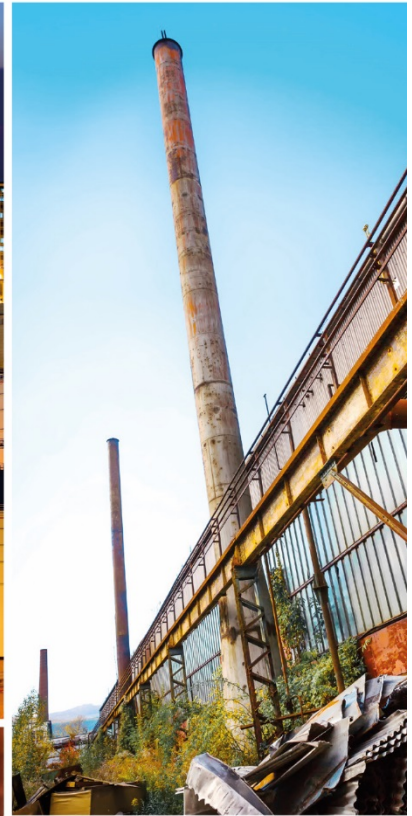


APPENDIX G
Traffic Impact Analysis



Port of Long Beach Carnival Cruise Line Terminal Improvement Project Traffic Impact Analysis Report (TIAR)

Final Report



REPORT SIGNATURE SHEET

This Engineering and Traffic Study has been prepared under the direction of the following Professional Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.



Jay D. Walter, PE
Registered Civil Engineer

April 5, 2019

Date

Prepared by Kathryn Savoy Kleinschmidt, Professional Traffic Operations Engineer (PTOE),
Certificate # 3871.



Executive Summary

The Port of Long Beach Carnival Improvement Project will have increased project trips on Saturday with the larger vista-class cruise ship, the Carnival Panorama (Panorama). With the Panorama coming into rotation in December 2019 by replacing the current Carnival Splendor (Splendor) cruise ship, improvements to the existing cruise terminal are proposed. These improvements include:

- extension of the existing passenger bridge system;
- additional high-capacity mooring dolphins;
- improvement and maintenance dredge activity in the harbor;
- replacement of existing foam-filled fenders;
- expansion of the existing parking garage; and,
- possible reconfiguration of traffic leasehold lanes.

In addition to the Carnival improvements, the City of Long Beach plans to implement bicycle and pedestrian improvements in the study area. The South Waterfront / Pier J improvements will directly serve the Long Beach Cruise Terminal (LBCT) by providing a shared use path adjacent to Windsor Way and a crosswalk on the north leg on Windsor Way and Queens Highway. This project's construction is estimated to start in late 2019. In addition, the free public bus service that currently serves the Queen Mary and links to several destinations in Downtown Long Beach, including the Long Beach Transit Hub, will still be available for passengers and employees of Carnival Cruise Line.

Based on the current construction conditions with the Gerald Desmond Bridge Replacement Project (GDBRP), the study locations and traffic patterns are different in the Existing Conditions and Opening Year analysis around Interstate 710 (I-710) interchange with Pico Avenue and W Ocean Boulevard. GDBRP construction is expected to be complete by end of 2019.

In the Existing Conditions analysis, there are several detours, closures, and temporary intersection configurations with the discontinuous I-710 through the interchange at Pico Avenue and W Ocean Boulevard. For the Existing Conditions analysis, all intersections and mainline and ramp segments, operate with an acceptable level of service (LOS) C or better except for the intersection at Pico Avenue and W Ocean Boulevard. In the Saturday p.m. peak hour, this intersection incurs a significant impact with the addition of project trips (Existing Plus Project Scenario). This is due to the existing conditions of the intersection straddling the threshold between LOS D and LOS E, and the addition of the project trips which causes the existing LOS D to deteriorate to LOS E. In addition, all eastbound and westbound traffic for W Ocean Boulevard and I-710 northbound traffic is being routed through this intersection due to the closures with the construction of GDBRP.

In order to mitigate this significant impact, it is recommended that congestion management strategies be put into place if the detour and closure conditions are still in place when the Panorama begins the cruise schedule. These strategies could include traffic signal timing modifications and monitoring of traffic during peak hours for signal adjustments, grouping passenger trips to/from the airport by buses, and alternative transportation options. With the direct connection to the Long Beach Transit Hub via current bus service to



the Queen Mary terminal, many passengers could benefit in taking transit to the LBCT in avoiding the parking garage fees.

The Opening Year was analyzed with the completed improvements for the GDBRP. In this study scenario, the net increase in project related trips associated with the increased operations of Carnival will not have a substantial impact to the future traffic and capacity of the roadway network. All affected intersections will operate at favorable LOS C or better and all mainline and ramp segments will operate at LOS B or better through the buildout year. This is due to the off-peak period on Saturday and return of I-710 typical freeway conditions.

With the larger ship, an approximate increase of 1,000 passengers is expected on a typical “cruise” event on Saturday. Therefore, to address the additional parking needs, parking garage improvements will include an additional 659 parking stalls. This increased parking should sufficiently meet the current parking demands and provide adequate parking for the additional passengers and crew associated with the Panorama ship. In addition, with the parking garage improvements, there are proposed access changes to benefit the emergency access from the adjacent fire station and heliport pad to the Port of Long Beach.



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- Appendix B Trip Generation Calculations
- Appendix C Traffic Analysis Reports
- Appendix D Collision Summary
- Appendix E Bicycle and Pedestrian Counts
- Appendix F Alternative Transportation Services



1. Introduction

1.1 Purpose and Need

Atkins (prime) and GHD (subprovider) are acting on behalf of Carnival Cruise Line (client) to analyze, design, and achieve permit approval for their proposed expansion of the LBCT at Pier H. This Traffic Impact Analysis Report (TIAR) is necessary to satisfy California Environmental Quality Act (CEQA) requirements.

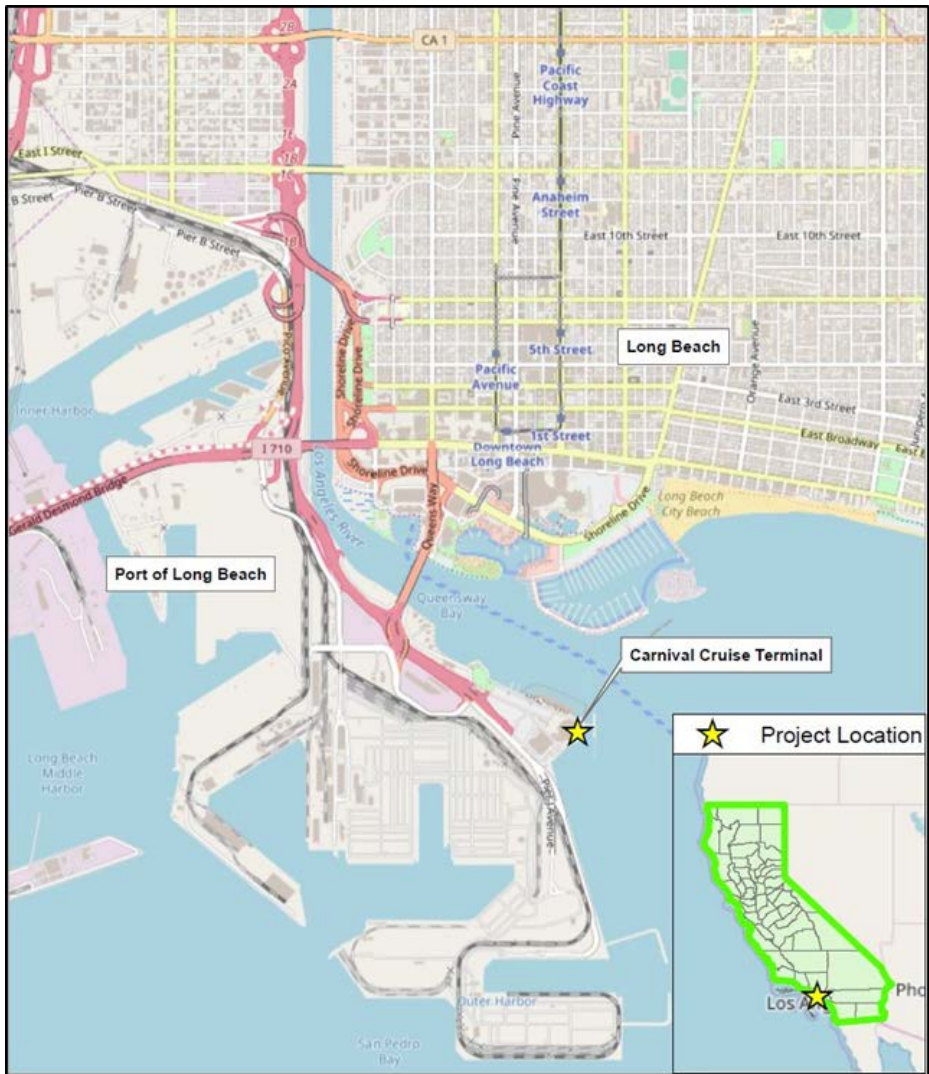
The LBCT in the Port of Long Beach (POLB) requires expansion due to the introduction of a larger vista-class ship, the Panorama. This larger vessel is scheduled to arrive at the LBCT in December 2019. The project will include: (a) extension of the existing passenger bridge system; (b) additional high-capacity mooring dolphins; (c) improvement and maintenance dredge activity in the harbor; (d) replacement of existing foam-filled fenders; (e) expansion of the existing parking garage; and (f) possible reconfiguration of traffic leasehold lanes.

