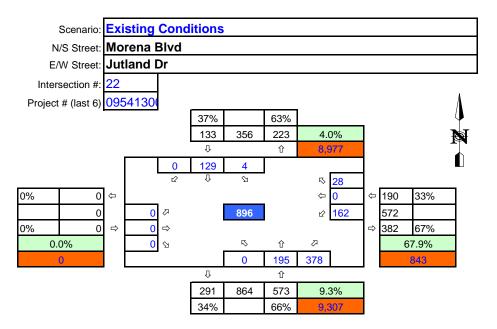
## Int 21 AM Peak Volumes

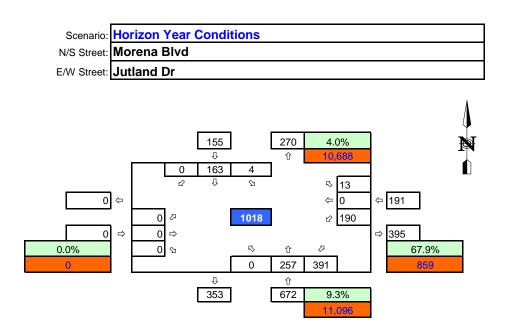


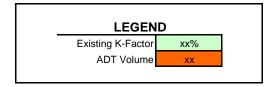




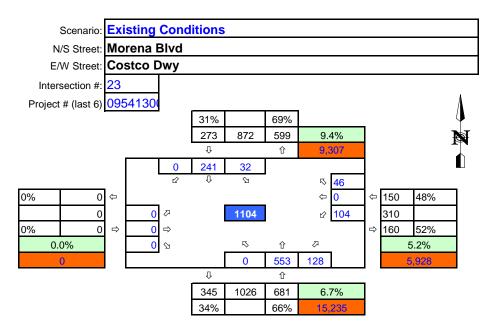
## Int 22 AM Peak Volumes

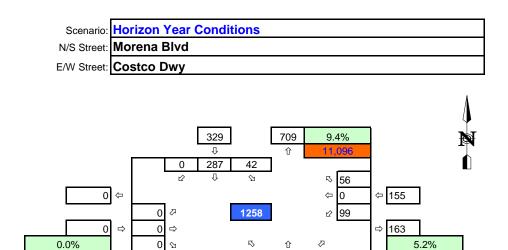






## Int 23 AM Peak Volumes





Û

386

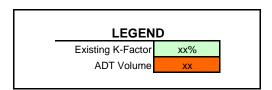
653

774

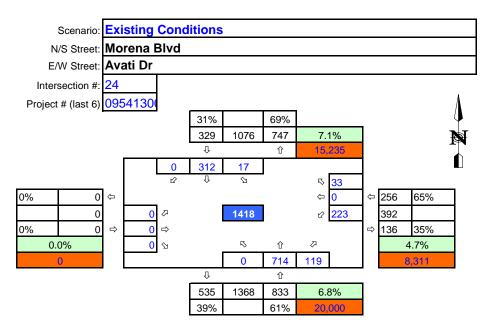
121

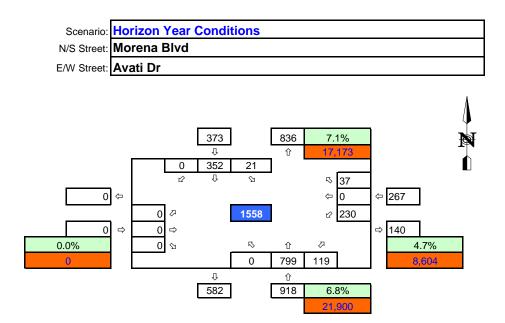
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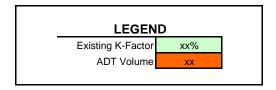
6,07



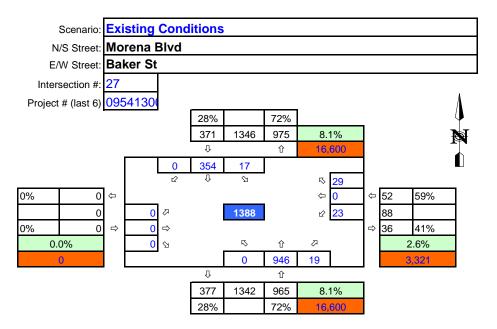
## Int 24 AM Peak Volumes

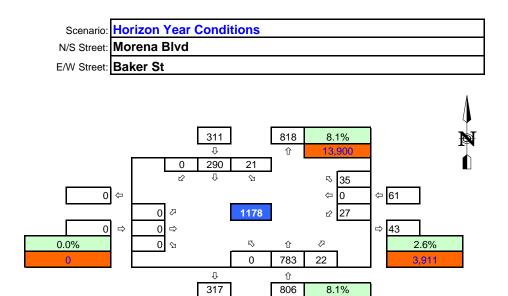


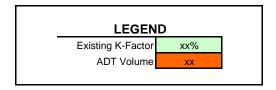




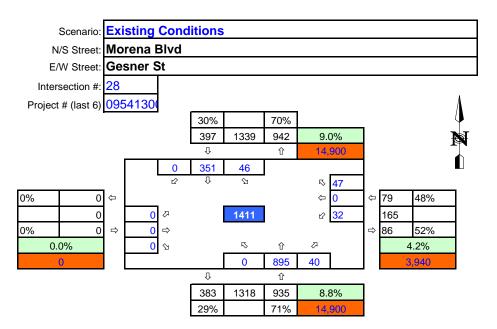
## Int 27 AM Peak Volumes

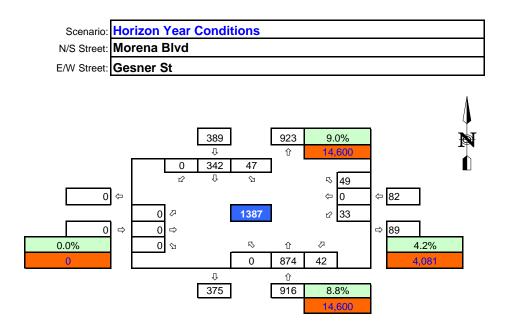


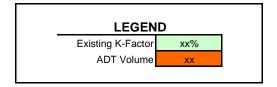




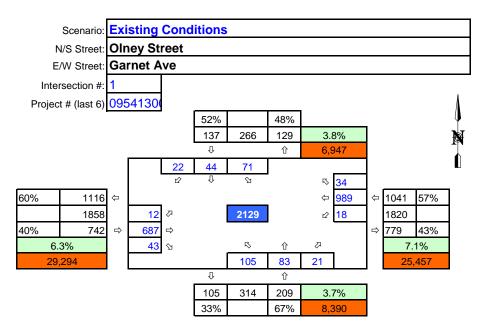
## Int 28 AM Peak Volumes

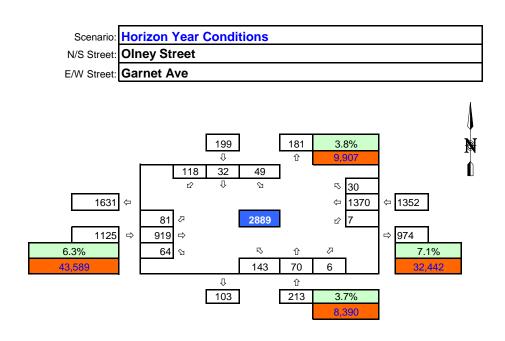




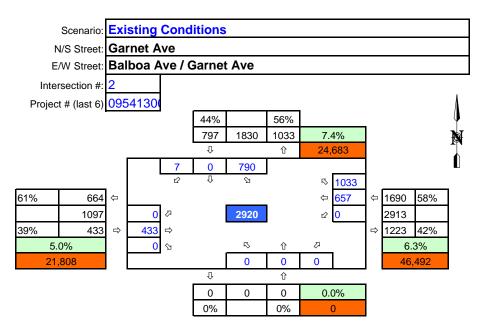


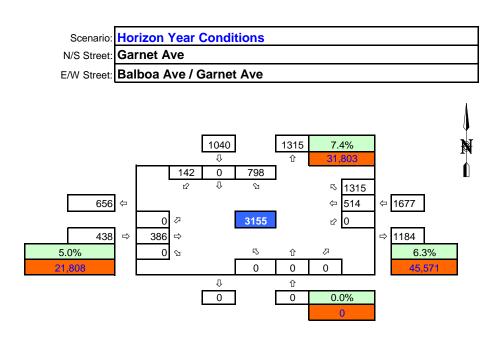
### Int 1 PM Peak Volumes

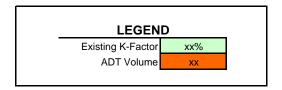




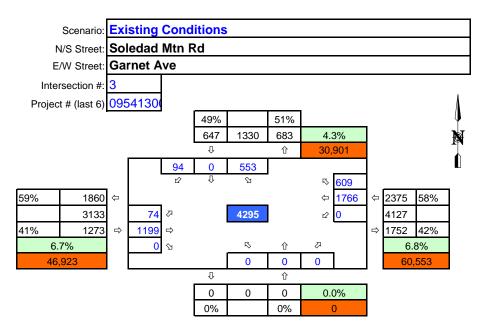
## Int 2 PM Peak Volumes

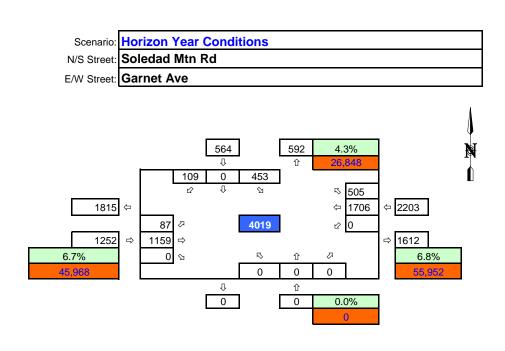


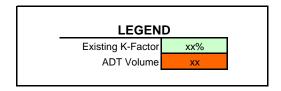




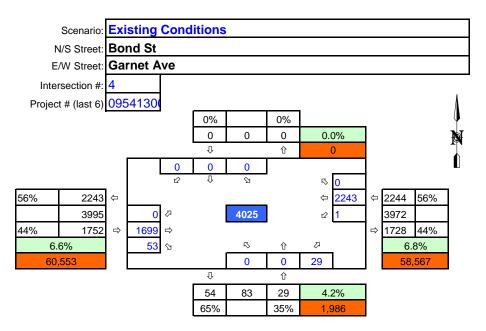
### Int 3 PM Peak Volumes

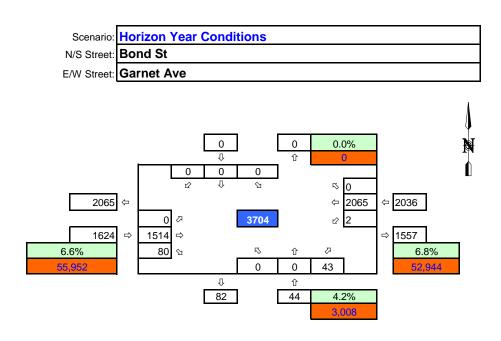




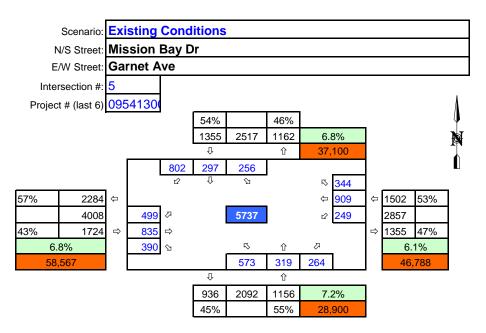


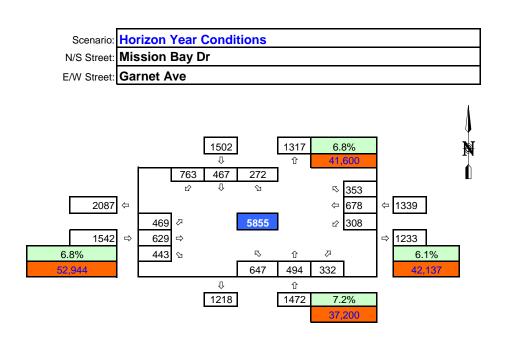
## Int 4 PM Peak Volumes

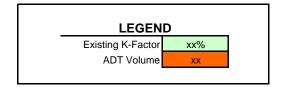




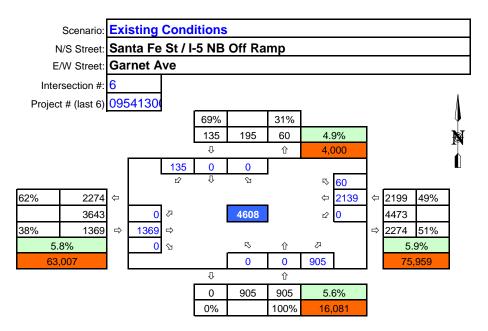
### Int 5 PM Peak Volumes

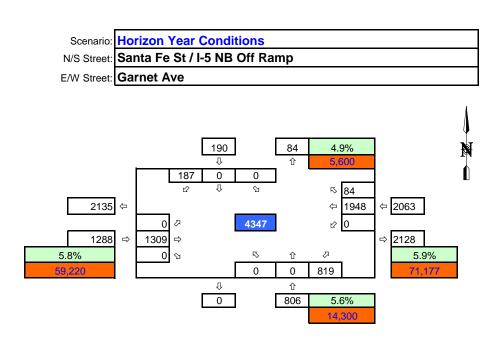


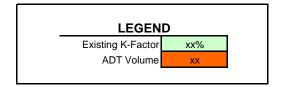




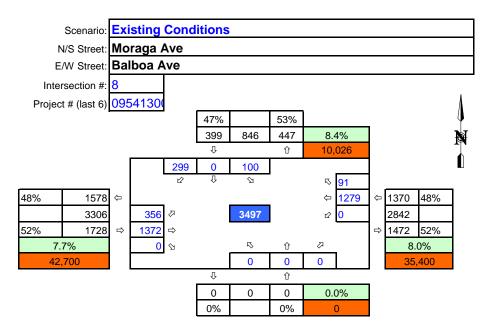
### Int 6 PM Peak Volumes

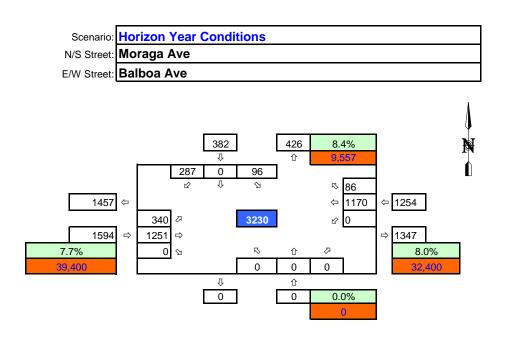


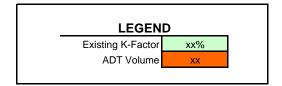




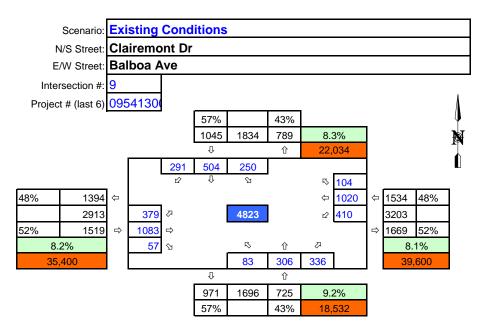
## Int 8 PM Peak Volumes

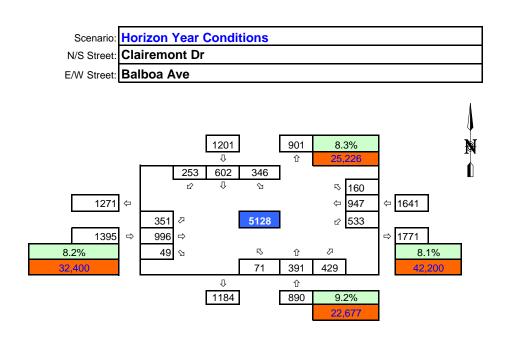


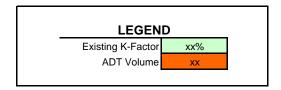




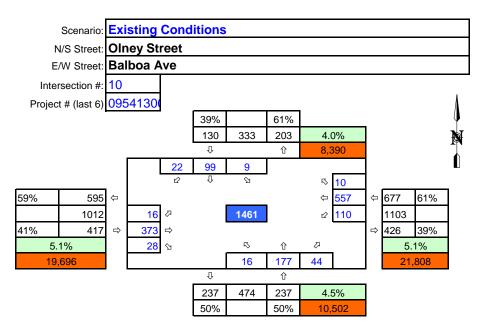
### Int 9 PM Peak Volumes

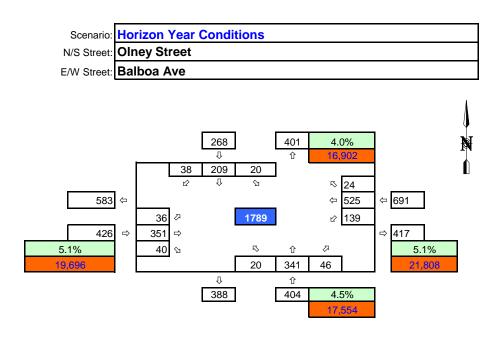


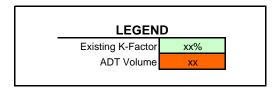




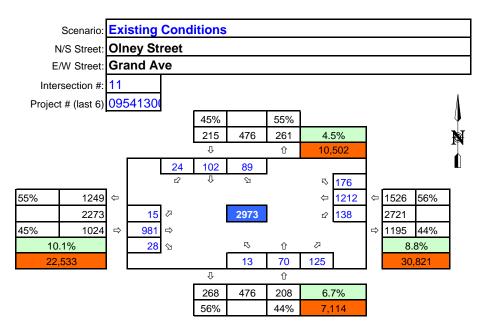
## Int 10 PM Peak Volumes

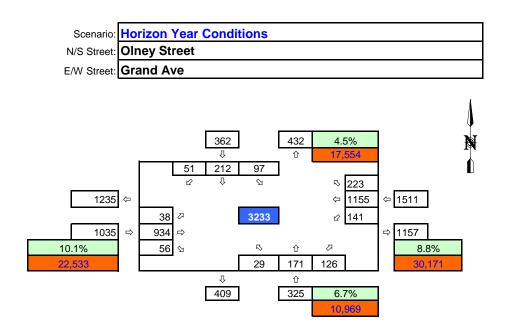


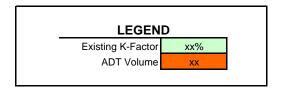




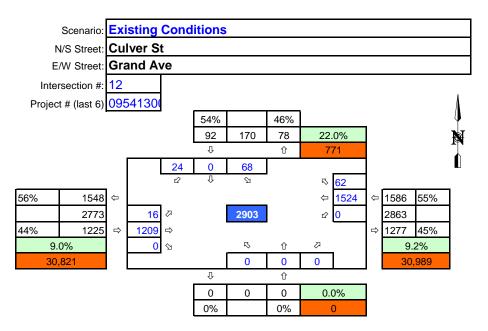
### Int 11 PM Peak Volumes

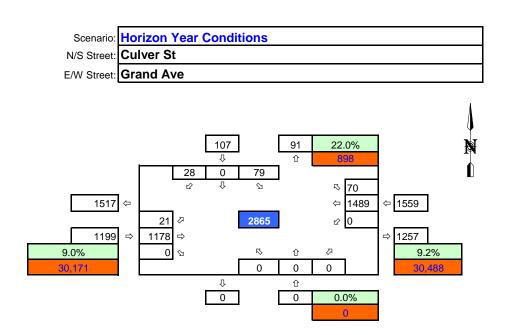


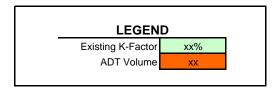




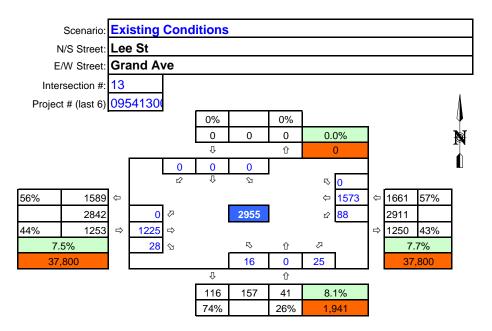
## Int 12 PM Peak Volumes

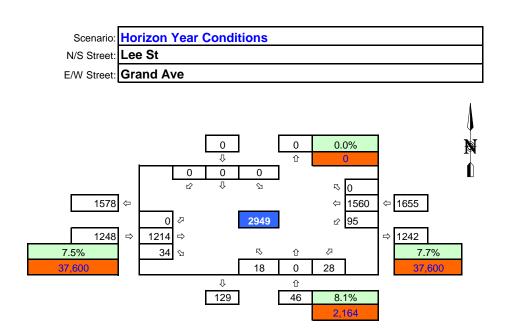


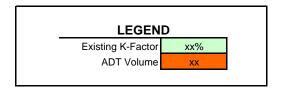




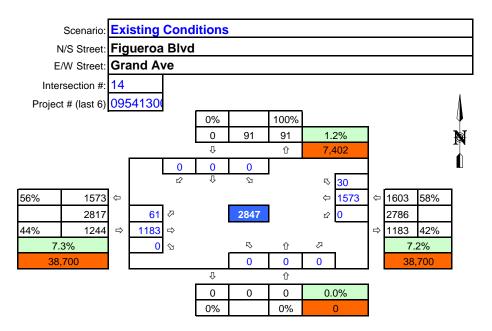
## Int 13 PM Peak Volumes

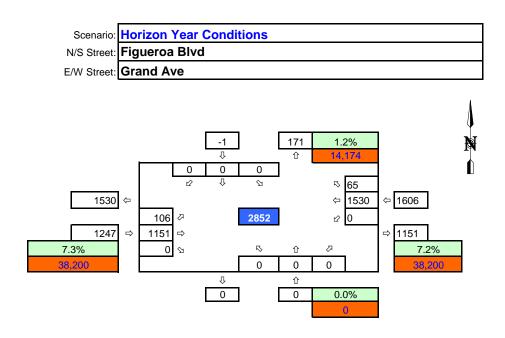


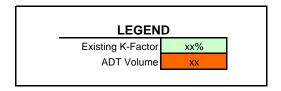




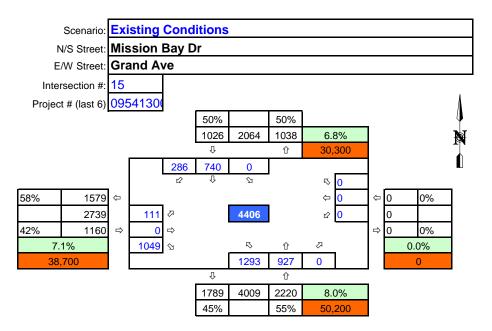
# Int 14 PM Peak Volumes

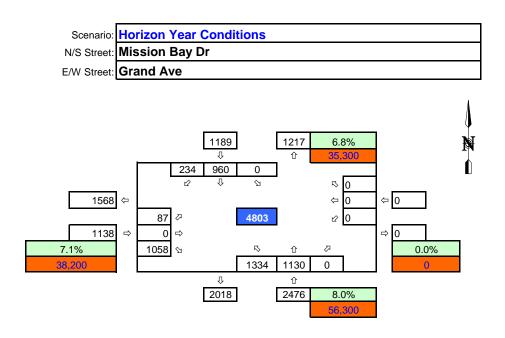


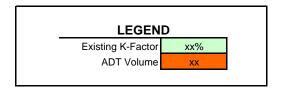




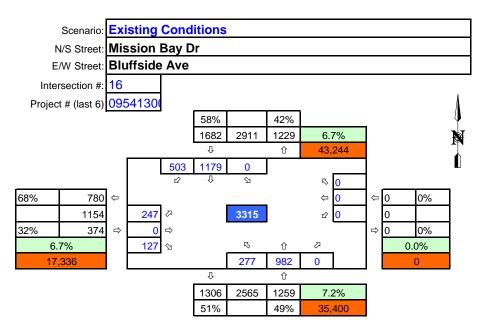
### Int 15 PM Peak Volumes

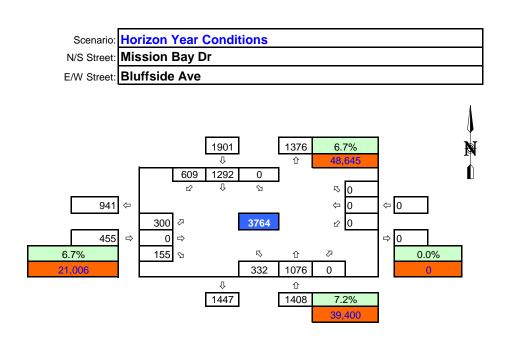


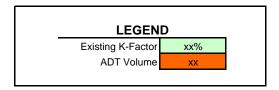




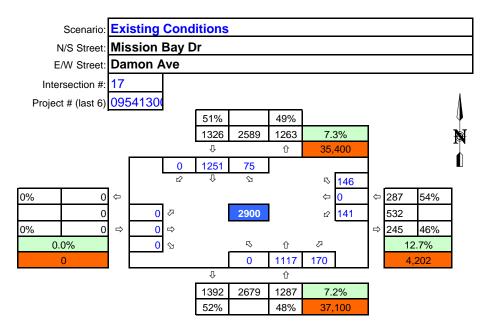
# Int 16 PM Peak Volumes

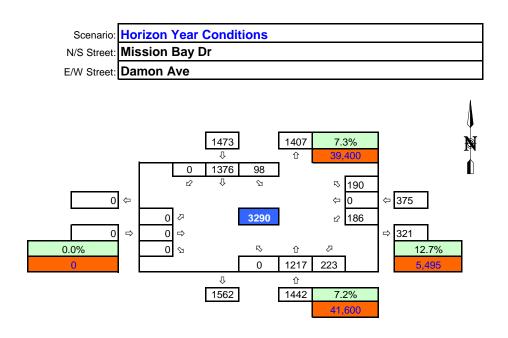


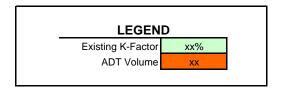




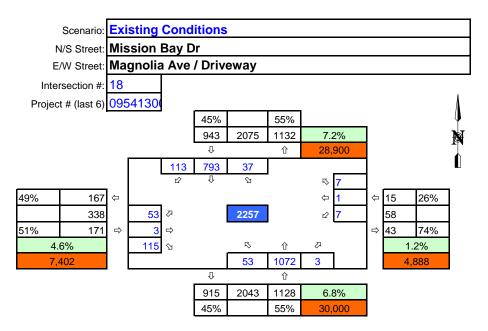
# Int 17 PM Peak Volumes

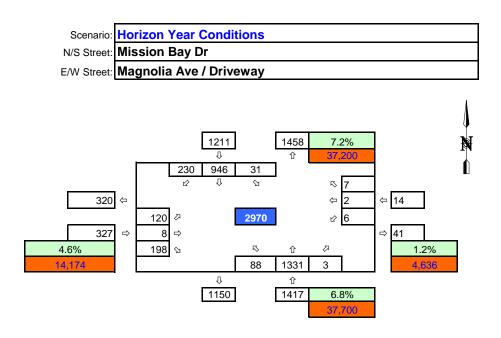


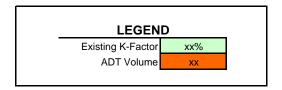




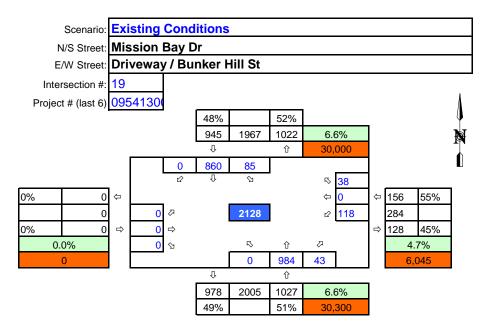
### Int 18 PM Peak Volumes

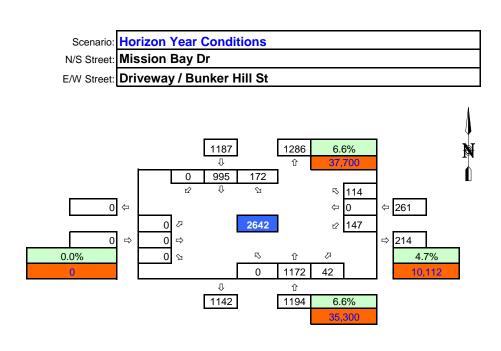




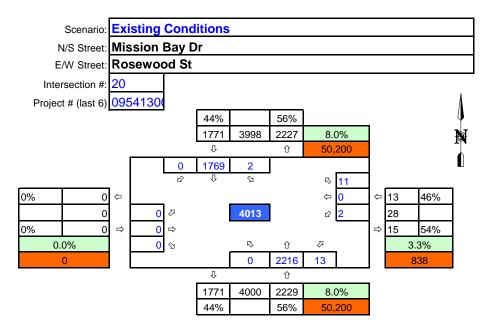


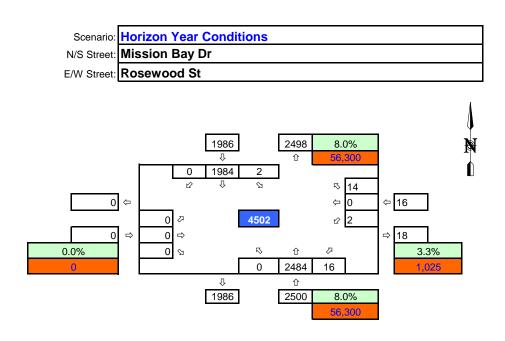
### Int 19 PM Peak Volumes



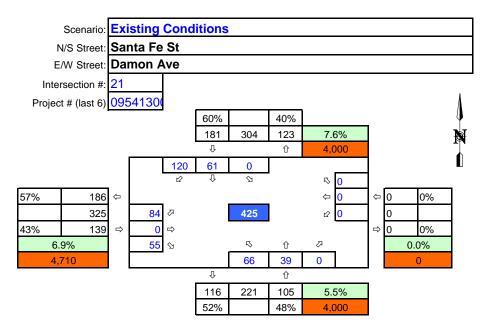


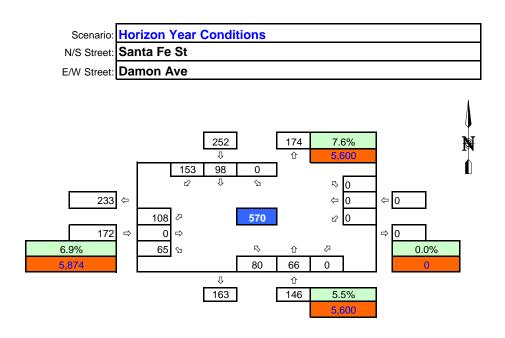
## Int 20 PM Peak Volumes

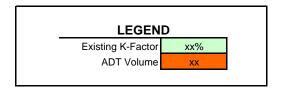




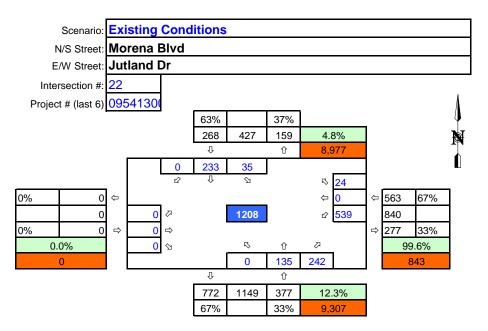
## Int 21 PM Peak Volumes

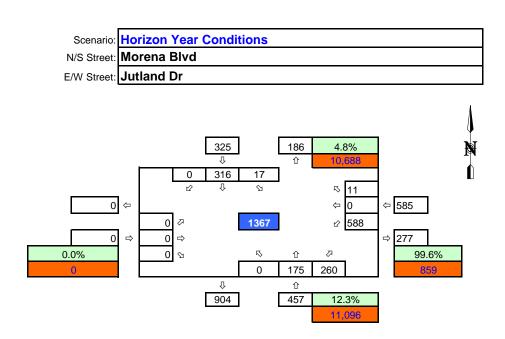


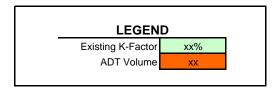




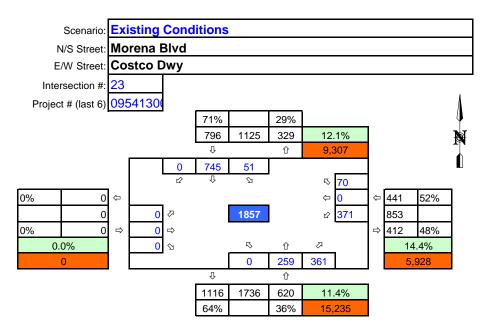
## Int 22 PM Peak Volumes

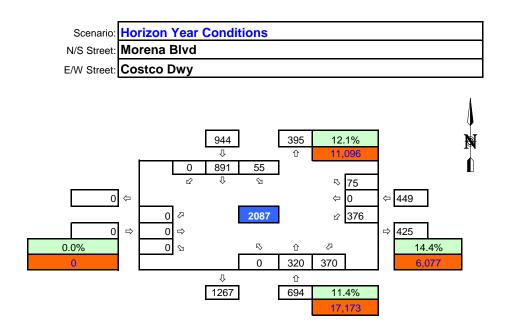




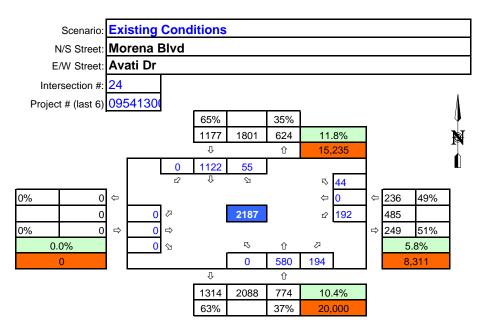


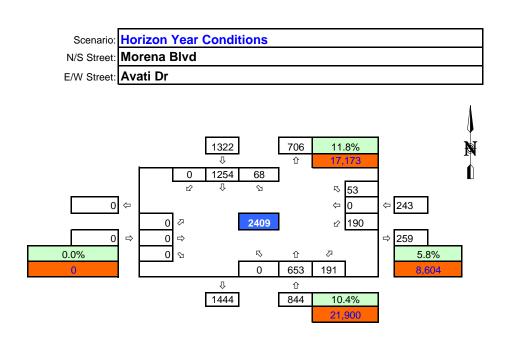
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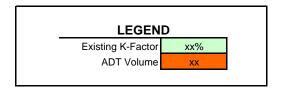




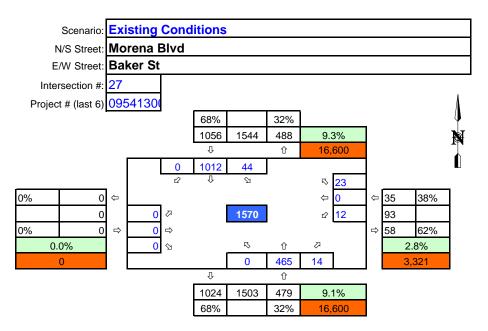
# Int 24 PM Peak Volumes

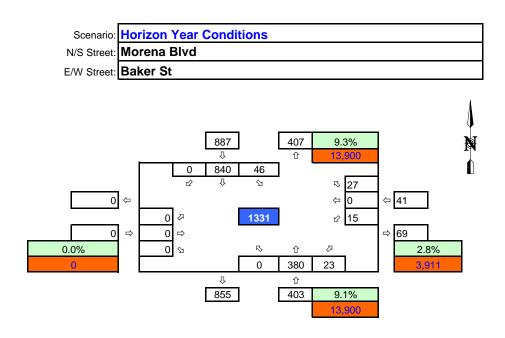


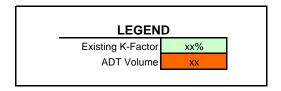




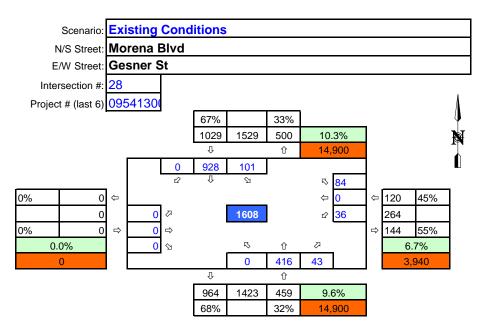
## Int 27 PM Peak Volumes

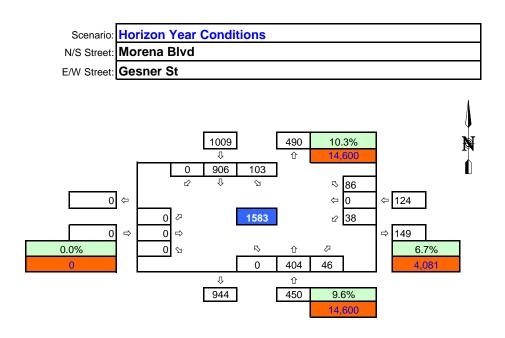


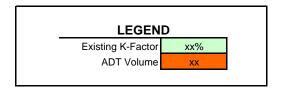




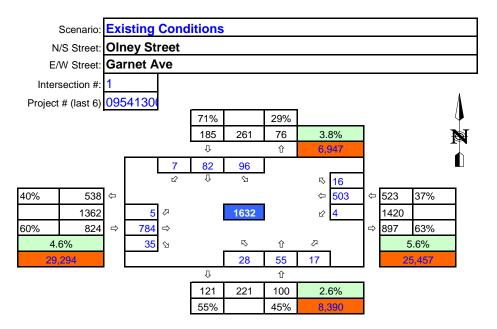
## Int 28 PM Peak Volumes

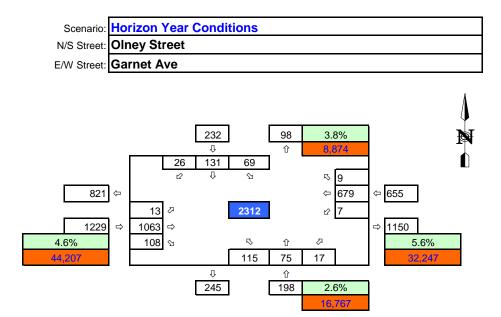


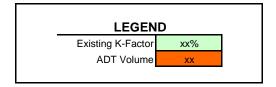




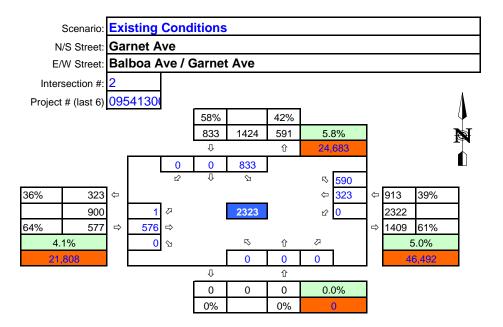
# Int 1 AM Peak Volumes

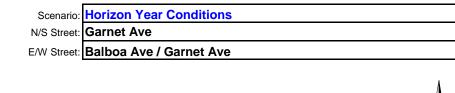


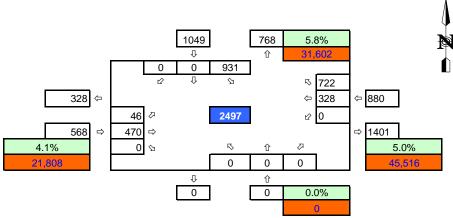


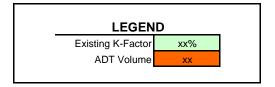


## Int 2 AM Peak Volumes

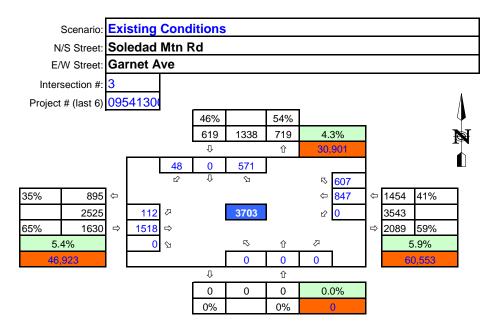


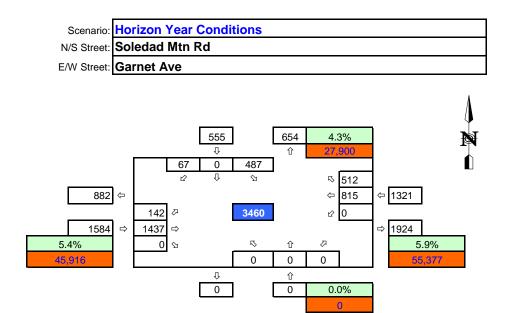


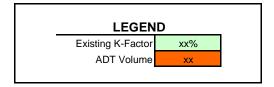




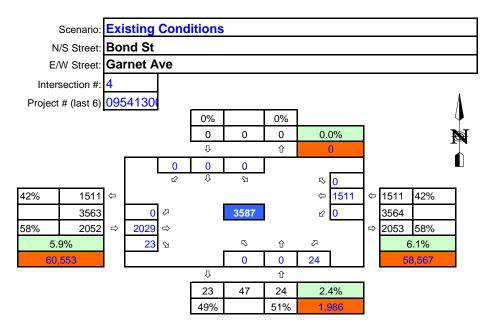
## Int 3 AM Peak Volumes

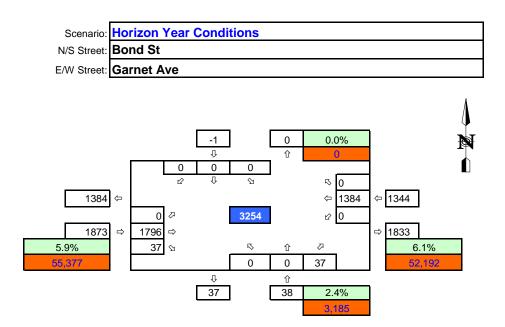


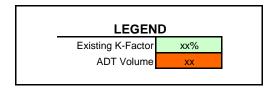




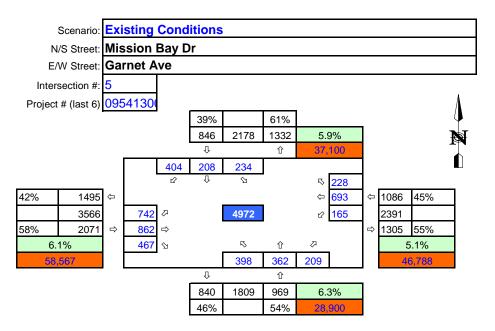
## Int 4 AM Peak Volumes

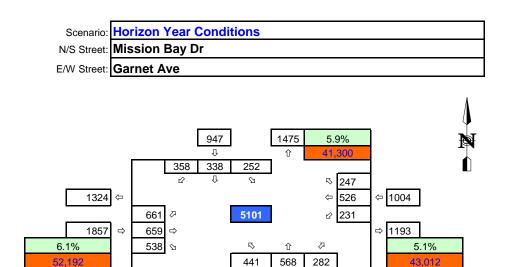






# Int 5 AM Peak Volumes

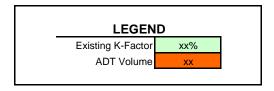




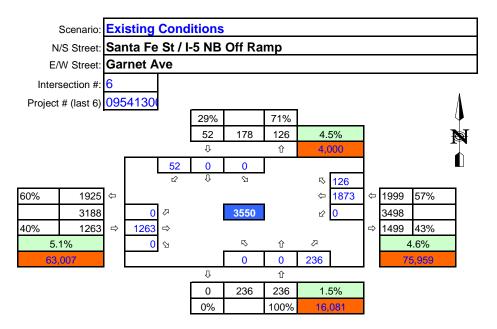
1291

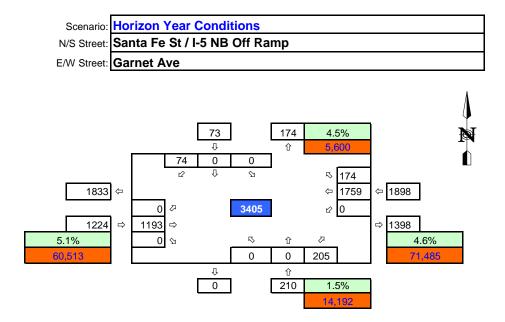
6.3%

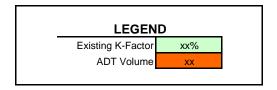
↓ 1107



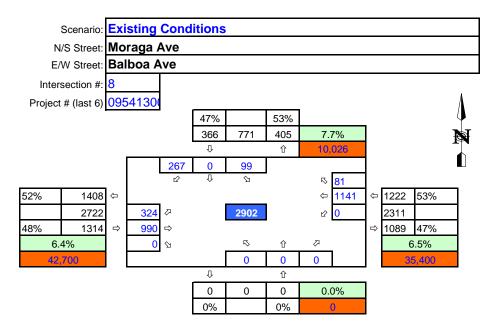
# Int 6 AM Peak Volumes

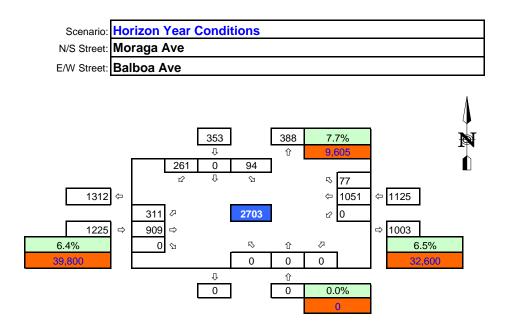


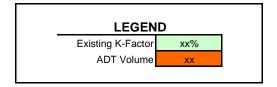




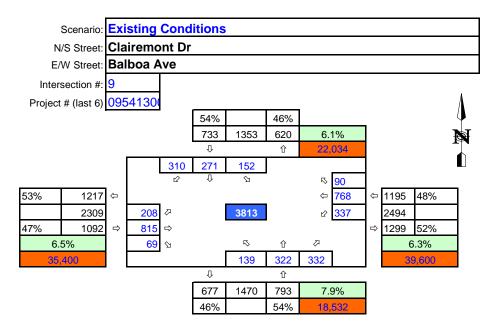
## Int 8 AM Peak Volumes

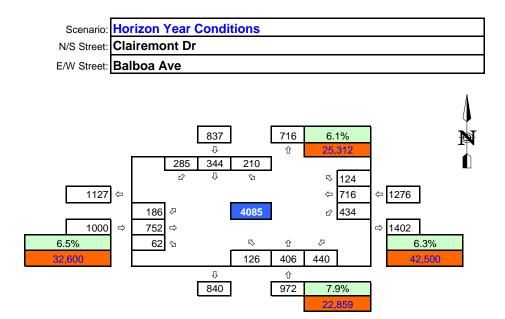


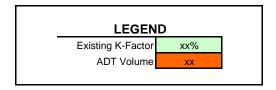




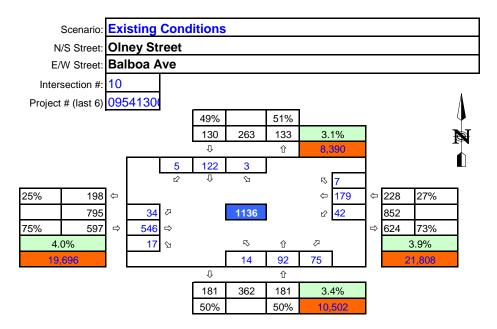
# Int 9 AM Peak Volumes

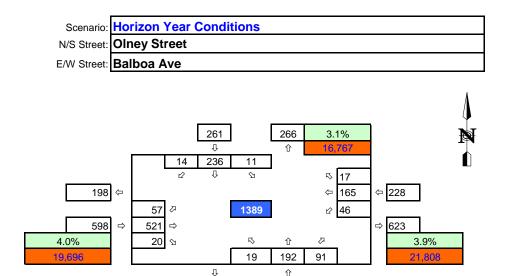






## Int 10 AM Peak Volumes

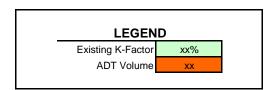




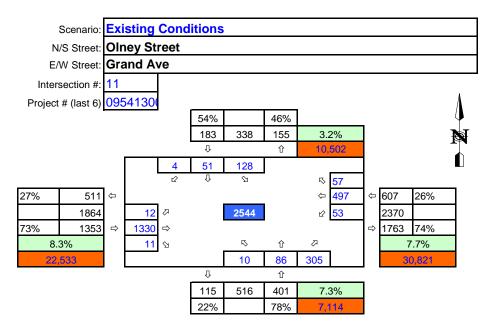
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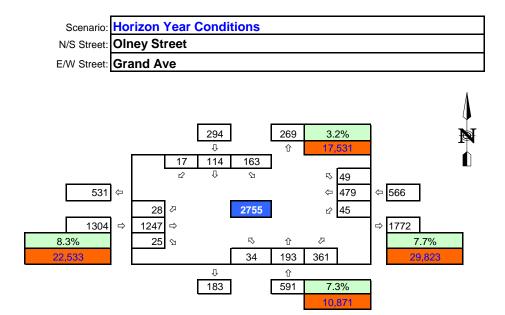
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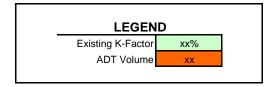
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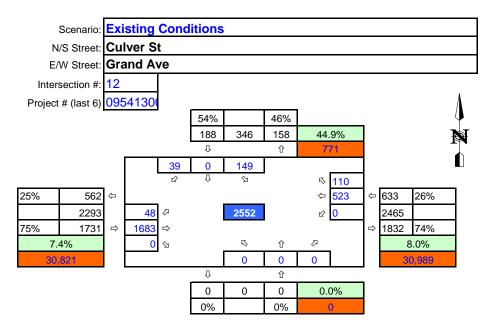
## Int 11 AM Peak Volumes

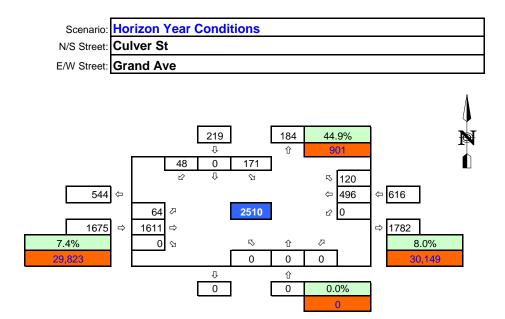


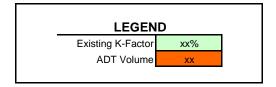




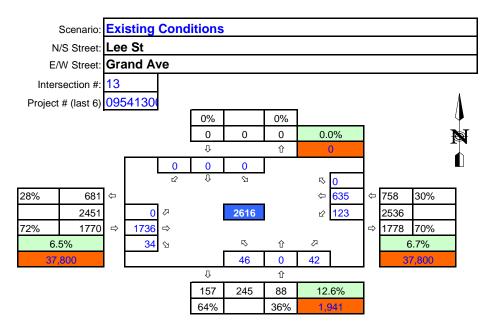
## Int 12 AM Peak Volumes

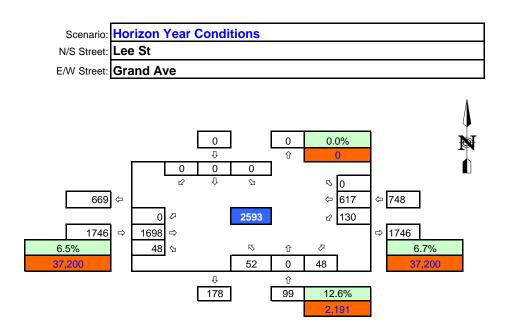


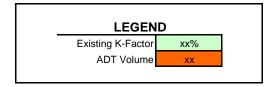




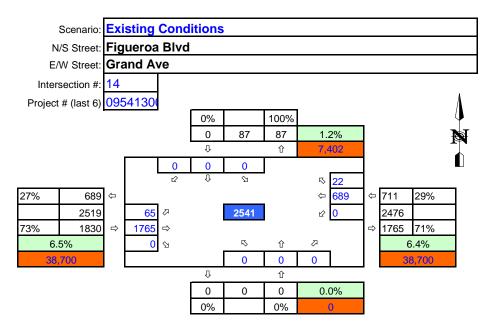
## Int 13 AM Peak Volumes

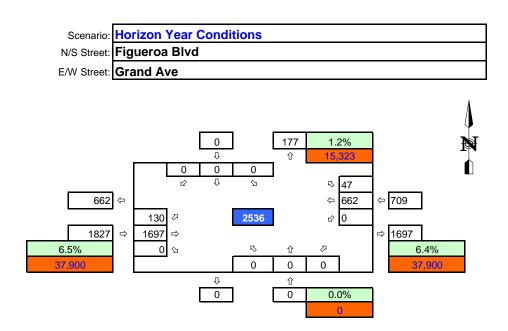


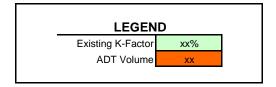




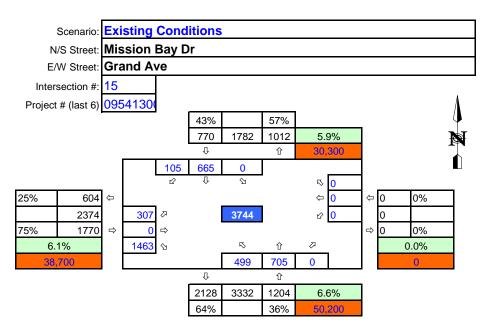
## Int 14 AM Peak Volumes

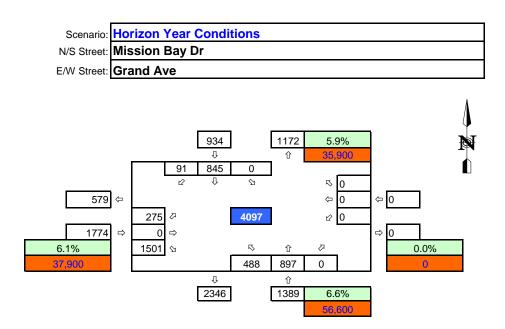


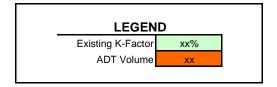




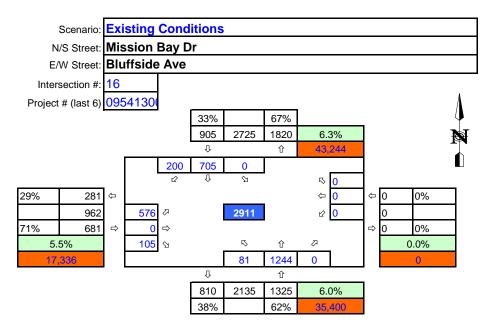
## Int 15 AM Peak Volumes

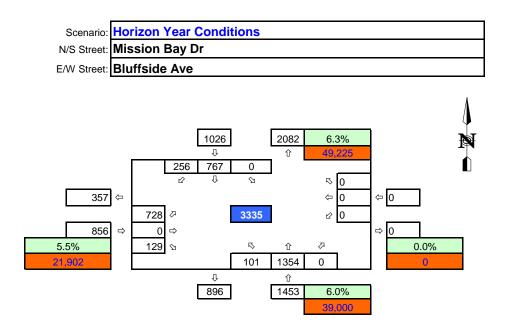


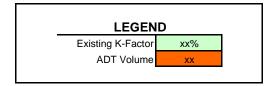




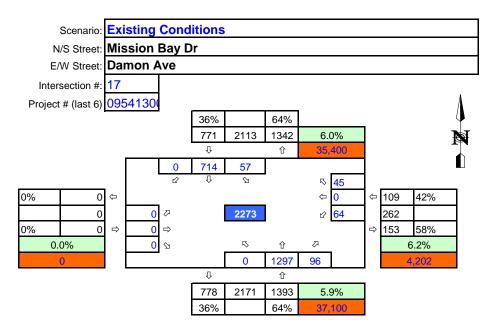
## Int 16 AM Peak Volumes

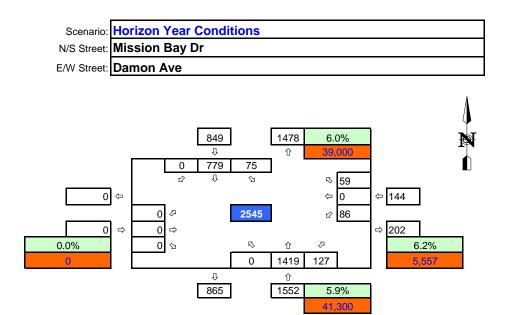


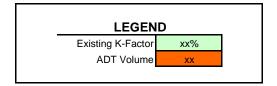




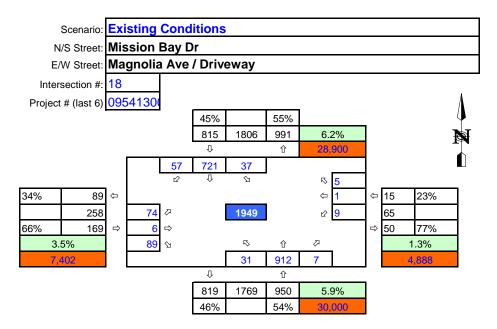
## Int 17 AM Peak Volumes

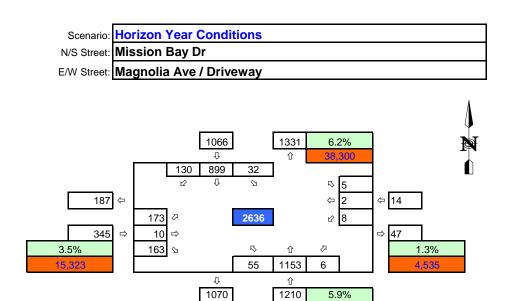


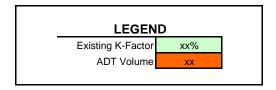




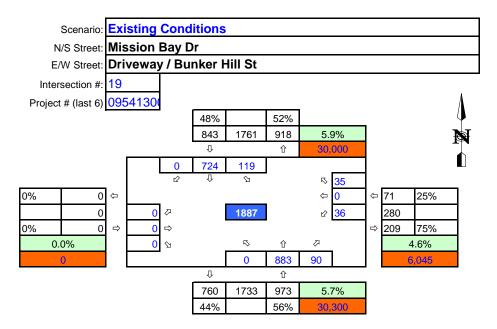
# Int 18 AM Peak Volumes

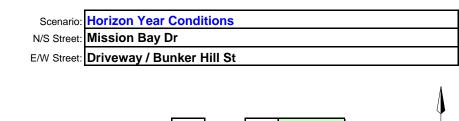


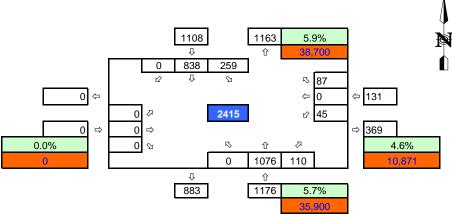


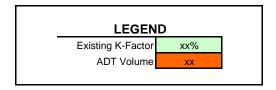


## Int 19 AM Peak Volumes

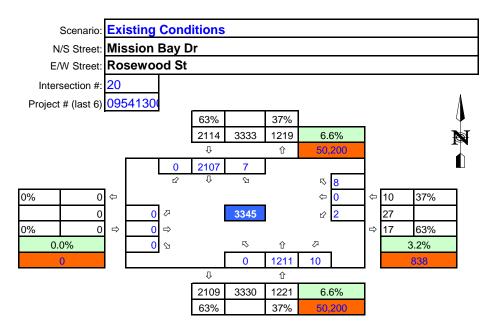


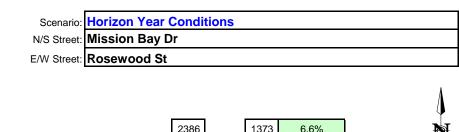


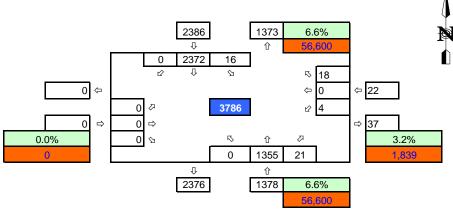


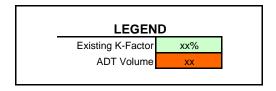


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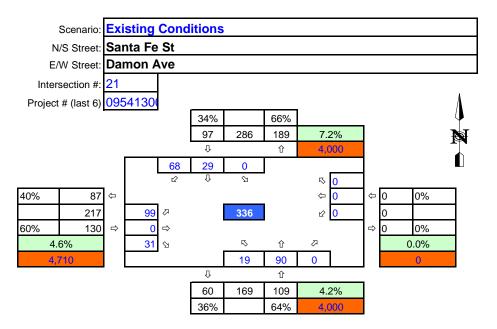


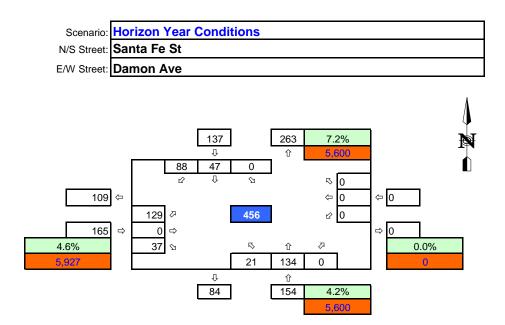


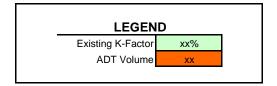




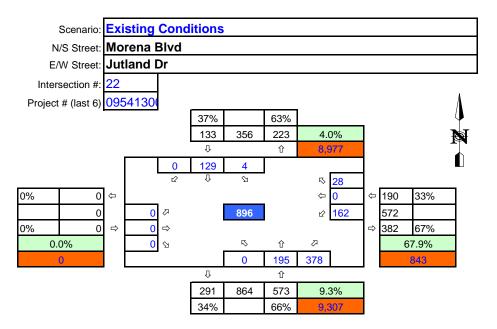
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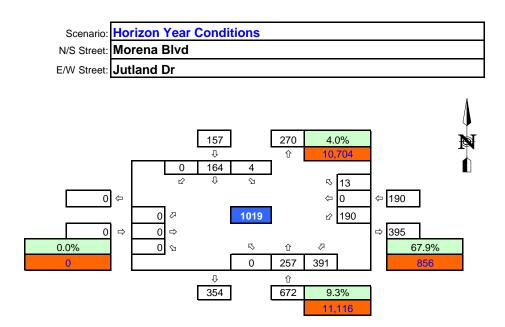


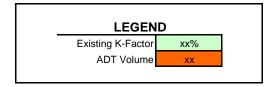




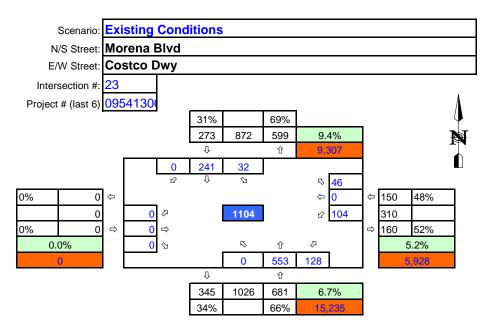
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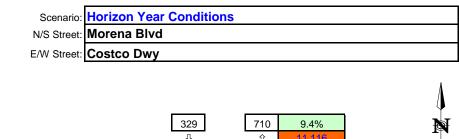


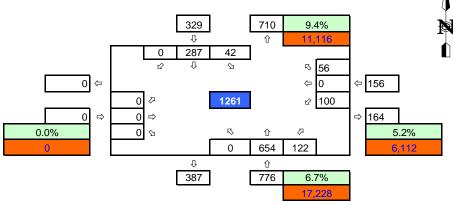


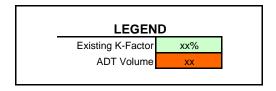


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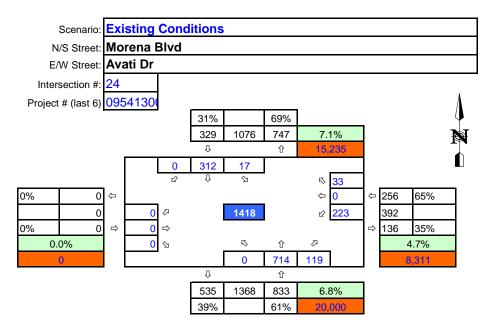


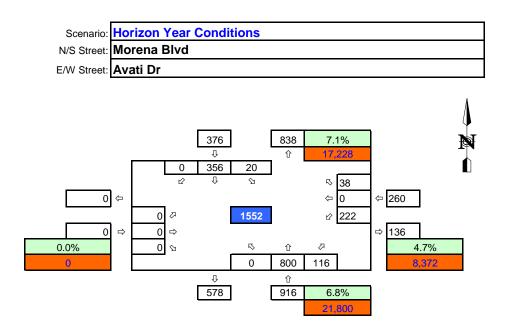


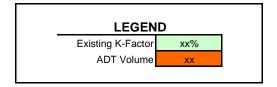




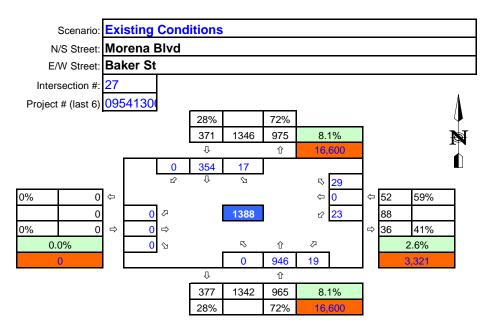
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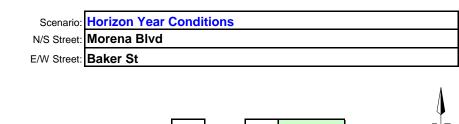


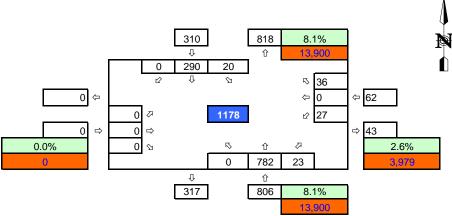


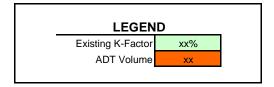


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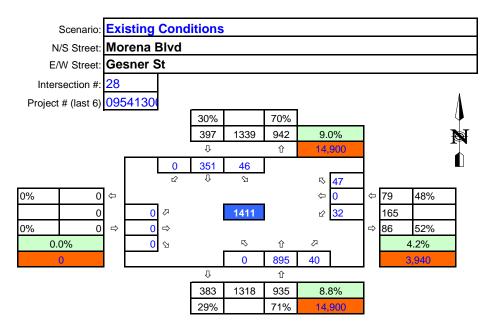


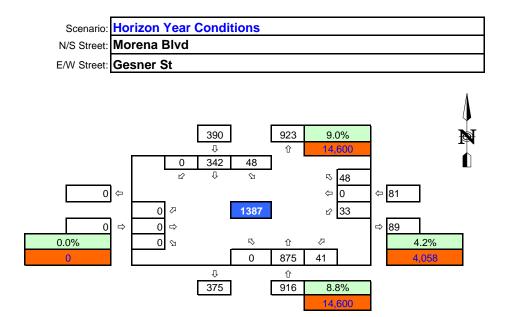


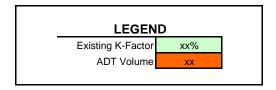




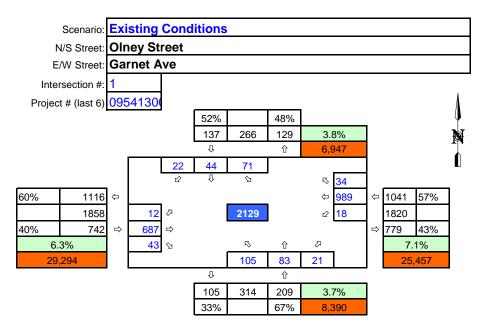
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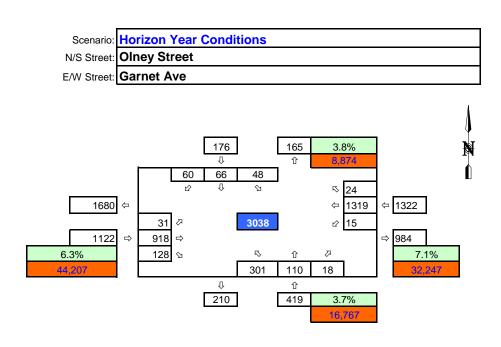




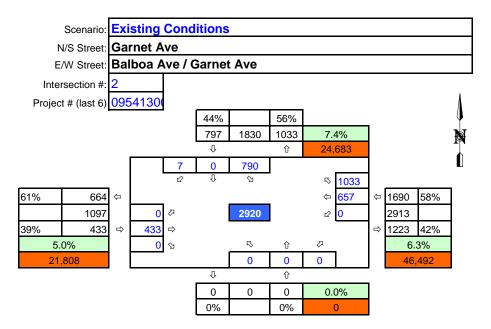


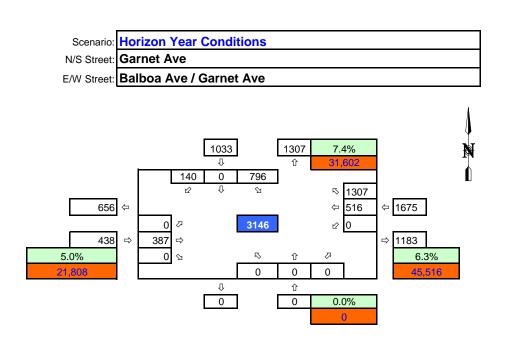
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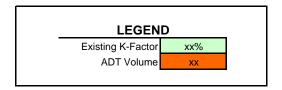




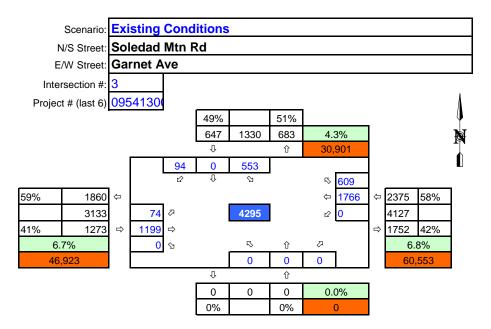
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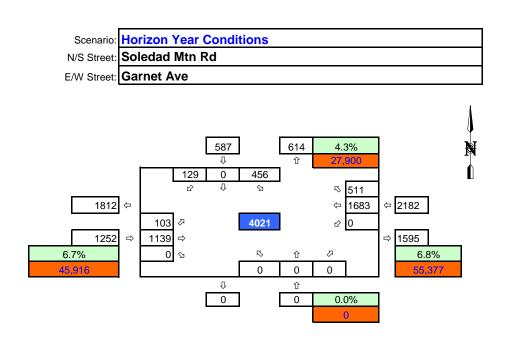




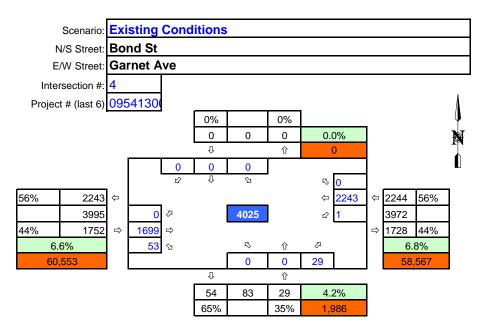


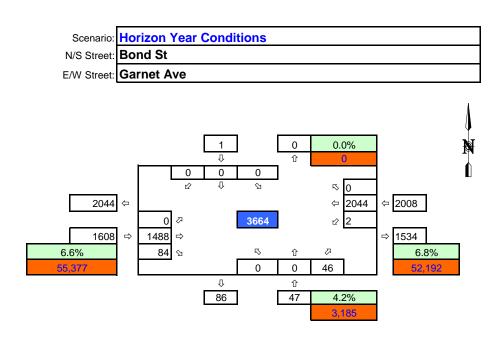
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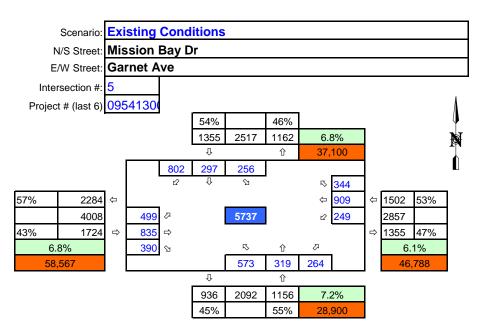


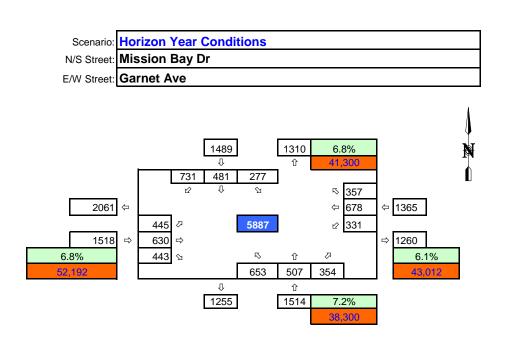
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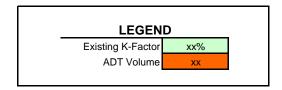




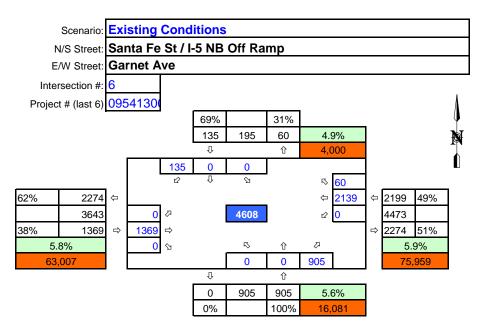
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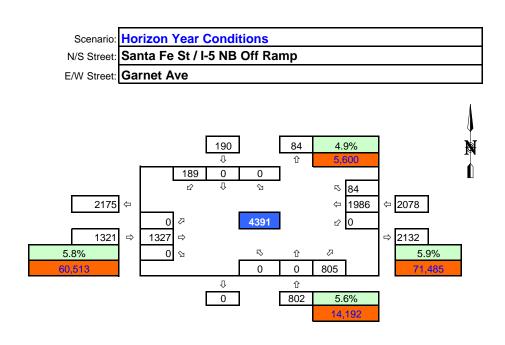


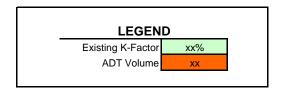




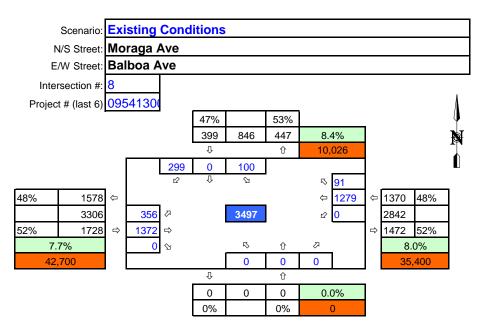
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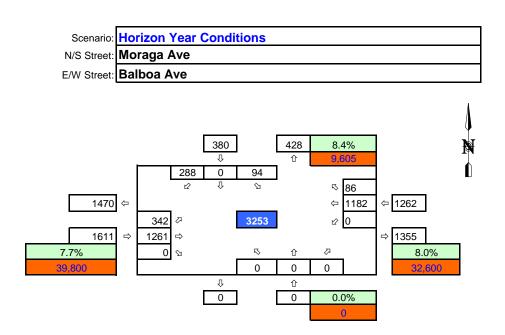


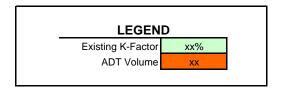




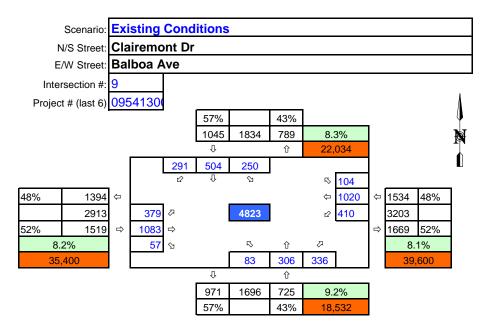
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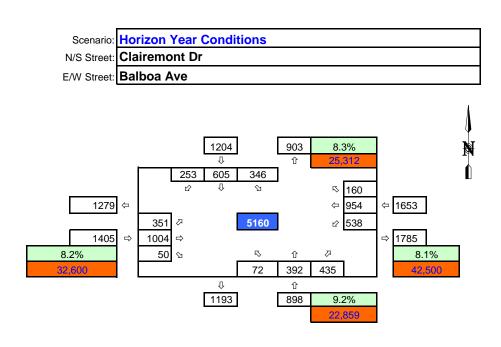




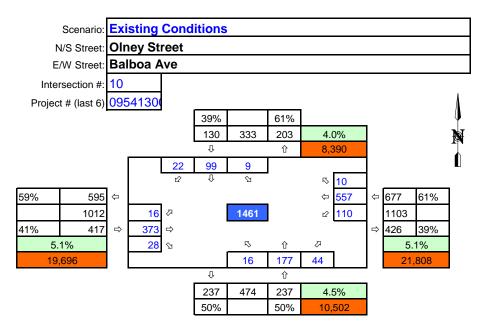


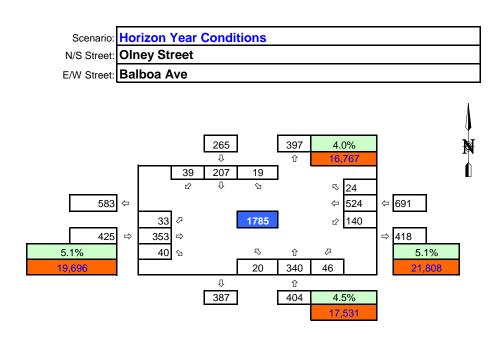
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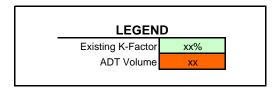




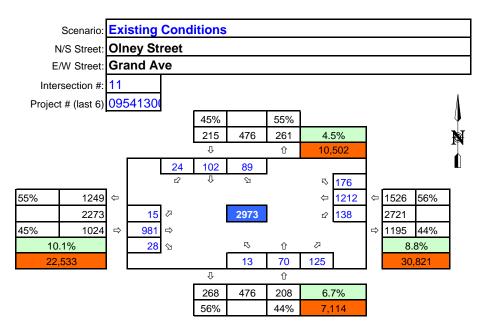
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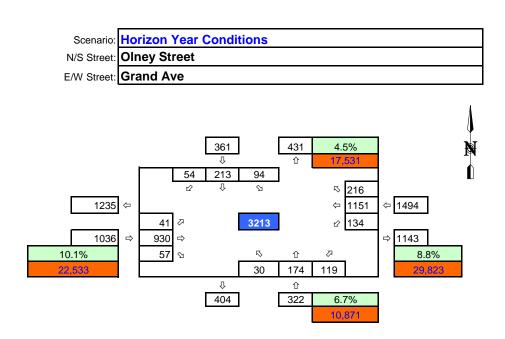


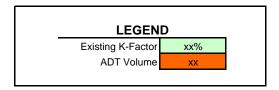




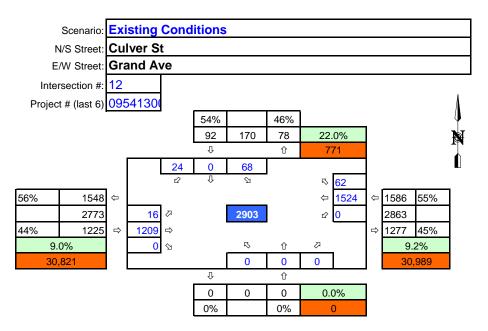
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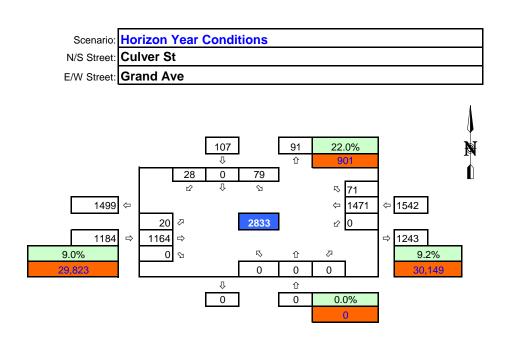


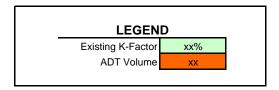




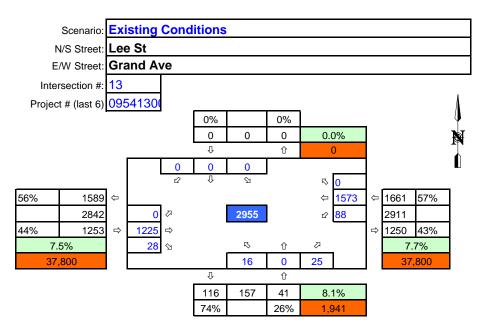
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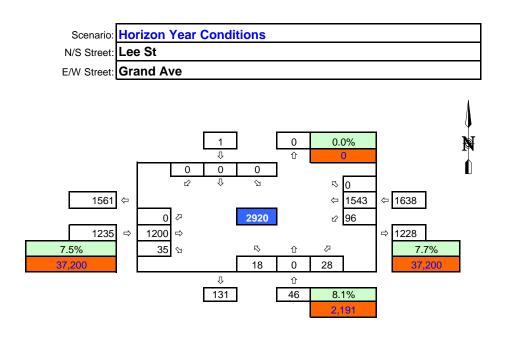


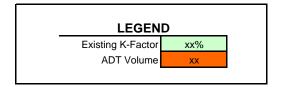




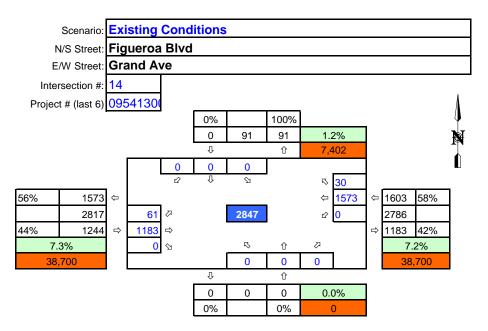
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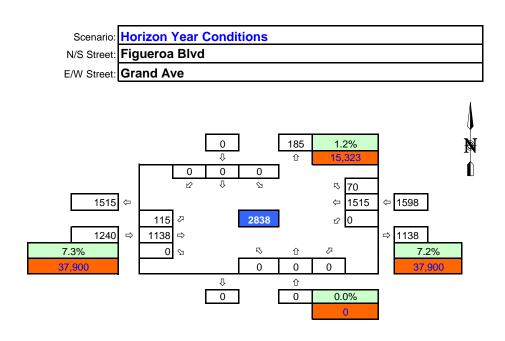




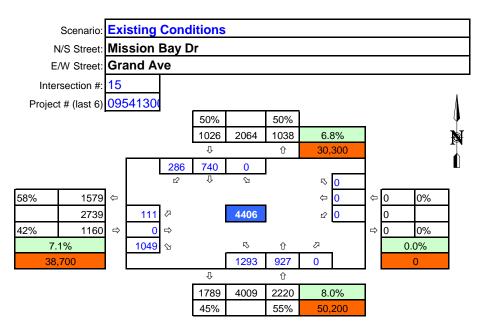


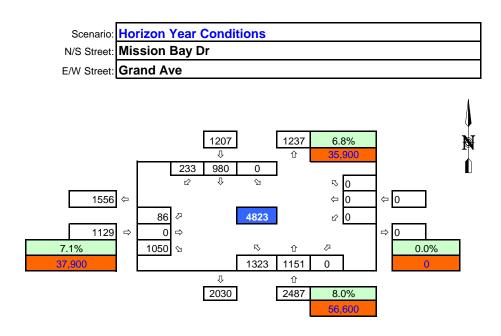
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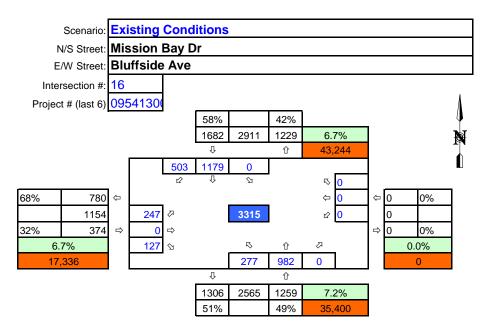


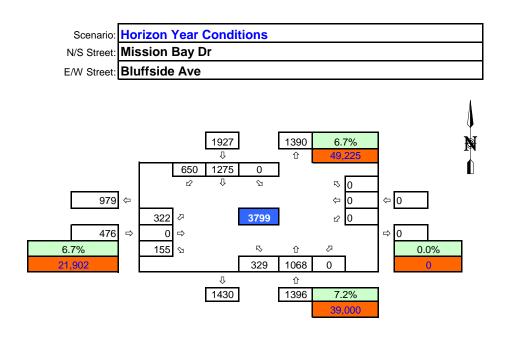
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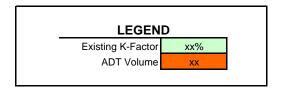




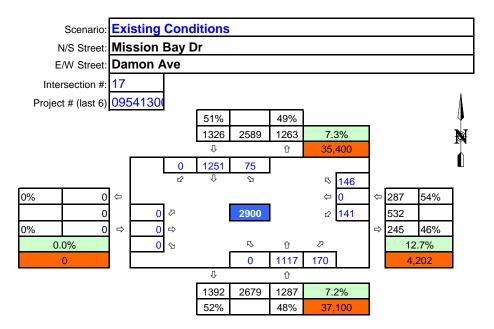
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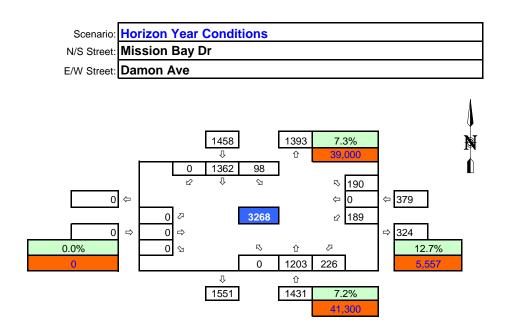


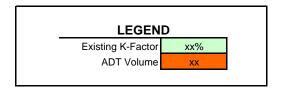




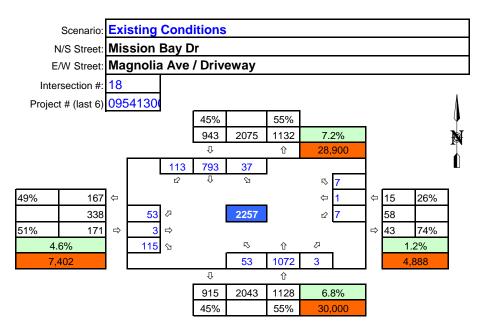
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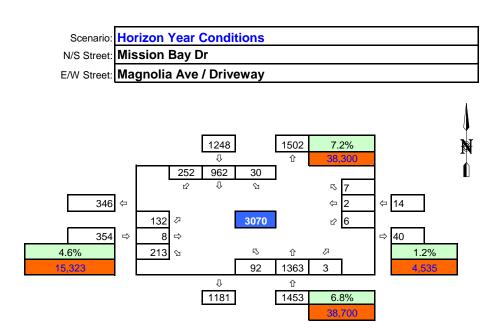


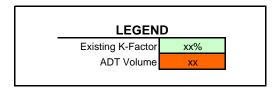




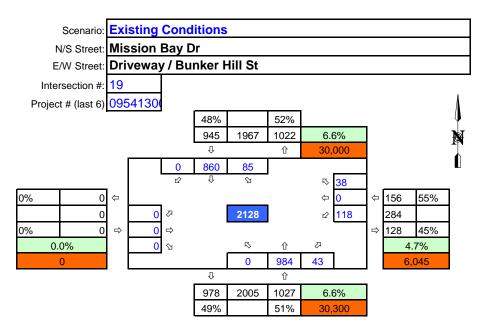
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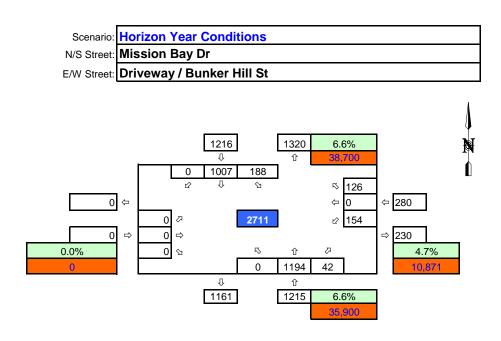




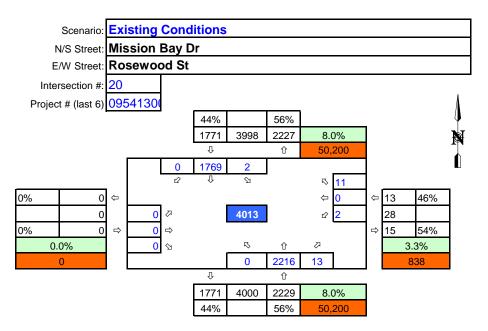


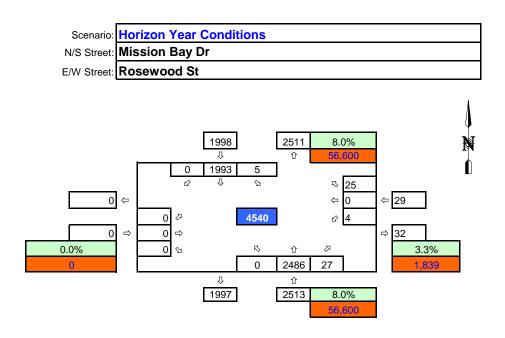
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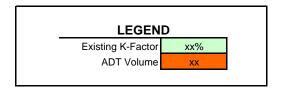




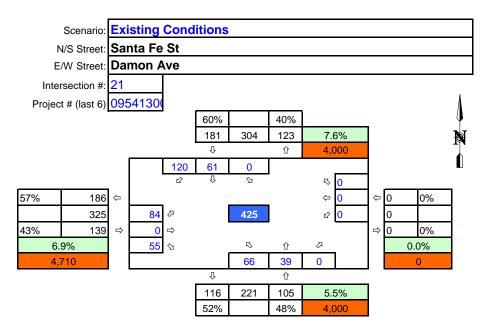
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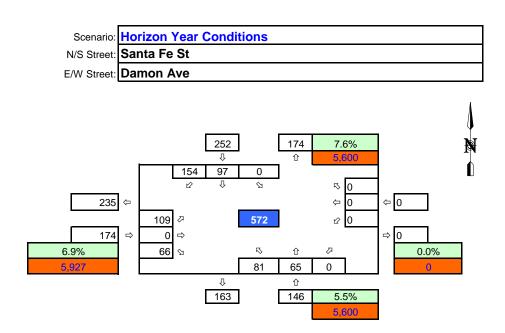


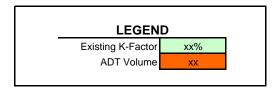




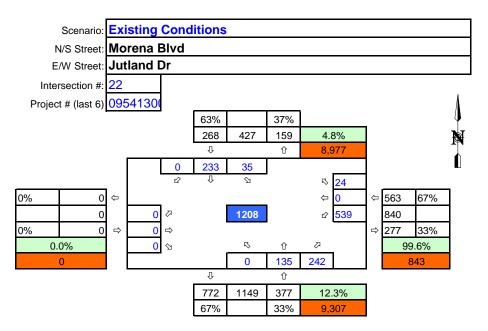
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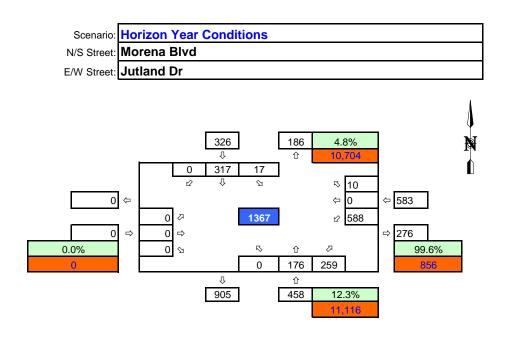


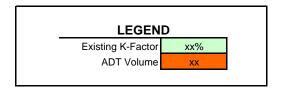




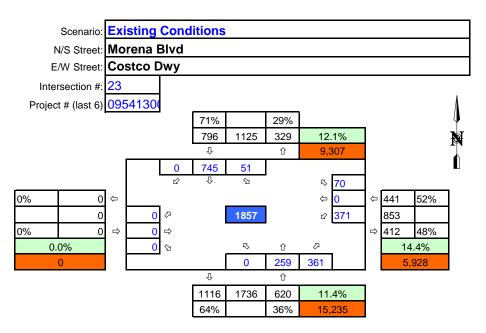
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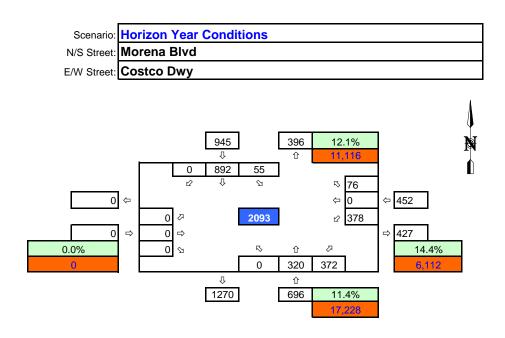




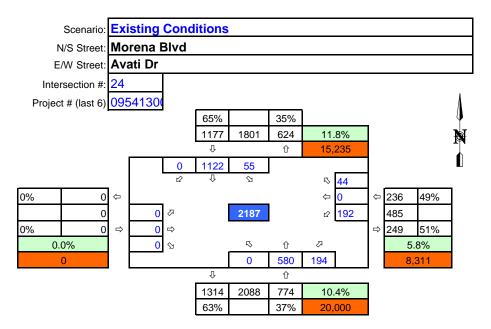


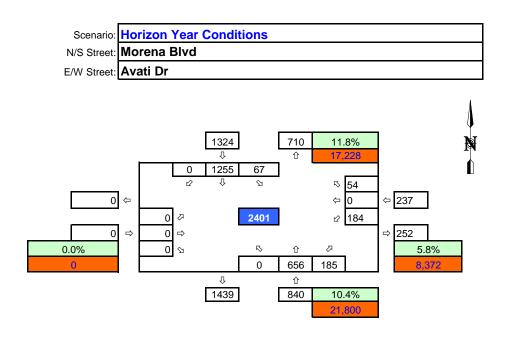
#### Int 23 PM Peak Volumes

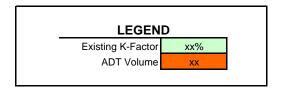




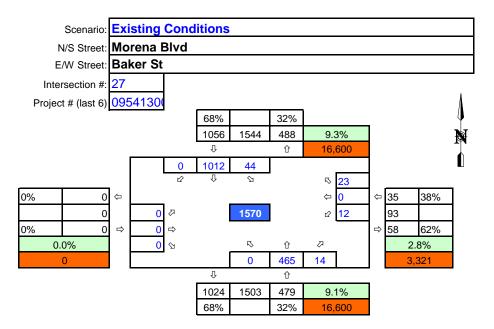
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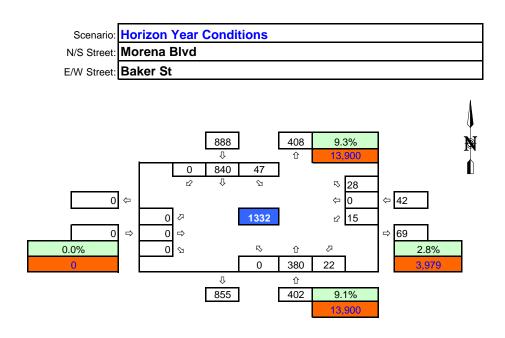


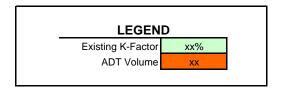




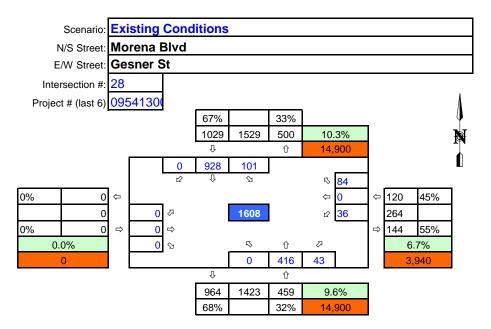
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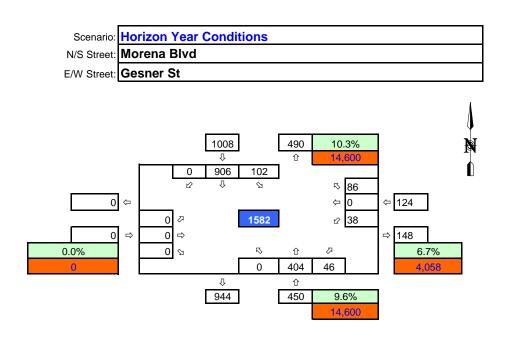






## Int 28 PM Peak Volumes





# 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	<b>+</b>	<b>→</b>	
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 <sub>7</sub>	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.

Synchro 9 Report Page 1

KHA Oueues

Balboa Transit Station 1: Olney St & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	4	†	~	<b>&gt;</b>	ţ	4	•	<b>←</b>	•	٠	<b>→</b>	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	¢Ì		F	₩			4			4	
Traffic Volume (vph)	14	1100	16	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	NA		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	V	۵		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	service		۵			
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%	⊇	ICU Level of Service	f 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	
Queue Length 95th (ft)	153	72	0	m274	
nternal Link Dist (ft)	936	284		668	
Turn Bay Length (ft)					
Base Capacity (vph)	1273	1389 1441	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	0.77	
ntersection Summary					

Synchro 9 Report Page 3

KHA Oueues

Balboa Transit Station 2: Balboa Ave & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

																																				В		6.6	В		
<b>`</b>	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, d2	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	O		
•	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		
ا ر	R SBL	*			_				0 0.95		0 0.95		2 0.92	7 613	0 0	7 613	Prot	7 7			0 32.7	_			5 748				8 55.8		_		61.8	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service		
<b>√</b>	WBT WBR	**	903 614		_		0.95 1.00		1.00 1.00		1.00 1.00	·		982 667	0	982 667	NA pm+ov	9			_	0		8.0 2.0		0.28 0.11				0.33 0.11			3.7	A		18.4	0.79	150.0	71.7%	15	
†	EBT	₩	1683	1683	1900	5.5	0.95	1.00	1.00	3539	1.00	3539	0.92	1829	0	1829	NA	2	2	106.4	106.4	0.71	5.5	9.6	2510	c0.52		0.73	13.1	00.1	15.0	В	16.6	В				•	7		
^	EBL	K.	53	53	1900	4.4	0.97	1.00	0.95	3433	0.95	3433	0.92	28	0	58	Prot	2		11.3	11.3	0.08	4.4	2.0	258	0.02		0.22	65.2	00:1	65.4	Ш					pacity ratio		zation		
	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	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	<b>\</b>	Į.	√	<	-	•	ᄼ	→	•
Movement FBI	~	FRT	FRR	WBI	WRT	WBR	NBI	NRT	NRR	SB	SBT	SRR
inirations	į	₩.	i	1	**		1		ĸ	200	3	*
Traffic Volume (voh)	0	2181	33	0	1628	0	С	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			۷	
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									
<ul> <li>c Critical Lane Group</li> </ul>												

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	<b>→</b>	•
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
Oueue 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

Synchro 9 Report Page 9

KHA Oueues

Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

	4	†	<i>&gt;</i>	<b>&gt;</b>	ţ	4	•	•	•	۶	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	ŧ	¥L.	F	++	<b>X</b> _	£	‡	*-	¥.	*	K. K
Traffic Volume (vph)	833	980	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)	902	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	9.99	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	677	71.17	0.0	9.5	5. 5	0.0	. o	5.7	0.0
Delay (s)	103.9	0.4.0	35.4	72.1	/8.4 T	48.4	87.0		30.0	84.	20.7	8.5
Approach Doloy (c)	-	7 07	2	-	74.1	۵	-	2	>	-	2 6	2
Approach LOS		- L			- LL			21.5			P. C	
of control of the con			ı	ı			ı	,	ı	ı	1	ĺ
Illelsection Summary												
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	ನ :	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
	<b>†</b>	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	<b>†</b>	<b>/</b>	<b>\</b>	ļ	4	•	<b>←</b>	•	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			<b>⋖</b>			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									
<ul> <li>c Critical Lane Group</li> </ul>												

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station
7: Balboa EB Ramps & Garnet Avenue
Timing Plan: AM Peak Period

	•	†	>	•	ţ	4	•	+	•	٠	<b>→</b>	•
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	
٠	SBL	109	0.47	43.4	0.0	43.4	25	123	201	155	868	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)	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

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Horizon Year Adopted Conditions Timing Plan: AM Peak Period Balboa Transit Station 8: Garnet Ave & Moraga Ave

rations (vp1) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		>	WBR	2		
1 2 2 2 8	ľ			SE	SBR	
7 2 2 6		‡	<b>*</b> _	×	R.	
e (vph) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			85	100	265	
ohpl) 1 1e (s)  ctor C 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	`	5 1236	82	100	265	
te (s)  do d		_	1900	1900	1900	
ctor rot)	4.4 5.7		6.5	9.6	9.6	
rot)		5 0.95	1.00	1.00	1.00	
rot)			0.85	1.00	0.85	
	75 1.00		1.00	0.95	1.00	
		` '	1583	1770	1583	
			1.00	0.95	1.00	
	Ì		1583	1770	1583	
Peak-hour factor, PHF 0.92			0.92	0.92	0.92	
Adj. Flow (vph) 3!	350 1170	1343	68	109	288	
	0	0	9	0	250	
	350 1170	1343	26	109	38	
	Prot №	N NA	Perm	Prot	Perm	
Protected Phases	5 2			4		
Permitted Phases			9		4	
_	14.6 59.3		39.5	10.8	10.8	
(2)			39.5	10.8	10.8	
		0	0.49	0.13	0.13	
	4.4 5.7		6.5	9.6	5.6	
Vehicle Extension (s) 2	2.0 4.8	- 1	3.9	2.0	2.0	
Lane Grp Cap (vph) 67	615 2578	7171 8	768	234	210	
v/s Ratio Prot c0.10		3 00.38		90.00		
//s Ratio Perm			0.04		0.02	
	0		0.08	0.47	0.18	
			11.2	32.6	31.4	
	_	-	1.00	1.00	1.00	
ncremental Delay, d2 0	0.7 0.2		0.1	0.5	0.2	
	31.2 4.7	16	11.3	33.2	31.5	
Level of Service	C		В	ပ	ပ	
Approach Delay (s)	10.8	19		32.0		
Approach LOS	В	3 B		ပ		
ntersection Summary						
HCM 2000 Control Delay		17.0	H	3M 2000 L	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	0	0.68				
Actuated Cycle Length (s)		81.4	S	Sum of lost time (s)	time (s)	16.5
Intersection Capacity Utilization		62.9%	೨	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

<b>→                                    </b>	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	
<b>/</b>	WBL				0.0					220	761	0	0	0	0.53	
†	EBT				0.0				.,		1572	0	0	0	0.65	
^	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	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£	#₽		F	₩		r	\$	*	r	<b>₽</b> ₽	
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	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	
Fit	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	က	0	0	9	0	0	0	28	0	111	0
Lane Group Flow (vph)	260	1015	0	400	1004	0	159	407	337	201	617	0
Turn Type	Prot	Ν		Prot	NA		Prot	NA	vo+mq	Prot	NA	
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	269	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		62.6	50.3	36.8	9.99	57.7	
Level of Service	ш	٥		ш	۵		ш	Ω	٥	ш	ш	
Approach Delay (s)		52.1			46.9			47.3			9.69	
Approach LOS		O			D			Ο			ш	
Intersection Summary												
HCM 2000 Control Delay			51.0	Ĭ	CM 2000	HCM 2000 Level of Service	ervice		٥			
HCM 2000 Volume to Capacity ratio	ty ratio		0.82									
Actuated Cycle Length (s)			140.7	S	Sum of lost time (s)	time (s)			20.5			
Intersection Capacity Utilization	nc		81.4%	೨	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	288	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																									
<b>→</b>	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	
<b>†</b>	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

<b>→</b>	SBT	303	1.01	85.7	0.0	85.7	197	#385	328		308	0	0	0	0.98					
<b>—</b>	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	
<b>/</b>	WBL	40	0.56	78.0	0.0	78.0	28	m#78		20	72	0	0	0	0.56		eue may		by upstr	
<b>†</b>	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

•	•	<b>†</b>	<u> </u>	<b>/</b>	ţ	4	•	<b>—</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	<u>r</u>	\$		F	₩			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	
	1.00	1.00		1.00	0.99			0.92			0.99	
It Protected	0.95	1.00		0.95	1.00			1.00			86.0	
Satd. Flow (prot)	1770	3528		1770	3501			1708			1801	
It Permitted	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	<b>,</b>	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	¥		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	വ	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	
	0.03	0.43		0.03	0.42			0.41			0.41	
Slearance Time (s)	4.4	2.1		4.4	4.9			4.9			4.9	
/ehicle Extension (s)	5.0	5.4		2.0	5.5			2.0			2.0	
(hdh)	61	1501		26	1486			662			299	
	0.02	c0.39		c0.02	0.16							
Perm								0.36			c0.41	
	0.48	0.91		0.71	0.37			0.89			1.01	
	50.2	28.5		20.8	20.8			29.2			31.4	
	1.00	1.00		1.01	1.01			1.00			1.00	
ital Delay, d2	2.1	6.7		29.2	0.7			13.3			53.4	
	52.3	38.2		80.7	21.8			42.6			84.9	
evel of Service	۵	۵		ıL	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 §	service		Q			
HCM 2000 Volume to Capacity ratio	atio		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) W C Ralio Connto Delay Courto Delay Oueue Delay Total Delay Total Delay Tun Bay, Length (ft) In Bay, Length (ft) In 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  10 m53 m170 169  1189 2612 2195  11 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 78 211  55 55 715	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 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 43. 189 2612 2195 43. cin 0 0 837 1 n 0 295 0	Flow (vph) 70 1666 638	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 cin 0 0 837 n 0 295 0 1 0 0 0 1	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 9,  f 0.0 0.2 0.3  53.5 4.3 9.4 1	144	66	126	48	Queue Length 50th (ft)
(1) 48 126 99 (1) m53 m170 169 1076 211 55 1076 211 189 2612 2195 Cin 0 0 837 In 0 295 0 In 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 ctn 0 295 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 48 126 99 10 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 1.0 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 0.3 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 1076 211 107 2195 10 0 0 837 10 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 5.1 1076 211 189 2612 2195 5.1 10 0 0 837 1072 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

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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		
✓	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	¥	2		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

	Ť	<b>/</b>	,	^	
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	9	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	
Intercoction Cumman					

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Horizon Year Adopted Conditions
Timing Plan: AM Peak Period Balboa Transit Station 13: Lee St & Grand Ave

Movement   FBT   FBR   WB1   WB1   WB1   WB1   WB2		†	<b>/</b>	<b>/</b>	ţ	•	•	
National Process   National Pr	ment	EBT	EBR	WBL	WBT	NBL	NBR	
h) 1631 43 124 593 49 46 h) 1631 43 124 593 49 46 h) 1631 43 124 593 49 46 h) 1900 1900 1900 1900 1900 1900 h 49	Configurations	₩		F	‡	>		
1631 43 124 593 49 46     1900 1900 1900 1900 1900 1900     1900 1900 1900 1900 1900     100 0.95	: Volume (vph)	1631	43	124	593	46	46	
1900   1900	· Volume (vph)	1631	43	124	593	46	46	
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   0.97   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   0.95   1.00   0.97   1.00   0.95	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   1,00   0.97	Lost time (s)	4.9		4.4	5.4	4.9		
100	Util. Factor	0.95		1.00	0.95	1.00		
100 095 100 097 100 097 100 097 100 097 100 098 1100 098 1100 097 100 098 1100 097 100 098 1100 097 100 098 1100 097 100 098 1100 097 100 097		1.00		1.00	1.00	0.93		
13526   1770   3539   1697     13626   1770   3539   1697     13626   1770   3539   1697     1373   47   135   645   53   50     1773   47   135   645   53   50     170   135   645   53   50     170   135   645   61   0     1819   0   135   645   61   0     1	petced	1.00		0.95	1.00	0.97		
100   0.95   1.00   0.97     3526   1770   35.90   10.97     1773   47   135   645   53   50     (vph)   1819   0   135   645   61   0     (vph)   1819   0   135   645   61   0     NA   Prot   NA   Prot     17   12   87.3   84     18   71.0   12.4   87.3   84     18   71.0   12.4   87.3   84     19   4.9   2.0   4.9     19   2361   207   2914   134     19   2361   207   2914   134     11   9   4.4   5.4   4.9     11   9   4.4   5.0   4.6     11   9   4.4   5.0   6.0     11   9   4.4   5.0     12   8.2   5.0   2   0.9     13   8.2   5.0   2   0.9     14   7   20   46     15   8.2   5.0   2   0.9     16   8.2   5.0   2   0.9     17   0   0.55   0.2   0.9     18   7   10.5   8.5   0.2     19   8.2   5.0   2   0.9     10   8.2   5.0   2   0.9     10   8.3   7.0   10.0     10   8.4   7.0     10   8.5   7.0   7.0     10   8.7   7.0     10	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) 1773 47 135 645 53 50 ph) 1819 0 135 645 61 0 0 ph) 1819 0 124 87.3 8.4 8.4 8.5 8.4 8.3 8.4 8.4 8.5 8.4 8.2 8.4 8.2 8.4 8.2 8.4 8.2 8.2 8.2 8.2 8.2 8.4 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2	Flow (perm)	3526		1770	3539	1697		
ph) 1773 47 135 645 53 50 ph) 1819 0 0 0 0 42 0 1819 0 135 645 61 0  NA Prof NA Prof 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 (vph)	1773	47	135	645	23	20	
(s) 1819 0 135 645 61 0 0  NA Prof NA Prof (A B B B B B B B B B B B B B B B B B B	Reduction (vph)	<del></del>	0	0	0	42	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 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.7 8.4 8.2 8.2 8.2 8.2 8.0 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2	Group Flow (vph)	1819	0	135	645	19	0	
12.4 87.3 8.4 12.4 87.3 8.4 12.4 87.3 8.4 12.4 87.3 8.4 12.0 82.008 4.4 5.4 4.9 20 207 2914 134 20.65 0.22 0.45 44.7 20 4.66 1.00 1.00 5.5 0.2 0.9 5.0.3 2.2 47.5 D A D 10.5 8.5 0.2 0.9 10.6 8.5 0.2 0.9 10.7 8.0 0.9 10.8 10.8 10.8 10.8 10.8 2.2 47.5 10.9 2.0 10.8 10.9 2.0 10.9 10.9 2.0 10.9 10.9 3.0 10.9 10.9	Гуре	N		Prot	NA	Prot		
(s) 71.0 12.4 87.3 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 8.4 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 8.4 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5	sted Phases	2		-	9	∞		
(\$) 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 (\$) 0.67 0.12 0.82 0.08 8.4 (\$) 0.67 0.12 0.82 0.08 8.4 (\$) 0.65 0.22 0.44 2.0 (\$) 0.65 0.20 0.9 (\$) 0.65 0.20 0.9 (\$) 0.65 0.20 0.9 (\$) 0.65 0.2 0.9 (\$) 0.9	tted 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 5.0 4.0 2.0 4.4 2.0 6.0.52 0.08 0.18 0.04 0.0.72 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 2.0 5.5 0.2 0.9 8.2 5.0.3 2.2 47.5 A D A D B D COMMITTED C	ted Green, G (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 5.) 4.0 2.0 4.4 2.0 7.0 207 2914 134 6.0.52 6.0.08 0.18 6.0.04 0.77 0.65 0.22 0.45 11.9 44.7 2.0 46.6 0.52 1.00 1.00 1.00 0.52 1.0 1.00 1.00 0.52 8.2 6.3 2.2 47.5 0.58 8.2 5.0 3 2.0 47.5 0.59 9.9 0.59 9.0 9.0 9 0.50 0.50 0.0 9 0.50 0.0 0.0 0.0 0.0 0.50 0.0 0.0 0.0 0.0 0.50 0.0 0.0 0.0 0.0 0.50 0.0 0.0 0.0 0.0 0.50 0.0 0.0 0.0 0.0 0.70 0.70 0.70 0.0 0.0 0.0 0.70 0.70	ive Green, g (s)	71.0		12.4	87.3	8.4		
4,9	ted g/C Ratio	19:0		0.12	0.82	0.08		
207 2914 2.0 207 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 0.2 0.9 5.3 2.2 47.5 D A D 10.5 A D 10.6 A D 10.8 A D	ance Time (s)	4.9		4.4	5.4	4.9		
207 2914 134  0.05 0.18 0.004  0.65 0.22 0.45  44.7 2.0 466  1.00 1.00 1.00  5.5 0.2 0.9  5.03 2.2 4.7.5  D A D  1.05 A D  1.05 A D  1.04 HCM 2000 Level of Service  0.73 Sum of lost time (s)  70.7% ICU Level of Service	e Extension (s)	4.0		2.0	4.4	2.0		
0.08 0.18 0.04  0.65 0.22 0.45  44.7 2.0 46.6  1.00 1.00 1.00  5.5 0.2 0.9  5.0.3 2.2 4.7.5  D A D  10.5 47.5  B D  10.4 HCM 2000 Level of Service  0.73  10.60 Sum of lost time (s)  10.7% ICU Level of Service	Grp Cap (vph)	2361		207	2914	134		
0.65 0.22 0.45 4.7 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 10.5 47.5 B D 10.6 Sum of lost time (s) 70.7% ICU Level of Service	atio Prot	c0.52		80.00	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 2.2 47.5 1.0 A D 1.0 A	atio Perm							
44.7 2.0 46.6 1.00 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 0.73 106.0 Sum of lost time (s) 70.7% ICU Level of Service	atio	0.77		0.65	0.22	0.45		
1.00 1.00 1.00 5.5 0.2 0.9 5.0.3 2.2 4.7.5 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	m Delay, d1	11.9		44.7	2.0	46.6		
55 02 09 50.3 22 47.5 50.3 22 47.5 50.3 4.7.5 8 D 10.5 47.5 8 D 10.4 HCM 2000 Level of Service 0.73 106.0 Sum of lost time (s) 70.7% ICU Level of Service 15	ession Factor	0.52		1.00	1.00	1.00		
50.3 22 47.5  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	nental Delay, d2	2.0		5.5	0.2	6.0		
D A D 10.5 47.5 B D 10.4 HCM 2000 Level of Service 0.73 106.0 Sum of lost time (s) 15	(s)	8.2		50.3	2.2	47.5		
10.4 HCM 2000 Level of Service 10.6 Sum of lost time (s) 70.7% ICU Level of Service 15	of Service	V		۵	A	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 cum of lost time (s) 70.7% ICU Level of Service 15	ach LOS	A			В	Ω		
Hoy	ection Summary							
0.73 106.0 Sum of lost time (s) 70.7% ICU Level of Service 15	2000 Control Delay			10.4	Н	M 2000 I	evel of Service	В
106.0 Sum of lost time (s) 70.7% ICU Level of Service 15	2000 Volume to Capaci	ity ratio		0.73				
Utilization 70.7% ICU Level of Service 15 ICU Level of Service 15	ted Cycle Length (s)			106.0	Su	m of lost	time (s)	14.2
15	ection Capacity Utilizati	on		70.7%	⊇	J Level o	f Service	O
Hical I ane Groun	sis Period (min)			15				
Illical Early Glods	Critical 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	<b>†</b>	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	949	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 1876 1770 1870 1870 1870 0.00 1770 1870 1870 1870 0.00 1770 1870 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 1870 0.00 1770 1870 0.00 1770 1870 0.00 1770 1870 0.00 1770 1770 1770 1770 0.00 1770 1770 1770 1770 1770 1770 1770 17	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   0.07     170   170   0.07     170   170   1.07     170   170   1.07     171   1.9     172   14.1   1.9     173   14.1   1.9     174   1.02     175   14.1   1.9     177   177   178     177   178   179     178   179   170     189   170   170     180   170   170     180   170   170     180   170   170     180   170   170     180   170   170     190   170   170     190   170   170     100   170   170     110   170	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 732 092 092 092 093 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	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) 1118 1500 1285 h) 118 1500 1285 h) 119 1863 3012 h) 2.0 4.4 4.4 h) 4.4 h) 2.0 4.4 4.4 h) 0.0 h) 1.0 0.1 h) 1.0 0.1 h(2) 1.0 0.1 h(3) 1863 3012 h) 1.0 0.1 h) 1.0 0.1 h(4) 1.0 0.1 h(5) 1.0 0.1 h(5) 1.0 0.1 h(6) 1.9 0.0 h(7) 1.0 0.1 h(8) 1.9 0.0 h(8) 1.9 0.0 h(9) 1.9 0.0 h(10) 1.0 0.91 h	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	<del></del>	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  4 4 44  119 1883 3012  0.05 0.97 0.21  0.05 0.97 0.21  0.05 0.97 0.21  0.06 0.91  1.00 0.91  2 6.7 14.1 0.2  6.7 14.1 0.2  6.7 14.1 0.2  6.7 14.1 0.2  6.7 14.1 0.2  6.8 A	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 0.00 1.9 1.00 1.00 0.91 1.00 1.00 0.91 1.00 1.00 0.91 1.00 1.00 0.91 1.00 0.00 1.9 1.00 0.00 1.	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  Y  Y  Y  Y  Y  HCM 2000 Level of Service  1.50 1.50 Sum of lost time (s)  1.50 1.50 Sum of los	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 Y  12.7 HCM 2000 Level of Service 1.05 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 12. Ith (s) 15.0 Sum of lost time (s) 15. Ith (s) 15.0 Sum of lost time (s) 15. Ith (s) 15.0 Sum of lost time (s) 15. Ith (s) 15.0 Sum of lost time (s) 15. Ith (s) 15.0 Sum of lost time (s) 15. Ith (s) 15.0 Sum of lost time (s) 15. Ith (s) 15.0 Sum of lost time (s) 15.	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) 1.90	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         1.2.7         HCM 2000 Level of Service           In (s)         1.05         Sum of lost time (s)         1.2.           In (s)         15.00         Sum of lost time (s)         1.2.           In (s)         15.8         ICU Level of Service         1.2.           In (s)         1.5         ICU Level of Service         1.2.	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							

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Balboa Transit Station 15: Mission Bay Dr & Grand Ave

Horizon Year Adopted Conditions Timing Plan: AM Peak Period

<b>→</b> ← ← ← / /	L 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	1 11.1 32.9 4.3 26.2	0 112 84	m0 110 31	526	5 285	1583	0 0 0 0 0	0 30 0 0 0	0 0 0 0 0	1 0.98 0.48 0.38 0.69	
<i>&gt;</i>	EBL EBR								773	225		0 0	0 30	0 0	0.91 0.98	
`	Lane Group E	Lane Group Flow (vph)	v/c Ratio 0	Control Delay 4	Queue Delay	Total Delay 4	h 50th (ft)			Tum Bay Length (ft)		Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio 0	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

EBI EBR (1900) 299 1400 1900 1900 1900 1900 1900 1900 19	NBL 460 460 1900 5.7 0.97	NBT	SBU	CDT	
1	460 460 460 1900 5.7 0.97			200	SBR
299 1400 190 1900 1900 4.4 4.0 1.00 100 1900 1.00 0.85 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 1.00 1.770 1583 0.95 1.00 1.770 1.683 1.770 1.00 1.770 1.00	460 460 1900 5.7 0.97	+	ď	4₽	
299 1400 1900 1900 4 4 40 1,00 185 0,95 1,00 1770 1583 0,95 1,00 1770 1583 0,97 1,00 0,09 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,93 1,00 0,03 0,93 0,93 0,94 1,49 75,0 0,020 1,00 0,03 0,03 0,03 0,03 0,03 0,03 0,03 0,03 0,03	460 1900 5.7 0.97	819	0	783	100
1900 1900 1900 1900 1900 1000 1000 1000	5.7	819	0	783	100
14, 4, 4, 0 100 100 100 0.85 0.95 1.00 1770 1583 0.95 1.00 1770 1583 0.92 0.92 1770 1583 0.92 1.00 ph) 0 0 ph) 325 1522 ph) 325 1522 ph) 1, 325 1522 ph) 2 1522 ph) 0 0 14, 9 75.0 14, 9 75.0 20 1.00 4, 4, 4, 4, 4, 4, 4, 4, 5, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6,	0.97	1900	1900	1900	1900
100 100 100 100 100 100 100 100 100 100	0.97	2.7		4.9	
100 085 170 183 1770 183 0.95 1.00 1770 1583 HF 0.92 0.92 325 1522 ph) 325 1522 ph) 325 1522 Prof Free 4 Free (s) 14.9 75.0 s) 0.20 1.00 4.4	0	0.95		0.95	
(s) 100 (995 100 (170 1883 0.95	90.	1.00		86:0	
1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1583 1770 1770 1770 1770 1770 1770 1770 1	0.95	1.00		1.00	
(s) 1.00 (9.95 1.00 (17	3433	3539		3479	
HF 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	0.95	1.00		1.00	
HF 0,92 0,92 0,92 ph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3433	3539		3479	
325 1522 ph) 0 0 0 ph) 325 1522 Prot Free 4 Free (s) 14,9 75.0 s) 0.20 1.00 4,4 s) 2.0	0.92	0.92	0.92	0.92	0.92
ph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	200	830	0	821	109
ph) 325 1522 Prof Free 4 Free (s) 14.9 75.0 5) 020 1.00 4.4 5) 2.0	0	0	0	=	0
Prot Free 4 Free (s) 14.9 75.0 s) 14.9 75.0 20 1.00 4.4 5) 2.0	200	890	0	949	0
(s) 14.9 75.0 s) 14.9 75.0 14.9 75.0 0.20 1.00 4.4 s) 2.0	Prot	NA	Prot	NA	
(s) 14.9 Free (s) 14.9 75.0 (o.20 1.00 4.4 (s) 2.0	-	9	2	2	
(s) 14.9 75.0 s) 14.9 75.0 0.20 1.00 4.4 s) 2.0					
s) 14.9 75.0 0.20 1.00 4.4 s) 2.0	15.3	20.0		29.8	
0.20 1.00 4.4 5) 2.0	15.3	20.0		29.8	
4.4 (2.0	0.20	19:0		0.40	
2.0	2.7	2.7		4.9	
	2.0	4.6		3.6	
1583	700	2359		1382	
0.18	0.15	0.25		0.27	
96:00					
0.93 0.96	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	
6.9	2.8	0.4		2.7	
42.9 6.9	30.1	4.2		25.8	
	ပ	⋖		ပ	
Approach Delay (s) 13.3		13.5		25.8	
Approach LOS B		В		ပ	
Intersection Summary					
HCM 2000 Control Delay	16.2	유	HCM 2000 Level of Service	evel of S	ervice B
pacity ratio	1.20				
	75.0	Sul	Sum of lost time (s)	ime (s)	15.0
zation 6	%0.79	2	ICU Level of Service	Service	O
Analysis Period (min)	15				
c Critical Lane Group					

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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

	^	•	<b>—</b>	<b>→</b>	•	
Lane Group	EBL	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	29/	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	202			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	

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	U	
•	SBR	ĸ.	196	196	1900	5.6	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	89. 6	22				HCM 2000 Level of Service		ime (s)	Service	
<b>→</b>	SBT	‡			1900			1.00		ľ		3539	0.92	853	0	853	N	9				0		4.8	`	0.24						4		7	В		HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
←	IL NBT	*	94 1389	`	_			0 1.00	1.00	ľ	5 1.00	0 3539		1510	0 0	1510	ot NA			7.7 48.6		0	4.4 5.0	.0 4.0		16 c0.43						9	: œ :	16.6	В		6	0	0	%	15
٠ م	EBR NBI		120		1900 1900	4	1.00	1.00	0.0	1770	0.95	1770	0.92 0.92	130 10	0	0 102	Prot			7	7.7	0.10	4	2	181	90:0		0.56	32.0	0.64	P. 1.9	7.7					23.9	0.80	75.0	%1.99	
٠	EBL	1	584	284	1900	4.4	0.97	26:0	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	53.1	o :	53.1	Ω			ity ratio		lon	
	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   Web   Web   Set		<b>/</b>	✓	<b>—</b>	•	٠	<b>→</b>	
figurations	ement	WBL	WBR	NBT	NBR	SBL	SBT	
tume (vph)         73         42         1445         107         52         819           tume (vph)         73         42         1445         107         52         819           v (vphp)         190         1900         1900         1900         1900         1900           time (s)         44         44         50         50         44         52         819           time (s)         44         44         50         50         144         52         819           time (s)         44         44         50         50         44         52         819           time (s)         44         44         50         50         44         52         819           time (so)         100         100         100         100         100         100         95           time (so)         100         100         100         100         100         100         95         100         100         96           time (so)         111         111         109         109         109         152         129         30         100         96         90         90         90         90 <th< td=""><td>e Configurations</td><td>۴</td><td>¥</td><td>*</td><td>₹_</td><td>r</td><td>‡</td><td></td></th<>	e Configurations	۴	¥	*	₹_	r	‡	
time (kph)         73         44         1400         150         1	ic Volume (vph)	73	45	1465	107	25	819	
time (s) 4.4 4.4 5.0 5.0 4.4 5.2 Fedor 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 1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 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 0.9	lle Volume (Vpm)	1900	1900	1900	1900	1900	1900	
Factor 1.00 1.00 0.95 1.00 1.00 0.95 ted 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 1.00  w (port) 1.00 0.85 1.00 1.00  w (port) 1.70 1.83 35.39 1.83 1.70 35.39  tractor, PHF 0.92 0.92 0.92 0.92 0.92  reflection (wph) 79 46 1.92 1.09 1.00  w (port) 70 1.83 35.39 1.83 1.70 35.39  reflection (wph) 79 46 1.92 1.00 0.95 1.00  w (port) 79 84 1.92 1.00 0.92 0.92 0.92  w (port) 79 84 1.92 1.00 0.92 0.92  w (port) 79 84 1.92 1.00 0.92  w (port) 70 84 1.92 1.00 0.92  w (port) 70 84 1.11 1.11 1.09 1.09 1.09 1.52 1.29 3  gC Ratio 0.07 0.07 0.73 0.73 0.70 0.86  Prot 0.00 0.00 0.00 0.25  Cap (wph) 1.30 1.17 2.592 1.159 1.79 30.50  Prot 0.00 0.00 0.00 0.25  Perm 0.00 0.00 0.00 0.00 0.00  W (port)	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  w (perm) 1770 1583 3539 1583 1770 3539  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  dup.Flow (uph) 79 44 1592 1.00 57 890  up.Flow (uph) 79 44 1592 1.00 57 890  up.Flow (uph) 79 44 1592 1.00 57 890  Green, G (s) 11.1 11.1 109.9 109.9 15.2 129.3  Aleasy of A4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		1.00	0.85	1.00	0.85	1.00	1.00	
w (prod)         1770         1583         3559         1583         1770         3539           w (prod)         0.95         100         100         100         0.95         100           w (perm)         170         1583         3539         1770         3539           r (actor, PHF         0.95         102         0.92         0.92         0.92           (wh)         79         46         1592         116         57         890           up Flow (wph)         79         46         1592         100         57         890           up Flow (wph)         79         46         1592         100         57         890           up Flow (wph)         79         46         1592         100         57         890           up Flow (wph)         79         4         152         100         80         100           Green, G (s)         11.1         11.1         1099         1099         152         129.3           Green, G (s)         11.1         11.1         1099         1099         152         129.3           Geen, G (s)         11.1         11.1         11.1         11.1         1099	rotected	0.95	1.00	1.00	1.00	0.95	1.00	
tred 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	. Flow (prot)	1770	1583	3539	1583	1770	3539	
riberm) 1770 1583 3539 1583 1770 3539  riberor, PHF 092 092 092 092 092  riberor, Cyph) 79 48 1592 116 57 890  up.Flow (vgh) 79 43 0 16 57 890  up.Flow (vgh) 79 3 1592 100 57 890  up.Flow (vgh) 79 111 11 1099 1099 15.2 1293  Geen, G(s) 11.1 11.1 11.1 1099 1099 15.2 1293  Geen, G(s) 11.1 11.1 11.1 11.1 11.1 1099 1099 15.2 1	ermitted	0.95	1.00	1.00	1.00	0.95	1.00	
refactor, PHF 092 092 092 092 092 092 0401 0401 0401 043 094 092 092 092 092 0401 0401 043 094 092 092 0401 0401 0401 043 094 094 092 0401 0401 0401 0401 0401 0401 0401 040	. Flow (perm)	1770	1583	3539	1583	1770	3539	
(vph)         79         46         1592         116         57         890           ciduction (vph)         79         46         1592         116         50         890           sed condition (vph)         79         3         1592         100         57         890           sed condition (vph)         79         78         152         100         80           Phases         4         4         2         2         1         6           Phases         4         4         2         2         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	-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
ordiction (vph)         0         43         10         16         0         0           up Flow (vph)         79         3         1592         100         57         890           In Phases         4         A         Prof         Prof         NA           Phases         4         2         1         6           Cener, G (s)         11.1         11.1         109.9         109.9         15.2         129.3           Gener, 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         10.9         10.8         12.2           A (s)         11.1         11.1         11.1         109.9         109.9         11.2         129.3           Gener, G (s)         11.1         11.1         11.1	Flow (vph)	79	46	1592	116	22	890	
up Flow (vgh)         79         3         1592         100         57         890           Prof. Perm.         NA         Perm.         Prof. NA         NA         Prof. NA           Phases         4         2         1         6         Prof. NA         P	R Reduction (vph)	0	43	0	16	0	0	
Properson Prof. Name Prof. NA Perm. NA Perm. Prof. Name Prof. Na	Group Flow (vph)	79	3	1592	100	22	890	
Phases	Type	Prot	Perm	NA	Perm	Prot	NA	
Phases	cted Phases	4		2		_	9	
Green, G (s) 11.1 11.1 109.9 105.9 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 10.9 109.9 15.2 129.3 Green, G (s) 11.1 11.1 10.9 10.9 10.9 15.2 129.3 Green, G (s) 2.0 3.5 2.0 3.5 3.5 3.5 3.0 3.5 3.5 3.0 3.5 3.5 3.0 3.5 3.5 3.0 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	itted Phases		4		2			
Geen g(s)         111         11999         152         1993           Geen g(s)         111         111         1099         152         1293           GCRatio         007         073         073         071         086           Filme (s)         44         44         50         50         44         52           Aversion (s)         20         20         38         38         20         35           Aversion (s)         20         20         38         38         20         35           Cap (wh)         130         117         2552         119         179         3050           Perm         0.00         0.01         0.03         0.02         19         0.02         19           Perm         0.01         0.03         0.61         0.09         0.32         0.29         19         19           Perm         0.01         0.01         0.02         0.00         1.27         2.54         19         19         10         12         2.54         19         19         10         12         12         12         12         13         14         15         15         14         15	ated Green, G (s)	1.	1.	109.9	109.9	15.2	129.3	
gC Ratio 0.07 0.07 0.73 0.73 0.10 0.86  a Time (s) 4.4 4.4 5.0 5.0 5.0 4.4 5.2  Cap (uph) 130 117 2592 1159 179 3050  Prot 0.0.04 0.0.4 0.0.5  Perm 0.0.1 0.0.0 0.0.5  Restrict 1.00 1.00 0.0.2 0.29  Restrict 5.4 9.7 5.7 6.26 1.9  On Factor 1.00 0.0.0 0.22 0.29  Restrict 5.4 9.7 5.7 6.26 1.9  On Factor 1.00 0.0.0 0.1 2.7 2.54  Delay (s) 6.4.5 2.8 0.1 80.0 5.0  E	tive Green, g (s)	11.1	11.1	109.9	109.9	15.2	129.3	
Time(s) 44 44 50 50 44 52  Alersion (s) 20 38 38 38 38  Alersion (s) 20 32 35  Cap (vph) 130 117 2592 1159 179 3050  Prof. 0.004 0.45 0.03 0.25  Perm 0.61 0.03 0.61 0.09 0.22  Delay, d1 67.3 64.4 97 57 62.6 19  Or Factor 1.00 0.22 0.00 1.27 2.54  Tal Delay, d2 5.4 0.0 0.7 0.1 0.3 0.2  E F F R A A F F F F A A B Belay 0.00  Control Delay  O Control Coley  O C	ated g/C Ratio	0.07	0.07	0.73	0.73	0.10	98.0	
All Properties   State   Sta	rance Time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
Cap (wh)         130         117         2592         1159         179         3050           Port         c0.04         c0.45         c0.25         c0.25           Perem         c0.00         c0.66         c0.03         c0.25           Perem         c0.00         c0.05         c0.25           Beay, d1         67.3         64.4         9.7         5.7         62.6         1.9           on Factor         1.00         100         0.22         c0.0         1.27         2.54           In Delay, d2         5.4         0.0         0.7         0.1         80.0         5.0           Pollay, (s)         6.45         2.8         0.1         80.0         5.0           Pollay, (s)         6.9.7         2.8         0.1         80.0         5.0           Pollay, (s)         6.7         2.8         0.1         80.0         5.0           Delay, (s)         6.7         2.8         7         A         A         A           LOS         E         A         A         A         A         A         A           Occurrol Delay         8.0         HCM 2000 Level of Service         6.5         A         A <td>de Extension (s)</td> <td>2.0</td> <td>2.0</td> <td>3.8</td> <td>3.8</td> <td>2.0</td> <td>3.5</td> <td></td>	de 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         0.00         0.02           101         0.03         0.61         0.03           102         0.01         0.02         0.29           100         1.00         0.22         0.00         1.27         2.54           100         1.00         0.22         0.00         1.27         2.54           100         0.7         0.1         0.3         0.2           100         0.7         0.1         0.3         0.2           100         0.7         0.1         0.3         0.2           100         0.7         0.1         0.3         0.2           100         0.7         0.1         0.3         0.2           100         0.7         0.1         0.3         0.2           100         0.7         0.1         0.6         5.0           100         0.5         0.6         4         A         A           100         0.5         0.6         9.6         9.6         0.6           100         0.5         0.6         A         A         A         A         A           0 Valume to C	atio Prot	c0.04		c0.45		0.03	c0.25	
10	atio Perm		0.00		90.0			
Delay, d1   673   644   97   57   626   19     On Factor   100   100   0.22   0.00   1.27   254     Delay, d2   54   0.0   0.2   0.01   1.27   254     Delay, d2   54   0.0   0.1   0.1   0.3   0.2     Delay (s)   69.7   2.8   0.1   80.0   5.0     Delay (s)   69.7   2.6   9.6     LOS   E	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 9.6  LOS E A A E A A  Delay (s) 6.9.7 E A A  Octorio Delay  Octorio Dela	ırm Delay, d1	67.3	64.4	6.7	2.7	62.6	1.9	
Isl Delay, d2	ession Factor	1.00	1.00	0.22	0.00	1.27	2.54	
72.7   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	(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 A B A  I B B A  I C B B A  I C D Level of Service  150.0 Sum of lost time (s)  I S 15.3% I C D Level of Service  15 I C D Level of Service  15 I C D Level of Service  15 I C D Level of Service	l of Service	ш	ш	V	V	ш	A	
E A A A A   A   A   B   B   B   B   B   B	oach Delay (s)	69.7		5.6			9.6	
1	oach LOS	ш		A			۷	
lay 8.0 HCM 2000 Level of Service Capacity ratio 0.58 Sum of lost time (s) h (s) 150.0 Sum of lost time (s) Utilization 55.3% ICU Level of Service	section Summary							
Capacity ratio 0.58 h (s) 150.0 Sum of lost time (s) Utilization 5.5.3% ICU Level of Service 15	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 Capacity	y ratio		0.58				
Utilization 55.3% ICU Level of Service 15	ated Cycle Length (s)			150.0	S	m of lost	time (s)	13.8
15	section Capacity Utilization	c		55.3%	⊇	U Level o	Service	В
PHICALL and Croun	vsis 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

	Ť	ţ	•	<b>—</b>	۶	<b>→</b>	
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	233	115	42	1157	37	166	
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

	•	<b>†</b>	~	<b>&gt;</b>	ţ	4	•	•	•	٠	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		÷			4		۳	₩		۴	4₽	
Traffic Volume (vph)	100	∞	106	∞	_	2	36	1058	9	34	836	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		0.98			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		∞			4		-	9		2	2	
Permitted Phases	<b>∞</b>			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	⋖		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	ĮΞ	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	S	m of lost	time (s)			14.3			
Intersection Capacity Utilization	L.		54.9%	⊇	U Level o	ICU Level of Service			⋖			
Analysis Period (min)			15									
c 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

	ţ	<b>—</b>	٠	<b>→</b>	
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.			
m Wolumo for 05th postcoatile arrests is motored by unotroom classel	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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		×	₩.		¥	4₽	
Traffic Volume (vph)	0	0	0	32	0	45	0	1020	82	149	820	0
Future Volume (vph)	0	0	0	32	0	45	0	1020	82	149	820	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	
Fit					0.92			0.99		1.00	1.00	
Fit Protected					86:0			1.00		0.95	1.00	
Satd. Flow (prot)					1684			3500		1770	3539	
Fit Permitted					98.0			1.00		0.95	1.00	
Satd. Flow (perm)					1478			3500		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	38	0	46	0	1109	68	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	N		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		06:0	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			⋖		ပ	A	
Approach Delay (s)		0.0			34.2			5.9			6.3	
Approach LOS		A			ပ			A			A	
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		0.54									
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

	<b>,</b>	-	۶	<b>→</b>	
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	26.6	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	
Intersection Summary					
m Volume for 95th percentile queue is metered by upstream signal.	tile queue is	meterec	by upstr	sam 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		
<b>→</b>	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		
<b>←</b>	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	
<b>√</b>	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	
<b>→</b>	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	
<b>√</b>	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

	<b>&gt;</b>	4	<b>←</b>	4	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	<b>y</b> -	¥.	+	<b>K</b>		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
	•	<b>—</b>	٠	<b>→</b>	
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

WBL WBR NN  WBL WBR NN  WBL WBR NN  WBC WBC NN  WBC WB	Movement Lane Configurations Traffic Volume (voh)	WBI	WBR	H	0	S		
\$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  \$6 709 1900 1900 1900  \$1 00 095 100 095  \$6 098 1 00 100 095  \$6 099 100 095 100  \$6 714 127 46 315  \$6 0 0 0 0 0 0  \$7 14 127 46 315  \$6 0 714 127 46 315  \$6 0 10 0 0 0  \$7 14 127 46 315  \$6 0 714 12 200  \$1 144 1.2 2	igurations	7		<u> </u>	NBK	205	SBT	
55 657 117 42 290 1900 1900 1900 1900 1900 1900 55 657 117 42 290 100 1900 1900 1900 1900 100 095 100 095 100 095 100 095 100 095 100 095 100 095 100 100 095 100 100 095 100 100 095 100 100 095 100 100 095 100 100 095 100 100 100 095 100 100 100 100 100 100 095 100 100 100 100 100 100 100 100 100 100	(huv) emil	N.		4₽		r	**	
5. 657 117 42 200 1900 1900 1900 1900 5.5 4.4 4 5.5 0.95 1.00 0.95 0.098 1.00 0.95 1.00 0.95 1.00 3.459 1.770 3539 0.92 0.92 0.92 0.92 0.0 20 0.9 0.9 0.92 0.0 20 0.9 0.9 0.92 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 20 0.0 0.0 0	(10)	6	22	657	117	45	290	
1900	nme (vph)	46	22	657	117	45	290	
5.5	(ldhdv)	1900	1900	1900	1900	1900	1900	
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 0.92 0.92 0.92 0.0 170 3539 0.0 821 0 46 315 0.0 821 0 46 315 0.0 821 0 46 315 0.0 821 0 46 315 0.0 821 0 46 315 0.0 821 0 46 315 0.0 821 0 46 315 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0.0 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	time (s)	4.9		2.5		4.4	5.5	
0.98 1.00 1.00 3.459 1.00 1.00 3.459 1.770 3539 1.00 0.95 1.00 3.459 1.770 3539 0.92 0.92 0.92 0.92 0.0 70 0 0 0 0 0 20 0 0 0 0 0 0 821 0 46 315 0 821 0 46 315 0 821 0 0 0 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 14.4 1.2 20.0 14.4 1.2 20.0 0.41 0.03 0.57 0.55 2.8 2.8 2.0 2.8 2.8 2.0 2.8 2.8 2.0 2.8 2.9 3.9 2.0 0.57 0.75 0.15 2.8 4 5.5 2.8 4 5.5 2.8 4 5.5 2.8 4 5.5 2.8 4 6.7 3.8 4 6.7 3.8 4 6.7 3.8 4 6.7 3.8 4 7 3.8 8.4 9.8 4 8.4 9.8 4 4.1% ICU Level of Service 0.52 Sum of lost time (s) 1.5 Sum of lost time (s)	-actor	0.97		0.95		1.00	0.95	
100 0.95 1.00 3459 1.00 3459 1.770 3539 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.0 144 1.2 2.00 0.57 0.75 0.15 0.57 0.75 0.15 0.58 1.00 1.00 0.58 1.00 1.00 0.59 3.3 3.5 0.59 3.3 3.5 0.50 3.3 3.		0.95		86:0		1.00	1.00	
3459 1770 3559 1000 095 100 3459 1770 3559 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 0 144 12 200 0 144 0.03 057 55 44 5.5 55 44 5.5 55 44 5.5 55 44 5.5 55 44 5.5 55 44 5.5 55 44 5.5 57 8 167 0.09 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	p <sub>0</sub>	0.97		1.00		0.95	1.00	
1400 0.97 1.00  3459 0.92 0.92 0.92 0.92  60 714 127 46 315  0 821 0 0 40 315  0 821 0 46 315  1 44 12 20.0  144 15 20.0  144 15 20.0	(prot)	3311		3459		1770	3539	
3459 1770 3539  092 092 092 092 092  0 0 20 0 0 0 0  0 821 0 46 315  0 0 821 0 46 315  144 12 200  144 12 200  144 12 200  144 12 200  144 12 200  144 12 200  144 12 200  144 12 200  144 12 200  041 003 057  55 28 44 5.5  28 28 28  28 28 28  44 5.5  100 100 100  05 38.7 0.05  84 5.3 3.5  A HCM 2000 Level of Service  052 Sum of lost time (s)  421% ICU Level of Service  150 100 100  1421% ICU Level of Service  150 100 100 100  144 0.05 100  150 100 100  150	þa	0.97		1.00		0.95	1.00	
0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	(berm)	3311		3459		1770	3539	
60 714 127 46 315 0 20 0 0 0 0 821 0 0 0 144 0 0 0 144 1.2 200 041 0.03 057 55 44 5.5 28 20 20 041 0.03 057 55 44 5.5 20 20 041 0.03 057 057 0,75 0,15 100 1.00 1.00 058 4 53.3 4 84 53.3 84 HCM 2000 Level of Service 052 Sum of lost time (s) 421% ICU Level of Service	factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
0 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(hdh)	105	9	714	127	46	315	
0 821 0 46 315  NA Prof NA  1 1 6  144 1.2 200  144 1.2 200  041 1.2 200  041 0.03 0.57  5.5 4.4 5.5  2.8 2.0 2.8  1431 6.1 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 0.0  8.4 5.3 3.5  A D A A  8.4 9.8  A HCM 2000 Level of Service  0.52 Sum of lost time (s)  42.1% ICU Level of Service  1.5 Sum of lost time (s)  42.1% ICU Level of Service	duction (vph)	25	0	20	0	0	0	
NA Prot NA  2 1 6  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  2.8 2.8 2.0 2.8  2.8 2.0 2.8  1.431 6.1 2033  6.5 4.4 5.5  2.8 2.0 2.8  6.1 2033  6.1 2033  6.2 3.0 0.09  6.5 3.0 0.09  6.5 3.0 0.09  6.5 3.0 0.0  6.5 3.0 0	ip Flow (vph)	113	0	821	0	46	315	
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 2.4 5.5 2.8 2.4 5.5 2.8 2.0 2.0 2.0 2.4 0.03 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 8.4 D A 8.4 S3.3 3.5 A A B A B A B A B A B A B A A B A		Prot		MA		Prot	NA	
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 2.8 2.4 2.0 3.8 2.4 2.0 3.5 2.5 2.0 3.8 2.5 2.0 2.8 2.8 4 5.5 2.8 6.7 0.75 0.15 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 4 0.0 2.8 5.3 3.5 4 0.0 2.8 5.0 2.8 5.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Phases	00		2		-	9	
144 12 200 144 12 200 041 003 057 55 44 55 55 44 55 58 20 28 60.24 003 009 60.57 0.05 0.09 60.57 0.05 0.09 60.57 0.05 0.09 60.57 0.05 0.09 60.58 0.09 60.58 0.09 60.59 0.09 60.59 0.09 60.59 0.09 60.59 0.09 60.50 0.09 60.5	Phases							
14.4 1.2 20.0 0.41 0.03 0.57 5.5 4.4 5.5 2.8 2.0 2.8 2.0 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 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) 4.2.1% ICU Level of Service 1.5 1.4.1	Green, G (s)	4.4		14.4		1.2	20.0	
0.41 0.03 0.57 5.5 4.4 5.5 2.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.8 2.0 2.0 3.5 2.0 2.0 3.5 2.0 2.0 3.6 2.0 3.5 2.0 0.0 2.0 3.4 5.3 3.5 2.0 4 A D A A 3.4 5.3 3.8 3.4 9.8 4 5.3 3 3.5 4 6.0 3.6 2.5 2 Sum of lost time (s) 3.4 8.4 A A 4 4.1% ICU Level of Service 0.52 3.4 ROM 2000 Level of Service 1.5 2.0 2.0 3.8 2.0 2.0 3.8 2	Green, g (s)	4.4		14.4		1.2	20.0	
2.8 4.4 5.5 2.8 2.0 2.8 1.431 61 2033 60.24 60.03 0.09 60.57 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 D A A B A 8.4 9.8 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service	y/C Ratio	0.13		0.41		0.03	0.57	
28 20 28 1431 61 2033 6024 009 6057 075 015 78 167 3.5 100 100 100 100 65 367 00 84 533 3.5 A D D A A 8.4 P D B 8.4	Time (s)	4.9		5.5		4.4	5.5	
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) 4.1% ICU Level of Service	tension (s)	2.0		2.8		2.0	2.8	
0.57 0.75 0.15 7.8 16.7 3.5 7.8 16.7 3.5 7.0 0.5 3.4 0.0 8.4 53.3 3.5 A D A 8.4 9.8 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 7.4 15 ICU Level of Service 1.5	Cap (vph)	418		1431		61	2033	
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 B A 8.4 9.8 A HCM 2000 Level of Service 0.52 Sum of lost time (s) 14.1% ICU Level of Service 15.7 10.1 10.1 10.1 10.1 10.1 10.1 10.1 10	rot	c0.03		c0.24		c0.03	60:0	
0.57 0.75 0.15 7.8 16.7 3.5 1.00 0.5 3.6.7 0.0 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) 15.1 CU Level of Service	erm							
78 167 3.5 100 100 0.0 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 4.2 W. Cou Level of Service 0.52 Sum of lost time (s) 4.2 W. Cou Level of Service 1.5 ICU Level of Service		0.27		0.57		0.75	0.15	
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	elay, d1	13.7		7.8		16.7	3.5	
0.5 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 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	n Factor	1.00		1.00		1.00	1.00	
8.4 53.3 3.5 A D A 8.4 9.8 A A A A A A 9.4 HCM 2000 Level of Service 0.52 Sum of lost time (s) 42.1% ICU Level of Service 15	al Delay, d2	0.1		0.5		36.7	0.0	
A D A 8.4 9.8 A 9.8 A A A A A A A A A A A A A A A A A A A		13.9		8.4		53.3	3.5	
98  A A 98  A A A 600 Level of Service 0.52  348 Sum of lost time (s) 4.1% ICU Level of Service 1.5	ervice	B		⋖		۵	А	
A A A A A A A A A A A B A B A B A B A B	Delay (s)	13.9		8.4			8.6	
9.4 HCM 2000 Level of Service 0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	COS	В		V			Α	
9.4 HCM 2000 Level of Service 0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 1.5	n Summary							
0.52 34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	Control Delay			9.4	H	M 2000 L	evel of Service	⋖
34.8 Sum of lost time (s) 42.1% ICU Level of Service 15	Volume to Capac	ty ratio		0.52				
42.1% ICU Level of Service 15	ycle Length (s)			34.8	Sul	m of lost	ime (s)	14.8
	n Capacity Utilizati	uo		42.1%	ਹ	J Level of	Service	A
	Analysis Period (min)			15				

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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	0.08	0.00	0.12	
Intersection Summary							
illeiseululi Summary							

Synchro 9 Report Page 44 KHA Oueues

Balboa Transit Station Horizon Year Adopted Conditions 24: Morena Blvd & Avati Dr Timing Plan: AM Peak Period

																																					A		15.3
<b>→</b>	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	<b>‡</b>	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						
<b>&gt;</b>	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		
<b>→</b>	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		
<b>+</b>	NBT	1246	0.53	5.9	0.0	5.9	99	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         WBI         WBI         WBI         MBI	igurations ume (vph) ume (vph) (vphpl)	EBL	FRT										
March   Marc	gurations me (vph) me (vph) (vphpl)	,	בפו	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	me (vph) me (vph) (vphpl)	_		₩					‡	*-		*	*
90 0 151 0 0 0 0 1746 280 0 204 190 1900 1900 1900 1900 1900 1900 1900	me (vph) vphpl)	6	0	151	0	0	0	0	1146	280	0	204	410
1,00   1,00	(vpliply)	060	0 00	151	0 0	0 0	0 001	0001	1000	780	0001	204	410
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   1,00   0,95   1,00	me (s)	4.0	8	4.0	3	3	200	200	4.0	4.0	200	4.0	4.0
100   0.85   1.00   1.00   0.85   1.00   1	actor	1.00		1.00					0.95	1.00		0.95	1.00
1770   1583   1500   1000		1.00		0.85					1.00	0.85		1.00	0.85
1770   1583   3539   1583   3539   1583   3539   1770   1583   1600   1700	Q	0.95		1.00					1.00	1.00		1.00	1.00
100   100	(brot)	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	· ·	0.95		1.00					1.00	1.00		1.00	1.00
F 092 092 092 092 092 092 092 092 092 092	(berm)	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	actor, 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	(har	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         6         1         1         1         1 <th< td=""><td>uction (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<>	uction (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         6.2         23.4         40         6.2         23.4         40         3.0	o Flow (vph)	86	0	27	0	0	0	0	1246	304	0	222	446
4   4   4   4   6   6   6   6   6   6		Perm		Perm					NA	Free		NA	Free
4   4   4   4   4   4   4   4   4   4	hases								2			9	
6.1         6.1         6.1         6.1         2.34         37.5         2.34           0.16         6.1         0.61         23.4         37.5         23.4           0.16         6.1         0.62         1.00         0.62           4.0         4.0         4.0         4.0         4.0           3.0         3.0         3.0         4.0         4.0         4.0           2.87         2.57         2.208         158.3         2.08         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         6.0 <t< td=""><td>hases</td><td>4</td><td></td><td>4</td><td></td><td></td><td></td><td></td><td></td><td>Free</td><td></td><td></td><td>Free</td></t<>	hases	4		4						Free			Free
6.1 6.1 6.1 73.4 375 23.4  6.1 6.1 6.1 6.1 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 0.62 1.00 0.02 0.03 0.00 0.03 0.00 0.03 0.00 0.03 0.00 0.0	reen, 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	een, g (s)	6.1		6.1					23.4	37.5		23.4	37.5
10	C Ratio	0.16		0.16					0.62	1.00		0.62	1.00
3.0   3.0   3.0   3.0   3.0     257	ime (s)	4.0		4.0					4.0			4.0	
257 2208 1583 2208 002 002 0035 006 0002 0010 0010 0010 0010 0010 0010	ension (s)	3.0		3.0					3.0			3.0	
0.02	ap (vph)	287		257					2208	1583		2208	1583
002 019 019 010 010 010 010 0110 0110 01	ot.								c0.35			90:0	
134 0.10 0.56 0.19 0.10 134 1.10 1.00 1.28 0.2 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	E.	90.0		0.02						0.19			c0.28
13.4   4.1   0.0   2.8   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   1.2   8   A   A   A   A   A   A   A   A   A		0.34		0.10					0.56	0.19		0.10	0.28
100 100 100 100 100 100 100 100 100 100	lay, 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 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 8.0 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	ι 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	l 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	rvice	В		В					⋖	V		⋖	⋖
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	Jelay (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	.0S		В			A			A			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	Summary												
0.54 37.5 Sum of lost time (s) 43.3% ICU Level of Service 15	Control Delay			4.1	HC	M 2000 L	evel of S	service		A			
37.5 Sum of lost time (s) 43.3% ICU Level of Service 15	Volume to Capacity	ratio		0.54									
43.3% ICU Level of Service 15	ycle Length (s)			37.5	Sul	m of lost	time (s)			8.0			
	Capacity Utilization	_	7	43.3%	ਹ	J Level of	f Service			⋖			
	eriod (min)			15									

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KHA Queues

Synchro 9 Report Page 48

Balboa Transit Station 26: Morena Blvd & Balboa Station Driveway/Balboa EB Ramps Timing Plan. AM Peak Perbol

	٠	<b>†</b>	ţ	√	•	•	٠	<b>→</b>	
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

Lane Cord gurations	EBR v	0000					
100 1900 1900 1900 1900 1900 1900 1900	1 140	WBR	NBL NBT	NBR	SBL	SBT	SBR
10 1 140 1900 1900 1900 1900 1900 1900 1900 190	1 140	k.	¥ ₩		r	4₽	
110 140 140 140 140 140 140 140 140 140	1 140		6 957	150	20	258	47
1900 1900 1900 1900 1900 1900 1900 1900		440		150	20	258	47
4.0 1.00 0.099 0.099 0.092 0.092 0.092 0.092 0.092 0.092 0.092 0.093 0.093 0.093 0.094 0.094 0.001 0.006 0.006 0.007 0.006 0.007 0.006 0.007 0.006 0.007 0.006 0.007 0.007 0.007 0.007 0.006 0.007 0.006 0.007 0.007 0.007 0.006 0.007 0.007 0.007 0.007 0.006 0.007 0.0	1900 1900 1	1900	_	1900	1900	1900	1900
100 100 1009 1100 1100 1100 1110 1011 1110 1010 1010 1010 1001 10		4.0			4.0	4.0	
0.099 1.000	1.00	1.00	1.00 0.95		1.00	0.95	
100 1839 1002 1092 1092 1092 1092 11 1 152 11 1 0 0 11 0 0 12 0 13 8 13 8 13 8 13 8 14 4 16 0 17 0 18 0 19 0 10		0.85			1.00	86.0	
1839 1000 1100 111 1 152 111 1 152 111 0 09 111 0 0 111 0 0		1.00			0.95	1.00	
100 1839 1072 092 11 1 152 11 1 0 0 11 0 0 12 0 13 8 13 8 13 8 13 8 13 8 14 0 10 0		1583		•	1770	3457	
1839 1092 092 092 1092 092 092 11 0 0 11 0 0 11 0 0 11 0 0 11 0 0 12 0 13 8 13 8 13 8 13 8 13 8 10 0 10 0		1.00	0.95 1.00		0.95	1.00	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		1583		,	1770	3457	
11 152 11 0 0 1 10 0 1 11 0 0 1 11 0 0 1 11 0 0 1 10 0	0.92 0.92	0.92	0.92 0.92	0.92	0.92	0.92	0.92
11 0 0 0 1 1 0 0 0 1 1 0 0 0 1 0 0 0 0	1 152	478			54	280	21
111 0 0 0 1 1 1 1 0 0 0 1 1 1 1 0 0 0 1 1 1 1 0 1	0		0 13	0	0	15	0
218 C C C C C C C C C C C C C C C C C C C		6 162	,	0	54	316	0
38 38 38 38 38 38 38 38 38 38 39 30 40 40 40 40 40 40 40 40 40 40 40 40 40	Split	Perm	Prot NA		Prot	NA	
38 38 38 38 40 40 40 40 107 107 100 100 100 100 100 100 100 10	80	8	5 2		_	9	
3.8 4.0 4.0 4.0 3.0 3.0 3.0 1.07 0.10 2.8 2.8 2.8 2.9 2.9 2.9 2.9 2.18 0.6 0.6 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7		80					
218 218 218 218 218 218 218 218		13.5			2.0	30.9	
006 40 40 40 40 40 40 107 100 100 100 100 100 100 10		13.5			2.0	30.9	
21.8 21.8 21.8 21.8 21.8 21.8 64.9	0	0.21 0			0.03	0.48	
3.0 1.107 0.10 0.10 0.10 0.29,4 0.69 0.69 0.69 0.69	4.0	4.0	4.0 4.0		4.0	4.0	
107 0.10 0.10 0.28 9 0.28 9 0.29 4 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.0		3.0			3.0	3.0	
289 010 010 010 004 004 005 006 008 649		329	19 1581		54	1645	
0.10 1.28 9 1.00 0.4 0.4 0.294 2.94 0.6 0.6 0.69 0.649			0.01 co.34	0	0.03	60.0	
010 010 100 100 04 024 5 C C C C C C 069 649		0.10					
289 100 0.4 0.4 0.29,4 2.0 30.6 0.69 64.9		0.49			1.00	0.19	
100 29.4 29.4 30.6 30.6 0.69 64.9	23.4	22.7	31.9 14.6		31.5	8.6	
29.4 29.4 30.6 C C C C 21.8 0.649		1.00			1.00	1.00	
29.4 C C C C C C C C C C C C C C C C C C C	3.3	1.2		_	122.5	0.1	
21.8 0.6 0.69 0.69 64.9		23.8	55.8 16.7	_	153.9	6.6	
30.6 C 21.8 0.69 64.9		ပ ပ	E B		ш	⋖	
21.8 0.69 64.9	24.8	8	17.0			30.1	
21.8 0.69 64.9		O	В			ပ	
21.8 0.69 64.9							
0.69		HCM 2000 Level of Service	ice	ပ			
64.9	69:0						
		Sum of lost time (s)		16.0			
Intersection Capacity Utilization 71.8% ICU Le		ICU Level of Service		ပ			
Analysis Period (min) 15	15						
C. 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	>-		*	*-	۳	₩	
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)	9.9	6.9			4.1		
tC, 2 stage (s)							
fF (s)	3.5	3.3			2.2		
bo dnene tree %	98	87			86		
cM capacity (veh/h)	154	224			646		
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)	26	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	Ω						
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

	•	<b>←</b>	•	٠	<b>→</b>	
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

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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

										,		١
	^	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	4	•	•	•	•	<b>→</b>	•
Movement	EBL	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 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	696			938			1145	2360	469	1661	2360	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
1F (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
po dueue 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					
Queue 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	В					
Intersection Summary												
Average Delay	roite uoite		2.1	2	l lovo	Oll Lovel of Service			ر			
Analysis Period (min)	alloll		15	2	רביים	20 450			ر			

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	COS
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	Ω
Soledad Mtn Rd	=	35		16.2	43.6	0.23	19.0	Ω
Bond St	=	35		6.0	21.9	0.17	27.6	O
Mission Bay Dr	=	35		292	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	Ф
Clairemont Dr	II	45		53.5	103.2	0.62	21.7	D
Total	=		201.4	728.7	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	C
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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	Artoriol	110		Cionol	Troite	- T	Artorio	Artorial
	Alterial	MOL	_	oglia	I ave	<u>8</u>	Allelia	Allelia
Cross Street	Class	Speed		Delay	Time (s)	(mi)	Speed	LOS
Bluffside Av	=	35	20.0	15.2	35.2	0.16	15.9	D
Damon Ave	=	35		5.5	25.6	0.16	22.1	O
Garnet Ave	=	32		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	Ω
Grand Ave	=	32		76.2	40.5	0.11	9.4	ш
Rosewood St	Ш	35		6.4	21.9	0.11	18.9	C
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

	•	†	<b>&gt;</b>	ţ	<b>←</b>	<b>→</b>	
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	33	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 Cummora					

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         FBI         FB		-						
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	EBL	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 1.00 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 1.00 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 1.00 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 1.00 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 1.29 100 1.00 1.00 1.29 100 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.00 1.00 1.29 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Configurations		*	₹	*-	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	276	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   1.00   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   0.95   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   0.95   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   1.0	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   0.00     100   0.00	Ē		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		
0.92   0.92   0.92   0.92   0.92   0.92   0.92   0.92   0.92   0.93   0.95	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, B, A, B, 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 0.34 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 0.43 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 0.9 31.5 9.8 14.0 0.9 60.4 A B A E 9.8 A A E 9.8 A A A F 1.60 CU Level of Service 0.82 1.60 Sum of lost time (s) 7.0.5% ICU Level of Service	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	Protected Phases		7	2		4		
350 35.0 67.0 22.1 35.0 35.0 67.0 22.1 0.5.2 1.00 0.33 5.0 5.0 4.9 6.1 6.1 5.2 1848 1652 1441 1135 0.18 0.03 0.43 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 9.8 A E 9.8 9.8 60.4 A B A E 9.8 9.8 60.4 A A B A E 9.8 9.8 10.0 0.9 60.4 A A B A E 9.8 9.8 10.0 0.9 60.4 A A A E	Permitted Phases				Free			
350 35.0 67.0 22.1 5.5 5.0 1 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 1.07 9.3 11.8 0.0 22.4 1.00 1.00 1.29 0.15 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 1.5 2.0 Sum of lost time (s) 0.82 1.5 2.0 Sum of lost time (s) 0.82 1.5 2.0 0.9 60.4 A A E 1.5 6.0 HCM 2000 Level of Service 0.82 1.5 6.0 Sum of lost time (s)	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)		32.0	32.0	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 1.60 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 0.82 0.82 1.83 0.82 0.83 0.82 0.82 0.83 0.84 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	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 0.0 224 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 (\$) 70.5% 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 67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	Level of Service		V	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	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		:M 2000	Level of Service	S
67.0 Sum of lost time (s) 70.5% ICU Level of Service 15	HCM 2000 Volume to Capac	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 Utilizat	tion		70.5%	⊇	U Level o	f Service	U
	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
	•	<b>†</b>	ţ	4	٠	<b>*</b>	
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	17.1	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)	21	362	1087	180	346	<b>-</b>	
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.