The Panorama cruise vessel will have 4,008 average passenger capacity in comparison to the POLB current largest vessel, the Splendor with 3,012 average passenger capacity. In addition, more employees and service vehicles will be necessary with the larger ship. This overall increase of passengers, employees, and service vehicles will equate to a net increase of 1,093 passenger car equivalent trips on Saturday. The Panorama schedule for the next two years is to port on Saturdays. Carnival prefers to have the larger ship port on the weekend and even though they currently have no plans to change the day from Saturday, the only other possible day would be a Sunday. This will have less traffic impacts than a weekday.

1.1 Project Background

The LBCT is an existing facility with cruise operations occurring five (5) days a week (Thursday-Monday). As shown in **Figure 1.1**, this project is located off the Queens Highway in Pier H which is south of Interstate 710 (I-710) interchanges with Pico Avenue, Ocean Boulevard, and Harbor Scenic Drive. Adjacent to the LBCT is the tourist destination and hotel, the Queen Mary.

Figure 1.1 Project Location Map



1.1.1 Long Beach Cruise Terminal Schedule

The current Carnival schedule for December 2018 is shown in **Table 1.1**. In December 2018, cruise vessels docked five days a week on Thursday, Friday, Saturday, Sunday, and Monday. Thursday and Friday sailings were 3-day cruises, Sunday and Monday sailings were 4-day cruises, and Saturday is typically 7-day cruises, except December 1st, when the Splendor headed out for a 14-day cruise. Per Carnival, 14-day cruises typically only occur a couple of times a year and are not reflective of a typical cruise week. In addition, a typical cruise month would be similar to December 2018 except there would only be 7 day cruises on Saturday. **Table 2.1** shows that the Splendor docks on Saturday (shown in blue) and the Carnival Imagination (Imagination) docks on Thursday and Sunday (shown in green). Only one ship docks per day.



Table 1.1 Carnival Cruise Line December 2018 Schedule

01-Dec-2018	Sat	Carnival Splendor
02-Dec-2018	Sun	Carnival Imagination
03-Dec-2018	Mon	Carnival Inspiration
06-Dec-2018	Thu	Carnival Imagination
07-Dec-2018	Fri	Carnival Inspiration
09-Dec-2018	Sun	Carnival Imagination
10-Dec-2018	Mon	Carnival Inspiration
13-Dec-2018	Thu	Carnival Imagination
14-Dec-2018	Fri	Carnival Inspiration
15-Dec-2018	Sat	Carnival Splendor
16-Dec-2018	Sun	Carnival Imagination
17-Dec-2018	Mon	Carnival Inspiration
20-Dec-2018	Thu	Carnival Imagination
21-Dec-2018	Fri	Carnival Inspiration
22-Dec-2018	Sat	Carnival Splendor
23-Dec-2018	Sun	Carnival Imagination
24-Dec-2018	Mon	Carnival Inspiration
27-Dec-2018	Thu	Carnival Imagination
28-Dec-2018	Fri	Carnival Inspiration
29-Dec-2018	Sat	Carnival Splendor
30-Dec-2018	Sun	Carnival Imagination
31-Dec-2018	Mon	Carnival Inspiration

1.1.2 Proposed Schedule with Project Improvements

In December 2019, the client proposes to replace one of their existing cruise vessels, the Splendor, with the larger capacity cruise vessel, the Panorama, which will result in a net increase in trips on Saturday. As shown in **Table 1.2**, the Imagination will continue to dock on Thursday, the Carnival Miracle (Miracle) will have limited calls based on the temporary situation in covering the Saturday cruises while the Splendor is removed from rotation and the Panorama is put into rotation. Currently, there are no plans for the Miracle to berth at the LBCT beyond 2019.



Table 1.2 Proposed Schedule with Project

Vessel	Passenger Capacity	2018					Vessel Trips
		Thursday	Friday	Saturday	Sunday	Monday	
Inspiration	2,054		x			x	103
Imagination	2,056	x			x		104
Miracle	2,124			x ¹			2
Splendor	3,012			x ²			46
Vessel	Passenger Capacity	2019					Vessel Trips
		Thursday	Friday	Saturday	Sunday	Monday	
Inspiration	2,054		x			x	105
Imagination	2,056	x			x		101
Miracle	2,124			x ¹			7
Splendor	3,012			x ²			38
Panorama	4,008			x ³			6
Vessel	Passenger Capacity	2020					Vessel Trips
		Thursday	Friday	Saturday	Sunday	Monday	
Inspiration	2,054		x			x	104
Imagination	2,056	x			x		104
Panorama	4,008			x ³			51

¹ The Miracle will only serves POLB on a temporary basis on Saturday. When the Splendor ends service (10/5/19) and the Panorama begins typical service (12/14/2019) the Miracle will be in operation from 10/12-11/30/19 and there are no plans for the Miracle to be in operation in 2020.

² The Splendor is to end service on October 5, 2019.

³ The Panorama is to begin typical service on Saturday, December 14, 2019 and replace the Splendor vessel. There are no plans for the Miracle to dock in 2020.

Per Long Beach ship calls scheduled, the Splendor is to end service on October 5, 2019, the Miracle will be in operation from October 12 – November 30, 2019 for a temporary situation before the Panorama begins typical service on Saturday, December 14, 2019. Before the typical service begins for the Panorama, a special 3-day cruise is scheduled on December 11th. This special 3-day cruise was not modeled in the traffic analysis as it is a one-time introductory cruise for the new vista class ship.

Currently, the Miracle only occasionally docks at the POLB (2 vessel calls) and there are four (4) vessels for this terminal (Inspiration, Imagination, Miracle, and Splendor). In 2019, there will be five (5) vessels (Inspiration, Imagination, Miracle, Splendor, and Panorama). In 2020, it will reduce to three (3) vessels (Imagination, Inspiration, and Panorama). The Inspiration will still dock on Friday and Monday, Imagination will still dock on Thursday and Sunday, and Panorama will dock on Saturday. Therefore, the weekday cruise ships will be the same for 2018 to 2020 but Saturday will have a net increase of project trips from 2018 to 2020 with the Panorama replacing the Splendor.

1.2 Governing Guidelines

Based on the three reviewing agencies, City of Long Beach (lead agency), Port of Long Beach, and Caltrans there will be various guidelines to follow with the preparation of this TIAR. The different guidelines are discussed below.



1.2.1 City of Long Beach Traffic Impact Analysis Guidelines

The City of Long Beach Traffic Impact Analysis (TIA) Guidelines states the following:

- Intersections at which the project contributed a total of 50 or more trips per peak hour should be included.
 - However, additional intersection and roadway segment can be added to the study per the City Traffic Engineer's recommendation.
- Traffic counts need to be performed within 12 months of the study and counts should be conducted during a non-holiday weekday (Tuesday, Wednesday, or Thursday) for a.m. and p.m. peak two hour periods. Also, midday and weekend analysis can be required.
- Traffic Analysis Measure of Effectiveness (MOE) will follow the Intersection Capacity Utilization (ICU) method with the Volume to Capacity (V/C) ratios recommended per the TIA guidelines.
- Scenarios that need to be analyzed include:
 - Existing
 - Existing + Project
 - Project Build-Out Year + Cumulative Conditions
 - Project Build-Out Year + Cumulative Conditions + Project

In addition, the City of Long Beach has a Transportation/Traffic checklist for a Mitigated Negative Declaration (MND). This checklist must be completed and turned in with the TIAR in addressing the impacts to the applicable plan, ordinance or policy for MOEs in the performance of the circulation system, conflict with applicable CMP program, result in change in air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, and conflict with adopted polices, plan, and programs with alternative transportation systems (transit, pedestrians, and bicycles facilities) and overall safety of those facilities.

1.2.2 2010 Congestion Management Program (CMP) – Los Angeles County Metropolitan Transportation Authority

Since the project study area is within Los Angeles (LA) County, the governing congestion management program is the 2010 CMP for LA County. This CMP was adopted in 1992 in compliance with Proposition 111 in 1990 and has been periodically updated. The purpose of the CMP is to address “*the impact of local growth on the regional transportation system,*” page 1, 2010 CMP. The CMP highway and roadway system in LA County is currently experiencing heavy congestion on approximately 50% of freeways and 20% of major arterials in the morning and evening commute periods. During a typical weekday (Tuesday through Thursday), the a.m. peak hour generally falls within 7-9 a.m., and the p.m. peak hour is from 4-6 p.m. The CMP does not address weekend analysis specifically, as it is considered to be an off-peak period.