Synchro 9 Report Page 5

KHA Queues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

																																				U		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	1.00	0.0	53.5	Ω				HCM 2000 Level of Service		time (s)	f Service		
بو د	WBR SBL	新火	599 570	_		1.00 0.97		1.00 0.95		1.00 0.95				0 0	651 620	Prot	7 7				U	5.4 5.4		1391 720	0.10 c0.18					0.1 10.0		A	73.1	ш		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
<b>↓</b>	WBT W	*	1892		4.9			1.00	3539	1.00	3539	0.92	2057	0	2057	NA pm+ov	9			108.3	0.64	4.9	8.0	2254 13			٥		1.20	2.0	37.2	Ω	29.5	ပ		30.6	06:0	170.0	77.1%	15	
<b>↑</b>	EBL EBT	44	37 1324					0.95 1.00	,	0.95 1.00	133 3539		40 1439	0 0	40 1439	Prot NA	5 2			_	U	4.4 5.5		28 2568	0.01 c0.41					0.1 0.9	75.1 11.7	E B	13.4	В			.g.				
7	Movement	Lane Configurations	Traffic Volume (vph)						rot)		Satd. Flow (perm) 34	Peak-hour factor, PHF 0:		RTOR Reduction (vph)	Lane Group Flow (vph)		Protected Phases		_	s)	0		Vehicle Extension (s)	Lane Grp Cap (vph) 2		Perm				ital 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

Balboa Transit Station 4: Bond St & Garnet Ave	Ave			Horizon Year Adopted Conditions Timing Plan: PM Peak Period
	t	<b>↓</b>	ų.	
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

0.0 A

7.9 D

Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 5: Mission Bay Dr & Garnet Ave

	•	†	*	•	ţ	4	•	<b>+</b>	•	٠	<b>→</b>	*
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	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	✓	•	<b>←</b>	•	۶	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	‡	¥L.	F	‡	*-	£	\$	*-	£	*	K.
Traffic Volume (vph)	699	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
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)	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	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	M	vo+mq
Protected Phases	33	œ	-	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	9.62	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	00.18	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.T	56.9	35.6	110.8	80.2	40.1	90.9	78.	36.5	89.5	127.3	60.9
Level UI Selvice	٥	ט כ	٥	_	1,4	<b>D</b>	_	J 0	٦	_	_ 5	۵
Approach Delay (s)		70.7			6			9.30 D			χ Σ	
Approach LUS		ш			ш			ш			_	
Intersection Summary												
HCM 2000 Control Delay			70.5	Ĭ	CM 2000	HCM 2000 Level of Service	Service		ш			
HCM 2000 Volume to Capacity ratio	/ ratio		0.99									
Actuated Cycle Length (s)			170.0	S	nn of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	_		95.3%	≌	:U Level	ICU Level of Service			ш			
Analysis Period (min)			12									
<ul> <li>c Critical Lane Group</li> </ul>												

KHA HCM Signalized Intersection Capacity Analysis

<sup>-</sup> 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
	<b>†</b>	ţ	4	<b>*</b>	
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	<b>†</b>	<i>&gt;</i>	<b>\</b>	ļ	4	•	<b>←</b>	•	۶	-	•
Movement	EBF	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									
<ul> <li>c Critical Lane Group</li> </ul>												

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	*	<b>/</b>	ţ	√	•	•	•	٠	<b>→</b>	•
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 0 0 100  101 100 100		7.7			7:7			3.3	4.0	5.5	3.3	4.0	5.5
## FB1 FB2 FB3 WB1 WB2 NB1 SB1    FB1 FB2 FB3 WB1 WB2 NB1 SB1		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	Ē	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 0.0 347 39 0.0 0.0 0.0 0.0 0.0 0.0 347 39 0.0 0.0 0.0 0.0 0.0 0.0 113.1 25.1 0.0 0.0 0.0 0.0 113.1 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 1.0 0.0 1.13.1 25.1 0.0 1.0 0.0 1.13.1 25.1 0.0 1.0 0.0 1.13.1 25.1 0.0 1.0 0.0 1.13.1 25.1 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 0.0 0.0 1.13.1 25.1 0.0 0.0 0.0 0.0 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

	3	8				_					0.1				
*	SBR	323	0.70	13.9	0.0	13.9	0	84			822	_	_	_	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		
<b>*</b>	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		_				0.95				0.92	111	0	111	Prot	4				_	9.9			90.00						4	Ω	45.4	O		HCM 2000 L		Sum of lost time (s)	CU Level of Service		
4	WBR	*-	93		1900				1.00			Ì		_		76	Perm					0		3.9	903			0		_		6	A				_					
ţ	WBT	*	1385	`	_					.,		Ì		1505	0	1505	¥	9				U		3.9		c0.43					1.6			17.	В		17.7	0.72	101.4	%6'.19	15	
†	EBT	\$	1487	1487	1900	5.7	0.95		1.00			3539	0.92	1616	0	1616	¥	2		79.0	79.0	0.78	5.7	4.8	2757	0.46		0.59	4.6	1.00	0.5	2.0	A	12.6	В							
4	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	Ω					icity ratio	,	tion		
	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	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         WEI         WEI         NBT         NBT         SBL         SBT           Lane Group Flow (vph)         472         1307         485         1325         93         389         386         389<		^	†	<b>/</b>	ţ	•	•	•	۶	<b>→</b>	
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         780         46.6         111.7           80.2         68.0         80.3         73.2         96         209         431         45.5           3.7         4.955         3.37         49.88         16.3         77.6         411         46.6           4.0         1.0         2.0         2.0         135.0         431         46.6         111.7           2.0         2.0         2.0         2.0         135.0         41         46.6         111.7           3.0         3.0         4.0         2.0         3.0         1.0         120         1.0           4.0         4.0         4.0         1.0         1.0         0.0         0.0	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         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         49.95         337         498         163         276         441         #616           240         120         200         1350         1350         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	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.	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           327         #955         337         #988         163         276         441         #616           240         220         220         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         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         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         0         0           0         0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0         0         0	Queue Length 50th (ft)	248	402	255	~733	96	500	315	~322	-607	
3203         630         1350           240         200         200           650         1348         650         1324         335         604         335           0         0         0         0         0         0         0         0         0         0           0 <t< td=""><td>Queue Length 95th (ft)</td><td>327</td><td>#622</td><td>337</td><td>#988</td><td>163</td><td>276</td><td>441</td><td>#616</td><td>908#</td><td></td></t<>	Queue Length 95th (ft)	327	#622	337	#988	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           0.73         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	886	
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	<b>\</b>	ţ	4	•	•	•	٠	<b>→</b>	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	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	
Fit	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Fit 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	
Flt 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	389	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	M		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	0.98		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	ity ratio		1.03									
Actuated Cycle Length (s)			158.8	S	Sum of lost time (s)	time (s)			20.5			
Intersection Capacity Utilization	on		95.2%	೨	U Level o	CU 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

<b>→</b>	SBT	271	0.47	15.3	0.0	15.3	48	123	244		1173	23	0	0	0.24
<b>+</b>	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
1	EBL	35	0.18	26.5	0.0	26.5	<b>∞</b>	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

<b>*</b>	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							
۶	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					
√	WBR		24	24	1900								0.92	76	0	0																					HCM 2000 Level of Service		time (s)	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		Sum of lost time (s)	ICU Level of Service		
<b>/</b>	WBL	jr.	137	137	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	149	0	149	Prot	<del>-</del>		4.8	4.8	60.0	4.4	2.0	166	c0.08		06:0	22.9	1.00	40.5	63.4	ш				H		Su	⊴		
>	EBR		88	88	1900								0.92	41	0	0																					19.2	0.65	51.0	55.4%	15	
†	EBT	4₽	326	326	1900	5.1	0.95	66.0	1.00	3488	1.00	3488	0.92	387	Ξ	417	NA	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	В							
•	EBL	F	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					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)	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 20

Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

<b>→</b>	SBT	376	0.98	87.0	4.7	7.16	314	#465	328		453	38	0	0	0.91	
<b>←</b>	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	
<b>\</b>	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	
<b>†</b>	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	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	
•	SBR		09	9	<u></u>								0.92	99	0	
<b>→</b>	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

	†	<b>/</b>	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

Lane Configurations	NBR 27 27 1900 1902 0 0
1151 34 89 1482 17 1151 34 89 1482 17 1151 34 89 1482 17 1151 34 89 1482 17 1151 34 89 1482 17 1900 1900 1900 1900 1900 1900 1900 1	27 27 900 192 29 0
1151   34   89   1482   17     1900   1900   1900   1900     4.9	27 27 900 900 1,92 29 0 0
1151   34   89   1482   17   1900	27 900 9,92 0 0
1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1900   1000	900 192 29 0 0
49	29, 29 0 0
0.95   1.00	192 29 0 0
100	29 29 0 0
100 0.95   100 0.98   100 0.98   100 0.98   100 0.98   100 0.95   100 0.98   100 0.98   100 0.98   100 0.98   100 0.98   100 0.98   100 0.92   100 0.92   100 0.92   100 0.92   100 0.92   100 0.92   100 0.92   100 0.93   100 0.94	992 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3524 1770 3559 1675 1700 958 1675 1700 958 1700	29. 29 0 0
100 0.95	192 29 0 0
3524 1770 3539 1675  11 1261 37 97 1611 18  11 1287 0 97 1611 18  NA Prof NA P	992 29 0 0
F   0.92   0.9	9,92 2.9 0 0
1251   37   97   1611   18     1	29 0 0
h) 1287 0 97 1611 19  NA Prof	0 0
hb) 1287 0 97 1611 NA Prol NA 2 1 6 2 1 6 3) 102.4 11.9 118.2 102.4 11.9 118.2 102.4 11.9 118.2 0.76 0.08 4.9 4.4 5.4 4.0 2.0 4.4 2.0 4.4 5.4 4.0 1.0 0.37 0.05 0.05 5.9 5.8 9 1.7 0.4 1.0 0.00 2.0 6.5 0.05 3.1 6.3 9 2.3 4.4 5.4 4.7 7.8 1.0 0.00 2.8 5.0 0.00 3.1 6.3 9 2.3 4.8 A A A A A A A A A A A A A A A A A A A	0
NA Prof NA 6 102.4 11.9 118.2 102.4 11.9 118.2 102.4 11.9 118.2 102.4 12.6 10.9 0.8 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	
2 1 6 102.4 11.9 118.2 102.4 11.9 118.2 0.76 0.09 0.88 4.9 2.0 44 5.4 2692 157 3121 0.37 0.05 0.04 0.0 2 0.48 0.62 0.52 5.9 5.8 9 1.7 0.44 1.00 1.00 2 0.6 5.0 0.6 3.1 63.9 2.3 A A E A A	
) 102.4 11.9 118.2 0.76 0.09 0.88 4.9 4.4 5.4 4.0 2.0 4.4 2.692 157 3121 0.37 0.05 0.05 0.04 0.0 0.48 0.62 0.52 5.9 1.7 0.04 0.49 0.62 0.52 5.9 5.9 1.7 0.44 1.00 1.00 2 0.48 0.62 0.52 3.1 63.9 2.3 A A A A A A A A A A A A A A A A A A A	
5) 102.4 11.9 118.2 102.4 11.9 118.2 0.76 0.09 0.88 4.9 4.4 5.4 4.0 2.0 4.4 2.692 157 31.21 2.692 157 31.21 0.48 0.62 0.52 5.9 58.9 1.7 0.44 1.00 1.00 2 0.66 5.0 0.6 3.1 6.3.9 2.3 A A A A	
102.4 11.9 118.2 17.6 0.09 0.88 1.4 4.9 4.4 5.4 4.4 5.4 4.4 5.4 4.4 5.4 4.4 5.4 4.4 5.4 4.4 5.4 4.4 5.2 6.92 1.5 7.3 12.1 6.3 7 6.0.05 6.0.4 6.5 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	
0.76 0.09 0.88 4.9 4.4 5.4 4.0 2.0 4.4 2.692 157 3121 0.37 0.05 0.046 0.048 0.48 0.62 0.52 5.9 5.9 1.7 0.44 1.00 1.00 0.44 1.00 1.00 2 0.6 5.0 0.6 3.1 63.9 2.3 A F A A A A A A A A A A	
4,9 4,4 5,4 4,0 20 4,4 2,692 15,3 3121 0,37 0,05 0,46 0,037 0,48 0,62 0,52 5,9 5,9 1,7 0,44 1,00 1,00 2 0,6 5,0 0,6 3,1 6,39 2,3 A A F A A A	
4.0 2.0 4.4 2692 157 3121 2692 157 3121 0.37 0.05 0.04 0.05 5.9 5.89 1.7 0.44 1.00 1.00 2 0.66 5.0 0.6 3.1 6.3.9 2.3 A E A A A A A	
2692 157 3121 0.37 0.05 0.046 0.046 0.048 0.062 0.052 5.9 5.89 1.7 0.44 1.00 1.00 2 0.6 5.0 0.6 3.1 63.9 2.3 A E A A A A A	
0.37	
0.48 0.62 0.52 5.9 5.89 1.7 0.44 1.00 1.00 2 0.6 5.0 0.6 3.1 6.39 2.3 A E A A A A	
048 062 052 5,9 58,9 1.7 044 100 1.00 2 0.6 5.0 0.6 3.1 63.9 2.3 A E A A A A	
5.9 58.9 17 0.44 1.00 1.00 2 0.6 5.0 0.6 3.1 63.9 2.3 A E A A A A A	
2 0.6 1.00 1.00 0.6 0.6 0.6 0.6 3.1 6.39 2.3 A E A E A A A A A A A A A A A A A A A	
2 0.6 5.0 0.6 3.1 63.9 2.3 6 4 8 8 6 8 6 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
31 63.9 2.3 A E A 3.1 E 5.8 A A	
3.1 E A 5.8 A A A A A A A A A A A A A A A A A A A	
3.1 5.8 A A A	
A >	
Summary	
HCM 2000 Control Delay 5.6 HCM 2000 Level of Service	el of Service A
pacity ratio 0.52	
	ie (s) 14.2
ntersection Capacity Utilization 53.0% ICU Level of Service	
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 Perind
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	

<b>→</b>	SBT	1251	0.89	9.07	47.1	117.7	754	#636	478		1405	75	346	0	1.18	
<b>←</b>	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

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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

<sup># 95</sup>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

	4	7	•	-	•	<b>→</b>	•	
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR	
Lane Configurations	×	¥.	r.	*	4	₩		
Traffic Volume (vph)	102	066	1231	1071	0	988	265	
Future Volume (vph)	102	066	1231	1071	0	988	265	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	4.0	2.7	2.7		4.9		
Lane Util. Factor	1.00	1.00	0.97	0.95		0.95		
Fit	1.00	0.85	1.00	1.00		0.97		
Fit Protected	0.95	1.00	0.95	1.00		1.00		
Satd. Flow (prot)	1770	1583	3433	3539		3417		
Fit Permitted	0.95	1.00	0.95	1.00		1.00		
Satd. Flow (perm)	1770	1583	3433	3539		3417		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	111	1076	1338	1164	0	696	288	
RTOR Reduction (vph)	0	0	0	0	0	15	0	
Lane Group Flow (vph)	111	1076	1338	1164	0	1236	0	
Turn Type	Prot	Free	Prot	NA	Prot	NA		
Protected Phases	4		_	9	2	7		
Permitted Phases		Free						
Actuated Green, G (s)	15.0	170.0	70.8	144.9		69.2		
Effective Green, g (s)	15.0	170.0	70.8	144.9		69.2		
Actuated g/C Ratio	0.09	1.00	0.42	0.85		0.41		
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)	156	1583	1429	3016		1390		
v/s Ratio Prot	90:0		c0.39	0.33		c0.36		
v/s Ratio Perm		89.00						
v/c Ratio	0.71	89.0	0.94	0.39		0.89		
Uniform Delay, d1	75.4	0.0	47.4	2.8		46.8		
Progression Factor	1.00	1.00	0.95	1.35		1.36		
Incremental Delay, d2	9.3	1.8	10.0	0.3		8.4		
Delay (s)	84.7	1.8	55.2	4.0		72.3		
Level of Service	ഥ	A	ш	V		ш		
Approach Delay (s)	9.6			31.4		72.3		
Approach LOS	V			ပ		ш		
Intersection Summary								
HCM 2000 Control Delay			365	Ĭ	HCM 2000 Level of Service	Pypl of S	ervice	ď
HCM 2000 Volume to Capacity ratio	tv ratio		0.91					
Actuated Cycle Length (s)			170.0	S	im of lost	time (s)		15.0
Intersection Capacity Utilization	uo		86.2%	2	ICU Level of Service	fService		Ш
Analysis Period (min)			15					
c Critical Lane Group								
- CHING 100 C								

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KHA Queues

Synchro 9 Report Page 30

Balboa Transit Station 16: Mission Bay Dr & Bluffside Av

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	٨	•	•	<b>→</b>	•	
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         20         0         0         0         0         0           100         244         650         356         356         48           100         2244         650         356         48 <t< th=""><th></th><th>4</th><th>~</th><th>•</th><th>•</th><th>-</th><th>`</th><th></th></t<>		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     0.96   0.91   0.92   0.92     0.97   0.94   0.92   0.92     0.98   1.21   1.31     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   0.94     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   0.96   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   0.96     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   188   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   0,94   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 38 1188 1437 426 h) 106 244 650 35.6 35.6 h) 106 244 650 35.6 35.6 h) 106 244 650 35.6 35.6 h) 107 029 076 042 042 h) 20 0 30 2706 1482 662 h) 20 0 079 074 097 064 h) 100 088 123 100 h) 100 100 h) 100 100 100	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 10.7 20 40 48 48 141 242 65.0 10.0 688 2706 1482 662 10.0 0.75 06.7 0.44 0.97 0.64 10.0 0.88 17.2 4.8 10.0 0.88 41.4 24.4 10.0 0.88 41.4 24.4 10.0 0.88 41.4 24.4 10.0 0.88 41.4 24.4 10.0 0.88 26.7 48 41.4 24.4 10.0 0.88 26.7 48 41.4 24.4 10.0 0.88 26.7 48 41.4 24.4 10.0 0.88 26.7 48 67.0 0.64 10.0 0.88 26.7 48 67.0 0.64 10.0 0.88 26.7 48 67.0 0.64 10.0 0.88 26.7 48.0 0.60 10.0 0.88 26.7 48.0 0.60 10.0 0.88 26.7 48.0 0.60 10.0 0.88 26.7 41.0 20.0 Level of Service 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.83 50.0 0.00 0.00 0.00 10.0 0.00 0.00 0.00 0	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	Reduction (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         3.5         6           7         10.6         24.4         65.0         35.6         35.6           9         10.6         24.4         65.0         35.6         35.6           10.1         0.2         24.4         65.0         35.6         35.6           10.2         0.2         0.2         0.4         0.42         0.42           10.2         2.0         4.0         4.8         4.8         4.8           10.0         0.0         0.0         4.0         0.2         0.64           2.0         0.7         0.4         0.9         0.6         0.6           2.0         0.7         0.4         0.9         0.6         0.6           3.5         2.6         4.2         19.7         0.6         4.4           4.2         2.0         0.4         17.2         4.8           4.2         2.0         0.4         17.2         4.8           4.2         2.0         0.4         17.2         4.8           4.2         2.5	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         35.6         35.6           106         244         650         35.6         35.6           012         0.29         0.76         0.42         0.42           4.4         4.4         5.0         5.6         5.6         5.6           1.2         2.0         4.0         4.8         4.8         4.8           412         5.08         2.06         1.42         6.2         6.2           0.09         0.0.19         0.34         0.41         0.27         0.64           0.75         0.67         0.4         0.97         0.64         0.97         0.64           1.00         0.88         1.23         1.00         1.00         0.64         1.07         0.48           2.0         0.4         1.72         4.8         1.4         2.4         0.6         0.64	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   4.6   5.6     2.0   2.0   4.0   4.8   4.8     412   5.08   2.706   1482   662     0.09   0.0.19   0.34   0.04     0.75   0.67   0.44   0.97   0.64     0.75   0.67   0.44   0.97   0.64     0.75   0.67   0.44   0.97   0.64     0.75   0.67   0.44   0.97   0.64     0.75   0.67   0.44   0.97     0.88   1.2   1.7   4.8     0.89   2.5   4.8   41.4   24.4     0.80   0.80   0.80   0.80     0.8	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 8.2 1.48 6.2  0.0.9 0.0.19 0.34 0.0.41  0.75 0.67 0.44 0.97 0.64  3.59 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	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         60.19         60.74         627           60.09         60.19         60.41         627           60.75         64         69.7         60.4           100         68         1.23         1.00         1.00           2         6.7         3.5         24.2         1.97           42.7         2.0         0.4         17.2         4.8           0         6.7         2.0         0.4         17.2         4.8           42.7         2.0         0.4         17.2         4.8         1.00         1.00           0         6.7         2.0         0.4         17.2         4.8         1.4         2.4         0.0         C         0.0         C         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	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	9.6	
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 2.5 4.8 41.4 24.4 D C A 17.2 4.8 C A 2 D C A 2.7 3.5 2.6.7  42.7 2.6 4.8 41.4 24.4 D C A 3.0 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	
D C A D C   A D C   A D C   A D C   A D C   A D C   A D C   A D C   A D D C   A D D C   A D D C   A D D D C   A D D D D D D D D D D D D D D 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	200		/00 77	3 5		C coning	
	ntersection capacity utilizat.	5		11.2%	٥	n revel o	Service	O.
Analysis Period (min) 15	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	<b>←</b>	•	۶	<b>→</b>	
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.	
Oueue 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 queue is metered by unstream signal	i en en e li	s metere	hv inst	ream sign	<u></u>		
	الله المحمد	5	ساسات (م		į		

KHA Queues

Horizon Year Adopted Conditions Timing Plan: PM Peak Perbd Balboa Transit Station 17: Mission Bay Dr & Damon Ave

	<b>\</b>	<b>√</b>	+	•	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	k.	++	<b>R</b> _	×	₩	
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	1.1	
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	
<b>—</b>	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		9	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	†	~	<b>/</b>	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	<ul><li>ane Configurations</li></ul>		÷			4		F	<u></u>		<b>F</b>	<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	<del></del>	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 22.0 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	<b>—</b>	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 F F F F F F F F F F F F F F	-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 19.9 HCM 2000 Level of Service 10.60 Sum of lost time (s) 64.4% ICU Level of Service 15.10 Sum of lost time (s) 17.0 Sum of lost time (s) 17.0 Sum of lost time (s) 17.1 5.2 5.2 6.1 7 17.0 Sum of lost time (s) 17.1 6.4 6.4 6.4 6.1 5.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.1 7 17.1 6.2 6.2 7 17.1 6.2 6.2	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 2.48 0.0 1.10 1.10 2.48 0.0 1.10 1.10 95.2 6.1.7 92.9 F E E 95.2 6.1.7 92.9 F E E 19.9 HCM 2000 Level of Service 170.0 Sum of lost time (\$) 64.4% ICU Level of Service 15	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  70.3 61.7 77.9  1.00 1.00 7.19  95.2 61.7 92.9  F E F E  95.5 64.4% ICUL Level of Service  150 Sum of lost time (s)  64.4% ICUL Level of Service  15	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 0.00 7.1 95.2 61.7 92.9 F E E F 95.2 61.7 92.9 19.9 HCM 2000 Level of Service 10.60 170.0 Sum of lost time (s) 64.4% ICU Level of Service 15	//c Ratio		0.86			0.05		0.63	0.53		0.50	0.47	
100 100 110 110 110 110 110 110 110 110	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												

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Balboa Transit Station 19: Mission Bay Dr & Bunker Hill St

Horizon Year Adopted Conditions
Timing Plan: PM Peak Period

	ţ	<b>—</b>	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	9.0	
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	
C collection of the					
Intersection Summary					
m Volume for 95th percentile aueue is metered by upstream signal	ile aueue is	metere	l by upstr	ım signal.	
			-		

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																										
<b>→</b>	SBT	#	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	5.0	V	9.1	⋖							
٠	SBL	r	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	۵									
•	NBR		36	36	1900								0.92	36	0	0																					В		14.3	В		
•	NBT	₩	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	F	0	0	1900								0.92	0	0	0	Prot	-																			ervice					
4	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		3M 2000		Sum of lost time (s)	ICU Level of Service		
<b>&gt;</b>	WBL		116	116	1900								0.92	126	0	0	Perm		4																		Н		S	⊇		
~	EBR		0	0	1900								0.92	0	0	0																					11.9	0.56	85.0	%0.09	15	
<b>†</b>	EBT	4	0	0	1900								0.92	0	0	0		4																0.0	A							
•	EBL		0	0	1900								0.92	0	0	0			4																			y ratio		<u>_</u>		
	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)	Critical Land Groun

Synchro 9 Report Page 37

Balboa Transit Station 20: Mission Bay Dr & Rosewood St

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

	<b>/</b>	-	٠	<b>→</b>
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				
<ul> <li>Wolume for 95th percentile queue is metered by upstream signal.</li> </ul>	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

Movement   WBI WBR NST   NBR SBI   NBR SBI	Movement Lane Configurations Traffic Volume (vph) Future Volume (vph)							
tions	gurations Ime (vph) Ime (vph)	WBL	WBR	NBT	NBR	SBL	SBT	
(vph) 5 29 2295 32 7 1843 (vph) 6 2 2295 32 7 1843 pl) 1900 1900 1900 1900 1900 (s) 4.0 4.0 4.0 4.0 0.8 1.0 0.9 100 0.95 0.99 1.00 0.95 1.00 0.95 1.00 0.95	ime (vph)	¥		4413		r	₩	
(vph) 5 29 2995 32 7 1843  pl) 1900 1900 1900 1900 1900  r 100 1900 1900 1900 1900  r 100 0,91 1,00 0,95  r 100 0,99 1,00 0,99  r 100 0,99 0,99  r 100 0,99 1,00 0,99  r 100 0,99  r 100 0,99 1,00 0,99  r 100 0,99 1,00 0,99  r 100 0,99 1,00 0,9	me (vph)	22	53	2295	32	7	1843	
b) 1900 1900 1900 1900 1900 1900 1900 190		2	56	2295	32	7	1843	
(\$) 4.0 4.0 4.0 4.0  In the control of the control	(nduda)	1900	1900	1900	1900	1900	1900	
or 100 0.91 100 0.95  or 0.88 1.00 1.00 1.00  l 1634 5075 1.70 3539  m) 1634 5075 0.92 0.92 0.92  m (vph) 30 0 2529 0 8 2003  es 8 2 2495 35 8 2003  m (vph) 7 0 2529 0 8 2003  es 8 2 2495 35 8 2003  m (vph) 7 0 2529 0 8 2003  es 8 2 2495 35 8 2003  m (vph) 7 0 2529 0 8 2003  es 8 2 2495 35 8 2003  m (vph) 7 0 2529 0 8 2003  es 8 2 2495 35 8 2003  m (vph) 7 0 2529 0 8 2003  es 8 2 2495 35 8 2003  m (vph) 7 0 2529 0 8 2003  es 8 2 2495 35 8 2003  es 9 8 2003  es 9 8 2003  m (vph) 7 0 2529 0 8 2003  es 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ime (s)	4.0		4.0		4.0	4.0	
0.88   1.00   1.00   1.00   1.00   1.00   1.00   1.034   5.075   1.770   35.39   1.00   0.99   1.00   0.95   1.00   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   0.92   0.9	actor	1.00		0.91		1.00	0.95	
(yph) 6.99 1.00 0.95 1.00  m) 1634 5075 1.00 6.95 1.00  m) 1634 5075 1.770 3539  m) 1634 5075 1.770 3539  m (yph) 30 0.92 0.92 0.92 0.92  m (yph) 30 0.2529 0.8 2.003  m (yph) 30 0.2529 0.8 2.003  m (yph) 42 6.74 1.4 728  m (s) 42 6.74 1.4 728  m (s) 30 0.05 0.05 0.05  m (s) 30 0.05 0.00 0.05  m (s) 30 0.05 0.00 0.05  m (s) 30 0.05 0.00 0.05  m (s) 390 4.4 4.75 9.0  m (c) 290 Check of the control of the contr		0.88		1.00		1.00	1.00	
1634 5075 1770 3539   1734 5075 1770 3539   1739 5359   1730 535	þ	0.99		1.00		0.95	1.00	
m) 1634 5075 100 m) 1634 5075 100 m, 1634 5075 100 m, PHF 092 092 092 092 092 m, PHF 092 092 092 092 092 m, (vph) 30 0 1 1 0 0 0 m, (vph) 7 0 2529 0 8 2003 m, (vph) 8 0 7 1 4 728 min (c) 42 67.4 1.4 728 min (c) 60 0.5 0 0.00 m, (c) 30 30 30 30 m, (d) 8 0 0.5 0 0.00 m, (d) 30 0 0.5 0 0.00 m, (d) 30 0 0.5 0 0.00 m, (e) 30 0 0.5 0 0.00 m, (fillipation 0.06 m, (fillipation 0.06 m, (fillipation 0.09 m, (fill	(prot)	1634		5075		1770	3539	
m) 1634 5075 1770 3539 m, FHF 0,92 0,92 0,92 0,92 0,92 0,92 m (vph) 30 0 0 0 0 0 0 m (vph) 30 0 0 0 0 0 0 m (vph) 30 0 0 2529 0 8 2003 m (vph) 7 0 2529 0 8 2003 es 8 2 2003 es 8 2 1 6 es 8 2 2003 es 8 2 2003 es 9 200	þ	0.99		1.00		0.95	1.00	
N, PHF         0.92         0.92         0.92         0.92           N (pph)         30         0         2         0.92         0.92           N (uph)         30         0         2529         0         0         0           es         8         2         1         6         6         0           es         8         2         1         6         8         2003           es         8         2         1         6         6         8         2003           es         8         2         1         6         8         2003         9           es         8         67.4         1.4         72.8         1         6         6           es         8         67.4         1.4         72.8         1         6         6           es         6.7         4.2         67.4         1.4         72.8         1         6         6           es         4.0         4.0         4.0         4.0         4.0         4.0         6         6         6         6         6         6         6         6         6         6         6         6	(perm)	1634		5075		1770	3539	
mor(ph) 5 32 2495 35 8 2003  w (vph) 7 0 2529  w (vph) 7 0 2529  w (vph) 7 0 2529  s 8 2 1 0 0 0  s 8 2 1 0 0  s 8 2 1 0 0  s 8 2 1 0 0  s 8 2 1 0 0  s 8 2 1 0 0  s 9 2003  w (vph) 7 0 2529  s 1 0 0 0 0  s 10 0 0 0  s 20 0 0 0  s 20 0 0 0  s 20 0 0 0  s 30 0 0 0 0  s 30 0 0 0 0  s 30 0 0 0  s 44 0 75 0 0  s 10 0 0	actor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
w (vph) 30 0 1 0 0 0 0 w (vph) 37 0 2529 0 0 8 2003   es 8 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	(hdv	2	32	2495	32	00	2003	
w (vph) 7 0 2529 0 8 2003  es 8 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	uction (vph)	30	0	-	0	0	0	
es Brot NA Prot NA es Brot NA es Brot NA Prot NA es Brot NA es Bro	o Flow (vph)	7	0	2529	0	8	2003	
es 8 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		Prot		M		Prot	NA	
es 67.4 1.4 72.8 1.4	Phases	œ		2		-	9	
A, G (s) 4 2 67.4 1.4 72.8 1.4 (s) 4.2 67.4 1.4 72.8 1.4 (s) 67.4 1.4 72.8 1.4 (s) 67.4 1.4 72.8 1.4 (s) 67.5 67.5 67.5 67.5 67.5 67.5 67.5 67.5	hases							
i.g(s) 4.2 67.4 1.4 72.8 and of contract o	reen, G (s)	4.2		67.4		1.4	72.8	
atio 0.05 0.79 0.02 0.86 on (s) (s) 4.0 0.00 0.05 0.00 0.00 0.00 0.00 0.00	reen, g (s)	4.2		67.4		1.4	72.8	
10   10   10   10   10   10   10   10	C 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	Fime (s)	4.0		4.0		4.0	4.0	
vph)         80         4024         29         3031           vph)         cc         0.50         0.57         0.00         cc           d1         3.6         0.63         0.28         0.66           d1         3.86         3.6         4.13         2.0           ctor         1.00         1.08         4.09         4.0           rot         0.4         0.8         3.1         0.7           s         0.4         0.8         3.1         0.7           rot         0.9         A         A         A           rot         0.0         A.4         4.7.5         9.1           rot         0.0         A.4         4.4         9.1           rot         0.0         A.4         A.4         A.4           rot	ension (s)	3.0		3.0		3.0	3.0	
c0.00 0.50 0.00 c0.57  d1 386 0.63 0.28 0.66  e1 386 3.6 41.3 2.0  e1 380 1.00 1.00 1.00 0.57  e1 380 1.00 1.00 0.57  e1 380 1.00 1.00 1.08 1.09  e1 380 1.00 1.00 1.00 1.00  e1 390 1.00 1.00 1.00 1.00  e1 390 1.00 1.00 1.00 1.00  e1 390 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	ap (vph)	80		4024		59	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 1.00 ctor 1.00 ctor 1.00 ctor 1.00 ctor 1.00 1.00 cto	rot	00.00		0.50		0.00	c0.57	
1008	erm							
td1 386 3.6 41.3 2.0  Istor 1.00 1.00 1.08 4.09  Istor 0.44 0.8 3.1 0.7  Istor 0.45 0.8 3.1 0.7  Istor 0.45 0.8 3.1 0.7  Istor 0.45 0.8 3.1 0.7  Innary  Innary  Inner O Capacity ratio 0.66  Innary		0.08		0.63		0.28	99:0	
tion 1.00 1.00 1.08 4.09  lay, d2 0.4 0.8 3.1 0.7  lay 0.4 4 7.5 9.0  lay 0.5 4.4 0.1  los 39.0 6.7 HCM 2000 Level of Service on the complex of the co	alay, d1	38.6		3.6		41.3	2.0	
lay, d2         0.4         0.8         3.1         0.7           s, 39.0         4.4         47.5         9.0           r(s)         39.0         4.4         47.5         9.0           r(s)         39.0         4.4         9.1         A           mmary         A         A         A         A           root objective         6.7         HCM 2000 Level of Service           Length (s)         6.5         HCM 2000 Level of Service           Length (s)         85.0         Sum of lost time (s)           actify Utilization         6.9%         ICU Level of Service           (min)         15         ICU Level of Service	η Factor	1.00		1:00		1.08	4.09	
39,0	l Delay, d2	0.4		0.8		3.1	0.7	
(s) 190 A D A A D A A D A A D A A D A A D A A D A A D A A D A A D A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A D A		39.0		4.4		47.5	0.6	
(\$) 39.0 4.4 9.1  Mmary  mmary  for Departy at the CM 2000 Level of Service  me to Capacity at the CM 2000 Level of Service  me to Capacity at the CM 2000 Level of Service  me to Capacity at the CM 2000 Level of Service  CM 15 15 15 15 15 15 15 15 15 15 15 15 15	rvice	٥		V		۵	A	
nmary  trol Delay  trol Delay  trol Capacity ratio  Length (s)  socity Utilization  6.7  HCM 2000 Level of Service  0.66  Sum of lost time (s)  2004  15  15	Delay (s)	39.0		4.4			9.1	
6.7 HCM 2000 Level of Service 0.66 85.0 Sum of lost time (s) 60.9% ICU Level of Service 15	.0S	Ω		A			Α	
6.7 HCM 2000 Level of Service 0.66 Sum of lost time (s) 60.9% ICU Level of Service 15	Summary							
0.66 850 Sum of lost time (s) 60.9% ICU Level of Service 15	Control Delay			6.7	유	M 2000 L	evel of Service	A
85.0 Sum of lost time (s) 60.9% ICU Level of Service 15	Volume to Capacit	v ratio		99.0				
60.9% ICU Level of Service	ycle Length (s)			85.0	Sur	n of lost t	ime (s)	12.0
75	Capacity Utilization	E		%6.09	ਹ	J Level of	Service	В
	Analysis Period (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

																						А	
•	SBR			118	118	0.92	128															f Service	
<b>→</b>	NBT SBT				70 99		76 108	SB 1	236	0	128	-0.29	4.0	0.26	877	8.4	8.4	۷				ICU Level of Service	
<b>√</b>	EBR NBL	æ.			45 57			EB 2 NB 1	49 138	0 62	49 0				1121 772		8.4	A		8.3	A	33.9%	15
<b>≺</b>	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

	<b>&gt;</b>	4	•	•	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	<u>r</u>	¥L.	*	¥.		₩.	
Sign Control	Stop		Stop			Stop	
Traffic Volume (vph)	613	11	171	275	74	303	
Future Volume (vph)	613	11	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	26	329	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	999	18	186	566	136	219	
Volume Left (vph)	999	0	0	0	79	0	
Volume Right (vph)	0	9	0	299	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%	⊇	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		<b>&gt;</b>	4	•	•	۶	<b>→</b>	
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		<b>₩</b>		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  1.3 1 1.5 190  1.4 5.5 190  1.5 190	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  9.096 100 0.96 100  3.884 3.259 1770 3539  1.00 0.92 0.92 0.92 0.92 0.92  1.00 1.00 0.95 100  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  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  9.7 0.25 0.34 0.04 0.49  1.0 0.25 0.34 0.04 0.49  1.1 0.0 1.00 1.00  9.0 3.4 0.57 0.28  9.0 3.8 0.45 0.8 1724  9.0 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 0.3 46.5 0.4  1.1 1.0 HCM 2000 Level of Service  Capacity ratio 0.66  Interest of Service  1.5 0.80 Sum of lost time (s)  Unitration 1.5	It Protected	96:0		1.00		0.95	1.00	
996 100 095 100 095 100 095 100 095 092 092 092 092 092 092 092 092 092 093 092 093 092 093 092 093 092 093 092 093 092 093 093 093 093 093 093 093 093 093 093	100   0.96   1.00   0.95   1.00   0.95   1.00   0.95   1.00   0.92   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           97         131         1.5         190           97         131         1.5         190           98         2.0         2.0         2.8         2.0           100         1.0         0.0         0.0         4           101         1.0         1.0         1.0         1.0           102         1.0         1.0         1.0         1.0           103         4.6         0.1         1.0         1.0           103	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  8 2 1 6  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  832 1094 68 1724  0.13 0.15 0.03 0.28  0.53 0.45 0.81 0.57  1.28 10.1 186 7.1  1.28 10.1 10.4 65.1 7.5  B B B E A  1.3.1 10.4 65.1 7.5  B B B B B  1.3.1 10.4 65.1 7.5  B Capacity ratio 0.66  Unitization 1.5  1.5 0.06  Unitization 1.5 19.0  1.5 0.06  Unitization 1.5 10.0  1.5 0.06  Unitization 1.5 10.0  1.5 0.06  Unitization 1.5 10.0  1.5 0.0  1.	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  6.3 1724  6.3 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 1.0 1.0 1.0 1.0  1.2 8 6.1 7.5  1.3 1 1.0 4 6.5 0.4  1.3 1 1.0 HCM 2000 Level of Service  Capacity ratio 0.66  Nullization 1.5 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 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 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 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	)) 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	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 1.5 190 9.6 13.1 1.5 190 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 10.1 186 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 1.0 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 0.06 Ulization 1.5 0.04 1.5 0.04 1.6 0.04 1.7 0.06 Ulization 1.5 0.06	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 0.13 0.15 0.03 0.028 0.53 0.45 0.03 0.028 0.53 0.45 0.08 0.028 0.53 0.45 0.08 0.028 0.10 1.00 1.00 1.00 1.00 0.10 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 0.04 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 1.04 6.5 0.4 1.31 1.04 6.5 0.4 1.31 1.04 6.5 0.4 1.31 1.04 6.5 0.4 1.31 3.0 Sum of lost time (s) Utilization 6.66 Sun/or evel of Service 1.50 3.90 Sum of lost time (s) 1.50 49.2% ICU Level of Service 1.51 1.52 1.53 1.54 1.55 1.55 1.55 1.55 1.55 1.55 1.55	4.9 5.5 4.4 5.5 2.0 2.8 832 1094 68 1724 60.13 10.15 0.03 0.28 10.15 0.03 0.28 10.15 0.03 0.28 10.15 0.03 0.028 10.15 0.03 0.03 0.028 10.10 10.0 10.0 10.0 10.0 10.0 10.0 10	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 E A 13.1 10.4 65.1 7.5 B B C A 11.0 HCM 2000 Level of Service Capacity ratio 0.66 Ultization 1.5	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 1.00 1.00 1.00	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 13.1 10.4 65.1 7.5 13.1 10.4 65.1 7.5 13.1 10.4 65.1 7.5 13.1 10.4 65.1 7.5 13.1 10.4 65.1 7.5 13.1 10.4 65.1 7.5 13.1 10.4 65.1 10.6 13.1 11.0 HCM 2000 Level of Service 13.2 11.0 HCM 2000 Level of Service 14.3 11.0 HCM 2000 Level of Service 14.3 11.0 HCM 2000 Level of Service 14.3 11.0 HCM 2000 Level of Service 15.1 11.0 HCM 2000 Level of Service 16.3 10.4 20.4 20.4 20.4 20.4 20.4 20.4 20.4 2	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 14.9 11.0 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.0 HCM 2000 Level of Service Capacity ratio 0.66 Utilization 49.2% ICU Level of Service 1.5	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 TAILO HCM 2000 Level of Service Capacity ratio 0.66 Lost time (s) 39.0 Sum of lost time (s) 15.0 Level of Service 15.1 To the control of Service 15.1 To the c	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) 16 (s) 17 (s) 17 (s) 17 (s) 18 (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

	•	/	—	•	۶	<b>→</b>	
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)	23	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

																																				A		15.3	В		
<b>→</b>	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	co.39		0.65	0.9	1.00	1.0	7.0	Α	7.6	⋖		ervice					
٠	SBL	×	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		ime (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	004	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	36							0.92	0	0	0	Prot	<del>-</del>																			0.6	89.0	45.1	56.3%	15	
✓	WBR	¥.	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									
<b>&gt;</b>	WBL	F	193	193	4 9	0.97	1.00	0.95	3433	0.95	3433	0.92	210	0	210	Prot	7		7.6	7.6	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)	

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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	

	į		!				
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	0.67	
Intersection Summary							

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Horizon Year Adopted Conditions Timing Plan: PM Peak Period Balboa Transit Station 25: Morena Blvd & Balboa WB Ramps

	•	†	<i>&gt;</i>	<b>\</b>	<b>↓</b>	4	•	<b>←</b>	•	٠	<b>→</b>	•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	¥		₩					₩	¥C		44	W.	
Traffic Volume (vph)	150	0	259	0 0	0	0	0 0	1093	8 8	0 0	722	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	60.0		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	⋖	
Approach Delay (s)		15.0			0.0			5.7			3.3		
Approach LOS		В			V			A			A		
Intersection Summary													
HCM 2000 Control Delay			5.7	H	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	_		45.2%	⊇	ICU Level of Service	Service			A				
Analysis Period (min)			15										
<ul> <li>Critical Lane Group</li> </ul>													

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Balboa Transit Station 26: Morena Blvd & Balboa Station Driveway/Balboa EB Ramps Timing Plar. PM Peak Perbol

Lane Group EBL EBI WBI WBR NBL SBL SBI Lane Group EBL EBI WBI WBR NBL NBI SBL SBI Lane Group Flow (vph) 87 34 359 576 58 819 141 925 WC Ratio Control Delay 0.37 0.14 0.80 0.84 0.05 0.79 0.72 542 17.5 Course Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.										
EBL   EBT   WBT   WBR   NBL   NBT   SBL     87		1	†	ţ	1	•	•	۶	<b>→</b>	
87         34         359         576         5         819         141           0.37         0.14         0.80         0.84         0.05         0.79         0.77           0.0         0.0         0.0         0.0         0.0         0.0         0.0           3.1.5         24.3         41.7         21.7         32.2         27.3         54.2           3.1.5         24.3         41.7         21.7         32.2         27.3         54.2           3.1.5         24.3         41.7         21.7         32.2         27.3         54.2           3.4         4.1         4.1         21.7         32.2         27.3         54.2           4.1         4.1         4.1         4.1         4.2         4.2         151         54.2           4.8         4.6         4.5         4.5         4.1         1.0         1.0         1.0           0         0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0           0         0         0         0 <td< td=""><td>Lane Group</td><td>EBL</td><td>EBT</td><td>WBT</td><td>WBR</td><td>NBL</td><td>NBT</td><td>SBL</td><td>SBT</td><td></td></td<>	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 41.7 21.7 32.2 27.3 54.2 34 43.0 42.4 41.2 42.4 41.5 41.5 41.5 41.5 41.5 41.5 41.5 41	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         18         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           0.19         0.07         080         083         0.05         0.73         0.72	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         10         1978           448         465         451         693         111         1118         195           0         0         0         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 19 007 080 083 005 073 072 1	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	0.80	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   FBI   WBI   WBI   WBI   NBI		1	†	<b>/</b>	<b>&gt;</b>	ţ	√	•	•	•	۶	<b>→</b>	•
4         7         7         4           27         5         300         30         530         5         573         180           27         5         300         30         530         5         573         180           27         5         300         30         530         5         573         180           40         40         100         190	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
27         5         300         30         530         5         573         180           1900	Lane Configurations	r	¢			₩	¥C	je-	₩.		¥	4₽	
27         5         300         30         530         5         573         180           1900	Fraffic Volume (vph)	8	27	2	300	30	530	2	573	180	130	840	7
1900   1900	-uture Volume (vph)	88	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   0.96   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   0.96   1.00   0.95   0.95   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   100   1822   1782   1833   1770   3412   1822   1700   3412   100   1092   0.92	Ft	1.00	86:0			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   0.96   100   0.95   100   1822   1782   1833   1770   3412   2412   249   292   0.93   0.92   0.93   0.92   0.93   0.92   0.93   0.92   0.93	Satd. Flow (prot)	1770	1822			1782	1583	1770	3412		1770	3532	
1822   1782   1583   1770   3412   2412	Flt Permitted	0.95	1.00			96:0	1.00	0.95	1.00		0.95	1.00	
0.92         0.93         0.93 <th< 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></th<>	Satd. Flow (perm)	1770	1822			1782	1583	1770	3412		1770	3532	
29         5         326         33         576         5         623         196           30         0         0         330         5         782         0           1         NA         Split         NA         Perm         Prof         18           7.1         16.1         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           8.0         3.0         3.0         3.0         3.0         3.0           9.02         0.02         0.0         0.0         0.0         0.0         0.0           1.00         1.00         1.00         1.00         1.00         0.0         0.2         0.0           1.00         1.00         1.00         1.00         1.00	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	Adj. Flow (vph)	87	53	2	326	33	9/9	2	623	196	141	913	12
30 0 0 359 276 5 782 0 0   359 276 5 782 0 0   4 4 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	RTOR Reduction (vph)	0	4	0	0	0	300	0	37	0	0	_	0
NA   Split NA Perm Prot NA   NA   NA   Split NA Perm Prot NA   NA   NA   NA   NA   NA   NA   NA	ane Group Flow (vph)	87	30	0	0	329	276	2	782	0	141	924	0
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 0.32 7.3 3.0 3.0 3.0 3.0 7.3 8 4.0 4.0 4.0 7.3 8 6.0 6.0 6.0 6.0 6.0 6.0 7.4 0.28 0.71 7.5 18 1105 7.6 0.0 0.1 7.7 18 1105 7.8 0.16 0.86 0.74 0.28 0.71 7.8 0.16 0.86 0.74 0.28 0.71 7.9 0.16 0.86 0.74 0.28 0.71 7.9 0.16 0.87 0.87 0.87 7.9 28.4 4.10 1.00 1.00 7.0 0.4 1.5 7.8 8.3 2.1 7.0 0.4 1.5 7.8 8.3 2.1 7.0 0.4 1.5 7.8 8.3 2.1 7.0 0.4 1.0 32.1 41.9 22.4 7.0 0.4 1.0 32.1 41.9 22.4 7.0 0.4 1.0 0.1 0.0 1.00 7.2 0.0 0.4 1.0 0.1 0.0 1.00 7.2 0.0 0.4 1.0 0.1 0.0 1.00 7.3 0.0 0.1 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 0.0 7.3 0.0 0.0 0.0 0.0 7	rurn Type	Split	¥		Split	Ν	Perm	Prot	NA		Prot	NA	
7.1 16.1 16.1 2.2 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 0.010 0.24 0.24 0.01 0.32 4.0 4.0 4.0 4.0 4.0 3.0 0.10 0.0 0.0.2 2.8 0.10 0.10 0.10 0.0 3.0 1.00 1.00 1.00 1.00 3.0 1.00 1.	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 0.24 0.32 0.40 4.0 4.0 4.0 4.0 4.0 0.30 30 30 30 3.0 3.0 0.02 0.02 0.03 0.07 0.02 0.02 0.07 0.04 15.9 7.8 8.3 2.1 0.04 15.9 7.8 8.3 2.1 0.04 15.9 7.8 8.3 2.1 0.05 0.03 0.00 0.00 0.04 15.9 7.8 8.3 2.1 0.05 0.03 0.00 0.04 15.9 7.8 8.3 2.1 0.05 0.00 0.00 0.00 1.00 1.00 1.00 0.00 1.00 1	Permitted Phases						8						
7.1 16.1 16.1 0.7 22.2   0.10 0.24 0.24 0.01 0.32   4.0 40 40 40 40 40 40 40 40 40 40 40 40 40	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 4.0 4.0 4.0 4.0 4.0 3.3 3.0 3.0 3.0 3.0 3.0 1.188 418 372 18 1105 0.02 0.20 0.07 0.00 0.23 0.016 0.86 0.74 0.28 0.71 0.04 15.9 7.8 8.3 2.1 0.04 15.9 7.8 8.3 2.1 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 0.00 0.07 0.07 0.00 1.00 1.00 0.07 0.07 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Effective Green, g (s)	7.1	7.1			16.1	16.1	0.7	22.2		7.1	28.6	
40	Actuated g/C Ratio	0.10	0.10			0.24	0.24	0.01	0.32		0.10	0.42	
3.0   3.0   3.0   3.0   3.0     188	Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
188	/ehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
8 0.02	-ane Grp Cap (vph)	183	188			418	372	18	1105		183	1474	
0.16 0.86 0.74 0.28 0.71 2.80 2.81 2.43 33.6 20.3 0.04 15.9 7.8 83 2.1 0.24 4.10 32.1 41.9 22.4 0.2 0 D C D C 0.2 35.5 D C 2.6.3 HCM 2000 Level of Service 0.73 0.88 Sum of lost time (s) 6.88% ICU Level of Service 15	//s Ratio Prot	c0.05	0.02			c0.20		0.00	c0.23		c0.08	0.26	
26.3 HCM 2000 Level of Service 0.73 8.8% ICU Level of Service 0.75 8.8% ICU Level of Service	//s Ratio Perm						0.17						
280 251 243 336 203 100 100 100 100 100 100 0.4 15.9 78 83 2.1 284 4.1.0 32.1 41.9 22.4 0.5 D C D C 0.5 D C D C 0.73 HCM 2000 Level of Service 0.73 Sum of lost time (s) 68.8% ICU Level of Service 15	//c Ratio	0.48	0.16			98.0	0.74	0.28	0.71		0.77	0.63	
100 100 100 100 100 100 284 115.9 7.8 8.3 2.1 2.1 28.4 2.2 2.2 2.2 2.2 3.2 30.2 35.5 C D 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 C C C D C C C C D C C C C C D C	Jniform Delay, d1	28.9	28.0			25.1	24.3	33.6	20.3		29.9	15.7	
26.3 HCM 2000 Level of Service  26.3 HCM 2000 Level of Service  37.3 Sum of lost time (s)  68.8% ICU Level of Service  15.	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 0.73 Sum of lost time (s) 68.8% ICU Level of Service 15.	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  26.3 HCM 2000 Level of Service  26.3 HCM 2000 Level of Service  26.3 Sum of lost time (s)  68.9% ICU Level of Service  15	Delay (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 D C C C C C C C C C C C C C	evel of Service	O	ပ				O		ပ		۵	В	
26.3 HCM 2000 Level of Service 0.73 8.8 8 Sum of lost time (s) 6.8.8% 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) 6.87% ICU Level of Service 15	Approach LOS		ပ			D			S			S	
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) 68.8% ICU Level of Service 15	HCM 2000 Control Delay			26.3	H	3M 2000	Level of S	Service		ပ			
68.5 Sum of lost time (s) 68.8% ICU Level of Service 15	HCM 2000 Volume to Capacity	y 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 Utilization	nc		%8.89	೨	U Level o	f Service			ပ			
	Analysis Period (min)			15									
c. Critical I ane Group	c Critical Lane Group												

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Balboa Transit Station 27: Morena Blvd & Baker St

Horizon Year Adopted Conditions Timing Plan: PM Peak Period

																																							¥	
<b>→</b>	SBT	<b>‡</b>	1032	1032	Free	% 00	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	9 kg	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	
<b>\</b>	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

	•	<b>←</b>	•	٠	<b>→</b>	
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	26	
Queue Length 95th (ft)	47	98	17	69	119	
Internal Link Dist (ft)	1333	298			3362	
Turn Bay Length (ft)			95	95		
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		
<b>→</b>	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	<b>&gt;</b>	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

	١,	1	م	\ \	↓	<b>-</b> ∕	<b> </b>	←	۱ ۹	•	-	•
	i											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡	<b>R</b> _		‡				*-			*-
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	FOS
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	=	32		12.3	39.6	0.23	20.9	Ω
Bond St	=	32		0.7	21.7	0.17	27.8	ပ
Mission Bay Dr	=	32		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	Ф
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)	Ē	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	25.7	В
Grand Ave	=	35		4.4	19.9	0.11	20.8	O
Bunker Hill St	=	32		11.7	26.0	0.11	14.6	
Magnolia Ave	=	32		9.3	30.7	0.17	19.6	O
Garnet Ave	=	32		60.5	74.3	0.10	5.0	ш
Damon Ave	=	32		34.3	46.0	0.09	6.8	ш
Bluffside Av	=	35		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

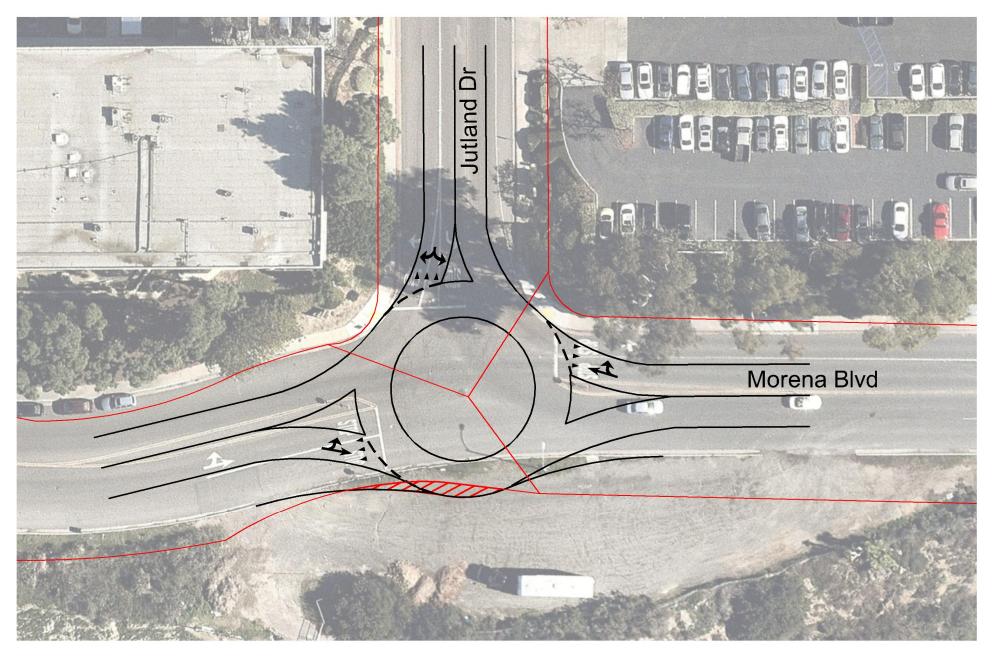
Horizon Year Adopted Conditions
Timing Plan: PM Peak Period

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

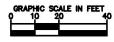
INTERSECTION MITIGATIONS

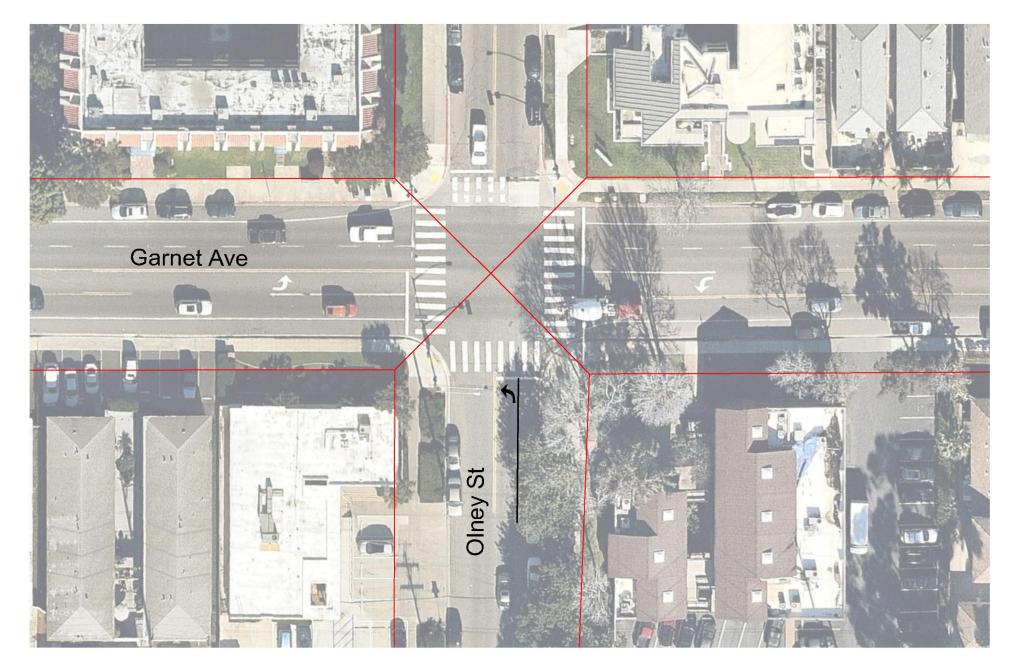




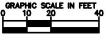
RIGHT OF WAY IMPACT

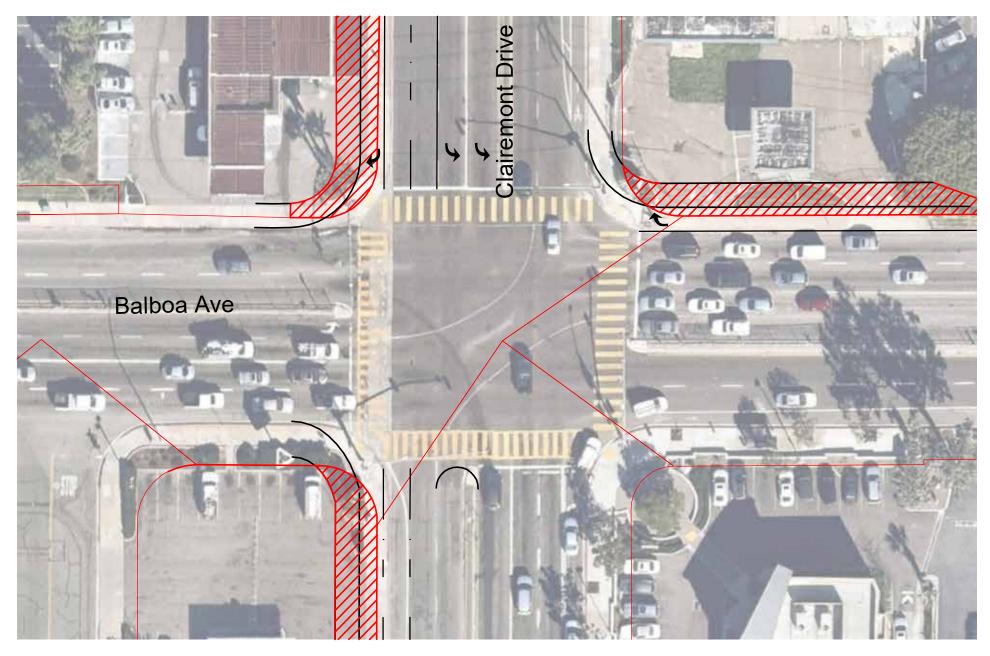








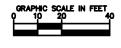






RIGHT OF WAY IMPACT





## APPENDIX G

MITIGATED ADOPTED FUTURE CONDITIONS ANALYSIS SUPPORTING INFORMATION

	•	-	•	•	4	<b>†</b>	<b>↓</b>
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	<b>→</b>	•	•	<b>←</b>	•	•	<b>†</b>	/	<b>/</b>	<b>↓</b>	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥	f)		¥	<b>∱</b> }		, J	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

	۶	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	~	<b>\</b>	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.

Movement         EBL         EBT         EBR         WBL         WBT         WBR         NBL         NBT         NBR         SBL         SBT         SBR           Lane Configurations         11         44         7         11         44         7         11         44         7         11         44         7         11         44         7         11         44         12         29         251         259         458           Future Volume (vph)         833         860         541         182         693         243         461         445         229         251         259         458           Ideal Flow (vphpl)         1900 <th></th> <th>۶</th> <th>-</th> <th>•</th> <th>•</th> <th><b>←</b></th> <th>•</th> <th>•</th> <th><b>†</b></th> <th><b>/</b></th> <th><b>&gt;</b></th> <th>ļ</th> <th>4</th>		۶	-	•	•	<b>←</b>	•	•	<b>†</b>	<b>/</b>	<b>&gt;</b>	ļ	4
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 </th <th>Movement</th> <th>EBL</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th>	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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 </td <td>Lane Configurations</td> <td>77</td> <td><b>^</b></td> <td>7</td> <td>ሻሻ</td> <td>ተተተ</td> <td>7</td> <td>ሻሻ</td> <td><b>^</b></td> <td>7</td> <td>ሻሻ</td> <td><b>^</b></td> <td>77</td>	Lane Configurations	77	<b>^</b>	7	ሻሻ	ተተተ	7	ሻሻ	<b>^</b>	7	ሻሻ	<b>^</b>	77
Ideal Flow (vphpl)         1900 <td>Traffic Volume (vph)</td> <td></td> <td></td> <td>541</td> <td></td> <td></td> <td>243</td> <td></td> <td></td> <td>229</td> <td></td> <td></td> <td></td>	Traffic Volume (vph)			541			243			229			
Total Lost time (s)         4.4         4.9         4.4         4.9         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9         4.4         4.9	Future Volume (vph)	833	860	541	182	693	243	461	445	229	251	259	458
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           Flt Protected         0.95         1.00         1.00 </td <td>Ideal Flow (vphpl)</td> <td>1900</td>	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	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
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         0.95         1.00	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
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       0.95       1.00       1.00       0.95       1.00       1.00       2787         Satd. Flow (perm)       3433       3539       1583       3433       5085       1583       3433       3539       1583       3433       3539       2787	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 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         0.95         1.00	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 (perm) 3433 3539 1583 3433 5085 1583 3433 3539 1583 3433 3539 2787	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
Peak-hour factor, PHF 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	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	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	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	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	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	Protected Phases	3	8	1	7	4		1	6	7	5	2	3
Permitted Phases 8 4 6 2	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	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	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	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 4.9 4.9 4.4 4.9 5.3 4.4	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         2.0         4.5         2.0         2.0         3.3         2.0	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	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 0.09	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/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	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	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 1.0	Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2 34.4 2.2 0.7 5.1 4.2 0.4 11.2 1.2 0.1 7.1 1.0 0.1	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	Delay (s)		41.8		69.6	59.9	49.3	69.5	40.8		69.9	45.7	21.4
Level of Service F D C E E D C E D C	Level of Service	F	D	С	Е		D	Е	D	С	Е	D	С
Approach Delay (s) 54.6 59.2 50.3 40.5			54.6			59.2			50.3			40.5	
Approach LOS D E D D	Approach LOS		D			Е			D			D	
Intersection Summary	Intersection Summary												
HCM 2000 Control Delay 52.1 HCM 2000 Level of Service D	HCM 2000 Control Delay			52.1	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capacity ratio 0.78		city ratio											
Actuated Cycle Length (s) 145.0 Sum of lost time (s) 19.0					S	um of los	t time (s)			19.0			
Intersection Capacity Utilization 73.3% ICU Level of Service D		tion		73.3%				)					
Analysis Period (min) 15	Analysis Period (min)			15									

c Critical Lane Group

# Horizon Year Adopted Conditions MITIGATED Timing Plan: AM Peak Period

	-	•	<b>←</b>	~	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	-	•	•	<b>←</b>	•	•	<b>†</b>	~	<b>&gt;</b>	ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<b>^</b>	7		<b>^</b>				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			5 8				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

	•	<b>→</b>	•	←	•	•	<b>†</b>	<i>&gt;</i>	<b>&gt;</b>	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.

	۶	<b>→</b>	•	•	+	•	•	†	<i>&gt;</i>	<b>/</b>	<b>↓</b>	-√
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	77	<b>∱</b> ∱		ሻሻ	<b>^</b>	7	7	<b>^</b>	7	ሻሻ	<b>^</b>	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	<u>;</u>		С			
Analysis Period (min)			15									

c Critical Lane Group

	•	•	<b>†</b>	<i>&gt;</i>	ļ
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					

	•	•	<b>†</b>	/	<b>&gt;</b>	<b>↓</b>			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	ሻ	7	<b>†</b>	7		41∱			
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	А	А	А		A			
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	e	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.

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	۶	-	•	<b>←</b>	4	<b>†</b>	ļ
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	<b>^</b>		ሻ	<b>∱</b> }		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		E			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

	٠	<b>→</b>	•	•	•	•	4	<b>†</b>	<i>&gt;</i>	<b>\</b>	ļ	4
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 SI	BL SBT	SBR
Lane Configurations ነሻ ተተ ሾ ነሻ ተተተ ሾ ነሻ	ኘ ተተ	77
	4 369	905
Future Volume (vph) 569 832 456 273 901 366 663 396 290 2	4 369	905
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 190	00 1900	1900
Total Lost time (s) 4.4 4.9 4.4 4.9 4.4 4.9 4.4 4.9 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	00 1.00	0.85
Flt Protected 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 0.00 0.95	1.00	1.00
Satd. Flow (prot) 3433 3539 1583 3433 5085 1583 3433 3539 1583 34	3539	2787
Flt Permitted 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	1.00	1.00
Satd. Flow (perm) 3433 3539 1583 3433 5085 1583 3433 3539 1583 34	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
Adj. Flow (vph) 618 904 496 297 979 398 721 430 315 2	98 401	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 2	98 401	932
Turn Type Prot NA pm+ov Prot N	ot 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		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		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.		0.40
Clearance Time (s) 4.4 4.9 4.4 4.9 4.4 4.9 4.4 4.9 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 4	6 547	1108
v/s Ratio Prot 0.18 0.26 0.10 0.09 c0.19 0.06 c0.21 0.12 0.06 0.10	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.	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 1.0	00 1.00	1.00
	.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 B E D C F D C	E E	D
Approach Delay (s) 35.8 47.3 73.7	50.2	
Approach LOS D E	D	
Intersection Summary		
HCM 2000 Control Delay 50.3 HCM 2000 Level of Service D		
HCM 2000 Volume to Capacity ratio 0.86		
Actuated Cycle Length (s) 135.0 Sum of lost time (s) 19.0		
Intersection Capacity Utilization 79.4% ICU Level of Service D		
Analysis Period (min) 15		

c Critical Lane Group

	<b>→</b>	•	<b>←</b>	~	1
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					

<sup># 95</sup>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		<b>^</b>	7		<b>^</b>				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												

<sup>95</sup>th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

	۶	<b>→</b>	•	•	<b>←</b>	•	•	†	<i>&gt;</i>	<b>&gt;</b>	ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1/1	<b>∱</b> }		44	<b>†</b> †	7	7	<b>^</b>	7	44	<b>^</b>	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

	•	•	<b>†</b>	/	ļ
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					

<sup>95</sup>th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

	•	•	<b>†</b>	~	<b>&gt;</b>	<b>↓</b>			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	ሻ	7	<b>†</b>	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	f 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	ich	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.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2016 Akcelik and Associates Pty Ltd | sidrasolutions.com Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Wednesday, July 28, 2017 2:5942 PM Project: K:NSIV\_TPTO(09543006 - Balboa Station/SIDRA/Morena at Jutland/Kourdabou Mitigation Analysis.sip7

# 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

i. Only of a carrier, we	200						sono como como de como de como de como como de
	•	†	•	ţ	<b>+</b>	<b>→</b>	
Lane Group	EBF	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	14	1272	80	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)	10	#1187	9m	m145	#287	239	
Internal Link Dist (ft)		374		899	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	443	1267	20	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

	•	<b>†</b>	~	<b>\</b>	ţ	√	•	<b>←</b>	•	٠	<b>→</b>	•
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	679	6	115	75	11	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	
Frt	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	∞	738	10	125	82	18	75	142	28
RTOR Reduction (vph)	0	m	0	0	-	0	0	က	0	0	2	0
Lane Group Flow (vph)	14	1269	0	8	747	0	0	222	0	0	240	0
Tum Type	Perm	NA		Perm	NA		Perm	NA		Perm	MA	
Protected Phases		2			9			∞			4	
Permitted Phases	2			9			∞			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							
v/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	- i	70.5		3.0	0.3			40.4			0.7	
Delay (s)	5.4	43.0		0.7	0.6			   			42.4	
Approach Dolay (c)	c	7 (7		2	c c			- 1-			A 45 C	
Approach Delay (s)		47.0			0.6						40.4	
Intercetion Summan		2									٥	
Illelsection Sulfillary												
HCM 2000 Control Delay			36.2	ĭ	HCM 2000 Level of Service	Level of :	Service		۵			
HCM 2000 Volume to Capacity ratio	/ ratio		0.99	•		:			0			
Actuated Cycle Length (s)			106.0	รี :	Sum of lost time (s)	time (s)			8.1			
Intersection Capacity Utilization	_		%2.06	<u>ت</u>	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
	†	ţ	4	و	
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)	#506	8	0	m204	
Internal Link Dist (ft)	936	284		899	
Turn Bay Length (ft)					
Base Capacity (vph)	434	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	1.29	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

							,
	•	<b>†</b>	ţ	4	٠	<b>*</b>	
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	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 10.6 898 754 997 243 243  es 8 75 2 134 1330 667  d1 548 89 134 330 667  d1 548 89 134 338 480 409  ctor 1.00 100 0.41 0.61 1.00 1.00  lay, d2 5 6 10 6 5 2.4 54 0.1  es 5 6 10 6 7 6 0.1  es 6 10 6 0.1  es 7 7 7 8 8 9 134 338 480 409  ctor 1.00 100 0.41 0.61 1.00 1.00  lay, d2 6 10 6 6 0.1  es 6 10 6 0.1  es 7 8 14, 4 6 5 6 0.1  es 7 8 14, 1 4.6  es 7 9 10.1  es 8 14, 1 4.6  es 7 9 10.1  es 8 14, 1 4.6  es 9 13 12.0  es 9 13 12.0  es 10 0.41 0.61 1.00 1.00  es 10 0.41 0.61 1.00 1.00  es 11 0.6 0.71 1.00 1.00  es 11 0.6 0.71 1.00 1.00  es 12 0.72 1.00 1.00 1.00  es 14, 1 4.6  es 15 0.73 1.00 1.00  es 16 0.70 1.00 1.00  es 17 0.70 1.00 0.70  es 18 0.70 1.00 1.00  es 17 0.70 1.00 1.00  es 18 0.70 1	Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00	
(yph) 0.95 100 100 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 7 7 7 7 es 5 7 629 14 es 5 2 6 7 7 7 7 es 5 6 10.6 89.8 75.4 99.7 24.3 24.3 e. 1.g (s) 10.6 89.8 75.4 99.7 24.3 24.3 e. 1.g (s) 10.6 89.8 75.4 99.7 24.3 24.3 e. 2 6 7 7 7 7 e. 3 7 7 7 7 e. 5 8 10 0.8 7 2.0 3.0 e. 5 8 10 0.8 7 2.0 3.0 e. 6 8 10 0.8 7 2.0 3.0 e. 6 8 10 0.8 7 2.0 3.0 e. 6 8 10 0.8 7 2.0 3.0 e. 7 8 1.0 e. 8 1.1 0.0 0.0 e. 9 1.1 0.0 0.0 e. 1.1 0	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  one of a day of	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 10.0 0.41 0.61 1.00 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 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 2.0 3.0  ton(s) 2.0 5.6 8.0 2.0 2.0 3.0  ton(s) 2.1 25.4 2134 1330 667 307  ton 16.3 0.61 0.42 0.79 0.05  et 7 2 2 2 3 4 3 48 0 40 9  et 7 2 2 3 0.61 0.42 0.79 0.05  et 8 1.1 0.6 0.1 6.0 0.1  et 8 8 9 13.1 38 480 40 9  et 9 13.1 0.6 0.1 6.0 0.1  et 9 14 6.0 0.1 6.0 0.1  et 14 4.6 A D D  mmany  mmany  meany  mean	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 0.0 1.00  ation 0.08 1.1 0.6 0.1 0.0 1.00  ation 0.09 0.1 0.0 0.1 0.0 1.00  ation 0.09 0.1 0.0 0.1 0.0 0.1 0.0 0.1  by (s) R A A A A A A A A A A A A A A A A A A	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           1.0         4.0         0.0         0.1         0.0           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 166 HCM 2000 Level of Service 1.050  Length (s) 125.0 Sum of lost time (s) 18.00  pacity Utilization 6.2.7% ICU Level of Service 1.00  (min) 15 ICU Level of Service 1.00  166 HCM 2000 Level of Service 1.00  175.0 Sum of lost time (s) 18.00  186 HCM 2000 Level of Service 1.00  187 HCM 2000 Level of Service 1.00  188 HCM 2000 Level of Service 1.00  189 HCM 2000 Level of Service 1.00  189 HCM 2000 Level of Service 1.00  189 HCM 2000 Level of Service 1.00  180 HCM 2000 Level of Serv	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	<del></del>	9.0	0.1	0.9	0.1	
(\$)   E	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  Sum of lost time (s)  127.8  ICU Level of Service  166  HCM 2000 Level of Service  178.0  18.18.18.18.18.18.18.18.18.18.18.18.18.1	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
Avalysis Period (min) 15 c. Critical 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
	<b>†</b>	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	<b>†</b>	<i>&gt;</i>	<b>/</b>	ļ	✓	•	•	•	٠	<b>→</b>	•
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			
- L		00:1			00:1				0.86			
Fit Protected		1.00			1:00				1.00			
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				0.05			
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	오	:M 2000 I	HCM 2000 Level of Service	ervice		⋖			
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									
<ul> <li>c Critical Lane Group</li> </ul>												

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

	•	†	~	<b>&gt;</b>	ţ	√	•	<b>—</b>	•	٠	<b>→</b>	•
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
Oueue 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)	970	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

	^	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	4	•	•	•	۶	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	ŧ	¥C.	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.	1:00	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

	•	<b>†</b>	>	<b>/</b>	ţ	4	•	•	•	٠	<b>→</b>	•
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		<b>a</b>			⋖			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									
<ul> <li>c Critical Lane Group</li> </ul>												

KHA HCM Signalized Intersection Capacity Analysis

Balboa Transit Station
7: Balboa EB Ramps & Garnet Ave Timing Plan: AM Peak Perbol

- Movement E	↑ Ha	₩ ₩	WBL	₩	<b>√</b> 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				

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Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year with Preferred LU a Ave

ane Group         EBL         EBT           ane Group Flow (vph)         338         988           and CRatio         0.60         0.41           on For Block         30.0         5.2           Dueue Delay         0.0         0.0           Iotal Delay         30.0         5.2	WBT WI 1142 0.76 0 19.2 0.0 19.2 19.2 19.2	WBR 84 0.12 0 0.0 0.0 3.5 3.5 3.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	SBL 102 0.41 31.0 0.0	SBR 284 0.61 10.3 0.0
p Flow (vph) 338 0.60 0.60 30.0 30.0 lay 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0			102 3.41 31.0 0.0 31.0	284 0.61 10.3 0.0
0.60 30.0 lay 0.0 V 30.0			31.0 0.0 31.0	0.61 10.3 0.0
30.0 0.0 30.0			31.0 0.0 31.0	10.3 0.0
30.0			0.0	0.0
30.0			31.0	( ( )
				10.3
			36	_
113		22	82	62
	3203		501	
Tum Bay Length (ft) 215	2	. 220	155	
Base Capacity (vph) 599 2779	1858 8		903	946
Starvation Cap Reductn 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.	0.10	0.11	0.30

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Balboa Transit Station 8: Garnet Ave & Moraga Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Period

Movement         EBL         EBL         MBR         SBL         SBR           Laber Configurations         17         44         7         4         261           Laber Configurations         131         909         1051         77         94         261           Traffic Volume (yph)         331         909         1051         77         94         261           Traffic Volume (yph)         1900         1900         1900         1900         1900         1900           Traffic Volume (yph)         307         0.95         100         100         100         1900         1900           Traffic Volume (yph)         307         0.95         100		•	<b>†</b>	ţ	4	٠	•	
figurations	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lime (kph)         311         909         1051         77         94         261           Lime (kph)         311         909         1051         77         94         261           (v(php)         311         909         1051         77         94         261           (v(php)         1900         1900         1900         1900         1900           time (s)         44         5.7         6.5         6.5         5.6         5.6           Factor         100         100         100         100         100         100           ted         0.95         100         100         100         100         100           ted	Lane Configurations	*	ŧ	ŧ	*-	F	ĸ.	
ulme (kph)         311         909         1051         77         94         261           r (kphp)         1900         1900         1900         1900         1900           r (kphp)         1900         1900         1900         1900         1900           r (kphp)         44         5.7         6.5         6.5         6.5         6.6         5.6           r (kphp)         0.97         0.95         0.95         1.00         1.00         0.85           r (kpcm)         3.433         35.39         35.39         15.83         1.00         0.85           r (kpcm)         3.433         35.39         35.39         15.83         1.00         0.85           r (kpcm)         3.433         35.39         35.39         15.83         1.70         1.83           r (kpcm)         3.433         35.39         35.39         15.83         1.00         0.85         1.00           r (kpcm)         3.433         35.39         35.39         15.83         1.00         1.00         0.85         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1	Traffic Volume (vph)	311	606	1051	11	94	261	
High	Future Volume (vph)	311	606	1051	11	94	261	
Fador (a) 44 5.7 6.5 6.5 5.6 5.6 5.6 Fedor (b) 100 100 100 100 100 100 100 100 100 10	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
ted 0.97 0.95 0.95 1.00 1.00 0.85 ted 0.95 1.00 1.00 0.85 ted 0.95 1.00 1.00 0.85 1.00 0.85 ted 0.95 1.00 1.00 0.95 1.00 0.85 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95	Total Lost time (s)	4.4	5.7	6.5	6.5	9.6	5.6	
ted 0.95 1.00 0.85 1.00 0.85 1.00 0.85 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.85 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.	Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	
ted 0.95 1.00 1.00 0.95 1.00 w (pord) 3433 3539 3539 1583 1770 1583 r (pord) 338 988 1142 34 102 284 duction (wh) 338 988 1142 36 102 242 up Flow (wph) 338 988 1142 36 102 242 up Flow (wph) 338 988 1142 36 102 242  Screen, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 Green, G (s) 10.1 4.4 2.4 2.4 Green, G (s) 10.0 10.0 10.0 10.0 10.0 Green, G (s) 10.0 10.0 10.0 10.0 10.0 10.0 Green, G (s) 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	T.	1.00	1.00	1.00	0.85	1.00	0.85	
w (prod) 3433 3539 3539 1583 1770 1583 (certain between colors) 3433 3539 3539 1583 1770 1583 (certain between colors) 3433 3539 3539 1583 1770 1583 (certain between colors) 343 3539 3539 1583 1770 1583 (certain between colors) 343 3539 3539 1583 1770 1583 (certain between colors) 343 988 1142 84 102 284 (certain between colors) 348 988 1142 84 102 284 (certain between colors) 348 988 1142 84 102 284 (certain between colors) 349 988 1142 84 84 84 (certain between colors) 349 349 20 20 20 (certain between colors) 349 349 20 20 20 (certain between colors) 349 349 340 233 (certain between colors) 349 349 340 233 (certain between colors) 349 340 234 (certain between colors) 349 349 340 233 (certain between colors) 349 349 340 343 (certain between colors) 349 349 340 333 (certain between colors) 349 340 340 340 340 340 340 340 340 340 340	Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
ted 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 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	Satd. Flow (prot)	3433	3539	3539	1583	1770	1583	
ribacion (yph) 3433 3539 3539 1583 1770 1583  ribacion (yph) 338 988 1142 84 102 284  duction (yph) 338 988 1142 84 102 284  duction (yph) 338 988 1142 84 102 284  duction (yph) 338 988 1142 84 102 284  phrases 5 2 6 4 4  Phrases 5 2 6 6 4 4  Phrases 5 2 6 6 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 41.4 26.1 26.1 86 8.6  Green, G (s) 10.1 4.4 26.1 26.1 86 8.6  Green, G (s) 10.1 4.4 26.1 26.1 86 8.6  Green, G (s) 10.1 4.4 26.1 26.1 86 8.6  Green, G (s) 10.1 4.4 26.1 20.0  Great (ph) 566 20.3 40.0 10.0  Group 10.0 1.00 1.00 1.00 1.00 1.00  Growthol Delay 7 17.3 10.4 24.4 23.4  Greene C A B B C C C  Delay (s) 4.7 17.3 10.4 24.4 23.4  Greene C A B B C C C  Delay (s) 4.7 17.3 10.4 24.4 23.4  Greene C A B B C C C  Delay (s) 4.7 17.3 10.4 24.4 23.4  Greene C A B B C C C  Delay (s) 6.1 3 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 3 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 3 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 3 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 3 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 3 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C A B B C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C A B C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C A B C C C C  Delay (s) 6.1 5.6 5.6 5.6  Greene C C C C C C C C C C C C C C C C C C	Fit Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
rfactor, PHF 092 092 092 092 092 092 092 091 091 091 091 091 091 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	3433	3539	3539	1583	1770	1583	
(vph)         338         988         1142         84         102         284           deflorio (vph)         338         988         1142         36         102         284           phases         1         0         0         48         0         242           phases         5         2         6         8         6         4           phases         5         2         6         4         4         4           phases         5         2         6         4         4         4         4           Green, G(s)         10.1         4.1.4         26.1         26.1         8.6         8.6         8.6           Green, G(s)         10.1         4.1.4         26.1         26.1         8.6         8.6         8.6           Green, G(s)         10.1         41.4         26.1         26.1         8.6 <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>	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Oduction (vph)         0         0         48         0         242           up Flow (vph)         338         988         1142         36         102         42           Phases         5         A         A         NA         Perm         Prof         Perm           Phases         5         2         4         4         4         4         4           Green, G(s)         10.1         41.4         26.1         26.1         86         8.6           Green, G(s)         10.1         41.4         26.1         26.1         86         8.6           Green, G(s)         10.1         41.4         26.1         26.1         86         8.6           Green, G(s)         10.1         41.4         26.1         26.1         8.6         8.6           Green, G(s)         10.1         44         5.6         5.6         5.6         5.6           GCR         20.4         8.3         3.9         2.0         2.0         1.0           April         0.1         0.2         2.4         2.6         5.6         5.6           Permin         0.2         2.3         1.0         1.0         1.0	Adj. Flow (vph)	338	886	1142	84	102	284	
up Flow (vph)         338         988         1142         36         102         42           Phases         5         2         6         4         4           Phases         5         2         6         4         4           Phases         10.1         41.4         26.1         26.1         86         8.6           Green, G (s)         10.1         41.4         26.1         26.1         86.6         8.6           Green, G (s)         10.1         41.4         26.1         26.1         8.6         8.6           Green, G (s)         10.1         41.4         26.1         26.1         8.6         8.6           Green, G (s)         10.1         41.4         26.1         26.1         8.6         8.6           Green, G (s)         10.1         41.4         26.1         26.5         5.6 <t< td=""><td>RTOR Reduction (vph)</td><td>0</td><td>0</td><td>0</td><td>48</td><td>0</td><td>242</td><td></td></t<>	RTOR Reduction (vph)	0	0	0	48	0	242	
Protection (S) 2 6 4 Perm Prot Perm Prot Perm Protection (S) 2 6 4 Perm Protection (S) 2 6 4 Perm Protection (S) 10.1 41.4 26.1 26.1 86. 8.6 Green, G(S) 4.4 5.7 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Lane Group Flow (vph)	338	886	1142	36	102	42	
Phases 5 2 6 4  Phases 6 4  Phases 6 4  Green, G(s) 10.1 41.4 26.1 26.1 86 8.6  Cap (vph) 565 2390 1506 674 248 222  Prof. G(s) 23 0.20  Cap (vph) 565 2390 1506 674 248 222  Prof. G(s) 10.0 1.50 0.0 0.0  Frem 0.60 0.41 0.76 0.05 0.01  Frem 0.70 0.00 0.00 0.00  Frem 0.70 0.00 0.00  Frem 0.70 0.00 0.00  Frem 0.70 0.00	Turn Type	Prot	¥	¥	Perm	Prot	Perm	
Phases 6 4 Phases 6 101 41.4 26.1 26.1 86 8.6 Green, G(s) 10.1 0.16 0.3 0.3 0.14 0.14 Aversion (s) 2.0 2.3 0.2 0.0 2.0 Prof. 0.10 0.28 0.22 0.00 Prof. 0.10 0.28 0.22 0.00 Prof. 0.20 0.20 0.00 Prof. 0.20 0.0	Protected Phases	2	2	9		4		
Green, G (s) 10.1 41.4 26.1 26.1 86 8.6 Green, G (s) 10.1 41.4 26.1 26.1 86 8.6 Green, G (s) 10.1 41.4 26.1 26.1 86 8.6 Green, G (s) 10.1 41.4 26.1 26.1 86 8.6 8.6 Green, G (s) 10.1 41.4 26.1 26.1 8.6 8.6 8.6 9.6 Green, G (s) 4.4 5.7 6.5 6.5 5.6 5.6 5.6 5.6 6.5 6.5 6.5 6.5	Permitted Phases				9		4	
Green g(s)         10.1         41.4         26.1         26.1         8.6         8.6           Gradio (SC Ratio or 16         0.68         0.43         0.14         0.14         0.14           Filme (s)         4.4         5.7         6.5         6.5         5.6         5.6           Attension (s)         2.0         4.8         3.9         3.9         2.0         2.0           Attension (s)         2.0         4.8         3.9         3.9         2.0         2.0           Cap (wh)         565         2.39         1506         6.74         2.48         2.22           Port         0.0         0.2         0.0         0.03         0.03         0.03           Perm         0.0         0.4         0.7         0.0         0.0         0.03         0.0           Perm         0.0         0.4         0.0	Actuated Green, G (s)	10.1	41.4	26.1	26.1	9.8	8.6	
g/C Ratio 0.16 0.68 0.43 0.43 0.14 0.14  strime(s) 2.0 4.8 3.9 5.6 5.6 5.6 5.6  Cap (wh) 5.65 2.390 15.06 674 248 222  Cap (wh) 6.65 2.390 15.06 674 248 222  Prot 0.10 0.28 0.32 0.02  Perm 0.60 0.41 0.76 0.05 0.41 0.19  elay, d1 2.37 4.5 14.9 10.3 2.40 2.33  on Factor 1.10 1.00 1.00 1.00 1.00 1.00  Elabelay, d2 1.1 0.2 2.4 0.0 0.4 0.4 0.10  Elabelay, d2 1.1 0.2 2.4 0.0 0.4 0.4 0.10  Elabelay, d3 1.1 0.2 2.4 0.0 0.4 0.4 0.10  Delay (s) 8 16.8 C C  Delay (s) 8 16.8 C C  Delay (s) 8 16.8 C C  Outmon to Capacity ratio 0.06  I so the capaci	Effective Green, g (s)	10.1	41.4	26.1	26.1	9.8	9.8	
Section   Sect	Actuated g/C Ratio	0.16	89.0	0.43	0.43	0.14	0.14	
Akersion (s)         2.0         4.8         3.9         3.9         2.0         2.0           Cap (vph)         565         2390         1506         674         248         222           Perm         co.10         0.28         co.32         co.06         6.04         0.03           Perm         0.60         0.41         0.76         0.02         0.03           Perm         0.60         0.41         0.76         0.05         0.41         0.19           elady         d.         2.37         4.5         14.9         10.3         2.0         0.03           no Fcior         1.00         1.00         1.00         1.00         1.00         1.00           an Exciso         1.1         0.2         2.4         0.0         0.4         0.1           belay (s)         4.7         17.3         10.4         2.4         2.3.4           LOS         A         B         C         C         C           Delay (s)         A         B         C         C         C           Control Delay         A         B         C         C         C           Overtiol Delay         A         B	Clearance Time (s)	4.4	2.7	6.5	6.5	9.6	2.6	
Cap (vph)         565         2390         1506         674         248         222           Prof         -0.10         0.28         -0.32         -0.06           Perm         -0.10         0.28         -0.03         -0.03           Perm         0.60         0.41         0.76         0.05         0.41         0.19           Pelay, dt         23.7         4.5         149         100         1.00         1.00         1.00           Pelay, dt         1.1         0.2         2.4         0.0         0.4         0.1         1.00           Pelay, dt         1.1         0.2         2.4         0.0         0.4         0.1         1.00           Delay, ds         1.7         17.3         10.4         24.4         23.4         2.2           LOS         A         B         B         C         C         C           LOS         A         B         C         C         C         C           A control Delay         1.46         HCM 2000 Level of Service         C         C         C           Oycle Length's Tailo         6.13         Sum of tost time (s)         1         C         C	Vehicle Extension (s)	2.0	4.8	3.9	3.9	2.0	2.0	
Prof.         c0.10         0.28         c0.32         c0.06           Perm         c0.10         0.28         c0.32         c0.06           Perm         0.60         0.41         0.76         0.05         0.03           Peley, d1         23.7         4.5         14.9         10.3         24.0         0.33           on Factor         1.00         1.00         1.00         1.00         1.00           lad Delay, d2         1.1         0.2         2.4         0.0         0.4         0.1           erive         C         A         B         B         C         C           Delay (s)         9.8         1.6.8         2.3.7         C         C           LOS         A         B         B         C         C           Drough (s)         9.8         1.6.8         2.3.7         C           A         B         C         C         C           O Volume to Capacity ratio         0.6         HCM 2000 Level of Service           Overleading (min)         61.3         Sum of lost time (s)           A read of min         15         ICU Level of Service	Lane Grp Cap (vph)	299	2390	1506	674	248	222	
Perm         0.002         0.003           Perm         0.60         0.41         0.75         0.05         0.41         0.19           Pelay, d1         2.3.7         4.5         1.49         10.3         2.40         2.33           On Factor         1.00         1.00         1.00         1.00         1.00         1.00           Rai Delay, d2         1.1         0.2         2.4         0.0         0.4         0.1           Revice         C         A         B         B         C         C           Delay (s)         C         A         B         C         C         C           Delay (s)         A         B         C         C         C         C         C           O Control Delay         A         B         C         C         C         C         C         C         C         C         C         C	//s Ratio Prot	00.10	0.28	c0.32		90.00		
0.60	//s Ratio Perm				0.02		0.03	
belay, d1 23.7 4.5 14.9 10.3 24.0 23.3  on Factor 1.00 1.00 1.00 1.00 1.00  Ind Delay, d2 1.1 0.2 2.4 0.0 0.4 0.1  Delay (s) 4.7 17.3 10.4 24.4 23.4  C A B B C C C  Delay (s) A B B C C C  Delay (s) A B B C C  Ontrol Delay Control Delay 14.6 HCM 2000 Level of Service  Oyche Length 7 11.0 5.0 0.0 0.0  Oxform Capacity 17 0.0 0.0  Oxform Capacity 17 0.0 0.0  Oxform Capacity 18 0.0 0.0 0.0  Oxform Capacity 18 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	v/c Ratio	09:0	0.41	92.0	0.05	0.41	0.19	
on Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	23.7	4.5	14.9	10.3	24.0	23.3	
lat Delay, d2 1.1 0.2 2.4 0.0 0.4 0.1  erwice C A B B C C  Delay (s) A B C C  Delay (s) A B C  Control Delay  O Volume to Capacity ratio 0.66  Cycle Length (s) 6.13  Sum of lost time (s)  In Capacity Utilization 6.75% ICU Level of Service 1.4 or Control Delay  In Capacity Utilization 6.75% ICU Level of Service 1.4 or Control Delay  In and Croun 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	1.00	1.00	
24.9   4.7   17.3   10.4   24.4   23.4     Delay (s)	Incremental Delay, d2	Ξ:	0.2	2.4	0.0	0.4	0.1	
C A B B C C 9.8 16.8 23.7 A B C C  (C C C C C C C C C C C C C C C C C	Delay (s)	24.9	4.7	17.3	10.4	24.4	23.4	
9.8 16.8 23.7  A B C  (Capacity ratio 0.66 8.0m of lost time (s) 1.5% ICU Level of Service 1.5.5% ICU Level of Ser	Level of Service	ပ	A	В	В	ပ	U	
A B C  Applies to the control of the	Approach Delay (s)		8.6	16.8		23.7		
14.6 HCM 2000 Level of Service	Approach LOS		A	В		ပ		
lay 14.6 HCM 2000 Level of Service -Capacity ratio 0.66 0.1.3 Sum of lost time (s) Utilization 57.5% ICU Level of Service	Intersection Summary							
Capacity ratio 0.66 h (s) 61.3 Sum of lost time (s) Utilization 57.5% ICU Level of Service 15	HCM 2000 Control Delay			14.6	Ħ	3M 2000	evel of Service	В
h (s) 61.3 Sum of lost time (s) Utilization 57.5% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		99.0				
Utilization 57.5% ICU Level of Service 15	Actuated Cycle Length (s)			61.3	S	m of lost	time (s)	16.5
15	Intersection Capacity Utilizat	loi		57.5%	2	U Level o	Service	8
Critical Land (France)	Analysis Period (min)			7				
	Critical Lane Groun			2				

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>&gt;</i>	<b>/</b>	ţ	4	•	<b>←</b>	•	٠	<b>→</b>	•
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	‡	*-	r	<b>₽</b> ₽	
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         0.95         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	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   1400   1000 1000 1000 1000 1000 1000	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   Prof. NA   Prof	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   250   2.5   4.4   0.9   5.1   43.4     0.18   0.18   2.0   2.0   2.0     0.17   0.17   0.17   0.10   0.10     0.17   0.18   0.17   0.17   0.11     0.18   0.19   1.00   1.00   1.00   1.00     0.10   0.10   0.10   0.10   0.10     0.10   0.10   0.10   0.10   0.10     0.10   0.10   0	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

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Balboa Transit Station 10: Olney St & Balboa Ave

Horizon Year with Preferred LU
Timing Plan: AM Peak Period

dovement EBL  ane Configurations     Iraffic Volume (vph)   57  iture Volume (vph)   57  deal Flow (vphp)   1900  deal Flow (vphp)   44	<b>EBT</b> → 521	EBR	WBI						2		
-	<b>4↑</b> 521			WBT	WBR	NBL	NBT	MBR	SBL	SBT	SBR
-	521		F	₩			4			4	
_		20	46	165	17	19	192	91	1	236	14
	521	20	46	165	17	19	192	91	1	236	14
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	5.1		4.4	2.0			4.9			4.9	
1.00	0.95		1.00	0.95			1.00			1.00	
1.00	0.99		1.00	66.0			96:0			0.99	
0.95	1.00		0.95	1.00			1.00			1.00	
1770	3519		1770	3491			1781			1846	
0.95	1.00		0.95	1.00			16.0			86:0	
Satd. Flow (perm) 1770	3519		1770	3491			1728			1810	
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
	266	22	20	179	18	21	509	66	12	257	15
RTOR Reduction (vph) 0	4	0	0	10	0	0	53	0	0	4	0
ane Group Flow (vph) 62	584	0	20	187	0	0	300	0	0	280	0
Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases 5	2		-	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	14.6		1.4	12.9			11.9			11.9	
	0.35		0.03	0.30			0.28			0.28	
	2.1		4.4	2.0			4.9			4.9	
(ehicle Extension (s) 2.0	5.8		2.0	2.5			2.0			5.0	
ane Grp Cap (vph) 133	1214		28	1064			486			206	
00.04	c0.17		0.03	0.05							
							c0.17			0.15	
0.47	0.48		98.0	0.18			0.62			0.55	
Jniform Delay, d1 18.7	10.9		20.4	10.8			13.2			12.9	
	1.00		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	11.1		89.2	10.9			14.9			13.7	
В	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	ervice		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%	⊇	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