The 2010 CMP uses the ICU method to determine signalized intersection operations. The ICU method is consistent with the Highway Capacity Manual (HCM). Interstate 710 (I-710) is part of the 2010 CMP



monitoring requirements and Caltrans provides the freeway monitoring results for uninterrupted facilities (i.e. freeways, multilane, and two-lane highways).

For CMP purposes, a substantial change in freeway and arterial intersection performance is defined as an increase or decrease in demand and/or volume to capacity to ratio of at least 0.10, accompanied by a change in LOS.

1.2.3 Caltrans Guidelines

The Caltrans, *Guide for the Preparation of Traffic Impact Studies, December 2002* and guidelines and direction from Caltrans District 7 staff were followed.

Based on these guidelines, the traffic analysis for the freeway mainline segments, ramps, and any weave areas were based on HCM 6th Edition methodology. In addition, off-ramps queues before a ramp terminal will be analyzed. This entailed taking the 95th percentile queues and comparing them to the ramp storage length to see if the queue length exceeded 85% of the available ramp storage.

1.2.4 CEQA Guidelines

The TIAR will follow a hybrid of the guidelines in the 2011 and 2018 CEQA Guidelines. In both guidelines, we will follow Appendix G Environmental Checklist. Per the checklist, this TIAR needs to address whether the traffic generated by the site improvements will have a substantial increase in relation to the existing traffic load and capacity of the roadway network. This can be quantified by a substantial increase in vehicle trips, V/C ratio, congestion at intersections, or vehicle miles traveled.

1.3 Methodology

1.3.1 Memorandum of Assumptions

A Memorandum of Assumptions was sent to the City of Long Beach for approval of the overall process and trip generation and distribution methodology. This document was also coordinated with the Port of Long Beach and Caltrans for their comments and feedback. All comments were addressed and the finalized document was submitted on January 9, 2019.

1.3.2 Study Scenarios

At a meeting with the stakeholders (City of Long Beach, Port of Long Beach, and Caltrans) on December 12, 2018 at the Caltrans District 7 headquarters in Los Angeles, the study scenarios were discussed and agreed to include the following four conditions:

- Existing Conditions (2018) without Project
- Existing Conditions (2018) with Project
- Opening Year (2020) Cumulative Conditions without Project
- Opening Year (2020) Cumulative Conditions with Project



1.3.3 Study Peak Hours

Based on the larger cruise vessel, Panorama only docking on Saturday, there will only be an increase in project trips on Saturdays. Therefore, the Saturday peak hours for the LBCT will be analyzed.

1.3.3.1 Long Beach Cruise Terminal Peak Hours

Based on passenger data from Carnival, the a.m. peak hour is from 9-10 a.m. and the p.m. peak hour is from 1-2 p.m. on Saturday. A typical schedule has the ship arriving in the morning with passenger disembarkation occurring between 7 to 11 a.m. with the peak disembarkation from 9-10 a.m. Passenger embarkation is staggered with passengers being assigned a specific arrival time. Check in begins at 10:30 a.m. with some passengers arriving as early as 9 a.m. The check in process is complete by 3 p.m. with the peak embarkation from 1-2 p.m.

1.4 Previous Studies

There are two main projects within the study area. The Gerald Desmond Bridge Replacement Project and the I-710 Corridor Project.

The Gerald Desmond Bridge Replacement Project is currently in construction and impacting the study area roadways. There are road closures and detours in the vicinity of I-710 interchanges with Pico Avenue and W Ocean Boulevard. The construction conditions will be reflected in the Existing Conditions analysis and the ultimate design will be captured in the Opening Year Conditions.

The I-710 Corridor Project will be briefly mentioned below as there are currently no impacts from this project. Also, the proposed improvements will not be completed in the Opening Year.

1.4.1 Gerald Desmond Bridge Replacement Project

The Gerald Desmond Bridge Replacement Project is major construction project with stakeholders to include Caltrans, Metro, Port of Long Beach, and the US Department of Transportation. On August 9, 2010 the Harbor Commission adopted the final Environmental Impact Report (EIR) for the project. On November 3, 2010 the California Transportation Commission approved the design build process and on January 8, 2013 the Gerald Desmond Bridge Replacement Project had its official groundbreaking ceremony.

Per the GDBRP website, this project is currently under construction with a tentative completion date of the end of 2019. The long-term closures are as follows:

- WB Ocean Boulevard to NB I-710 Freeway Connector Closure
- WB Ocean Boulevard at Pico Avenue
- EB Ocean Boulevard
- SB I-710 Freeway to WB Ocean Boulevard Connector Closure

Long-term closures are defined as permanent closures until the new roadway is complete and open to traffic. These long-term closures includes detours of traffic to at grade intersections. The traffic headed to Terminal Island on I-710 SB must exit at Pier BCDE / Terminal Island (detour signage off I-710) and travel



southbound along Pico Avenue through at grade intersections before being able to ramp back onto the I-710 toward the Gerald Desmond Bridge. In addition, all traffic headed from Gerald Desmond to I-710 NB have to exit the freeway and go through the at-grade intersection at Pico Avenue and W Ocean Boulevard to be able to ramp back onto I-710 from the loop ramp at the 9th Street interchange. This break of the I-710 interstate is also affecting the direct connection between the I-710 and W Ocean Boulevard. All eastbound and westbound traffic on W Ocean Boulevard is currently routed through at-grade intersections before ramping back to the desired roadway.

1.4.2 I-710 Corridor Project

The I-710 Corridor Project encompasses I-710 within the study area. For this TIAR there was no direct impacts with the I-710 Corridor Project that needed to be taken into account with our analysis. The I-710 Corridor Project is currently in the Record of Decision/Notice of Determination phase, along with additional parallel activities that include working groups, coordination and studies related to various policy proposals

2. Existing Conditions

The existing LBCT currently operates five days a week and has a parking garage on site. Field observations included viewing the current drop off, parking, and site circulation, along with current traffic patterns associated with the detours and closures from the Gerald Desmond Bridge Replacement Project. For ease, it will be assumed that I-710 is running north-south through the project's study area.

2.1 Field Observations

As shown in **Figure 2.1**, the LBCT serves one cruise vessel per day. The existing terminal has a passenger bridge that extends between the ship and the dome. This set up funnels all passengers through the dome and back to the parking garage or location for pick up / drop off.

Figure 2.1 Long Beach Cruise Terminal



After entering the Carnival ticket gates, the first intersection is at Queens Highway and Windsor Way. As shown in **Figure 2.2**, this all-way stop intersection has overhead signage that directs traffic for parking to the left and drop-off / pick up traffic to stay straight. There is also ground mounted way-finding signage on both sides of the intersection with the same message. Furthermore, if you continue through the intersection there are emergency services with a fire station and heliport site.

Figure 2.2 Queens Highway at Windsor Way – Way-Finding Signage



Field visits were conducted on October 25, 2018 and January 15, 2019, and it was noted that there were different routes because of the Gerald Desmond Bridge Replacement project. According to the Gerald Desmond Bridge Replacement Project website, the Pico Avenue off-ramp from I-710 and W Ocean Boulevard was closed permanently on November 30, 2018. These closure means that traffic traveling east from the Gerald Desmond Bridge will still be funneled onto Pico Avenue and there will be no direct

connection to/from W Ocean Boulevard to the Gerald Desmond Bridge. **Figure 2.3** shows the westbound traffic from W Ocean Boulevard off-ramp to the signalized intersection at Pico Avenue with the traffic from the Gerald Desmond Bridge/eastbound W Ocean Boulevard meeting on the opposite side.

Figure 2.3 WB W Ocean Boulevard Off-Ramp with Pico Avenue



Figure 2.4 shows the opposite approach from eastbound W Ocean Boulevard / Gerald Desmond Bridge. The current lane geometry includes two exclusive left turn lanes with a shared left-right turn lane due to the heavy traffic volumes for I-710 northbound. All traffic from the Gerald Desmond Bridge to I-710 northbound must exit at Pico Avenue and head north on Pico Avenue to take the 9th Street on-ramp to I-710.

Figure 2.4 EB W Ocean Boulevard / I-710 NB Off-Ramp to Pico Avenue





As shown in **Figure 2.5**, all traffic headed to the Gerald Desmond Bridge / SR 47 from SB I-710 must exit at Terminal Island/ Pico Avenue / Piers C-T. After taking the loop ramp you continue to stay to the right at the intersection with 9th Street and Pico Avenue. The traffic continuing on SB I-710 then free flows onto S Harbor Scenic Drive.

Figure 2.5 9th Street at Pico Avenue Intersection – Detour to I-710



2.2 Study Locations

Traffic study locations were selected based on circulation patterns and significance in the network from the project's trip generation and trip distribution. As shown in **Figures 2.6 and 2.7** and outlined below, the study locations include intersections, mainline segments, ramps, and cruise terminal access points. Each location was evaluated for existing conditions and the ultimate configuration.