*	SBT	319	1.03	89.2	0.0	89.2	~230	# 406	328		311	_	0	_	1.03					
-	NBT	639	0.83	33.4	0.0	33.4	326	#239	315		770	0	0	0	0.83				ے	
Ļ	WBT	574	0.40	23.3	0.0	23.3	107	203	1076		1449	0	0	0	0.40		te.		be longe	
<b>/</b>	WBL	49	69.0	94.7	0.0	94.7	32	m#95		20	11	0	0	0	69:0		ally infini		eue may	
†	EBT	1382	0.97	49.0	0.0	49.0	~493	#656	276		1430	0	0	0	0.97		theoretic	cycles.	acity, qu	cycles.
١	EBL	30	0.32	57.5	0.0	57.5	70	21		20	101	0	0	0	0.30		ity, queue is	um after two	exceeds car	um after two
	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	<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	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	EBI 1611 1611 1611 1611 1611 1611 1611 16	WBU WBU 0000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBT 496 496 496 496 496 496 695 695 695 659 159	WBR 120 120 1900	SBL 171 171 170 1.00 0.97	SBR 48	
ns h) h) h) PHF (vph)		0.92 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBT 496 496 496 1900 4.9 0.97 1.00 3436 0.92 539 15	120 120 1900	SBL 171 171 1900 4.9 1.00 0.97	SBR 48	
ns hh) hch hch hch hch hch hch hch hch hch		0.92 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	476 496 496 1900 1900 4.9 0.97 11.00 3436 0.92 539 15	120 120 1900	171 171 171 1900 4.9 1.00 0.97	48	
oh) PHF (vph)		0,92 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	496 496 1900 4.9 0.95 1.00 3436 1.00 3.436 0.92 5.39 15 654	120	171 171 1900 4.9 1.00 0.97	48	
PHF (vph)		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	496 1900 4.9 0.95 0.97 1.00 3436 1.00 3436 0.92 539 15	1900	171 1900 4.9 1.00 0.97		
PHF (vph)		1900 0.92 0 0 0 0	1900 4.9 0.95 0.97 1.00 3436 1.00 3436 0.92 539 15	1900	1900 4.9 1.00 0.97	48	
PHF (vph)		0.92 0 0 0 0	4.9 0.95 0.97 1.00 3436 1.00 3436 0.92 539 15		4.9 1.00 0.97	1900	
PHF (vph)		0.92 0 0 0	0.95 0.97 1.00 3436 1.00 3436 0.92 539 15		1.00		
PHF (vph)		0.92 0 0 0	0.97 1.00 3436 1.00 3436 0.92 539 15		0.97		
PHF (vph)		0.92 0 0 0	1.00 3436 1.00 3436 0.92 539 15		, ,		
PHF (vph)		0.92 0 0 0 0	3436 1.00 3436 0.92 539 15 654		96:0		
PHF (vph)		0.92 0 0 0	1.00 3436 0.92 539 15 654		1740		
PHF (vph)		0.92 0 0 0	3436 0.92 539 15 654		96.0		
		0.92 0 0 0	0.92 539 15 654		1740		
		0 0 0	539 15 654	0.92	0.92	0.92	
		0 0	15	130	186	52	
(vph)	>	0 Prot	654	0	=	0	
P	1751	Prot		0	227	0	
		5	NA		Prot		
0	2	-	9		4		
Permitted Phases							
Actuated Green, G (s) 7.5	77.9		66.2		18.1		
Effective Green, q (s) 7.5			66.2		18.1		
0	0.73		0.62		0.17		
	5.1		4.9		4.9		
Vehicle Extension (s) 2.0			4.1		2.0		
Lane Grp Cap (vph) 125	2600		2145		297		
	_		0.19		c0.13		
Perm							
			0.30		0.77		
	7.4		9.2		41.9		
_			0.92		1.00		
Incremental Delay, d2 1.1			0.4		10.1		
20			8.8		52.0		
Level of Service D	V		V		۵		
Approach Delay (s)	5.9		8.8		52.0		
Approach LOS	A		A		O		
Intersection Summary							
HCM 2000 Control Delay		10.7	HC	M 2000 L	HCM 2000 Level of Service	ervice	В
HCM 2000 Volume to Capacity ratio		0.72					
Actuated Cycle Length (s)		106.0	Sur	Sum of lost time (s)	ime (s)		14.4
Intersection Capacity Utilization		72.3%	<u> </u>	Level of	Service		O
Analysis Period (min)		15					
c Critical Lane Group							

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Synchro 9 Report Page 24

Balboa Transit Station 13: Lee St & Grand Ave

Horizon Year with Preferred LU Timing Plan: AM Peak Perlod

<b>√</b>	WBT NBL		0.23 0.61						1401 337		2902 545	0 0	11 0	0 0	0.03 0.00
<b>\</b>	WBL	141	19.0	59.1	0.0	59.1	93	151		400	274	0	0	0	051
†	EBT	1898	0.81	17.1	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	Doducod vilo Datio

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>	<b>/</b>	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   0.94   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   0.95   1.00   0.97   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 4.4 2.0 2.0 6.0 0.2 1.00 6.0 0.	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 D A D 10.7 47.4 B HCM 2000 Level of Service 10.60 5.06 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 6.04  0.67 0.23 0.49  4.46 2.1 46.5  1.00 1.00  1.00 1.00  6.0 0.2 1.0  6.0 0.2 1.0  6.0 0.2 1.0  7.0.6 0.0  1.0.7 47.4  B HCM 2000 Level of Service  0.76  1.0.6 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 5.0.6 2.3 47.4 D A D 10.7 47.4 B D 11.8 HCM 2000 Level of Service 0.76 10.0 Sum 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 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 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 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 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 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 B D A A A B D A A A B D A A B D A A A B D A A A B D 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     1973   3539   2896   0.02   0.02   0.02   0.02     1984   100   0.29   0.00   0.00   0.00     1985   118   0.6   0.2   0.00   0.00   0.00     1986   1980   0.00   0.00   0.00   0.00   0.00     1980   1980   0.00   0.00   0.00   0.00     1980   1980   0.00   0.00   0.00   0.00   0.00   0.00   0.00     1980   1980   0.00	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	<b>₩</b>				
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 0.2  dz 1.10 0.29  dz 1.10 0.29  dz 1.10 0.29  dz 1.11 0.6 0.29  dz 1.11 0.6 0.2  dz 1.11 0.6 0.29  dz 1.1	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 1770 3539 3504 1770 1309 100 1770 1845 720 51 0 0 0 1770 1845 720 51 0 0 0 1770 1840 1840 1840 1770 1840 1840 1770 1840 1840 1770 184	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     150   100   100   100     150   100   100   100     150   100   100   100     150   100   100   100     150   100   100   100     150   100   100   100     150   100   100   100     150   100   100     150   100   100     150   100   100     150	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   720   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.18 0.0 0.29  co.18 0.0 0.29  co.18 0.0 0.29  co.19 0.00  co.29 0.00  co.30 0.00	RTOR Reduction (vph)	0	0	<del>-</del>	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) 6.1 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.2 1.0 0.29  d.2 11.8 0.6 0.2  7.5 0.6 1.0  Delay A A A A A  A A A A  HCM 2000 Level of Service  1.00 0.58  gth (s) 1.30  1.50.0 Sum of lost time (s)  1.10 0.58  gth (s) 1.30  1.30  1.30  1.30  1.30  1.30  1.30  1.30  1.30	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 (\$) 2.9 6.4 8.0 0.2 (\$) 3.0 0.2 (\$) 4.0 0.2 (\$) 4.0 0.2 (\$) 4.0 0.0 (\$) 5.0 0.0 (\$) 5.0 0.0 (\$) 6.0 0.2 (\$) 7.0 0.2 (\$) 6.0 0.2 (\$) 7.0 0.2 (\$) 7.0 0.2 (\$) 7.0 0.2 (\$) 8.0 0	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  6.48 0.0 2.9  6.48 0.0 2.9  1.00 1.00 0.29  2.0 4.1 A A  Indianol Copacity ratio 0.58  9.01 (S) Sum of lost time (S) on 1.50.0  1.50 Sum of lost time (S) 1.50.0  1.50 Sum of lo	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 0.00 A A A 0.00 A A A A 0.00 A A A A A 1.00 A A A A 1.00 A A A A 1.00 A A A I.00 A A I.00 A A I.00 A A I.00 A A I.00 A A I.00 A A A I.00 A A I.00 A A I.00 A A I.00 A A I.00 A I.00 A A I.00 A I.00	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 (100 0.00) 1.50 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 8 0.6 0.2 9 0.6 1.0 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 1.55 1.57	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</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 #189 358 195 192 358 225 225 225 299 299 299 299 225 225 299 299</td> <td>299 1632 530 975 918 0.084 0.082 0.084 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	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 #189 358 195 192 358 225 225 225 299 299 299 299 225 225 299 299	299 1632 530 975 918 0.084 0.082 0.084 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   Feb.   Feb.   MeR   Seb.   Sep.			Ì				•	
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	۴	ŧ	ŧ	N.	£	¥.	
275 1501 488 897 845 91 1900 1900 1900 1900 1900 1900 15.7 5.7 5.7 4.9 4.0 100 0.95 0.95 0.88 0.97 1.00 1.00 1.00 1.00 0.85 1.00 0.85 0.95 1.00 1.00 1.00 0.95 1.00 1.70 3539 3539 2787 3433 1583 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 0.00 0.00 0.90 0.92 0.92 0.92 0.00 0.00 0.00 0.95 1.00 0.00 0.00 0.00 0.95 1.00 0.00 0.00 0.00 0.95 0.00 0.00 0.00 0.00 0.95 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	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	
1 100 0.95 0.95 0.88 0.97 1.00 0.85 0.98 0.97 1.00 0.85 0.98 0.97 1.00 0.85 0.98 0.97 1.00 0.85 0.99 0.95 1.00 0.85 0.90 0.95 1.00 0.85 0.90 0.95 1.00 0.95 0.90 0.95 0.90 0.90 0.90 0.90 0	Total Lost time (s)	2.7	4.9	2.7	2.7	4.9	4.0	
100 100 100 085 100 085 100 085 100 095 100 100 100 100 100 085 100 085 100 095 100 100 100 095 100 095 100 100 100 095 100 095 100 100 100 095 100 095 100 095 100 100 095 100 095 100 095 100 100 095 100 09	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	Fit 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 15.2 42.0 20.3 25.4 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 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 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.00 0.30 0.30	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 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 0.0 20.9 5.9 3 33.4 20.9 5.9 3 38.7 HCM 2000 Level of Service Capacity ratio 1.50 0.93 Sum of lost time (\$) Utilization 7.38% ICU Level of Service 1.50 0.93 Sum of lost time (\$) 1.50 0.93 Sum of lost time (\$) 1.50 0.93 Sum of lost time (\$)	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 6.4 9     5.7 4.9 5.7 6.4 9     5.0 3.6 2.0 2.0 3.6     5.0 3.6 2.0 2.0 3.6     5.0 3.6 0.27     5.0 3.6 0.27     5.0 4 0.15 0.09 0.0.27     6.0 4 0.15 0.09 0.0.27     7.0 1.00 1.00 1.14 3.38 1.21 1.00     1.0 1.00 1.14 3.38 1.21 1.00     1.0 1.0 1.0 1.14 3.38 1.21 1.00     1.0 1.0 1.0 1.14 3.38 1.21 1.00     1.0 1.0 1.0 1.2 7.5 0.1     1.0 8 C E D A A A A A A A A A A A A A A A A A A	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  1.0 1.0 1.14 3.38 1.2 1.10  1.3 2 2.2 1.2 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 75.7 37.0 0.1  1.6 0.9 3.8 7 MCM 2000 Level of Service  1.6 0.9 3.8 7 MCM 2000 Level of Service  1.7 0.9 3.8 7 MCM 2000 Level of Service  1.8 3.8 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	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 2.35 2.20 2.44 0.0  1.00 1.00 1.14 3.38 1.21 1.00  1.01 1.01 1.01 3.38 1.21 1.00  1.02 1.02 1.2 7.5 0.1  1.03 2.0 5.2 1.2 7.5 0.1  1.0 1.0 1.0 1.14 3.38 1.21 1.00  2.0 1.2 1.2 7.5 0.1  2.0 9 59.3 33.4  C E D A  In (s) 36.7 HCM 2000 Level of Service  Capacity ratio 0.93  1.50 Sum of lost time (s)  Utilization 7.38% ICU Level of Service  1.50 0.93 Sum of lost time (s)  1.50 0.93 Sum of lost time (s)	Effective Green, g (s)	15.2	45.0	20.3	20.3	23.2	75.0	
2.0 3.6 2.0 2.0 3.6 3.8 4.9 3.8 2.0 2.0 3.6 3.8 4.9 4.9 3.8 4.0 4.0 4.0 6.15 0.09 0.0.27 0.06 0.8 4 0.82 0.55 0.35 0.87 0.06 0.8 4 0.82 0.55 0.35 0.87 0.06 0.8 4.1.9 1.3.2 3.6 2.2 1.2 7.5 0.1 0.0 1.00 1.00 1.14 3.38 1.21 1.00 0.1 0.0 1.4 3.38 1.21 1.00 0.1 0.0 1.00 1.00 1.00 1.00 1	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 1.2 7.5 0.01 4.19 17.1 290 75.7 37.0 0.1 4.19 17.1 290 75.7 37.0 0.1 4.19 17.1 290 75.7 33.4 A 5.0 5.9 59.3 3.4 A 6.0 5.9 59.3 3.4 A 6.0 5.9 59.3 3.4 A 6.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Clearance Time (s)	2.7	4.9	2.7	2.7	4.9		
388 1981 957 754 1061 1583  0.17	Vehicle Extension (s)	2.0	3.6	2.0	2.0	3.6		
0.17	Lane 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 C C E C C C Capacity ratio 0.93 Sum of lost time (s) Dulization 13.8% ICU Level of Service 1.5 0.9 1	Progression Factor	1.00	1.00	1.14	3.38	1.21	1.00	
41,9 17,1 29,0 75,7 37,0 0,1	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  L  L  L  L  L  L  L  L	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	CM 2000	evel of Service	D
h (s) 75.0 Sum of lost time (s) Utilization 73.8% ICU Level of Service 15	HCM 2000 Volume to Capacit	ty ratio		0.93				
Utilization 73.8% ICU Level of Service 15	Actuated Cycle Length (s)			75.0	S	im of lost	time (s)	16.3
15	Intersection Capacity Utilization	uo		73.8%	೨	U Level o	f Service	Q
	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>	<b>√</b> BE	← NBI	→ SBT	SBR	
ane Group Flow (vph)	931	110	1472	834	278	
//c Ratio Control Delay	33.2	39.9	21.7	20:0	0.30 8.3	
lueue 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	
section Summary						
itersection 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

Movement   EBL   EBR   NBL   NBT   SBR	A A constant							
National Process   National Pr	Movement	EBF	EBR	NBL	NBT	SBT	SBR	
728 129 101 1354 767 256  1900 1900 1900 1900 1900 1900  4.4 4 5.0 156 256  4.4 4 6 5.0 156 256  4.4 4 7 5.0 156 256  4.4 4 6 0.95 100 1900  6.98 1.00 1.00 0.85  6.98 1.70 1.00 1.00 0.85  6.98 1.70 1.00 1.00 1.00  7.91 140 110 1472 834 278  10 0 10 0 10 1.00  10 0 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 1.00  10 10 10 10 1.00  10 10 10 10 1.00  10 10 10 10 10 10 10  10 10 10 10 10 10 10  10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10 10  10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 10 10  10 10 10 10 10 10 1	Lane Configurations	N.		je.	*	*	<b>R</b> .	
728 129 101 1354 767 256 1900 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	728	129	101	1354	191	256	
1900   1000   1000	Future Volume (vph)	728	129	101	1354	191	256	
44	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
0.97 1.00 0.95 0.95 1.00 0.96 0.98 1.00 0.98 0.98 1.00 1.00 0.85 0.98 1.00 0.98 0.99 1.00 1.00 0.85 0.99 1.00 1.00 0.85 0.99 1.00 1.00 0.85 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.00	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   1.00     0.96   0.95   1.00   1.00   1.00     0.96   0.95   1.00   1.00   1.00     0.97   0.92   0.92   0.92   0.92     0.92   0.92   0.92   0.92   0.92     0.92   0.92   0.92   0.92   0.92     0.93   0.94   0.92   0.92   0.92     0.94   0.95   0.92   0.92   0.92     0.95   0.96   0.96   0.96     0.96   0.97   0.97   0.97     0.97   0.97   0.97   0.97     0.98   0.99   0.96   0.96     0.99   0.90   0.90   0.90     0.90   0.90   0.90   0.90     0.90   0.90   0.90   0.90     0.91   0.90   0.90   0.90     0.91   0.92   0.91   0.41     0.92   0.93   0.94   0.48   4.8     0.90   0.90   0.56   0.41   0.41     0.91   0.92   0.92   0.92     0.92   0.93   0.95   0.95     0.93   0.95   0.94   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.95   0.95   0.95     0.95   0.95   0.95   0.95     0.	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 0.92 1.00 1.00 0.97 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.94 0.92 0.92 0.91 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	E	0.98		1.00	1.00	1.00	0.85	
3388 1770 3539 3539 1883   1969	Fit Protected	96:0		0.95	1.00	1.00	1.00	
1996   1997   100   100   100   1388   1388   1389   1383   1388   1383   1388   1383   1388   1383   138	Satd. Flow (prot)	3388		1770	3539	3539	1583	
170   3539   1583   1838   1770   3539   3539   1583   1770   3539   3539   1583   1770   3539   3539   1583   1770   363   2092   093   093	-It 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   0,91   1,10   1,1	Satd. Flow (perm)	3388		1770	3539	3539	1583	
hy) 21 140 110 1472 834 278 hy) 910 0 10 105 hy) 910 0 110 1472 834 278 hy) 910 0 10 1472 834 173 hy) 910 0 10 1472 834 173 hy 10 1472 834 1743 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) Prot NA NA Perm  4 5 2 6 5 3 6 7 42.3 30.6 30.6 5 3.3 6.7 42.3 30.6 30.6 6 0.31 0.09 0.56 0.41 0.41 7.2 0 4.0 4.8 4.8 7.2 0 4.0 4.8 4.8 7.2 0 4.0 4.8 4.8 7.2 0 4.0 0.42 0.24 7.3 10.6 0.42 0.24 7.3 1.5 1995 14.3 645 7.0 0.7 0.6 0.42 0.24 7.3 8.3 1.2 12.2 17.2 14.8 7.3 8.3 12.2 17.2 14.8 7.4 33.2 12.2 17.2 14.8 7.5 0.8 1.5 8 7.5 0.8 1.5 8 7.5 0.8 1.5 8 7.6 0.8 1.5 8 7.7 0.8 1.5 8 7.8 1.5 0.8 1.5 8 7.9 0.8 1.5 8 7.9 0.8 1.5 1.5 8 7.9 0.8 10.8 10.8 10.8 10.8 10.8 10.8 10.8	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  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. 33.3 6.7 42.3 30.6 30.6  1. 20 2.0 40. 48 4.8  1. 00.9 0.56 0.41 0.41  4.4 5.0 5.6 5.6  1. 20 4.0 4.8 4.8  1. 00.27 0.06 0.42 0.24  0.37 0.06 0.42 0.24  0.41 0.08 1.54 1.00  2. 7.3 8.3 2.0 1.7 148  2. 7.3 8.3 2.0 1.7 1.0  2. 7.3 8.3 2.0 1.7 1.0  2. 0 0.89 1.54 1.00 1.00  2. 0 0.89 1.54 1.00 1.00  3. 1.7 37.9 20.8 18.9 15.8  2. 0 0.89 1.54 0.00 1.00  2. 0 0.89 1.54 0.00 1.00  3. 1.7 37.9 20.8 18.9 15.8  2. 0 0.89 1.54 0.00 1.00  3. 1.7 0.00 0.89 0.89 1.54 0.00 1.00  3. 1.7 0.00 0.89 0.89 1.54 0.00 1.00  3. 1.7 0.00 0.89 0.89 0.89 0.89 0.89 0.89 0.89	REDICTION (vph)	21	0	0	0	0	105	
Prot Prot NA NA Perm 4	ane Group Flow (vph)	910	0	110	1472	834	173	
4 5 2 6 6  23.3 6.7 42.3 30.6 50.6  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 0.41 0.41  2.0 20 4.0 4.8 4.8 4.8  1.052 158 1995 1443 645  0.027 0.06 0.042 0.24  24.4 33.2 12.2 17.2 14.8  1.00 0.87 0.70 0.74 0.58 0.27  2.3 8.3 2.0 1.7 1.0  2 0.89 1.54 1.0 1.00  2 3.1.7 37.9 20.8 18.9 15.8  C D C B B B  31.7 2.0 18.1  C C B Capacity ratio 0.85  1.50 0.8	Turn Type	Prot		Prot	NA	NA	Perm	
s) 23.3 6.7 42.3 30.6 30.6  123.3 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 0.41 0.41  2.0 2.0 4.0 4.8 4.8  1052 158 1995 1443 645  0.07 0.04 0.05 0.04  2.44 33.2 12.2 17.2 14.8  1.00 0.87 0.70 0.74 0.58 0.27  2.44 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  2 0.8 1.3 1.7 1.0  C D B B  C D C D B  C D C B B  C D C D B  C D C D B  C D D C D B  C D D C D B  C D D C D D C D D  C D D D D D D D D  C D D D D	Protected Phases	4		2	2	9		
(a) 23.3 6.7 42.3 30.6 30.6 (b) 23.3 6.7 42.3 30.6 30.6 (c) 31 0.09 0.56 0.41 0.41 (c) 4.4 5.0 5.6 5.6 (d) 20 0.56 0.42 0.48 4.8 (d) 20 0.27 0.06 0.42 0.24 (d) 4.4 3.2 12.2 17.2 14.8 (e) 7.3 8.3 2.0 1.7 1.0 (e) 7.3 8.3 2.0 1.7 1.0 (f) 0.89 1.54 1.00 1.00 (g) 0.89 1.54 0.01 (g) 0.89 1.54 0.00 1.00 (g) 0.89 0.89 0.89 0.89 0.80 (g) 0.89 0.89 0.80 (g) 0.89 0.80 (g) 0.89 0.80 (g) 0.80 (	Permitted Phases						9	
23.3 6.7 42.3 30.6 30.6  4.4 4.4 5.0 6.0 4.8 4.8  1.05 2.0 2.0 4.0 4.8 4.8  1.05 1.05 0.41 0.41  2.0 2.0 4.0 4.8 4.8  1.05 0.47 0.6 0.42  2.4 3.2 12.2 17.2 14.8  2.4 3.2 12.2 17.2 14.8  2.4 3.3 2.0 1.7 1.0  2. 7.3 8.3 2.0 1.7 1.0  2. 7.3 8.3 2.0 1.7 1.0  2. 7.3 8.3 2.0 1.7 1.0  2. 0 8 B B  3.1.7 2.0 8 18.9 15.8  2. 0 8 B B  3.1.7 2.0 8 18.9 15.8  3.1.7 3.7.9 20.8 18.9 15.8  3.1.7 1.0 0.8  3.1.7 0.8 18.9 15.8  3.1.8 0.8 18.9 15.8  3.1.9 0.8 18.9 15.8  3.1.0 0.8 18.9 18.9 18.9  3.1.0 0.8 18.9 18.9 18.9 18.9 18.9 18.9 18.9 18	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 5.6 1.052 2.0 4.0 4.8 4.8 4.8 1.052 1.58 1995 1443 645 0.027 0.06 0.0.42 0.24 0.11 0.87 0.70 0.74 0.58 0.27 24.4 33.2 12.2 17.2 14.8 1.100 0.89 1.54 1.00 1.00 2 31.7 37.9 20.8 18.9 15.8 C D C B IS 31.7 2.20 18.1 C D C B Service C Capacity ratio 0.85 Sum of lost time (s) in (s) 1.00 1.000 0.85 Sum of lost time (s) 1.00	Effective Green, g (s)	23.3		6.7	42.3	30.6	30.6	
44	Actuated g/C Ratio	0.31		0.09	0.56	0.41	0.41	
2 0	Clearance Time (s)	4.4		4.4	2.0	9.6	2.6	
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 17.2 148  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 2.08 18.9 15.8  C C B C B B  31.7 2.00 18.1  C C B C B B  ANALY 2000 Level of Service  C C B C B  10.00 0.85 Sum of lost time (s)  10.01 0.05 Sum of lost time (s)	Vehicle Extension (s)	2.0		2.0	4.0	4.8	4.8	
co.27	-ane 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 3.1 7 37.9 2.08 18.9 15.8 C D C B B B 3.1 7 2.00 18.1 C C B C B B B 4.2	//s Ratio Prot	c0.27		90:0	c0.42	0.24		
0.87 0.70 0.74 0.58 0.27 2.44 3.32 1.22 17.2 14.8 1.00 0.89 1.54 1.00 2 7.3 8.3 2.0 1.7 1.0 2 0.0 8 18.9 15.8 C D C B B B 31.7 2.00 1.81 C C B B B AND C C B B B AND C C B B B B AND C C B B B B AND C C B B B AND C C B B B B AND C C B B AND C	//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 1.00 1.00 1.00 1.00 1.00 1.00 1.00	//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 TS C D C T	Jniform Delay, d1	24.4		33.2	12.2	17.2	14.8	
2 7.3 8.3 2.0 1.7 1.0  3.1.7 37.9 20.8 18.9 15.8  C D C B B B  3.1.7 2.2.0 18.1  C C B C B B B  4 22.0 18.1  C B C B B B  4 22.0 18.1  C B B B  5 2.0 18.1  C B B B  7 2.0 18.1  C B B  7 2.0 18.1	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 C B B B  22.0 18.1  C C B  Y  Y  Y  Y  LUlization 70.1% ICU Level of Service  1.5 Sum of lost time (s)  1.5 ICU Level of Service  1.5 Sum of lost time (s)  1.5 ICU Level of Service  1.5 ICU Level of Service  1.5 Sum of lost time (s)  1.5 ICU Level of Service  1.5 Sum of lost time (s)  1.5 ICU Level of Service	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 B B  4 C B B  22.0 18.1 C B B  4 C B B  5 C B B  6 C B B  7 C B B  7 C B B  7 C B B  7 C B B  8 C	Delay (s)	31.7		37.9	20.8	18.9	15.8	
31.7 22.0 18.1  C B  Y  Y  X 23.3 HCM 2000 Level of Service chapacity ratio 75.0 Sum of lost time (s) 75.0 Sum of lost time (s) 70.1% ICU Level of Service 1.0 Intilization 70.1% ICU Level of Service	evel of Service	ပ		Ω	ပ	В	В	
Y         C         B           Y         23.3         HCM 2000 Level of Service           elay         23.3         HCM 2000 Level of Service           o Capacity ratio         0.85         Sum of lost time (s)           In (s)         75.0         Sum of lost time (s)           Utilization         70.1%         ICU Level of Service           15         15	Approach Delay (s)	31.7			22.0	18.1		
189   23.3 HCM 2000 Level of Service   Capacity ratio   0.85   Num of lost time (s)   15.0   Sum of lost time (s)   101 Level of Service   15   15   15   15   15   15   15   1	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           15         15	ntersection Summary							
Capacity ratio 0.85 Sum of lost time (s) 75.0 Sum of lost time (s) 10.1 Level of Service 15.15 ICU Level of Service 15.15	HCM 2000 Control Delay			23.3	Н	:M 2000	Level of Service	U
h (s) 75.0 Sum of lost time (s) Utilization 70.1% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.85				
Utilization 70.1% ICU Level of Service 15	Actuated Cycle Length (s)	,		75.0	S	m of lost	time (s)	14.4
	ntersection Capacity Utilizat	ion		70.1%	⊇	U Level o	f Service	U
	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

	<b>&gt;</b>	4	<b>←</b>	•	۶	<b>→</b>	
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	
Queue Length 50th (ft)	06	0	391	19	83	174	
Queue Length 95th (ft)	148	46	512	47	m137	228	
Internal Link Dist (ft)	1203		376			749	
Tum Bay Length (ft)		75		160	185		
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							
				ŀ	ŀ		

m Volume for 95th percentile queue is metered by upstream signal.

Synchro 9 Report Page 32 KHA Oueues

Horizon Year with Preferred LU Timing Plan: AM Peak Period Balboa Transit Station 17: Mission Bay Dr & Damon Ave

																																				B		83	В	
<b>→</b>	SBT	*	<i>611</i>	779	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	3.5	9.0 A	96	A		HCM 2000 Level of Service				
<u>ب</u> ب	NBR SBL	r R	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	c0.05			7.3 60.0		7.0 0.3		1			HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
<b>←</b>	S NBT	**	·		_			1.00	0 1.00	` '	0 1.00	3 3539		4 1542		5 1542	Z	2			_	٥		3.8		00.44					777		12.7	2		14.9	0.59	150.0	29.6%	7
<b>*</b>	WBL WBR	F	86 59		_						0.95 1.0	1770 1583	0.92 0.92	93 64		93	Prot Perm	4				٥	4.4 4.4		145 129	c0.05			66.7 63.4		0.0		9 69	Ш			vratio		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)	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	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	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

<b>→</b>	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.
<b>←</b>	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
<b>†</b>	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	<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	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					
<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	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   EBI   EBI   MBI								-	-				
Part	rement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
5   5   5   5   5   5   5   5   5   5	ane Configurations		4			4		F	₹		*	<b>₽</b>	
tory (hgh) 1900 1900 1900 1900 1900 1900 1900 190	raffic Volume (vph)	0	0	0	45	0	87	0	1076	110	259	838	0
tor (yph)  100  100  100  100  100  100  100  1	ile volume (vpm)	1000	1000	1900	1900	1000	1900	1900	1000	1900	1900	1000	1900
tor for first property of the following follow	I Lost time (s)	3	8	3	8	4.9	2	2	5.0	200	4.4	5.0	3
100   100	Util. Factor					1.00			0.95		1.00	0.95	
100   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   0.95   0.92   0						0.91			0.99		1.00	1.00	
1668 3490 1770 3539  1689 1000 1770 3539  16092 092 092 092 092 092 092 1000  1504 0 0 0 133 0 0 170 120 282 911  100 0 0 0 113 0 0 1283 0 00 0 0  100 0 0 113 0 0 1283 0 100 282 911  100 0 1 10 0 1283 0 10 0 0 0 0  100 0 0 113 0 0 1283 0 10 0 0 0  100 0 0 0 113 0 0 1283 0 10 0 0  100 0 0 0 110 0 0 1283 0 10 0  100 0 0 0 110 0 0 1283 0 10 0  100 0 0 0 1 110 0 0 1283 0 10 0  100 0 0 0 1 1 0 0 0 1283 0 10 0  100 0 0 0 0 1 1 0 0 0 1283 0 10 0  100 0 0 0 0 0 1 1 0 0 0 1 0 0 0  100 0 0 0	rotected					86.0			1.00		0.95	1.00	
100   0.98   1.00   0.95   1.00   1.00   0.95   1.00   1	. Flow (prot)					1668			3490		1770	3539	
1504   3490   1770   3539     1092   092   092   092   092   092   092   092     10	ermitted					0.89			1.00		0.95	1.00	
0,92 0,92 0,92 0,92 0,92 0,92 0,92 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 56 45,1 100 15 1 56 45,1 100 15 1 56 45,1 100 15 1 50 007 0 060 0.13 0 1 112 2098 236 2 1 20 1 112 2098 236 2 1 20 1 10 0 010 0.01 0.01 0.01 0 0 0 32.5 145 147.9 0 0 32.5 14.5 147.9 0 0 0 32.5 14.5 147.9 0 0 0 0 0.00 0.00 Level of Service C 0 0 0 0 0.00 0.00 0.00 0.00 0.00 0.00	-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 0 111 0 0 1283 0 282     4 4 4 4 4 1 6	-low (vph)	0	0	0	49	0	95	0	1170	120	282	911	0
0 0 0 11 0 0 1283 0 282     4 4 4 4 1 1 6 5 5 6 45.1     5 6 45.1   10.0 5 5 6 45.1     6 7	R 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	11	0	0	1283	0	282	911	0
4 4 4 1 6 5  1 5 6 45.1 10.0 5  5 6 45.1 10.0 5  5 6 45.1 10.0 5  6 0.07 0.60 0.13 0  1 12 2.098 2.36 2  1 12 2.098 2.36 2  0 0.10 0.10 0.61 1.19 0  0 0.10 0.10 0.61 1.19 0  0 0.0 32.5 14.5 147.9  0 0.0 32.5 14.5 147.9  0 0.0 32.5 14.5 17.9  0 0.0 32.5 14.5 17.9  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0  1 0.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	Type				Perm	NA		Prot	NA		Prot	NA	
1	cted Phases		4			4		<del>-</del>	9		2	2	
5.6 45.1 10.0 5.6 45.1 10.0 5.0 4.4 10.0 5.0 4.4 10.0 5.0 0.0 7 0.60 0.13 0.0 0.1	itted Phases	4			4								
5.6 45.1 10.0 5.6 45.1 10.0 5.0 6.0 6.0 6.1 6.0 6.0 6.1 6.0 6.0 6.1 6.1 6.0 6.0 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	ted Green, G (s)					9.9			45.1		10.0	59.5	
0.07 0.60 0.13 0.44 2.0 3.2 2.0 112 2.098 236 2 2.0 4.4 2.0 0.07 0.01 0.01 0.01 1.19 0.01 3.2.3 9.4 32.5 1.00 0.1 1.00 0.41 1.19 0.05 0.0 32.5 14.5 14.5 A  2.8 HCM 2000 Level of Service C 0.66 7.50 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	tive Green, g (s)					9.6			45.1		10.0	59.5	
112   2098   23   2   2   2   2   2   2   2   2	ited 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 0.61 1.19 (0.10  0.10 1.43 0.96  2.5.8 HCM 2000 Level of Service C  0.5.6 Sum of lost time (s) 14.3  15.0 Sum of lost time (s) 14.3  15.1 14.3 14.3  15.1 14.3 14.5  15.1 14.5 14.5  16.1 14.5 14.5  17.1 14.5 14.5  17.2 14.5 14.5  17.3 14.5 14.5  17.4 14.5 14.5  17.4 14.5 14.5  17.5	ance Time (s)					4.9			2.0		4.4	2.0	
112 2098 236 2  00.01 0.10 0.61 1.19 ( 0.10 0.10 0.61 1.19 ( 0.10 0.10 0.61 1.19 ( 0.10 0.10 0.61 1.19 ( 0.0 32.5 14.5 14.7 ( 0.0 32.5 14.5 14.7 ( 0.0 32.5 14.5 14.7 ( 0.0 0.25.8 HCM 2000 Level of Service C 0.66 750 Sum of lost time (s) 14.3 14.3 15.1 ( 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10	le Extension (s)					2.0			3.2		2.0	3.2	
0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	Grp Cap (vph)					112			2098		236	2807	
258 HCM 2000 Level of Service C C C Sum of lost time (s) 143 C C C C C C C C C C C C C C C C C C C	atio Prot								c0.37		00.16	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 C 0.56 750 Sum of lost time (s) 14.3 15.0 Sum of lost time (s) 14.3	atio Perm					0.01							
32.3 9.4 32.5 100 1.43 0.96 100 32.5 14.5 147.9 0.0 32.5 14.5 147.9 0.0 32.5 14.5 17.9 0.0 32.5 14.5 F 0.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	atio					0.10			0.61		1.19	0.32	
100 143 096  100 143 096  101 1107 1107  110 116.7  125.8 HCM 2000 Level of Service C  0.56 Sum of lost time (s)  150 Sum of lost service C  151 153 143 143 155 143 155 143 155 143 155 143 143 155 143 155 143 155 143 155 155 155 155 155 155 155 155 155 15	rm Delay, d1					32.3			9.4		32.5	2.2	
25.8 HCM 2000 Level of Service C C 14.3 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	mental Delay, d2					0.1			1.0		116.7	0.3	
0.0 32.5 14.5 A C B B F 25.8 HCM 2000 Level of Service C 0.66 75.0 Sum of lost time (s) 14.3 15.1 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 Sum of lost time (s) 14.3 75.0 Sum of lost time (s) C 15.15 ICU Level of Service C 15.15 ICU Level of Service C	of Service					ပ			В		ш	⋖	
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 IS	oach 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		⋖			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 75.0 Sum of lost time (s) 1 67.4% ICU Level of Service 15	2000 Control Delay			25.8	Н	: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%	⊇	J Level o	f Service			ပ			
	sis 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

	<b>\</b>	<b>—</b>	٠	<b>→</b>	
Lane Group	WBL	NBT	SBL	SBT	
Lane Group Flow (vph)	24	1496	17	2578	
v/c Ratio	0.16	0.33	0.11	0.79	
Control Delay	18.8	2.5	34.8	4.4	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	18.8	2.5	34.8	4.5	
Queue Length 50th (ft)	2	0	<b>∞</b>	2	
Queue Length 95th (ft)	23	142	6m	480	
Internal Link Dist (ft)	221	096		535	
Tum Bay Length (ft)			09		
Base Capacity (vph)	365	4512	148	3256	
Starvation Cap Reductn	0	0	0	23	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.07	0.33	0.11	0.80	
Interception Summary					
m Volume for 95th percentile queue is metered by upstream signal.	itile queue is	metered	by upstr	am signal.	
				2	

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)		<b>&gt;</b>	4	•	•	٠	<b>→</b>	
NA	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
18   1855   21   16   2372     1900   1900   1900   1900   1900   1900     4	Lane Configurations	À		4413		F	44	
1900   1000   1000	Traffic Volume (vph)	4	9	1355	21	16	2372	
1900   1900	Future Volume (vph)	4	<u>@</u>	1355	71	91	2372	
1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1,00   0,91   1,00   0,95     1,00   0,99   1,00   1,00   1,00     1,040   5,074   1,770   3,539     1,040   5,074   1,770   3,539     1,040   5,074   1,770   3,539     1,040   5,074   1,770   3,539     1,040   5,074   1,770   3,539     1,050   0,92   0,92   0,92   0,92     1,07   1,07   2,08   1,09     1,07   1,07   1,09   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,07   1,07   1,09     1,08   0,38   0,49   0,85     1,09   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     1,00   1,00   1,09     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     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     1,00   1,00   1,00     1,00   1,00   1,00     1,00   1,00   1,00     1,00   1,00     1,00	Total Lost time (s)	4.0		4.0		4.0	4.0	
0.89 1.00 1.00 1.00 0.99 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	
10.99	Fit	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	Flt Protected	0.99		1.00		0.95	1.00	
1949   100   0.95   100   1640   0.95   100   1504   100   0.95   100   1504   100   1504   100   1504   100   1	Satd. Flow (prot)	1640		5074		1770	3539	
1640   5074   1770   3539   1640   5074   1770   3539   178   1889   1899   1	FIt 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   0,92   0,92   0,93   0,93   0,94   0,9	Satd. Flow (perm)	1640		5074		1770	3539	
hy) 19 20 1473 23 17 2578 hy) 5 0 147 20 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	
hh) 19 0 11 0 0 0 h) 5 0 1495 0 17 2578 h) Prot NA Prot NA 8 2 1 6642 s) 2.8 58.7 1.5 64.2 h 0.04 0.78 0.02 0.86 h 140 0.78 0.02 0.86 h 30 30 3.0 3.0 h 41 3971 35 3029 c0.00 0.29 0.01 c0.73 c0.08 0.38 0.49 0.85 c0.00 0.29 0.01 c0.73 c0.08 0.38 0.49 0.85 c0.09 0.29 0.01 c0.73 c0.08 0.38 0.49 0.85 c0.09 0.29 0.01 c0.73 c0.08 0.38 0.49 0.85 c0.09 0.29 0.01 c0.73 c0.09 0.29 0.01 c0.73 c0.00 0.29 0	Adj. Flow (vph)	4	20	1473	23	17	2578	
hh) 5 0 1495 0 17 2578  Prot NA Prot N	RTOR Reduction (vph)	19	0	<b>,</b>	0	0	0	
Prot   NA   Prot   NA	Lane Group Flow (vph)	2	0	1495	0	17	2578	
8 2 1 6  9 28 58.7 1.5 64.2  1 28 58.7 1.5 64.2  1 0.04 0.78 0.02 0.86  1 0.04 0.78 0.02 0.86  1 0.05 0.00 0.29 0.01 0.73  2 0.08 0.38 0.49 0.85  2 0.08 0.38 0.49 0.85  2 0.08 0.38 0.49 0.85  2 0.08 0.38 0.49 0.85  2 0.08 0.38 0.49 0.85  2 0.08 0.38 0.44 2.9  1.00 1.00 1.00 1.88 0.97  2 0.5 0.5 0.3 5.8 1.8  2 0.5 0.5 0.3 5.8 1.8  2 0.5 0.5 0.3 0.3 1.46  2 0.5 0.5 0.3 1.46  2 0.5 0.5 0.5 0.3 1.46  2 0.5 0.5 0.5 0.5 0.5 0.97  2 0.5 0.5 0.5 0.5 0.97  3 0.4 0.4 0.5 0.97  2 0.5 0.5 0.5 0.5 0.97  3 0.5 0.5 0.5 0.97  4 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	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 0.00 0.29 0.01 0.0.73 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 2 0.5 0.3 5.8 1.8 2 0.5 0.3 4.0 0.87 2 0.5 0.3 4.0 0.87 3 0.7 0.0 0.87 2 0.5 0.3 4.0 0.87 3 0.7 0.0 0.87 4.0 0.8	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           3.0         3.0         3.0         3.0           6.1         3971         3.5         30.2           6.1         3971         3.5         30.2           6.0         0.29         0.01         0.07         0.01           0.0         0.29         0.01         0.07         0.0           2.5         3.6         4.2         2.9         0.0           3.5         4         2.9         4.6         0.0           0.5         0.3         5.8         1.8         4.6           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A	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 5.4 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 3.0 3.0 4.0 6.1 3971 35 3029 c0.00 0.29 0.01 c0.73 c0.08 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 35.4 2.8 45.1 4.6 35.4 2.8 45.1 4.6 A D A 35.4 2.8 45.1 4.6 Copacity ratio 0.87 A HCM 2000 Level of Service co-Capacity ratio 0.87 Copacity ratio 75.0 Sum of lost time (s) Cultization 75.6% ICU Level of Service	Effective Green, g (s)	2.8		58.7		1.5	64.2	
4,0         4,0         4,0           5,0         3,0         3,0           6,1         3971         3,5         30,29           6,0         0,29         0,01         60,73           0,08         0,38         0,49         0,85           34,9         2,5         36,4         2,9           1,00         1,00         1,08         0,97           0,5         0,3         5,8         1,8           2,6         0,3         5,8         1,8           1,00         1,00         1,08         0,97           0,5         0,3         5,8         1,8           1,00         1,00         1,08         0,97           1,00         1,00         1,08         0,97           1,00         1,00         1,08         0,97           1,00         1,00         1,09         0,97           1,00         1,00         1,09         0,97           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	Actuated g/C Ratio	0.04		0.78		0.02	98.0	
3.0   3.0   3.0	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 1.8  3.5.4 2.8 45.1 4.6  A A D A  Y  Y  Y  Y  Y  Vulitzation 75.6% ICU Level of Service 1.05  1.50 Sum of lost time (s)  1.01 1.05  1.05 Sum of lost time (s)  1.01 1.05 Sum of lost time (s)  1.01 1.05 Sum of lost time (s)  1.01 1.05 Sum of lost time (s)	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 D A D A 35.4 2.8 45.1 4.6 D A A D A A 35.4 2.8 4.9 D A A HCM 2000 Level of Service 1.00 0.87 Sum of lost time (s) 1.01 Level of Service 1.02 0.87 Sum of lost time (s) 1.03 75.0 Sum of lost time (s) 1.04 1.05 Service 1.05 0.87 Sum of lost time (s) 1.05 0.87 Sum of lost time (s) 1.06 0.87 Sum of lost time (s) 1.06 0.87 Sum of lost time (s) 1.07 Sum of lost time (s) 1.08 0.87 Sum of lost time (s) 1.09 0.87 Sum of lost time (s) 1.00 0.87 Sum of lost time (	-ane Grp Cap (vph)	61		3971		35	3029	
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 35.4 2.8 45.1 4.6 D A D A D A A 35.4 2.8 45.1 4.6  D A D A D A A 35.4 2.8 4.9  O Capacity ratio 0.87	//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 2.5 0.5 0.3 5.8 1.8 2.6 0.3 5.8 1.8 2.7 0.5 0.3 5.8 1.8 2.8 45.1 4.6 2.9 A D A 35.4 2.8 45.1 4.6 2.9 A A 35.4 2.8 45.1 4.6 2.8 A A 35.4 A A	//s Ratio Perm							
349 25 364 2.9 100 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 D A	//c Ratio	0.08		0.38		0.49	0.85	
100 100 108 097 2 0.5 0.3 5.8 1.8 35.4 2.8 45.1 4.6 D A D A 35.4 2.8 4.9 D A A 35.4 2.8 4.9 A 4.9  Y  Y  Y  In (S)  In	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 35.4 2.8 4.9 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	
D A D A A D A A B A B A A B A A A A A A	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 75.6%  Cultification 75.6%  Cultification 15.6%	Level of Service	٥		⋖		٥	A	
y  y  4.3 HCM 2000 Level of Service of Spacity ratio 0.87 Sum of lost time (s) rutilization 75.0% 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			A	
4.3 HCM 2000 Level of Service 0.87 75.0 Sum of lost time (s) 75.0% ICU Level of Service 15	Intersection Summary							
0.87 75.0 Sum of lost time (s) 75.6% ICU Level of Service 15	HCM 2000 Control Delay			4.3	Ή	M 2000	evel of Service	A
75.0 Sum of lost time (s) 75.6% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.87				
Utilization 75.6% ICU Level of Service 15	Actuated Cycle Length (s)	,		75.0	S	m of lost	time (s)	12.0
15	Intersection Capacity Utilizat	ion		75.6%	ੁ	U Level o	f Service	Q
- Orthor Lan Grain	Analysis Period (min)			15				
	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	۵					Timing Plan: AM Peak Period
	•	4	•	•	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	×	¥C.	*	<b>R</b>		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		A		
Intersection Summary							
Delay			12.1				
Level of Service			В				
Intersection Capacity Utilization	_		35.5%	⊇	ICU Level of Service	Service	A
Analysis Period (min)			15				

Balboa Transit Station
23: Morena Blvd & Costco Dwy
Timing Plan: AM Peak Period

I apa Group		-		•
Laire Gloup	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	844	46	312
v/c Ratio	0.24	0.45	0.17	0.14
Control Delay	10.8	8.5	18.4	4.2
Oueue 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
Oueue 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
Intersection Summan				

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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	<b>→</b>	
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   190   1900   19	ane Configurations	1		₩		r	<b>‡</b>	
1900 1900 1900 1900 1900 1900 1900 1900	raffic Volume (vph)	9 1 0	25 25	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 0.99 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 1.00 0.99 0.99	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 0.91 0.92 0.92 0.92 0.91 0.92 0.92 0.91 0.91 0.93 0.92 0.93 0.93 0.93 0.93 0.94 0.95 0.93 0.95 0.94 0.95 0.95 0.95 0.93 0.95 0.95 0.93 0.95 0.95 0.93 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  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  970 170 170  9	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		<del>-</del>	9	
4.5         14.5         1.2         20.1           4.5         14.5         1.2         20.1           4.9         5.5         4.4         5.5           4.9         5.5         4.4         5.5           4.9         5.5         4.4         5.5           2.0         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           1.3         8         7.9         1.6.8         3.5           8         A         E         A         A           1.3         8.4         5.7         3.5         A           1.3         8         A         B         A           1.3         8         A         B         A           1.3         8.4         1.0         0.0	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     6.04   6.024   6.032     6.05   6.07   6.05     1.00   1.00   1.00     1.00   1.00   1.00     1.39   8.4   5.7   3.5     8.4   5.7   3.5     8.4   5.7   3.5     8.4   5.7   3.5     8.4   5.7   3.5     8.4   5.7   3.5     8.4   5.7   3.5     9.6   HCM 2000 Level of Service     1.39   8.4   8.4     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.4   8.5     1.39   8.5   8.5     1.30   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5   8.5     1.30   8.5     1.30   8.5   8.5     1.30	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 1.3.9 8.4 56.7 3.5 B A E A 13.9 8.4 10.3 B A E A 1	/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	/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 10.8 B B A B B B B A B B B B B B B B B B B B	ncremental Delay, d2	0.1		0.5		40.0	0.0	
B	velay (s)	13.9		8.4		26.7	3.5	
13.9 8.4 10.3 B A B  (c) The control of Service 1.2  (d) The control of Service 1.2  (e) The control of Service 1.2  (f) The c	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         Innoverse	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		
<b>→</b>	SBT	*	356	356	1900	%0	5.7	0.95	1.00	1.00	3539	1.00	3539	0.92	387	0	387	NA	2	2	23.0	23.0	0.56	5.7	5.0	1970	0.11		0.20	4.6	1.00	0.1	4.7	A	12.2	В		ervice					
•	SBL	r	70	20	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	<b>‡</b>	800	800	1900	-3%	0.9	0.95	1.00	1.00	3592	1.00	3592	0.92	870	0	870	NA	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	V		Ĭ		S	2	!	
F	NBU	4	0	0	1900									0.92	0	0	0	Prot	_																			10.7	0.51	41.3	37.5%	15	?
4	WBR	¥.	38	88	1900		4.9	1.00	0.85	1.00	1662	1.00	1662	0.92	4	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									
<b>\</b>	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	2	14.6	В			v ratio		uc		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Grade (%)	Total Lost time (s)	Lane Util. Factor	Į.	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)	Committee of the control of the cont

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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	Dalbua	۷ ۵ ۸	allba	ı	ı		IIIIIIII FIAII. AM F
	•	<i>&gt;</i>	•	<b>←</b>	<b>→</b>	<b>\</b>	
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	7777	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

	^	<b>/</b>	•	•	-	`	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	r	K.	F	₩	₩	*-	
Traffic Volume (vph)	8 8	151	280	1422	218	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	
F	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	1546	237	446	
RTOR Reduction (vph)	0	141	0	0	0	0	
Lane Group Flow (vph)	86	23	304	1546	237	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	31.4	14.5	45.8	
Effective Green, g (s)	6.4	6.4	12.9	31.4	14.5	45.8	
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)	247	221	498	2426	1120	1583	
v/s Ratio Prot			0.17	c0.44	0.07		
v/s Ratio Perm	90:0	0.01				c0.28	
v/c Ratio	0.40	0.10	0.61	0.64	0.21	0.28	
Uniform Delay, d1	17.9	17.2	14.3	4.0	11.5	0.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	<del></del>	0.2	2.2	9.0	0.1	0.4	
Delay (s)	19.0	17.4	16.5	4.6	11.6	0.4	
Level of Service	В	В	В	Þ	В	A	
Approach Delay (s)	18.0			6.5	4.3		
Approach LOS	В			V	A		
Intersection Summary							
HCM 2000 Control Delay			7.1	Ĭ	CM 2000	HCM 2000 Level of Service	٨
HCM 2000 Volume to Capacity ratio	ity ratio		89.0				
Actuated Cycle Length (s)	,		45.8	S	Sum of lost time (s)	time (s)	12.0
Intersection Capacity Utilization	ion		51.0%	೨	U Level o	ICU Level of Service	А
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	ЕБ ка	mps		liming Plan: AM Peak Period
	•	<b>†</b>	ţ	4	•	•	٠	<b>→</b>	
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	
Queue 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	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.

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

> → 丿 人	NBR SBL SBT SBR		150 50 272 47	50 272	_						0.95 1.00		0.92 0.92 0.92 0.92	54 296	0	0 54 333 0	Prot NA	1 6		2.0 30.8		0.03 0.48	4.0 4.0	3.0 3.0	54 1645	c0.03 0.10		_				153.9 9.9	FA	29.3	υ		C		16.0	O	
<b>-</b>	NBT	4.	953	953	1900	4.0	0.95	86:0	1.00	3467	1.00	3467	0.92			1186	NA	2		29.5	29.5	0.46	4.0	3.0	1578	c0.34		0.75	14.6	1.00	2.1	16.7	Ω	17.0	В						
•	NBL	r	6	6	1900	4.0	1.00	1.00	0.95	1770	0.95	1770	0.92	10	0	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			0	
✓	WBR	¥C_	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	ပ				HCM 2000 Level of Service		it 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	O	24.7	O		1CM 2000		Sum of lost time (s)	CU Level	
-	WBL		140		1900								0.92	152	0	0	Split	∞																			ľ				
~	EBR		_		1900								0.92		0																						21.7	0.69	64.8	71.7%	15
†	EBT		10		_		1.00				1.00		0.92				¥	4		3.8		90.0	4.0		107				28.9		0.4			30.5	O						
^	EBL	_	29	52	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					acity ratio		ation	
	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)	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)

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

						•
	<b>&gt;</b>	<b>←</b>	4	٠	<b>→</b>	
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

																																					В		14.7	А		
<b>→</b>	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	0.1	8.7	¥ (	8./1	B		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	-		<del>[</del>	1.	0.03	4.4	2.0	54	c0.03		96:0	17.4	1.00	107.7	- C2 - L22: L	_				CM 2000 I		Sum of lost time (s)	ICU Level of Service		
•	NBR	*	41	41	1900	2.9	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	2.0	1.00	0.0	2.0	₹				Ĭ		S	೨		
<b>←</b>	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	9.0	۵. د	₹ (	7.7	A		10.7	0.55	32.9	44.5%	15	
✓	WBR		48	48	1900								0.92	52	0	0																										
<b>&gt;</b>	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	4.0.4	5.9	מ פ	15.9	B			ty ratio	,	on		
	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	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

# 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	∞			<b>-</b>	
Permitted Phases				$\infty$			
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 E	L
Ordinome Di		2	7.1.1	5	0.01	2	2.2	
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	Ω.
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.7	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

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### 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	100	30	ט טט	ט טט	V UV	0.40	440	C
Diditional 2 to	Ξ	3	0.04	0.04	0.01	2.0	2.5	)
Damon Ave	=	32	20.1	4.0	24.1	0.16	23.5	O
Garnet Ave	=	32	11.7	49.2	6.09	60.0	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	20.0	
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	מאנו						IIIIIII JI I III I CAN I CINA
	4	†	<b>/</b>	ţ	•	<b>→</b>	
Lane Group	EBF	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)	9	#190	m8	326	#405	100	
Internal Link Dist (ft)		374		899	244	450	
Turn Bay Length (ft)	20		20				
Base Capacity (vph)	111	992	11	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.

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KHA Oueues

Horizon Year with Preferred LU Timing Plan: PM Peak Period Balboa Station 1: Olney St & Garnet Ave

	•	†	~	<b>/</b>	ţ	4	•	<b>-</b>	4	٨	<b>→</b>	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>.</u>	¢Ì		F	4₽			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	76	327	120	20	52	72	9
RTOR Reduction (vph)	0	7	0	0	2	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	N		Perm	N		Perm	¥	
Protected Phases		2			9			∞			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		Ф	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	3M 2000	HCM 2000 Level of Service	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  100 092 092 092 092 092  100 100 100 096  3539 3106 1441 3389  0.92 092 092 092 092  0 421 561 1421 865 152  0 0 421 561 1421 865 152  0 0 421 561 1421 865 152  0 0 10 0 0 339 0 022 092  0 421 561 1421 865 152  0 0 2 339 0 022 092  0 421 561 1421 865 152  0 10 0 0 339 0 022  0 10 0 0 339 0 022  0 10 0 0 0 339 0 022  0 10 0 0 0 339 0 022  0 10 0 0 0 339 0 022  0 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 7.2 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 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 0 2 2 4 4 1 5 1 670 220 0 5 2 100 0.33 5 0 5 1 0 0.33 5 0 5 1 0 0.33 5 0 5 1 0 0.33 6 0 1 6 1 112 0 1 2 0.30 0 2 0 20 0 1 2 0.30 0 2 0 0.3 0 1 2 0.30 0 2 0 0.3 0 2 0 0.3 0 3 0.4 0 1 0 0 0.0 0 1 0 0.0 0 1 0 0.0 0 2 0 0.3 0 49 0 6 2 0.2 0 8 6 109 0.0 0 1 1.3 0 1 2 1.2 0 1 2 0.5 0 8 8 3 29.5 A B A C 8 9 3 29.5 A B A C 8 9 3 29.5 A A B A C 8 9 12.3 1.2 29.5 A A B A C 8 9 3 29.5 A A A A A A A C 8 9 3 29.5 A A A A A A C 8 9 3 29.5 A A A A A A C 8 9 3 3 29.5 A A A A A A A C 8 9 3 3 29.5 B 10 10 10 10 10 10 10 10 10 10 10 10 10	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 8 C C 8.9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	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 0.0 0.2 0.3 0.5 0.4 0.0 0.0 0.2 0.3 0.5 0.4 0.0 0.0 0.3 0.5 0.4 0.0 0.0 0.3 0.5 0.4 0.0 0.0 0.3 0.5 0.0 21.4 0.0 1.0 1.3 0.0 0.0 21.4 0.0 0.0 21.4 0.0 0.0 2.4 0.0 0.0 2.4 0.0 0.0 2.4 0.0 0.0 2.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	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 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 0.30 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 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 8.9 8.9  A A A C  8.9 8.9 8.9  A A C  8.9 8.9 8.9  A A A C  8.9 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 C 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 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 8.6 109 0.0 21.4 8.6 109 0.0 21.4 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  14.7 HCM 2000 Level of Service 2010 67.0 Sum of lost time (s) 5210 Sum of lost time (s)	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 8.9 8.3 29.5 A A A C A A A 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 12.3 1.2 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) 5.245 5.255 5.257 5	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	Incremental Delay, d2		0.3	1.5	1.2	<del>-</del>		
A B A C 8.9 8.3 29.5 A A A C A A A C 14.7 HCM 2000 Level of Service 67.0 Sun of lost time (s) 52.5 Cation 63.6% ICU Level of Service 15. 15. 15. 15. 15. 15. 15. 15. 15. 15.	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							
20dy ratio 0.70 Sum of lost time (s) 22dion 6.3.6% ICU Level of Service 15	HCM 2000 Control Delay			14.7	H	<b>SM 2000</b>	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

	4	<b>†</b>	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		264		
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	

<sup>95</sup>th 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

EBT 708 2 0.49 0.5 0.0	
Tow (vph) 1708 2222 0.49 0.63 0.49 0.63 0.5 1.1 0.0 0.1 0.5 1.2 0.5 1.2 0.5 1.2 0.5 1.8 0.5 1.	
0.49 0.63 0.5 1.1 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 0.5 1.2 0.5 1.8	
0.0 0.1 0.5 1.2 0.5 1.2 0.6 (#) 0 18	
0.5 1.2 1.50th (ft) 0 18	
50th (ft) 0 18	
c	
Zuene Lengin 95in (ii) 0 mzz 0	
nternal Link Dist (ft) 806 574	
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>&gt;</i>	<b>/</b>	ţ	1	•	•	•	٠	<b>→</b>	•
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 Cili 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

	•	†	<i>&gt;</i>	<b>/</b>	<b>↓</b>	✓	•	•	•	٠	<b>→</b>	•
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

	4	<b>†</b>	~	<b>&gt;</b>	ţ	4	•	•	4	٠	<b>→</b>	•
Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	ŧ	₩	F	<b>‡</b>	*-	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	16:0	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
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	7	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	ட	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

	t	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	<b>†</b>	<b>/</b>	<b>\</b>	ļ	4	•	<b>←</b>	•	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									
<ul> <li>c Critical Lane Group</li> </ul>												

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		
	†	~	<b>/</b>	ţ	•	•	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	*	¥C.		*		¥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	*	*	×	<b>*</b>	
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	L.		62.0%	ಶ	ICU Level of Service	Service	В
Analysis Period (min)			15				
Critical Lane Group							

Synchro 9 Report Page 15

Balboa Station 9: Clairemont Dr & Garnet Ave

Horizon Year with Preferred LU Timing Plan: PM Peak Period

<b>→</b>	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	630		1282	0	0	0	0.94
<b>\</b>	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

EBI         EBI         WBI         WBI         WBI         WBI         NBI         NBI         NBI         SBI           351         1004         50         538         954         160         72         392         435         346           351         1004         50         538         954         160         72         392         435         346           1900		•	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	✓	•	•	•	٠	-	•
National State	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
351 1004 50 538 954 160 72 392 435 346     353 1004 50 538 954 160 72 392 435 346     1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	F	₩		£	₩		r	\$	*	r	<b>₩</b>	
351   1004   50   538   954   160   72   332   435   346     44   44   64   64   64   72   332   435   346     44   67   67   67   67   67   67   67	Traffic Volume (vph)	351	1004	20	538	954	160	72	392	435	346	909	253
1900   1900	Future Volume (vph)	351	1004	20	238	954	160	72	392	435	346	909	253
44   57   44   64   44   53   44   44   44   100   1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100   0.97   0.95   0.97   0.95   1.00   0.96   1.00   0.90   0.90   1.00   0.90   0	Total Lost time (s)	4.4	2.7		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   1.00   0.95   1.00   1.00   0.95   3.433   3.514   3.433   3.463   1.770   3.539   1.583   1.770   3.539   1.583   1.770   3.539   3.514   3.433   3.463   3.453   1.770   3.539   1.583   1.770   3.539   3.545   3.770   3.539   3.545   3.770   3.539   3.545   3.770   3.539   3.545   3.770   3.539   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.545   3.750   3.75	Fr	1.00	0.99		1.00	86:0		1.00	1.00	0.85	1.00	96:0	
3433   3514   3433   3463   1770   3539   1583   1770   3539   1583   1770   3433   3443	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Color   Colo	Satd. Flow (prot)	3433	3514		3433	3463		1770	3539	1583	1770	3383	
He to 20	Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
HF 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	Satd. Flow (perm)	3433	3514		3433	3463		1770	3539	1583	1770	3383	
382   1091   54   585   1037   174   78   426   473   376     382   1091   54   585   1037   174   78   426   473   376     382   1082   1082   1082   1082   1082     5	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) 80 2 0 6 0 9 0 0 0 60 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	382	1091	24	282	1037	174	78	426	473	376	929	275
(s) 162 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 22.6 51.8 9.0 23.5 46.1 28.7 (s) 16.2 46.1 23.5 2.0 3.0 2.0 0.0 0.1 0.1	RTOR Reduction (vph)	0	2	0	0	6	0	0	0	09	0	33	0
Prot NA   Prot NA   Prot NA   Prot NA   Prot NA	Lane Group Flow (vph)	382	1143	0	585	1202	0	78	426	413	376	006	0
(s)         16.2         46.1         22.6         51.8         9.0         23.5         46.1         28.7           (s)         16.2         46.1         22.6         51.8         9.0         23.5         46.1         28.7           (s)         16.2         46.1         22.6         51.8         9.0         23.5         46.1         28.7           (s)         16.2         46.1         22.6         51.8         9.0         23.5         46.1         28.7           (s)         20.3         3.0         6.0         0.7         0.3         4.4         6.4         4.4         6.1         28.7           (s)         2.0         3.7         0.6         0.7         0.0         0.20         0.20         20           (s)         1.5         1.5         1.7         1.7         1.7         1.7         1.7         1.0	Turn Type	Prot	M		Prot	NA		Prot	NA	vo+mq	Prot	NA	
S	Protected Phases	2	2		-	9		co	∞	-	7	4	
(\$) 162 461 226 518 9.0 235 461 287 (\$) 162 461 226 518 9.0 235 461 287 (\$) 162 461 226 518 9.0 235 461 287 (\$) 162 461 226 518 9.0 235 461 287 (\$) 220 212 24 2.0 20 21 22 24 2.0 20 21 22 24 2.0 20 20 21 22 24 2.0 20 20 21 22 24 2.0 20 20 21 20 2	Permitted Phases									∞			
s) 162 46.1 226 518 9.0 235 46.1 287 47 4.4 5.3 4.4 5.4 5.3 4.4 5.4 5.4 5.3 4.4 5.4 5.4 5.3 4.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Actuated Green, G (s)	16.2	46.1		22.6	51.8		0.6	23.5	46.1	28.7	43.2	
0.12 0.33 0.16 0.37 0.06 0.17 0.33 0.20 2.2 2.4 4.4 4.4 5.3 2.0 3.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Effective Green, g (s)	16.2	46.1		22.6	51.8		0.6	23.5	46.1	28.7	43.2	
1,4   5,7   4,4   6,4   4,4   5,3   4,4   3,95   1151   5,51   1274   113   5,91   5,10   2,0	Actuated g/C Ratio	0.12	0.33		0.16	0.37		90.0	0.17	0.33	0.20	0.31	
S	Clearance Time (s)	4.4	2.7		4.4	6.4		4.4	5.3	4.4	4.4	5.3	
395   1151   551   1274   113   591   518   361     0.11   0.33   0.17   0.35   0.04   0.12   0.13   0.27   0.04     0.97   0.99   1.06   0.94   0.69   0.72   0.80   1.04     0.97   0.99   1.06   0.94   0.69   0.72   0.80   1.04     0.87   0.91   0.91   0.91   0.91   0.91   0.91     0.87   0.91   0.91   0.91   0.91   0.91   0.91     0.88   0.88   0.88   0.88   0.88   0.88     0.89   0.81   0.81   0.88   0.88   0.88     0.89   0.81   0.81   0.81   0.81   0.81     0.89   0.81   0.81   0.81   0.81   0.81     0.89   0.81   0.81   0.81   0.81   0.81     0.89   0.81   0.81   0.81   0.81   0.81     0.89   0.81   0.81   0.81   0.81   0.81     0.89   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.81   0.81   0.81   0.81   0.81   0.81   0.81   0.81     0.80   0.81   0.	Vehicle Extension (s)	5.0	3.5		2.0	3.0		5.0	2.4	2.0	2.0	5.6	
0.11 c0.33 c0.17 0.35 0.04 0.12 0.13 c0.21 c 0.97 0.99 1.06 0.94 0.69 0.72 0.81 6.20 47.1 59.0 43.0 645 55.5 43.1 56.0 d2 36.1 24.7 55.8 13.8 13.6 4.0 7.8 58.6 98.1 71.9 1.14 56.9 72 0.80 1.00 d2 36.1 24.7 55.8 13.8 13.6 4.0 7.8 58.6 98.1 71.9 14.8 56.9 78.1 59.5 144.6 F F F F F F F F F F F F F F F F F F F	Lane Grp Cap (vph)	395	1151		551	1274		113	169	518	361	1038	
0.97   0.99   1.06   0.94   0.69   0.72   0.13	v/s Ratio Prot	0.11	00.33		c0.17	0.35		0.04	0.12	0.13	c0.21	c0.27	
0.97 0.99 1.06 0.94 0.69 0.72 0.80 1.04 0.69 0.72 0.80 1.04 0.62 47.1 59.0 43.0 6.45 55.5 55.5 5.0 1.04 0.70 1.00 1.00 1.00 1.00 1.00 1.00 1.00	v/s Ratio Perm									0.13			
620 471 590 430 645 555 431 560  42 36.1 24.7 55.8 138 16.4 1.00 1.00  42 36.1 24.7 55.8 138 13.6 4.0 7.8 58.6  98.1 71.9 114.8 56.9 78.1 59.5 50.9 14.6  F E E E D I F  72.1 HCM 2000 Level of Service E  10.2 Sum of lost time (s) E  11.0 Sum of lost time (s) F  11.0 Sum of lost time (s) F  12.1 Sum of lost time (s) F  13.2 Sum of lost time (s) F  14.2 Sum of lost time (s) F  14.3 Sum of lost time (s) F  14.4 Sum of lost time (s) F  14.5 Sum of lost time (s) F  15.5 Sum of lost time (s) F  15.5 Sum of lost time (s) F  16.5 Sum of lost time (s) F  17.5 Sum of lost time (s) F  18.5 Sum of lost time (s) F  18.5 Sum of lost time (s) F  19.5 Sum of lost	v/c Ratio	0.97	0.99		1.06	0.94		69.0	0.72	0.80	1.04	0.87	
d2 36.1 24.7 55.8 13.8 13.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Uniform Delay, d1	62.0	47.1		29.0	43.0		64.5	55.5	43.1	26.0	46.0	
d2 36.1 24.7 55.8 13.8 13.6 4.0 7.8 58.6 98.1 71.9 114.8 56.9 78.1 59.5 50.9 114.6 F F F F F F F F F F F F F F F F F F F	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
98.1 71.9 114.8 56.9 78.1 59.5 50.9 114.6 F E E D F F E E D F F E E D F F E E D F F E E D F F E E D F F E E D F F E E D F F E E D F F E E E D F F E E E D F F E E E D F F E E E D F F E E E D F F E E E D F F E E E E	Incremental Delay, d2	36.1	24.7		55.8	13.8		13.6	4.0	7.8	9.89	7.7	
F E F E E D F F F E E E D F F 75.7 56.8 E D F F F E E D F F F E E D F F E E D F F E E D F F E E D F F E E D F F E E D F F E E D F F E E E D F F E E E D F F E E E E	Delay (s)	98.1	71.9		114.8	56.9		78.1	59.5	50.9	114.6	53.8	
78.4 75.7 56.8  F F F F F F F F F F F F F F F F F F F	Level of Service	ш	ш		ш	ш		ш	ш	٥	ш	Ω	
E E E  Introduction    Page 2017  Pelay 72.1 HCM 2000 Level of Service    10.2 Sum of lost time (s)    140.7 Sum of lost time (s)    150.0 Level of Service     150.0 Level of Service     150.0 Level of Service     150.0 Level of	Approach Delay (s)		78.4			75.7			26.8			71.2	
72.1 HCM 2000 Level of Service 1.02 1.40.7 Sum of lost time (s) 91.2% ICU Level of Service 15	Approach LOS		ш			ш			ш			ш	
72.1 HCM 2000 Level of Service 1.02 1.40.7 Sum of lost time (s) 91.2% ICU Level of Service 15	Intersection Summary												
1.02 140.7 Sum of lost time (s) 91.2% ICU Level of Service 15	HCM 2000 Control Delay			72.1	ヹ	CM 2000	Level of S	ervice		ш			
140.7 Sum of lost time (s) 9.1.2% ICU Level of Service 15	HCM 2000 Volume to Capaci	ty ratio		1.02									
91.2% ICU Level of Service 15	Actuated Cycle Length (s)	,		140.7	S	um of lost	time (s)			20.5			
Analysis Period (min) 15 C. Critical Lane Group	Intersection Capacity Utilizati	on		91.2%	೨	U Level o	f Service			ш			
c. Critical Lane Group	Analysis Period (min)			15									
a di trodi monto di della	c Critical Lane Group												

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KHA Queues

Synchro 9 Report Page 18

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
<b>†</b>	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   ERI   ERI   MBI   MBI   MBI   MBI   MBI   MBI   SBI		1	†	<u>/</u>	<b>&gt;</b>	ţ	4	•	<b>—</b>	•	٠	<b>→</b>	•
1	Movement	EBL	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	70	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	. <del></del>	1.00	0.98		1.00	0.99			0.98			0.98	
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  C B E B C B C B B C C B B C C Capacity ratio 0.06  C Capacity ratio 0.06  C Capacity ratio 0.06  Indization 169	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	8	0	0	Ξ	0
Prot NA Prof NA Perm NA NA Perm 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			∞			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 2.0 0.03 0.17 0.02 2.1 0.09 0.17 0.02 2.1 0.09 0.17 0.02 2.1 0.09 0.17 0.00 2.1 0.09 0.17 0.00 2.2 0.2 5.0 2.0 0.2 5.0 2.0 0.2 5.0 2.0 0.2 7.0 2.0 0.1 0.0 0.1 0.0 0.1 0.0 2.0 0.2 0.1 0.0 2.0 0.2 0.2 0.2 2.	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)	9.	16.3		4.8	19.4			16.5			16.5	
0.03	ffective Green, g (s)	1.8	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     17   102   0.12   0.09   0.17   0.024     17   13   13   1.00   1.00   1.00     17   1.00   1.00   1.00   1.00   1.00     18   19   10   1.00   1.00   1.00     19   19   19   1.00   1.00     10   1.00   1.00   1.00   1.00     10   1.00   1.00   1.00     10   1.00   1.00   1.00     10   1.00   1.00   1.00     10   1.00   1.00   1.00     10   1.00   1.00     10   1.00   1.00     10   1.00   1.00     10   1.00   1.00     10   1.00   1.00     10   10   10     10   10   10     10   10	ctuated g/C Ratio	0.03	0.31		0.09	0.37			0.32			0.32	
S	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   0.93   0.45   0.024     24,7   13,9   23,4   12,3   16.0     1,00   1,00   1,00   1,00   1,00     2,4   1,4   1,00   1,00   1,00     3,8   0,2   50,2   0,2   5.6     4,1   7,3   12,5   2,16     5,6   15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,5   2,16     15,7   12,6   2,16     15,7   12,6   2,16     15,8   12,8	/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   100	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 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6	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 2.16 2.16 2.16 2.16 2.16 2.16 2.16 2.16	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 C Delay  20.4 HCM 2000 Level of Service C to Capacity ratio 0.66 Sum of lost time (s) 14.4 y Utilization 15.9% ICU Level of Service B 17.1	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	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			ပ			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		ပ			
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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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)         45         1073         146         1486         351           IpFlow (vph)         654         0.06         0.09         0.064           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 0.64 104 1054 0.64 104 1054 0.64 104 1054 0.64 1	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   EBL   EBT   EBR   WBL   WBT   WBT   NBL   NBT   NBT   NBL   NBT		4	<b>†</b>	<i>&gt;</i>	<b>&gt;</b>	ţ	4	•	•	•	٠	<b>→</b>	•
1900   1900	Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
190   41   930   57   134   1151   216   30   174   119     190   1900   1900   1900   1900   1900   1900     44   5.1   4.4   4.9   4.9   4.9   4.9     100   1900   1900   1900   1900   1900   1900     44   5.1   4.4   4.9   4.9   4.9     100   0.95   1.00   0.98   0.95     100   0.95   1.00   0.98   0.95     100   0.95   1.00   0.95   1.00     1770   3509   1770   3455   1.02     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   343     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1770   3455   1.03     1770   3509   1.04   1.04   1.05     1770   3509   1.04   1.05   1.05     1770   3509   1.04   1.05   1.05     1770   3509   1.04   1.05   1.05     1770   3509   1.04   1.05     1770   3509   1.04   1.05     1770   3509   1.04   1.05     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   3509   1.04     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05     1770   1.05   1.05	-ane Configurations	×	₩₽		<i>y</i> -	₩.			4			4	
190   41   920   57   134   1151   216   30   174   119     190   1900   1900   1900   1900   1900   1900   1900   1900     190   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   0.95   1.00   0.95   1.00   1.00     1.00   0.95   1.00   0.95   1.00   1.00     1.00   0.95   1.00   0.95   1.00   1.00     1.00   0.95   1.00   0.95   1.00   1.00     1.00   0.95   1.00   0.95   1.00   0.92     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   0.92   0.92     1.00   0.95   0.90   0.92   0.92   0.92     1.00   0.95   0.90   0.92   0.92   0.92     1.00   0.95   0.90   0.92   0.92   0.92     1.00   0.95   0.90   0.92   0.92     1.00   0.95   0.90   0.92   0.92     1.00   0.95   0.90   0.92   0.92     1.00   0.95   0.90   0.92   0.92     1.00   0.95   0.90   0.92   0.92     1.00   0.95   0.90   0.90   0.92     1.00   0.95   0.90   0.90   0.92     1.00   0.95   0.90   0.90   0.92     1.00   0.95   0.90   0.90   0.90     1.00   0.95   0.90   0.9	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	24
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   0.95   1.00   0.95   0.92   0.92     1.00   0.04   0.146   1.140   0.05   0.93     1.00   0.04   0.146   1.817   0.83     1.00   0.05   0.06   0.04   0.03     1.00   0.00   0.08   0.04   0.03     1.00   0.00   0.00   0.04   0.03     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     1.00   0.00   0.00   0.00     1.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00   0.00   0.00     1.00	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	<b>#</b>	1.00	0.99		1.00	86.0			0.95			86:0	
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     1791   26   26   26   26   26   26     1792   26   26   26   26   26     1793   26   26   26   26   26     1794   27   27   27   27   27     1794   27   27   27   27   27     1795   25   27   27   27     1795   27   27   27   27     1795   27   27   27   27     1795   27   27   27   27     1795   27   27   27     1795   27   27   27     1795   27   27   27     1795   27   27   27     1795   27     1795   27	It Protected	0.95	1.00		0.95	1.00			1.00			0.99	
1770 3509 100 0.95 100 0.95   1633   1633   1634   1770 3456   1633   1633   1634   1770 3456   1633   1633   1634   1236   1634   1236   1634   1236   1634   1236   1634   1236   1634   1236   1634   1236   12	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	3509		1770	3455			1633			1205	
1011   62   146   1251   235   33   189   129     1011   62   146   1251   235   33   189   129     1011   10   10   10   0   0   17   0     1011   1011   1011   10   0   0   334   0     1011   1011   1011   1011   1011   1011     1011   1011   1011   1011   1011   1011   1011     1011   1011   1011   1011   1011   1011   1011     1011   1011   1011   1011   1011   1011   1011   1011     1011	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 0	(dj. Flow (vph)	45	1011	62	146	1251	235	33	189	129	102	232	26
Prof. NA   Prof. NA   Perm NA	RTOR 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) 6.7 61.8 14.0 70.5 9 63.3 (s) 6.7 61.8 18.4 1817 5.3 3 6.7 61.8 184 1817 5.3 3 6.7 61.8 184 1817 5.3 3 6.7 61.8 18.4 1817 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	urn Type	Prot	₹		Prot	Ν		Perm	NA		Perm	NA	
(s) 5.5 6.18 14.0 70.5 8 43.8 (s) 5.5 6.18 14.0 70.5 43.8 43.8 (s) 6.04 0.46 0.10 0.53 0.33 4.9 (s) 7.2 16.18 184 1817 5.3 2.0 6.3 0.03 0.00 0.03 0.30 0.00 0.00 0.0	Protected Phases	2	7		_	9			00			4	
(s) 5.5 61.8 14.0 70.5 43.8 (s) 5.5 61.8 14.0 70.5 43.8 (s) 5.5 61.8 14.0 70.5 43.8 (s) 6.5 61.8 14.0 70.5 43.8 (s) 6.5 61.8 14.0 70.5 63.3 (s) 6.3 6.4 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7	Permitted Phases							∞			4		
S   5.5 618	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     0.01   1.00   1.00   1.07   0.83   1.00     0.02   1.15   1.07   0.83   1.00     0.03   0.30   2.99   3.98     0.05   0.05   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   0.008   0.043   0.20     0.05   0.06   0.79   0.81   0.05     0.05   0.06   0.79   0.81   0.063     0.05   0.06   0.79   0.83   1.00     0.07   0.83   1.00     0.08   25.1   39.8     0.09   31.9   C C D D Delay     0.09   134.0   Sum of lost time (s)   14.0     0.09   134.0   Sum of lost time (s)   14.0     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.01   1.01   1.01     0.00   1.01   1.01   1.0	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   1.00 1.00 1.07 0.83 1.00   2 11.5 2.1 15.9 3.3 1.17   74.8 30.1 78.8 25.1 39.8   2.0   C C D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   Delay 37.9 HCM 2000 Level of Service   D D   D   D   D   D   D   D   D   D	/ehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
0.03   0.30   0.008   0.043   0.20   0.008	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		c0.08	c0.43							
0.62 0.66 0.79 0.81 0.63 38.2     0.62 0.66 0.79 0.81 0.63 38.2     0.63 2. 280 5.86 2.63 3.82 3.82     0.70 1.00 1.07 0.83 1.00     0.74 8 30.1 7.8 25.1 39.8     0.74 8 30.1 7.8 25.1 39.8     0.75   0.75   0.75     0.75   0.75   0.75     0.75   0.75	/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 10.7 0.83 1.0.0 10.0 10.0 10.7 0.83 1.0.0 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  74.8 2.1 15.9 3.3 1.7  74.8 2.1 15.9 3.3 1.7  74.8 2.5 1 39.8  E	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 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 C D D C C C C D D C C C C C D D C C C C C C D D C	oelay (s)	74.8	30.1		78.8	25.1			39.8			86.5	
31.9 29.9 39.8 C C D C D Delay 10 Capacity ratio 0.89 HCM 2000 Level of Service 0.89 (1.34.0 Sum of lost time (s) 134.0 Sum of lost time (s) 14.6% (CU Level of Service 1.55.0 S	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) 14.0 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) 14 94.6% ICU Level of Service 15	pproach LOS		ပ			ပ			О			ш	
37.9 HCM 2000 Level of Service 0.89 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	HCM 2000 Control Delay			37.9	Ĭ	CM 2000	Level of S	ervice		Ω			
1340 Sum of lost time (s) 94.6% ICU Level of Service 15	ICM 2000 Volume to Capacity	ratio		0.89									
2ation 94.6% 15	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	f Service			ш			
Company of the Control of the Contro	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

	^	<b>†</b>	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					
<ul> <li>Wolume for 95th percentile queue is metered by upstream signal.</li> </ul>	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