With the current construction from the Gerald Desmond Bridge Replacement Project, the I-710 interchange with W Ocean Boulevard, Pico Avenue, and Harbor Scenic Drive have a temporary configuration. This temporary configuration is necessary to facilitate the new bridge approaches and direct connector ramps to the existing roadway systems. The study locations were evaluated for the existing conditions based on the temporary configuration and the ultimate configuration for the areas impacted by the bridge project.

2.2.1 Existing Year – Construction Conditions

The existing study intersections, mainline and ramp segments are listed below and graphically displayed in **Figure 2.6 – Existing Year Study Locations**. For ease, the number below is the same as the numbering throughout the study.



Study Intersections:

1. Pico Avenue / WB W Ocean Boulevard Off-Ramp / I-710 Ramps
2. Pico Avenue / W Ocean Boulevard On-Ramp / Pier E Street
3. Golden Shore / W Ocean Boulevard
4. Queens Way / W Ocean Boulevard
5. Chestnut Place / Queens Way Ramps / W Shoreline Drive
6. Pico Avenue / S Harbor Scenic Drive On-Ramp
7. Pico Avenue / Pier G Avenue at W Van Camp St / Harbor Plaza
8. Harbor Plaza / S Harbor Scenic Drive Off-Ramps / Queens Way Off-Ramps
9. Queensway Drive / Queens Highway / Harbor Plaza
10. S Harbor Scenic Drive / Harbor Plaza
11. Queens Highway / Windsor Way

Study Mainline Segments:

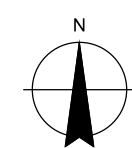
12. I-710 North of S Harbor Scenic Drive Ramps
14. S Harbor Scenic Drive – South of W Ocean Boulevard Off-Ramp
15. I-710 West of Pico Avenue Off-Ramp
20. S Harbor Scenic Drive – North of Queens Way
22. SB S Harbor Scenic Drive – South of Queens Way On-Ramp
24. NB Queensway Drive– South of Queens Way Off-Ramp
25. SB Queens Hwy – North of Carnival / Queen Mary Entrance

Study Ramp Segments:

13. NB S Harbor Scenic Drive Off-Ramp to WB W Ocean Boulevard
16. NB I-710 Off-Ramp to Pico Avenue
17. Pico Avenue On-Ramp to SB I-710
18. W Ocean Boulevard Off-Ramp to Pico Avenue
19. Pico Avenue On-Ramp to W Ocean Boulevard
21. Queens Way Off-Ramp to SB S Harbor Scenic Drive
23. Queensway Drive Off-Ramp to Queens Way

STUDY INTERSECTIONS, RAMPS AND MAINLINE

- | STUDY INTERSECTIONS | STUDY RAMP SEGMENTS | STUDY MAINLINE SEGMENTS |
|--|---|---|
| ① PICO AVE/ WB W OCEAN BLVD OFF-RAMP/ I-710 RAMPS | ▲13 NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLVD | ■12 I-710-NORTH OF S HARBOR SCENIC DR RAMPS |
| ② PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST | ▲16 NB I-710 OFF-RAMP TO PICO AVE | ■14 S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP |
| ③ GOLDEN SHORE/ W OCEAN BLVD | ▲17 PICO AVE ON-RAMP TO SB I-710 | ■15 I-710-WEST OF PICO AVE OFF-RAMP |
| ④ QUEENS WAY/ W OCEAN BLVD | ▲18 W OCEAN BLVD OFF-RAMP TO PICO AVE | ■20 S HARBOR SCENIC DR-NORTH OF QUEENS WAY |
| ⑤ CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR | ▲19 PICO AVE ON-RAMP TO W OCEAN BLVD | ■22 SB S HARBOR SCENIC DR-SOUTH OF QUEENS WAY ON-RAMP |
| ⑥ PICO AVE/ S HARBOR SCENIC DR ON-RAMP | ▲21 QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR | ■24 NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP |
| ⑦ PICO AVE/ PIER G AVE/ W VAN CAMP ST/ HARBOR PLAZA | ▲23 QUEENSWAY DR OFF-RAMP TO QUEENS WAY | ■25 SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE |
| ⑧ HARBOR PLAZA/ S HARBOR SCENIC DR OFF-RAMPS/ QUEENS WAY OFF-RAMPS | | |
| ⑨ QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA | | |
| ⑩ S HARBOR SCENIC DR/ HARBOR PLAZA | | |
| ⑪ QUEENS HWY/ WINDSOR WAY | | |



Carnival Cruise Long Beach Cruise Terminal Improvement Project
Existing Condition
 Study Intersections, Ramps and Mainline Segments

Project No. 11183495
 Report No. RPT.01
 Date 4/5/2019

FIGURE 2.6



2.2.2 Opening Year – Ultimate Conditions

With the reconfiguration of the I-710 at S Harbor Scenic Drive / Ocean Boulevard and Pico Avenue interchange there will be different study intersections and mainline and ramp segments when compared to the current temporary configuration. In addition, traffic movement and patterns will change with the new configuration. Listed below and displayed on **Figure 2.7 – Opening Year Study Locations** are the study intersections and mainline and ramp segments. For ease in the naming convention of I-710 direction, all movements will be referred to as NB or SB. Also, the numbers will coincide with the study graphics. As shown below, there is a new intersection with the proposed improvement (1A). Also, the intersection at Pico Avenue and W Ocean Boulevard changes configuration with the improvements.

Study Intersections:

- 1A. Pico Avenue / I-710 SB On-Ramp (new intersection due to improvements)
1. Pico Avenue / WB W Ocean Boulevard Off-Ramp
2. Pico Avenue / I-710 NB Off-Ramp / Pier E St
3. Golden Shore / W Ocean Boulevard
4. Queens Way / W Ocean Boulevard
5. Chestnut Place / Queens Way Ramps / W Shoreline Drive
6. Pico Avenue / S Harbor Scenic Drive On-Ramp
7. Pico Avenue / Pier G Avenue at W Van Camp St / Harbor Plaza
8. Harbor Plaza / S Harbor Scenic Drive Off-Ramps / Queens Way Off-Ramps
9. Queensway Drive / Queens Highway / Harbor Plaza
10. S Harbor Scenic Drive / Harbor Plaza
11. Queens Highway / Windsor Way

Study Mainline Segments:

12. I-710 North of S Harbor Scenic Drive Ramps
14. S Harbor Scenic Drive – South of W Ocean Boulevard Off-Ramp
15. I-710 West of Pico Avenue Off-Ramp
20. S Harbor Scenic Drive – North of Queens Way
22. SB S Harbor Scenic Drive – South of Queens Way On-Ramp
24. NB Queensway Drive – South of Queens Way Off-Ramp
25. SB Queens Hwy – North of Carnival / Queen Mary Entrance
28. I-710 – North of Pico Avenue On-Ramp



30. I-710 – South of Pico Avenue On-Ramp

Study Ramp Segments:

- 13. NB S Harbor Scenic Drive Off-Ramp to WB W Ocean Boulevard
- 21. Queens Way On-Ramp to SB S Harbor Scenic Drive
- 23. Queensway Drive Off-Ramp to Queens Way
- 26. SB I-710 Off-Ramp to S Harbor Scenic Drive
- 27. S Harbor Scenic Drive On-Ramp to NB I-710
- 29. Pico Avenue On-Ramp to SB I-710
- 31. WB W Ocean Boulevard Off-Ramp to Pico Avenue
- 32. Pico Avenue On-Ramp to EB W Ocean Boulevard
- 33. NB I-710 Off-Ramps to W Ocean Boulevard / Pico Avenue
- 34. SB I-710 Off-Ramp to W Ocean Boulevard
- 35. NB I-710 Off-Ramp to W Ocean Boulevard / Pico Avenue

STUDY INTERSECTIONS, RAMPS AND MAINLINE

STUDY INTERSECTIONS

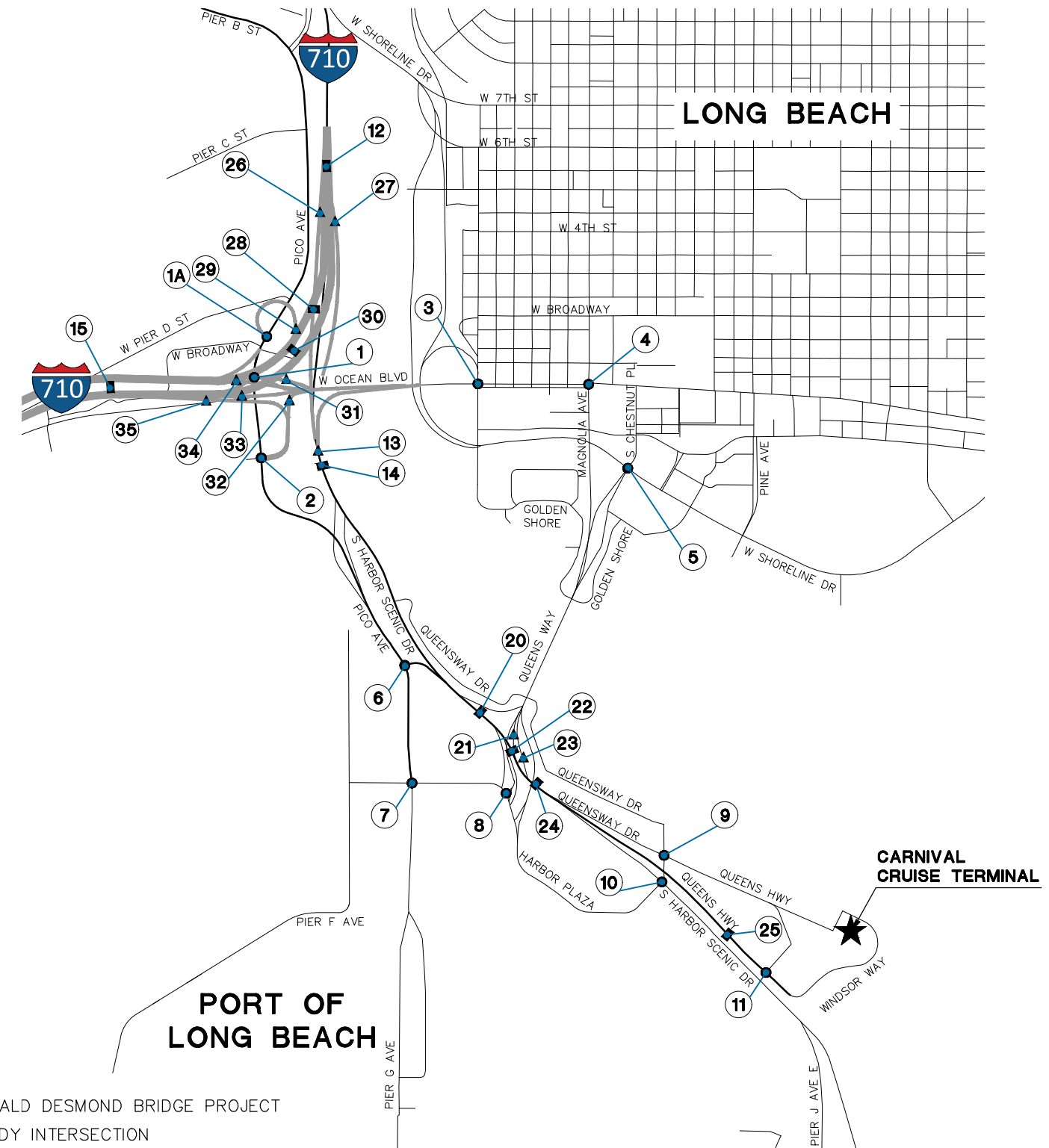
- 1A PICO AVE/ I-710 SB ON-RAMP
- 1 PICO AVE/ WB W OCEAN BLVD OFF-RAMP
- 2 PICO AVE/ I-710 NB OFF-RAMP/ PIER E ST
- 3 GOLDEN SHORE/ W OCEAN BLVD
- 4 QUEENS WAY/ W OCEAN BLVD
- 5 CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR
- 6 PICO AVE/ S HARBOR SCENIC DR ON-RAMP
- 7 PICO AVE/ PIER G AVE/ W VAN CAMP ST/ HARBOR PLAZA
- 8 HARBOR PLAZA/ S HARBOR SCENIC DR OFF-RAMPS/ QUEENS WAY OFF-RAMPS
- 9 QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA
- 10 S HARBOR SCENIC DR/ HARBOR PLAZA
- 11 QUEENS HWY/ WINDSOR WAY

STUDY RAMP SEGMENTS

- 13 NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLVD
- 21 QUEENS WAY ON-RAMP TO SB S HARBOR SCENIC DR
- 23 QUEENSWAY DR OFF-RAMP TO QUEENS WAY
- 26 SB I-710 OFF-RAMP TO S HARBOR SCENIC DR
- 27 S HARBOR SCENIC DR ON-RAMP TO NB I-710
- 29 PICO AVE ON-RAMP TO SB I-710
- 31 WB W OCEAN BLVD OFF-RAMP TO PICO AVE
- 32 PICO AVE ON-RAMP TO EB W OCEAN BLVD
- 33 NB I-710 OFF-RAMPS TO W OCEAN BLVD/ PICO AVE
- 34 SB I-710 OFF-RAMP TO W OCEAN BLVD
- 35 NB I-710 OFF-RAMP TO W OCEAN BLVD/ PICO AVE (COMBINED)

STUDY MAINLINE SEGMENTS

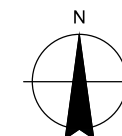
- 12 I-710-NORTH OF S HARBOR SCENIC DR RAMPS
- 14 S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP
- 15 I-710-WEST OF PICO AVE OFF-RAMP
- 20 S HARBOR SCENIC DR-NORTH OF QUEENS WAY
- 22 SB S HARBOR SCENIC DR-SOUTH OF QUEENS WAY ON-RAMP
- 24 NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP
- 25 SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE
- 28 I-710-NORTH OF PICO AVE ON-RAMP
- 30 I-710-SOUTH OF PICO AVE ON-RAMP



LEGEND:

- - GERALD DESMOND BRIDGE PROJECT
- - STUDY INTERSECTION
- ▲ - STUDY RAMP SEGMENT
- - STUDY MAINLINE SEGMENT

STUDY SEGMENTS 16-19 HAVE BEEN PERMANENTLY CLOSED OR MOVED UNDER ULTIMATE CONFIGURATION



Carnival Cruise Long Beach Cruise Terminal Improvement Project
 Opening Year 2020
 Study Intersections, Ramps and Mainline Segments

Project No. 11183495
 Report No. RPT.01
 Date 4/5/2019

FIGURE 2.7



2.3 Existing Traffic Volumes

Existing traffic volumes were derived from traffic counts collected in 2018 and early 2019 and historical traffic data. Existing traffic counts were collected on November 15, 16, and 17, 2018 for areas not under construction. This week was chosen because it was representative of a typical week for Carnival (no 14-day cruises scheduled this week) and not during a holiday week. In addition, weekday traffic counts were provided at the following locations by the listed agency:

- W Ocean Boulevard and Magnolia Avenue/Queens Way (City of Long Beach)
- Harbor Plaza and Pico Avenue (Port of Long Beach)
- Pico Avenue and Pier E Street (Port of Long Beach)
 - During temporary configuration (long-term closure and detour)
- Pico Avenue and Ocean Boulevard (Port of Long Beach)
 - During temporary configuration (long-term closure and detour)

Due to the need to have Saturday traffic counts at the locations listed above, additional traffic counts were collected on Saturday, January 5, 2019. These traffic counts were integrated and balanced as necessary with the other traffic counts. In addition, the study locations effected by the Gerald Desmond Bridge Replacement project were compared to the EIR traffic projections for both the existing configuration and ultimate configuration to capture typical traffic conditions. All existing traffic counts and figures are located in **Appendix A: Traffic Volume Data**.

3. Trip Generation

Trip generation for this project is based on terminal operation information and passenger booking information (with no personal information) provided by the client. Trip generation was conducted for Thursday and Saturday for Existing Conditions 2018 and Opening Year 2020. These two scenarios were then compared to determine the net increase in project trips for the proposed improvements (Opening Year 2020).

The trip generation included the passenger capacity of the vessel, employee and service vehicle trips, average occupancy of vehicles, vehicle type, and transportation mode split. Based on this information, project trips were translated into passenger car equivalents.

As shown in **Table 3.1**, the off-site supply trucks for the proposed project (larger vessel Panorama) have slightly higher peak day and annual one-way trips when compared to the Existing Conditions for the Saturday. The supply trucks begin arriving to unload around 7 a.m., and finish unloading around noon. So the percentages per hour for inbound and outbound trips were distributed accordingly throughout the day and translated per passenger car equivalents for trip generation. All supply vehicles were heavy vehicles



except for the “delivery van.” The delivery van is a light duty truck (LDT) and has the same vehicle characteristics as a passenger car with a passenger car equivalent (PCE) equal to 1.

Table 3.1 Supply Trucks Baseline versus Proposed Project

Analysis Year	Vehicle Type	Vehicle Class	Activity		Offsite
			Peak Day Number of One-Way Trips	Annual Number of One-Way Trips	One-way trip length offsite (mi)
Baseline					
2018	Delivery van (local)	LDT2	3	676	15
2018	Box truck and dumpsters(local)	LHD2	6	832	21
2018	Tractor trailer (local)	HDV	16	2,132	20
2018	Tractor trailer (out of state)	HDV	4	442	2,735
2018	USDA/Foreign waste	LHD2	3	390	25
Proposed Project					
2020	Delivery van (local)	LDT2	3	676	15
2020	Box truck and dumpsters(local)	LHD2	6	910	21
2020	Tractor trailer (local)	HDV	19	2,340	20
2020	Tractor trailer (out of state)	HDV	5	572	2,735
2020	USDA/Foreign waste	LHD2	3	468	25

Table 3.2 displays the number of employees per shift for Existing 2018 Conditions and Opening Year 2020. Shift 1 starts between 7-8 a.m. and Shift 2 starts at 3 p.m. All shifts are 8 hours. Saturday shows the only increase in employees from Existing Conditions to Opening Year.