Lane Configurations		4	<b>†</b>	l <b>ė</b>	ļ	4	٠	*	
March   Marc	Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR	
20 1164 0 1471 71 79 28 20 1164 0 1471 71 79 28 20 1164 0 1900 1900 1900 1900 1900 1900 1900 1	Lane Configurations	×	+	4	₩₽		>		
20 1164 0 1471 71 79 28 1900 1900 1900 1900 1900 1900 4 4 4 4 9 4.9 100 0.95 0.95 1.00 0.95 1.00 0.99 0.97 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 3515 1733 1770 3539 0.92 0.92 0.92 0.92 1770 3539 0.92 0.92 0.92 0.92 1770 3539 0.92 0.92 0.92 0.92 1770 3539 0.94 0.105 0.09 1771 115 1030 125 1772 115 1030 125 1773 0.38 0.37 0.09 1774 1775 0.09 1775 0.38 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.97 0.00 1775 0.42 0.42 0.48 0.06 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.54 0.54 1775 0.39 0.43 0.62 0.65 1775 0.39 0.43 0.54 1775 0.39 0.48 0.065 1775 0.39 0.48 0.065 1775 0.39 0.49 0.49 1777 0.39 0.40 0.48 0.065 1775 0.39 0.48 0.065 1775 0.39 0.48 0.065 1775 0.39 0.49 0.49 1777 0.39 0.49 0.49 1777 0.39 0.49 0.49 1777 0.39 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.4	Traffic Volume (vph)	70	1164	0	1471	71	79	28	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	70	1164	0	1471	71	79	28	
4.4   5.1   4.9   4.9     1.00   0.95   0.95   1.00     1.00   0.95   0.95   1.00     1.00   0.95   0.97   1.00     1.00   0.95   0.97   1.00     1.00   0.95   0.97   1.03     1.70   35.39   35.15   1.733     1.70   35.39   35.15   1.733     22   1265   0.92   0.92   0.92     32   1265   0.92   0.92   0.92     32   1265   0.92   0.92   0.92     4.3   11.5   10.30   1.25     5   2   1265   0   1674   0   105   0     4.3   11.15   103.0   1.2.5     5   2   4.1   2.0   1.2.5     6   3   4.4   5.1   4.9   4.9     6   4   5.1   4.9   4.9     6   5   2.04   2.01   1.01     6   5   2.04   2.01   1.01     6   6   8   58.7   1.00     6   7   1.00   6.2   65.7     6   8   8   8   8     7   1   HCM 2000 Level of Service     1   1   2.2%   1.34   0.62   8     8   3   1.9   6.2   6.57     9   4   5   1.34   0.62     1   5   2.00     1   3   0.3   0.77   1.00     1   3   0.3   0.77   1.00     1   3   0.3   0.77   1.00     1   3   0.3   0.77   1.00     1   3   0.3   0.77   1.00     1   4   5   1.34   5   1.34     5   5   5   5   5     6   5   5   5   5     7   100   6.2   6.57     8   8   8   8     9   1340   Sum of lost time (s)     10   10   1.34   1.34   1.34     10   10   1.34   1.34   1.34     10   10   1.34   1.34   1.34     10   10   1.34   1.34   1.34     10   10   1.34   1.34   1.34     10   10   1.34   1.34   1.34     10   1.34   1.34   1.34   1.34     10   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34   1.34     10   10   1.34   1.34   1.34   1.34   1.34   1.34     10   10   1.34	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
100 0,95 0,95 1,00     1,00 1,00 0,95 1,00 0,97     1,00 1,00 0,99 1,097 0,97     1,00 1,00 0,96 1,00 0,96     1,70 3539 3515 1,733     1,70 3539 3515 1,733     1,70 3539 3515 1,733     2 1265 0 1599 77 86 30     2 1265 0 1674 0 105 0     1,2 2 1265 0 1674 0 105 0     4,3 1115 1030 1,25 0,09     4,4 3 1115 1030 1,25     4,3 1115 1030 1,25     4,3 1115 1030 1,25     1,3 0,3 0,43 0,62 0,65     1,3 0,3 0,43 0,62 0,65     1,3 0,3 0,43 0,43 0,62 0,65     1,3 0,3 0,43 0,43 0,43 0,40     1,3 0,3 0,43 0,43 0,44     1,07 0,53 0,49 0,77 1,00     1,3 0,3 0,49 0,77 1,00     1,3 0,3 0,49 0,77 1,00     1,3 0,3 0,49 0,77 1,00     1,3 0,3 0,40 0,40 0,40     1,3 0,3 0,40 0,40     1,3 0,3 0,40 0,40     1,4 0,4 0,4 0,4 0,4 0,4 0,4 0,4 0,4 0,4 0	Total Lost time (s)	4.4	5.1		4.9		4.9		
100 100 0.99 0.97 1700 3539 3515 1733 0.95 1.00 1.00 0.96 1770 3539 3515 1733 1770 3539 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 0.92 0.92 0.92 0.92 0.03 0.03 0.03 0.04 0.04 0.04 0.05 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03	Lane Util. Factor	1.00	0.95		0.95		1.00		
170   3539   3515   1733     1770   3539   3515   1733     1770   3539   3515   1733     1770   3539   3515   1733     1770   3539   3515   1733     2	Frt	1.00	1.00		0.99		0.97		
1770 3539 3515 1733   1770 3539 3515 1733   1780 1790 1796 1790 1796   1790 1790 1790 1796   1790 1790 1790 1796   1790 1790 1790 1790 1790 1790   1790 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fit Protected	0.95	1.00		1.00		96:0		
1770   3539   100   100   096     1770   3539   3515   1733     22   1265   0   1599   77   86   30     3   22   1265   0   1674   0   105   0     3   2   1265   0   1674   0   105   0     4   3   1115   103   125   0     4   3   1115   103   125   0     5   2   4   3   1115   103   125     6   3   3   3   3   3   3   3     7   4   4   4   4   4     8   5   2844   2701   161     9   6   2   2   4   3     10   3   0   3   0   3     10   3   0   3   0   3     10   4   3   11   5   0     10   5   5   5   4   3     10   6   5   6   6     10   7   6   6   6     10   8   7   1   HCM 2000 Level of Service     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0     10   13   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0     10   13   0   0   0   0     10   13   0   0   0   0     10   13   0   0   0   0     10   13   0   0   0   0     10   13   0	Satd. Flow (prot)	1770	3539		3515		1733		
1770   3539   3515   1733     1770   3539   3515   1733     172   22   1265   0   1599   77   86   30     1	FIt Permitted	0.95	1.00		1.00		96:0		
10	Satd. Flow (perm)	1770	3539		3515		1733		
2 1265 0 1599 77 86 30  10 0 0 2 1065 0 111 0  22 1265 0 1674 0 105 0  10 1 2 1265 0 1674 0 105 0  10 1 1	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
)) 22 1265 0 1674 0 105 0 Prot NA NA Prot NA NA Prot NA	Adj. Flow (vph)	77	1265	0	1599	11	98	30	
) 22 1265 0 1674 0 105 0	RTOR Reduction (vph)	0	0	0	2	0	=	0	
Prot   NA   Prot   NA   Prot	Lane Group Flow (vph)	22	1265	0	1674	0	105	0	
5 2 1 6 4  4.3 1115 1030 125  6.03 0.83 0.77 0.09  4.4 4 5 1115 1030 125  2.0 42 4.7 4.9 4.9  2.0 42 4.1 2.0  6.01 6.36 6.048 6.066  6.38 2.9 6.8 8.87  1.07 6.2 6.57  1.3 0.3 0.3 0.7 1.00  1.3 0.3 0.9 7.0  1.4 A A E  A A A E  Capacity ratio 0.62 6.57  A A A E  A A A E  I Capacity ratio 0.62 6.7  1.3 0.3 0.9 7.0  1.4 A A E  A A A E  I A A A B  I A A B E  I A A A B  I A B B	Turn Type	Prot	Ν	Prot	NA		Prot		
4.3     111.5     103.0     12.5       4.3     111.5     103.0     12.5       0.03     0.83     0.77     0.09       4.4     5.1     4.9     4.9       2.0     4.2     4.1     2.0       5.0     2.0     4.9     4.9       5.0     2.0     4.9     4.9       6.3     2.0     4.1     2.0       6.3     2.9     4.1     2.0       6.3     2.9     6.8     5.8       6.3     2.9     6.8     5.8       7.0     6.2     6.5     6.5       8     6.2     6.5     6.5       1.3     0.3     0.9     7.0       1.3     0.3     0.9     7.0       6.3     4     A     E       A     A     A     E       A     A     A     E       A     A     A     E       A     A     A     E       A     A     A     E       A     A     A     E       A     A     A     A       A     A     A     A       A     A     A     A       A     A <td>Protected Phases</td> <td>2</td> <td>2</td> <td><del>-</del></td> <td>9</td> <td></td> <td>4</td> <td></td> <td></td>	Protected Phases	2	2	<del>-</del>	9		4		
4.3     111.5     103.0     12.5       4.3     111.5     103.0     12.5       6.03     12.5     0.09     12.5       4.4     5.1     4.9     4.9     4.9       4.4     5.1     4.9     4.9     4.9       4.4     5.1     4.9     4.9     4.9       5.0     4.2     4.1     2.0       6.2     4.1     2.0     4.9       6.3     2.9     4.1     2.0       6.3     6.3     6.2     6.5       6.3     0.43     0.62     0.65       6.3     0.3     0.77     1.00       1.3     0.3     0.77     1.00       6.3     1.9     6.2     6.5.7       8.3     1.9     6.2     6.5.7       A     A     A     A       Capacity ation     0.62     6.5.7       A     A     A     A       A     A     A     A       A     A     A     A       A     A     A     A       A     A     A     A       A     A     A     A       A     A     A     A       A     A <t< td=""><td>Permitted Phases</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Permitted Phases								
4.3 1115 1030 125 0.03 0.83 0.77 0.09 4.4 5.1 4.9 4.9 4.9 2.0 4.2 4.1 2.0 5.6 2944 2701 161 5.6 2944 2701 161 0.01 c0.36 c0.48 c0.06 0.39 0.43 0.62 0.65 6.8.6 2.9 6.8 5.87 1.07 0.53 0.77 1.00 1.13 0.3 0.9 7.7 1.00 1.3 0.3 0.9 7.7 1.00 1.4 A A E A A A E A A A E Capacity ratio 0.62 6.57 A A A E A A A E A A A E A A B B A A B E A A B B A B A B B Capacity ratio 0.62 0.65 1.3 0.3 0.9 7.0 1.3 0.3 0.9 7.0 1.3 0.3 0.9 7.0 1.3 0.3 0.9 7.0 1.3 0.3 0.9 7.0 1.3 0.3 0.9 7.0 1.3 0.3 0.9 7.0 1.3 0.3 0.9 0.9 7.0 1.3 0.3 0.9 0.9 7.0 1.3 0.3 0.9 0.9 0.9 1.3 0.9 0.9 0.9 1.3 0.9 0.9 0.9 1.3 0.9 0.9 0.9 0.9 1.3 0.9 0.9 0.9 1.3 0.9 0.9 0.9 0	Actuated Green, G (s)	4.3	111.5		103.0		12.5		
0.03 0.83 0.77 0.09 4.4 5.1 4.9 4.9 2.0 2.0 4.1 2.0 5.6 2944 2.701 161 0.01 0.36 0.048 0.06 0.39 0.43 0.62 0.65 6.8.6 2.9 6.8 5.8.7 1.07 0.53 0.77 1.00 2.1 3 0.3 0.9 7.0 2.2 6.7 6.7 2.3 0.3 0.9 7.0 2.4 5.1 HCM 2000 Level of Service (Capacity ratio 0.62 Capacity ratio 0.63 Capacity ratio 0.64 Capacity ratio 0.64 Capacity ratio 0.64 Capacity ratio 0.65 Capacity ratio 0.64 Capacity ratio 0.65 Capacity rati	Effective Green, g (s)	4.3	111.5		103.0		12.5		
4.4 5.1 4.9 4.9 2.0 4.2 4.1 2.0 2.0 4.2 701 161 5.6 294 701 161 0.01 0.36 0.48 0.06 0.39 0.43 0.62 0.65 6.36 2.9 6.8 5.87 1.07 0.53 0.77 1.00 1.13 0.3 0.9 7.0 6.9.3 1.9 6.2 6.57 E. A. A. E. E. A. A. E. E. 1.3 0.40 0.62 0.65 1.41 0.05 1.42 0.48 0.06 1.43 0.3 0.48 0.09 1.44 0.48 0.06 1.44 5.1 1.00 1.45 0.48 0.06 1.45 0.48 0.06 1.45 0.48 0.06 1.45 0.48 0.06 1.46 0.48 0.06 1.47 0.06 1.48 0.06 1.48 0.06 1.48 0.06 1.48 0.06 1.49 0.06 1.40	Actuated g/C Ratio	0.03	0.83		0.77		0.09		
2.0 4.2 4.1 2.0 5.6 2944 2.701 161 0.01 60.36 60.48 60.06 6.36 63.4 6.2 9.6 8.8 58.7 1.07 63.3 0.77 1.00 1.1.3 0.3 0.9 7.0 6.9.3 1.9 6.2 6.5.7 6.9.3 1.9 6.2 6.5.7 1.0 6.2 6.5.7  A A E  A A E  Capacity ratio 0.62 1.340 Sum of lost time (s) 1.350 0.9 1.340 1.310 Sum of lost time (s) 1.310 0.62 1.32% ICU Level of Service	Clearance Time (s)	4.4	5.1		4.9		4.9		
56 2944   2701   161     101   0.36   0.048   0.006     0.39   0.43   0.62   0.65     0.39   0.43   0.62   0.65     0.39   0.43   0.62   0.65     0.31   0.33   0.77   1.00     0.33   1.9   6.2   6.57     0.31   0.9   7.0     1.3   0.3   0.9   7.0     0.3   1.9   6.2   6.57     0.4   E   E     0.5   0.5   0.5     0.5   0.5	Vehicle Extension (s)	5.0	4.2		4.1		5.0		
0.01 0.36	Lane Grp Cap (vph)	26	2944		2701		161		
63.6 2.9 6.8 58.7 1.00 1.07 0.53 0.77 1.00 1.13 0.3 0.9 7.0 69.3 1.9 6.2 65.7 E A A E E A A E 3.0 6.2 65.7 A A E A A E A A E A A E A A E A A E A A E A A E A A E A A E A A E A A E A A E A A B A A B A B A B A B A B A B A B A B	v/s Ratio Prot	0.01	c0.36		c0.48		90:00		
0.39 0.43 0.62 0.65 0.36 2.9 6.8 58.7 0.30 0.33 0.77 1.00 0.33 0.77 1.00 0.33 0.9 7.0 0.9 7.0 0.9 6.2 6.5.7 0.9 6.2 6.5.7 0.9 7.1 HCM 2000 Level of Service 1.30 0.62 Sum of lost time (s) 0.62 Sum of lost time (s) 0.81 0.82 Sum of lost time (s) 0.83 0.84 Sum of lost time (s) 0.84 0.85 Sum of lost time (s) 0.85 0.85 Sum of lo	v/s Ratio Perm								
63.6 2.9 6.8 5.8.7 1.07 0.5.3 0.77 1.00 1.13 0.3 0.9 7.0 69.3 1.9 6.2 6.5.7 E A A E E 3.0 6.2 6.5.7 A A A E A A E A A E A A E A A I HCM 2000 Level of Service Capacity ratio 0.6.2 Sum of lost time (s) 134.0 Sum of lost time (s) 1134.0 Sum of lost time (s) 1135.00 110	v/c Ratio	0.39	0.43		0.62		0.65		
1.07 0.53 0.77 1.00 1.13 0.3 0.9 7.0 6.2 65.7 E A A E E A B E E A A E E A B E E A A E E A B E E A B E E A B E E A B E E A B E E A B E E B B E	Uniform Delay, d1	63.6	2.9		8.9		28.7		
1.3 0.3 0.9 7.0 69.3 1.9 6.2 65.7 E A A E 3.0 6.2 65.7 A A E Capacity ratio 0.62 Initization 57.2% ICU Level of Service 15.2% ICU	Progression Factor	1.07	0.53		0.77		1.00		
69.3 1.9 6.2 65.7  E A A A E  3.0 6.2 65.7  A A A E  Capacity ratio 0.62  Utilization 57.2% ICU Level of Service  15.2% ICU Level of Service  16.8	Incremental Delay, d2	1.3	0.3		6:0		7.0		
F A A E   E   E   S	Delay (s)	69.3	1.9		6.2		65.7		
3.0 6.2 65.7  A A E  L  L  L  Capacity ratio 0.62  n (s) 134.0 Sum of lost time (s)  Utilization 57.2% ICU Level of Service  15.00	Level of Service	ш	V		V		ш		
A A E  1	Approach Delay (s)		3.0		6.2		65.7		
lay 7.1 HCM 2000 Level of Service (Capacity ratio 0.62 Sum of lost time (s) 134.0 Sum of lost time (s) 157.2% ICU Level of Service 15 15.2% ICU Level of Service 10 15 15 15 15 15 15 15 15 15 15 15 15 15	Approach LOS		A		⋖		ш		
slay         7.1         HCM 2000 Level of Service           Capacity ratio         0.62            h (s)         134.0         Sum of lost time (s)            Utilization         57.2%         ICU Level of Service            15         15	Intersection Summary								
Capacity ratio 0.62 Sum of lost time (s) 134.0 Sum of lost time (s) 114.0 Sum of lost time (s) 114.0 Sum of lost time (s) 115 ICU Level of Service 15	HCM 2000 Control Delay			7.1	H	3M 2000 I	evel of S	ervice	А
h (s) 134.0 Sum of lost time (s) ' Utilization 57.2% ICU Level of Service 15 to 15 to 10 t	HCM 2000 Volume to Capacity	y ratio		0.62					
Utilization 57.2% ICU Level of Service 15 ICU Level of Service 10	Actuated Cycle Length (s)			134.0	S	im of lost	time (s)		14.4
a	Intersection Capacity Utilizatio	<u>_</u>		57.2%	೨	U Level or	f Service		В
c. Critical Lane Group	Analysis Period (min)			15					
	c Critical Lane Group								

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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	
Ť	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 EBR   ### EBR   ##	WBL	WBT			
			NBL	NBR	
		*	>		
	%	1543	. 81	28	
		1543	92	28	
	1900	1900	1900	1900	
0.95 1.00 1.00		5.4	4.9		
1.00	1.00	0.95	1.00		
1.00	1.00	1.00	0.92		
	0.95	1.00	0.98		
3524	1770	3539	1678		
1.00	0.95	1.00	0.98		
3524	1770	3539	1678		
	0.92	0.92	0.92	0.92	
1304 38		1677	70	30	
		0	53	0	
1341 0	104	1677	71	0	
NA	Prot	NA	Prot		
2	-	9	œ		
101.6	12.6	118.1	9.9		
101.6	12.6	118.1	9.9		
0.76	0.09	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	00.00	c0.47	c0.01		
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	2.5	0.7	6:0		
3.4	63.7	2.5	63.2		
Α	ш	V	ш		
3.4		0.9	63.2		
Α		⋖	ш		
HCM 2000 Control Delay	5.8	H	CM 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)	ime (s)	14.2
ntersection Capacity Utilization	54.8%	⊇	CU Level of Service	Service	A
	15				

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Balboa Station
Horizon Year with Preferred LU
14: Grand Ave & Figueroa Blvd
Timing Plan: PM Peak Period

Lane Group         EBL         EBT         WBT           Lane Group Flow (vph)         125         1337         1723           Are Realio         0.74         0.35         0.58           Control Delay         94         0.3         20.0           Oueue Delay         0.0         0.0         3.9           Total Delay         98.4         0.3         23.8           Total Delay         98.4         0.3         23.8           Daceue Length Soft (ft)         138         0         5           Dueue Length Soft (ft)         138         0         910           Ium Bay Length (ft)         90         773           Ium Bay Length (ft)         90         773           Base Capacity (pth)         20         78           Base Capacity (pth)         20         3539         2976           Shavalion Cap Reductin         0         1146	
125 1237 0.74 0.35 98.4 0.3 98.4 0.3 98.4 0.3 138 0 605 99 99 99 99 99 99 99 99 99 99 99 99 99	
0.74 0.35 0.0 0.3 0.0 0.0 98.4 0.3 138 0 208 0 605 90 605 249 3539	
98.4 0.3 0.0 0.0 98.4 0.3 138 0 208 0 605 90 605	
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 0 0 1	
208 0 605 90 249 3539 2 0 0 1	
605 90 249 3539 0 0	
90 249 3539 0 0	
249 3539 0	
0 0	
Spillback 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

Movement -ane Configurations	FR	EBT	WRT	000	SB		
-ane Configurations	ומר		- 2	WBK	2	SBR	
offic Victimo (uph)	¥	*	<b>₩</b>				
AIIIC VOIGINE (VDII)	115	1138	1515	02	0	0	
uture Volume (vph)	115	1138	1515	20	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				
FIt 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	
REDITION (Vph)	0	0	<del>-</del>	0	0	0	
ane Group Flow (vph)	125	1237	1722	0	0	0	
Turn Type	Prot	N	M				
Protected Phases	2	7	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	3239	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	ഥ	⋖	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 L	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	y ratio		0.61				
Actuated Cycle Length (s)			170.0	Sur	Sum of lost time (s)	ime (s)	12.7
ntersection Capacity Utilization	E		28.6%	ਹ	ICU Level of Service	Service	В
Analysis Period (min)			15				
Critical Lane Group							

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KHA Queues

Balboa Station 15: Grand Ave & Mission Bay Dr

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	•	<b>†</b>	ţ	4	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	F	086	1900	4.9	0.97	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	00.31		0.92	54.3	0.97	11.3	64.1	ш	51.8	D		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		
ļ	WBT	ŧ	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	
<b>†</b>	EBT	‡	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	6:0	20.4	ပ	26.1	ပ							
•	EBL	r	98 8	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	6.7	ш					y ratio		<u>_</u>		
	Movement	Lane Configurations	Traffic Volume (vph)	r dulle Voldiffe (vpr.) 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

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Balboa Station 16: Mission Bay Dr & Bluffside Av

Horizon Year with Preferred LU Timing Plan: PM Peak Period

	4	•	<b>←</b>	<b>→</b>	•	
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	205			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		>-		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 0.90 0.90	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  3.66 2.71 3.9 2.6 2.9  1.00 0.90 0.90 1.00 1.00  2.38.0 2.9 0.4 16.3 13.7  4.4 2.73 3.9 4.0 3.6  E	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 0.99 0.90 1.00 1.00 120 0.99 0.90 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 0.4 163  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  E A D D D  14.6 3.94  A D D D  15.0 A D D  16.0 A D D  16.0 A D D  17.0 B B D  18.0 B D  18.0 B D  18.0 B D  19.1 B D  19.1 B D  10.1 B D		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   24.4 6.40 34.6 34.6     0.14		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 0.88  1.02 1.03 0.04 1.03 1.03  1.03 0.04 1.03 1.03  1.04 0.98 Sum of lost time (s)  1.04 0.98  1.05 0.04 0.05 Sum of lost time (s)  1.05 0.05 Sum of lost time (s)		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 0.00 0.00 0.00 0.00 0.00 0.00 0.00	.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 38.0 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 2.80 0.4 16.3 13.7 176.6 27.3 3.9 40.9 36.6 1.6 27.3 3.9 40.9 36.6 1.6 27.3 3.9 40.9 36.6 1.6 27.3 3.9 40.9 36.6 1.6 27.3 3.9 40.9 36.6 1.6 27.3 3.9 40.9 36.6 1.6 27.3 3.9 40.9 36.6 1.6 2.7 3 3.9 40.9 36.6 1.6 2.7 3 3.9 40.9 36.6 1.6 2.7 3 3.9 40.9 36.6 1.6 2.7 3 3.9 40.9 36.6 1.6 2.7 3 3.9 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3.9 40.9 36.6 1.6 2.7 3 3.0 40.9 36.6 1.6 2.7 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	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  Salabatic Service Capacity ratio 688 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  It (s) 79.5% ICU Level of Service 16  It (s) 79.5% ICU Level of Service 17  It (s) 79.5% ICU Lev		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

<b>→</b>	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	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	m Volume for 95th percentile queue is metered by upstream signal

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																																					C		13.8	В	
<b>→</b>	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	080	5.2	3.5	2837	c0.42		0.52	5.7	0.12	0.2	6.0	Α	4.0	A		HCM 2000 Level of Service		ime (s)	Service	
<u>ر</u>	SBL >	_	86 98		_	4.4						3 1770		5 107	0 2	107	n Prot	<del>-</del>	~	31.0	31.0			3 2.0	322	90:0						46	В				HCM 2000 L		Sum of lost time (s)	ICU Level of Service	
<b>、</b>	NBT NBR	4			_	5.0 5.0			1.00 1.00	3539 1583		3539 1583		1308 246	0 47	1308 199	NA Perm	2		101.1 101.1	101.1 101.1			3.8 3.8	2104 941							16		22.4	ပ		20.7	0.64	170.0	60.7%	15
1	WBR	*-		`	1900	4.4	_		1.00	1583 3		1583 3		207 1:	94	113 1:	Perm		4	24.1 10		0.14 0		2.0	224 2.								ш	2			2		, [[	.09	
<b>/</b>	WBL	*	189	189	1900	4.4	1.00	1.00	0.95	1770	0.95	1770	0.92	205	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	98.6	ட	78.3	ш			ity ratio		lion	
	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)

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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	<b>→</b>
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 0 266 0 0 0 0 0 0 266 0 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 1.1.7 0.06 0.74 0.69 1.1.7 0.06 0.74 0.69 1.1.7 0.06 0.74 0.69 1.1.7 0.06 0.74 0.69 1.1.8 freoretically infinite. imum affer two 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 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 5 469 4 10.5 268 4691 32 m#175 576 30.3 271 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.  imm after two cycles. Imm exceeds capacity, que em ay be longer. Imm eter wo 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 66 0 1.17 006 0 0 0 0 1.17 006 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	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 0.05 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.	

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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	† 🖽
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 0.94 10.0 10.0 0.97 0.82 0.95 10.0 0.95 10.0 0.92 0.95 0.92 0.92 0.95 10.0 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.94 0.94 0.05 0.95 0.95 0.92 0.94 0.04 0.05 0.95 0	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 1.25 2393 6.9 2210  2.0 2.0 3.7 2.0 3.7  2.84 1.25 2393 6.9 2210  0.01 0.80 0.62 0.04 0.59  0.04 0.80 0.62 0.04 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	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	
12.1 115.0 6.7 1 12.1 115.0 6.7 1 12.1 115.0 6.7 1 0.07 0.68 0.04 2.0 3.7 2.0 1.25 2393 69 3 0.06 0.42 0.02 0.06 0.42 0.02 1.08 0.61 1.00 1.08 0.61 1.00 1.07 1.04 81.8 F B F 1 6.5 B F 1 7.0 B F 1 7.0 B F 1 8.1 B F 1 9.5 B F 1 1.0 B F 1	NA
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 60.06 00.42 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 5.0 4.4 1.25 2393 69 3 0.06 0.042 0.02 0.08 0.62 0.48 77.8 15.3 79.9 1.08 0.61 1.00 2.29 1.0 1.9 1.09 1.0 1.09 1.0 1.09 1.0 1.09 1.0 1.09 1.0 1.09 1.0 1.00 1.0 1	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 69 500 000 000 000 000 000 000 000 000 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 1778 15.3 79.9 1778 15.3 79.9 1770 10.4 81.8 F B F 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.	2.0
0.06	297
080 062 048 778 15.3 79.9 108 0.61 1.00 22.9 1.0 1.9 17.0 10.4 81.8 F 16.5 B F 14.3 D D	
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	<b>→</b>	
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

EBL EBT EI  4 0	Feb.   Feb.   Feb.   Web.   Web.   Web.   Web.   Neb.		1	<b>†</b>	<u> </u>	<b>/</b>	ţ	√	•	•	•	٠	<b>→</b>	•
Second Color   Seco	Apple   Appl	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(v(ph))         0         0         154         0         126         0         1194         42         188           (v(ph))         100         0         154         0         126         0         1194         42         188           (v(p))         100         0         0         154         0         190         190           (v(p))         100         0         154         0         150         100         140           (v)         100         100         100         100         100         100         100           (v)         100         0 </td <td>  Secondary   Color   /td> <td>Lane Configurations</td> <td></td> <td>4</td> <td></td> <td></td> <td>4</td> <td></td> <td>je-</td> <td>₩</td> <td></td> <td>¥</td> <td>4₽</td> <td></td>	Secondary   Color	Lane Configurations		4			4		je-	₩		¥	4₽	
help) 1900 1900 1900 1900 1900 1900 1900 190	h(p)) 100 100 154 0 126 0 1900 1900 1900 1900 1900 1900 1900 1	Traffic Volume (vph)	0	0	0	154	0	126	0	1194	42	188	1007	0
hip) 1900 1900 1900 1900 1900 1900 1900 190	hip) 1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	0	0	0	154	0	126	0	1194	45	88	1001	0
e (s) 149 6.50 4.4  for	tor (yph) (y	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
tor for find a control of the find of the	tor for first control of the f	Total Lost time (s)					4.9			2.0		4.4	2.0	
oi)  (iv)  (	ol)  interpret  ol)  ol)  ol)  ol)  ol)  ol)  ol)  ol	Lane Util. Factor					1.00			0.95		1.00	0.95	
ou) 1709 1700 1700 1700 1700 1700 1700 1700	ou)  1091 1100 1100 1170 1170 1170 1170 117	F# .					0.94			0.99		00.1	00.1	
ol) (1703   1703   1710	ol) (1703 3521 1770 (1703) (17	Fit Protected					0.97			1.00		0.95	1.00	
1450   1450	1450   1450	Satd. Flow (prot)					1703			3521		1770	3539	
Into, PHF 092 092 092 092 092 092 092 092 092 092	Into, PHF 092 092 092 092 092 092 092 092 092 092	FIt Permitted					0.83			1.00		0.95	1.00	
(or, PHF         0.92         0.93         0.93         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.93	tor, PHF         0.92         0.93         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.92         0.93	Satd. Flow (perm)					1450			3521		1770	3539	
100   167   0   1298   46   204   100   100   100   1298   46   204   100   100   1298   46   204   100   100   1298   46   204   100   1298   46   204   100   1298   46   204   100   1298   46   204   100   1298   47   100   1298   47   100   1298   47   100   1298   47   100   1298   47   100   1298   47   100   1298   47   100   1298   100   1298   129	1,000   0,00	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
lon (uph) 0 0 0 123 0 0 3 4 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	lon (vph) 0 0 0 123 0 0 3 4 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj. Flow (vph)	0	0	0	167	0	137	0	1298	46	204	1095	0
low (oph)         0         0         181         0         1341         0         204         1           sess         4         4         4         1         6         5         100         6           sess         4         4         4         1         6         5         100         6           sess         4         4         4         1         6         5         6         10         6           en C(s)         4         4         4         1         6         6         0.12         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         4.4         10         6         6         6.1         10         6         4.4         10         6         6         6.1         10         6         6         6.1         10         6         6         6.1         1         6         6         6.1	low (oph)         0         0         181         0         0         1341         0         204         1           sess         4         4         4         1         6         5         6         1         6         5         1         6         5         6         1         6         5         6         1         6         6         6         1         6         6         1         6         1         6         1         6         6         7         1         0         6         1         1         6         5         6         4	RTOR Reduction (vph)	0	0	0	0	123	0	0	က	0	0	0	0
sess         4         4         4         Prof         NA         Prof           sess         4         4         4         1         6         5           sess         4         4         1         6         5           sess         4         4         1         6         5           n.n. g (s)         13.5         47.2         10.0         6           set (s)         0.16         0.56         4.4         4           sion (s)         2.0         3.2         2.0         2.0           sion (s)         2.0         3.2         2.0         4.4           sion (s)         2.0         2.0         3.2         2.0           sion (s)         0.0         0.0         0.0         0.0         0.0           sion (s)         0.0         0.0         0.0         0.0         0.0         0.0           clay, d2         1.51         1.4         4.73         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         <	sess         4         Perm         NA         Prof         NA         Prof           sess         4         4         4         1         6         5           sess         4         4         1         6         5           ses         4         13.5         47.2         10.0         6           s.n. g(s)         13.5         47.2         10.0         6           set         0.16         0.56         0.12         0         4.4         4         4           sion (s)         2.0         2.0         3.2         2.0         3.2         2.0         1.0         6           re(s)         2.0         2.0         3.2         2.0         3.2         2.0         1.0         6         4.4	Lane Group Flow (vph)	0	0	0	0	181	0	0	1341	0	204	1095	0
ses         4         4         4         1         6         5           stacks         4         4         4         4         1         6         5           stacks         4         4         4         4         7         100         6           stack         7         13.5         47.2         100         6         100         6           Ratio         0.16         0.16         0.56         0.12         100         6         4.4         4           sine(s)         2.0         4.9         5.0         4.4	ses         4         4         4         1         6         5           ses         4         4         4         4         1         6         5           n. G(s)         n. G(s)         4         4         7         10.0         6           n. G(s)         n. G(s)         13.5         47.2         10.0         6           Ratio         0.16         0.16         0.56         0.12         10.0         6           Ratio         0.16         0.16         0.56         0.12         10.0         6           Ratio         2.30         2.30         1.95         2.0         2.0           (v(ph)         2.30         1.95         2.08         2.0           n         0.79         0.09         0.98         0.12           n         0.79         0.79         0.69         0.98         0.78           ce         0         0.79         0.74         18.4         9.29           etesy, des         0         0         9.4         18.4         9.29           ce         0         0         9.4         18.4         9.29           ce         0         0.	Turn Type				Perm	NA		Prot	NA		Prot	NA	
ses         4         4           n.n G (s)         4         4           n.n G (s)         13.5         47.2         10.0           n.n G (s)         13.5         47.2         10.0           n.n G (s)         13.5         47.2         10.0           Ratio         0.16         0.56         0.12         0.12           Ratio         2.0         3.2         2.0         4.4           sion (s)         2.0         3.2         2.0           1 (oph)         2.30         1.05         1.05         0.0           n         0.0         0.0         1.26         0.08         0.0           n (d)         3.44         1.34         47.3         47.3           actor         1.00         1.26         1.22         1.22           eleby, d.         1.00         1.24         1.34         47.3           actor         0.0         49.4         18.4         7.2           average         0.0         49.4         18.4         7.2           average         0.0         49.4         18.4         7.2           average         0.0         49.4         18.4         7.2	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         0.15         4.4         10.0           Ratio         0.16         0.15         0.12         10.0         4.4           sion (s)         2.0         2.0         2.0         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         4.7         4.2         4.4         4.7         4.2         4.4	Protected Phases		4			4		-	9		2	2	
13.5   13.5   10.0   0.0	13.5   13.5   10.0   0.0	Permitted Phases	4			4								
an g(s) 13.5 47.2 100 6 Ratio 0.16 0.15 0.12 ( Ratio 0.17 0.15 0.13 0.13 ( Ratio 0.18 0.19 0.10 0.10 0.10 ( Ratio 0.19 0.10 0.10 0.10 ( Ratio 0.10 0.10 0.10 0.10 0.10 ( Ratio 0.10 0.10 0.10 0.10 0.10 ( Ratio 0.10 0.10 0.10 0.10 0.10 ( Ratio 0.10 0.10 0.10 0.10 0.10 0.10 ( Ratio 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1	ang (s) 13.5 47.2 100 64 47.2 100 64 47.2 100 64 47.2 100 64 64 67.2 100 64 67.2 100 64 67.2 100 64 67.2 100 64 67.2 100 64 67.2 100 67.2	Actuated Green, G (s)					13.5			47.2		10.0	9.19	
Ratio 0.16 0.56 0.12 0  ne (s) 2.00 2.00 2.00  slon (s) 2.00 2.00 2.00  (vph) 2.00 2.00 2.00  n 0.012 0.038 0.01.2 0  n 0.012 0.049 0.098 0  relay, d2 15.1 1.4 47.3  ce D 15.1 1.4 47.3  ce D 2.09 0.09 0.98 0.098 0.098 0.009  ce D 19.1 1.4 47.3  relay, d2 19.1 1.4 47.3  numary  action 1.00 Level of Service C 1.00  numary  action 1.00 Level of Service C 1.000  apacity (s) 8.00 0.75 Sum of lost time (s) 14.3  for time to Capacity ratio 1.29	Ratio         0.16         0.56         0.12         0.12         0.12         0.12         0.12         0.12         0.12         0.12         0.12         0.12         0.12         0.13         0.12         0.12         0.12         0.12         0.02         0.02         0.02         0.02         0.02         0.03 <t< td=""><td>Effective Green, g (s)</td><td></td><td></td><td></td><td></td><td>13.5</td><td></td><td></td><td>47.2</td><td></td><td>10.0</td><td>9.19</td><td></td></t<>	Effective Green, g (s)					13.5			47.2		10.0	9.19	
he (s)         4.9         5.0         4.4           sion (s)         2.0         2.0         4.4           sion (s)         2.0         3.2         2.0           (v(ph)         2.30         1.955         2.0           n         0.0.12         0.38         0.0.12         0.0           n of 1         0.0	he(s)         4.9         5.0         4.4           sion (s)         2.0         2.0         4.4           sion (s)         2.0         2.0         4.4           sion (s)         2.0         1.95.5         2.0           sion (s)         2.3         1.95.5         2.0           n         0.0.12         0.0.38         0.0.12         0.08         0.0           r d1         3.74         1.36         37.4         1.22         1.22         1.22           elsy, d2         0.0         49.4         18.4         92.9         1.22 <td>Actuated g/C Ratio</td> <td></td> <td></td> <td></td> <td></td> <td>0.16</td> <td></td> <td></td> <td>0.56</td> <td></td> <td>0.12</td> <td>0.72</td> <td></td>	Actuated g/C Ratio					0.16			0.56		0.12	0.72	
sion (s)         2.0         3.2         2.0           (iph)         230         1955         208         2           n         00.12         0.38         0.01.2         0	sion (s)         2.0         3.2         2.0           (viph)         2.30         1.955         2.08         2.0           (viph)         0.0.12         0.0.38         0.0.12 </td <td>Clearance Time (s)</td> <td></td> <td></td> <td></td> <td></td> <td>4.9</td> <td></td> <td></td> <td>2.0</td> <td></td> <td>4.4</td> <td>2.0</td> <td></td>	Clearance Time (s)					4.9			2.0		4.4	2.0	
(vph) 230 1955 208 2  n	(vph)         230         1955         208         2           n         c0.12         0.38         c0.12         0           n         0.79         0.69         0.98         0           ct         1.00         0.69         0.98         0           ct         1.00         1.26         37.4         47.3           ct         1.00         1.20         1.22	Vehicle Extension (s)					2.0			3.2		2.0	3.2	
Col. 22   Col. 38   Col. 30   Col.	n c0.12 c0.38 c0.12 ( d. d1 344 13.6 37.4 actor 1.00 12.6 1.22 1.22 1.22 1.22 1.22 1.22 1.22	Lane Grp Cap (vph)					230			1955		208	2564	
0.012 0.69 0.98 (0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.79 0.79 0.79 (0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79	0.012 0.69 0.98 (0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.69 0.98 (0.79 0.79 0.79 0.79 0.79 (0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79	//s Ratio Prot								00.38		c0.12	0.31	
10.79 0.69 0.98 (0.79 1.20 1.20 1.22 1.22 1.22 1.22 1.22 1.22	10.79 0.69 0.98 (0.79 0.69 0.98 (0.79 0.69 0.98 (0.79 0.69 0.99 (0.79 0.69 0.99 (0.79 0.69 0.99 (0.79 0.69 0.99 (0.79 0.99 0.99 (0.79 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 0.99 (0.79 0.99 0.99 0.99 0.99 0.99 0.99 0.99	//s Ratio Perm					c0.12							
3.4.4 13.6 37.4 13.6 37.4 13.6 17.2 11.0 12.6 12.2 12.2 13.6 12.2 12.6 12.2 13.6 12.2 13.6 12.2 13.6 12.2 13.6 12.6 12.2 13.6 12.6 12.2 13.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12	134   136   37.4   13.6   37.4   13.6   1.22   1.22   1.20   1.26   1.22   1.20   1.26   1.22   1.20   1.26   1.22   1.20   1.	v/c Ratio					0.79			69.0		0.98	0.43	
100   126   122   131   132   132   133   133   134   134   47.3   134   47.3   134   47.3   134   1	100 126 122 1 15.1 1.4 47.3 14.4 47.3 14.4 47.3 14.4 47.3 14.4 47.3 14.4 47.3 14.4 47.3 14.4 47.3 14.4 47.3 14.3 14.3 14.3 14.3 14.3 14.3 14.3 14	Uniform Delay, d1					34.4			13.6		37.4	4.7	
15.1 1.4 47.3 49.4 18.4 47.3 49.4 18.4 92.9 18.4 92.9 19.9 19.9 19.9 19.9 19.9 19.9 19.9	15.1 1.4 47.3 49.4 18.4 47.3 49.4 18.4 92.9 D B B F C C C C C C C C C C C C C C C C C	Progression Factor					1.00			1.26		1.22	1.61	
184 92.9  184 92.9  185 0.0 49.4 18.4 92.9  184 0.0 B B F  184 0.2 B  184 0.2 B  184 0.2 B  185 0.0 Level of Service C  185 0.0 Sum of lost time (s) 14.3  185 0.0 Level of Service C  186 0.0 Level of Service C  187 0.0 Level of Service C  187 0.0 Level of Service C  188 0.0 Sum of lost time (s) 14.3  189 0.0 Level of Service C  180 0.0 49.4 18.4 92.9	184 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 92.9  100 49.4 18.4 18.4 92.9	Incremental Delay, d2					15.1			1.4		47.3	0.4	
D   B   F	D   B   F	Delay (s)					49.4			18.4		92.9	7.9	
0.0 49.4 18.4  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  T.29% ICU Level of Service C  T.29% ICU Level of Service C	A A D B B B B B B B B B B B B B B B B B	Level of Service					۵			В		ш	⋖	
A D B B  (1)  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	A D D B  189	Approach Delay (s)		0.0			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	22.9 HCM 2000 Level of Service Capacity ratio 0.75 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15	Approach LOS		٧			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	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         Inn	Intersection Summary												
Capacity ratio 0.75 Sum of lost time (s) 85.0 Sum of lost time (s) 12.9% ICU Level of Service 15	Capacity ratio 0.75 h (s) 85.0 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15	HCM 2000 Control Delay			22.9	H	3M 2000	Level of S	service		ပ			
h (s) 85.0 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15	h (s) 85.0 Sum of lost time (s) Utilization 72.9% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.75									
Utilization 72.9% ICU Level of Service	Utilization 72.9% ICU Level of Service 15 ICU Level of Service 16	Actuated Cycle Length (s)			85.0	S	ım of lost	time (s)			14.3			
	9	ntersection Capacity Utilizat	lion		72.9%	೨	U Level o	f Service			ပ			
		Analysis Period (min)			15									

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Balboa Station 20: Mission Bay Dr & Rosewood St

Horizon Year with Preferred LU Timing Plan: PM Peak Perlod

	<b>\</b>	<b>—</b>	۶	<b>→</b>	
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	33	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 Cumman					
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><b>&gt;</b></th><th>4</th><th>•</th><th>•</th><th>٠</th><th><b>→</b></th><th></th></t<>		<b>&gt;</b>	4	•	•	٠	<b>→</b>	
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 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 5077 1770 3339     103 50 70 70 70 70 70 70 70 70 70 70 70 70 70	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     1632   5072   0.92   0.92   0.92     1703   0.92   0.92   0.92     1703   0.92   0.92   0.92     1704   NA   Prof   NA     1707   0.03   0.81   1.3   74.1     1708   1.00   0.04   0.02     1708   1.00   0.04   0.00     1709   1.00   0.04   0.00     1700   1.00   0.04   0.00     1700   1.00   0.04   0.00     1700   1.00   0.04   0.00     1700   1.00   0.04   0.00     1700   1.00   0.04   0.00     1700   1.00   0.04   0.00     1800   0.05   0.05   0.05	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	<del>-</del>	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 0.9 2.4 1.0 0.8 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 A A D	//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 42 48.5 3.0  A 42 48.5 3.0  A 42 48.5 3.0  A 42 48.5 3.0  A 5 A 7  A 7  Y  Y  Y  Y  Y  Y  Y  Y  Y  Y  Y  Y  Y	//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 (s) (strike) (solution) (solu	evel of Service	٥		∢		۵	Α	
y  y  y  Selay  Capacity ratio  C32  HCM 2000 Level of Service  C32  HCM 2000 Level of Service  C33  HCM 2000 Level of Service  C34  HCM 2000 Level of Service  C35  HIlization  C37  C41  C51  C51  C61  C61  C61  C61  C61  C6	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

						,	
	4	~	•	<b>←</b>	<b>→</b>	*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	<b>&gt;</b> -			₩	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	129	272				
Volume Left (vph)	118	88	0				
Volume Right (vph)	72	0	167				
Hadj (s)	-0.07	0.14	-0.33				
Departure Headway (s)	4.8	4.8	4.3				
Degree Utilization, x	0.25	0.21	0.32				
Capacity (veh/h)	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
	<b>/</b>	✓	•	•	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	<b>X</b>	*	¥		44	
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)	636	=	191	282	9	345	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total (vph)	689	11	161	282	133	230	
Volume Left (vph)	639	0	0	0	92	0	
Volume Right (vph)	0	=	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			ш				
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

이 등 등 을 다 보고 보고 보고 하는 이 그 오 하는 이 등 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이		<b>&gt;</b>	4	<b>←</b>	•	٠	<b>→</b>	
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		<b>₩</b>		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   0.92   0.92     0.92   0.92   0.92   0.92     0.93   0.94   0.90   0.90     0.94   0.94   0.90   0.90     0.95   0.90   0.90     0.95   0.90   0.90     0.96   0.95   0.90     0.96   0.90   0.90     0.96   0.95   0.90     0.99   0.90   0.90     0.99   0.90   0.90     0.99   0.90   0.90     0.99   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 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 0.96 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	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  2 0,4 0,90 0,57  1,28 1,02 1,88 7,2  1,28 1,02 1,88 7,2  1,28 1,02 1,03 0,57  1,28 1,02 1,03 0,57  1,28 1,05 1,00 1,00  2 0,4 0,90 0,57  1,13 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 B F A  13,1 10,5 9,14 7,6  B B B B F A  13,1 10,5 9,14 7,6  B B B B F A  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   3.284   1.00   3.539   1.00   3.282   3.284   1.00   3.539   1.00   3.282   3.284   4.04   6.0   9.00   0.00	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 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 6/1715  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 20 0.4 0.40 0.057  1 20 0.4 0.03 0.057  1 31 10.5 0.04 0.4  1 31 10.5 0.04  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 F A  1 31 10.5 91.4 7.6  B B B F A  1 31 10.5 91.4 7.6  B B B C  Capacity ratio 0.06  Capacity ratio 0	RTOR Reduction (vph)	36	0	569	0	0	0	
Prot NA Prot NA 8 8 2 1 6 8 8 2 1 1 6 6 8 8 8 13.1 1.5 19.0 9.8 13.1 1.5 19.0 0.25 0.33 0.048 0.48 0.48 0.49 0.55 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.40 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.44 0.45 0.45	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 13.1 10.5 91.4 7.6 9  y  y  y  y  tulization 49.6% ICU Level of Service 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	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 18.8 7.2  1.40 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 B F A  1.31 10.5 91.4 7.6  B B B F A  1.31 10.5 91.4 7.6  B B B F A  1.31 10.5 91.4 7.6  B B B F A  1.31 0.5 91.4 7.6  B B B F A  1.31 0.5 91.4 7.6  Capacity ratio 0.66  Capacity	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 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 13.1 0.5 91.4 7.6 13.1 0.5 91.4 7.6 14.5 91.4 7.6 15. 0.6 91.4 7.6 16.8 91.4 7.6 17.8 91.4 7.6 18.8 91.4 7.6 18.8 91.4 7.6 19	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)           Int (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  y  tublization 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) th (s) 15.6 12.4 B B Capacity ratio 0.66 th (s) 16.6 12.4 12.4 B B Capacity ratio 0.66 th (s) 16.6 12.4 12.4 12.4 12.4 12.4 12.4 12.4 12.4	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 11.2 A 13.1 10.5 12.4  13.1 10.5 12.4  13.1 10.5 12.4  14.2 MA 2000 Level of Service 15.2 Sum of lost time (s) 16.3 39.2 Sum of lost time (s) 17.1 10.1 Evel of Service 18.4 10.5 10.1 Evel of Service 19.5 10.1 Evel of Service 19.5 10.1 Evel of Service 19.5 10.1 Evel of Service	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				
	<ul> <li>Critical Lane Group</li> </ul>							

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Balboa Station 24: Morena Blvd & Avati Dr

Horizon Year with Preferred LU Timing Plan: PM Peak Period

l ane Group							
	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	29.0	
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

																																					<	A	A A 15.3	A A 15.3
<b>→</b>	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 5 5 27.1	0 1364 NA 2 2 5 5 27.1	0 1364 NA 2 2 5 5 27.1 27.1 0.60	1364 NA 2 2 27.1 27.1 0.60	0 1364 NA 2 2 5 27.1 27.1 0.60 5.7 5.0	0 1364 NA 2 2 5 27.1 27.1 0.60 5.7 5.0	0 1364 NA 2 2 27.1 27.1 27.1 0.60 5.7 5.0 5.0	0 1364 NA 2 2 27.1 27.1 27.1 5.0 5.0 5.7 5.0 5.0 5.7	0 1364 NA 2 2 5 27.1 27.1 0.60 5.7 5.0 5.0 5.0 6.039	1364 NA NA 2 2 2 27.1 27.1 27.1 5.0 5.7 5.0 60.39	0 NA	1364 NA NA N	1364 NA NA N	1364 1364 1364 1364 1364 1366	1364 NA NA 127.1 27.1 27.1 5.0 5.0 5.0 6.8 6.8 A A A	1364 NA NA 2 2 27.1 27.1 27.1 5.0 5.0 5.0 6.39 6.8 6.8 A A A	1364 1364 127.1 27.1 27.1 27.1 27.1 27.1 27.1 27.1 5.0 6.0 6.8 A A A A A A A A A A A A A A A A A A A	1364 1364 127.1 27.1 27.1 27.1 27.1 27.1 27.1 27.5 6.8 6.8 A A A A A A A A A A A A A A A A A A A	1364 1364 1364 14 15 15 10 10 10 10 10 10 10 10 10 10	1364 NA NA 2 2 27.1 27.1 27.1 27.1 27.1 6.0 6.3 6.3 6.8 A A A A A A	1364 NAA 2 5 27.1 27.1 27.1 27.1 5.7 5.7 5.0 6.8 6.8 A A A A A A A A A A A A A A A A A A A
٠	SBL	*	19	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 3.6 3.6	73 Prot 5 5 3.6 3.6 0.08	73 Prot 5 3.6 3.6 0.08 4.4	73 Prot 5 3.6 3.6 0.08 4.4 2.0	Prot 5 3.6 3.6 0.08 4.4 2.0 2.0	Prot 5 3.6 3.6 0.08 4.4 2.0 141 0.04	73 Prot 5 3.6 3.6 0.08 4.4 2.0 2.0 141	73 Prot 5 3.6 0.08 4.4 2.0 2.0 141 0.04	73 Prot 5 3.6 3.6 0.08 4.4 2.0 141 0.04	73 Prot 5 3.6 3.6 0.08 4.4 2.0 141 0.04 0.52 19.9	Prot 5 3.6 3.6 0.08 4.4 2.0 2.0 2.0 1.01 10.9 1.00 1.00	Prot 5 3.6 3.6 0.08 4.4 2.0 2.0 141 0.04 0.05 1.09 1.00 1.3	73 Prot 5 3.6 0.08 4.4 4.4 2.0 141 0.04 0.52 199 1.3 2.1.3 C.C	73 Prot 5 3.6 0.08 4.4 2.0 141 0.04 0.05 1.00 1.00 1.30 1.30 1.00 1.00 1.00 1.00	73 Prot 5 3.6 0.08 4.4 2.0 141 0.05 100 1.00 1.00 1.3 2.1 3.6 2.0 1.0 1.0 1.0 1.0 2.0 2.0 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	73 Prot 5 3.6 3.6 0.08 4.4 2.0 2.0 2.0 141 0.04 0.05 1.00 1.30 C.C	73 Prot 5 3.6 0.08 4.4 2.0 141 0.04 0.05 199 1.00 1.3 2.1.3 2.1.3	pm+ev Prof NA 73 1364 Prof NA 7 5 5 2 6 6 2 3 6 27.1 5 6 2 2 0 5 0 6 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prot 5 3.6 3.6 3.6 0.08 4.4 2.0 0.04 0.05 1.00 1.3 2.1 3 2.1 3 2.1 3 2.1 3 2.1 3 2.1 3 2.1 3 C C	73 Prot 5 5 3.6 3.6 0.08 4.4 4.4 4.4 4.4 0.05 1.00 1.00 1.3 2.1.3 C C Tittne (s)
•	NBR	*-	185	1900	4.9	1.00	0.85	1.00	1583	1.00	1583	0.92	201	84	117	=	vo+mq	vo+mq	7 / / / / / / / / / / / / / / / / / / /	pm+ov 7 6 6 26.2	pm+ov 7 6 26.2 26.2	pm+ov 7 6 26.2 26.2 26.2 0.58	26.2 26.2 26.2 26.2 26.2 0.58	26.2 26.2 26.2 26.2 0.58 4.9	pm+ov 7 6 26.2 26.2 26.2 26.2 0.58 4.9 4.9	pm+ov 7 6 26.2 26.2 26.2 0.58 4.9 2.0 919	pm+ov 7 6 26.2 26.2 26.2 0.58 4.9 2.0 919 0.02 0.05	pm +ov 7 6.2 26.2 26.2 26.2 26.2 0.58 4.9 2.0 2.0 919 919 0.02 0.05 0.05 0.05 0.05	pm+ov 7 7 6 6 2.6.2 2.6.2 2.6.2 2.6.2 0.58 4.9 919 0.005 0.013 0.13	pm+ov 7 6 6 26.2 26.2 26.2 26.2 2.0 0.58 4.9 919 0.05 0.05 0.13 4.3 1.00	26.2 26.2 26.2 26.2 26.2 2.0 2.0 919 0.02 0.05 0.05 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	26.2 26.2 26.2 26.2 26.2 2.0 2.0 919 0.02 0.05 0.05 0.05 1.00 1.00 1.00 4.3	pm+ov 7 7 6 6 6 26.2 26.2 26.2 26.2 20.0 919 919 919 919 919 919 919 919 919 91	pm+ov 7 6 6 2.6.2 2.6.2 2.6.2 2.0 2.0 9.19 9.19 9.00 0.05 0.05 0.05 0.05 4.3 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	pm+ov 7 26.2 26.2 26.2 0.58 4.9 919 0.02 0.05	pm+ov 7 6 26.2 26.2 26.2 0.58 4.9 919 0.02 0.05 0.05 0.05 0.05 0.05 4.3 4.3 A	pm+ov 6 26.2 26.2 26.2 26.2 0.58 4.9 2.0 919 0.02 0.05 0.05 0.03 4.3 4.3 A A	pm+ov 7 7 6 6 26.2 26.2 26.2 2.0 0.58 4.9 9.19 0.02 0.05 0.05 4.3 4.3 4.3 4.3 4.3 A A A A A A A A A A A A A A A A A A A	pm+07 6 26.2 26.2 26.2 26.2 26.2 2.0 0.58 4.9 9.19 0.00 0.00 0.00 4.3 1.00 0.00 4.3 A A	pm+ov Prof 6 5 6 26.2 3.6 26.2 3.6 26.2 3.6 0.08 4.9 4.4 2.0 2.0 919 141 0.02 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05
←	NBT	*	656	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	713	0	713	2	NA N	N 9	8 8 9	NA 6	NA 6 18.8 18.8	NA 6 6 18.8 18.8 18.8 0.42	0.42 0.42	NA NA 18.8 18.8 0.42 6.0 6.0 5.2	NA 6 6 18.8 18.8 0.42 6.0 5.2 1475	NA 6 6 6 6 6.0 6.0 6.0 6.0 6.2 6.2 6.2 0.20	NA 6 6 6 0.42 6.0 5.2 5.2 0.20	NA 6 6 6 0.42 6.00 5.20 6.20 0.20 0.48	NA 6 6 6 6 0.0 0.42 6.0 5.2 1475 0.20 0.20 0.48 9.6 9.6	NA 6 6 6 6 0.042 6.0 5.2 1475 0.20 0.20 0.48 9.6 1.00	NA	NA N	NA N	NA N	NA N	NA N	NA N	NA N	NA N	NN NA N
F	NBN	4	00	1900								0.92	0	0	c	,	Prot	Prot	Prot	Prot –	Prot 1	Prot 1	Prot 1	Prot 1	Prot	Prot	Prot C	Pot t	P P C C	, Prot	, tot	, tot	, tot	, tot	, to —	, to —	, Pro -	Prot 1 1 8.9	Prot 1 1 8.9 0.0.67 45.1	Prof. 1 1 1 8.9 0.67 45.1 6.6 8%
4	WBR	*	25 25	1906	4.9	1.00	0.85	1.00	1583	1.00	1583	0.92	26	46	10	?	Prot	Prot 7	Prot	Prot 7	Prot 7.4 7.4	Prot 7.4 7.4 7.4 0.16	Prot 7 7.4 7.4 7.4 0.16	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0	Prot 7 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 2.59	Prot 7.4 7.4 7.4 0.16 4.9 2.0 2.59 0.01	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.5 0.01	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.5 0.01 0.01	Prot 7.4 7.4 7.4 7.4 7.4 7.4 7.9 2.0 2.5 2.5 0.01 0.01 15.9 115.9 1.00	Prot 7 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.9 2.0 2.5 2.5 0.01 0.00 1.00 0.00 0.00 0.00 0.00 0.	Prot 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Prot 7.4 7.4 7.4 7.4 0.16 2.0 2.59 0.01 15.9 1.00 0.00 1.50 15.9 B	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 0.16 4.9 2.0 2.0 2.0 2.0 2.0 0.01 1.00 0.0 1.59 1.59 1.59	Prot 7 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7	Prof. 7 7 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.	Prot 7 7.4 7.4 7.4 0.16 4.9 2.0 2.0 2.0 2.0 2.0 0.01 1.00 0.01 1.00 0.01 1.59 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Prof. 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4	Prof. 7 7 7 7.4 7.4 7.4 7.4 7.4 7.4 9.2 0.01 2.50 0.01 1.00 0.004 115.9 B
<b>&gt;</b>	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 7.4	Prot 7 7 7.4 7.4	Prot 7 7.4 7.4 7.4 0.16	Prot 7 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 0.16 4.9 2.0 563	Prot 7.4 7.4 7.4 0.16 4.9 2.0 563 c0.06	Prot 7.4 7.4 7.4 0.16 4.9 2.0 563 c0.06	Prot 7.4 7.4 7.4 7.4 7.4 0.16 4.9 2.0 2.0 5.03 0.06 0.36	Prot 7.4 7.4 0.16 4.9 2.0 563 0.06 0.36 16.7 16.7	Prot 7.4 7.4 0.16 4.9 2.0 563 0.06 0.36 1.00 1.00 1.00	Prot 7 7 7 7.4 7.4 7.4 7.4 0.16 4.9 2.0 2.0 5.63 0.06 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 7.4 7.4 7.4 7.4 7.4 7.4	Prot 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4	Prol 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4	Prol 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 2.0 5.63 0.06 0.06 16.7 10.0 10.9 16.9 16.9 16.9 16.9 16.9 16.9 16.9 16	Prot 7.4 7.4 7.4 0.16 6.36 0.06 0.06 0.1 1.6.7 1.6.9 1.6.9 1.6.9 1.6.9 1.6.9 1.6.9	Prot 7.4 7.4 0.16 4.9 2.0 0.36 0.36 0.36 1.00 0.1 1.00 0.1 1.6 B B B Its of the state of the sta	Prot 7.4 7.4 7.4 7.4 0.16 4.9 2.0 6.0.06 0.36 1.00 0.1 16.9 16.9 1	Prot 7.4 7.4 7.4 7.4 0.16 4.9 2.0 6.06 0.36 1.6.7 1.6.7 1.6.9 B B It.6.9
		gurations	me (vph)	(vphpl)	ime (s)	actor		þ	(prot)	, D	(berm)	Peak-hour factor, PHF	(hav	REDICTION (vph)	ane Group Flow (vph)			hases	hases hases	Turn Type Protected Phases Permitted Phases Actuated Green, G (s)	hases hases reen, G (s) reen, g (s)	hases hases reen, G (s) reen, g (s) C Ratio	hases hases reen, G (s) reen, g (s) C Ratio	hases hases reen, G (s) reen, g (s) C Ratio C Ratio ension (s)	hases hases hases creen, G (s) C Ratio C Ratio Filme (s) ension (s)	hases hases reen, G (s) c Ratio C Ratio Time (s) ension (s) ension (s)	hases hases reen, G (s) C Ratio C Ratio E rein (s) ension (s) ension (s)	hases hases reen, 6 (s) C Ratio C Ratio Ifme (s) ension (s) arap (vph)	hases hases reen G(s) reen g(s) C Ratio C Ratio C Ratio C Ratio C Ratio or C	hases hases reen, G (s) reen, g (s) C Ratio Time (s) ension (s) ension (s) ension (d) ere erm	hases hases hases reen, G (s) reension (s) red (wh)	hases hases tren, G (s) cen, g (s) C Ralio C Ralio C Ralio ensine (s) ap (vph) ord erm lay, d1 Factor I Pactor	hases hases hases (s) (c) (c) (c) (c) (d) (d) (d) (d) (em) (em) (em) (em) (em) (em) (em) (em	hases hases hases reen, G (s) respond (s)	hases reen, G (s) reen reen, G (s) reen reen reen reen reen reen reen ree	hases hases reen, G (s) reen, g (s) c Ralio (C Ralio (Time (s) ap (vph) rot ap (vph) rot rot ap (vph) rot rot leav, d1 rector releav, d2 robelay (s) OS	Turn Type emitted Phases Periotected Phases Periotected Phases Actuarded Green, G (s) Effective Green, g (s) Lehicle Extension (s) ane Grp Cap (vph) Instruction Period Instruction Delay, d2 Progression Factor	Turn Type Protected Phases Permitted Phases e-mitted Phases Actuated Green, G (s) Effective Green, g (s) Actuated green, g (s) Effective Green, g (s) Effective Green, g (s) Actuated green, g (s) Certain C Ratio Linior Delay, d1 Linior Delay, d2 Pleay (s) Progression Factor Incremental Delay, d2 Pleay (s) Approach Delay (s) Approach Delay (s) Approach LOS Intersection Summary Intersection Summary ACM 2000 Control Delay	Turn Type Proceed Phases Femilited Phases Femilited Phases Actualed Green, G (s) 7.4 Actualed Green, G (s) 7.4 Actualed Green, G (s) 7.4 Actualed g/C Ratio O10	Turn Type Protected Phases Protected Phases Permited Phases Protected Phases Actualed Green, G (s) Effective Green, G (s) Vehicle Extension (s) Lane Gry Cap (vph) Vehicle Extension (s) Lane Gry Cap (vph) Vehicle Extension (s) Lane Gry Cap (vph) Vehicle Extension (s) Lane Gry Cap (s) Vehicle Extension (s) Lane Gry Cap (s) Vehicle Extension Factor The Ratio Uniform Delay, d1 Progression Factor Progression Factor Progression Factor Progression Factor Progression Factor Actor Control Delay HCM 2000 Volume to Capacity Actualed Cycle Length (s) Actualed Cycle Length (s) Indresection Canacht Hillization Produced Cycle Length (s) Produced Cycle Length (s
	Movement	Lane Configurations	Traffic 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	Adj. Flow (vph)	RTOR Red	Lane Group		l urn I ype	Frotected Phases	Frotected Phases Permitted Phases	Form Type Protected F Permitted F Actuated G	Frotected F Protected F Permitted F Actuated G Effective G	Turn Type Protected Phases Permitted Phases Actuated Green, G (s Effective Green, g (s) Actuated g/C Ratio	Turn Type Protected Phases Permitted Phases Actuated Green, G Effective Green, g ( Actuated g/C Ratio Clearance Time (s)	Fortier of the Protected Phases Pertuated Phases Actuated Green, G (s Effective Green, g (s) Actuated g/C Ratio Clearance Time (s) Vehicle Extension (s)	I urn 1ype Protected F Permitted F Actuated G Effective G Actuated g Clearance Clearance Vehicle Ex Lane Grp C	I un I ype Protected Phases Pennitted Phases Actualed Green, G Effective Green, g ( Actualed grC Ratio Clearance Time (s) Vehicle Extension ( Lane Gpc Cap (uph) v/s Ratio Prot	I um I ype Protected Phas Permitted Phas Actuated Green Effective Green Effective Green Tim Vehicle Extens Lane Grp Cap v/s Ratio Prot v/s Ratio Prot	I unn ype Protected F Permitted F Actuated G Effective G Actuated g/ Clearance Vehicle Ext Lane Grp C v/s Ratio P v/s Ratio P	I um 1ype Protected Phases Permitted Phases Permitted Phases Actuated Green, ( Actuated QC Rail Actuated QC Rail Vehicle Exiension Vis Railo Perm vis Railo	I un I ype Protected Phases Permitted Phases Permitted Phases Actualed Green, G Actualed Green, G Actualed Green, G Actualed Green, G Actualed Por Vehicle Extension t Lane Gip Cap (vph Vs Ratio Prot Vs Ratio Perm Vs Ratio Perm Uniform Delay, d1 Progression Factor	lum lype Protected Phases Pennitied Phases Pennitied Phases Actuated Green, G (s) Actuated gC Ratio Clearance Time (s) Vehicle Extension (s) Vehicle Extension (s) Veraio Prot Uniform Delay, d1 Uniform Delay, d1 Progression Factor Progression Factor Incremental Delay, d2	Forecast of Protected Forecast of Protected Forecast of Actuated G Effective G Actuated g Actuated g Clearance Vehicle Exit Lame Grp C vis Ratio P vis Ratio D Uniform De Progression Delay (s)	Turn 1ypa Protected Phase Permitted Phase Actuated Green, Effective Green, Actuated g/C Ra Vehicle Extension Ver Raio Prot W/C Raio Prot W/C Raio Prot W/C Raio Prot W/C Raio Prot Deloy, C. Deloy, C. Progression Fac Progression Fac Progres	I un I ype Protected Phases Permitted Phases Permitted Green, G Actualed Green, G Actualed Green, G Actualed Green, G Actualed GP Actualed	I um lype Permitted Phas Permitted Phas Permitted Gheat Actualed Greet Effective Greet Clearance Tim Vehicle Extensi Lane Gry Cap (Lane Gry Cap Uniform Delay, Uniform Delay, Progression Fa Incremental De Delay (s) Delay (s) Level of Service Level of Service Approach Delay Approach Clos	Fortierded Perietted Perietted Perietted Perietted Actualed Garualed Garual	I um type Permitted F Permitted F Permitted F Actualed G Effectualed G Clearance Vehicle Exi Lane Gp C Vis Ratio P	I um type Permitted F Permitted F Actualed 9 Effective G Effective G Clearance Vehicle Exi Lane Gp C Vis Ratio P V	I fun Type Perintede F Perintede G Actualed G Effective G Actualed G Clearance Vehicle Exi Lane Gsp C Vs Ratio P V/s Ratio P V	I um type Permitted F Permitted F Actuated G Effective G Actuated S Clearance Vehicle EXI Lane Gp C Vis Ratio P Vi

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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	
<b>→</b>	SBT	845	0.55	12.0	0.0	12.0	9/	145	2304		1567	0	0	0	0.54	
<b>←</b>	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   FBI   FBB   NBI   NBI   SBI   SBB   SBB   NBI   NBI   SBI   SBB   NBI   NBI   SBI   SBB   NBI   NBI   SBI   SBB   NBI   SBI   SBB		•	<i>&gt;</i>	•	•	<b>→</b>	`	
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           t (vphp)         190         100         100         100         190         190           t (vphp)         190         100         100         100         100         100           t (ad)         1770         1583         1770         3539         3539         1583           t (ad)         100         0.95         0.92         0.92         0.92         0.92         0.92           t (ad)         100         0.93         1.03         1.00	Lane Configurations	*	*-	F	‡	‡	R.	
time (kph) 190 1209 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	120	259	8 8	1254	111	970	
time (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	ruule volume (vpn) Ideal Flow (vphpl)	1900	1900	1900	1900	1000	1900	
Factor 1.00 1.00 0.95 0.95 1.00  Ind 0.85 1.00 0.95 1.00 0.85  Ind 0.95 1.00 0.95 1.00 0.85  Ind 0.95 1.00 0.95 1.00 1.00 0.95  Ind 0.95 1.00 0.95 1.00 1.00  Ind 0.95 1.00 0.95 0.92 0.92  Ind 0.95 1.00 0.95  Ind	Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
ted 100 085 100 100 085  w (por) 100 085 100 100 085  ted 095 100 095 100 100 100  ted 095 100 095 100  ted 095 100 100 100 100  ted 096 099 092 092  ted 095 100 100 100 100  ted 096 099 092 092  ted 095 100 100 100 100  ted 096 099 092 092  ted 095 100 100 100 100  ted 096 099 093 094  ted 095 095 095 095  ted 096 099 095 095  ted 096	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 (pord)         1770         1583         1770         3539         3539         1583           ted         0.95         1.00         0.95         1.00         1.00         1.00           w (perm)         1.770         1583         1770         3539         3539         1583           fred         0.95         1.00         0.92         0.92         0.92         0.92           fractor         0.92         0.92         0.92         0.92         0.92         0.92           up Flow (vgh)         1.63         89         98         1363         845         1054           parametric (vgh)         1.83         1.32         2.52         180         4.24         4.24           Green (vgh)         3.84         3.43         3.13         3	Fit	1.00	0.85	1.00	1.00	1.00	0.85	
w (prod)         1770         1583         1770         3539         1583         1683           tred         7095         100         0.95         100         100         100           d (pem)         1770         1583         1770         3539         3539         1583           red (pem)         1770         1583         1770         3539         3539         1583           red (pem)         1771         353         3539         3539         1583         1583           red (pem)         163         282         98         1363         845         1054           cub (clot)         163         282         98         1363         845         1054           perm         Perm         Perm         Prof         NA         Ree         1054           perm         Perm         Prof         NA         Ree         1054         1054           perm         Perm         Perm         Perm         Perm         Perm         Perm         Perm           Geen, G         92         92         32         252         180         424         424           Geen, G         93         33         33	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    Very Chem   1770 1.583 1.770 3.539 1.583 1.5	Satd. Flow (prot)	1770	1583	1770	3539	3539	1583	
w (perm)         1770         1583         1770         3559         3559         1583           riphor, PHF         0.92         0.92         0.92         0.92         0.92           riphor, PHO         163         98         1363         845         1054           dublicion (vph)         163         99         88         1363         845         1054           up Flow (vph)         163         89         98         1363         845         1054           Phases         9         136         84         1054         0         0           Phases         4         4         5         6         6         6         0           Phases         4         4         5         2         6         6         6           Phases         4         4         5         2         6         6         7           Green (Gs)         9.2         9.2         3.2         25.2         180         4.4           Green (Gs)         9.2         9.2         3.2         25.2         180         4.4           Accept (s)         9.2         0.2         0.0         0.0         0.0         0.0	Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00	
rfactor, PHF 092 092 092 092 092 092 092 091 091 091 092 092 092 092 092 092 092 092 092 092	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         98         1363         845         1054           production (vph)         163         99         1363         845         1054           phases         4         4         2         6         Free           Phases         4         4         2         6         Free           Green, G(s)         92         92         32         252         180         424           Green, G(s)         92         92         32         252         180         424           Green, G(s)         92         92         32         252         180         424           Green, G(s)         92         32         252         180         424         404         40	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         845         1054           Up Flow (vph)         163         89         98         1363         845         1054           Phases         4         4         5         2         6         Free           Phases         4         4         5         6         Free           Geen, (G)         9.2         9.2         3.2         25.2         180         42.4           Geen, (G)         9.2         9.2         3.2         25.2         180         4.24           Geen, (G)         9.2         9.2         3.2         25.2         180         4.24           Geen, (G)         9.2         0.2         1.0         4.0         4.0         4.0           April (G)         3.0         3.0         3.0         3.0         3.0         3.0         3.0           April (G)         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0	Adj. Flow (vph)	163	282	86	1363	845	1054	
up Flow (vgh)         163         89         98         1363         845         1054           phases         Perm         Perm         Perm         Por         105         Pere           Phases         4         2         2         2         6         Free           Phases         4         4         5         2         6         Free           Green, G(s)         92         92         32         252         180         424           Green, G(s)         92         022         028         042         100         424           Aurenion (s)         36         30         30         30         30         30         30           Aurenion (s)         384         34         34         34         30         24         40         40         40         40         40         40         40         40         <	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, 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) 2,2 2,2 2,2 2,2 1,00 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0	Permitted Phases	4	4				Free	
Green g(s)         9.2         9.2         3.2         2.5.2         18.0         4.2.4           Gradio (S. Ratio (S.)         2.2         0.28         0.25         0.28         0.24         1.00           Time (s)         4.0         4.0         4.0         4.0         4.0         4.0           Alersion (s)         3.0         3.0         3.0         3.0         3.0         3.0           Cap (vph)         384         343         133         2103         1502         1583           Prof         0.09         0.06         0.39         0.24         0.65         0.67           Perm         0.04         0.26         0.74         0.65         0.67         0.67           Perm         0.04         1.00         1.00         1.00         1.00         1.00           In Elbery (d.         0.8         0.74         0.65         0.67         0.67           Beroke         1.5.1         1.4.2         38.2         6.4         9.7         2.2           Beroke         1.5         1.4.5         8         A         A         A           O Control Delay         1.4.5         8         5.6         A         A <td>Actuated Green, G (s)</td> <td>9.5</td> <td>9.2</td> <td>3.2</td> <td>25.2</td> <td>18.0</td> <td>42.4</td> <td></td>	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 s l'ime (s) 4.0 4.0 4.0 4.0 cap (vph) 3.0 3.0 3.0 3.0 Cap (vph) 384 343 133 2103 1502 1583 Prot 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 Delay, d1 14.3 13.8 19.2 5.7 9.2 0.0 on Factor 1.00 1.00 1.00 1.00 1.00 Included y, d2 0.4 19.0 0.7 0.5 2.2 Erevice B B B D A A A A D A D D D D D D D D D D	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	
Alterision (s)         3.0	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           Perm         0.42         0.26         0.74         0.65         0.67           Perm         0.42         0.26         0.74         0.67         0.00           on Factor         1.00         1.00         1.00         1.00         1.00           service         0.8         0.4         1.00         1.00         1.00           service         1.5.1         14.2         38.2         6.4         9.7         2.2           Delay (s)         1.45         8         B         A         A         A         A           D. Summary         1.45         8         5.6         A         A         A         A           O. Ontrol Delay         7.7         HCM 2000 Level of Service         0.93         N.Cotal cross of Service         0.93         N.Cotal cross of Service         0.93	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		
Prof. 0.06 0.39 0.24 0.06 0.09 0.04 0.009 0.06 0.009 0.004 0.006 0.009 0.006 0.000 0.0007 0.0	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 0.667  14.3 13.8 19.2 5.7 9.2 0.0  15.1 14.2 38.2 6.4 9.7 2.2  Everyee B B Delay (9.7 0.5 5.6  ELOS B	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	
belay, d1         14.3         13.8         19.2         5.7         9.2         0.0           on Factor         1.00	v/c Ratio	0.42	0.26	0.74	0.65	0.56	29:0	
on Factor 100 100 100 100 100 100 100 100 100 10	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           incive         B         B         B         A         A         A         A           Delay (s)         14.5         8.5         5.6         B         B         B         B         B         B         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   6.4   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  A A  A A  A A  A A  A A	Level of Service	В	В	٥	⋖	¥	V	
A A A  7.7 HCM 2000 Level of Service acity ratio 0.93 Sum of lost time (s) 22ition 49.6% ICU Level of Service 15	Approach Delay (s)	14.5			8.5	9.6		
7.7 HCM 2000 Level of Service 0.93 Sum of lost time (s) 42.4 Sum of lost time (s) 15 cation 49.6% ICU Level of Service 15	Approach LOS	В			A	A		
7.7 HCM 2000 Level of Service 0.93 0.093 Sum of lost time (s) zation 49.6% ICU Level of Service 15	Intersection Summary							
acity ratio 0.93 Sum of lost time (s) 224 Sum of lost time (s) 221ion 49.6% ICU Level of Service 15	HCM 2000 Control Delay			7.7	Ħ	0000 M	l aval of Sarvica	٨
2.30 Sum of lost time (s) 2.31 Sum of lost time (s) 2.32 Sum of lost time (s) 42.4 Sum of lost time (s) 15 15	HOM 2000 Volume to Canada	ity rotio		000	Í	2007		
2ation 49.6% ICU Level of Service 15	Actional Circle Longth (c)	ary ratio		0.93	Č	tool to our	time (c)	000
Utilization 49.6% ICU Level of Service 15	Actuated Cycle Length (s)			47.4	が !	IM OF IOST	time (s)	12.0
Analysis Period (min) 15	Intersection Capacity Utilizati	uo		49.6%	೨	U Level o	1 Service	A
	Analysis Period (min)			15				

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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	<b>†</b>	ţ	4	•	•	ၨ	<b>→</b>	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	87	34	326	576	2	968	141	985	

	4	†	ļ	4	€	<b>—</b>	٠	<b>→</b>	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	87	34	326	576	2	968	141	982	
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	Α	11.1	В							
۶	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		
<b>←</b>	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	V	9.3	Þ							
•	NBL	r	ı,	1900	4.0	1.00	1.00	0.95	1770	0.21	384	0.92	2	0	2	Perm		7	20.3	20.3	0.45	4.0	3.0	174		0.01	0.03	8.9	1.00	0.1	6.9	∢				ervice					
✓	WBR	*-	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	9.8	21.3	ပ				Level of S		time (s)	f Service		
ļ	WBT	₩	8 8	1900	4.0	1.00	1.00	96:0	1782	0.72	1343	0.92	33	0	359	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		
<b>/</b>	WBL		300	1900								0.92	326	0	0	Perm		∞																		Ĭ		ร	2		
~	EBR		ro r	1900								0.92	2	0	0																					13.2	0.74	44.8	70.8%	15	
†	EBT	¢	27	1900	4.0	1.00	0.98	1.00	1822	1.00	1822	0.92	59	က	31	N	4		16.5	16.5	0.37	4.0	3.0	671	0.02		0.05	9.1	1.00	0.0	9.1	⋖	10.1	В							
•	EBL	*	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	В					ty ratio		uo		
	Movement	Lane Configurations	Traffic Volume (vph)	Ideal Flow (vohol)	Total Lost time (s)	Lane Util. Factor	Ft	Flt 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 27: Morena Blvd & Baker St

Horizon Year with Preferred LU Timing Plan: PM Peak Period

																																								A	
<b>→</b>	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					
<b>&gt;</b>	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				THE PROPERTY OF STREET
	•	<b>+</b>	•	٠	<b>→</b>	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	134	439	20	111	982	
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	
Oueue 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

<b>→</b>		l			_		00 0.95				75 1.00	١	Ī	6	0 0	11 985	ot NA			3.6 21.3	.6 21.3	_	4.4 6.0			_					.3 0.3		* * *	7:0 A		HCM 2000 Level of Service A		Sum of lost time (s) 14.7	ICU Level of Service A
✓ <	NBR SBL	*	46 102		_		1.00 1.00			Ì	1.00 0.95	Ì	0.92 0.92	50 111	31	19 111	Perm Prot					_			585 176				7.3 15.7		0.0 5.3					HCM 20		Sum of	ICU Lev
<b>←</b>	R NBT	*	86 404		_	5.9	0.95	1.00	1.00	3539	1.00	3539	2 0.92	4	0 0	0 439	NA	2		13.4	13.4	0.37	5.9	4.4	1310	0.12		0.34	8.2	1:00	0.3	8.4	¥ 00	o.3		7.4	0.52	36.2	41.1%
1	WBL WBR	>			1900 1900	4.4	1.00	0.91	86:0	1663	86:0	1663	0			53	Prot	œ		4.5	4.5	0.12	4.4	2.0	206	c0.03		0.26	14.3	1.00	0.5	14.6	14.6	9 <u>.</u>			ity ratio		ion
	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)	Approach Dolon (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	

	•	<b>†</b>	ļ	✓	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	*-		لمولع	
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	
Total Lost time (s)		2.0	4.0	4.0		2.0	
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	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	∞			<b>-</b>	
Permitted Phases				∞			
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	B		8	
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

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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	0.00	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 <sup>★</sup>	=	45	24.2	10:0	2.4 <del>13.0</del> 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 <sup>★</sup>	=	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)	(mi)	Speed	LOS
Clairomont Dr	II	AF	117	57.0	72 G	0.13	6.7	L
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	8
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	0.00	כנ	A 7.0	מטט	0 30	C
TO DOOMOCOL		3	0.04	5.5	F:17	V.£V	7.07	ם
		70	47.0		7 00	0 40	7.04	L
IVIISSIOII DAY DI	Ш	3	0.51	7.1.	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

Synchro 9 Report Page 1

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
טו נג . ו ש	101	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
Recorreced St	#	35	15.9	3 6	19.6	0.12	22.6
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	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	/	<b>/</b>	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)		¥	<b>∱</b> }		Ţ	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	Α		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

	•	-	•	•	<b>←</b>	*	4	<b>†</b>	<i>&gt;</i>	<b>&gt;</b>	ļ	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	44	<b>^</b>	7	44	<b>^</b>	7	1,1	44	7	77	<b>†</b>	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		<b>^</b>		#			
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	0	0	0	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			
ane 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		CN 2000	ll . £ C ;		A	
HCM 2000 Control Delay			4.1	Н	UM 2000	Level of Service	ce	А	
HCM 2000 Volume to Capa	acity ratio		0.44 36.6			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	<b>^</b>		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	C	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	ment 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	ach	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	ach	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	ach	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.