Table 3.2 Employees per Shift for Carnival POLB Terminal

Day of the Week	2018		2020	
	Shift 1	Shift 2	Shift 1	Shift 2
Sunday	187	4	187	4
Monday	187	4	187	4
Tuesday	0	0	0	0
Wednesday	0	0	0	0
Thursday	194	4	194	4
Friday	194	4	194	4
Saturday	248	4	286	4

Table 3.3 displays the percentage of employees for the different transportation modes to the terminal. These percentages were provided by Carnival and are based on the current employees’ mode of



transportation. These transportation mode splits include public transit, solo driver, and carpool and were used in the trip generation analysis.

Table 3.3 Employee Transportation Mode Split

Mode of Transportation to Terminal	Employees (% of Total)
Public Transit	19%
Solo driver	69%
Carpool	12%

Based on the high percentage of heavy duty trucks in the Port of Long Beach (as high as 80% in certain areas) and additional roadway space needed for trucks, it is important to translate all vehicles into passenger car equivalents (PCEs) before performing capacity analysis for delay and volume to capacity (V/C) ratios. PCEs are used to more accurately reflect the effects heavy vehicles have on the capacity on the roadway. As shown in **Table 3.4**, the PCE factors per vehicle classifications are quantified based on the I-710 Corridor Study RDEIR. These passenger car equivalents were used in translating all vehicle classes into passenger cars. Since autos and light trucks have a PCE of 1.0, they will be shown separately on the subsequent trip generation tables. In addition, all heavy vehicles will be shown as PCEs.

Table 3.4 Passenger Car Equivalent Factors

Vehicle Chassis	Passenger Car Equivalents
Autos and light trucks	1.0
Shared ride 2 person HOV	1.0
Shared ride 2 person Non-HOV	1.0
Shared ride 3 person HOV	1.0
Shared ride 2 person Non-HOV	1.0
Light Heavy-Duty Trucks (Non-Port Trucks)	1.2
Medium Heavy-Duty Trucks (Non-Port Trucks)	1.5
Heavy Heavy-Duty Trucks (Non-Port Trucks)	2.0
Port Autos	1.0
Port Bobtail Trucks	1.2
Port Chassis Trucks	2.0
Port Non-Container Trucks	2.0
Transload Secondary Trucks	2.0
Inrtermodal Domestic Trucks	2.0

Source: Cambridge Systematics - I-710 Corridor Study RDEIR

Currently, Carnival has vessel calls five days a week (i.e. Thursday, Friday, Saturday, Sunday, and Monday). Only one-vessel docks per day with arrival (passenger disembarkation) in the morning and



departure (passenger embarkation) in the afternoon. Passenger check in for embarkation begins around 10:30 a.m. and then the arrival/boarding times are staggered throughout the day and complete by 3 p.m.

Based on three months of recent passenger embarkation and disembarkation data from Carnival in 2018, the percentages of passengers per hour were calculated and used in the trip generation. The peak hours based on percentages of passenger per hour for Thursday were 8:00 a.m. - 9:00 a.m. and 1:00 - 2:00 p.m., and 9:00 a.m. – 10:00 a.m. and 1:00 p.m. – 2:00 p.m. on Saturday.

Table 3.5 and Table 3.6 displays the Existing 2018 and Opening Year 2020 trip generation for a typical Thursday and Saturday respectively. This trip generation is based on vessel passenger capacity, peak hour percentages, employees, supply trucks, and overall passenger car equivalents. Based on passenger room booking information, average occupancy rate of 2.3 passengers for Thursday and 2.2 passengers for Saturday was used in trip generation. More detailed information can be found in **Appendix B - Trip Generation Calculations**.

Table 3.5 Existing 2018 – Trip Generation

Thursday - 2018	Daily	AM Peak (8-9 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	2426	68	400	468	215	35	250
Autos and Light Duty Trucks	2029	27	358	385	198	15	213
Heavy Vehicles (PCEs)	397	41	43	84	17	20	37

Saturday - 2018	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	3557	109	705	814	458	71	529
Autos and Light Duty Trucks	3028	48	639	687	421	32	453
Heavy Vehicles (PCEs)	529	61	66	126	37	39	76

Table 3.6 Opening Year 2020 – Trip Generation

Thursday - 2020	Daily	AM Peak (8-9 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	2426	68	400	468	215	35	250
Autos and Light Duty Trucks	2029	27	358	385	198	15	213
Heavy Vehicles (PCEs)	397	41	43	84	17	20	37

Saturday - 2020	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	4650	144	936	1080	610	94	704
Autos and Light Duty Trucks	3959	64	850	914	561	42	603
Heavy Vehicles (PCEs)	691	80	86	166	49	52	101

In calculating the overall net of project trips generated by the proposed terminal improvements for the larger vessel, the difference between Existing 2018 and Opening Year 2020 Trip Generation were calculated. **Table 3.7** shows the net increase in project trips for Thursday and Saturday. Thursday has no net increase in project trips because there is no change in the passenger capacity, employees, or supply



trucks. However, Saturday does have a net increase of project trips. Therefore, it is recommended Saturday peak hours be studied. In addition, Thursday traffic will be captured as a baseline but no traffic analysis will be conducted on a weekday since there are no project impacts.

Table 3.7 Opening Year 2020 – Trip Generation Net Project Trips

Net Project Trips- Thursday	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	0	0	0	0	0	0	0
Autos and Light Duty Trucks	0	0	0	0	0	0	0
Heavy Vehicles (PCEs)	0	0	0	0	0	0	0

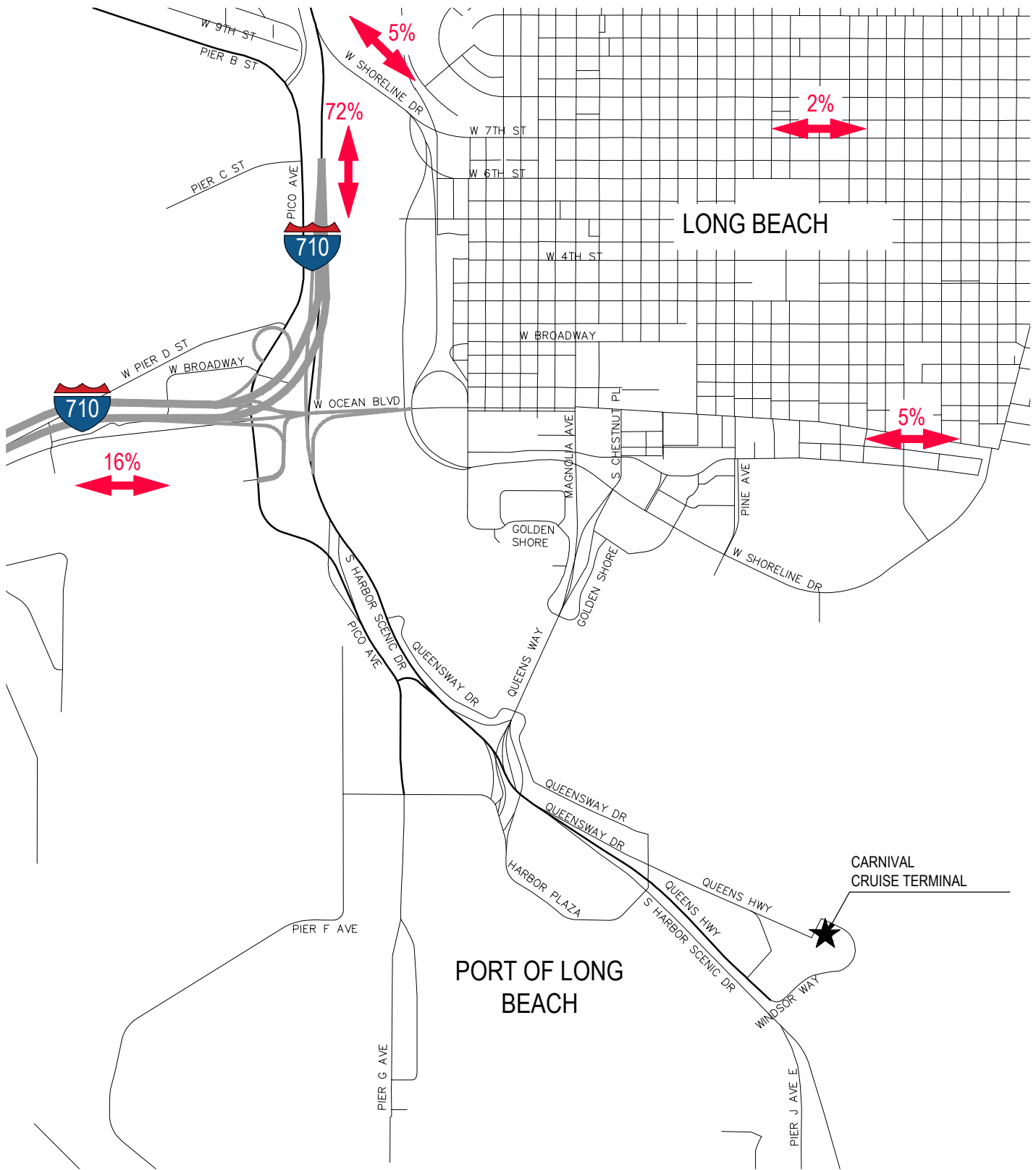
Net Project Trips- Saturday	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	1093	35	231	266	152	23	175
Autos and Light Duty Trucks	931	16	211	227	140	10	150
Heavy Vehicles (PCEs)	162	19	20	39	12	13	25

4. Trip Distribution



The existing roadway network around the project area is a network of freeway and arterial facilities. Interstate 710 provides north-south regional access to the project with connections to SR 1, SR 47, and I-405. The primary east-west arterial is Seaside Avenue/Ocean Boulevard which is located north of the project site and provides connection to Downtown Long Beach. Pico Avenue provides a north-south connection to Harbor Plaza. The key access streets to the LBCT are Harbor Scenic Drive, Harbor Plaza, and Queensway Drive.

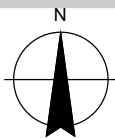
Figures 4.1, 4.2, and 4.3, show the trip distribution percentages for passengers, supply trucks, and employees. For **Figure 4.1**, the trip distribution was determined based on origin and destination for existing passenger booking data for the LBCT. Using passenger arrival booking information from the past four most recent Saturdays, the percentage of passengers from the cities and counties in California were determined. If a passenger was from out of state or provided their airport information in the booking, the California airports' city and county information was used. Over 70% of passengers (77.84%) took an airplane to the Southern California area with Los Angeles International Airport (LAX) having the largest percentage of passenger's flights. Based on these percentages, passenger trips were then assigned to the logical routes based on shortest path assumptions. This detailed information is included in the **Appendix B – Trip Generation Summary**.

For supply trucks and employees (**Figures 4.2 and 4.3**), the trip distribution was based on the current supply vendors and employees travel patterns. Carnival surveyed the vendors and employees to obtain the trip distribution percentages for the roadway network.



LEGEND:

-  - GERALD DESMOND BRIDGE PROJECT
-  - PERCENT OF TRUCK TRIPS USING THIS ROUTE



Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
Project Trip Distribution (Passengers)

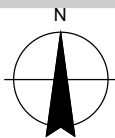
Project No. 11183495
 Report No. RPT01
 Date 01/17/2019

Figure 4.1



LEGEND:

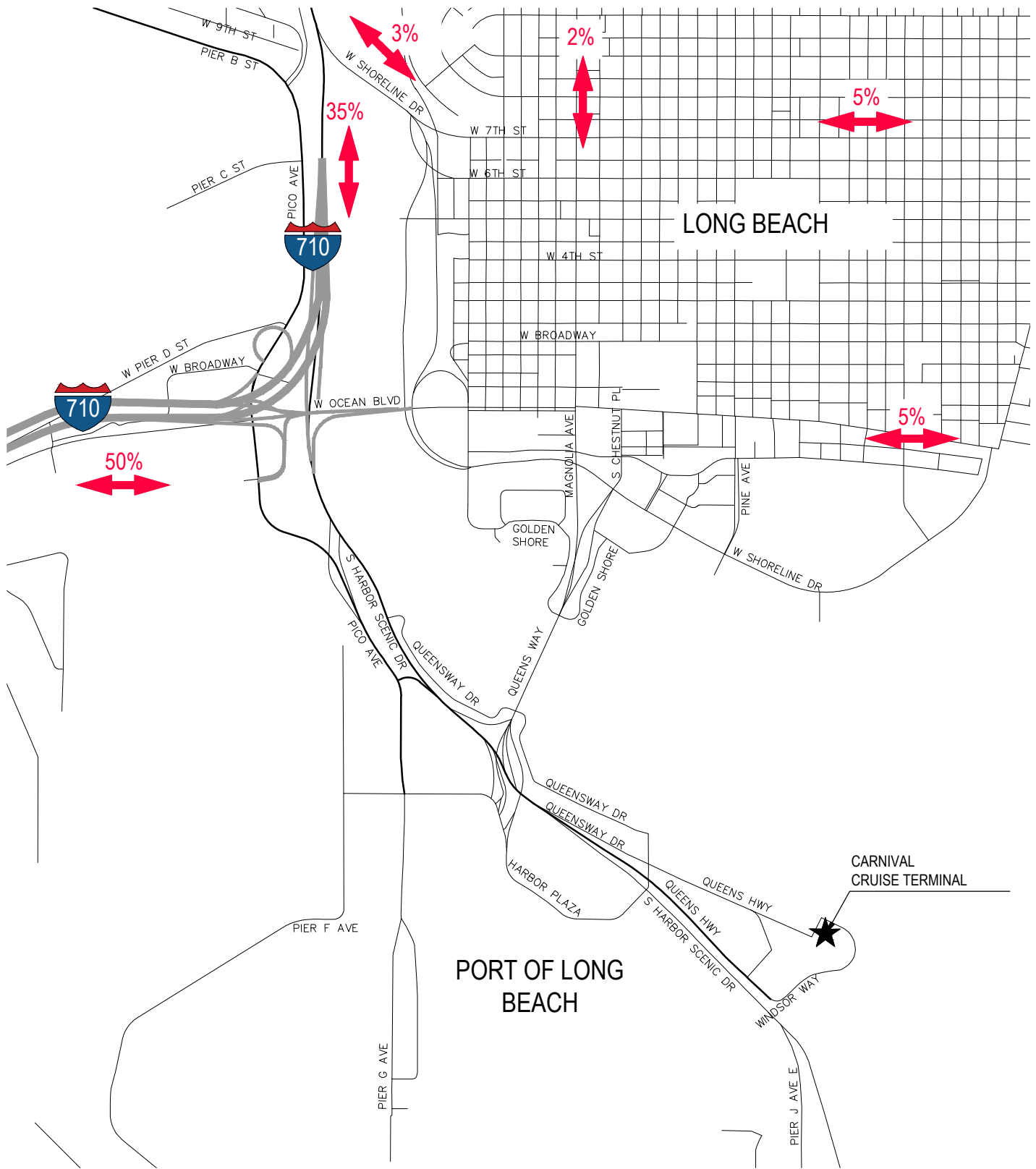
- GERALD DESMOND BRIDGE PROJECT
- PERCENT OF TRUCK TRIPS USING THIS ROUTE



Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
Project Trip Distribution (Supply Trucks)

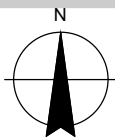
Project No. 11183495
 Report No. RPT01
 Date 01/17/2019

Figure 4.2



LEGEND:

- GERALD DESMOND BRIDGE PROJECT
- PERCENT OF EMPLOYEE TRIPS USING THIS ROUTE



Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
Project Trip Distribution (Employees)

Project No. 11183495
 Report No. RPT01
 Date 01/17/2019

Figure 4.3



4.1 Trip Distribution on the State Highway System

The net project trips were distributed on the surrounding state highway system to the project study area. The origin and destination for the net project trips was based on the average of the historical passenger data from the LBCT. Based on origin and destination patterns from passenger zip codes or airports in California, logical routes were assumed based on shortest path assumptions. As shown in **Figure 4.4**, traffic analysis zones around the study roads (I-710, I-405, SR 1, and SR 47) were established in collecting the net project trips on Saturday and these trips were then distributed on the roadway network. Based on this select zone analysis, I-710 will be the main route for passenger vehicle trips to and from the LBCT.