SIDRA INTERSECTION 7.0 | Copyright © 2000-2016 Akcelik and Associates Pty Ltd | sidrasolutions.com Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Wednesday, July 26, 2017 4:54:55 PM Project: K:\SND\_TPTO\095413006 - Balboa Station\SIDRA\Morena at Jutland\Roundabout Mitigation Analysis.sip7

Timing Plan: AM Peak Period

	•	•	†	~	<b>/</b>	ţ			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	, N	7	<b>†</b>	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		A			
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%	6 ICU Level of Service				Α	
Analysis Period (min)			15						

c Critical Lane Group

	۶	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	/	<b>/</b>	ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)		¥	<b>↑</b> ↑		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	<b>→</b>	•	•	<b>←</b>	4	4	<b>†</b>	<b>/</b>	<b>\</b>	ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	77	<b>^</b>	7	1/2	<b>^</b>	7	ሻሻ	44	7	77	<b>1</b>	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		0.10	0.17	0.10	00.E.	0.13	00.E.	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	С	E	E	D	F	С	С	Е	F	C
Approach Delay (s)	_	46.5		_	57.8	J	•	61.7		_	61.9	
Approach LOS		D			E			E			Е	
Intersection Summary												
HCM 2000 Control Delay			56.9	Н	CM 200	D Level of	Service		Е			
HCM 2000 Volume to Capa	city ratio		0.97		CIVI EUU	2 20001 01	C 31 VI 00		_			
Actuated Cycle Length (s)	ion y rano		135.0	ç	um of lo	st time (s)			19.0			
Intersection Capacity Utiliza	ation		91.2%			of Servic			13.0 F			
An aliceia Davis d (main)	au VII		31.270	10	O LEVEI	OI OCIVIO	·		r			

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

	-	•	•	<b>←</b>	4	<i>&gt;</i>		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	<b>^</b>	7		<b>^</b> ^		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	city ratio		0.71					
Actuated Cycle Length (s)	-		53.5	Si	um of lost	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.   WBL   WBL   WBR   WBR   WBL   WBR   WBR   WBL   WBR   W		•	<b>†</b>	<b>/</b>	<b>/</b>	<b>↓</b>	✓	•	<b>←</b>	•	۶	<b>→</b>	•
ph) 351 1004 50 538 954 160 772 392 455 ph) 351 1004 50 538 954 160 772 392 455 ph) 351 1004 50 538 954 160 772 392 455 ph) 351 1004 50 538 954 160 772 392 455 ph) 360 1900 1900 1900 1900 1900 1900 1900 19	lovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ph) 351 1004 50 538 954 160 72 332 455 ph) 1301 1004 150 538 954 160 72 332 455 ph) 1301 1004 1500 1900 1900 1900 1900 1900 1900 1900	ane Configurations	1	444		14	444	<b>X</b>	F	#	¥.	14	₩	¥c_
hp) 351 1004 50 538 954 160 772 332 455 1900 1900 1900 1900 1900 1900 1900 1900	raffic Volume (vph)	321	1004	20	238	954	160	72	392	435	346	902	253
1900   1900	uture Volume (vph)	321	1004	20	538	954	160	72	392	435	346	902	253
1,000   1,00	al Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100   100	otal 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 0.99	ane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
0.95 100 0.95 100 0.95 100 100 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 0.95 100 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	.==	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
343 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 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 0.92 0.92 0.92 0.92 0.92 0.92 0.92	td. Flow (prot)	3433	5049		3433	5085	1583	1770	3539	1583	3433	3539	1583
1091	Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
1942   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	td. Flow (perm)	3433	5049		3433	5085	1583	1770	3539	1583	3433	3539	1583
1091   54   585   1037   174   78   426   473     2	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	. Flow (vph)	382	1091	54	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
25.7 168 27.9 6.9 21.5 38.3 25.7 168 27.9 27.9 6.9 21.5 38.3 25.7 168 27.9 27.9 6.9 21.5 38.3 25.7 168 27.9 27.9 6.9 21.5 38.3 25.7 168 27.9 27.9 6.9 21.5 38.3 25.2 10.2 10.2 10.2 10.2 10.2 10.2 10.2 10	n Type	Prot	ΑN		Prot	NA	Perm	Prot	ΑN	vo+mq	Prot	NA	Perm
25.7 16.8 27.9 27.9 6.9 21.5 38.3 25.7 16.8 27.9 27.9 6.9 21.5 38.3 2.0 27.7 16.8 27.9 27.9 6.9 21.5 38.3 2.0 27.7 16.8 27.9 27.9 6.9 21.5 38.3 2.0 27.7 16.8 27.9 27.9 6.9 21.5 38.3 2.0 27.7 16.9 20.2 20.2 24 2.0 20.3 20.1 20.2 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.1 20.2 20.3 20.3 20.3 20.3 20.3 20.3 20.3	tected Phases	5	2		_	9		က	∞	_	7	4	
25.7 168 27.9 57.9 6.9 21.5 38.3 21.0 25.7 168 27.9 27.9 6.9 21.5 38.3 21.0 22.7 0.28 0.29 0.77 0.23 0.40 0.27 0.29 0.77 0.23 0.40 0.25 0.29 0.77 0.23 0.40 0.25 0.20 0.20 0.20 0.20 0.40 0.20 0.20 0.20	mitted Phases						ဖ			∞			4
155	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 0.40 0.35 0.40 0.35 0.40 0.35 0.20 0.07 0.23 0.40 0.35 0.20 0.07 0.23 0.40 0.35 0.07 0.23 0.40 0.35 0.20 0.30 0.20 0.24 0.20 0.23 0.07 0.23 0.07 0.03 0.03 0.03 0.03 0.03 0.03 0.0	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   2.0   3.0   2.0   2.4   2.0     1371   6.09   1499   466   129   804   640     0.023   0.017   0.020   0.04   0.12     0.083   0.96   0.69   0.11   0.60   0.53     0.100   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     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	: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
1 35 20 30 20 24 20 1 1371 609 1499 466 129 804 640 1 0.023 0.017 0.020 0.03 0.04 0.12 0.12 1 0.83 0.96 0.89 0.11 0.60 0.53 0.67 1 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1 0.0 1.00 1.0	arance Time (s)	4.4	2.7		4.4	6.4	6.4	4.4	5.3	4.4	4.4	5.3	5.3
1371 669 1499 466 129 894 640 60 60 60 60 60 60 60 60 60 60 60 60 60	hicle 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	640	391	950	425
0.83 0.96 0.69 0.01 0.60 0.53 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	Ratio Prot	0.11	c0.23		c0.17	c0.20		0.04	0.12	0.12	c0.11	c0.19	
1 0 83 0 99 0 91 0 053 0 67 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Ratio Perm						0.03			0.15			0.07
324 386 295 243 425 321 230 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Ratio	97.0	0.83		96.0	0.69	0.11	0.60	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	form Delay, d1	38.7	32.4		38.6	29.5	24.3	42.5	32.1	23.0	41.7	31.1	27.3
46 267 14 01 54 04 20 370 653 309 244 479 326 250 389 415 0 C C C C C C C C C C C C C C C C C C	gression Factor	1.00	1.00		1.00	1.00	1.00	9.	1.00	1.00	1.00	1.00	1.00
370 653 309 244 479 326 250 1 D E C C D C C 2 C C 389 415 0 301  395 HCM 2000 Level of Service D 0.85 946 Sum of lost time (s) 73.1% ICU Level of Service D	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	ay (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	Jel of Service	_	Ω		ш	ပ	ပ	Ω	ပ	ပ	ш	ပ	ပ
D D C C 39.5 HCM 2000 Level of Service 0.85 Sum of lost time (s) 73.1% ICU Level of Service 15	proach Delay (s)		38.9			41.5			30.1			44.6	
39.5 HCM 2000 Level of Service 0.85 Cum 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 lost time (s) 73.1% ICU Level of Service 15	M 2000 Control Delay			39.5	Ì	CM 2000	Level of 3	Service		۵			
946 Sum of lost time (s) 73.1% ICU Level of Service 15	M 2000 Volume to Capaci	ity ratio		0.85									
73.1% ICU Level of Service 15	tuated Cyde Length (s)			94.6	Ō	um of lost	time (s)			20.5			
alysis Period (min) 15 Critical Lane Group	ersection Capacity Utilizati	ion		73.1%	으	U Level o	of Service			۵			
Critical Lane Group	alysis Period (min)			15									
	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         NBI         Table Load (vicine)								
588 10 176 259 17 317 317 317 318 318 319 319 319 319 319 319 319 319 319 319	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
588 10 176 259 17 317 1190 1900 1900 1900 1900 1900 1900 19	Lane Configurations	*	¥C	*	*		€#	
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           1.00         0.85         1.00         0.85         1.00         0.95         1.00           1.770         1583         1863         1583         3530         0.94         1.00           1.770         1582         1863         1583         3530         0.94         1.00           0.95         1.00         1.00         1.00         0.94         1.00         0.94           0.77         1.583         1863         1.823         1.83         3316         0.94           0.79         0.79         0.20         0.20         0.22         0.82         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83         0.83	Traffic Volume (vph)	288	10	176	259	17	317	
1900 1900 1900 1900 1900 1900 1900 100 1	Future Volume (vph)	288	10	176	528	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 0.92 0.90 0.94 0.94 0.94 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 17.7 17.7 10.4 10.4 10.4 17.7 17.7 10.4 10.4 10.4 0.49 0.49 0.29 0.29 0.29 0.40 0.40 0.29 0.29 0.40 0.40 0.29 0.29 0.70 0.10 0.05 0.10 0.70 0.10 0.05 0.11 0.73 4.7 10.2 9.6 10.3 10.6 4.7 10.6 9.8 10.3 10.6 4.7 10.6 9.8 10.3 10.6 4.7 10.6 9.8 10.3 10.6 4.7 10.6 9.8 10.5 10.7 10.4 10.4 HCM.2000 Level of Service 10.5 10.1 Sum of lost time (s)	Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	
1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.90 1.70 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	1.00	1.00	1.00	1.00		0.95	
0.95 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	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           082         0.92         0.92         0.92         0.92           639         11         191         282         18         345           639         5         191         81         0         0           639         5         191         81         0         0           639         5         191         81         0         0           639         5         191         81         0         0           639         5         191         80         0         0         0           639         191         81         104 <td>Flt Protected</td> <td>0.95</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td></td>	Flt Protected	0.95	1.00	1.00	1.00		1.00	
1770   1583   1863   1583   3316   1770   1583   1863   1583   3316   1770   1583   1583   3316   1770   1583   1583   3316   1770   1583   1583   1583   3316   1770   1711	Satd. Flow (prot)	1770	1583	1863	1583		3530	
1770 1583 1863 1316  0.82 0.82 0.92 0.92 0.92  0.93 0.94 0.92 0.92 0.92  0.96 0.9 0.20 0.92  17.7 17.7 104 104 10.4  0.49 0.49 0.29 0.29 0.29  3.0 3.0 3.0 3.0 3.0  8.87 776 5.56 4.56 9.55  0.00 0.4 0.02 0.03  1.00 1.00 1.00 1.00  1.00 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 18 345 639 6 0 201 0 0 6 8 0 201 0 0 0 8 8 2 2 6 177 177 104 104 104 177 177 104 104 104 177 177 104 104 104 177 177 104 104 104 177 177 104 104 104 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 0.05 0.18 0.74 0.01 0.36 0.18 0.38 7.3 4.7 102 9.6 103 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
639 6 0 201 0 363  Prot Perm NA Perm Perm NA 8 8 2 2 6 6 6 6 7 177 104 104 104 104 104 104 104 104 104 104	Adi. Flow (vph)	639	7	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	Lane Group Flow (vph)	639	5	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 0.05 0.01 0.73 4.7 10.2 9.6 10.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Tum Type	Prot	Perm	¥	Perm	Perm	NA	
17.7   17.7   10.4   10.5	Protected Phases	∞		2			9	
17.7 17.7 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4	Permitted Phases		∞		2	9		
177 177 104 104 104  0.49 0.29 0.29  4.0 40 40 40 40  3.0 3.0 3.0 3.0 3.0  887 776 536 456 955  0.36 0.00 0.05 0.11  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  1.05 4.7 10.6 9.8 10.5  B A B A B A B B A B B A B B A B B A B B A B B A B B A B B B B B B B B C C C C C C C C C C C C	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 0.05 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 A B B A B B A B B A B B A B	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	
60.36 776 536 456 955 955 950 950 950 950 950 950 950 950	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 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 10.5 10.1 A HCM 2000 Level of Service of Servic	Lane Grp Cap (vph)	298	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 10.1 10.5 B B A B B A 10.5 10.1 10.5 Calculation 0.60 0.60 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	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 3.0 0.4 0.2 0.3 10.6 4.7 10.6 9.8 10.5 10.5 10.1 B A B B 10.5 10.1 C 10.5 10.4 HCM 2000 Level of Service acity ratio 0.60 2 2 2 2 2 3 6.1 Sum of lost time (s) 1.00 10 5 10 10 10 10 10 10 10 10 10 10 10 10 10	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 B 10.5 B B A B B 10.1 B B A B B 10.5 B B B B B 10.5 B B B B B 10.5 B B B B 10.5 B B B B B B B 10.5 B B B B B B B 10.5 B B B B B B B 10.5 B B B B B B B B 10.5 B B B B B B B B 10.5 B B B B B B B	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 10.1 10.5 Cation 80.6% ICU Level of Service 16.6% ICU Level of ICU Leve	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 10.50 2 2 2 2 3 6.1 Sum of lost time (s) 15 10.1 Level of Service 15 15 10.1 Level of Service	Delay (s)	10.6	4.7	10.6	9.8		10.5	
10.5 B B B B B C 10.1 10.5 B C 10.4 HCM 2000 Level of Service acity ratio 0.60 Sum of lost time (s) 15 15 15 15 16 17 10.1 10.1 10.1 10.2 10.1 10.2 10.1 10.2 10.2	Level of Service	മ	V	മ	V		<b>a</b>	
B B B  10.4 HCM 2000 Level of Service 10.60 0.60 Sum of lost time (s) 10.50 Cation 60.6% ICU Level of Service 15	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) zation 60.6% ICU Level of Service 15	Approach LOS	Ф		മ			В	
10.4 HCM 2000 Level of Service 10.60 0.60 36.1 Sum of lost time (s) 2ation 60.6% ICU Level of Service 15	Intersection Summary							
nacity ratio 0.60 16. 36.1 Sum of lost time (s) 2ation 60.6% ICU Level of Service 15	HCM 2000 Control Delay			10.4	¥	JM 2000 I	evel of Service	В
so:1 Sum of lost time (s) zation 60.6% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.60	C	:		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		%9:09 ::	ပ	U Level o	Service	m
	Analysis Period (min)			3				

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	LOSA	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	I		
	4	<b>†</b>	<b>/</b>	ţ	•	<b>→</b>	
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	
Lane Group Flow (vph)	49		ж	765	111	279	
v/c Ratio	0.11	0.92	0.04	0.31	0.42	0.88	
Control Delay	8.9		10.7	8.9	39.6	0.99	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	8.9		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)	22		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>&gt;</i>	<b>\</b>	ļ	✓	•	<b>←</b>	•	٠	<b>→</b>	•
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)	45	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	<del>-</del>	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			566	
v/s Ratio Prot		c0.65			0.22							
v/s Ratio Perm	80.0			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			1.00			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	∢	ပ		V	V						ш	
Approach Delay (s)		24.9			8.4			36.9			64.8	
Approach LOS		ပ			⋖			Ω			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	S	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 (pph) 51 Traffic Volume (pph) 51 Ideal Flow (vphp) 1900 Tobal Lost time (s) 1901 Tobal Lost time (s) 1900 I Lane Uill. Factor Fire Fire Protected Sadd. Flow (port) 62 Sadd. Flow (port) 63 Sadd. Flow (port) 63 Sadd. Flow (port) 64 RTOR Reduction (vph) 0 Lane Group Flow (vph) 0	↑↑ 466 466 466 466 1900 5.0 0.95 1.00 1.00 35.2 0.81 2879 0.92 507 0.92 507 0.92	WBT ↑↑ 328 328 328 1900 5.0 0.91	WBR 723	SBL 7	SBR	
DOS (V(Ph))  116  117  117  118  118  118  118  118	446 466 466 1900 5.0 0.95 11.00 3.522 0.81 2.879 0.92 507 0.92 507	41 328 328 1900 5.0 0.91	723	À.		
ph) (ph) (ph) (ph) (ph) (vph) ((vph)	466 466 1900 5.0 0.95 11.00 3522 0.81 2879 0.92 507 0	328 328 1900 5.0 0.91	723			
ph) 119 (vph) PHF 0	466 1900 5.0 0.95 1.00 3522 0.81 2879 0.92 507 0 562	328 1900 5.0 0.91		937	0	
)) )) PHF 0 ((vph)	1900 5.0 0.95 1.00 3522 0.81 2879 0.92 507 0 562	1900 5.0 0.91	723	937	0	
;) ) PHF 0 ((vph) ((vph)	5.0 0.95 11.00 35.2 0.81 2.879 0.92 5.07 0 0 5.62 NA	5.0	1900	1900	1900	
) PHF 0 ((vph)	0.95 1.00 1.00 3522 0.81 2879 0.92 507 0 562 NA	0.91	4.0	4.9		
PHF 0	1.00 3522 3522 0.81 2879 0.92 507 0 562 NA		0.91	0.97		
PHF 0	1.00 3522 0.81 2879 0.92 507 0 562 NA	0.92	0.85	1.00		
) PHF 0 (vph)	3522 0.81 2879 0.92 507 0 562 NA	1.00	1.00	0.95		
m) nr, PHF 0 nn (vph) w (vph)	0.81 0.92 507 0 562 NA	3124	1441	3433		
m) nr, PHF 0 on (vph) wr (vph)	2879 0.92 507 0 562 NA	1.00	1.00	0.95		
on (vph)	0.92 507 0 562 NA	3124	1441	3433		
n (vph) w (vph)	507 0 562 NA	0.92	0.92	0.92	0.92	
	0 562 NA	357	786	1018	0	
	562 NA	245	0	0	0	
	NA 2	505	393	1018	0	
Turn Type	2	NA	Free	Prot		
Protected Phases	1	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		
		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	<u></u>	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	A		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	Sur	Sum of lost time (s)	time (s)	6.6
Intersection Capacity Utilization	-	70.3%	ਹੁ	Level o	ICU Level of Service	U
Analysis Period (min)		15				

KHA HCM Signalized Intersection Capacity Analysis

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KHA Queues

Balboa Transit Station

3: Garnet Ave & Soledad Mtn Rd

Timing Plan: AM Peak Period

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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	
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Intersection Summary							

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KHA Oueues

Balboa Transit Station 3: Garnet Ave & Soledad Mtn Rd

Horizon Year with Reduced LU Timing Plan: AM Peak Period

Movement         EBI         EBI         WBI         WBR         SBL         SBR           Lane Configurations         11         44         4.4         7         7         7           Future Configurations         121         1464         828         508         479         55           Future Volume (vph)         120         1900         1900         1900         1900         1900           Total Lost time (s)         4.4         5.5         4.9         5.4         5.4         5.4         5.4           Lane Util Factor         100         100         100         100         100         1900         1900           Fit         Protected         0.95         1.00         1095         1.00         1095         1.00           Fit Permitted         0.95         1.00	EBL 121 121 121 121 132 3433 3433 0.95 0.95 0.95 0.95 132 132 132 132 132 132 132 132 132 132			1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	7	
144   14   17   17   17   17   17   17	121 121 127 1900 1900 1909 3433 0.95 3433 0.95 132 132 132 132 132 132 132 132 132 132		2, 3, 3, 3	91 .1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	555 555 500 500 500 500 500 500 500 500	
1464   828   508   479   55     1464   828   508   479   55     1464   828   508   479   55     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     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   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   0.00     1.00   1.00   0.00     1.00   1.00   0.00     1.00   1.00   0.00     1.00   1.00   0.00     1.00   1.00   0.00     1.00   0.01   0.00     1.00   0.00	121 1900 4.4 6.4 100 0.97 3433 0.95 3433 0.95 1.32 1.32 1.32 1.32 1.32 1.32 1.32 1.32			91 1. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	555 555 500 500 500 500 500 500 500 500	
1464 828 508 479 55	121 1900 4.4 1.00 1.00 1.00 1.32 1.32 1.32 1.32 1.32 1.32 1.32 1.32			1.	555 000 000 000 000 000 000 000	
1 55	1900 144 0.97 1.00 0.95 3433 0.92 1.32 1.32 Prof 106			2, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	000 4 4 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
100 100 0.95 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 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.95 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	0.97 1.00 0.95 3.433 0.92 0.92 1.32 0.92 1.32 Prot 5 5			. 1. 0. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	25 55 50 50 55 50 50 50 50 50 50 50 50 50	
100 100 0.85 1.0	1.00 0.95 0.95 0.95 0.92 0.92 1.32 0.92 1.32 Prof 1.06			0. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	25 55 55 55 55 55 55 55 55 55 55 55 55 5	
8 3839 3839 1683 3433 1583 1683 8339 3839 1683 3433 1583 1683 8339 1683 3433 1583 1683 8339 1683 3433 1583 1683 8339 1683 3433 1683 1683 1683 1683 1683 1683 1683 16	0.95 3433 0.95 3433 0.92 0.92 1.32 1.32 Prof 5 5			2 - 5 - 50	22 23 33 30 00 00 00 00 00 00 00 00 00 00 00	
8 3539 3539 1583 3433 1583 1583 1580 1100 1100 100 0095 1100 0095 1100 0092 0092 0092 0092 0092 0092 0092	3433 0.95 3433 0.92 132 0 132 Prot 5 10.6			5.1. 1.0.	333 300 300 322 500 500 112 112 114 114 115	
100 100 100 0.95 1.00 3339 3339 1883 3433 1883 1591 090 552 521 0.0 0 0 0 0 48 0 0 0 552 521 12 1591 900 552 521 12 1 NA NA pm+ov Prot custom 1 Z 6 7 7 7 7 7 7 2 6 7 7 7 7 7 7 3 0.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 1 5.5 4.9 5.4 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 0.8 0.7 0.19 1 5.5 0.8 0.2 0.0 3.0 1 5.6 8.0 2.0 3.0 1 5.6 8.0 2.0 3.0 1 5.6 8.0 2.0 3.0 1 5.6 8.0 2.0 3.0 1 5.6 8.0 2.0 3.0 1 5.6 8.0 2.0 3.0 1 5.6 8.0 2.0 3.0 1 1.0 0.6 0.1 4.0 1 1.0 0.6 0.1 6.0 0.1 1 1.0 0.6 0.1 6.0 0.1 1 1.0 0.6 0.1 6.0 0.1 1 1.0 0.6 0.1 6.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.5 0.1 8.0 0.1 1 1.0 0.0 0.1 9.0	0.95 3433 0.92 132 0 132 Prot 5 10.6			0.	20 22 22 20 20 20 20 20 20 20 20 20 20 2	
3539 3539 1583 3433 1583	3433 : 3 0.92   0.92   132   132   132   132   132   106   10.6			0.	22 22 50 60 12 12 12 14 14 17	
1992   6992   6992   6992   6992   6992   6992   6992   6993	0.92 132 0 132 Prot 5 10.6			0	22 550 148 112 12 14 17	
1591   900   552   521   60     1 0	132 15 0 0 132 15 Prot 1 5 5 10.6 99				50 48 12 12 mm 4 4	
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1591 900 552 521 12	) 132 11 Prot 5 10.6 9				12 4 7	
1 NA NA pm+ov Prot custom 2 6 7 7 4 2 6 6 3 7 7 4 4 5 6 7 7 7 4 6 90.1 75.7 99.7 24.0 24.0 6 90.1 75.7 99.7 24.0 24.0 7 7 90.1 75.7 99.7 24.0 24.0 7 8 90.1 75.7 99.7 24.0 24.0 7 90.2 26.0 2.0 3.0 7 5.6 8.0 2.0 2.0 3.0 7 5.6 8.0 2.0 2.0 3.0 7 5.6 8.0 2.0 2.0 3.0 7 5.6 8.0 2.0 2.0 3.0 7 5.6 8.9 303 7 6.9 3.0 7 7 8 8 13.0 6.9 303 7 8 8 13.0 6.0 7 1.1 0.0 0.1 7 1.2 0.6 0.1 6.0 0.1 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 8 A D D 7 1 3.2 54.1 41.2 7 9 90.1 13.5 5.6 5.8 7 90.1 13.5 5.6 5.8 7 90.1 13.5 5.0 5.0 7 12.0 0.0 0.0 0.0 0.0 0.0 7 1 3.2 54.1 41.2 7 90.1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 7 1 13.5 5.0 5.0 0.0 0.0 7 1 13.5 5.0 5.0 0.0 0.0 7 1 13.5 5.0 5.0 0.0 0.0 7 1 13.5 5.0 5.0 0.0 0.0 0.0 7 1 13.5 5.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Prot 5 10.6 9				4 7 0	
2 6 7 7 4 4  90.1 75.7 99.7 24.0 24.0  90.1 75.7 99.7 24.0 24.0  90.1 75.7 99.7 24.0 24.0  5.6 8.0 2.0 24.0  5.5 8.0 2.0 2.0 3.0  2.550 2143 1330 659 303  6.045 0.42 0.42 0.79 0.04  1.00 0.51 0.82 1.00 1.00  1.10 0.51 0.82 1.00 1.00  1.10 0.51 0.82 1.00 1.00  1.11 0.5 0.1 0.0 0.1  1.12 0.6 0.1 6.0 0.1  1.13 5.6 A D  1.14 0.1 0.1  1.15 0.1 0.1  1.15 0.1 0.1 0.1  1.15 0.1 0.1  1.	5 10.6 10.6	6 75.7			7	
90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 24.0 27.2 26.1 24.0 24.0 24.0 27.2 26.1 24.0 24.0 24.0 24.0 24.0 24.0 24.0 24.0	10.6	75.7	7	7	7	
90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 75.7 99.7 24.0 24.0 90.1 5.6 8.0 2.0 3.0 2550 2143 1330 65.9 303 2550 2143 1330 65.9 303 90.6 0.0 0.0 0.0 0.0 90.6 0.0 0.0 0.0 0.0 90.7 0.0 0.0 0.0 0.0 90.7 0.0 0.0 0.0 90.8 9 130 3.8 48.1 41.1 90.8 9 130 3.8 48.1 41.1 90.9 130 3.8 48.1 41.1 90.0 0.1 6.0 0.1 90.0 7.1 3.2 5.1 41.2 90.0 7.1 3.2 5.1 41.2 90.0 7.1 3.2 5.1 41.2 90.0 7.1 3.2 5.0 0.0 90.0 7.1 3.2 5.1 41.2 90.0 7.1 3.2 5.0 0.0 90.0 7.1 4.2 5.0 0.0 90.0 7.1 3.2 5.0 0.0 90.0 7.1 3.2 5.0 0.0 90.0 7.1 41.2 0.0 90.0 7.1 3.2 5.0 0.0 90.0 7.1 41.2 0.0 90.0 7.1 3.2 5.0 0.0 90.0 7.1 41.2 0.0 90.0 7.1 3.2 5.0 0.0 90.0 7.1 41.2 0.0 90.0 7.1 4	10.6 10.6	75.7	9		_	
90,1 757 997 240 240 1 0,72 0.61 989 0.19 2.56 80 2.0 2.0 3.0 2.56 80 2.0 2.0 3.0 2.55 0.08 0.15 0.01 2.55 0.08 0.15 0.01 0.07 0.07 0.04 1 8 9 130 8.8 481 41.1 1 0.6 0.1 6.0 0.1 1 0.0 7.1 3.2 54.1 41.2 1 8 A A D D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B A B D 1 B B A B D 1 B B A B D 1 B B B B B B D 1 B B B B B B B B B B B B B B B B B B B	10.6	75.7			9	
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		2.5			0.	
1 55 49 54 54 54 54 54 54 54 55 56 80 20 30 30 30 55 50 80 20 30 30 55 50 80 20 30 30 55 50 50 50 50 50 50 50 50 50 50 50 50	0.08	0.61			61	
5.6 8.0 2.0 2.0 3.0     2550	4.4	4.9			4.	
2550 2143 1330 659 303 1 c0.45 0.25 0.008 c0.15 0.01 2 0.62 0.42 0.42 0.79 0.04 1 8 9 130 88 48.1 41.1 1 1.0 0.51 0.82 1.00 1.00 1 100 7.1 3.2 54.1 41.2 1 8 A D D 1 8 A D D 1 8 A D D 1 8 A D D 1 8 A D D 1 9 B A S D 1 9 B A S D 1 1 5 6 8.28 1 8 A S D 1 1 5 5 8 8 9 1 1 5 5 8 8 9 1 1 5 5 8 8 9 1 7 8 8 9 100 100 100 100 100 100 100 100 100 1	2.0	8.0			0.	
1 C0.45 0.25 0.08 c0.15 0.01 0.62 0.42 0.42 0.42 0.79 0.04 1.00 0.51 0.82 1.00 1.00 1.00 1.10 0.51 0.82 1.00 1.00 0.1 0.0 7.1 3.2 5.4.1 41.2 B A D D D D D D D D D D D D D D D D D D	291	2143			33	
0.662 0.42 0.42 0.79 0.04  1 89 130 38 48.1 41.1  1 100 0.51 0.82 1.00 1.00  1 1.2 0.6 0.1 6.0 0.1  1 0.0 7.1 3.2 54.1 41.2  1 8 A D D  1 3.5 5.6 5.28  B A D D  1 3.5 9.6  1 5.8 D  1 5.9 D  1 5.0 Sum of lost time (s)	0.04	0.25	S		11	
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
1 8 9 130 38 481 41.1 1 1.00 0.51 0.02 1.00 1.00 1 1.0 0.6 0.1 6.0 0.1 1 0.0 7.1 3.2 54.1 41.2 B A D D D 1 13.5 6 52.8 B A D D 1 13.5 1.00 Level of Service 0.77 Sum of lost time (s)	0.45 (	0.42			74	
100 051 082 1.00 1.00 1 1.2 0.6 0.1 6.0 0.1 100 7.1 3.2 54.1 41.2 B A D D D 13.5 5.6 52.8 B A D D 13.5 1.00 1.00 Level of Service 0.77 Sum of lost time (s)	54.4	13.0			:	
11.2 0.6 0.1 6.0 0.1 10.0 7.1 3.2 54.1 41.2 13.5 5.6 5.28 13.5 1.6 5.0 14.5 HCM 2000 Level of Service 0.71 12.5.0 Sum of lost time (s)	1:00	0.51			00	
100 7.1 3.2 5.1 41.2 1 8 A D D D 1 13.5 5.6 52.8 B A D 1 12.5 HCM 2000 Level of Service 0,71 25.0 Sum of lost time (s)	ital Delay, d2 0.4	9.0				
13.5 5.6 52.8 B A D D B A D 13.5 16.5 16.5 HCM 2000 Level of Service 0.71 Sum of lost time (s)	54.9	7.1	ŭ		.2	
135 5.6 52.8 B A D 165 HCM 2000 Level of Service 0.71 125.0 Sum of lost time (s)	٥	A	A		Q	
B A D 16.5 HCM 2000 Level of Service 0.71 12.5.0 Sum of lost time (s)	/ (s)	9.6	52.	œ		
16.5 HCM 2000 Level of Service 0.71 12.5 0 Sum of lost time (s)		V		0		
16.5 HCM 2000 Level of Service 0.71 Sum of lost time (s)	ersection Summary					
0.71 125.0 Sum of lost time (s)	CM 2000 Control Delay	16.5	HCM 20	000 Level	l of Service	В
125.0 Sum of lost time (s)		0.71				
		125.0	Sum of	lost time		18.7
Intersection Capacity Utilization 63.2% ICU Level of Service		3.2%	ICU Lev	el of Ser	vice	В
Analysis Period (min) 15	nalysis 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	†	~	<b>/</b>	ţ	4	•	•	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<b>₽</b> ₽			*				*			*
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		⋖			⋖			∢			4	
Intersection Summary												
HCM 2000 Control Delay			0.4	H	:M 2000	HCM 2000 Level of Service	ervice		Α			
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									
<ul> <li>c Critical Lane Group</li> </ul>												

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	†	~	<b>/</b>	ţ	4	•	<b>←</b>	4	٠	<b>→</b>	•
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

	•	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	✓	•	•	•	۶	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£	ŧ	₩.	*	<b>‡</b>	*-	F	‡	*	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	599	258	272	358	371
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	M	vo+mq
Protected Phases	က	∞	-	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	0.05	c0.14	0.17	0.05	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	89.	0.0
Delay (s)	129.8	51.0	39.1	68.1	48.8	32.5	60.4	32.9	19.9	29.0	20.4	21.2
Level of Service	ш	٥	٥	ш	٥	ပ	ш	٥	В	ш	۵	O
Approach Delay (s)		9.9/			49.0			41.1			41.1	
Approach LOS		ш			٥			٥			D	
Intersection Summary												
HCM 2000 Control Delay			55.8	Ξ	M 2000	HCM 2000 Level of Service	Service		ш			
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.		80.0%	೨	U Level	ICU Level of Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

KHA HCM Signalized Intersection Capacity Analysis

<sup>-</sup> 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	8	
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	<b>†</b>	<i>&gt;</i>	<b>\</b>	ţ	4	•	-	4	٨	<b>→</b>	•
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
Frt		1.00			0.99				0.85			0.86
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		∞			2 4				7			
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%	⊇	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

																																								А	
•	NBR	W.	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	907	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	907	0	0	1700	0.42	0	0.0		0.0				C	
/	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%	12
<b>/</b>	EBR	¥C.	657	657			0.92	714																			EB 2	401	0	0	1700	0.24	0	0.0							
<b>†</b>	EBT	##	738	738	Free	%0	0.92	807						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 (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)	tF (s)	po queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	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	<b>†</b>	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							

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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	<b>*</b>	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	<b>K</b>	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	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

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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

(ph)         203         877         468         906         136         439           (ph)         203         877         468         906         136         439           (ph)         203         887         468         906         136         439           (ph)         889         408         681         315         548         367           (ph)         82         260         146         238         79         127           (ph)         42         250         146         238         79         127           (ph)         43         411         #293         317         152         177           (ph)         43         4411         #293         367         127         177           (ph)         240         220         200         136         136         136           (ph)         240         220         200         136         136         136           (ph)         289         117         504         136         0         0         0           (ph)         289         177         504         0         0         0         0		•	†	<b>/</b>	ţ	•	•	•	۶	<b>→</b>	
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 42.2 250 146 238 79 127 4136 #411 #293 331 152 240 220 177 544 1361 305 1361 240 229 117 544 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 4.25 250 146 236 79 127 #136 #411 #293 3,71 152 177 2.40 220 220 200 2.40 220 220 200 2.40 220 220 200 2.40 0.0 0.0 0.0 0.0 0.0 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 12.7 41.1 #2.93 33.1 152. 177 240 229 11.7 56.4 1361 36.7 62.0 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	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 240 220 200 289 1177 504 1361 305 1261 0	Queue Length 50th (ft)	62	250	146	236	79	127	196	139	151	
3203 630 1350 240 287 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 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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Tum Bay Length (ft)	240		220		200		100	120		
	Base Capacity (vph)	588	1177	504	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 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
0.70 0.75 0.03 0.47 0.45 0.25	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	<b>→</b>	•
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   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 0.008 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 0.74 0.43 3.3 2.64 40.0  1.02 0.10 1.00 1.00 1.00 1.00  1.03 0.10 0.10 0.10 0.10 0.10 0.10  1.04 0.10 0.10 0.10 0.10 0.10  1.05 0.14 0.05 0.14 0.0 0.15  1.06 0.15 0.14 0.0 0.15  1.07 0.15 0.15 0.14 0.0 0.15  1.08 0.15 0.14 0.0 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.15 0.15  1.00 0.	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 0.16 0.94 0.05 0.17 0.094 0.05 0.10 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  5.6.8 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  5.0.9 HCM 2000 Level of Service D  0.87 HCM 2000 Level of Service D  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 1 40.3 HCM 2000 Level of Service D 0 87 Sum of lost time (s) D 76.9% ICU Level of Service D	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

EBL EBT WBL 63 586 50 024 046 023 21.9 128 24.0 0 0.0 0.0 21.9 12.8 24.0 14 41 11 50 125 44 172 150 150 125 44 173 150 150 125 44		329 0.61 17.0 0.0 17.0 59 139	SBT 287 287 6.53 6.65 0.0 1.6.7 5.7 129
(1) 63 586 50 (1) 624 023 (2) 19 128 240 (1) 19 128 240 (1) 14 41 11 (1) 50 125 44 (1) 51 125 44			287 0.53 116.7 0.0 116.7 57
024 046 023 21.9 128 24.0 0.0 0.0 0.0 21.9 128 24.0 1.1 41 11 0) 50 125 44 117 150 150 125 44 150 135 150			0.53 16.7 0.0 16.7 57
21.9 12.8 24.0 0.0 0.0 0.0 21.9 12.8 24.0 14 41 11 10 50 125 44 1172 150 150 135 44			16.7 0.0 16.7 57 129
0.0 0.0 0.0 21.9 128 240 00 10 128 240 01 50 125 44 1172 150 150 150			0.0 1.6.7 5.7 129
21.9 12.8 24.0 10 14 41 11 10 50 125 44 117 150 150 150 150 150 150			16.7 57 129
(f) 14 41 11 (f) 50 125 44 1172 150 150 321 1916 220			57 129
(f) 50 125 44 1172 150 150 321 1916 220		39	129
1172 150 150 321 1916 220			
150 150 150 321 1916 220	936	328	244
321 1916 220			
	1707 13	1367	1420
Starvation Cap Reductin 0 0 0	0	0	14
Spillback Cap Reductn 0 0 0	0	0	0
Storage Cap Reductn 0 0 0	0	0	0
Reduced v/c Ratio 0.20 0.31 0.23 0.1	0.12 0	0.24	0.20
Intersection Summan			

KHA Synchro 9 Report Oberies Page 18

Balboa Transit Station 10: Olney St & Balboa Ave

Horizon Year with Reduced LU
Timing Plan: AM Peak Period

Part Configurations	ERT         RBL         WBI         WBT         WBR         NBI         NBI         NBI         SBI         ABI         ABI <th>  Per   Per    </th> <th>WBL 46 46 46 44 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1</th> <th></th> <th>0.05</th> <th>NBT 4.9 192 192 1900 4.9 1.00 0.96 1.00 0.97 1781 0.97 0.92 209 209 209 8 8</th> <th>92 92 92 92 1900 100 0 0 0</th> <th>12 12 12 13 0 0 0 0 0 0 4 4</th> <th>SBT 237 237 237 237 1900 4.9 1.00 1.00 0.98 1807 258 258 258 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</th> <th>15 15 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16</th>	Per   Per	WBL 46 46 46 44 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1		0.05	NBT 4.9 192 192 1900 4.9 1.00 0.96 1.00 0.97 1781 0.97 0.92 209 209 209 8 8	92 92 92 92 1900 100 0 0 0	12 12 12 13 0 0 0 0 0 0 4 4	SBT 237 237 237 237 1900 4.9 1.00 1.00 0.98 1807 258 258 258 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	15 15 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16
tions		(vph) 58 520 (vph) 58 520 1900 1900 1900 1900 1900 1900 1900 19	46 46 46 1900 100 100 0.95 1770 0.95 50 50 50 50 1770 1770 1770 1770 1770 1		0.50 Per	192 1900 1900 4.9 1.00 0.96 1,00 1,00 1,00 1,00 0,92 209 209 209 300 NA NA NA NA	92 92 1900 100 0 0	12 12 12 13 0 0 0 0 Perm	237 237 1900 4,9 1,00 1,00 1,845 0,98 1807 0,92 2,58 2,58 4 2,83 NA	15 15 16 0 0 0
(yph)         58         520         19         46         165         18         192         92         12         237           (yph)         58         520         190         1900 <t< td=""><td>(yph)         58         520         19         46         165         18         192         92         12         237           (yph)         58         520         19         46         165         18         19         92         12         237           (ph)         1900</td><td>(vph) 58 520 (vph) 98 520 190 190 190 190 190 190 190 190 190 19</td><td>46 46 47 47 47 100 100 100 107 177 177 109 50 50 50 50 50 174 174 177 177 177 177 177 177 177 177</td><td></td><td>190 0.5</td><td>192 192 1900 4.9 1.00 0.96 1.00 1.73 1730 0.92 209 209 209 209 209 300 NA</td><td>92 92 92 1900 100 0</td><td>12 12 13 13 0 0 0 0 Perm</td><td>237 237 1900 4.9 1.00 0.99 1.00 1.09 1.09 1.00 1.09 1.09</td><td>15 15 1900 16 0 0 0</td></t<>	(yph)         58         520         19         46         165         18         192         92         12         237           (yph)         58         520         19         46         165         18         19         92         12         237           (ph)         1900	(vph) 58 520 (vph) 98 520 190 190 190 190 190 190 190 190 190 19	46 46 47 47 47 100 100 100 107 177 177 109 50 50 50 50 50 174 174 177 177 177 177 177 177 177 177		190 0.5	192 192 1900 4.9 1.00 0.96 1.00 1.73 1730 0.92 209 209 209 209 209 300 NA	92 92 92 1900 100 0	12 12 13 13 0 0 0 0 Perm	237 237 1900 4.9 1.00 0.99 1.00 1.09 1.09 1.00 1.09 1.09	15 15 1900 16 0 0 0
(vph)         58         520         19         46         165         18         192         92         12         237           pl)         1900	(γρh)         \$8         \$20         19         46         165         18         18         92         92         12         237           (γ)         1900 <t< td=""><td>(vph) 58 520 pl) 1900 1900 1900 1900 1900 1900 1900 190</td><td>46 1900 44 1,00 1,00 0,95 1,770 0,92 50 50 50 50 1,770 1,700</td><td></td><td>190.</td><td>192 1900 14.9 1.00 0.96 1.00 1.781 0.97 1730 0.92 209 209 209 209 209 300 NA</td><td>92 1900 0.92 100 0</td><td>12 1900 0 0 0 Perm</td><td>237 1900 1,00 0,99 1,00 0,99 1,00 1,00 1,00</td><td>15 1900 16 0 0</td></t<>	(vph) 58 520 pl) 1900 1900 1900 1900 1900 1900 1900 190	46 1900 44 1,00 1,00 0,95 1,770 0,92 50 50 50 50 1,770 1,700		190.	192 1900 14.9 1.00 0.96 1.00 1.781 0.97 1730 0.92 209 209 209 209 209 300 NA	92 1900 0.92 100 0	12 1900 0 0 0 Perm	237 1900 1,00 0,99 1,00 0,99 1,00 1,00 1,00	15 1900 16 0 0
pl)         1900	100   1900   1	(\$) 1900 1900 1 (\$) 144 5.1 100 0.95 100 0.	1900 1,000 1,000 1,000 1,005 1,770 0,92 50 0 0 0 0 0 0 1,770 1,70 1,		0.5 Per	1900 4.9 1.00 1.00 1.781 0.97 1.730 0.92 2.09 2.09 3.00 NA 8	1900 100 0 0 0	1900 0.92 0 0 0 Perm	1900 4.9 1.00 1.09 1.09 1.09 1.09 1.845 0.92 2.58 4 4 2.83 NA	1900 16 0 0
(\$) 44 5.1 44 5.0 495 100 695 100 100 100 100 100 100 100 100 100 10	(\$) 44 5.1 44 5.0 44 5.0 4.9 100  or of the control	(\$) 44 5.1  or 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 0.08  1.00 0.08  1.00 0.08  1.00 0.09  1.00 0.01	4.4 1.00 1.00 0.95 1770 0.92 50 50 50 1.4 1.4		9:0	4.9 1.00 0.96 1.00 1.781 0.97 1.730 2.09 2.09 2.09 3.00 NA 8	0.92 100 0 0	0.92 0 0 0 Perm	4.9 1.00 0.99 1.00 1.845 0.98 1.807 0.92 258 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.92 0 0
or         1.00         0.95         1.00         1.00           1 0 0 0.95         1.00         0.95         1.00         1.00           1 1 1 1 2 0 0.95         1.00         0.95         1.00         0.99         1.00           1 1 1 1 2 0 0.95         1.00         0.95         1.00         0.95         1.00         1.09           1 1 1 1 2 0 0.92         0.92         0.92         0.92         0.92         0.92         0.92         0.92         0.93	n         100         0.95         100         0.95         100         100           n         1.00         0.95         1.00         0.96         1.00           n         1.00         0.95         1.00         0.98         1.00         1.09           n         1.10         3.20         1.77         3.486         1.781         1.845           m)         1.770         3.50         1.77         3.486         1.781         1.845           m)         1.770         3.50         1.70         3.486         1.781         1.845           m)         1.770         3.50         0.92         0.92         0.92         0.92         0.92           m         1.770         3.486         1.730         1.89         1.89         1.89         1.89           m         1.770         3.486         1.73         2.0         2.0         0.9         3.89         0.92	or 100 095  1 100 095  1 1770 3520  1 1770 3520  1 1770 3520  1 1770 3520  1 1770 3520  2 100  2 100  2 100  2 100  2 100  2 100  2 100  2 100  2 100  2 100  3 100  3 100  3 100  3 100  4 100  5 100  6 100	1.00 0.95 1770 0.95 0.92 50 50 0 70 11.4 11.4		Per   Per	1.00 0.96 1.00 1.781 0.97 1.730 2.09 2.09 2.09 3.00 NA 8	0.92 100 0 0	0.92 0 0 0 Perm	1.00 0.99 1.00 1.00 1.845 0.98 0.92 258 283 NA	0.92 0 0 0
100 099	100   0.99   1.00   0.98   0.96   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.95   0.99   0.95   0.99   0.99   0.95   0.99   0	100 0.99  100 0.99  1170 3520  1070 0.95 1.00  1070 3520  1070 0.92 0.92  1070 0.92 0.92  1070 0.92 0.92  1070 0.92 0.92  1070 0.92 0.92  1070 0.92 0.92  1070 0.92 0.92  1070 0.92 0.92  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93 0.93  1070 0.93  1070 0.93  1070 0.93  1070 0.93  1070 0.93	1.00 0.95 1770 0.95 1770 0.92 50 50 50 50 1770 1.14 1.4		Per	0.96 1.00 1.781 0.97 1.730 0.92 209 209 300 NA 8	0.92 0 0	0.92 13 0 0 0 Perm	0.99 1.00 1.845 0.98 0.92 2.58 4 2.83 NA	0.92 0 0 0
1770   3520   1770   3486   100   100   100   100   100   1770   3520   1770   3486   1731   1845	1770   3520   1770   3486   1781   1900	(h) (100 m) (170 3520 m) (1770 m) (177	0.95 1770 0.95 1770 0.92 50 0 0 0 0 11.4 1.4		Per Per	1.00 1781 0.97 1730 0.92 209 209 209 300 NA 8	0.92 0 0 0	0.92 0 0 0 Perm	1.00 1845 0.98 1807 0.92 258 4 283 NA	0.92 0 0
(γ)         (γ) <td>(γρ)         1770         3820         1770         3486         1781         1845           m)         1770         3820         1770         3486         1781         1845           m)         1770         3820         1770         100         097         098           m)         1770         3820         1770         100         092</td> <td>(1) 1770 3520 (1</td> <td>1770 0.95 1770 0.92 50 0 50 Prot 1.4 1.4</td> <td></td> <td>Per Per</td> <td>1781 0.97 1730 0.92 209 29 300 NA 8</td> <td>0.92 100 0 0</td> <td>0.92 0 0 0 Perm</td> <td>1845 0.98 1807 0.92 258 4 4 283 NA</td> <td>0.92 0 0</td>	(γρ)         1770         3820         1770         3486         1781         1845           m)         1770         3820         1770         3486         1781         1845           m)         1770         3820         1770         100         097         098           m)         1770         3820         1770         100         092	(1) 1770 3520 (1	1770 0.95 1770 0.92 50 0 50 Prot 1.4 1.4		Per Per	1781 0.97 1730 0.92 209 29 300 NA 8	0.92 100 0 0	0.92 0 0 0 Perm	1845 0.98 1807 0.92 258 4 4 283 NA	0.92 0 0
0.95   1.00   0.95   1.00   0.97   0.98     m)   1770   3520   1770   3486   1730   1730   0.98     m   1770   3520   0.92   0.92   0.92   0.92   0.92   0.92     m   1770   3520   0.92   0.92   0.92   0.92   0.92   0.92     m   (γph)   63   565   21   50   179   20   20   209   100   13   258     m   (γph)   63   583   0   50   118   0   0   299   0   0   4     m   (γph)   63   583   0   50   188   0   0   209   0   0   283     m   (γph)   63   533   0   50   188   0   0   0   283     m   (γph)   63   53   146   14   12.9   11.9   11.9     m   1.05   3.2   146   1.4   12.9   11.9   11.9     m   1.05   3.2   146   1.4   12.9   11.9   11.9     m   1.05   3.2   3.2   3.2   3.2   3.2   3.2   3.2     m   1.05   3.3   3.124   58   1063   3.2   3.0     m   1.07   1.07   1.00   1.00   1.00   1.00     m   1.07   1.01   1.00   1.00   1.00   1.00     m   1.07   1.01   1.03   688   0.1   1.6   1.0     m   1.07   1.07   1.08   2.04   1.08   1.09     m   1.07   1.07   1.08   2.06   1.49   1.49   1.37     m   1.07   1.07   1.08   2.06   1.09   1.00     m   1.07   1.07   1.08   1.09   1.00     m   1.07   1.07   1.08   1.09   1.09   1.00     m   1.07   1.07   1.08   1.09   1.09   1.00     m   1.07   1.07   1.07   1.09   1.00     m   1.07   1.07   1.08   1.09   1.00     m   1.08   1.09   1.09   1.00   1.00     m   1.08   1.09   1.09   1.09   1.00     m   1.08   1.09   1.09   1.09   1.00     m   1.08   1.09   1.09   1.00   1.00     m   1.08   1.09   1.09   1.00	National Color   Nati	m) 0.95 1.00 m, PHF 0.92 1.00 m (vph) 0 3 m (vph) 1 3.2 14.6 m (s) 3.2 14.6 m	0.95 1770 0.92 50 50 50 Prot 1.4 1.4		Per	0.97 1730 0.92 209 209 300 NA 8	0.92 100 0 0	0.92 0 0 0 Perm	0.98 1807 0.92 258 4 283 NA	0.92 0 0
1770   3520   1770   3486   1730   1897   1897   1790	March   1770   3520   1770   3486   1730   1730   1807   1807	m) 1770 3520 m, r, PHF 092 092 092 692 m (vph) 0 3 w (vph) 63 583 es 5 2 es 5 14,6 es 5 2 es 7 14,6 m (s) 3,2 14,6 alo 0.08 0.35 alo 0.08 0.35 m (s) 44 5,1 on (s) 2,0 con (s) 2,8 con (s) 40 d1 18,7 10,9 ctor 100 100	1770 0.92 50 0 50 Prot 1.4 1.4		Per	1730 0.92 209 29 300 NA 8	0.92 100 0 0	0.92 13 0 0 Perm	1807 0.92 258 4 283 NA 4	0.92
N, EPH         0.92         <	γγγγγγγ         γγ         <	A, PHF 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	0.92 50 0 0 50 Prot 1.4 1.4 0.03		0.9	0.92 209 209 300 NA 8	0.92 0 0 0	0.92 0 0 0 Perm	0.92 258 4 4 283 NA 4	16 0 0 0 0
nt (vph) 63 565 21 50 179 20 209 100 13 m (vph) 63 585 21 50 179 20 209 100 13 m (vph) 63 3 0 0 111 0 0 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(4)         565         21         50         179         20         209         100         13           (Vph)         63         38         0         111         0         29         100         13           ss         5         20         11         0         29         0 <t< td=""><td>m (vph) 63 565 m (vph) 63 583 m (vph) 63 583 es 5 2 es 5 2 146 n, G(s) 3.2 146 1, g(s) 3.2 146 atlo 0.08 0.35 atlo 0.08 0.35 g(s) 2.0 28 on (s) 2.0 28 vph) 133 1214 c0.04 c0.17 c1 187 10.9 ctor 1.00</td><td>50 0 0 50 1.4 1.4 0.03</td><td></td><td>Per</td><td>209 29 300 NA 8 8</td><td>0 0 0</td><td>13 0 0 Perm</td><td>258 4 283 NA 4</td><td>0 0 0</td></t<>	m (vph) 63 565 m (vph) 63 583 m (vph) 63 583 es 5 2 es 5 2 146 n, G(s) 3.2 146 1, g(s) 3.2 146 atlo 0.08 0.35 atlo 0.08 0.35 g(s) 2.0 28 on (s) 2.0 28 vph) 133 1214 c0.04 c0.17 c1 187 10.9 ctor 1.00	50 0 0 50 1.4 1.4 0.03		Per	209 29 300 NA 8 8	0 0 0	13 0 0 Perm	258 4 283 NA 4	0 0 0
nn (vph) 0 3 0 0 111 0 0 0 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nn (vph) 6 3 83 0 0 11 0 0 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	an (vph) 63 583 w (vph) 63 583 es 5 2 es 5 2 es 5 2 es 6(s) 3.2 14.6 alo 0.08 0.35 alo 0.08 0.35 alo 0.08 0.35 con (s) 2.0 2.8 (vph) 133 1214 co.04 co.17	50 Prot 1.4 0.03		Per	29 300 NA 8 8	0 0	O Derm	283 NA 4	0 0
Piot   NA   Piot   NA   Perm   NA   NA   Perm   NA   Perm   NA   Perm   NA   Perm   NA   Perm   NA   NA   Perm   Perm   NA   Perm   P	March   Marc	Prot NA Prot N	50 Prot 1.4 1.4 0.03		Per	300 NA 8 8	0	Perm 4	283 NA 4	0
Prot NA Prot NA Perm NA	Prof. NA   Prof. NA   Perm NA   Pe	Prot 5 3.2 3.2 0.08 4.4 2.0 2.0 2.0 0.04 0.04 1.00 0.47 1.00 0.47 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Prot 1 1.4 0.03	NA 6 12.9 12.9 0.30	Perm 8	NA 8 11.9		Perm 4	NA 4	
5         2         1         6         8         4           3.2         146         1.4         12.9         11.9         11.9           3.2         14.6         1.4         12.9         11.9         11.9           0.08         0.35         0.03         0.30         0.28         4.9         11.9           2.0         2.5         2.0         2.0         2.8         4.9	5 2 1 6 8 8 4  3.2 146 14 129 11.9  3.2 146 1.4 129 11.9  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  1.33 1214 58 1063 486  0.0.04 0.0.17 0.03 0.05 0.05  0.04 0.0.17 0.03 0.05 0.05  1.07 1.0 1.00 1.00 1.00 1.00  1.0 0.0 1.00 1.0	3.2 3.2 3.2 4.4 2.0 1.3 0.0.0 1.00	1.4	6 12.9 12.9 0.30	ω	8 11.9		4	4	
14	3.2 14.6 1.4 12.9 8 1.19 3.2 14.6 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 2.5 2.0 2.0 2.0 2.5 2.0 1.3 12.14 58 106.3 486 0.0.4 0.17 0.03 0.05 0.05 0.04 0.07 0.08 0.06 0.18 0.04 0.07 0.08 0.06 0.18 0.05 0.09 0.00 0.00 1.0 0.0 1.00 0.00 0.00 1.0 0.0 1.00 0.0 1.00 1.0 0.0 1.00 0.0 1.00 1.0 0.0 1.00 0.0 1.00 1.0 0.0 1.00 0.0 1.00 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 0.0 0.0 1.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3.2 3.2 0.08 4.4 2.0 133 0.04 0.47 18.7	1.4	12.9 12.9 0.30	ω	11.9		4		
3.2 146 1.4 12.9 11.9 3.2 146 1.4 12.9 11.9 0.08 0.03 0.038 4.4 5.1 4.4 5.0 0.3 0.28 4.4 5.1 4.4 5.0 0.3 0.28 4.4 5.1 4.4 5.0 0.3 0.28 2.0 2.8 2.0 2.5 2.0 2.0 1.33 1214 58 1063 486 0.04 0.0.17 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 1.00 1.00 1.00	3.2 146 1.4 12.9 11.9  0.08 0.38 0.03 0.03 0.28  4.4 0.37 0.03 0.03 0.28  2.0 2.8 2.0 2.5 2.0  2.0 2.8 1063 0.03 0.05  0.07 0.04 0.03 0.05 0.05  0.07 0.04 0.08 0.08 0.18 0.05  1.00 1.00 1.00 1.00 1.00  1.0 0.3 68.8 0.1 1.0  1.0 1.0 0.3 68.8 0.1 1.0  1.0 1.0 1.0 1.0 1.0  1.0 0.3 0.05 0.1  1.0 0.3 0.05 0.1  1.0 0.3 0.05 0.1  1.0 0.3 0.05 0.1  1.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0  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  1.0 0.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3.2 3.2 0.08 4.4 2.0 1.33 0.04 0.47 1.00	1.4	12.9 12.9 0.30		11.9				
3.2 14.6 1.4 12.9 11.9  0.08 0.35 0.03 0.30 0.28  4.4 5.1 4.4 4.5 5.0 4.8  2.0 2.8 2.0 2.5 2.0  2.0 2.8 2.0 2.5 2.0  1.33 12.14 5.8 10.63 4.86  0.0.4 0.17 0.03 0.05 0.01  1.87 10.9 20.4 10.8 0.62  1.00 1.00 1.00 1.00 1.00  1.01 1.01 1.	3.2 14.6 1.4 12.9 11.9  0.08 0.35 0.03 0.30 0.28  4.4 5.1 4.4 4.5 0.3 0.30 0.28  2.0 2.8 2.0 2.5 2.0  2.0 2.8 2.0 2.5 2.0  2.0 2.8 0.05 0.05  0.04 0.17 0.03 0.05 0.01  1.0 1.00 1.00 1.00 1.00  1.1 0.03 6.8 0.18 0.62  1.1 0.0 1.00 1.00 1.00  1.2 0.0 1.00 1.00  1.3 12.4 8.5 0.18 0.62  1.4 0.0 1.0 1.0 1.0 1.0  1.5 1.1 89.2 1.0 9 14.9  1.5 1.2 1.3 HCM 2000 Level of Service B  1.5 1.5 HCM 2000 Level of Service A  1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.4 14.4  1.5 1.5 1.5 1.5 1.4 14.4	3.2 0.08 4.4 2.0 1.33 0.04 0.47 1.00	1.4	12.9					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 2.0 2.0 2.0 4.9 0.0.4 0.17 0.03 0.05 0.017 0.47 0.48 0.86 0.18 0.62 1.0 0.3 6.88 0.1 1.0 1.0 0.3 6.88 0.1 1.0 1.0 0.3 6.88 0.1 1.4 1.0 1.00 1.00 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	0.08 0.35 0.03 0.28 0.28 0.44 5.1 4.4 5.0 4.9 0.28 0.02 0.02 0.02 0.02 0.02 0.02 0.02	0.08 4.4 2.0 2.0 133 0.04 0.47 18.7	0.03	0.30		71.9			11.9	
44 5.1 44 5.0 4.9  2.0 2.8 2.0 2.5 2.0  1.33 12.14 5.8 1063 486  c.0.04 c0.17 0.03 0.05 0.05  0.47 0.48 0.86 0.18 0.62  1.00 1.00 1.00 1.00 1.00 1.00  1.10 0.3 6.88 0.1 1.6  1.10 0.3 6.88 0.1 1.6  1.20 1.00 1.00 1.00 1.49  4 12.0 2.04 1.05 1.09  1.04 1.05 1.00 1.00 1.00  1.05 1.00 1.00 1.00 1.00  1.06 1.00 1.00 1.00 1.00  1.07 1.00 1.00 1.00 1.00  1.00 1.00 1.00 1.0	44   5.1   44   5.0   4.9     2.0   2.8   2.0   2.5     133   1214   5.8   0.63   486     0.014   0.03   0.05   0.05     0.047   0.048   0.86   0.18   0.05     1.00   1.00   1.00   1.00   1.00     1.01   1.01   1.02   1.04     1.02   1.03   6.88   0.1   1.16     1.03   6.88   0.1   1.16     1.04   1.05   1.06   1.49     1.05   1.05   1.06     1.05   1.05   1.05	5) 2.0 1.33 0.047 1.87 1.00				0.28			0.28	
2.0 2.8 2.0 2.5 2.0  133 1214 58 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 0.3 6.8 0.1 1.00  1.10 0.3 6.8 0.1 1.49  B B B B B B B B B B B B B B B B B B B	2.0         2.8         2.0         2.5         2.0           133         1214         \$8         1063         486           c0.04         c0.17         0.03         0.05         60.17           0.047         0.48         0.86         0.18         0.62           1.00         0.49         0.86         0.18         0.62           1.00         1.00         1.00         1.00         1.00           1.0         0.3         68.8         0.1         1.49         14.9           1.0         1.11         89.2         10.9         14.9         14.9           1.0         1.20         2.66         14.9         14.9           1.0         1.53         HCM 2000 Level of Service         B           1.53         HCM 2001 Level of Service         B           1.53         1.53         HCM 2001 Level of Service         A           1.54         1.53         1.54         14.4           1.54         1.53         1.54         14.4           1.54         1.53         1.54         14.4           1.55         1.50 Lu Level of Service         A           1.55         1.50 Lu Level of Service	5) 2.0 133 0.04 0.47 18.7	4.4	2.0		4.9			4.9	
133 1214 58 1063 486  0.0.04 0.17 0.03 0.05  0.47 0.48 0.86 0.18 0.62  187 10.9 2.04 10.8 132  1.0 1.00 1.00 1.00 1.00  1.1 1.1 89.2 10.9 14.9  B B F B F B B F B B B B B B B B B B B	133 1214 58 1063 486  0.0.04 0.1.7 0.0.3 0.0.5  0.47 0.48 0.86 0.18 0.62  187 109 2.0.4 108 132  1.0 1.00 1.00 1.00 1.00  1.1 0.0.3 6.88 0.1 1.6  1.2 1.2 1.3 HCM 2000 Level of Service  1.4 0.57  1.5 HCM 2000 Level of Service  1.5 Service A  1.6 Service B  1.7 II.3 Service B  1.8 Service A  1.9 Service A	0.04 0.47 1.00	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  18.7 10.9 20.4 10.8 13.2  1.0 1.00 1.00 1.00 1.00 1.00  1.1 1.1 89.2 0.1 1.4 9  B B F B B F B B  12.0 26.6 14.9  B Capacity ratio 0.57 Sum of lost time (s) 144  Utilization 52.8% ICU Level of Service A	c0.04 c0.17 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 0.3 6.88 0.1 1.49  1.8 F B F B B F B B B B B B B B B B B B B	CO.04 0.47 18.7 1.00	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 13.2  1.0 0.3 6.88 0.1 1.6  1.0 0.3 6.88 0.1 1.6  9.7 11.1 89.2 10.9 14.9  B B F B B F B B B B B B B B B B B B B	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 1.0 1.00 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	0.47	0.03	0.05						
18.7 10.9 20.4 10.8 0.62 18.7 10.9 20.4 10.8 13.2 10.0 10.0 1.00 1.00 1.00 1.00 19.7 11.1 89.2 10.9 14.9 12.0 26.6 14.9 18.9 F B B F B 15.3 HCM 2000 Level of Service B 15.3 Sum of lost time (s) 14.4 16.5 Service B 17.4 Service B 18.5 Sum of lost time (s) 14.4 18.5 Sum of lost time (s) 14.4 19.5 Service A 19.5 Service A 19.6 Service A 19.7 Service A 19.8 Service A 19.8 Service A 19.8 Service A 19.9 Service B 19.9 Service A 19.9 Service B 19.9 Service A	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     1.7   11.1   89.2   10.9   14.9     1.8   E   E   E   E   E     1.0   E     1.0   E   E     1.0   E     1.0   E   E     1.0   E   E     1.0   E     1.0   E   E     1.0   E	18.7				c0.17			0.16	
187 109 204 108 132 100 100 100 100 100 1.00 110 103 688 0.1 1.6 19.7 11.1 89.2 10.9 14.9 1	187 109 204 108 132 100 100 100 100 100 1.00 110 103 688 0.1 1.6 19.7 11.1 89.2 10.9 14.9 1 8	18.7	98.0	0.18		0.62			0.56	
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	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 F B B B B 12.0 26.6 14.9  4  4  4  4  4  4  4  4  5  6  7  7  7  7  7  8  7  8  7  8  7  8  8	1,0 0,3 6,88 0,1 1,6	•	1.00	1.00		1.00			1.00	
19.7 11.1 89.2 10.9 14.9  B B F B B B 12.0 26.6 14.9  B C B B 14.9  15.3 HCM 2000 Level of Service B 15.3 Sum of lost time (s) 14.4  Utilization 52.8% ICU Level of Service A 15.3 III. III. III. III. III. III. III. I	19.7 11.1 89.2 10.9 14.9 B B F B B B C C B B A C Capacity ratio 0.57 It(s) 42.3 Sum of lost time (s) A IIIIzation 15.8 (c) Evel of Service A IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	ital Delay, d2 1.0	8.89	0.1		1.6			8.0	
B F B B F B B B B B B B B B B B B B B	B F B B F B B B B B B B B B B B B B B	19.7	89.2	10.9		14.9			13.7	
12.0 26.6 14.9  y  y  y  ty  15.3 HCM 2000 Level of Service B  Capacity ratio 0.57 Sum of lost time (s) 14.4  Utilization 5.28% ICU Level of Service A  15.3 Sum of lost time (s) 14.4  Utilization 1.58 ICU Level of Service A  15. The service A  16. The service A  17. The service A  18. The service A  19. The service	12.0 26.6 14.9 B C B State of the state of Service B State of Service B State of Service B I S Sum of lost time (s) 14.4 Utilization 52.8% ICU Level of Service A I S Sum of lost time (s) 14.4 I S Sum of lost time (s) 14.4	В	ш	В		В			В	
V         B         C         B           P         T5.3         HCM 2000 Level of Service         B           Capacity ratio         0.57         Sum of lost time (s)         B           In (s)         42.3         Sum of lost time (s)         14.4           Utilization         52.8%         ICU Level of Service         A           15         15         14.4	Mode of the control o			26.6		14.9			13.7	
### 15.3 HCM 2000 Level of Service   15.3 HCM 2000 Level of Service   0.57	y 15.3 HCM 2000 Level of Service Capacity ratio 0.57 Sum of lost time (s) 15.2 8% ICU Level of Service			ပ		В			В	
slay         15.3         HCM 2000 Level of Service           Capacity ratio         0.57         Sum of lost time (s)           h (s)         42.3         Sum of lost time (s)           Utilization         52.8%         ICU Level of Service           15         15	slay         15.3         HCM 2000 Level of Service           Capacity ratio         0.57         Nm of lost time (s)         1.00           In (s)         42.3         Sum of lost time (s)         1.00           Utilization         52.8%         ICU Level of Service         1.00	section Summary								
Ocapacity ratio 0.57 Sum of lost time (s) 1.6(s) 42.3 Sum of lost time (s) 1.7(s) 1.7(	Capacity ratio 0.57 Sum of lost time (s) h (s) 42.3 Sum of lost time (s) Lillization 52.8% ICU Level of Service 15		HCI	M 2000 Level o	f Service		В			
h (s) 42.3 Sum of lost time (s) Utilization 5.28% ICU Level of Service 15	h (s) 42.3 Sum of lost time (s) Utilization 52.8% ICU Level of Service 15									
Utilization 52.8% ICU Level of Service	Utilization 52.8% ICU Level of Service 15		Sur	n of lost time (s			14.4			
rsis Perind (min) 15	sis Period (min) 15		no!	Level of Servi	ce		⋖			
		sis Period (min)								

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

	^	<b>†</b>	<b>/</b>	ţ	-	<b>→</b>	
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							
<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	ly, 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.					
m Volume for 05th porcentile questo is motored by unctroom clans.	i orionia oli	motoro	A by	anio moo	-		

KHA Queues

Balboa Transit Station 11: Olney St & Grand Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

Aovement												
	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	K	<b>₩</b>		F	₩\$			4			4	
raffic Volume (vph)	78	1250	22	46	481	52	34	189	372	167	114	15
uture Volume (vph)	78	1250	52	46	481	25	34	189	372	167	114	15
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	
<del>1</del> =	1.00	1.00		1.00	0.99			0.92			0.99	
-It Protected	0.95	1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)	1770	3529		1770	3487			1701			1799	
It Permitted	0.95	1.00		0.95	1.00			96:0			0.38	
satd. Flow (perm)	1770	3529		1770	3487			1645			869	
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)	30	1359	27	22	523	22	37	205	404	182	124	16
REDICTION (vph)	0	<del>-</del>	0	0	7	0	0	22	0	0	2	0
ane Group Flow (vph)	30	1385	0	20	573	0	0	589	0	0	320	0
urn Type	Prot	₹		Prot	N		Perm	Α		Perm	NA	
Protected Phases	2	2		-	9			00			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.7	42.1		3.4	42.0			46.1			46.1	
Effective Green, g (s)	3.7	42.1		3.4	42.0			46.1			46.1	
Actuated g/C Ratio	0.03	0.40		0.03	0.40			0.43			0.43	
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	1401		26	1381			715			303	
//s Ratio Prot	0.02	c0.39		c0.03	0.16							
/s Ratio Perm								0.36			c0.46	
/c Ratio	0.49	0.99		0.89	0.41			0.82			1.06	
Jniform Delay, d1	50.2	31.7		51.1	23.1			26.4			29.9	
Progression Factor	1.00	1.00		1.02	1.01			1:00			1:00	
ncremental Delay, d2	2.3	21.4		78.7	6:0			7.3			67.5	
Delay (s)	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	Н	HCM 2000 Level of Service	Level of !	Service		D			
HCM 2000 Volume to Capacity ratio	y ratio		1.02									
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)			14.4			
ntersection Capacity Utilization	E		101.3%	೨	ICU Level of Service	f Service			O			
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	ı		ı		IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
•	•	<b>†</b>	L	ţ	4	٠	•	
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR	
ane Configurations	×	₩	4	4₽		×		
Fraffic Volume (vph)	64	1630	0	203	120	172	48	
(f)	64	1630	0	203	120	172	48	
·	0061	1900	1900	1900	1900	1900	1900	
•	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		0.97		
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 (	0.92	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	662	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		∢		A		O		
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		U

Synchro 9 Report Page 23

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
ļ	WBT	619	0.23					70	1401		2909	0	17	0	0.23
<b>\</b>	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		†	>	<b>/</b>	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   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	21	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	<b>.</b>	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		
100 095 100 097 3525 1770 3539 1697  1 092 092 092 092 092 092 1867 50 140 679 55 52  1) 1916 0 140 679 65 0  1 0 0 42 0  1 0 0 42 0  1 1 0 0 0 42 0  2 140 679 65 0  8 8 8  1 0 127 87.1 8.6  1 0 12 082 008  1 0 12 082 008  1 0 12 082 008  1 0 12 082 008  1 0 12 082 008  1 0 10 0 100  1 0 0 100  1	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 0 42 0  1 1916 0 140 679 65 0  1 10 6 8 65 0  1 10 8 8 6  1 10 8 1 8 18  1 10 8 1 8 18  1 10 8 18  1 10 8 18  1 10 8 18  1 10 8 18  1 10 8 18  1 10 8 18  1 10 8 18  1 10 8 18  1 10	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	619	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	42	0	
NA Prot NA Prot NA Prot NA Prot NA Prot NA NA Prot 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 0.86 Sum of lost time (s) 10.81 0.86 Sum of lost time (s) 10.91 0.86 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 7.0 12.2 12.2 12.2 12.2 12.2 12.2 12.2 12	Permitted Phases							
70.5 11.27 87.1 8.6 6 4.9 4.4 5.4 4.9 6.08 4.9 4.4 5.4 4.9 6.008 4.0 2.0 4.4 2.0 2.34 2.12 2907 137 6.054 6.008 0.19 6.04 13.0 44.6 2.1 46.5 6.0 1.00 1.00 1.00 1.02 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.9 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 10.5 47.5 B D	ctuated 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 10.3 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	ffective 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 44.6 2.1 44.5 0.60 1.00 1.00 1.00 1.0.2 5.9 0.2 0.9 10.2 5.9 0.2 0.9 10.2 5.4 0.2 0.9 10.2 10.5 47.5 B D A D D 10.2 B 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) 1.17 HCM 2000 Level of Service 1.25 0.7% ICU Level of Service	Actuated g/C Ratio	0.67		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		
234 212 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  2.5 5.9 0.2 0.9  10.2 5.9 0.2 0.9  10.2 5.9 1.2 47.5  B D A D  10.5 47.5  B D A D  10.5 47.5  10.5 47.5  B D A D  10.5 47.5  10.5 1.0.5 8.00  11.7 HCM 2000 Level of Service  1.0.5 8.00 0.10	/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		80.03	0.19	00.04		
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 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 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 10.5 47.5 10.6 Sum of lost time (s) 10.7 10.7 10.0 Sum of lost vice 10.8 10.8 10.8 10.8 10.8 10.8 10.8 10.8	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	0.7	6:0		
B D A D 10.2 10.5 47.5 B D  (A D D  (A	Jelay (s)	10.2		50.4	2.3	47.5		
10.2	evel of Service	В		۵	∢	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	Approach LOS	В			В	Ω		
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	:M 2000 I	evel of Service	В
h (s) 106.0 Sum of lost time (s) 137% ICU Level of Service	ICM 2000 Volume to Capaci	ity ratio		0.76				
Utilization 73.7% ICU Level of Service	ctuated Cycle Length (s)			106.0	S	m of lost	time (s)	14.2
ţ	ntersection Capacity Utilizati	loi		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

	\	†	,	
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
	•	<b>†</b>	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 0.31 1.00  5.7 4.9 5.7 5.7 4.9  20 3.6 0.2 0.00 0.00  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  5.1 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 42.3 33.3 21.8 24.4 0.0  1.3 3.8 2.2 1.2 6.9 0.1  4.1 17.0 2.9.3 71.5 37.0 0.1  D B C E D A  C E C  C C  C C  Sumoflost time (s)  Ilization 73.6% ICUL tevel of Service  15 20.8 20.9 20.0 20.0 20.0  15 20.8 20.8 20.0 20.0 20.0  15 20.8 20.8 20.0 20.0 20.0  15 20.8 20.8 20.0 20.0 20.0  13 3.5 20.8 20.0 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.8 20.0 20.0  13 3.5 20.0 20.0 20.0  14 2.1 17.0 29.3 71.5 37.0 0.1  15 20.8 56.4 20.0 20.0 20.0  16 20.8 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0 20.0  18 5.4 20.0 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0  20 8 5.4 20.0 20.0 20.0 20.0 20.0 20.0  20 8 5		<	1	<b> </b>	√	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) 1771 323 123 100  (v) 1771 323 123 100  (v) 1771 288 134 233 218 244 0.0  (v) 1771 283 346 25 0.34 0.85 0.06  (v) 1771 283 346 283 115 370 0.1  (v) 1770 293 715 270 0.1  (v) 1770 200 200 200 200 200 200 200 200 200	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) 8.5 6.4 0.0  m (s) 9.5 0.0  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 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         1.61         NA         NA         Prof         Free           N, G(s)         15.1         4.2.         2.0.6         2.30         75.0           es         5         6         4         Free           O, G         15.1         4.2.         2.0.6         2.30         75.0           es         7. G(s)         15.1         4.2.         2.0.6         2.30         75.0           es         7. G(s)         15.1         4.2.         2.0.6         2.30         75.0           es         7. G(s)         2.0.         2.0.         2.30         75.0         7.0           es         7. G(s)         2.0.         2.0.         2.0.         3.1.         7.0           es         7. G(s)         2.0.         2.0.         2.0.         3.1.         3.0         3.0           es         1.0.         2.0.	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   263   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 1 422 206 206 230 750 1 424 5.7 5.7 4.9 2 36 20 36 2 1991 972 765 1052 1583 2 1991 972 765 1052 1583 2 1991 972 765 1052 1583 2 1991 972 765 1052 1583 2 1991 972 765 1052 1583 2 1991 972 765 1052 1583 2 1991 972 765 1052 1583 2 2 2 2 2 44 0.0 2 8 36 22 12 69 0.1 2 8 6 5 6 4 0.1 2 8 6 6 8 133 3 2 8 6 8 6 8 100 2 8 8 6 8 8 100 2 8 8 6 8 8 100 2 8 8 6 8 8 100 2 8 8 9 99	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  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     1.10 0.117 3.23 1.23 1.00     1.10 29.3 71.5 8.9 0.1     1.10 29.3 71.5 8.9 0.1     1.10 29.3 71.5 8.9 0.1     1.20 8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 33.3     20.8 56.4 1.00 Level of Service     20.8 56.8	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 1 604 915 009 60.26 1 0.83 0.55 0.34 0.85 0.06 1 13 4 23 218 244 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) 73.6% ICU Level of Service 15	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	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 22 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 C C E 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		В	ပ	ш	٥	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

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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

	<b>&gt;</b>	4	•	•	۶	<b>→</b>	
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)	86	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	
:							
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		
<b>→</b>	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	A	9.4	A		HCM 2000 Level of Service		t time (s)	ICU Level of Service		
٠	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	c0.05		0.36	59.9	1.18	0.3	70.8	ш				ICM 2000		Sum of lost time (s)	CU Level		
•	NBR	*-	126	126	1900	2.0			1.00			1583	0.92		21	116	Perm		2		_	_	2.0	3.8	1108		0.07	0.10			0.2		A						-			
•	NBT	*			_				1.00	` '	1.00	3539	0.92		0	1559	₹	2		105.0	-	0		3.8	2477	c0.44						~	В	12.8	В		14.9	0.59	150.0	29.6%	15	
4	WBR	K.	29		_							`	0.92		26	5	Perm		4			0	4.4		128							63.6	ш									
•	WBL	*	82	83	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			apacity ratio	3)	lization		
	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)	and localing

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Balboa Transit Station 18: Mission Bay Dr & Magnolia Ave

Horizon Year with Reduced LU Timing Plan: AM Peak Period

<b>→</b>	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						al.
<b>—</b>	NBT	1232	0.53	10.8	0.0	10.8	332	464	804		2316	0	0	0	0.53		e.		be longer		eam sign
•	NBL	58	0.58	104.5	0.0	104.5	28	m105		9	119	0	0	0	0.49		ally infinit		ene may		by upstr
ţ	WBT	16	0.05	36.9	0.0	36.9	6	30	271		315	0	0	0	0.05		theoretical	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	<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	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

151   8   2   5   53   1126   7   34   882   117     150   1900   1900   1900   1900   1900   1900     49   44   50   44   50   44   50     100   1900   1900   1900   1900   1900   1900     100   100   100   100   1900   1900   1900     100   100   100   100   1900   1900     100   100   100   100   100   095     100   100   100   100   095   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   100   100   100     100   100   100   100     100   100   100   100     100   100	
1900 1900 1900 1900 1900 1900 000 000 00	6
100 100 095 100 096 095 096 096 096 096 097 097 097 170 3536 1770 3477 082 097 097 100 100 100 100 100 100 100 100 100 10	4.9
0.97	1.00
1735 1770 3536 1770 3477 1770 3477 1770 3477 1770 3536 1770 3477 1770 3536 1770 3477 1770 3536 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 3477 1770 1770 1770 1770 1770 1770 1770 1	0.98
0.082 0.95 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0. 2 5 58 1224 8 37 959 0 0 4 0 0 0 0 0 0 0 6 0 0 4 0 0 0 0 0 0 0 6 0 0 4 0 0 0 0 0 0 0 6 0 0 4 0 0 0 0 0 0 0 6 0 0 4 0 0 0 0 0 0 0 0 6 0 0 4 0 0 0 0 0 0 0 0 0 0 0 4 0 0 58 1232 0 37 1080 0 4 0 0 58 1232 0 37 1080 0 2 1 0 58 1232 0 37 1080 0 2 2 0 1 2 2 0 37 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1702
992 092 092 092 092 092 092 092 092 092	0.83
9 2 5 58 1224 8 37 959 0 12 0 0 0 0 6 0 12 0 0 0 0 0 0 6 0 12 0 0 0 0 0 0 0 6 0 12 0 0 0 0 0 0 0 0 0 12 0 0 0 0 0 0 0 0 4 0 0 0 0 0 0 0 0 0 0 0	0.92
Perm NA Prof N	10
Perm NA Prof NA NA Prof NA NA Prof NA	21
4 1 6 5 4 4 1 6 6.3 32.0 7.4 97.4 6.3 32.0 7.4 97.4 6.3 0.21 0.05 0.65 0.004 4.9 4.4 5.0 4.4 2.0 2.0 3.035 0.02 0.01 6.03 6.35 0.02 0.04 0.67 0.54 0.50 0.04 0.67 0.54 0.50 0.04 0.67 0.54 0.50 0.07 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 1.24 0.85 1.66 7.22 D F B F B F E 46.8 98.5 10.6 7.22 D F B C C 7.22 D F	NA
4 320 7.4 974 6.3 320 7.4 974 6.3 320 7.4 974 6.3 4.3 320 7.4 974 6.3 6.3 6.2 1 0.05 0.05 0.05 0.04 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.4 5.0 4.0 4.4 5.0 4.0 4.0 6.0 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	
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 3.1 2.0 2.0 3.11 87 2296 74 2.0 0.01 0.03 0.35 0.02 0.04 0.67 0.54 0.50 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 E 46.8 98.5 10.6 72.2 D F B B E HCM 2000 Level of Service C	32.0
4.9 4.4 5.0 4.4 2.0 2.0 3.7 311 87 2296 74 2.0 0.01 0.03 0.035 0.02 0.02 0.03 0.04 0.67 0.54 0.50 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 1.24 0.8 1.9 46.8 14.6 E 46.8 14.6 D HCM 2000 Level of Service C	0.21
2.0 2.0 3.7 2.0 3.11 c0.8 2.296 7.4 2.0 0.001 c0.03 c0.35 0.02 0.004 0.67 0.54 0.50 0.004 0.67 1.4.2 7.0.3 0.00 1.2.1 0.8 1.9 46.8 98.5 10.6 72.2 0.0 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 C HCM 2000 Level of Service C	4.9
311 87 2296 74 2 0.01	2.0
0.01 0.03 0.03 0.02 0.02 0.04 0.05 0.05 0.05 0.04 0.67 0.54 0.50 0.05 0.04 0.67 0.54 0.50 0.05 0.05 0.05 0.05 0.05 0.05	310
0.04 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 E 46.8 14.6 D F B E HCM 2000 Level of Service C	77
46.8 70.1 14.2 70.3 1.00 12.3 0.70 1.00 0.0 12.1 0.8 1.9 46.8 98.5 10.6 72.2 D F B E 46.8 14.6 D B H HCM 2000 Level of Service C	1.05
100 123 070 100 100 100 100 100 100 100 100 100	59.0
0.0 12.1 0.8 1.9 46.8 98.5 10.6 72.2 1 46.8 14.6 D F B E 46.8 14.6 C Sum of lost time (s) 14.3 ICU Level of Service C	1.00
468 985 106 722 468 985 106 722 468 146 B B B HCM 2000 Level of Service C C ICU Level of Service C C	0.99
46.8 14.6 B B B B B B B B B B B B B B B B B B B	125.0
46.8 14.6 D B HCM 2000 Level of Service C Sum of lost time (s) 14.3 ICU Level of Service C	_ :
HCM 2000 Level of Service C Sum of lost time (s) 14.3 ICU Level of Service C	125.0
HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service	ı.
HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service	
Sum of lost time (s) ICU Level of Service	56
Sum of lost time (s) ICU Level of Service	0
ICU Level of Service	15
15	.69

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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					
<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	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
0.92 0 125 1 125 8 8 4 4 4 4.4 4 0.06 1 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
NA 4 4.4 4.4 4.4 0.06 2.0 87
0.009 33.4 1.00 0.2 33.6 C C C C C C C C C C C C C C C C C C C

Intersection Summary Molume for 95th percentile queue is metered by upstream signal.

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 37

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
		5			6
	\	+	و		
	•	-		•	
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)			09		
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 Well Well Not	Movement							
Y         ↑↑↑         ↑↑ <th></th> <th>WBL</th> <th>WBR</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th></th>		WBL	WBR	NBT	NBR	SBL	SBT	
2 10 1357 12 9 2363 1900 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	>		4₩₽		r	**	
1900   1000   1000	Traffic Volume (vph)	2	10	1357	12	6	2363	
1900   1900	Future Volume (vph)	2	10	1357	12	6	2363	
1,00	Ideal Flow (vphpl)	0061	0061	0061	0061	0061	0061	
1,00   0,51   1,00   0,55   1,00   0,00	lotal Lost time (s)	4.0		4.0		4.0	4.0	
0.89   1.00	Lane UIII. Factor	00.1		1.00		00.1	1.95	
1637 5079 1770 3539 1097 1770 3539 1098 1770 3539 1099 1092 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	F.II. Destroyed	0.89		00.1		00.1	1.00	
1637   5079   1770   3539   1637   5079   1770   3539   1637   5079   1770   3539   1637   1770   3539   1637   1770   3539   1637   1770   3539   1637   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   1770   3539   1770   1770   3539   1770   1770   3539   1770   1770   1770   3539   1770	Fil Profected	66.0		0.1		0.95	00.1	
1639   1000   0.955   1.000	Satd. Flow (prot)	1637		2079		1770	3539	
1637   5079   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3568   1770   3568   1770   17568   1770   17568   1770	FIt 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   0,9	Satd. Flow (perm)	1637		5079		1770	3539	
h) 11 1475 13 10 2568 h) 2 11 1475 13 10 2568 h) 2 0 148 0 0 0 h) 11 0 14 0 0 0 h) 14 0 02 11 6 h) 1.4 60.2 1.4 65.6 h) 1.4 60.2 1.4 65.6 h) 1.4 60.2 0.80 0.02 0.87 h) 1.4 60.2 0.80 0.02 0.87 h) 1.4 60.2 1.4 65.6 h) 1.5 0.80 0.02 0.87 h) 1.6 0.2 0.80 0.83 h) 1.7 0.80 0.83 h) 1.8 0.30 0.83 h) 1.9 0.34 0.30 0.83 h) 1.0 0.34 0.30 0.83 h) 1.0 0.34 0.30 0.83 h) 1.0 0.37 0.34 0.37 h) 1.0 0.3 2.3 44.3 3.7 h) 2 1.0 0.3 2.3 44.3 h) 3 1.2 2.3 44.3 h) 4 HCM 2000 Level of Service of Capacity ratio 0.87 h (s) 75.0 Sum of lost time (s) httlianton 75.3% ICU Level of Service 0.87 ht (s) 75.0 Sum of lost time (s) httlianton 75.3% ICU Level of Service 0.87 h h (s) 1.0 0.87 h h (	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 11 0 1 0 0 0 h) 2 0 1487 0 10 2568  R 2 0 17 0 0 0 h) 2 0 1487 0 10 2568  8 2 1 66 h) 2 14 60.2 14 65.6 h) 14 60.2 14 65.6 h) 0.02 0.80 0.02 0.87 h) 30 30 30 0.87 h) 30 30 30 0.87 h) 0.07 0.36 0.30 0.83 h) 1.0 0.37 h) 1.0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 h) 1.0 0.3 0.3 0.3 0.3 0.3 0.3 h) 1.0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0	Adj. Flow (vph)	2	1	1475	13	10	2568	
hb) 2 0 1487 0 10 2568  Prot NA Prot NA 8 2 1 6 6 6 6 114 60.2 114 65.6 114 60.2 14 65.6 114 60.2 14 65.6 115 60.2 14 65.6 116 60.2 14 65.6 117 60.2 18 30.9 12 10 0.2 0.3 0.83 13 30.9 14 0.0 0.2 0.3 0.8 15 10 0.2 0.3 0.8 16 10 0.3 0.3 0.8 17 2 2.1 36.3 2.1 18 10 0.3 2.9 1.6 19 A HCM 2000 Level of Service 10 0.87 Sum of lost time (s) 116 1.5 Sum of lost time (s) 118 1.5 Sum of lost time (s) 119 1.5 Sum of lost time (s) 119 1.5 Sum of lost time (s) 110 1.5 Sum of lost time (s)	RTOR Reduction (vph)	Ξ	0	-	0	0	0	
Prot NA Prot NA S	Lane Group Flow (vph)	2	0	1487	0	10	2568	
8 2 1 6 9 14 602 14 656 11.4 602 14 656 11.4 602 14 656 10.02 0.80 0.02 0.87 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 3.0 4076 33 3095 0.00 0.29 0.01 6.73 0.07 0.36 0.30 0.83 3.6.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2 1.0 0.3 2.9 1.6 2 1.0 0.3 2.9 1.6 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 4 37.2 2.3 44.3 3.7 6elay 3.4 HCM 2000 Level of Service 0 Capacity ratio 0.87 Sum of lost time (s) 11 (s) 75.0 Sum of lost time (s) 11 (s) 75.0 Sum of lost time (s) 11 (s) 75.0 Sum of lost time (s)	Turn Type	Prot		₹		Prot	NA	
s) 1.4 60.2 1.4 65.6 0.02 0.80 0.02 0.87 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.07 0.29 0.01 0.07 0.07 0.36 0.30 0.83 3.6.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2.1 36.3 2.1 1.0 0.3 2.9 1.6 2.1 36.3 2.1 4.4 3 3.7 D A D A 37.2 2.3 44.4 3.3 D A A 37.2 2.3 44.3 3.7 D A A 1.6 A 3.7 A A D A A A A	Protected Phases	∞		7		_	9	
14   60.2   14   65.6   1.4   65.6   1.4   60.2   1.4   65.6   1.4	Permitted Phases							
14 602 14 656 002 087 002 080 002 087 40 40 40 40 30 30 30 30 30 4076 33 3095 007 029 001 00.73 007 036 030 083 2.1 36.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2 1.0 03 2.9 1.6 37.2 2.3 44.3 3.7 D A D A A A	Actuated Green, G (s)	1.4		60.2		1.4	9.59	
0.02 0.80 0.02 0.87 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.00 0.29 0.01 0.03 0.07 0.36 0.30 0.83 3.6.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2 1.1 36.3 2.1 2 37.2 2.3 44.3 3.7 D A D A A 37.2 2.3 44.3 3.9 D A A B A A 37.2 2.3 44.3 3.9 D A A B A A 1.0 0.87 Sum of lost time (s) Int (s) 75.0 Sum of lost time (s) Int (s) 75.0 Sum of lost time (s) Int (s) 75.0 Sum of lost time (s)	Effective Green, g (s)	1.4		60.2		1.4	92.9	
4.0 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Actuated g/C Ratio	0.02		0.80		0.02	0.87	
30 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Clearance Time (s)	4.0		4.0		4.0	4.0	
30 4076 33 3095  0.00 0.29 0.01 0.73  0.07 0.36 0.30 0.83  2 1.0 0.3 2.1 36.3 2.1  1.00 1.00 1.14 1.02  2 1.0 0.3 2.9 1.6  2 37.2 2.3 44.3 3.7  A A B A  37.2 2.3 44.3 3.7  A HCM 2000 Level of Service of Capacity ratio 0.87  Int (s) Sum of lost time (s) 1.5 3.5 3.5  Int (s) Sum of lost time (s) 1.5	Vehicle Extension (s)	3.0		3.0		3.0	3.0	
c0.00 0.29 0.01 c0.73  0.07 0.36 0.30 0.83 3.6.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2 1.1 0.3 2.9 1.6 2 3.7 2 2.3 44.3 3.7 2 2.3 44.3 3.7 3.7 2 2.3 44.3 3.9 4  3.7 4 A A  3.9 A  3.9 A  4.0 2000 Level of Service cCapacity ratio 0.87 Sum of lost time (s) 1.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Lane Grp Cap (vph)	30		4076		33	3095	
0.07 0.36 0.30 0.83 36.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2 1.0 0.3 2.9 1.6 2 37.2 2.3 44.3 3.7 D A D A D A 37.2 2.3 47.3 3.9 Felay 3.4 HCM 2000 Level of Service ocapacity ratio 0.87 Sum of lost time (s) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	//s Ratio Prot	00.00		0.29		0.01	c0.73	
007 0.36 0.83 36.2 2.1 36.3 0.83 36.2 2.1 36.3 2.1 1.00 1.00 0.3 2.9 1.6 2 1.0 0.3 2.9 1.6 37.2 2.3 44.3 3.7 D A D A 37.2 2.3 3.9 D A A   W	//s Ratio Perm							
36.2 2.1 36.3 2.1 1.00 1.00 1.14 1.02 2.1 1.00 0.3 2.9 1.6 3.12 2.3 44.3 3.7 A B A 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 B A A B A A B A A B A A B A B A B A B A B A B A B A B	//c Ratio	0.07		0.36		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 D A A 37.2 2.3 3.9 A 37.2 2.3 3.9 A A A   W   **Matricle of the control of the co	Uniform Delay, d1	36.2		2.1		36.3	2.1	
2 1.0 0.3 2.9 1.6 37.2 2.3 44.3 3.7 D A D A 37.2 2.3 3.9 D A A 37.2 2.3 3.9 A 37.2 2.3 3.9 A A  Y  Y  Utilization 75.3% ICU Level of Service 15.0 Sum of lost time (\$) 15.0 Sum of lost time (\$) 15.0 Sum of lost time (\$) 15.1 Sum of lost time (\$)	Progression Factor	1.00		1.00		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  Y  Y  HCM 2000 Level of Service 0 Capacity ratio 0.87 Int (s) 75.0 Sum of lost time (s) 15.1 For the late of Service 15.2 Sum of lost time (s) 15.3 Sum of lost time (s) 16.4 Sum of lost time (s) 17.5 Sum of lost time (s) 18.4 Su	Incremental Delay, d2	1.0		0.3		5.9	1.6	
37.2 2.3 3.9 37.2 2.3 3.9 4	Delay (s)	37.2		2.3		44.3	3.7	
37.2 2.3 3.9  Y  Y  Y  Pelay  A HCM 2000 Level of Service  Capacity ratio 0.87 Sum of lost time (s)  In (s)  T5.0 Sum of lost time (s)  1. Utilization 75.3% ICU Level of Service  1. Sum of lost time (s)  1. Sum of lost time (s)	Level of Service	Ω		A		۵	Α	
y y y x elay 3.4 HCM 2000 Level of Service 0.5apacity ratio 16(s) 175.0 Sum of lost time (s) 175.0 TUtilization 15.3% 10.1 Level of Service 15.3% 11.5% 12.5% 13.5% 14.5% 15.5	Approach Delay (s)	37.2		2.3			3.9	
18	Approach LOS	O		٧			A	
slay         3.4         HCM 2000 Level of Service           Capacity ratio         0.87         0.87           h (s)         75.0         Sum of lost time (s)           Utilization         75.3%         ICU Level of Service           15         15	Intersection Summary							
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	HCM 2000 Control Delay			3.4	윈	M 2000	Level of Service	A
h (s) 75.0 Sum of lost time (s) Utilization 75.3% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.87				
Utilization 75.3% ICU Level of Service 15	Actuated Cycle Length (s)			75.0	Su	m of lost	time (s)	12.0
	Intersection Capacity Utilizat	ion		75.3%	2	J Level o	f Service	Q
	Analysis Period (min)			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
	<b>&gt;</b>	4	•	4	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	¥L.	*	<b>R</b> _		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

	<b>&gt;</b>	4	<b>←</b>	•	٠	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	No.		₩		¥	₩	
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	А
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	الا Avati D	L				Ĺ	Timing Plan: AM Peak Period
	<b>&gt;</b>	√	<b>←</b>	•	٠	<b>→</b>	
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	20	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							

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Balboa Transit Station

24: Morena Blvd & Avati Dr

Timing Plan: AM Peak Period

																																						В		15.3	A	
<b>→</b>	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	19.0	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	
<b>←</b>	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								
<b>&gt;</b>	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

EBI EBR NBL NBT SBT SBT SBT SBT SBT SBT SBT SBT SBT S		SBT	SBR
Name			
90 151 280 1439 1900 1900 1900 1400 1400 4.0 4.0 4.0 4.0 1400 1900 1900 1900 1900 1900 1900 190		‡	R.
90 151 280 1439 1900 1900 1900 1900 1900 40 40 40 40 1900 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 0.95 100 0.95 100 0.96 104 0.95 100 0.97 1770 1583 1770 3539 0.98 164 304 1564 0.19 98 164 304 1564 0.10 0.90 172 173 315 0.14 0.14 0.18 0.18 0.14 0.14 0.18 0.19 0.16 0.10 0.10 0.10 0.10 0.10 0.10 1.00 1.00		204	410
1900 1900 1900 1900 1900 1900 1900 1900		204	410
4.0	•	1900	1900
1,00 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 1,00 0,95 1,00 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0		4.0	4.0
100 085 100 100 100 100 100 100 100 100 100 10		0.95	1.00
10.95		1.00	0.85
1770   1583   1770   3539   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770   1583   1770		1.00	1.00
10.95   10.0   0.95   1.00     1770   1833   1770   3539     1770   1833   1770   3539     1770   1833   1770   3539     1770   1833   1770   3539     1770   1831   1770   1781     1770   1781   1775   1781     1770   1770   1770   1781     1770   1770   1770   1781     1770   1770   1781   1781     1770   1770   1770   1781     1770   1770   1781   1781     1770   1770   1781     1770   1770   1770     1770   1770		3539	1583
1770   1583   1770   3539   1770   1583   1770   3539   1584   1584   1770   1584   1770   1584   1770   1584   1584   1584   1584   1584   1584   1884		1.00	1.00
F 0,92 0,92 0,92 0,92 0,92 0,92 0,93 1,564 0,98 1,64 3,04 1,564 0,98 1,64 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,0 4,		3539	1583
h) 98 164 304 1564 b) 98 23 304 1564 c) 141 00 0 c) 44 64 12.9 31.5 c) 64 64 12.9 31.5 c) 14 0.14 0.28 0.69 c) 10 0.06 0.01 c) 10 0.01 c) 10 0.01 c) 10 0.01 c) 10 1.00 c) 10		0.92	0.92
h) 98 23 304 1564 Perm Perm Prof 1564 Perm Perm Prof 1664 A 4 4 4 5 129 31.5 0.14 0.14 0.28 0.69 0.01 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.01 0.00 0.01 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.04 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.01 0.00 0.00 0.00		222	446
h) 98 23 304 1564 Perm Perm Prof NA 4 4 4 5 2 4 4 4 12.9 31.5 6 4 6 4 12.9 31.5 10.14 0.14 0.12 0.3 3.0 3.0 3.0 3.0 3.0 2.46 220 497 2428 246 220 497 2428 0.06 0.01 0.17 0.044 180 17.2 14.3 4.0 1.00 1.00 1.00 1.00 2 1.1 0.2 2.2 0.6 19.1 17.5 16.6 4.6 18.1 B B B A 18.1 B B A 18.1 B B A 18.1 A 18.		0	0
Perm Perm Prof NA 5 2 2 4 4 5 5 2 2 2 6 4 6 4 12.9 31.5 6 4 6 4 12.9 31.5 6 4 6 4 12.9 31.5 6 4 6 4 12.9 31.5 6 6 4 6 4 12.9 31.5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		222	446
4 4 5 5 2  9 64 64 129 315  64 64 129 315  64 64 129 315  014 0.14 0.28 0.69  30 30 30 30  30 30 30  246 220 497 2428  006 0.01 0.17 0.44  180 17.2 14.3 4.0  190 1.00 1.00 1.00  2 1.1 0.2 22 0.6  191 17.5 166 46  B B B B A A B A A B A A B A A B A A B A B B B A A B A B B B B A A B A B B B B B B A A B A B		NA	Free
9, 6.4 6.4 12.9 31.5 6.4 6.4 12.9 31.5 1.4 0.14 0.28 0.65 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 246 220 477 2428 0.17 0.041 0.04 0.00 0.01 0.04 1.00 1.00 0.01 0.04 1.10 1.00 1.00 1.00 2 1.1 0.2 2.2 0.6 1.1 0.2 2.2 0.6 1.1 0.2 2.2 0.6 1.1 1 0.2 2.2 0.6 1.1 0.2 2.2 2.2 2.2 0.6 1.1 0.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2		9	
9) 6.4 6.4 12.9 31.5 1.4 6.4 12.9 31.5 1.0 14 0.14 0.8 0.69 4.0 0.14 0.10 0.8 2.46 220 497 2428 2.46 220 497 2428 0.06 0.01 0.17 0.044 1.80 1.72 14.3 4.0 1.10 1.00 1.00 1.00 2. 1.1 0.2 2.2 0.6 1.1 0.2 2.2 0.6 1.1 0.2 2.2 0.6 1.1 1.2 14.3 4.0 1.1 1.0 1.0 1.00 1.00 2. 1.1 0.2 2.0 0.6 1.1 1.2 14.3 4.0 2. 1.1 0.2 2.2 0.6 8 B B A A A 1.1 1.2 1.6 4.6 8 B A A 1.1 1.2 1.6 4.6 9 capacity ratio 0.68 1.1 1.1 0.2 2.2 0.6 1.2 1.3 4.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00			Free
64 64 129 31.5 40 4.0 28 0.65 40 4.0 4.0 20 3.0 3.0 3.0 3.0 3.0 246 220 497 2428 0.06 0.01 0.01 0.04 130 170 1.00 1.00 1 1.1 0.2 2.2 0.6 1 1.1 0.2 2.2 0.6 1 1.1 0.2 2.2 0.6 1 1.1 0.2 2.2 0.6 1 1.1 0.2 2.0 0.6 1		14.6	45.9
0.14 0.14 0.28 0.69 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 246 220 497 2428 0.06 0.01 0.17 0.044 0.06 0.01 0.01 0.04 0.10 1.00 1.00 1.00 0.11 0.2 22 0.6 0.11 1 0.2 22 0.6 0.11 1 0.2 22 0.6 0.11 1 0.2 22 0.6 0.11 1 0.2 22 0.6 0.11 1 0.2 22 0.6 0.11 1 0.2 22 0.6 0.11 1 0.2 22 0.6 0.12 1 0.10 0.10 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.0		14.6	45.9
40 40 40 40 40 40 40 40 40 40 40 40 40 4		0.32	1.00
30 30 30 30 30 30 30 30 30 30 30 30 30 3		4.0	
(vph) 246 220 497 2428  0.06 0.01 0.14  0.17 0.44  0.18 0.17 0.04  0.10 0.10 0.10  1.10 0.2 22 0.6  1.10 0.2 22 0.6  1.11 0.2 2.2 0.6  1.11 0.2 2.2 0.6  1.12 0.10  1.13 0.10  1.14 1.75 1.66 4.6  Interpretable BBBBAA  Interpretable BBBAA  Interpretable BBBAAA  Interpretable BBBAAA  Interpretable BBBAAA  Interpretable BBBAAAA  Interpretable BBBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA		3.0	
0.06 0.01 0.17 0.044  0.10 0.10 0.61 0.64  0.10 0.10 0.61 0.64  0.10 0.10 0.10 0.100  0.10 0.10 0.100  0.10 0.10		1125	1583
0.006 0.01 0.006 0.01 0.00 0.10 0.61 0.04 0.01 0.10 0.10 0.100 1.01 0.10 1.00 1.00 1.02 22 0.06 1.03 1.04 1.05 1.06 1.04 1.05 1.05 1.05 1.05 1.05 1.0			
leday,d1 064 010 061 064 064 064 064 064 064 064 064 064 064			c0.28
180 172 143 40 1.00 100 1.00 1.00 1.1 10.2 2.0 0.6 19.1 17.5 16.6 4.6 B B B A A 18.1 6.6 46. A A 3.1 7.1 7.1 6.6 4.6		0.20	0.28
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		11.4	0.0
1.1 0.2 2.2 0.6 19.1 17.5 16.6 4.6 B B B A 6.6 B A 18.1 A A 18.1 A A 7.1 Aactiy ratio 0.68 45.9 zation 51.4%		1.00	1.00
19.1 17.5 16.6 46 18.1 6.6.6 B A A A A A A A A A A A A A A A A A A A		0.1	0.4
B B B A 18.1 6.6 B A A 7.1 7.1 acity ratio 0.68 45.9 zation 5.14%		11.5	0.4
18.1 6.6  B A  A 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1		В	A
B 7.1 7.1 addy ratio 0.68 45.9 zation 51.4%	9.9	4.1	
7.1 7.1 0.68 45.9 zation 51.4%	A	∢	
7.1 9acity ratio 0.68 45.9 2ation 51.4%			
acity ratio 0.68 45.9 zation 51.4%		:M 2000 Le	evel of Service
45.9 zation 51.4%	89.0		
zation 51.4%		m of lost ti	me (s)
		U Level of	Service
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

Particular   Par		^	†	<i>&gt;</i>	<b>&gt;</b>	ţ	√	•	<b>←</b>	•	٠	<b>→</b>	•
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10	Lane Configurations	*	43			4	*	je.	₩.		¥	₩.	
10	Traffic Volume (vph)	59	9	-	140	11	440	6	026	150	20	258	47
1900   1900	Future Volume (vph)	53	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	Ft	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.98	
1839   1805   1583   1770   3468   1770   1100   0.95   1.00   0.95	Flt 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	
1	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   5   2   1     4   8   8   8   5   2   1     5   8   9   135   135   0.7   30.1   2.0     5   9   135   135   0.7   30.1   2.0     6   9   9   135   135   0.7   30.1   2.0     6   9   9   135   135   0.7   30.1   2.0     7   9   9   135   135   0.7   30.1   2.0     8   9   135   135   0.7   30.1   2.0     9   9   135   135   0.7   30.1   2.0     9   0.06   0.21   0.01   0.46   0.03     9   0.10   0.01   0.01   0.04   0.01     100   0.10   0.03   0.56   0.76   1.00     100   0.04   315   23.2   4.7   31.8     9   0.10   0.04   315   1.2   32.3   2.1     0   0.10   0.04   315   1.2   32.3     0   0.10   0.04   315   1.2   1.2     0   0.10   0.05   0.05   0.05     0   0.10   0.00   0.00   0.00     0   0   0.00   0.00   0.00     0   0   0.00   0.00   0.00     0   0   0.00   0.00   0.00     0   0   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00     0   0.00   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0.00   0.00     0   0   0.00   0.00     0   0   0.00   0.00     0   0   0.00   0.00     0   0   0   0.00     0   0   0   0.00     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   13   0   0   0   0   0   0   0   0   0	Adj. Flow (vph)	32	=	-	152	84	478	10	1054	163	54	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   135   135   0.7   30.1   2.0     15   135   135   0.7   30.1   2.0     15   135   135   0.7   30.1   2.0     16   0.05   0.21   0.21   0.40   0.03     17   0.01   0.04   0.01   0.04   0.01     10   0.10   0.05   0.05   0.07   0.00     10   0.04   3.5   1.2   32.3   2.1   1.2.5     10   0.10   0.04   3.5   1.2   32.3   2.1   1.2.5     10   0.10   0.04   3.5   1.2   32.3   2.1   1.2.5     10   0.10   0.04   3.5   0.05   0.05   0.05     10   0.04   3.5   1.2   32.3   2.1   1.2.5     10   0.07   0.04   0.05   0.05   0.05     10   0.04   3.5   0.05   0.05   0.05     10   0.05   0.05   0.05   0.05     10   0.04   3.5   0.05   0.05   0.05     10   0.05   0.05   0.05   0.05     10   0.04   3.5   0.05   0.05   0.05     10   0.05   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     4	Lane Group Flow (vph)	32	11	0	0	236	162	10	1204	0	54	316	0
4   8   8   5   2   1     39	Turn Type	Split	₹		Split	ΑN	Perm	Prot	NA		Prot	Ν	
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     0.06   3.0   3.0   3.0   3.0   3.0     0.07   3.0   3.0   3.0   3.0     0.01   0.0.13   0.01   0.35   54     0.01   0.0.13   0.01   0.35   0.03     0.01   0.04   3.5   1.2   3.2   1.1     0.02   0.04   3.5   1.2   3.2   1.1     0.04   3.5   1.2   3.2   2.1   1.2.5     0.05   0.06   0.06   0.00   1.00   1.00     0.04   3.5   1.2   3.2   2.1   1.2.5     0.05   0.07   0.000   0.00   0.00   0.00     0.07   0.000   0.00   0.00   0.00     0.07   0.000   0.00   0.00   0.00     0.07   0.000   0.000   0.000   0.00     0.07   0.000   0.000   0.000   0.000     0.07   0.000   0.000   0.000   0.000     0.07   0.000   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.07   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000   0.000     0.000   0.000   0.000   0.000   0.000   0.000     0.000   0.0	Protected Phases	4	4		80	80		2	2		_	9	
3.9         13.5         13.5         0.7         30.1         2.0           4.0         4.0         4.0         4.0         4.0         4.0         4.0           4.0         4.0         4.0         4.0         4.0         4.0         4.0           9.0         0.0         0.21         0.21         0.0         4.0         4.0         4.0           1.09         3.0         3.0         3.0         3.0         3.0         3.0         3.0           1.09         3.7         3.2         1.8         1.93         5.4         4.0         4.0           0.01         0.01         0.03         3.0         3.0         3.0         3.0         3.0         3.0           0.10         0.03         0.05         0.76         0.03         3.0 </td <td>Permitted Phases</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>∞</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Permitted Phases						∞						
3.9   135   135   137   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 0.10 3.0 3.0 3.0 3.0 3.0 3.0 0.10 0.63 0.50 0.56 0.76 1.00 0.10 0.63 0.50 0.56 0.76 1.00 0.10 0.100 1.00 1.00 1.00 1.00 0.10 0.10	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     1.00   0.04   3.2   1.2   3.2   1.4     1.00   1.00   1.00   1.00   1.00     1.00   3.5   1.2   3.2   2.1     2.96   2.13   2.42   64.5   6.8   154.2     2.06   2.52   8   17.1     2.19   HCM 2000 Level of Service   C     1.00   0.25   Sum of lost time (s)   16.0     1.00   1.00   1.00	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	
0.01	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 3.2.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.04 3.5 1.2 3.2 2.1 1.2.5 2.96 2.73 24.2 64.5 16.8 154.2 2.0 C C E B 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) 16.0 15.22 1.60 1.00 1.00 1.00 1.00 1.00 15.24 1.60 1.60 1.60 1.60 1.60 1.60 1.60 1.60	v/s Ratio Prot	c0.02	0.01			00.13		0.01	c0.35		c0.03	0.09	
29.1 0.00 0.63 0.50 0.76 0.70 1.00 0.00 0.00 0.00 0.22 14.7 31.8 1.00 0.04 3.5 1.2 32.3 2.1 14.7 31.8 1.2 29.6 2.73 24.2 64.5 16.8 154.2 2.0	v/s Ratio Perm						0.10						
291 237 230 312 147 318 118 1100 100 100 100 100 100 100 100	v/c Ratio	0.30	0.10			0.63	0.50	0.56	97.0		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	
296 27.3 24.2 32.3 2.1 122.5 2.6 2.6 2.6 2.7 3 24.2 64.5 16.8 154.2 2.0 C C E B F F 2.0 C C C B B F F 2.0 C C C B B F F 2.0 C C C B B F F 2.0 C C C C C C C C C C C C C C C C C C C	Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
296 27.3 24.2 64.5 16.8 154.2 C C E B F F C C C E B F F C C C C E B F F C C C C C C C C C C C C C C C C C	Incremental Delay, d2	1.6	0.4			3.5	1.2	32.3	2.1		122.5	0.1	
C C C E B F F 30.7 25.2 17.1 B F C C C E B F F C C C C E B F F C C C C E B F F C C C C E B F F C C C C E B F F C C C C E B F C C C C C C C C C C C C C C C C C C	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 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	Level of Service	ပ	ပ			O	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			O			В			ပ	
21.9 HCM 2000 Level of Service 0.70 Sum of lost time (s) 72.2% ICU Level of Service 15	Intersection Summary												
0.70 65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	HCM 2000 Control Delay			21.9	Ĭ	3M 2000	Level of 5	Service		ပ			
65.5 Sum of lost time (s) 72.2% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.70									
zation 72.2% ICU Level of Service 15	Actuated Cycle Length (s)	,		65.5	S	im of lost	time (s)			16.0			
<u> </u>	Intersection Capacity Utilizati	ion		72.2%	೨	U Level o	of Service			ပ			
C. Orthical Lana Groun	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

WBL         WBL         NBR         SBL           igurations         Y         4         7         Y           igurations         Y         4         7         Y           inne (Vehh)         27         35         783         22         21           ord         0%         0%         0%         0%         0%           or         0%         0%         0%         0%         0%           or rate (vph)         29         38         851         24         23           ss         rate (vph)         29         38         851         24         23           sc         cx         0%         0%         0%         0%         0%           ockage         filare (veh)         88         851         875         4.11         875           signal (f)         nord         6.8         6.9         4.11         875         4.11         875           signal (f)         nord         6.8         6.9         4.11         875         4.11         875         4.11         875         4.11         875         4.11         875         4.11         875         4.11         875		-		-				
outractions (vehin) 27 35 783 22 21 290  volume (vehin) 27 35 783 22 21 290  outractor 0,92 0,92 0,92 0,92 0,92  outractor 0,92 0,92 0,92 0,92 0,92  outractor 0,92 0,92 0,92 0,92 0,92  outractor 0,93 8 851 24 23 315  idense (veh) 29 38 851 855  idense (veh) 29 38 851 855  idense (veh) 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Outme (verlyt)         27         35         783         22         21         290           Volume (verlyt)         27         35         783         22         21         290           Volume (Verlyt)         29         38         851         24         23         315           Interestion         092         092         092         092         092         092           Interestion         092         092         092         092         092         092           Interestion         092         092         092         092         092         092           Interestion         093         851         24         23         315         315           Interesting (N)         86         85         875         88	Lane Configurations	>		*	¥C	r	<b>‡</b>	
Volume (Vehh)         27         35         783         22         21         290           Anitrol         Organ         Free         Free         Free         Free           Our Factor         O/92	Traffic Volume (veh/h)	27	35	783	22	21	290	
Our Factor         Stop         Free         Free           Owr acte (vph)         29         38         651         24         23         315           Jow rate (vph)         29         38         651         24         23         315           Jans         Speed (fts)         68         692         092         092         092           Jans         Jans         851         24         23         315<	Future Volume (Veh/h)	27	32	783	22	21	290	
Own rate (uph) 29 38 851 24 23 315 inns rate (uph) 29 38 851 24 23 315 inns rate (uph) 29 38 851 24 23 315 inns rate (uph) 29 38 851 24 23 315 inns rate (uph) 29 38 851 24 23 315 inns rate (uph) 29 851 24 23 315 inns rate (uph) 29 2 conf vol inns rate (uph) 214 303 22 inns rate (uph) 214 303 22 inns rate (uph) 214 303 22 inns rate (uph) 25 2 inns rate (uph)	Sign Control	Stop		Free			Free	
Hour Factor 0,92 0,92 0,92 0,92 0,92 0,92 1,092	Grade	%0		%0			%0	
Intervention (III)         29         38         851         24         23         315           strians (IIII)         Intervention (IIII)         None         None         None           Int Blockage (IIII)         Int Blockage         None         None         None           Int Blockage         Int Blockage         None         None         None           Int Blockage         Int Strage (III)         875         None         None           Int Storage veh)         Int Strage (III)         875         None         875           Aspet (III)         Int Strage (IIII)         875         4.1         875           Aspet (IIII)         8.8         8.7         4.1         875           Aspet (IIII)         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8         8.8	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
width (NS)         None         None           width (NS)         None         None           nt Blockage         None         None           san signal (II)         875         None           san signal (II)         875         None           san signal (III)         875         None           sage 1 conf vol         1054         851         875           stage 2 conf vol         68         69         4.1           stage 1 conf vol         1054         851         875           stage 2 conf vol         68         69         4.1           stage 2 conf vol         68         69         4.1           stage 5         86         87         4.1           stage 6 (s)         3.5         3.3         2.2           stage (s)         3.5         3.3         7.67           packty (veh/h)         214         303         2.2         8.8           e Left         86         87         7.67         7.00           e Left         38         0         2.0         0           e Left         25         1700         1700         1700           LOS         C         0	Hourly flow rate (vph)	29	38	821	24	23	315	
Width (ft)         Width (ft)           In Stockage (fts)         None         None           In More action (fts)         None         None           In More action (fts)         None         None           In More action (ft)         None         None           In Storage veh)         851         875           action (ft)         851         875           Anticition (ft)         851         875           Anticition (ft)         875         4.1           Adage (s)         8         6.9         4.1           And (ft)         875         875         875           And (ft)         875         4.1         875           And (ft)         875         4.1         875           And (ft)         8         6.9         4.1         875           Back (s)         8         6.9         4.1         875           Back (s)         8         8         8         9.7           Back (s)         8         8         8         9.7           Back (s)         8         8         8         9.7           Back (s)         8         8         8         9.0         0	Pedestrians							
11 Blockage Int Bl	Lane Width (ft)							
In Blockage  from In Blockage  from In Storage veh)  and storage (s)  and storage (s	Walking Speed (ft/s)							
Intro Hare (veh)  In type  and storage veh)  and storage veh  and storage v	Percent Blockage							
n type and size and size and size and to Same and Size and Log Same and Size and Log Same and Size and Log Same and Saga Log Saga Saga Saga Saga Saga Saga Saga Sa	Right turn flare (veh)							
ann signal (†) angel (s) age 1 conf vol agge (s) agge	Median type			None			None	
am signal ((1) attach of the control of age 1 control of age 2 control of age 2 control of age 2 control of age 2 control of 6 8 6 9 attach control of 6 8 9 attach control of 6 8 9 attach control of 6 8 9 attach control of 6 9 9 attach control of 6 9 9 attach control of 6 9 att	Median storage veh)							
alton unblocked  and conditing volume and conditing and condition and co	Upstream signal (ft)							
And the control of th	pX, platoon unblocked							
stage 1 conf vol         875         875           stage 2 conf vol         1054 851         875           stage 2 conf vol         6.8 6.9         4.1           stage (s)         6.8 6.9         4.1           stage (s)         3.5 3.3         2.2           sue free %         86 87         97           padity (veh/h)         214 303         767           padity (veh/h)         214 303         767           set Total         67 851 24 23 188 188           te Total         67 851 24 0 0 0           te Total         67 851 24 0 0 0           te Capacity         26 0 20           te Capacity         26 0.0           te Capacity         26 0.0           to Capacity         26 0.0           to Capacity         27 1700 1700 1700 1700 1700 1700 1700 17	vC, conflicting volume	1054	851			875		
Atage 2 conf vol         Londord vol         1054         851         875           Anholocked vol         6.8         6.9         4.1         4.1           Atage (s)         6.8         6.9         4.1         4.1           Stage (s)         3.5         3.3         2.2         2.2           Pacific (see %)         8.6         8.7         9.7         2.2           Pacific (see %)         8.6         8.7         9.7         767           Pacific (see %)         8.7         1.2         2.2         2.2           Pacific (see %)         8.7         1.2         2.2         2.2           Pacific (see %)         8.7         1.2         1.2         2.2         2.2           Pacific (see %)         8.7         1.2	vC1, stage 1 conf vol							
rublocked vol 1054 851 875  stage (s) 6.8 6.9 4.1  stage (s) 8.8 6.9 4.1  stage (s) 3.5 3.3 2.2  sue free % 86 87 97  padty (vehr) 214 303 767  for Lane # WB 1 NB 2 SB 1 SB 2 SB 3  for Late 1 29 0 0 23 0 0  for Right 38 0 24 0 0 0  for Right 38 0 24 0 0 0  for Capacity 0.26 0.50 0.01 0.03 0.09 0.09  for Capacity 0.26 0.50 0.01 0.03 0.09  for Capacity 0.27 0.01 0.03 0.09  for Capacity 0.28 0.00 0.09  for Capacity 0.28 0.00 0.09  for Capacity 0.28 0.00 0.00  for Capacity 0.28 0.00 0	vC2, stage 2 conf vol							
type (s)         6.8         6.9         4.1           stage (s)         3.5         3.3         2.2           aue free %         86         87         97           padity (veh/h)         214         303         2.2           padity (veh/h)         214         303         2.2           padity (veh/h)         214         303         2.4         97           padity (veh/h)         WB 1         NB 1         NB 2         SB 1         SB 3           padity (sheh/h)         WB 1         NB 1         NB 2         SB 3         SB 3           padity (sheh/h)         WB 1         NB 1         NB 1         NB 1         NB 1         NB 1           padity (sheh/h)         WB 1         NB 1         NB 1         NB 1         NB 1         NB 1           padity (sheh/h)         25         0 0         24         0 0         0 0         0 0           padity (sheh/h)         23         0.0         0.0         9.8         0.0         0.0           close (sc)         0         23         0.0         0.0         9.8         0.0         0.0           close (sc)         0         23         0.0         0.0	vCu, unblocked vol	1054	851			875		
stage (s)     3.5     3.3     2.2       sue free %     86     87     97       pacify (veh/h)     214     303     767       pacify (veh/h)     214     303     124     28       pacify (seh/h)     214     305     24     0     0       pacify (seh/h)     25     1700     1700     1700     1700       pacify (seh/h)     23     0.0     0.7     1700     0.0       pacify (seh/h)     23     0.0     0.7     170     170       pacify (seh/h)     23     0.0     0.7     170     170       pacify (seh/h)     23     0.0     0.7     170     170       pacify (seh/h)     24     0.0     0.7     17	tC, single (s)	8.9	6.9			4.1		
3.5         3.3         2.2           padity (verh/h)         214         33         2.2           fon_Lane #         WB 1         NB 1         NB 2         SB 1         SB 3           fon_Lane #         WB 1         NB 1         NB 2         SB 1         SB 3           fon_Lane #         WB 1         NB 2         SB 1         SB 3         SB 3           for_Lane #         WB 1         NB 2         SB 1         SB 3         SB 3           for_Lane #         WB 1         NB 2         SB 1         SB 3         SB 3           for Lane #         WB 1         NB 2         SB 1         SB 3         SB 3           for Edit         29         0         23         0         0         0         0           for Right         25         10         10         10         0         0         0         0         0         0           for Bight         25         10         0         2         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0 <th< td=""><td>tC, 2 stage (s)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	tC, 2 stage (s)							
86 87 97  214 303 767  WB 1 NB 1 NB 2 SB 1 SB 3  67 851 24 23 158 158  29 0 0 23 0 0  257 1700 1700 1700 1700  026 050 001 0.03 0.09  239 0.0 0 2 0 0  239 0.0 0 9.8 0.0 0  239 0.0 0 9.8 0.0 0  C A A INDICATION 1.14  1.4 ICU Level of Service	IF (S)	3.5	3.3			2.2		
VB 1         NB 1         NB 2         SB 1         SB 3           WB 1         NB 1         NB 2         SB 1         SB 3           67         851         24         23         158         158           79         9         0         23         0         0         0           25         1700         1700         1700         1700         0	p0 queue free %	98	87			67		
WB 1         NB 1         NB 2         SB 1         SB 3           67         851         24         23         158         158           29         0         0         23         0         0           38         0         24         0         0         0           257         1700         1700         1700         1700           26         0.50         0         0         0           23         0.0         0         2         0           C         A         A         0         0           C         A         A         0         0           C         A         0         0         0           C         A         0         0         0           C         A         0         0         0           C         A         0         0         0           A         11.4         ICU Level of Service	cM capacity (veh/h)	214	303			167		
67 851 24 23 158 158 29 0 0 23 0 0 38 0 24 0 0 0 257 1700 1700 767 1700 1700 25 0 0 0 2 0 0 23.9 0 0 0 9.8 0.0 0.0 C A A 101 1700 1700 C 3.9 0.0 0.7 C 11.4 1.4 121.5% ICU Level of Sarvice	Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	
29 0 0 23 0 0 0 2 3 0 0 0 2 3 0 0 0 2 3 1 0 0 0 0 2 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Total	19	851	24	23	158	158	
38 0 24 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Left	53	0	0	23	0	0	
257 1700 1700 767 1700 1700 226 0.50 0.01 0.03 0.09 0.09 239 0.0 0.0 9.8 0.0 0.0 C 239 0.0 0.7 C 31 0.0 0.7 1.4 Illization 51.5% ICU Level of Service	Volume Right	38	0	24	0	0	0	
0.26 0.50 0.01 0.03 0.09 0.09 2.5 0 0 2 0 0 2.39 0.0 0.0 9.8 0.0 0.0 C	SSH	257	1700	1700	191	1700	1700	
25 0 0 2 0 0 C 239 0.0 0.0 9.8 0.0 0.0 C A A 239 0.0 0.7 C A 1.4 Ilization 51.5% ICU Level of Service	Volume to Capacity	0.26	0.50	0.01	0.03	0.09	60:0	
23.9 0.0 0.0 98 0.0 0.0 C A A C C C A A C C C A A C C C A A C C C C C A C	Onene Length 95th (ft)	22	0	0	2	0	0	
23.9 0.0 0.7 C 0.7 In 1.4 ICU Level of Service	Control Delay (s)	23.9	0.0	0.0	8.6	0.0	0.0	
23.9 0.0 0.7 C	Lane LOS	ပ			⋖			
C Timary 1.4 1.5 1.5 1.7 1.6 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	Approach Delay (s)	23.9	0.0		0.7			
1.4 3adiy Utilization 51.5% ICU Level of Service	Approach LOS	ပ						
1.4 1.0 Level of Service	Intersection Summary							
51.5% ICU Level OI Service	Average Delay	i e il e		1.4	2	-	,	<
	Intersection Capacity Utiliz	ation		51.5%	⊇	n Level o	1 Service	⋖

KHA HCM Unsignalized Intersection Capacity Analysis

Horizon Year with Reduced LU Timing Plan: AM Peak Period Balboa Transit Station 28: Morena Blvd & Gesner St

	<b>&gt;</b>	<b>←</b>	•	٠	<b>→</b>	
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	٧
<b>→</b>	SBT	#	342	342	1900	0.9	0.95	1.00	1.00	3539	1.00	3539	0.92	372	0	372	AN	9		22.5	22.5	0.63	0.9	4.2	2218	0.11		0.17	2.8	9. 0	2.8	⋖	16.7	В		HCM 2000 Level of Service		time (s)	f Sprving
٠	SBL	¥	47	47	1900	4.4	1.00					1770	0.92	21	0	51	Prot	-			Ξ	0.03	4.4	2.0	54	c0.03			17.4		118.0	ш				HCM 2000 I		Sum of lost time (s)	CILL evel of Service
•	NBR	R.	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	5.0	00.0	5.0	⋖				_		0)	_
<b>—</b>	NBT	\$	874	874	1900	5.9	0.95	1.00	1.00	3539	1.00	3539	0.92	950	0	950	N	2		17.1	17.1	0.48	5.9	4.4	1685	c0.27		0.56	1.00	0.0	7.3	۷	7.2	A		10.4	0.54	35.9	44.6%
4	WBR		49	46	1900								0.92	53	0	0																							
<b>&gt;</b>	WBL	>-	33	33	1900	4.4	1.00	0.92	0.98	1679	0.98	1679	0.92	36	46	40	Prot	∞		3.0	3.0	0.08	4.4	2.0	140	c0.02		0.29	15.4	0.00	15.9	В	15.9	В			acity ratio		ration
	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)	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

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	
Intersection Summary					

Intersection Summary
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

	•	<b>†</b>	ļ	4	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	¥.		لولو	
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 liffle (s)		0.4	0.4	0.4		4.0 0.88	
Frt		100	100	0.85		0.85	
Fit Protected		1.00	1.00	1.00		1.00	
Satd. Flow (prot)		5085	5085	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	8			<del></del>	
Permitted Phases				8			
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		<b>V</b>	A	A		m	
Approach Delay (s)		0.0	8.2		12.2		
Approach LOS		V	A		В		
Intersection Summary							
HCM 2000 Control Delay			5.7	H 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	ď		*Reducti	on of si	*Reduction of signal delay for	ty for
					transit	duene :	ransit queue jump lane	
	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	( <u>m</u>	Speed	SOT
Olassi Ct		20	101	20.4	0.01	000	7.7	ш
omoj or	= :	3			7.01	00:0		
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	Ω
Bond St	=	35	21.0	9.0	21.6	0.17	28.0	O
Mission Bay Dr	=	32	15.5		68.5	0.12	6.5	ш
l-5 Off-ramp ★	=	45	24.2	<del>15.2</del> 1	0.0	4.2 1.23	21.3	Ω
Balboa WB Ramps	=	45	7.1	0.4	ا چ	0.07	31.4	В
Moraga Ave★	=	45	22.2	G 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)	(m)	Speed	FOS
יטר		36	200	4.0	יוב ב	00.0	0.20	C
10 postages		8	0.03	5.	0.03	0.2.0	5.72	,
	100	70	45.7	2.0		0 40		(
IMISSION DAY DI	E	3		7.0	4:47	21.0	7:11	٥
Bunker Hill St	=	32	14.7	13.5	28.2	0.11	13.9	ш
Magnolia Ave	=	32	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	=	35	11.7	13.9	25.6	0.09	12.1	ш
Bluffside Av	=	35	20.1	21.2	41.3	0.16	13.7	В
Total	=		121.0	107.6	228.6	0.94	14.7	Q

#### KHA Arterial Level of Service

Synchro 9 Report Page 1

#### 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	SOT
Dluffeida Av	Ξ	25	0.00	10.7	30.7	0.16	141	C
Damon Ave	=	35	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	5.6	24.0	0.17	25.1	В
Grand Ave	=	35	14.7	38.7	53.4	0.11	7.3	ш
101	=	35	15.7	0.0	49.6	0.43	20 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	1	<b>/</b>	ţ	-	<b>→</b>	
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

	4	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	✓	•	•	•	٠	<b>→</b>	$\searrow$
Movement	EBF	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			9.5			1.00	
Frt	1.00	0.99		1.00	9.1			1.00			0.92	
Fit 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	0,	∞	1489	33	155	9/	7	23	32	128
RTOR Reduction (vph)	0	က	0	0	2	0	0	2	0	0	70	0
Lane Group Flow (vph)	88	1066	0	8	1520	0	0	236	0	0	1%	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			9			80			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			286			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			1.00			1.00	
Incremental Delay, d2	35.4	16.8		1.	1.7			16.7			0.8	
Delay (s)	44.8	28.9		8.5	13.3			40.7			22.8	
Level of Service	Ω	ပ		⋖	B			٥			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	ty 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)			15									
<ul> <li>c Critical Lane Group</li> </ul>												

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 Rail         0.23         0.65         0.50         0.90           Control Delay         9.1         6.3         1.2         29.6           Outeue Delay         9.0         0.0         0.0         0.0           Outeue Delay         9.1         6.3         1.2         29.6           Outeue Delay         9.1         6.3         1.2         29.6           Outeue Length Sthr (ft)         45         6.7         23.1           Outeue Length Sthr (ft)         45         6.7         1.44         1138           Base Capacity (vph)         936         329         899           Inm Basi Link         1833         1967         1441         1138           Slonage Cap Reductin         0 </th <th><ol><li>Balboa Ave &amp; Garnet Ave</li></ol></th> <th>irnet Av</th> <th>e e</th> <th></th> <th></th> <th>Timing Plan: PM Peak Period</th>	<ol><li>Balboa Ave &amp; Garnet Ave</li></ol>	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 7 936 329 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 6,8 1,28 0 1 936 3,29 1853 1967 1441 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 1883 1967 1441 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	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         EBI         EBI         WBI         SBI         SBR           Lane Confortalistics         44         45         7         142         142           Lane Confortalistics         140         1315         798         142         142           Future Volume (ph)         0         386         514         1315         798         142           Future Volume (ph)         0         386         514         1315         798         142           Future Volume (ph)         0         386         51         60         49         98           Future Volume (ph)         0         936         61         40         49         99           Lane Util. Factor         100         100         100         98         68         0.88           Fill Permitted Processor         100         100         100         98         141         388           Sald. Flow (prof)         0         420         92         092         092         092           Adj. Flow (prof)         0         420         92         02         0         0           Adj. Flow (prof)         0         420         93         714         999								
(ivph) 0 386 514 1315 798 142 (ivph) 1900 1900 1900 1900 1900 1900 (iv) 5 0 190 190 1900 1900 (iv) 5 0 10 10 190 1900 (iv) 100 100 100 096 (iv) 100 100 100 113 (iv) 100 10	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
(yph) 0 386 514 1315 798 142 (yph) 1 0 386 514 1315 798 142 (yph) 1 1900 1900 1900 1900 1900 (5) 5.0 5.0 4.0 4.9 142  or 100 0.92 0.85 0.98 (1.00 0.92 0.85 0.98 (1.00 0.92 0.85 0.98 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.100 0.96 (1.00 0.100 0.113 (1.00 0.100 0.113 (1.00 0.100 0.113 (1.00 0.100 0.113 (1.00 0.100 0.113 (1.00 0.100 0.113 (1.00 0.00 0.00 (1.00 0.00	Lane Configurations		*	₩₽	*	***		
(yph) 0 386 514 1315 798 142 b) 1900 1900 1900 1900 1900 c) 5 0 4 0 1900 1900 c) 5 0 4 0 1900 1900 c) 6 0 91 0 91 0 97 c) 100 0 92 0 93 0 98 c) 100 100 100 0 96 c) 100 100 100 100 c) 100 100 100 100 c) 100 c) 100 100 c) 10	Traffic Volume (vph)	0	386	514	1315	798	142	
pl) 1900 1900 1900 1900 1900 1900   (5) 5.0 5.0 4.0 4.9   (6) 0.95 0.91 0.91 0.97   (7) 0.95 0.91 0.91 0.97   (8) 0.95 0.91 0.91 0.97   (9) 0.92 0.85 0.98   (1) 0.00 0.92 0.85 0.98   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 1.00 0.96   (1) 0.00 1.00 1.00 0.96   (1) 0.00 1.00 1.00 0.96   (1) 0.00 1.00 1.00 0.96   (1) 0.00 1.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.96   (1) 0.00 1.00 0.90   (1) 0.00 1.00 0.90   (1) 0.00 1.00 0.90   (2) 0.00 0.90   (3) 0.12 0.13 0.13   (4) 0.00 0.90   (5) 0.10 0.10 0.113   (5) 0.10 0.10 0.113   (6) 0.10 0.10 0.113   (1) 0.10 0.10 0.10 0.113   (1) 0.10 0.10 0.113   (2) 0.10 0.10 0.10 0.113   (3) 0.10 0.10 0.10 0.113   (4) 0.10 0.10 0.10 0.10 0.113   (5) 0.10 0.10 0.10 0.10 0.10 0.113   (6) 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1	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	
100   0.95   0.91   0.97   0.97   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.99   0.90   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	듄		1.00	0.92	0.85	0.98		
(b) 3539 3105 1441 3388  m) 100 096  m) 100 096  m) 100 096  m) 100 096  100 096  100 096  100 096  100 096  100 096  100 096  100 096  100 096  100 092  100 092  100 092  100 092  100 092  100 096  10	Fit Protected		1.00	1.00	1.00	96:0		
m) 100 100 096 m) 3539 3105 1441 3388 m) 6 2 092 092 092 092 m) 6 2 092 092 092 092 m) 7 PHF 0.92 092 092 092 092 m) 7 PHF 0.92 093 093 093 093 m) 8 1429 867 154 m) 0 0 340 0 22 0 m) 140 0 0 340 0 22 0 m) 150 0 340 0 22 0 m) 150 0 341 142 144 m) 150 0 152 0 152 100 0 133 m) 151 0 100 0 113 m) 1854 1626 1441 1112 m) 101 0 100 1.03 0.50 m) 102 0.03 0.50 m) 103 1.5 1.2 4.5 m) 103 0.03 0.03 m) 104 0 105 0.03 m) 105 0.03 0.03 m) 106 0.03 0.03 m) 107 0.03 0.03 m) 108 0 0.03 1.13 m) 109 0.0 214 m) 100 0.00 0.113 m) 100 0.00 0.00 m) 100 0.00 0.00 m) 100 0.00 0.00 m) 100 0.00 m)	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) 0 420 934 714 999 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 35.1 135.1 67.0 22.0 m (s) 5.0 5.0 100 0.33 m (s) 5.0 5.0 141 1112 m (s) 5.0 5.0 141 1112 m (s) 6.1 6.1 5.2 m (s)	Flt Permitted		1.00	1.00	1.00	96.0		
γ, PHF         0.92         0.92         0.92         0.92           γ, PHF         0.92         0.92         0.92         0.92           γ, (γρh)         0         4.20         9.34         174         9.99         0           wi (γρh)         0         4.20         9.34         714         9.99         0           es         2         2         4         es         7         4           es         2         2         4         es         7         4           es         2         2         4         es         4         es           r, G (s)         35.1         35.1         67.0         22.0         es         4.9           r, G (s)         35.1         35.1         67.0         22.0         es         4.9           r, G (s)         35.1         35.1         67.0         22.0         4.9         es           s (s)         6.1         6.1         6.1         6.1         6.2         6.2         6.0           r (s)         8.2         10.0         1.0         1.11         4.5         4.5         4.5           r (s)         8.2         1.2	Satd. Flow (perm)		3539	3105	1441	3388		
nv(vph) 0 420 559 1429 867 154  nv(vph) 0 0 340 0 22 0  es 2 2 6  es 2 2 7  es 35.1 35.1 67.0 22.0  eg 35.1 35.1 67.0 22.0  eg 35.1 35.1 67.0 22.0  eg 6,1 6.1 6.1 5.2  (cph) 1884 1426 1441 1112  (cph) 1884 1626 1441 1112  (cph) 1884 1626 1441 1112  (cph) 1884 1626 1441 1112  (con) 0.23 0.57 0.50 0.90  d1 0.23 0.57 0.50 0.90  d1 0.23 0.57 0.50 0.90  d1 0.33 0.51 0.50 0.90  d1 0.3 0.51 0.0 0.14  eg 8 12.3 1.2 28.6  eg 8 8 12.3 1.2 28.6  eg 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
ww (vph) 0 0 340 0 22 0 0 ww (vph) 0 0 420 934 714 999 0 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	
ww (vph) 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 5.1 35.1 67.0 22.0   1.g (s) 35.1 35.1 67.0 23.0   1.g (s) 5.0 5.0 14.1 11.2   1.g (s) 6.1 6.1 5.2   1.g (s) 6.1 6.1 1.3 11.2   1.g (s) 6.1 6.1 1.3 1.2 4.5   1.g (s) 8.9 1.3 1.2 4.5   1.g (s) 8.9 8.3 28.6   2.g (s) 8.9	RTOR Reduction (vph)	0	0	340	0	22	0	
es 2 2 4 4 es 3.1 35.1 67.0 22.0 1, G(s) 35.1 35.1 67.0 22.0 1, g(s) 5.0 5.0 100 0.33 100 0.1 5.2 100 0.1 5.2 100 0.2 101 0.2 102 0.3 103 0.2 104 0.2 105 0.3 105 0.3 106 0.3 107 0.3 108 113 112 109 0.0 113 12 45 109 0.0 113 12 45 12 45 12 45 12 45 12 45 12 45 12 45 12 45 13 12 286 14 1 11 2 14 1 11 2 15 1 2 45 16 1 3 12 17 1 2 45 18 1 2 45 18 1 3 12 18 1 3 12 18 1 3 12 18 1 3 12 18 1 3 12 18 1 3 12 18 1 3 12 18 1 3 13 18 1 3 13 18 1 3 13 18 1 3 13 18 1 3 13 18 1 3 13 18 1 3 13 18 1 3 14 18	Lane Group Flow (vph)	0	420	934	714	666	0	
bes 2 2 4 4  es 5 1 35.1 670 220  i. g (s) 35.1 35.1 670 220  iii) 0.52 0.52 1.00 0.33  alio 0.52 0.52 1.00 0.33  on (s) 6.1 6.1 6.1  ivolution 0.12 0.03 0.00  d 1 884 1626 1441 1112  ivolution 0.12 0.03 0.00  d 1 88 10.9 0.0 21.4  clor 1.00 1.00 1.13  ely, d2 0.3 1.5 1.2 846  a A B A C  ivolution 0.70 Service  minary  from many  from o.70 Service  from 0.70 Service	Tum Type		Ϋ́	Ν	Free	Prot		
es Free 1, (5 (s) 35.1 35.1 67.0 22.0 4(s) 35.1 35.1 67.0 22.0 4(s) 35.1 35.1 67.0 22.0 4(s) 5.0 6.5 10.0 0.33 6(s) 5.0 1 6.1 6.1 6.1 6(s) 6.1 6.1 6.1 6.2 6(s) 6.0 1441 1112 6(ph) 11854 1426 1441 1112 6(ph) 0.12 0.30 0.50 6.10 0.00 21.4 6(s) 6.0 0.00 61.0 1.00 1.00 1.13 61.0 1.00 1.00 1.13 61.0 1.00 1.00 1.13 62.0 8.8 1.2 4.5 63.0 8.9 12.3 1.2 4.5 63.0 8.9 12.3 1.2 4.5 64.0 8.9 1.2 4.5 65.0 8.9 8.3 A 65.0 8.9 1.2 4.5 65.0 8.9 1	Protected Phases		7	7		4		
A, G (s) 35.1 35.1 67.0 22.0  A, g (s) 5.0 5.2 1.00 0.33  B (s) 5.0 5.0 4.9  A, g (s) 6.1 6.1 5.2  Apply 1884 1626 1441 1112  B (s) 10.2 0.50 0.90  A1 0.2 0.2 0.4  B (s) 0.5 0.50 0.90  A1 1.0 0.10 1.13  B (s) 0.0 1.00 1.14  B (s) 0.0 1.00 1.13  B (s) 0.3 1.5 1.2 4.5  B (s) 0.3 1.3 1.5 1.2 4.5  B (s) 0.3 1.3 1.5 1.2 4.5  B (s) 0.3 1.3 1.5 1.2 4.5  B (s) 0.3 1.3 1.5 1.2 4.5  B (s) 0.3 1.3 1.2 1.2  B (s) 0.3 1.3 1.2 1.2  B (s) 0.3 1.3 1.2 1.2  B (s) 0.3 1.3 1.	Permitted Phases				Free			
1, g(s)   35.1   35.1   67.0   22.0     1, g(s)   5.0   5.0   1.0     1, g(s)   5.1   6.1   5.2     1, g(s)   6.1   6.1   6.1     1, g(s)   6.1   6.	Actuated Green, G (s)		35.1	35.1	0.79	22.0		
atio 0.52 0.52 1.00 0.33  e (s) 5.0 5.0 4.9  on (s) 6.1 6.1 1.112  (wh) 1884 1626 1441 1112  0.12 0.30 0.50 0.00  d 1 8.6 10.9 0.0 21.4  ctor 1.00 1.00 1.13  lay, d2 0.3 1.5 1.2 4.5  e (s) 8.9 1.2 3 1.2 28.6  e (s) 8.9 8.3 28.6  frita Delay 14.5 HCM 2000 Level of Service  mmany  ment of lost time (s) 1.00 0.70  Length (s) 67.0 Sum of lost time (s) 1.00 0.70  Lengt	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 5.2 on (s) 1854 1626 1441 1112 o1.2 c0.3 0.50 0.3 0.50 0.3 0.50 0.3 1.5 1.2 4.5 s A B A C y (s) 8.9 8.3 A C mmany  man of location (s) 6.70 clor clor clor clor clor clor clor clor	Actuated g/C Ratio		0.52	0.52	1.00	0.33		
(vph) 6.1 6.1 5.2 (vph) 1884 1626 1441 1112 (vph) 0.12 c0.30 c0.29 (c0.29 c0.29 c0.29 c0.29 c0.29 c0.29 c0.29 c0.29 c0.29 c0.20 c0.29 c0.20 c0.2	Clearance Time (s)		2.0	2.0		4.9		
(vph) 1854 1626 1441 1112  0.12 0.30 0.029  d1 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 8.6  9 A B A C  y(s) 8.9 8.3 2.86  mmany  mmany  mmany  trol Capacity ratio 0.70  Length (s) 67.0 Sum of lost time (s)  pacity Utilization 6.37%  1.5 1.2 28.6  A A B A C  C Service  1.6 Sum of lost time (s)  1.7 Sum of lost time (s)  1.8 Sum of lost time (s)  1.9 Sum of lost time (s)  1.1 Sum of lost time (s)  1.2 C Sum of lost time (s)  1.3 Sum of lost time (s)  1.4 Sum of lost time (s)	Vehicle Extension (s)		6.1	6.1		5.2		
0.12    0.30	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 1.01  lay, d2 0.3 1.5 1.2 4.5  e A B A C  y (s) 8.9 8.3 A C  mmany  man of lost time (s)  end of lost time (s)  end of lost time (s)  for the lost of service  for the lost time (s)  for the lost	v/s Ratio Prot		0.12	c0.30		c0.29		
d1 8.6 10.9 0.0 21.4 ctor 1.0 1.00 1.00 1.13 lay, d2 0.3 1.5 1.2 4.5 lay, d2 0.3 1.5 1.2 4.5 lay, d2 0.3 1.5 1.2 4.6 lay d3 1.2 28.6 lay d3 1.2 28.6 lay d3 1.3 1.2 28.6 lay d3 1.4 C. lay d3 1.5 1.2 28.6 lay d3 1.5 1.2 28.6 lay d3 1.5 1.2 28.6 lay d3 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 C. lay d3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	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 4.5  lay, d2 0.3 1.5 1.2 28.6  e A B A C  y(s) 8 9.3 28.6  mmary  frot Delay 14.5 HCM 2000 Level of Service 1.00 0.70  Length (s) 67.0 Sum of lost time (s) 5.2 model of Service 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio		0.23	0.57	0.50	0.90		
ctor 100 100 1.13  lay, d2 0.3 1.5 1.2 4.5  a A B A C  y(s) 8.9 8.3 28.6  mmany  Into Locapadiy ratio 0.70  Length (s) 67.0 Sum of lost time (s)  pacify utilization 63.7%  Ichor and a control of service of ser	Uniform Delay, d1		9.8	10.9	0.0	21.4		
lay, d2 0.3 1.5 1.2 4.5  8	Progression Factor		1.00	1.00	1.00	1.13		
8 9 12.3 1.2 28.6  y (s) 8 9 8.3 28.6  mmary  memory  memory  memory  memory  memory  memory  A A A C  C  memory  14.5 HCM 2000 Level of Service  0.70 Sum of lost time (s)  end of 37% ICU Level of Service  frinch  14.5 HCM 2000 Level of Service  14.5 HCM 2000 Level of Service  14.5 HCM 2000 Level of Service  15.0 Sum of lost time (s)  16.0 Sum of lost time (s)  17.0 Sum of lost time (s)	Incremental Delay, d2		0.3	1.5	1.2	4.5		
S	Delay (s)		8.9	12.3	1.2	28.6		
y(s)         8.9         8.3         28.6           mmany         A         A         C           retain Delay         14.5         HCM 2000 Level of Service           me to Capacity ratio         0.70         Sum of lost time (s)           Length (s)         67.0         Sum of lost time (s)           pacity Utilization         63.7%         ICU Level of Service           freinh         15         ICU Level of Service	Level of Service		⋖	В	⋖	ပ		
A A C   C	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		V	۷		ပ		
14.5 HCM 2000 Level of Service 0.70 Sum of lost time (s) 63.7% ICU Level of Service 15	Intersection Summary							
0.70 Sum of lost time (s) 67.0 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 Capaci	ity ratio		0.70				
63.7% ICU Level of Service	Actuated Cycle Length (s)			0.79	S	m of lost	time (s)	6.6
	Intersection Capacity Utilizati	lon		63.7%	⊇	U Level o	f Service	В
	Analysis Period (min)			7				

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         HNI         MBR         SB         SBR           Lare Condigualianos         1 149         1706         505         433         109           Tearle Condigualianos         1 1159         1706         505         433         109           Real Flow (vipu)         900         1900         1900         1900         1900           Real Flow (vipu)         900         1900         1900         1900         1900           Real Flow (pcm)         343         3339         3539         168         100           Fit Pontected         0.95         100         100         0.85         100           Fit Pontected         0.95         100         100         0.85         100           Fit Pontected         0.95         100         100         0.85         100           Sald Flow (pcm)         3433         3539         3539         1583         343         1583           Sald Flow (pcm)         3433         3539         3539         1583         343         1583           Sald Flow (pcm)         3433         3539         3539         1583         343         1583           Sald Flow (pcm)         3433<								
1159   1706   505   453   109   1159   1706   505   453   109   1159   1706   505   453   109   1159   1706   505   453   109   1159   100   505   100   1900   1000   1	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
1159   1706   505   453   109     1159   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   0.96   1.00     2.5   35.39   1583   34.33   1583     2.5   4.9   5.4   5.4   5.4     2.5   4.9   5.4   5.4   5.4     3.839   35.39   1583   34.33   1583     3.839   35.39   1583   34.33   1583     3.839   35.39   1583   34.33   1583     3.839   35.39   1583   34.33   1583     3.839   35.39   1583   34.33   1583     3.839   35.49   492   49     4.0   NA	Lane Configurations	*	44	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   0.85   1.00   0.85   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 0.885 1100 100 100 0.995 1.00 1100 100 100 0.995 1.00 1100 100 0.995 1.00 1100 100 0.995 1.00 1100 100 0.995 1.00 1100 100 0.99 0.92 1100 1854 549 492 49 1100 1854 549 492 49 1100 1854 549 492 49 1100 1854 549 492 49 1100 1854 549 180 180 1100 1854 549 180 180 1100 1854 549 180 180 1100 185 1233 258 258 1100 183 975 1233 258 258 1100 183 975 1233 258 258 1100 184 175 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 146 176 100 100 1100 188 250 48 572 500 1100 188 250 48 572 500 1100 188 250 48 572 500 1100 188 250 88 572 500 188 250 88 5	Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00	
3 1500 100 100 1055 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 0.90 0.92 0.92 1 100 100 0.00 0.00 0.00 1 100 100 0.00 0.	Frt	1.00	1.00	1.00	0.85	1.00	0.85	
3.539 3.539 1583 3.539 1583 1583 1583 1583 1583 3.539 1583 3.433 1583 3.639 1583 3.433 1583 1583 3.839 3.839 1583 3.433 1583 3.639 3.639 1583 3.433 1583 3.639 3.639 1583 3.433 1583 3.639 1580 3.639 3.639 1580	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     1260   1854   549   492   118     1261   1854   549   492   49     1282   275   123   25.8   25.8     1083   97.5   123.3   25.8   25.8     1083   97.5   123.3   25.8   25.8     1083   97.5   123.3   25.8   25.8     1083   97.5   123.3   25.8   25.8     1083   97.5   123.3   25.8   25.8     1083   97.5   123.3   25.8   25.8     1084   95.4   5.4   5.4   5.4     1085   0.07   0.01   0.01     1087   0.08   0.08   0.01     1090   1.40   1.70   1.00     100   1.46   1.76   1.00   1.00     100   1.46   1.76   1.00   1.00     100   2.1   0.1   2.1     12   2.1   6.3   2.4   5.5   5.0     12   2.1   6.3   2.4   5.5   5.0     12   2.1   6.1   6.1     145.0   Sum of lost time (s)     145.0   1.00   1.00     145.0   1.00   1.00     145.0   1.00   1.00     145.0   1.00   1.00     145.0   1.00   1.00     145.0   1.00   1.00     145.0   1.00   1.00     145.0   1.00   1.00     146.0   1.00   1.00     147.0   1.00   1.00     148.0   1.00   1.00     148.0   1.00   1.00     148.0   1.00   1.00     148.0   1.00   1.00     148.0   1.00   1.00     148.0   1.00   1.00     149.0   1.00   1.00     140.0   1.00   1.00     1	Satd. Flow (prot)	3433	3539	3539	1583	3433	1583	
3539 3539 1583 3433 1583     1260 1854 549 092 092 092 092 092 092 092 092 092 09	Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
1260   1854   549   492   118   1260   1854   549   492   118   1260   1854   549   492   118   1260   1854   549   492   118   1260   1854   549   492   118   1260   1854   549   492   499   1260	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 90 69 1260 1854 549 492 118 127	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
1260 1854 549 492 49 1260 1854 549 492 49 11 NA NA pm+ov Prot custom 1 08.3 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 10.5 0.67 0.85 0.18 0.18 1 5.5 4.9 5.4 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 5.4 5.4 1 5.5 4.9 5.4 5.4 1 5.5 4.9 5.4 5.4 1 5.5 4.9 5.4 5.4 1 5.5 4.9 5.4 1 5.5 4.9 5.4 1 5.4 5.4 5.2 1 6.3 2.4 57.2 50.6 1 0.0 1.00 1 0.6 2.1 0.1 7.3 0.3 1 6.5 2.1 6.1 6.1 0.0 1 6.5 2.1 0.1 7.3 0.3 1 7.2 16.3 2.4 57.2 50.6 1 1.2 2.1 1 6.18 D 1 12.2 2.1 1 6.18 C 1 8.5 5.0 0.00 1 8.5 5.0 0.00 1 9.5 5.0 0.00 1 9.5 5.0 0.00 1 145.0 0.00 1 0.00 1 145.0 0.00 1 0.00	Adj. Flow (vph)	95	1260	1854	549	492	118	
1260 1854 549 492 499 11 NA NA PM+ov Prot custom 2	RTOR Reduction (vph)	0	0	0	0	0	69	
1 NA NA pm+ov Prot custom  2 6 7 7 4 2 6 6 2 6 7 7 7 4 4 2 6 6 7 7 7 4 4 108.3 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 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 25.8 25.8 1108.3 20.0 2.0 3.0 108.5 20.0 2.0 3.0 109.5 20.0 3.0 109.5 20.0	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  10.075 0.67 0.08 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 5.5 4.9 0.2 0.2 0.0  2 6.4 2.0 0.7 c.0.14 0.03  0 0.4 2.0 0.7 c.0.14 0.03  0 0.4 2.1 0.1 7.3 0.3  1 0.5 8 0.9 0.81 0.17  1 0.0 1.0 0.10 0.0  1 0.6 2.1 0.1 7.3 0.3  2 4 0 HCM 2000 Level of Service  0 80  1 2 2.1.1 6.18  2 4 0 HCM 2000 Level of Service  0 80  1 45.0 Sum of lost time (s)  6 87.8 C.0.1 0.0 0.0  1 6 8.7 C.0.1 0.0 0.0  1 7 8 8 0.3 0.3  1 8 C A E E  1 8 C A E E  1 8 C A E E  1 8 C A E E  1 9 C A E E  1 12 2.1.1 6.18  1 8 C A E E  1 8 C A E E  1 9 C A E E  1 12 2.1.1 6.18	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 2588 258 1085 677 085 0.18 0.18 1 5.5 4.9 5.4 5.4 5.4 1 5.5 8.0 2.0 2.0 3.0 1 5.6 8.0 2.0 2.0 3.0 1 5.6 8.0 2.0 2.0 3.0 1 5.6 8.0 2.0 2.0 3.0 1 5.6 8.0 2.0 2.0 3.0 1 5.6 8.0 2.1 0.2 1 6.0 2.1 1.0 1.00 1 6.0 2.1 0.1 7.3 0.3 1 7.2 16.3 2.4 57.2 50.6 1 100 146 1.76 1.00 1.00 1 6.0 2.1 0.1 7.3 0.3 1 7.8 26.0 4.3 64.5 50.9 1 8.0 4.3 64.5 50.9 1 9.0 4.3 64.5 50.9 1 12.2 21.1 61.8 1 8.0 HCM 2000 Level of Service 0 80 1 145.0 Sum of lost time (s) 1 6.8 7.5 10.0 1.00 1 6.8 7.5 10.0 1.00 1 7.1 145.0 Sum of lost time (s) 1 8.1 145.0 Sum of lost time (s) 1 9.1 145.0 Sum of lost time (s) 1 15.1 145.0 Sum of lost time (s) 1 15.1 145.0 Sum of lost time (s)	Permitted Phases		7		9		7	
1083 775 1233 258 258 1075 067 068 018 018 10.56 80 2.0 2.0 3.0 10.64 217 017 018 10.46 018 018 10.46 018 018 10.46 018 019 10.0 146 1176 1100 1100 10.0 146 1176 1100 1100 10.0 2.1 01.3 24 57.2 50.6 11.2 21.1 61.8 12.2 21.1 61.8 145.0 Sum of lost time (s) 16.8 Sum of lost time (s) 17.8 Sum of lost time (s) 18.9 Sum of lost time (s) 18.9 Sum of lost time (s) 18.9 Sum of lost time (s) 19.15 Sum of lost time (s)	Actuated Green, G (s)	7.0	108.3	97.5	123.3	25.8	25.8	
1 5.5 4.9 6.8 0.18 0.18 1 5.5 4.9 5.4 5.4 5.4 1 5.5 4.9 2.0 2.0 3.0 1 5.6 8.0 2.0 2.0 3.0 1 5.6 8.0 2.0 2.0 3.0 1 0.4 0.1 0.1 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 0.7 C.1 4.0 0.0 1 0.6 2.1 0.1 7.3 0.3 1 0.6 2.1 0.1 7.3 0.3 1 0.7 C. A E D 1 1.2 2.1.1 6.18 1 C A C A E C O B 1 0.8 0.8 0.8 0.8 0.8 0.8 1 145.0 Sum of lost time (s) 1 61.8 1.0 1.0 1.0 1.0 1 145.0 Sum of lost time (s) 1 15.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	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 c0.52 007 c0.14 0.03 9.0.38 0.28 0.28 0.17 1.0. 146 1.76 1.00 1.0. 4.1 1.76 1.00 1.0. 4.3 6.45 50.9 1.2. 2.1.1 A E D 1.2. 2.1.1 A E D 1.2. 2.1.1 A E B 1.3. A E B 1.4. 2.000 Level of Service 0.80 1.45.0 Sum of lost time (s) 1.45.1 Sum of lost time (s)	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 2.0 4.3 64.5 50.9 1.2 21.1 61.8 B C A E D 1.2 21.1 61.8 B C A E D 1.45.0 Sum of lost time (s) 6.87% ICU Level of Service 0.80 I.55 1.54 ICU Level of Service 0.80 I.55 1.54 ICU Level of Service 0.80 I.55 1.55 1.55 1.55 1.55 1.55 1.55 1.55	Vehicle Extension (s)	2.0	9.6	8.0	2.0	2.0	3.0	
8 0.36 c0.52 0.07 c0.14 0.03 0.28 0.28 0.28 0.28 0.39 0.81 0.17 0.100 1.46 1.76 1.00 1.00 1.00 1.00 1.46 0.2 2.1 0.1 7.3 0.3 0.3 0.4 5.2 5.06 0.4 3 6.5 5.09 0.4 5.2 2.1.1 6.18 0.8 C A E E E C A E E E C A E E E C A E E E C A E E E C A E E E E	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  1.22 21.1 61.8  24.0 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 0.81 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 0.0 3 1 7.8 260 4.3 64.5 50.9 1 A C A E D 12.2 21.1 61.8 B C E  24.0 HCM 2000 Level of Service 0.80 Sum of lost time (s) 68.7% ICU Level of Service 1.5 Sum of lost time (s) 68.7% ICU Level of Service 1.5 Sum of lost time (s) 1.5 Sum of lost t	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 0.1 0.1 0.1 0.1 0.1 24 0 HCM 2000 Level of Service 0.80 1.45 0 Sum of lost time (s) 68.7% ICU Level of Service 1.5 15 15 15 15 15 15 15 15 15 15 15 15 15	Uniform Delay, d1	67.5	7.2	16.3	2.4	57.2	20.6	
0.6 2.1 0.1 73 0.3  1.7 8 26.0 4.3 64.5 50.9  1.2 21.1 61.8  B C E  24.0 HCM 2000 Level of Service 0.80 1.45.0 Sum of lost time (s) 68.7% ICU Level of Service 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) 68.7 (CU Level of Service 1.5	Incremental Delay, d2	3.0	9.0	2.1	0.1	7.3	0.3	
12.2 21.1 61.8 E D 12.2 21.1 61.8 B C E  24.0 HCM 2000 Level of Service 0.80 Sum of lost time (s) 68.7% ICU Level of Service 1.5	Delay (s)	70.5	7.8	26.0	4.3	64.5	50.9	
12. 21.1 61.8 B C E 24.0 HCM 2000 Level of Service 0.80 Sum of lost time (s) 68.7% ICU Level of Service 1.5	Level of Service	ш	A	ပ	Þ	ш	Ω	
B C E 24.0 HCM 2000 Level of Service 0.80 145.0 Sum of lost time (s) 68.7% ICU Level of Service 15	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		8	S		ш		
24.0 HCM 2000 Level of Service 0.80 145.0 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	¥	CM 2000	Level of Service	S
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 15	Actuated Cycle Length (s)			145.0	S	im of lost	time (s)	18.7
	Intersection Capacity Utiliza	tion		%2.89	೨	U Level (	of Service	O
	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	†	~	<b>/</b>	ţ	4	•	•	•	٠	<b>→</b>	*
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	080	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	927	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

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KHA Oueues

Balboa Station 5: Mission Bay Dr & Garnet Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

	•	<b>†</b>	<i>&gt;</i>	<b>/</b>	ţ	4	•	•	•	۶	<b>→</b>	•
Movement	EBF	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
Turn Type	Prot	NA	vo+mq	Prot	A	vo+mq	Prot	NA	vo+mq	Prot	₹	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	298	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	00.7	0.1	0.1	1.00	1.00	1.00	1.00
Incremental Delay, dz	7.17	 xo (	4. 0	24.3	0.7	0.0	24.8	0.5	- c	0.0	90.3	7.1
Delay (s)	9.	59.4	47.8	113.3	26.9	. ç	113.4	38.3	21.3	98.0	- 14.3	35.7
Annroach Dolay (s)	1	, c	۵	-	7 7 7	۵	-	47.5	>	1	- 1	2
Approach LOS		Э.			Б			Э			- ш	
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	Š	sol Jo mr	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	on		93.3%	2	U Level	ICU Level of Service	0		ш			
Analysis Period (min)			15									
<ul> <li>c Critical Lane Group</li> </ul>												

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	פֿ	iei y	Œ	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	7.6	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	18.2	0.3	25.1	7.6	
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	629	
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	98.0	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

	•	<b>†</b>	>	<b>\</b>	ţ	√	•	•	•	٠	<b>→</b>	`
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									
<ul> <li>c Critical Lane Group</li> </ul>												

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>	<b>/</b>	ţ	€	•	
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							
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						<b>-</b> !	
Approach Delay (s)	0.0			0:0		65.5	
Approach LOS						L.	
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

<b>↓</b>	EBL EBT WBT WB	1360 1272	0.55 0.76	6.4 19.3	0.0	6.4 19.3	110 211	213 342		215 25	520 2485 1677 79	0 0 0	0 0 0	0 0 0	0.71 0.55 0.76 0.1
↓ ↑	WBT WBR	1272 93	0.76 0.12	19.3 3.4	0.0 0.0	19.3 3.4	211 0	342 24	3203	250 1	1677 7799	0 0 0	0 0 0	0 0 0	0.76 0.12
`\ \	SBL SBR					32.8 14.9		83 84	01	155	698 (0	0 0	0 0	0 0	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 Reduced LU Timing Plan: PM Peak Period Balboa Station 8: Garnet Ave & Moraga Ave

																																				В		16.5	В		
_	SBR	R.	287	797	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)	ervice		
٠ بر	SBL S	<u>,</u>	96			_					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	*-	98 8	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	V				HC		Sur	ICN		
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		9.70	14.9	1.00	2.3	17.1	В	16.6	В		15.1	69.0	0.89	61.6%	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	A	11.0	В							
1	EBL	£	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	ပ					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	\	†	<b>/</b>	ţ	✓	<b>—</b>	4	٠	<b>→</b>	
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	#180	#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

	^	<b>†</b>	<u> </u>	<b>/</b>	ţ	1	•	<b>—</b>	•	٠	<b>→</b>	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£.	₩		ķ.	₩		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	NA		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	0.98		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	55.6		9.77	9.69	20.0	114.5	53.4	
evel of Service	ш	ш		ш	ш		ш	ш	٥	ш	٥	
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	HCM 2000 Level of Service	l pypl of 9	anvira		ш			
HCM 2000 Volume to Capacity ratio	ity ratio		1.01				2		1			
Actuated Cycle Length (s)			140.6	S	Sum of lost time (s)	time (s)			20.5			
ntersection Capacity Utilization	uo.		80.8%	<u> </u>	CU Level of Service	f 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

<b>→</b>	SBT	290	0.48	15.3	0.0	15.3	53	132	244		1141	61	0	0	0.27
<b>+</b>	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)	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.

Oueue shown is maximum after two cycles.

Horizon Year with Reduced LU Timing Plan: PM Peak Period Balboa Station 10: Olney St & Balboa Ave

EBI	EBL EBT EBR	40 139 40 139 40 139 40 139 1900 1900 1900 1005 1770 0.9	WBR 24 24 24 1900 0 0 0 0 0			20 20 20 1900 1900 Perm	SBT SBR 4 209 38 209 38 1900 1900 1,90 1,90 1,100
March   Marc	## 4th 4d	40 139 40 139 40 139 1900 1900 100 100 1770 0.95 1770 0.	24 24 24 1900 092 26 0 0			20 20 20 20 22 22 0 0 Perm	0 0
38 351 40 139 525 24 20 341 46 20 1900 1900 1900 1900 1900 1900 1900 190	36 351 40 37 36 151 38 351 40 38 44 5.1 100 1998 1100 0.95 1100 0.95 1100 0.95 1170 3486 0.95 1.00 1170 3486 0.95 1.00 1170 3486 0.92 0.92 0.92 0.92 0.92 0.92 0.93 12 43 0.04 0.31 0.05 0.01 0.05 0.01 0.06 0.01 0.07 0.01 0.08 0.02 0.08 0.02 0.09 0.00 0	40 139 40 139 1900 1900 44 100 100 0.95 1770 0.95 0.95 0.95 1770 0.95 0.	24 24 1900 002 0 0 0			20 20 1900 0.92 22 22 0 0 Perm	0
36 351 40 139 525 24 20 341 46 20 1900 1900 1900 1900 1900 1900 1900 190	36 351 40 1900 1900 1900 4 4 5.1 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.95 1.00 0.98 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.770 3486 1.9 16.4 1.9 16.4 1.9 16.4 1.9 16.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	40 139 1900 1900 100 1900 100 0.95 1770 0.95 1	24 0.92 26 0 0 0			20 1900 0.92 22 22 0 0 Perm	0
1900   1900	1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 144 140 100 1005 1005 1005 1005 1005	0,92 26 0 0 0	5 -0		1900 0.92 0 0 Perm	
144   51   44   50   4.9     100   0.95   1.00   0.95   1.00     100   0.95   1.00   0.95   1.00     100   0.95   1.00   0.95   1.00     100   0.95   1.00   0.95   1.00     100   0.95   1.00   0.95   1.00     100   0.95   1.00   0.95   1.00     1770   3486   1770   3516   1830     1770   3486   1770   3516   1830     1770   3486   1770   3516   1.00     1770   3486   1770   3516   1.00     1770   3486   1770   3516   1.00     1770   3486   1770   3516   1.00     1770   3486   1770   3516   1.00     1770   3486   1770   3516   1.00     1770   3486   1770   3516   1.00     180   181   181   181   181   181     180   181   181   181   181     180   181   181   181   181     180   180   180   181   181     180   180   180   180     180   180   180   181     180   180   180   181     180   180   181   181     180   180   180   181     180   180   181   181     180   180   180   181     180   180   180   181   181     180   180   180   181   181     180   180   180   181   181     180   180   180   181   181     180   180   180   181   181     180   180   180   181   181     180   180   180   180   181     180   180   180   180   181     180   180   180   180   181     180   180   180   180   180   180     180   180   180   180   180   180     180   180   180   180   180   180     180   180   180   18	44 5.1 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 1.00 0.03 1.00 0.03 1.0	44 100 100 100 0.95 1770 0.92 43 151 0 0 151 Prot 1 48 48 48 48 48 48 48 48 48 48	0,92 26 0 0	101201011	0	0.92 22 0 0 Perm	
1,00   0.95   1,00   0.95   1,00	100 0.95 100 0.98 0.95 1.00 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 348 1770 100 1770 100	100 100 0.95 1770 0.95 1770 0 0 151 0 0 151 Prot 1 48 4.8 4.8 4.8 4.8 4.8 4.8	0,92 26 0 0		O	0.92 22 0 0 Perm	
100 0.98   100 0.99   0.98     101 0.98   100 0.99   0.98     102 0.95 1.00   0.95 1.00   1.00     103 1.00 0.95 1.00   0.97   1.00     103 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	100 0.98 0.95 1.00 1770 3486 0.95 1.00 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 178 39 322 43 179 16.4 50 1.9 16.4 50 1.9 16.4 50 1.9 16.4 50 1.9 16.4 50 1.9 16.4 51 1.9 16.4 52 2.8 53 1.9 16.4 54 1091 55 1.00 0.38 56 1.00 0.10 57 1.00 1.00 58 1.00 1.00 58 1.00 1.00 59 1.00 1.00 50 1.00 1	100 095 1770 092 092 43 151 0 0 0 151 Prot 48 48 48 48 48 48 48 48 48 48 48 48 48	0.92 26 0 0		O	0.92 22 0 0 Perm	
1,00	1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 3486 100 1770 1770 3486 100 1770 1770 1770 1770 1770 1770 1770	0.95 1770 0.95 1770 0.92 0.92 0.92 0.92 0.151 0.00 1.00 0.00 0.00 0.00 0.00 0.0	0.92 26 0 0		0	0.92 22 0 0 Perm	
1770   3486   1770   3516   1830   1770   3486   1770   3516   1830   1770   3486   1770   3516   1830   1770   3486   1770   3516   1787   1787   1788   1770   3516   1787   1788   1770   3516   1787   1788   1770   3516   1788   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1770   3516   1788	1770 3486 0,95 100 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 3486 1770 348 1770 34	1770 0.95 1770 0.92 0.92 0.92 0.92 0.92 151 0.09 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	0.92 26 0 0		0	0.92 22 0 0 Perm	
1,095   1,000   0,95   1,000   0,97     1,770   3486	F 0.95 100 1770 3486 1770 3486 1770 3486 1770 3482 1770 0.92 1770 143 179 16.4 179 16.4 170 0.01 170 0.01 170 0.02 170 0.02	0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.94 4.8 4.8 4.8 4.8 4.8 4.8 4.9 0.09 0	0.92 26 0 0	0,500	0	0.92 22 0 0 Perm	
1770 3486	H 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	1770 092 092 43 151 0 0 151 Prot 1 1 48 48 48 48 48 48 48 48	0.92 26 0 0		0	0.92 0 0 0 Perm	
HF 092 092 092 092 092 092 092 092 092 092	F 0,92 0,92 0,92 0,92 0,93 0,91 0,91 0,92 0,92 0,93 0,91 0,91 0,91 0,91 0,91 0,91 0,91 0,91	0.92 0.92 43 151 0 0 151	0.92 26 0 0	0., 1	0	0.92 0 0 Perm	
39 382 43 151 571 26 22 371 50 22     10	s) 382 43 o) 39 382 43 o) 39 413 0 o) 413 0 o) 5 2 5 2 19 164 o) 19 164 o) 19 164 o) 19 164 o) 19 164 o) 10 138 o) 20 o) 10 o) 1	43 151 0 0 0 0 151 Prof 1 1 4 8 4 8 4 8 4 8 0 0 9 0 4 4 8	26 0 0 0			22 0 0 Perm	
hy) 0 12 0 0 0 4 0 0 8 0 0 0 0 0 0 0 0 0 0 0 0 0	s) 10 0 12 0 17 0 17 0 17 0 17 0 17 0 17 0	0 0 0 151 Prot Prot 2 0 0.09 4.4 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	0 0			0 0 Perm	10 280 NA 4 4 16.8
bh)         39         413         0         151         593         0         0         435         0         0           Poot         NA         Prof         NA         Perm         NA         Perm           5         2         1         6         8         4           5         1.9         16.4         4.8         19.4         16.8         4           5         1.9         16.4         4.8         19.4         16.8         4         4           5         1.9         16.4         4.8         19.4         16.8         4         5.0         4         4         4         4         4         4         4         4         4         5.0         4         4         4         4         4         4         4         4         4         5.0         4         4         4         4         4	s) 39 413 0 Prof NA 5 2 5 2 2 6 1.9 16.4 0.04 0.31 4.4 5.1 4.4 5.1 6 4 1091 0.02 0.12 0.61 0.38 2.49 14.0 1.00 1.00 2 35.6 1.00 1.00 2 10.8 2 4.9 14.0 1.00 1.00 2 10.8 2 8 10.2 2 9 14.0 1.00 1.00 2 10.8 2 9 14.0 1.00 1.00 2 10.8 2 10.8	Prot 171 Prot 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0	, , , , ,		Perm 4	280 NA 4 16.8
Prot   NA   Prot   NA   Perm	Prot NA 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Prot 1 1 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				Perm 4	NA 4 16.8
5 2 1 6 8 8 4  5) 19 164 48 194 168  10 19 164 48 194 168  10 19 164 48 194 168  10 004 0.31 0.09 0.37 0.32  20 20 21 20 20 20  64 1091 162 1301 572  002 0.12 0.09 0.17 0.024  100 100 100 100 100 100  249 140 236 125 160  249 140 236 125 160  249 140 236 125 160  249 140 236 125 160  249 140 236 125 160  249 140 236 125 160  249 140 236 125 160  249 140 236 125 140  2551 213  B	5) 1.9 16.4 1.9 16.4 1.9 16.4 0.04 0.31 4.4 5.1 2.0 2.8 64 1091 0.02 0.12 0.01 0.38 24.9 14.0 1.00 1.00 1.00 1.00 2.10 8 0.2 3.56 14.2 D B D B	4.8 4.8 0.09 4.4 4.4 2.0 162	6 19.4 19.4			4	16.8
s) 1.9 16.4 48 19.4 16.8 4 10.4 16.4 48 19.4 16.8 16.8 1.9 16.4 48 19.4 16.8 10.04 0.31 0.09 0.37 0.32 2.0 2.8 2.0 2.5 2.0 2.8 2.0 2.5 2.0 2.9 0.02 0.12 0.09 0.0.17 0.02.4 0.02 0.12 0.09 0.0.17 0.02.4 0.04 1.00 1.00 1.00 1.00 1.00 2.49 1.40 23.6 12.5 16.0 2.49 1.40 23.6 12.5 16.0 2.49 1.40 1.00 1.00 1.00 2.49 1.40 1.00 1.00 1.00 2.50 0.50 0.50 0.50 0.50 0.50 2.50 0.50 0.50 0.50 0.50 0.50 0.50 2.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 2.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	s) 1.9 16.4 0.04 0.31 4.4 5.1 2.0 2.8 4.4 1091 0.02 0.12 0.61 0.38 2.4.9 14.0 1.00 1.00 1.00 1.00 2.8 0.61 0.38 2.4.9 14.0 1.00 1.00 1.00 1.	4.8 0.09 4.4 2.0 162	19.4			4	16.8
s) 1.9 16.4 4.8 19.4 16.8  1 1.9 16.4 4.8 19.4 16.8  1 0.04 0.03 0.37 0.32  2 0 2.8 2.0 2.5 2.0  2 0.02 0.01 0.00 0.01 0.00  0 0.01 0.02 0.01 0.00  2 4.9 140 0.02 0.01 0.00  2 4.9 140 0.03 0.46 0.76  1.00 1.00 1.00 1.00 1.00  2 4.9 140 1.00 1.00 1.00  2 10.8 0.2 5.3 0.2 5.3  2 4.9 140 1.00 1.00 1.00  2 10.8 0.2 5.0 2.0  3 5.6 14.2 7.0 1.07 0.10  4 7 7 2.1.3  B C C  C Capacity ratio 0.66  Int (s) 0.66  Int	5) 1.9 16.4 0.19 16.4 0.04 0.31 4.4 5.1 4.4 5.1 64 1091 0.02 0.12 0.61 0.38 2.49 14.0 1.00 1.00 1.00 1.00 2.50 14.0 1.00 1.00 1.00	4.8 4.8 0.09 4.4 2.0 162	19.4 19.4	16.8 16.8			16.8
1.9 164	1.9 164 0.04 0.31 4.4 5.1 2.0 2.8 64 1091 0.02 0.12 0.61 0.38 24.9 14.0 1.00 1.00 1.00 1.00	4.8 0.09 4.4 2.0 162	19.4	16.8			14.9
0.04 0.31 0.09 0.37 0.32 0.03	0.04 0.31 4.4 5.1 2.0 2.8 64 1091 0.02 0.12 c 0.61 0.38 24.9 14.0 1.00 1.00 1.00 1.00 2.1 0.8 0.2 1.08 0.2 1.08 0.2 1.08 0.2 1.08 0.2 1.09 0.2 1.00 1.00 1.00 1.	0.09 4.4 2.0 162					0.0
44         5.1         44         5.0         4.9           20         2.8         2.5         2.0           64         1091         1.6         2.0           64         1091         6.0         2.5         2.0           60.2         0.12         0.0         0.17         0.02.4         0.75           60.61         0.38         0.93         0.46         0.76         0.76           24.9         14.0         1.00         1.00         1.00         1.00           1 100         1.00         1.00         1.00         1.00         1.00         1.00           2 10.8         0.2         50.3         0.2         5.3         2.13         1.0           2 10.8         1.2         7.0         1.27         2.13         1.0         1.0           3 5.4         1.4         1.2         2.5         1.2         2.13         1.0           4 1.0         1.6         2.5         1.0         2.13         1.0         1.0           4 1.0         1.0         1.0         1.0         2.13         1.0         1.0         1.0         1.1         1.1         1.1         1.1         1.1	20 28 20 28 64 1091 0.02 0.12 0.61 0.38 24.9 14.0 1.00 1.00 1.00 1.00 2 10.8 0.2 2 10.8 0.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	2.0	0.37	0.32			0.32
2.0 2.8 2.0 2.5 2.0     64 1091	2.0 2.8 64 1091 0.02 0.12 c 0.61 0.38 2.49 14.0 1.00 1.00 2.108 0.2 3.5.6 14.2 D B D B D B	2.0	2.0	4.9	~		4.9
64 1091 162 1301 572  0.02 0.12 0.09 0.17 0.024  0.61 0.38 0.93 0.46 0.76  2.49 140 2.36 12.5 160  2.100 1.00 1.00 1.00 1.00  2.249 140 2.36 12.5 160  2.249 140 2.36 12.5 160  2.249 140 2.36 12.5 160  2.249 140 2.36 12.5 160  2.251 1.00  2.251 2.13  2.252 2.13  2.252 2.13  2.252 2.13  2.252 2.13  2.252 2.13  2.252 2.13  2.252 2.13  2.252 2.13  2.252 2.	64 1091 0.02 0.12 c.12 0.61 0.38 24.9 14.0 1.00 1.00 2 10.8 0.2 35.6 14.2 D B 16.0	162	2.5	2.0			2.0
0.02 0.12 0.09 0.0.17 0.0.24  0.61 0.38 0.93 0.46 0.07  2.49 14.0 23.6 12.5 16.0  2.10 1.00 1.00 1.00 1.00 1.00  2.20 1.00 1.00 1.00 1.00  2.20 1.00 1.00 1.00 1.00  2.20 1.00 1.00 1.00  2.20 1.00 1.00  2.20 1.00 1.00  2.20 1.00  2.	0.02 0.12 0.02 0.61 0.38 0.41 0.00 1.00 1.00 1.00 1.00 1.00 1.00	00 00	1301	272	ā		561
0.61 0.38 0.93 0.46 0.024 249 140 23.6 12.5 16.0 2 100 1.00 1.00 1.00 1.00 1.00 2 10.8 0.2 50.3 0.2 5.3 35.6 14.2 740 12.7 21.3 D B E B C Ay	0.61 0.38 24.9 14.0 1.00 1.00 35.6 14.2 D 16.0 B 16.0	60.00	20.17				
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   25.2   Sum of lost time (s)   14.4     10   11   15.2   15.3     11   12   15.3     12   13   14.4     13   14.4     14   15   15   15   15     15   25   25   25     16   25   25   25     17   25   25   25     18   25   25     19   25   25     10   25   25     11   25   25     12   25   25     13   25   25     14   25   25     15   25   25     16   25   25     17   25   25     18   25   25     18   25   25     19   25   25     10   25   25     10   25   25     11   25   25     12   25   25     13   25   25     14   25   25     15   25   25     16   25   25     17   25   25     18   25   25     18   25   25     19   25   25     10   25   25     10   25   25     10   25   25     10   25   25     10   25   25     10   25   25     10   25   25     10   25   25     10   25     25   25     25   25     25   25	0.61 0.38 24.9 14.0 1.00 1.00 2 10.8 0.2 35.6 14.2 D B 16.0			c0.7	_		0.16
24.9 14.0 23.6 12.5 16.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	24.9 14.0 1.00 1.00 2 10.8 0.2 35.6 14.2 D B 16.0		0.46	97:0	_		0.50
1.00	100 100 108 02 356 14.2 D B 16.0		12.5	16.0	_		14.4
108	2 10.8 0.2 35.6 14.2 D B 16.0		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  Y  D B C C C C C C C C C C C C C C C C C C C	35.6 14.2 D B 16.0 B		0.2	5.3	~		0.3
D B E B C C	۵		12.7	21.3			14.7
16.0 25.1 21.3  Y  y  A copacity ratio 0.66 Int (s) 11 (s)		В	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		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		В	O	O			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	ntersection Summary						
0.66 52.4 Sum of lost time (s) 56.7% ICU Level of Service 15	20.5		A 2000 Level of Se	rvice	ပ		
52.4 Sum of lost time (s) zation 56.7% ICU Level of Service		99:0					
Utilization 56.7% ICU Level of Service	52.4		of lost time (s)		14.4		
	26.7%		Level of Service		В		
	Analysis Period (min) 15	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

<b>-</b>	SBT	390	0.99	8.98	14.4	71.2	322	209	328		437	44	0	0	0.99
<b>+</b>	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	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 Station Horizon Year with Reduced LU 11: Olney St & Grand Ave Timing Plan: PM Peak Period

Movement   EBI   EBI   EBI   EBI   MBI		^	†	>	<b>/</b>	ţ	4	f	•	4	٠	<b>→</b>	•
Feb.   Feb.   Feb.   Wel.   Wel.   Wel.   Wel.   Neb.								-	-	_			
National Part   National Par	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
h h 38 934 56 141 1155 223 29 171 126 97 212  1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	*	₩		je-	₩			4			4	
1,000   38   934   56   141   1155   223   29   171   176   97   212     4	Traffic Volume (vph)	88	934	29	141	1155	223	29	171	126	4	212	51
1900   1900	Future Volume (vph)	88	934	26	141	1155	223	59	171	126	4	212	21
14   5.1   4.4   4.9	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100   0.95   1.00   1.00   1	Total Lost time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
100 099 100 098 095 095 099     100 099 100 098 099 099 099 099 099 099 099 099 0	Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
1770   3509   1770   3453   100   100   1099   100   100   1099   1770   3453   1640   1183   1803   1803   1909   1770   3453   1640   19183   180	Ŧ	1.00	0.99		1.00	0.98			0.95			0.98	
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	Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
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	Satd. Flow (prot)	1770	3209		1770	3453			1758			1803	
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	Fit Permitted	0.95	1.00		0.95	1.00			0.93			0.65	
PHF 692 692 692 692 692 692 692 692 692 692	Satd. Flow (perm)	1770	3509		1770	3453			1640			1183	
(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	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
(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	Adj. Flow (vph)	41	1015	19	153	1255	242	32	186	137	105	230	55
(vph)         41         1073         0         153         1486         0         0         337         0         0           (vph)         Prof         NA         Perm         NA         Perm         O         0           (s)         5.4         61.1         1.4         70.3         44.1         4           (s)         5.4         61.1         14.4         70.3         44.1         4           0         0.04         0.11         0.52         0.33         44.1         4           (s)         5.4         61.1         14.4         70.3         44.1         4         4           0         0.04         0.11         0.52         0.33         44.1         4         <	RTOR Reduction (vph)	0	က	0	0	Ξ	0	0	18	0	0	2	0
Piot NA Prof NA Perm NA Perm NA Perm Signary   Piot NA Perm NA	Lane Group Flow (vph)	41	1073	0	153	1486	0	0	337	0	0	382	0
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	Turn Type	Prot	M		Prot	NA		Perm	NA		Perm	NA	
5.4         61.1         14.4         70.3         8         4 <t< td=""><td>Protected Phases</td><td>2</td><td>2</td><td></td><td>-</td><td>9</td><td></td><td></td><td>8</td><td></td><td></td><td>4</td><td></td></t<>	Protected Phases	2	2		-	9			8			4	
5.4 61.1 14.4 70.3 44.1 44.1 0.0	Permitted Phases							∞			4		
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	Actuated Green, G (s)	5.4	61.1		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   0.34   0.55   0.35   0.55	Effective Green, g (s)	5.4	61.1		14.4	70.3			44.1			44.1	
1	Actuated g/C Ratio	0.04	0.46		0.11	0.52			0.33			0.33	
154   20   55   2.0     1599   190   1811   539     1031   0.009   0.043   0.21   0.02     286   584   26.6   38.0   0.00     1.00   1.00   1.00   1.00   0.00     2.3   2.0.3   4.3   1.6   1.00     2.3   2.0.3   4.3   1.6   1.00     2.4   2.5   2.0.3   4.3   1.6     2.5   2.5   2.5   2.0     3.08   788   30.9   39.6   8     2.5   2.5   2.5   2.5     3.2   3.5   3.5   3.5     40.6   HCM 2000 Level of Service   D     1.340   Sum of lost time (\$\$)   14.4     15   15   15   14.4     15   15   15   15   14.4     15   15   15   15   15     16   17   17   17   17     17   18   18   18     18   19   19   19     19   19   19   19	Clearance Time (s)	4.4	5.1		4.4	4.9			4.9			4.9	
1599   190   1811   539   539   539   539   531   53	Vehicle Extension (s)	2.0	5.4		2.0	5.5			2.0			2.0	
0.31	Lane Grp Cap (vph)	71	1599		190	1811			239			389	
0.067 0.81 0.82 0.63 0.63 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.65	v/s Ratio Prot	0.02	0.31		60.00	c0.43							
0.67	v/s Ratio Perm								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	v/c Ratio	0.58	19.0		0.81	0.82			0.63			0.99	
100 100 100 100 100 100 100 100 100 100	Uniform Delay, d1	63.2	28.6		58.4	26.6			38.0			44.7	
2.3 20.3 4.3 1.6 30.8 788 30.9 39.6 2. C E C D C E C D C B O D C HCM 2000 Level of Service D 0.90 134.0 Sum of fost time (s) 14.4 15.7 15.2 16.2 16.4 16.5 Evice D 15.2 16.2 16.4 16.5 Evice D 15.2 16.4 16.5 Evice P 16.5 16.5 16.5 16.5 16.5 16.5 16.5 16.5	Progression Factor	1.00	1.00		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	Incremental Delay, d2	6.9	2.3		20.3	4.3			1.6			45.9	
32.3 E C D D 32.3 38.3 39.6 C D 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	Delay (s)	70.1	30.8		78.8	30.9			39.6			87.7	
32.3 35.3 39.6 C D D D 40.6 HCM 2000 Level of Service D 0.90 Sum of lost time (s) 14.4 96.2% ICU Level of Service F 15	Level of Service	ш	ပ		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	Approach Delay (s)		32.3			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	Approach LOS		ပ			O			O			ш	
40.6 HCM 2000 Level of Service 0.90 Sum of lost time (s) 96.2% ICU Level of Service 15	Intersection Summary												
0.90 134 Sum of lost time (s) 96.2% ICU Level of Service 15	HCM 2000 Control Delay			40.6	Ĭ	3M 2000	Level of 5	Service		Q			
134.0 Sum of lost time (s) 96.2% ICU Level of Service 15	HCM 2000 Volume to Capa	acity ratio		06:0									
Utilization 96.2% ICU Level of Service 15	Actuated Cycle Length (s)			134.0	S	ım of lost	time (s)			14.4			
Analysis Period (min) 15	Intersection Capacity Utiliza	ation		96.2%	೨	U Level o	f Service			ш			
	Analysis Period (min)			15									

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Balboa Station Horizon Year with Reduced LU 12: Grand Ave & Culver St Timing Plan: PM Peak Period

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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

Movement  -ane Configurations  Traffic Volume (vph)	EBL	₽	WBU	WBT	WBR	SBL	SRR	
ane Configurations affic Volume (vph)	×	*	ľ	**		ŀ		
affic Volume (vph)			9	+		>		
	21	1178	00	1489	2 2	97	28	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	
otal Lost time (s)	4.4	2.1		4.9		4.9		
-ane Util. Factor	1.00	0.95		0.95		1.00		
_	1.00	1.00		0.99		16.0		
Flt Protected	0.95	1.00		1.00		96:0		
Satd. Flow (prot)	1770	3539		3515		1733		
It 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)	23	1280	0	1618	9/	98	30	
REDICTION (vph)	0	0	0	2	0	14	0	
ane Group Flow (vph)	23	1280	0	1692	0	102	0	
urn Type	Prot	N	Prot	NA		Prot		
Protected Phases	2	2	_	9		4		
Permitted Phases								
Actuated Green, G (s)	5.9	85.4		78.3		10.6		
Effective Green, g (s)	2.9	85.4		78.3		10.6		
Actuated g/C Ratio	0.03	0.81		0.74		0.10		
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)	48	2851		2596		173		
//s Ratio Prot	0.01	c0.36		c0.48		90.00		
/s Ratio Perm								
v/c Ratio	0.48	0.45		0.65		0.59		
Iniform Delay, d1	50.8	3.1		7.0		45.6		
Progression Factor	1.00	1.00		1.00		1.00		
ncremental Delay, d2	2.7	0.5		1.3		3.3		
Delay (s)	53.5	3.6		8.3		48.9		
evel of Service	۵	V		∢		۵		
Approach Delay (s)		4.5		8.3		48.9		
Approach LOS		A		A		Ω		
ntersection Summary								
HCM 2000 Control Delay			8.2	H	HCM 2000 Level of Service	Level of S	service	4
HCM 2000 Volume to Capacity ratio	y ratio		0.65					
Actuated Cycle Length (s)			106.0	S	Sum of lost time (s)	time (s)		14.4
ntersection Capacity Utilization	c		21.6%	0	ICU Level of Service	f Service		В
Analysis Period (min)			15					
Critical Lapo Croup			2					

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Balboa Station 13: Lee St & Grand Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

p p Flow (vph)				_	
p Flow (vph)	EBT	WBL	WBT	NBL	
	1357	103	1696	50	
v/c Ratio	0.50	0.62	0.53	0.45	
Control Delay	7.7	74.4	5.6	43.8	
Queue Delay	0.9	0.0	0.0	0.0	
Total Delay	13.7	74.4	5.6	43.8	
Queue Length 50th (ft)	216	88	123	17	
Queue Length 95th (ft)	336	146	200	59	
Internal Link Dist (ft)	211		1401	337	
Tum Bay Length (ft)		400			
	2701	175	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	0.59	0.53	0.12	
Intersection Summany					

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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		
<b>√</b>	NBL	<u>&gt;</u>			_		1.00				86.0		0.92				\ Prot			9.9		9 0.04		2.0	0/					Ì		63		63.2	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	*	•	`	_		0.95				1.00					1696	A			118.1	118.1	0.88	5.4	4.4					1.8	`	0.7		⋖	0.9	⋖							
-	WBL	F	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	0.06		0.62	58.5	1.00	5.2	63.7	ш				7.3	0.55	134.0	55.1%	15	
~	EBR		34	34	1900								0.92	37	0	0																										
<b>†</b>	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	V			y ratio		<u></u>		
	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

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14: Grand Ave & Figueroa Blvd	gueroa	Blvd		liming Plan: PM Peak Period
	1	Î	ţ	
	č	Ė	TOTAL	
Lane Group	EBL	EBI	WBI	
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				

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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	<b>†</b>	ţ	4	٠	<b>`</b>	
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 Sum of lost time (s) 12.1 30  are A 2000 Vell Length (s) 170.0 Sum of lost time (s) 12.1 30  are A 2000 Vell Length (s) 170.0 Sum of lost time (s) 12.1 30  are A 2000 Vell Length (s) 170.0 Sum of lost time (s) 170.0 Freeding Tell ane Group Chilarli ane Gr	Lane Configurations	×	*	<b>4</b> 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) 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 0.35 0.58  a Flow (port) 1.20 0.37 0.46  a Flow (port) 1.20 0.46  a Flow	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) 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 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) 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) 1.251 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 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 0.00  Railo Perm 0.75 0.00  Railo Perm 0.75 0.00  Railo Perm 1.00 0.460  Railo Perm 1.00 0.460  Railo Perm 1.00 0.00  R	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           reaction 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           reaction Capacity Utilization         1.70         Sum of lost time (s)         1.2           reaction Capacity Utilization         1.5         ICU Level of Service           reaction Capacity Italization         1.5         ICU Level of Service	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           soach Delay (s)         F         A         B         A         B           reaction Summary         A         B         A         A         B         A           reaction Summary         A         B <td>v/s Ratio Perm</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	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 Consort Delay (s) A B A B Consort Delay (s) A B A B A A B A B A A Cono Control Delay (s) A Conordor Local Delay (s) A Conord	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 A A A A A A A A A A A A A A A A	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           A 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.           A sissedion Capacity Utilization         58.3%         ICU Level of Service         12.           Pysis Period of finin         15         ICU Level of Service         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)         12.           A section Capacity Utilization         58.3%         ICU Level of Service         12.           A 2000 Volume to Capacity utilization         58.3%         ICU Level of Service         12.           Critical Lane Groun         15         Critical Lane Groun         12.	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           Lasted Cycle Length (s)         170.0         Sum of lost time (s)         12.           resection Capacity Utilization         58.3%         ICU Level of Service         15.           plysis Period (min)         15         ICU Level of Service         ICU Level of Service	Intersection Summary							
M 2000 Volume to Capacity ratio 0.60 Sum of lost time (s) 12.  rated Cycle Length (s) 170.0 Sum of lost time (s) 12.  reaction Capacity Utilization 58.3% ICU Level of Service 15.  Critical I are Groun	HCM 2000 Control Delay			13.1	Н	: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

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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	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	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 1.28 3.50 8.78 8.8	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 700 700
(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 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 1.00 2787 0.92 1228 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
11.0 ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (	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 1.043 Prot 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 0.07 0.07 0.07 0.07 0.07 0.07 0.07	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 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	
<b>→</b>	SBT	1404	0.97	44.5	0.0	44.5	377	#535	743		1440	0	0	0	0.97	
<b>←</b>	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		205	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>&gt;</i>	•	<b>←</b>	-	`	
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   0.93   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	<b>.</b> =	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	It Permitted	0.97		0.95	1.00	1.00	1.00	
HF 092 092 092 092 092 092 092 092 092 093 093 094 062 099 099 099 099 099 099 099 099 099 09	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 7 6 6 346 5) 116 244 640 346 346 5) 116 244 640 346 346 5) 116 244 640 346 346 5) 117 244 640 346 346 6) 118 244 640 346 346 7 119 0.29 0.75 0.41 0.41 7 0.12 0.20 0.73 0.40 7 0.91 0.71 0.44 0.97 0.80 7 0.91 0.71 0.44 0.97 0.80 7 0.91 0.71 0.44 0.97 0.80 7 0.92 0.91 1.00 1.00 7 0.94 0.97 1.85 1.03 7 0.95 0.97 0.97 1.85 1.00 7 0.96 0.97 1.90 1.00 7 0.97 0.97 0.90 1.00 7 0.98 0.99 0.99 1.00 1.00 7 0.99 0.99 1.00 1.00 7 0.90 0.90 0.90 1.00 7 0.90 0.90 0.90 1.00 7 0.90 0.90 0.90 1.00 7 0.90 0.90 0.90 0.90 1.00 7 0.90 0.90 0.90 0.90 1.00 7 0.90 0.90 0.90 0.90 0.90 1.00 7 0.90 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 0.90 7 0.90 0.90 0.90 7 0.90 0.90 0.90 7 0.90 0.90 0.90 7 0.90 0.90 0.90 7 0.90 0.90 0.90 7	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  right (s) 850 Sum of lost time (s)  ght (s) 10 10 10 10  This is a sum of lost time (s)  num  15	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 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 0.31 0.01 6.0.10 0.91 0.71 0.44 0.97 0.80 6.0.2 27.1 3.9 24.8 22.2 6.0.2 27.1 3.9 24.8 22.2 6.0.3 0.0 0.91 1.00 1.00 6.0.3 0.0 0.91 1.00 1.00 6.0.3 0.0 0.91 1.85 1.03 6.0 0.91 0.0 1.00 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.0 0.91 6.0 0.91 0.95 6.0 0.95 6.0 0.	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 0.3  2.1 3.1 0.4 18.5 10.3  2.2 1.4 3.1 0.4 18.5 10.3  2.2 1.4 3.1 0.4 18.5 10.3  2.3 5.6 5.6  2.4 3.3 3.6 A D C  5.7 6 3.9 8  E C A D C  A D C  5.7 6 9.5 39.8  Ind  Ind  Ind  Ind  Ind  Ind  Ind  In	Permitted Phases						9	
S	ctuated Green, G (s)	11.6		24.4	64.0	34.6	34.6	
0.014 0.29 0.75 0.41 0.41 4,4 4.5 5.0 5.6 5.6 5) 2.0 2.0 4.0 4.8 5.6 5.6 1, 453 5.08 2.664 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 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 1.00 1.00 0.90 0.91 0.91 0.90 0.90 0.91 0.91 0.90 0.90 0.91 0.91 0.90 0.90 0.91 0.91 0.90 0.90 0.91 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.91 0.90 0.90 0.90 0.91 0.90 0.90 0.90 0.91 0.90 0.90 0.90 0.91 0.90 0.90 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 6.44 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   19.87   19.5%   10.0 Level of Service   15.85	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

<b>→</b>	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	499	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	0.65	40.6	0.0	40.6	102	188		75	436	0	0	0	0.47	
<b>/</b>	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

Morement WBI WBR NBT NBB SBI SBT  Lane Codiguations		<b>/</b>	✓	•	•	٠	<b>→</b>	
No.	Movement	WBL	WBR	NBT	NBR	SBL	SBT	
186   190   1217   223   98   1376     186   190   1217   223   98   1376     1900   1900   1277   223   98   1376     44   44   50   50   44   50     100   0.95   1.00   1.90   1.90     100   0.95   1.00   0.95   1.00     100   0.95   1.00   0.95   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   1770   3539     1770   1583   3539   1583   1770   3539     1770   1583   3539   1401   101   100   0.95     1770   101   101   310   1366     1780   101   1014   310   1366     1791   1014   1014   310   1366     1792   201   38   38   20   3.5     170   101   0.01   0.01   0.01     170   101   0.01   0.01   0.01     170   100   100   100   0.01     170   100   100   100   0.01     170   170   100   100   100   0.01     170   170   170   170   170     170   170   170   170   170     170   170   170   170   170     170   170   170   170   170     170   170   170   170   170     180   170   170   170   170	Lane Configurations	r	¥	*	*-	r	**	
186   190   12/1   223   38   13/10   1900	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   1.00   0.95   1.00   0.95     1.00   1.00   0.95   1.00   0.95     1.70   1.583   35.39   1.583   1.770   35.39     1.70   1.583   35.39   1.583   1.770   35.39     1.70   1.583   35.39   1.583   1.770   35.39     1.70   1.583   35.39   1.583   1.70   35.39     1.70   1.583   35.39   1.583   1.70   35.39     1.70   1.583   35.39   1.583   1.70   35.39     1.70   1.583   35.39   1.583   1.70   1.496     1.70   1.583   3.242   1.07   1.496     1.70   1.20   2.07   3.2   2.42   1.07   1.496     1.70   1.70   1.70   1.70   1.366     1.70   1.70   1.70   1.70   1.366     1.71   1.71   1.71   1.71   1.71   1.71   1.70     1.70   1.70   1.70   1.70   0.70   0.72     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   1.70   0.70   0.70     1.70   0.70   0.70   0.70     1	Future Volume (Vpn) 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     100   0.95   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   1922   0.92   0.92   0.92     1770   1923   192   107   1496     1770   1923   192   107   1496     1770   1923   192   193   1936     1770   1770   1770   1770   1786     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770     1770   1770   1770   1770   1770   1770     1770   1770   1770   1770   1770   1770   1770     1770   1	Total Lost time (s)	4.4	4.4	2.0	2.0	4.4	5.2	
100 0.85 1.00 1.00     100 0.85 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
1770   1583   3539   1583   1770   3539   1583   1770   3539   1583   1770   3539   1770   3539   1770   1583   3539   1583   1770   3539   1770   1583   3539   1583   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   1359   1770	Ŧ	1.00	0.85	1.00	0.85	1.00	1.00	
1770   1583   3539   1883   1770   3539   1770   1583   3539   1883   1770   1583   3539   1883   1770   1583   3539   1883   1770   3539   1880   1770   3539   1880   1770   3539   1880   1770   3539   1880   1770   3539   1881   1770   3539   1881   1770   3539   1982   1770   3539   1982   1770   3539   1983   1770   1496   1996	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   1770   3539   1770   3539   1770   3539   1770   3539   1770	Satd. Flow (prot)	1770	1583	3539	1583	1770	3539	
1770   1583   5359   1583   1770   3559     1770   1583   5359   1583   1770   3559     1780   202   0.92   0.92   0.92   0.92     202   207   132   242   107   1496     Prot Perm NA Perm Prot NA     4   4   2.38   10.14   10.14   31.0   1366     1780   2.38   10.14   10.14   31.0   1366     1780   2.38   10.14   10.14   31.0   1366     1780   2.4   2.1   2.10   944   32.2   2843     1780   2.2   2.1   2.10   944   32.2   2843     1790   2.0   38   38   2.0   3.5     170   0.76   0.76   0.12     170   0.76   0.2   2.0     170   0.76   0.12     170   0.76   0.12     170   0.76   0.12     170   0.76   0.12     170   0.70   0.70   0.14     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.10     170   0.70   0.70   0.70     170   0.70   0.70   0.70     170	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   0,95   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) 202 112 1323 197 107 1496  Prof Perm NA Perm Prof NA A 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  s) 23.8 23.8 101.4 101.4 31.0 136.6  0.14 0.16 0.06 0.06 0.018 0.08  0.14 4.4 5.0 5.0 0.18 0.00  2.0 2.0 3.8 3.8 2.0 3.5  0.21 221 2110 944 322 2843  0.01 0.07 0.12  0.07 0.12 0.05 0.05 0.01  1.00 1.00 1.00 1.00 0.07  1.10 1.00 1.00 1.00 0.07  1.17 0.7 1.4 0.5 0.1 0.2  2 17.7 0.7 1.4 0.5 0.1 0.2  2 17.7 0.7 1.4 0.5 0.1 0.2  2 17.7 0.7 1.4 0.5 0.1 0.2  4 88 7 68 3 23.5 16.3 46.2 0.9  F E C B D A  A   y  y  HCM 2000 Level of Service  c Capacity ratio  0.64  11 (s)  10 0.04  10 0.04  10 0.04  10 0.04  10 0.04  10 0.05  10 0.	RTOR Reduction (vph)	0	95	0	45	0	0	
Prot         Perm         NA         Perm         Prot         NA           4         2         1         6           5)         23.8         23.8         10.14         10.14         31.0         136.6           0)         23.8         23.8         10.14         10.14         31.0         136.6           1         0.14         0.14         0.06         0.06         0.18         0.80           4         4         4.0         0.60         0.18         0.80         0.00           2.0         2.0         3.8         3.8         2.0         3.5         2.0           2.0         2.0         3.8         3.8         2.0         3.5         2.0           2.0         2.0         3.8         3.8         2.0         3.5         2.0           0.1         0.1         0.1         0.1         0.0         0.0         0.0         0.0           0.1         0.0         0.1         0.0         0.0         0.0         0.0         0.0         0.0           0.1         0.1         0.1         0.0         0.0         0.0         0.0         0.0         0.0         0.0	Lane 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           1014         014         060         0.18         080           20         20         38         38         20         3.5           21         21         2110         944         322         2843           0.07         0.07         0.12         0.042         0.042           0.11         0.07         0.12         0.042         0.042           0.12         0.03         0.21         0.33         0.53         0.042           1.17         0.7         1.4         0.5         0.1         0.2         0.0           1.17         0.7         1.4         0.5         0.1         0.2         0.0           1.17         0.7         1.4         0.5         0.1         0.2         0.0           1.17	Turn Type	Prot	Perm	NA	Perm	Prot	NA	
s) 238 238 101.4 101.4 31.0 136.6  128 238 101.4 101.4 31.0 136.6  0.14 0.14 0.60 0.60 0.18 0.80  4.4 4.4 4.5 0.5 0.4 0.80  2.0 38 38 2.0 3.5  2.0 38 38 2.0 3.5  0.0.1 0.0.3 0.1 0.0 0.6 0.0.42  0.0.7 0.8 0.2 0.3 0.2 0.3 0.5 0.4  1.10 0.0.6 22.1 15.8 60.5 5.7  1.10 0.10 1.00 1.00 0.7 0.1 0.2  2.1 1.7 0.7 1.4 0.5 0.1 0.2  8.8.7 6.8.3 2.3 16.3 46.2 0.1  F E C B D A  7.4 7.5 0.1 0.0 0.7  8.8.7 6.8.3 2.5 16.3 46.2 0.1  7.8 4 2.2 4 3.9  F H C C B D A  7.9 A  7.0 0.60 0.60 0.60 0.60  7.0 0.7 0.7 0.7 0.7 0.7  7.0 0.0 0.0 0.0 0.0  8.8 7 6.8 3 2.5 16.3 46.2 0.1  8.9 A  7.0 0.0 0.0 0.0  8.0 0.0 0.0 0.0  9.0 0.0 0.0  1.0 0.0 0.0 0.0  1.0 0.0 0.0	Protected Phases	4		2		_	9	
5)         238         238         1014         1014         31.0         136.6           6)         238         238         1014         1014         31.0         136.6           0.14         0.14         0.60         0.60         0.18         0.80           4.4         4.4         5.0         5.0         4.4         5.2           2.0         2.0         3.8         3.8         2.0         3.5           2.0         2.0         3.8         3.0         3.5           0.01         0.0         0.12         0.0         0.0           0.11         0.07         0.12         0.0         0.0           0.10         1.00         1.00         1.00         0.0         0.0           1.00         1.00         1.00         1.00         0.0         0.0         0.0           1.77         0.7         1.4         0.5         0.1         0.2         0.0           1.77         0.7         1.4         0.5         0.1         0.2         0.0           1.77         0.7         1.4         0.5         0.1         0.2         0.0           1.77         0.7         1.	Permitted Phases		4		2			
238 238 1014 1014 31.0 136.6  144 44 50 60 0.60 0.18 0.80  44 4 45 50 5.0 44 5.2  20 2.0 3.8 3.8 2.0 3.5  20 2.1 27 27 110 944 322 2843  0.11 0.07 0.07 0.12  0.082 0.50 0.63 0.21 0.33 0.53  71.0 67.6 22.1 15.8 60.5 5.7  1.00 1.00 1.00 0.76 0.12  2 17.7 0.7 14 0.5 0.1  F E C B D A  Y  y  y  HCM 2000 Level of Service  Cocpacity ratio  0.64  15	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  4.4 4.4 4.5 5.0 5.0 4.4 5.2  2.0 2.0 3.8 3.8 2.0 3.5  2.1 2110 944 322 2843  c.0.11	Effective Green, g (s)	23.8	23.8	101.4	101.4	31.0	136.6	
44	Actuated g/C Ratio	0.14	0.14	09:0	09:0	0.18	0.80	
2 0 2 0 38 38 2 0 35     247 221 2110 944 322 2843     0.11 0.07 0.37 0.06 0.042     0.82 0.50 0.63 0.21 0.33 0.53     1.10 0.76 22.1 158 0.65 5.7     1.10 1.00 1.00 1.00 0.76 0.12     1.77 0.7 1.4 0.5 0.1 0.2     1.77 0.7 1.4 0.5 0.1 0.2     1.87 68.3 23.5 16.3 46.2 0.9     1.8 7 68.3 23.5 16.3 46.2 0.9     1.8 7 68.3 23.5 16.3 46.2 0.9     1.8 7 68.3 23.5 16.3 46.2 0.9     1.8 7 68.3 0.35 16.3 46.2 0.9     1.8 7 68.3 0.35 16.3 46.2 0.9     1.8 8 7 68.3 23.5 16.3 46.2 0.9     1.8 9 7 68.3 0.35 16.3 46.2 0.9     1.8 10 10 10 10 10 10 10 10 10 10 10 10 10	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   71.0 67.6 2.21 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   8.8.7 68.3 2.35 16.3 46.2 0.9   F E C B D A A   78.4 22.4 3.9   F C C B C A A   78.4 22.4 3.9   78.4 20.5 HCM 2000 Level of Service o Capacity ratio 0.64   70.0 0.69% ICU Level of Service 1.00   70.0 0.64   70.0 0.65	//s Ratio Prot	00.11		c0.37		90:0	c0.42	
7082 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 F C C B C 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 79  y  y  y  th (s) 110 0.09% ICU Level of Service 0.64 110 0.64 110 0.64 110 0.64 110 0.64 110 0.64 110 0.64 110 0.64 110 0.64 110 0.64 110 0.64	//s Ratio Perm		0.07		0.12			
71.0 67.6 22.1 15.8 60.5 5.7 2 17.0 100 1.00 1.00 0.76 0.12 2 17.7 0.7 1.4 0.5 0.1 0.2 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 E C B C A 79.4   79.5 10.0 1.00 1.00 0.00  70.0 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 1.00 1.00 0.00  70.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	//c Ratio	0.82	0.50	0.63	0.21	0.33	0.53	
100 100 100 076 012 2 17.7 0.7 1.4 0.5 0.1 0.2 8.8.7 68.3 23.5 16.3 46.2 0.9 F E C B D A 78.4 22.4 3.9 K	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 88.7 68.3 2.35 16.3 46.2 0.9 F E C B D A 78.4 22.4 3.9 Y   Y  Y  Y  Y  Y  Y  Y  Y  Y  Y  Y  Y	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 79.5 HCM 2000 Level of Service of Capacity ratio 0.64 11 (s) 170.0 Sum of lost time (s) 1.00 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	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 A A  Y  Y  Y  H (s) 170.0 Sum of lost time (s)  15 170.0 Sum of lost time (s)  16 170.0 Sum of lost time (s)  17 170.0 Sum of lost time (s)  18 170.0 Sum of lost time (s)  19 170.0 Sum of lost time (s)	Delay (s)	88.7	68.3	23.5	16.3	46.2	6.0	
78.4 22.4 3.9  Y  Y  Capacity ratio 0.64  Utilization 60.9% ICU Level of Service 60.9% ICU Level of Service 70.9% ICU Level of Se	evel of Service	ш	ш	ပ	В	٥	V	
y  y  20.5 HCM 2000 Level of Service of Capacity ratio 0.64  (1) (s) 170.0 Sum of lost time (s) 170.0 (c) 110.1 Level of Service 150.0 (c) 1.0	Approach Delay (s)	78.4		22.4			3.9	
CM 2000 Control Delay         20.5         HCM 2000 Level of Service           CM 2000 Volume to Capacity ratio         0.64         10.0           Catcal Ength (s)         1700         Sum of lost time (s)           Fersection Capacity Utilization         60.9%         ICU Level of Service           nalysis Period (min)         15         170	Approach LOS	ш		O			Α	
20.5	ntersection Summary							
CM 2000 Volume to Capacity ratio 0.64 Sum of lost time (s) tersection Capacity Utilization 60.9% ICU Level of Service nalysis Period (min) 15	HCM 2000 Control Delay			20.5	Ħ	M 2000	evel of Service	Ü
tuered Cycle Length (s) 170.0 Sum of lost time (s) tersection Capacity Utilization 60.9% ICU Level of Service nalysis Period (min) 15	HCM 2000 Volume to Capacity	vratio		0.64				
tersection Capacity Utilization 60.9% ICU Level of Service nalysis Period (min) 15	Actuated Cycle Length (s)	and C		170.0	S	m of lost	time (s)	13.8
and control (min) 15	ntersection Canacity Hilizatio	5		%0.09	3 ⊆	l level	(Service	<u>a</u>
=	Included apparently constants	=		1,00	2			2
	=			2				

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Balboa Station 18: Mission Bay Dr & Magnolia Ave/Driveway

Horizon Year with Reduced LU Timing Plan: PM Peak Period

<b>→</b>	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
<b>-</b>	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
<b>†</b>	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	<ul> <li>Volume exceeds capacity, queue is theoretically infinite.</li> </ul>	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

The Protected Preses of Service (April 1998) 1997   1997	2 -002020		WBL	MB	WDR	70	2	NDK	7	7	
196   198   6   2   7   88   1331   3   3   1   946     1970   1900   1900   1900   1900   1900   1900   1900     100   1900   1900   1900   1900   1900   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   100     100   100   100   100   100     100   100   100   100   100     100   100   100   100   100     100   100   110   100   100     100   100   110   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   100   100     100   100   100     100   100   100     100   100   100     100   100   100     100   100     100   100   100     10	2 -00-0-0	_		÷		*	- T		7	1	SBK
1900   1900   1900   1901   1901   1900	2 -002020	_	9	~	7	88	1331	~	31	946	230
1900   1900	-007070	Ì	9	2	7	88	1331	m	31	946	230
49         49         44         5.0         44         5.0           100         100         100         0.95         1.00         0.95           0.98         0.98         1.00         1.00         0.95         1.00         0.95           1079         1.70         1.70         35.38         1.70         34.35         1.00         0.95         0.95         0.95         0.95         0.95         0.95         0.95         0.95         <	-00-0-0	,	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00 1,00 1,00 0,95 1,00 0,95 0,95 0,92 0,92 0,94 1,00 1,00 0,95 1,00 0,95 0,98 0,98 0,98 0,98 1,00 0,99 1,00 0,98 1,00 0				4.9		4.4	2.0		4.4	2.0	
0.92 0.94 0.00 0.97 0.098 0.95 0.00 0.97 0.098 0.95 0.00 0.97 0.098 0.95 0.00 0.95 0.00 0.97 0.098 0.095 0.00 0.95 0.00 0.97 0.00 0.097 0.00 0.097 0.00 0.092 0.09				1.00		1.00	0.95		1.00	0.95	
1098   0.98   0.98   1.00   0.95   0.95		٥.		0.94		1.00	1.00		1.00	0.97	
1679         1709         1770         3538         1770         3435           1491         1709         1770         3538         1770         3435           1491         1491         1770         3538         1770         3435           1 6092         0.92         0.92         0.92         0.92         0.92         0.92           3 32         0         0         6         0         0         0         0         12           1 NA         Perm         NA         Prof.         NA         Prof.         NA         Prof.         NA         126         2           3 40         34.0         11.9         114.9         6.8         1098         34         1028         34         1028         34         1028         34         1028         34         1028         34         1028         34         1028         34         108         34         108         34         108         34         108         34         108         34         108         34         108         34         108         34         108         34         108         34         108         34         108         34         108		~		0.98		0.95	1.00		0.95	1.00	
1987         0883         0.955         1.00         0.955         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         12         126         0         0         12           1 33         0 0 6         6 0         0         0         0         0         12         126         0         0         0         12         126         0         0         0         12         126         0         0         0         0         12         126         0         0         0         0         12         126         0         0         0         12         126         0         0         0         12         12         12         12         14         0         0         0         0         12 <td>149</td> <td>_</td> <td></td> <td>1709</td> <td></td> <td>1770</td> <td>3538</td> <td></td> <td>1770</td> <td>3435</td> <td></td>	149	_		1709		1770	3538		1770	3435	
1491   1441   1770   3538   1770   3435   1700   3435   1700   3435   1700   3435   1700   3435   1700   3435   1700   3435   1700   343   1028   340   0   0   0   0   0   0   10   10   1	149	_		0.83		0.95	1.00		0.95	1.00	
10,000	0.0			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 Prof NA Prof NA 5 1266 340 340 340 1119 1149 68 1098 340 340 119 1149 68 1098 340 20 020 007 0.66 0.04 0.65 20 20 20 2.0 2.0 3.7 2.0 3.7 20 20 20 2.0 2.0 3.7 2.0 3.7 20 20 20 2.0 2.0 3.7 2.0 3.7 20 20 20 2.0 2.0 3.7 2.0 100 1.00 1.00 1.00 1.00 1.00 1.44 0.00 2.01 0.04 0.57 142.4 54.8 10.1 81.8 18.0 142.4 54.8 104.4 10.1 81.8 18.0 142.4 54.8 104.4 10.1 81.8 18.0 142.4 54.8 104.4 10.1 81.8 18.0 176.5 20.00 2.0 3.7 2.0 3.7 20 3.7 2.0 3.7 20 2.0 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 20 3.7 3.7 2.0 3.7 2			0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
33         0         0         6         0			7	2	∞	96	1447	က	34	1028	250
NA   Perm   NA   Prof   NA   NA   Prof   NA   NA   Prof   NA   NA   NA   NA   NA   NA   NA   N			0	9	0	0	0	0	0	12	0
NA   Perm   NA   Prof   NA   Prof   NA     8			0	Ξ	0	96	1450	0	34	1266	0
8 4 4 1 6 5 340 340 119 1149 68 11 340 0.20 0.20 0.07 0.68 0.04 0 220 2.0 2.0 2.0 3.0 4.4 2.9 2.8 123 2391 70 2.0 2.0 2.0 2.0 3.0 0.04 0.05 0.04 1.0 1.08 0.04 0.78 0.04 0.02 0.0 1.108 0.04 0.78 0.04 1.0 1.42.4 54.8 104.4 10.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.1 81.8 1 142.4 54.8 104.4 11.3 1.5 1 170.0 Sum of lost time (\$) 14.3 1 176.3% I/U Level of Service D		_	Perm	NA		Prot	NA		Prot	NA	
340 4 340 1119 1149 68 1340 20 20 20 0.20 0.07 0.68 0.04 49 0.20 0.07 0.68 0.04 49 0.20 0.07 0.68 0.04 49 0.02 0.07 0.68 0.04 49 0.02 0.07 0.68 0.04 1.00 0.02 0.03 3.7 0.0 0.0 0.02 0.004 0.005 0.041 0.02 0.004 0.008 0.04 0.009 0.00 0.004 0.009 0.				4		<b>.</b>	9		2	2	
340 340 119 1149 68 1340 20 0.007 0.007 0.004 0.004 0.007 0.002 0.007 0.005 0.004 0.005 0.007 0.002 0.004 0.005 0.004 0.005 0.004 0.005 0.005 0.004 0.005 0.005 0.004 0.005 0.005 0.007 0.	œ		4				9				
340         340         119         1149         68         1           49         49         49         49         600         0.00         1.00         0.00         1.00         0.00         1.00         <	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 2.0 1.08 0.04 0.78 0.61 0.02 0.02 0.01 0.78 0.61 0.02 1.00 1.00 1.03 0.60 1.00 1.42.4 0.0 1.00 1.03 0.60 1.00 1.42.4 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 0.73 1.00 0.04 10.1 81.8 7.0 0.73 0.00 Level of Service 0.7 1.4.3 1.70 Sum of lost time (s) 14.3	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         0.41         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         1.08         0.60         1.00           1.42.4         54.8         1.04         1.1         81.8           F         D         F         B         F           1.42.4         54.8         1.04         1.01         81.8           1.42.4         54.8         1.04         1.01         81.8           1.73         F         B         F         F           1.74         54.8         1.59         F           1.75         F         B         F           1.74         D         Sum of lost time (s)         1.43           1.75         T         D         A           1.70         Sum of lost time (s) <t< td=""><td>0.20</td><td></td><td></td><td>0.20</td><td></td><td>0.07</td><td>89.0</td><td></td><td>0.04</td><td>0.65</td><td></td></t<>	0.20			0.20		0.07	89.0		0.04	0.65	
2.0         2.0         2.0         3.7         2.0           298         288         123         2391         70           60.22         0.01         c0.05         c0.41         0.02           1.08         0.04         0.78         0.61         0.49           6.80         54.8         77.8         15.1         79.9           1.00         1.00         20.7         0.9         1.9           142.4         54.8         1.04.4         10.1         81.8           F         D         F         B         F           142.4         54.8         1.04.4         10.1         81.8           F         D         F         B         F           A         54.8         1.04.4         10.1         81.8           F         D         F         B         F           A         A         54.8         15.9         F           B         B         F         B         F           B         A         A         B         B           A         A         A         B         B           A         A         A         B <td>4.9</td> <td>~</td> <td></td> <td>4.9</td> <td></td> <td>4.4</td> <td>2.0</td> <td></td> <td>4.4</td> <td>2.0</td> <td></td>	4.9	~		4.9		4.4	2.0		4.4	2.0	
298 288 123 2391 70  c0.22 0.001 0.005 0.0.41 0.0.2  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  7.6.5 B C C C  3.1.5 HCM 2000 Level of Service C  0.73 Sum of lost time (s) 14.3  15. 15.	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 0.78 0.61 0.49 0.49 0.49 0.40 0.004 0.78 0.61 0.49 0.49 0.40 0.40 0.40 0.40 0.40 0.40	368	~		288		123	2391		70	2218	
0.0.22 0.0.01 0.78 0.61 0.49 0.80 0.04 0.78 0.61 0.49 0.80 0.04 0.78 0.61 0.49 0.80 0.78 0.61 0.49 0.78 0.61 0.60 0.78 0.60 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.7						00.05	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	00.22	0.1		0.01							
680 548 778 151 799 7100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.08	_		0.04		0.78	0.61		0.49	0.57	
100 100 100 100 100 100 100 100 100 100	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 F D F B F 142.4 54.8 15.9 F MCM 2000 Level of Service C 0.73 176.3% ICU Level of Service D 15.3% ICU Level of Service D 15.3% ICU Level of Service D	1.00			1.00		1.08	09.0		1.00	1.00	
142.4 54.8 104.4 10.1 81.8 F B F B F F B F F B F F B B F F B B F F B B B F B	74.4	_		0.0		20.7	6.0		1.9		
F F B F B F F B F	142.4			54.8		104.4	10.1		81.8	18.0	
1424 54.8 15.9 F D B 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 15	_			۵		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	142.4	_		54.8			15.9			19.6	
31.5 HCM 2000 Level of Service 0.73 170.0 Sum of lost time (s) 76.5% ICU Level of Service 15	_			D			В			В	
31.5 HCM 2000 Level of Service 0.73 170.0 Sum of lost time (s) 76.5% ICU Level of Service 15											
0.73 1700 Sum of lost time (s) 76.3% ICU Level of Service 15		31.5	H	CM 2000	Level of S	Service		S			
170.0 Sum of lost time (s) 76.3% ICU Level of Service 15	ţį	0.73									
ICU Level of Service		170.0	ns Sn	um of lost	time (s)			14.3			
15		76.3%	೨	U Level o	f Service			۵			
		15									

Synchro 9 Report Page 35

Ü ď رابر ج. ح. Balboa Station

Horizon Year with Reduced LU Timing Plan: PM Peak Period

limin		
HIII St	<b>→</b>	CDT
sunker I	٠	īgo
way/t	<b>←</b>	TON
19: Mission Bay Dr & Driveway/Bunker Hil	ţ	TOW
19: Mission I		Long Group

																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		nene ma
NBT	1320	99.0	17.8	0.2	17.9	365	299	492		1998	147	0	0	0.71		pacity, q
WBT	284	0.84	38.3		39.4	11	#157	514		415	0	30	0	0.74		e 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

Movement         EBI         EBI         EBI         WBI         WBI         WBI         WBI         NBI         NBI         NBI         NBI         SBI         SBI         SBI         APL         AP		EBL	FRT										
1900   147   0   1172   42   172   995	ane Configurations Traffic Volume (vph) - uture Volume (vph) deal Flow (vphpl)		-	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900   1900   147   0   114   0   1172   42   172   995     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   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   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   190			4			4		F	₩		¥	₩	
1900		0	0	0	147	0	114	0	1172	42	172	995	0
1900   1900		0	0	0	147	0	114	0	1172	42	172	995	0
1,00   0.95   1.00   0.95		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100   0.95   1.00   0.00   0.00   0.00   0.00   0.00   0	I Lost time (s)					4.9			2.0		4.4	2.0	
100   0.94   0.99   1.00   0	e Util. Factor					1.00			0.95		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   0.92   0						0.94			0.99		1.00	1.00	
1706   3529   1706   3529   1700   3539   1700   3539   1446	rotected					0.97			1.00		0.95	1.00	
146   0.05   0	. Flow (prot)					1705			3521		1770	3539	
HF 092 092 092 092 092 092 092 092 092 092	ermitted					0.83			1.00		0.95	1.00	
HF 092 092 092 092 092 092 092 092 092 092	. Flow (perm)					1446			3521		1770	3539	
hith 0 0 0 0 155 0 0 3 0 0 0 0 0 0 125 0 0 3 0 0 0 0 0 0 125 0 0 0 3 0 0 0 0 0 0 0 125 0 0 0 137 0 0 0 187 1 0 0 0 187 1 0 0 0 0 0 187 1 0 0 0 187 1 0 0 0 187 1 0 0 0 0 187 1 0 0 0 0 0 187 1 0 0 0 0 0 0 187 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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
ph) 0 0 0 0 125 0 0 131 0 187 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Flow (vph)	0	0	0	160	0	124	0	1274	46	187	1082	0
bib) 0 0 0 0 159 0 0 1317 0 187 1  4 4 4 4 4 12.5 48.2 10.0 6  (s) 4 4 12.5 48.2 10.0 6  (s) 12.5 48.2 10.0 6  (s) 12.5 48.2 10.0 6  (d) 12.5 48.2 10.0 6  (e) 12.5 48.2 10.0 6  (f) 12.5 6.5 7 6.1 7  (g) 12.5 6.5 7 6.1 7  (g) 12.5 7.3 7  (g) 12.5 7  (	R Reduction (vph)	0	0	0	0	125	0	0	3	0	0	0	0
(s) 4 4 7 7 6 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Group Flow (vph)	0	0	0	0	159	0	0	1317	0	187	1082	0
(s) 4 4 4 1 6 5 5 (s) 4 4 1 6 6 5 5 (s) 4 6 1 1 6 6 5 6 (s) 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Type				Perm	NA		Prot	NA		Prot	NA	
(s) 4 4 1.25 48.2 10.0 6 (s) 12.5 48.2 10.0 6 (1.2.5 48.2 10.0 6 (1.2.5 48.2 10.0 6 (1.2.5 48.2 10.0 6 (1.2.5 48.2 10.0 6 (1.2.5 48.2 10.0 6 (1.2.5 4.4 4.4 4.4 4.4 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 6.0 6 (1.2.5 4.4 4.4 6 (1.2.5 4.4 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (1.2.5 4 (	ected Phases		4			4		<del>-</del>	9		2	2	
(s) 12.5 48.2 10.0 of 12.5 of	nitted Phases	4			4								
s) 125 482 100 6 0.15 0.57 0.12 0.12 190 0.57 0.12 0.13 10 0.07 0.01 0.03 0.01 0.00  20 0.32 0.03 0.01 0.03 20 0.03 0.03 0.01 0.03 20 0.04 0.05 0.06 0.90 0.00 20 0.05 0.06 0.90 0.00 20 0.05 0.06 0.90 0.00 20 0.05 0.06 0.90 0.00 20 0.07 0.06 0.90 0.00 20 0.07 0.06 0.90 0.00 20 0.07 0.06 0.90 0.00 20 0.07 0.00 0.00 0.00 20 0.00 0.00 0.00 0.00 20 0.00 0.0	ated Green, G (s)					12.5			48.2		10.0	62.6	
0.15 0.15 0.15 0.17 0.12 0.15 0.17 0.12 0.15 0.15 0.15 0.17 0.17 0.17 0.17 0.17 0.17 0.17 0.17	tive Green, g (s)					12.5			48.2		10.0	62.6	
10	ated g/C Ratio					0.15			0.57		0.12	0.74	
2.0 3.2 2.0  2.12 1996 2.08 2  1.05 0.011 0.037 0.011 0.05  3.4.8 12.7 37.0  1.00 1.22 1.20  1.25 1.2 2.8  47.3 16.7 73.1  0.0 47.3 16.7 73.1  A D B B E  19.9 HCM 2000 Level of Service B  0.71 85.0 Sum of lost time (s) 14.3  15.3 14.3 16.7  19.9 HCM 2000 Level of Service C  15.0 14.3 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	rance Time (s)					4.9			2.0		4.4	2.0	
212 1996 208 2  0.011 0.037 0.011 0.05  3.48 127 37.0  1.00 1.22 1.20  1.100 1.22 1.20  1.25 47.3 16.7 73.1  A D B B E  0.01 47.3 16.7 73.1  A D B B  19.9 HCM 2000 Level of Service B  0.71 85.0 Sum of lost time (s) 14.3  15.3% ICU Level of Service C	de Extension (s)					2.0			3.2		2.0	3.2	
0.011 0.037 0.011 0.037 0.011 0.037 0.011 0.037 0.011 0.037 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.05	Grp Cap (vph)					212			1996		208	2606	
0.75 0.66 0.90 ( 0.75 0.66 0.90 ( 0.75 0.66 0.90 ( 0.75 0.66 0.90 ( 0.75 0.66 0.90 ( 0.75 0.73 0.73 0.73 0.73 ( 0.71 0.74 0.74 0.74 0.74 0.74 0.74 0.74 0.74	atio Prot								c0.37		00.11	0.31	
0.075 0.66 0.90 (0.75 0.66 0.90 (0.75 0.66 0.90 (0.75 0.75 0.66 0.90 (0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	atio Perm					c0.11							
348 127 370 100 122 120 125 12 288 47.3 16.7 73.1 0.0 47.3 16.7 73.1 A D B B E 19.9 HCM 2000 Level of Service B 0.71 85.0 Sum of lost time (s) 14.3 15.3 ICU Level of Service C 15.3 ICU Level of Service C	atio					0.75			99.0		06:0	0.42	
100 122 120 120 120 120 120 125 120 120 125 120 120 120 120 120 120 120 120 120 120	orm Delay, d1					34.8			12.7		37.0	4.3	
12.5 1.2 28.8  47.3 16.7 73.1  0.0 47.3 16.7 73.1  A D B E  19.9 HCM 2000 Level of Service B  170.3% ICU Level of Service C  15.5 15.5 14.3	ression Factor					1.00			1.22		1.20	1.64	
47.3 16.7 73.1 0.0 47.3 16.7 73.1 A D B B E E 16.7 73.1 16.7 73.1 16.7 73.1 16.7 73.1 170.3 16.1 16.1 16.1 16.1 16.1 16.1 16.1 16	mental Delay, d2					12.5			1.2		28.8	0.4	
0.0 47.3 16.7 E  A D B B  19.9 HCM 2000 Level of Service B  0.71 85.0 Sum of lost time (s) 14.3  15.3% ICU Level of Service C  15.3% ICU Level of Service C	y (s)					47.3			16.7		73.1	7.3	
0.0 47.3 16.7 A D B B B 19.9 HCM 2000 Level of Service B C 771 85.0 Sum of lost time (s) 14.3 70.3% ICU Level of Service C C 75	l of Service					Ω			В		ш	⋖	
A D B  19.9 HCM 2000 Level of Service B 0.71 Sum of lost time (s) 14.3 70.3% ICU Level of Service C 15	oach Delay (s)		0.0			47.3			16.7			17.0	
19.9 HCM 2000 Level of Service 0.71 85.0 Sum of lost time (s) 70.3% ICU Level of Service 15	oach LOS		⋖			Ω			В			В	
19.9 HCM 2000 Level of Service 0.71 85.0 Sum of lost time (s) 70.3% ICU Level of Service 15	section Summary												
0.71 85.0 Sum of lost time (s) 70.3% ICU Level of Service 15	1 2000 Control Delay			19.9	H	M 2000 I	Level of S	service		В			
85.0 Sum of lost time (s) 70.3% ICU Level of Service 15	1 2000 Volume to Capacity	ratio		0.71									
Utilization 70.3% ICU Level of Service 15	ated Cycle Length (s)			85.0	Su	m of lost	time (s)			14.3			
ysis Period (min) 15	section Capacity Utilization			70.3%	2	J Level o	f Service			ပ			
	ysis Period (min)			15									

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Balboa Station 20: Mission Bay Dr & Rosewood St

Horizon Year with Reduced LU Timing Plan: PM Peak Period

KHA Queues

Balboa Station
Horizon Year with Reduced LU
20: Mission Bay Dr & Rosewood St
Timing Plan: PM Peak Period

																																					А		12.0	O		
<b>→</b>	SBL SBT	* <b>*</b>	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		
<b>↓</b>	NBT NBR	<u>ተ</u> ተቤ			1900 1900	4.0	0.91	1.00	1.00	5081	1.00	5081	0.92 0.92	2700 17	0 0	2717 0	NA A	2		70.3	70.3	0.83	4.0	3.0	4202	0.53		0.65	2.7	1.00	8.0	3.5	Α	3.5	Α		3.3 HCM	0.71	85.0 Sur	64.8% ICU	15	
√ \	WBL WBR	×	2 14		1900 1900	4.0	1.00	0.88	66.0	1631	0.99	1631	0.92 0.92	•	15 0		Prot	80		1.5	1.5	0.02	4.0	3.0	28	00.00		80:0	41.1	1.00	1.2	42.3	O	42.3	D			ty ratio				
	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

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Balboa Station 21: Santa Fe St & Damon Ave

Horizon Year with Reduced LU Timing Plan: PM Peak Period

																					A	
<b>`</b>	SBR			153	153	0.92	166														f Service	
<b>→</b>	NBT SBT		top Stop		86 99	0	72 107														ICU Level of Service	
•	NBL N		S	80	80	0.92	87	SB 1		0			0.32		9.3	9.3	A		9.3	⋖	42.4%	15
<i>&gt;</i>	L EBR	*	a	8 65			7 71	1 NB 1	1	7 87	1 0			3 707			A					
•	Movement EBL	Lane Configurations	S			Peak Hour Factor 0.92	Hourly flow rate (vph) 113	Direction, Lane # EB 1	Volume Total (vph) 188		Volume Right (vph) 71	re Headway (s)	×	Capacity (veh/h) 693	Control Delay (s) 9.4	Approach Delay (s) 9.4		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
	<b>/</b>	4	<b>←</b>	•	٠	<b>→</b>	
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  174 75 3  176 75 3  176 75 3  177 75 3  170 1900 190  170 1900 190  170 1900 190  170 1900 1900  17		<b>/</b>	4	<b>←</b>	•	٠	<b>→</b>	
NA	Tovement	WBL	WBR	NBT	NBR	SBL	SBT	
376         75         320         370         56         891           1900         1900         1900         1900         1900           49         52         370         55         891           1900         1900         1900         1900         1900           0.97         0.95         1.00         1.00         100           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           0.96         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         0.95           0.96         1.00         0.95         1.00         0.92           0.97         0.92         0.92         0.92         0.92         0.92           0.98         1.31         1.5         1.00         0.98         1.00         0.98           0.00         2.00         2.02         0.92         0.92         0.92         0.92	ane Configurations	1		<b>₩</b>		×	*	
376 75 320 370 55 891  1900 1900 1900 1900 1900 1900  49 55 100 1900 1900  0.97 0.92 10.0 1.00  0.96 10.0 0.95 10.0  3382 3255 1.00 1.00  3382 3255 1.00 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  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  0.96 1.00  0.97 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  0.20 2.8 2.8 2.0 2.8  0.20 2.8 2.0 2.8  0.20 2.8 2.0 2.8  0.20 2.8 2.0 2.8  0.20 2.8 2.0 2.8  0.20 2.8 2.0 2.8  0.20 2.8 2.8 2.0 2.8  0.20 2.8 2.8 2.0 2.8  0.20 2.8 2.8 2.0 2.8  0.20 3.3 0.15 0.03 0.27  0.10 1.00 1.00  0.54 0.44 0.90 0.56  1.27 1.02 1.02 1.08  0.18 1 1.05 1.00  0.30 0.3 2.20  0.30 0.3 2.20  0.4 A 7.6 A A 1.6  0.4 A 7.6  0.5 B B F A A 1.6  0.6 Service  1.0 0.6 Service  1.0 0.6 Service	raffic Volume (vph)	376	75	320	370	22	891	
1900   1900	uture Volume (vph)	376	75	320	370	22	891	
A	leal Flow (vphpl)	0061	0061	0061	0061	0061	0061	
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		5.5		4.4	5.5	
0.97 0.92 1.00 1.00 1.00 0.96 0.96 0.96 1.00 0.96 0.96 1.00 0.95 0.90 0.96 0.96 0.96 0.96 0.96 0.96 0.96	ane Util. Factor	0.97		0.95		1.00	0.95	
0.96 1.00 0.95 1.00 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	
3382 3255 1770 3539  3482 3255 1770 3539  3482 3255 1.00  3482 3255 1.00  409 82 348 402 60 968  h) 455 0 482 0 0 0  Prot NA P	It Protected	96:0		1.00		0.95	1.00	
10.96   1.00	atd. Flow (prot)	3382		3255		1770	3539	
13382   3255   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770   3539   1770	t 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   0,92   0,92   0,92   0,92   0,98   0,9	atd. Flow (perm)	3382		3255		1770	3539	
hy 68 2 348 402 60 968 hy 75 0 268 0 0 0 hy 75 0 268 0 0 0 hy 85 0 268 0 0 0 hy 75 0 268 0 0 0 hy 8 131 15 190 hy 9 8 131 15 190 hy 9 8 131 15 190 hy 9 9 131 15 190 hy 9 9 131 15 190 hy 9 131 15 190 hy 9 131 15 190 hy 9 113 1 105 103 c0.27 hy 9 113 105 118 105 hy 9 113 105 118 105 hy 9 113 105 118 105 hy 9 114 105 hy 100 hy 9 115 105 hy 100 hy 9 115 105 hy 100 hy 9 116 hy 100 ly 100 hy 9 117 105 hy 100 hy 9 118 hy 100 hy 9 119 hy 100 ly 100 hy 9 110 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 ly 100 hy 9 100 ly 100 ly 100 ly 100 ly 100 hy 9 100 ly 1	eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
hh) 36 0 268 0 0 0 h) 36 0 268 0 0 0 h) 455 0 482 0 60 968  Rotal MA Prof NA  8 2 1 1 6 h 98 131 15 190 h 99 656 h 117 102 188 72 h 100 100 100 100 100 h 100 100 100 100 h 101 105 105 h 131 105 105 h 14 76 h 8 B B B F 135 h 131 105 105 h 14 76 h 99 11.9 HCM 2000 Level of Service h 99 11.9 HCM 2000 Level of Service h 145 195 195 h 159 195 195 h 165 195 195 195 h 179 105 105 105 105 h 179 11.5 105 105 h 179 11.5	dj. Flow (vph)	409	85	348	402	09	896	
h) 455 0 482 0 60 968  Prot NA Prot NA  8 2 1 1 6  9 8 131 1.5 19.0  0.25 0.33 0.04 0.48  4.9 5.5 4.4 5.5  0.20 2.8 2.0 2.8  2.0 2.8 2.0 2.8  2.0 2.8 2.0 2.8  0.107 0.015 0.03 0.056  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 F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.31 10.5 91.4 7.6  B B F F A  1.32 10.5 91.4 7.6  B B F F F A  1.33 10.5 91.4 7.6  B B F F F A  1.34 10.5 91.4 7.6  B B F F F A  1.35 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	TOR Reduction (vph)	36	0	268	0	0	0	
Prot   NA   Prot   NA	ane 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 2 0.3 0.3 0.48 2.0 2.8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	urn Type	Prot		¥		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 2.0 2.8 8.45 1087 6.7 1715 0.13 0.15 0.03 0.0.27 1.27 10.2 18.8 7.2 1.27 10.2 18.8 7.2 1.31 10.5 9.14 7.6 B B F A 7.6 1.31 10.5 9.14 7.6 B B B F A 7.6 B B B B F A 7.6 1.31 10.5 9.14 7.6 B B B F A 7.6 B B B F A 7.6 B B B B B B A 7.6 B B B B B B B B B B B B B B B B B B B	otected Phases	∞		2		-	9	
9, 9, 8, 13.1 1.5 19.0  10, 26, 8, 13.1 1.5 19.0  10, 26, 13.3 0.04 0.48  4, 9, 5.5 4, 4 5.5  10, 0.4 0.48  845 1087 67 1715  0.54 0.44 0.90 0.56  12, 7 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	ermitted Phases							
9 8 131 15 190 9 8 131 15 190 9 9 131 15 190 9 12 0.33 0.48 0.48 9 5.5 4.4 5.5 8 45 187 67 1715 0.54 0.44 0.90 0.56 12.7 10.2 188 7.2 1.00 1.00 1.00 1.00 2 0.3 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 10.5 91.4 7.6 13.1 0.5 91.4	ctuated Green, G (s)	8.6		13.1		1.5	19.0	
0.25 0.33 0.04 0.48 49 5.5 44 5.5 2.0 2.8 44 5.5 845 1087 67 1712 0.013 0.15 0.03 0.27 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 9.1 A B B B B F A 1.31 10.5 9.1 A 1.31 10.5 1.25 B B B B B B B B B B B B B B B B B B B	fective Green, g (s)	8.6		13.1		1.5	19.0	
49         5.5         4.4         5.5           20         2.8         2.0         2.8           845         1087         6.7         1715           60.13         0.15         0.03         c0.27           0.54         0.44         0.90         0.56           127         102         1.88         7.2           100         1.00         1.00         1.00           2         0.3         0.3         72.6         0.4           B         B         F         A         A           I 13.1         10.5         9.4         7.6         B           B         B         F         A         A           I 13.1         10.5         9.4         7.6         B           I 13.1         10.5         P         A         B         B           I 13.1         10.5         B         B         B         B           I 13.1         10.5         NM 2000 Level of Service           Ocapacity ratio         0.6         Sum of lost time (s)         CU Level of Service           Ocapacity ratio         0.5         NM 2000 Level of Service	ctuated g/C Ratio	0.25		0.33		0.04	0.48	
2 0         2 8         2.0         2.8           845         1087         67         1715           0.013         0.05         0.027           0.024         0.04         0.06         0.56           127         10.2         1.88         7.2           1.00         1.00         1.00         1.00           2         0.3         0.3         72.6         0.4           1.3.1         10.5         91.4         7.6           B         F         A         A           B         F         B         B           B         B         B         B           B         B         B         B           B         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)           Utilization         49.5%         ICU Level of Service	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 72.6 0.4  1.31 10.5 91.4 7.6  B B F A  1.31 10.5 1.25  B B C A  1.31 0.55 1.25  B B C A  1.31 0.55 1.25  B B C A  1.31 0.55 1.25  B C B  1.32 0.66  C Capacity ratio 0.66  1.33 0.40  1.40 0.40  1.50 0.4	ehicle 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 0.0     1.00     1.00     1.00       2     0.3     0.3     72.6     0.4       1 3.1     10.5     9.4     7.6     9.4       1 3.1     10.5     1.4     7.6     9.7       B     B     B     1.2.5     B       B     B     HCM 2000 Level of Service       Capacity ratio     0.66     0.66     0.64       Capacity ratio     0.66     0.64     0.04     0.05       Int (s)     39.2     Sum of lost time (s)       Int (s)     1.00 Littlization     49.5%     ICU Level of Service	ine 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  13.1 10.5 9.14 7.6  y  y  y  1.1.9 HCM 2000 Level of Service 0.65 Service 1.05 1.95 Sum of lost time (s) 1.05 1.95 Service 1.04 1.95 Service	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 0.3 72.6 0.4 13.1 10.5 91.4 7.6 13.1 10.5 91.4 7	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 CM A B 1.31 10.5 12.5 B P CM A B 1.49 HCM 2000 Level of Service Copacity ratio 0.66 In (s) 39.2 Sum of lost time (s) In (s) 1.9 HCM 2000 Level of Service	c 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 12.5 B B B F A 7.6 12.5 B H CM 2000 Level of Service 11.9 HCM 2000 Level of Service	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 7.6 13.1 10.5 12.5 B B F 12.5 B Capacity ratio 0.66 Capacity ratio 0.66 Chillization 49.5% ICU Level 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 12.5 B A  y  y  11.9 HCM 2000 Level of Service	cremental Delay, d2	0.3		0.3		72.6	0.4	
B	elay (s)	13.1		10.5		91.4	7.6	
Y         12.5           Y         B         B           Neelay         11.9         HCM 2000 Level of Service           Capacity ratio         0.6         Sum of lost time (s)           Int (s)         39.2         Sum of lost time (s)           Utilization         49.5%         ICU Level of Service	evel of Service	В		В		ш	Α	
y         B         B           y         11.9         HCM 2000 Level of Service           h (S)         0.6         No mod lost time (s)           th (S)         39.2         Sum of lost time (s)           Utilization         49.5%         ICU Level of Service	oproach Delay (s)	13.1		10.5			12.5	
11.9	pproach 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	tersection Summary							
. Capacity ratio 0.66 Sum of lost time (s) 39.2 Sum of lost time (s) Utilization 49.5% ICU Level of Service	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	CM 2000 Volume to Capaci	ity ratio		99.0				
Utilization 49.5% ICU Level of Service	ctuated Cycle Length (s)			39.2	S	m of lost	time (s)	14.8
	tersection Capacity Utilization	lon		49.5%	⊇	J Level o	f Service	A
	Analysis Period (min)			15				
	c Critical Lane Group							

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Balboa Station 24: Morena Blvd & Avati Dr

Horizon Year with Reduced LU Timing Plan: PM Peak Period

<b>→</b>	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	
<b>—</b>	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	
<b>\</b>	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

	<b>\</b>	4	F	<b>←</b>	4	٠	<b>→</b>	
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	
Ft	1.00	0.85		1.00	0.85	1.00	1.00	
Fit Protected	0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1583		3539	1583	1770	3539	
Fit 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	A	
Approach Delay (s)	16.5			8.9			7.6	
Approach LOS	В			V			V	
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			55.9%	೨	ICU Level of Service	f Service		В
Analysis Period (min)			15					
<ul> <li>Critical Lane Group</li> </ul>								

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KHA Oueues

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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			100	1583		_	_	0.67	
<b>→</b>	SBT	871	0.57	12.1	0.0	12.1	80	151	2304		1565	0	0	0	0.56	
<b>←</b>	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	
1	EBL	163	0.42	16.9	0.0	16.9	32	69	439		679	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 Reduced LU Timing Plan: PM Peak Period Balboa Station 25: Morena Blvd & Balboa WB Ramps

	4	<i>&gt;</i>	•	•	-	`*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	<u>_</u>	¥L.	F	‡	‡	æ	
Traffic Volume (vph)	150	259	8 8	1268	801	970	
rutule volume (vpm) Ideal Flow (vphpl)	1900	1900	1900	1900	1000	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	
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)	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				c0.67	
v/c Ratio	0.43	0.27	0.74	0.65	0.58	19:0	
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	V	A	Α	
Approach Delay (s)	14.6			9.8	5.7		
Approach LOS	В			A	⋖		
Interception Summany							
HCM 2000 Control Delay			7.8	Ħ	000C M	HCM 2000 Level of Service	٥
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)	720
Actuated Cycle Length (S)			47.0	ಗ :	1501 10 III	time (s)	12.0
Intersection Capacity Utilization	uo		20.0%	2	ICU Level of Service	1 Service	А
Analysis Period (min)			15				
<ul> <li>Critical Lane Group</li> </ul>							

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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

				_	_							_		_	
<b>→</b>	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
<b>†</b>	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>1</th> <th>†</th> <th>&gt;</th> <th><b>&gt;</b></th> <th>ţ</th> <th>√</th> <th>•</th> <th>•</th> <th>•</th> <th>٠</th> <th><b>→</b></th> <th>•</th>		1	†	>	<b>&gt;</b>	ţ	√	•	•	•	٠	<b>→</b>	•
figurations	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
time (ph)         80         27         5         300         30         530         5         658         180         130           time (ph)         80         17         5         300         30         530         5         658         180         130           (v(php))         1900         1900         1900         1900         1900         1900         1900           time (s)         40         40         40         40         40         40         40         40           time (s)         40	Lane Configurations	*	¢			4	¥c_	K	₩.		*	₩₽	
vightle (vph)         89         27         5         300         30         53         65         180         130           vightle)         1900<	Traffic Volume (vph)	8	27	2	300	9	530	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 1100 085 1100 097 1100 1100 095 1100	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         130         122         100         224         1770           (pm)         828         1822         134         169         092	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	
Name	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)         67         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         A         Perm         NA         Perm         NA         Perm         NA         Perm           Process         166         166         166         166         166         205         205         205           Green, G(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         Perm         Perm         NA         Perm         Perm         Perm         Perm         NA         Perm         Perm         Perm         NA         Perm         Perm         Perm         Perm         NA         Perm         Perm         Perm         NA         Perm         Perm         Perm         NA         Perm         Perm         Perm         NA         Perm         AD	Adj. Flow (vph)	87	53	2	326	33	9/2	2	715	196	141	666	12
up Flow (vgh)         87         31         0         359         479         5         859         0         141           Phases         4         Perm         NA         Perm         NA         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	4	0	25	0	0	2	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 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         0.45         0.44         4.0<	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 0.45 0.45 0.45	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	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         1556         201         1           Perid         0.02         0.02         0.02         0.03         0.05         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.03         0.00 </td <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 0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.3	Lane Grp Cap (vph)	304	029			464	285	165	1556		201	1605	
Perm         0.11         0.27         cd.30         0.01         cd.32           Pelay, d.f.         0.05         0.05         0.05         0.07	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 difference   Delay diffe	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	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 A 2.4 B C A A B C C A B C A A B C C A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C C A B C C C A B C C C A B C C C A B C C C A B C C C A B C C C A B 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 C A A  13.4 HCM 2000 Level of Service B 0.75 Sum of lost time (s) 8.0 71.2% ICU Level of Service C 15	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 71.2% 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 45.1 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			U			
Calliant and Can	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	<b>X</b> -		+	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	026	413			438		
tC, single (s)	9.9	6.9			4.1		
tC, 2 stage (s)							
tF (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	22	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)	10	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	zation		36.7%	<u> </u>	U Level o	ICU Level of Service	⋖
Arialysis Period (mirr)			2				

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				ming ran ran car cho
	•	<b>+</b>	•	٠	<b>→</b>	
Lane Group	WBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	134	439	20	112	986	
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)	<b>∞</b>	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	×.	
<b>→</b>	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
<b>←</b>	NBT N	<b>‡</b>	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	0.80	

Intersection Summary
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

	•	<b>†</b>	ţ	4	٠	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		444	444	*-		لمراي	
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	0.82		0.85	
Fit 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				∞			
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		⋖	ပ	2		R	
Approach Delay (s)		0.1	19.3		19.8		
Approach LOS		A	В		В		
Intersection Summary							
HCM 2000 Control Delay			10.6	H H	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)	lime (s)	8.0
Intersection Capacity Utilization			64.0%	<u>ಶ</u>	CU Level of Service	Service	æ
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 (	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		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	59.7	75.2	0.12	5.9	ш
l-5 Off-ramp <sup>★</sup>	=	45	24.2	18.2	12.0 42.4 36	. 2 0.23	19.8	Δ
Balboa WB Ramps	=	45	7.1	1.0	] 8. ][	0.07	29.0	В
Moraga Ave★	=	45	22.2	1:0	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	П		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	=	<b>;</b> }	14.7	56.6	71.5	0.13	9:0	-
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
101	100	20	000	0.0	V 00	טט ט	0 00	C
TO DOOMSOOT		3	0.03	D.2	F.0.4	07:0	0.02	ם
	111	10	47.0	007	0.40	0 7 0	40.0	ı
IVIISSIOTI DAY DI	Е	3	0.51	D.O.	0.10	21.0	<b>3</b> .01	ľ
Bunker Hill St	=	32	14.6	17.8	32.4	0.11	12.0	ш
Driveway	=	32	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	=	35	20.1	4.0	24.1	0.16	23.5	O
Total	=		121.0	115.4	236.4	0.94	14.2	D

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

	Arterial	Flow	Running	Signal	Travel	Dist	Arterial	Arterial
Cross Street	Class	Speed	Time	Delay	Time (s)	(mi)	Speed	FOS
D1.00.11. A.	10	36	טטט	445	CAE	0.40	7 0	L
Didilolac / tv	=	0	0.04	2.5	2:5	2.0	÷.	
Damon Ave	=	32	20.1	1.0	21.1	0.16	26.8	ш
Garnet Ave	=	32	11.7	110.8	122.5	0.09	2.5	ш
Magnolia Ave	=	32	13.8	17.8	31.6	0.10	11.7	ш
Driveway	=	32	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	23.7	
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

					,							
	^	†	*	<b>/</b>	ļ	/	•	-	•	٠	<b>→</b>	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	‡	*	K.	*	¥C	K.	*	*-	¥.	*	*
Traffic Volume (vph)	692	929	533	214	528	242	8	22	263	250	329	378
Future Volume (vph)	692	929	233	214	528	242	4	221	263	220	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	0.97	0.95	1.00	0.97	0.95	1.00	26.0	1.00	0.88
こ	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)	752	713	579	233	574	263	478	266	286	272	358	411
RTOR Reduction (vph)	0	0	72	0	0	62	0	0	49	0	0	33
Lane Group Flow (vph)	752	713	207	233	574	201	478	599	237	272	358	380
Tum Type	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq	Prot	NA	vo+mq
Protected Phases	က	œ	-	7	4	2	-	9	7	5	2	c
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	66.1
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
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)	737	1148	771	333	731	498	226	1177	089	371	511	1364
v/s Ratio Prot	c0.22	0.20	0.11	0.07	00.16	0.04	c0.14	0.17	0.03	0.08	60.19	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	98.0	0.51	0.35	0.73	0.70	0.28
Uniform Delay, d1	53.0	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	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	ட	□	ပ	ш	ш	Ω	ш	Ω	ပ	ш	△	O
Approach Delay (s)		97.6			53.4			45.4			42.7	
Approach LOS		ш			Ω						Ω	
Intersection Summary												
HCM 2000 Control Delay			51.0	主	CM 2000	HCM 2000 Level of Service	Service					
HCM 2000 Volume to Capacity ratio	city ratio		0.83									
Actuated Cyde Length (s)			135.0	Ō	an of los	Sum of lost time (s)			19.0			
Intersection Capacity Utilization	tion		80.0%	9	U Level	CU Level of Service			□			
Analysis Period (min)			5									

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Balboa Transit Station 7: Balboa EB Ramps & Balboa Ave

Horizon Year with Reduced LU MITIGATED
Timing Plan: AM Peak Period

FBI FBR WBI WBI TAPE TAPE TAPE TAPE TAPE TAPE TAPE TAPE		Ť	*	•	,	•	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 0.95 7.93 1583 5.085 1611 7.00 1.00 0.85 1.00 0.86 7.93 1583 5.085 1611 7.00 1.00 0.95 1611 7.00 1.00 0.95 1611 7.00 0.85 0.92 0.92 0.92 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.02 714 0 1412 0 728 8.03 0.95 0.00 0.35 8.04 0 40 40 40 40 8.05 0.05 0.00 0.35 8.00 0.00 0.35 8.00 0	Movement	EBT	EBR	WBL	WBT	NBL	NBR	
738 657 0 1299 0 210 1908 1900 1900 1900 1900 1900 1909 1900 1900	Lane Configurations	₩	¥.		444		¥	
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	
1,00   0.95   1,00	Total Lost time (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	ぎ	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) 802 774 0 1412 0 228 h) 802 336 0 0 0 73 h) 802 338 0 1412 0 173 h) NA Perm NA Prot 4 4 5 8 5 5 5 5 6 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 17.7 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 17.7 17.7 17.7 17.7 17.7 140 17.7 17.7 17.7 17.7 17.7 17.7 17.7 17.7	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 58 5 color 17.7 17.7 39.7 14.0 h 17.7 17.7 39.7 14.0 h 40 40 0.35 h 17.7 705 5085 568 color 20 0.20 0.10 color 1.00 1.00 1.00 h 4 A A A A h A A A A h A A A A h A A A A h A A A A	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  17.7 17.7 39.7 140  17.7 17.7 39.7 140  1.0 0.45 0.35  1.0 0.20 0.03  2 0.20 0.20 0.10  2 0.20 0.20 0.27  1.00 1.00 1.00 0.3  2 0.3 0.5 0.0 0.3  2 0.3 0.5 0.0 0.3  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) 177 177 397 140 177 177 397 140 177 177 397 140 177 177 397 140 178 177 177 397 140 179 170 397 140 150 30 30 330 20 28 0.10 157 705 5085 568 157 705 5085 568 157 705 0.28 0.10 157 1045 0.28 0.27 158 1 0.45 0.08 9.2 1.00 1.00 1.00 1.00 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 3 0.5 0.0 0.3 4 A A A A 4 A A A A 4 A A A 4 A A A 5 8.1 0.0 9.5 4 A A A 4 A A A 5 8.1 0.0 9.5 4 A A A 6 HCM 2000 Level of Service 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 10 0.0 0.3 11 0.0 0.3 12 0.0 0.3 13 0.0 0.3 14 0.0 0.3 15 0.0 0.3 16 0.0 0.3 17 0.0 0.3 18 0.0 0.3 19 0.0 0.3 19 0.0 0.3 10 0.0	Protected Phases	4			58		5	
17.7   17.7   39.7   14.0   17.1   17.7   39.7   14.0   14.0   17.0   17.1   17.7   17.7   17.7   17.7   17.7   17.7   17.7   17.0	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         40         40           30         30         30         30           1577         705         5085         568           c0.23         0.28         0.10           0.51         0.45         0.28         0.27           7.9         7.6         0.0         9.2           1.00         1.00         1.00         1.00           2         0.3         0.5         0.0         0.3           8.1         8.1         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A         A           A         A         A         A	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 0.0 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 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 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 8.1 0.0 9.5 A A A A 9.0 0.0 9.5 A A 9.0 0.0 0.0 9.5 A A 9.0 0.0 0.0 9.5 A A 9.0 0.0 0.0 9.	Lane Grp Cap (vph)	1577	705		5085		568	
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 8.1 0.0 9.5 A A A A 9.0 0.0 9.5 A A 9.0 0.0 0.0 9.5 A A 9	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 8.1 8.1 0.0 9.5 9.5 9.7 9.9 9.9 9.9 9.9 9.9 9.9 9.9 9.9 9.9	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 9.8 A A A 9.9 A A A 9.0 A B	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 8.1 0.0 9.5 A A A A A 8.1 0.0 9.5 A 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  Outlization 4.6 HCM 2000 Level of Service 15 39.7 Sum of lost time (s) 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	Progression Factor	1.00	1.00		1.00		1.00	
81 81 00 95     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 copacity 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			<b>∀</b>	⋖(		
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	H	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 ICU Level of Service 15	Actuated Cycle Length (s)			39.7	Su	m of lost	time (s)	8.0
15	Intersection Capacity Utiliza	tion		44.0%	⊴	J Level o	Service	¥
Chirol and Grain	Analysis Period (min)			15				
	Chitical Lane Groun							

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

Movement   WBI   WBB   NBI   NBB   SBI   SBI		•	/	—	•	۶	<b>→</b>	
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   13   257   391   4   163     100   100   1900   1900   1900     100   100   100   0.95     100   0.95   1.00   0.95     1770   1583   1863   1583   3535     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     1770   1583   1863   1583   3355     1770   1583   1863   1583   3355     1770   1583   1863   1583     181   1211   211   211     207   3   279   241   0   130     207   3   279   241   0   130     208   211   211   211   211     209   205   0.57   0.05     200   0.05   0.05   0.05     200   0.05   0.05   0.05     200   0.05   0.07   0.05     200   0.05   0.07   0.05     200   0.05   0.07   0.05     200   0.05   0.07   0.05     200   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   0.95     100   100   100   0.95     170   1583   1863   1583   3535     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   190   100   100     170   170   170   170     170   170   171   271   271     170   170   170   170     170   170	Lane Configurations	*	*	*	*-		44	
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	
140 40 40 40 40 40 40 100 100 100 100 10	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1.00 1.00 1.00 0.95 1.00 0.85 1.00 0.95 1.00 0.85 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 0.95 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 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	
100 0.85 100 0.85 100 0.85 100 0.85 100 0.85 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	8.	9.	1.00	9.		0.95	
1770   1583   1863   1583   3535   1770   1583   1863   1583   3535   1770   1583   1863   1583   3363   1770   1583   1863   1583   3363   1770   1583   1863   1583   3363   1770   1583   1863   1583   3363   1770   1583   1863   1583   1363   1770	Ft	1.00	0.85	1.00	0.85		1.00	
1770   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   1363     1770   170   170   170     1770   170   170   170     170   170   17	Flt Protected	0.95	1.00	1.00	1.00		1:00	
1770   1583   1863   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 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Satd. Flow (perm)	1770	1583	1863	1583		3363	
h) 207 14 279 425 4 177 b) 207 3 279 241 0 181 Prof. Perm NA Perm Perm NA Perm Porm NA Perm Perm NA Perm NA Perm Perm NA P	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
h) 0 11 0 184 0 0 181 Prot Perm NA Per	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 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 0.02 0.015 0.05 0.54 0.01 0.26 0.27 0.09 0.54 0.01 0.26 0.27 0.09 0.54 0.01 0.26 0.27 0.09 0.10 1.00 1.00 1.00 1.00 0.10 1.00 1.00	Turn Type	Prot	Perm	NA	Perm	Perm	NA	
S   S   S   S   S   S   S   S   S   S	Protected Phases	∞		2			9	
8) 8.1 8.1 2.1.1 2.1.1 8) 8.1 8.1 2.1.1 2.1.1 2.1.1 0.02 0.22 0.57 0.57 0.57 4.0 4.0 4.0 4.0 4.0 3.0 3.0 3.0 3.0 3.0 0.03 3.4 1056 897 1907 0.04 0.05 0.05 0.05 0.01 0.26 0.27 0.09 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 6 0.7 0.1 1.4 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	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	
38 34 1056 897 1907  385 344 1056 897 1907  301 0.05 0.15  0.00 0.05 0.05  129 114 4.1 4.1 3.7  1.00 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  1.15 A A A A A  1.15 A A A A  1.16 A A A A A  1.17 A A A A A  1.18 A A A A  1.19 A A A A  1.10 0.06 0.7 0.1  1.10 0.06 0.7 0.1  1.11 A A A A A  1.12 A B A A  1.14 A A A A A  1.14 A A A A A  1.15 A A A  1.15 A A A  1.15 A A A  1.16 A A A  1.17 A A A A  1.18 A A A  1.19 A A A  1.10 A A  1.10 A A A  1.10 A A  A A  A A  A A  A A  A A  A A  A	Clearance Time (s)	4.0	4.0	4.0	4.0		4.0	
385 344 1056 897 1907  c0.12  0.00  0.00  0.01  0.00  0.01  1.29  1.14  1.14  1.14  1.15  1.15  1.14  1.14  1.14  1.15	Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
c0.12 0.05 c0.15 0.05 0.05 0.04 0.01 0.05 0.05 0.01 0.05 0.07 0.09 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)	385	344	1056	897		1907	
0.00 c0.15 0.05   0.05   0.05   12.9	v/s Ratio Prot	c0.12		0.15				
0.54 0.01 0.26 0.27 0.09 12.9 11.4 4.1 4.1 3.7 1.00 1.00 1.00 1.00 2 1.4 0.0 0.6 0.7 0.1 0.0 1.4.2 1.4 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 14.2 4.8 3.8 Copposity axio 6.5 HCM 2000 Level of Service o Capacity axio 37.2 Sum of lost time (s) 1.0 Utilization 35.5% (CU Level of Service o Capacity axio 35.5% (CU Level of Service o Capacit	v/s Ratio Perm		0.00		c0.15		0.05	
12.9 11.4 4.1 4.1 3.7 12.9 11.4 4.1 4.1 3.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	v/c Ratio	0.54	0.01	0.26	0.27		0.09	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	12.9	11.4	4.1	4.1		3.7	
2 1.4 0.0 0.6 0.7 0.1 14.3 11.4 4.7 4.8 3.8 14.2 4.8 A A A 14.2 4.8 3.8 14.2 4.8 3.8 14.2 4.8 3.8 14.3 1.4 4.7 4.8 3.8 14.2 4.8 3.8 14.3 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	Progression Factor	9:	9.	1.00	9.		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  Copposity ratio 0.34 Cultication 35.5% (OU Level of Service 15) 15	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	
742 48 3.8  9 A A A  Orapacity ratio 0.34 Sum of lost time (s) (U Level of Service 15) (U Level of Ser	Level of Service	മ	В	⋖	V		A	
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 Sum of lost time (s) 37.2 Sum of lost time (s) 15.5% ICU Level of Service 15	Approach LOS	മ		⋖			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	H	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 Capac	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 Utilizal	tion		35.5%	ಶ	J Level o	f Service	¥
	Analysis Period (min)			15				
c Critical Lane Group	c Critical Lane Group							

KHA HCM Signalized Intersection Capacity Analysis

Synchro 9 Report Page 3

## MOVEMENT SUMMARY

**∀ Site: 1**Roundabout
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	LOSA	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	B	EBT	ב		TOW						1	
ane Configurations			בסג	WBL		WBR	NBL	NBT	NBR	SBL	SBT	SBR
(day) samily)	44	44	*	14	₩	*	4	₩	K	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	2.8	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	rm 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		
<b>√</b>	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	†	<b>/</b>	<b>&gt;</b>	ţ	√	•	<b>-</b>	•	۶	-	•
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.	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   1730	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         1.0           2.0         4.1         2.2         2.2         2.2         7.6         3.5         3.5         3.5         3.	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		<del>-</del>	9		က	∞	<del>-</del>	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.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  2.0 3.5 2.0 3.0  2.0 3.5 2.0 2.0  4.42 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  1.00 1.00	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.0 C.0 C.0 C.0 C.0 C.0 C.0 C.0 C.0 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 0.59 (2.30 sum of lost time (s) 82.0% (CU Level of Service 15	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

Delay, d2   33   0.0   0.4   0.2   0.3     Delay, (s)	2 3.3 0.0 0.4 0.2 0.3 10.7 4.7 10.5 9.8 10.5 10.6 A B A B B 10.6 B A B B 10.8
No.   No.	No. 10
y         B         B           y         B         B           elay         10.4         HCM 2000 Level of Service           below         10.4         HCM 2000 Level of Service           h (s)         36.0         Sum of lost time (s)           h (s)         36.0         Sum of lost time (s)           Ublification         60.6%         ICU Level of Service	v         10.5         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         C         Level of Service         C         C         D         C         C         Level of Service         C         C         D         C         C         Level of Service         C         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         C         D         D         C         D         C         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D <th< td=""></th<>
10.4 HCM 2000 Level of Service 0.60 Sum of lost time (s) 60.6% ICU Level of Service 1.5	10.4 HCM 2000 Level of Service 0.60 Sum of lost time (s) 60.6% ICU Level of Service
10.4 HCM 2000 Level of Service 0.60 Sum of lost time (s) 60.6% ICU Level of Service 1.5	10.4 HCM 2000 Level of Service 0.60 Sum of lost time (s) 60.6% ICU Level of Service
0.60 36.0 Sum of lost time (s) 60.6% ICU Level of Service 45.	0,60 36.0 Sum of lost time (s) 60.6% ICU Level of Service
h (s) 36.0 Sum of lost time (s) Utilization 60.6% ICU Level of Service	h (s) 36.0 Sum of lost time (s) Utilization 60.6% ICU Level of Service
Utilization 60.6% ICU Level of Service	Utilization 60.6% ICU Level of Service
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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 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								AreEBNB_CroWBSB_CreF_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 <sup>E</sup>	n WBSB_	BL EBNB_Spe\	VBSB_Sp <sub>EBNB</sub> 52 Low	_Blo 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	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		CHOCHE OF	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		, i	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		<b>A</b> 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-ı	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							
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2 1	3	1			3						2	1	3 1	1						3							
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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				1	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
	1				3									0					3			0	0
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	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
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