4.2 Opening Year 2020 Net Project Trips

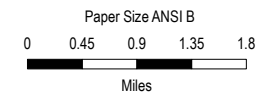
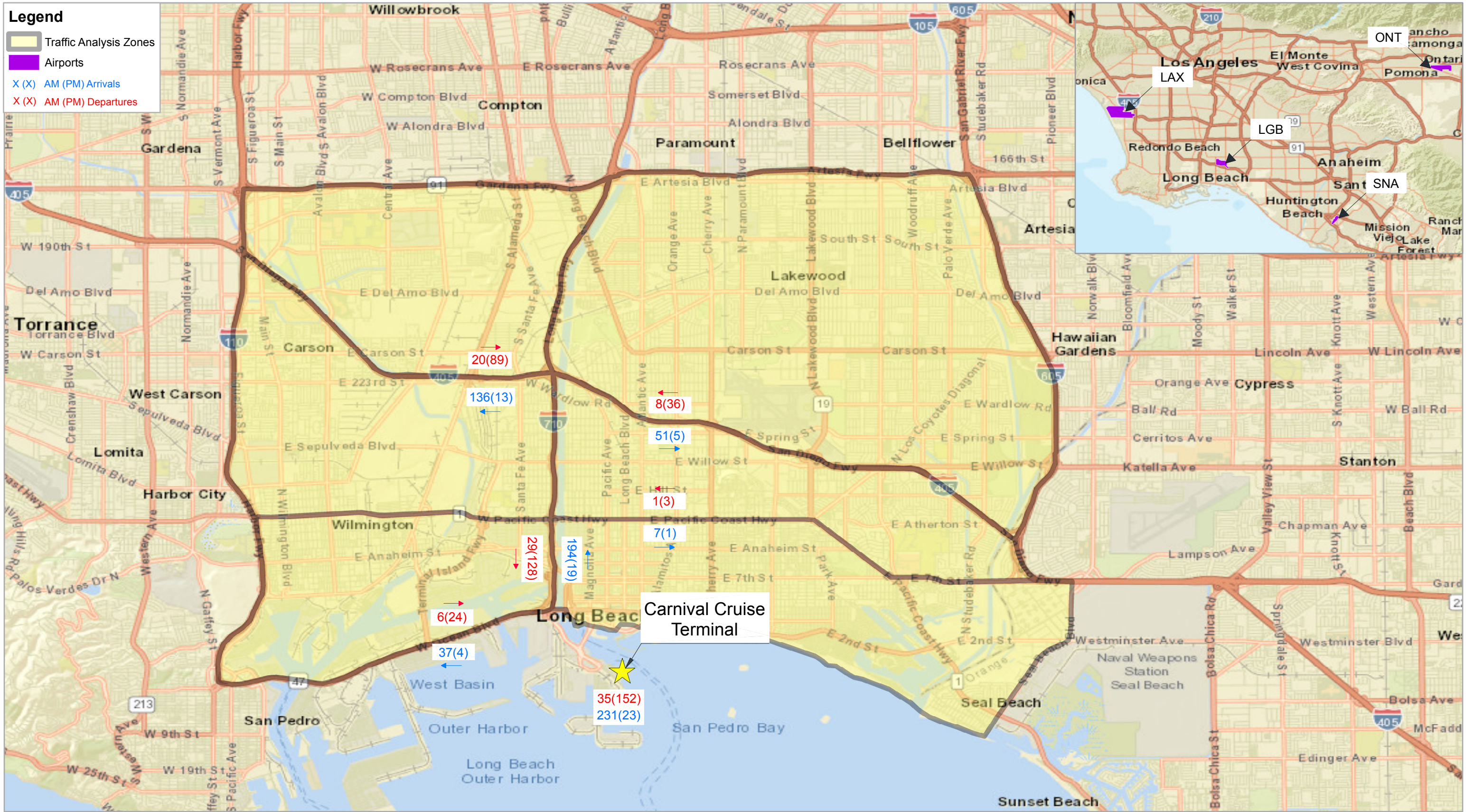
Based on the trip generation of net project trips in **Table 3.7** and trip distribution percentages for passengers, supply trucks, and employees in **Section 4**, the trips were assigned on the network based on shortest path and logical routes.

As shown in **Table 4.1**, Saturday net project trips are shown for passenger, supply trucks, and employees for the LBCT. This coincides with the trip distribution that differs between them.

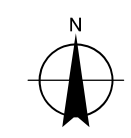
Table 4.1 Opening Year 2020 -Net Project Trips by User

Net Project Trips	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Passengers (PCEs)	1016	34	229	263	152	23	175
Supply Trucks (PCEs)	20	1	2	3	0	0	0
Employees (PCEs)	57	0	0	0	0	0	0
Total (PCEs)	1093	35	231	266	152	23	175

Per the project net trip generation and trip distribution, inbound and outbound trips were assigned to the network. **Figure 4.5** displays the net project trips for the study intersections with Opening Year Conditions. Since the Existing Conditions has a different roadway configuration and intersections with the GDBRP construction, the traffic volumes for that scenario are shown in **Appendix A – Traffic Volume Data**. In addition, the net project trips for mainline and ramp segments for both scenarios are included in **Appendix A**.



Horizontal Datum: North American 1983
Grid: GCS North American 1983



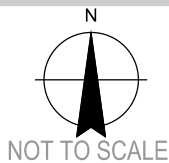
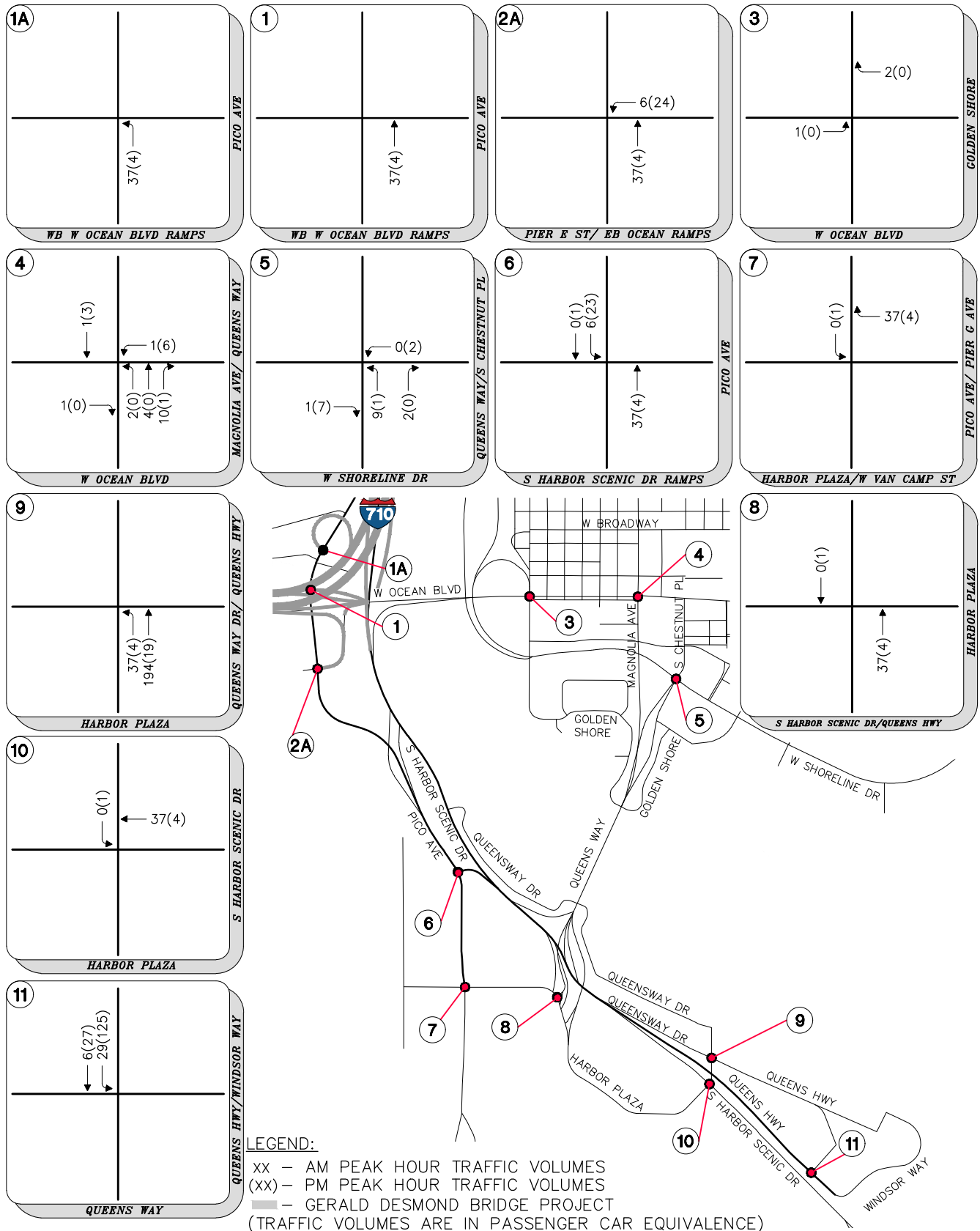
City of Long Beach
PORT OF LONG BEACH CARNIVAL CRUISE
LINES TERMINAL IMPROVEMENT PROJECT

Select Zone Analysis
State Highway System

Project No. 11183495
Revision No. -
Date 03/05/2019

FIGURE 4.4

\\ghd\ghd\US\Sacramento\Projects\1111183495 Alkins Long Beach Cruz Terminal Impl04- Technical Work\Traffic\Trip Distribution\Working Maps\Trip Distribution.mxd
Print date: 05 Mar 2019 - 15:08
Data source: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community. Created by: kleinrschmidt



Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
Opening Year 2020 Net Project Trips
Saturday Peak Hour Volumes
Study Intersections

Project No. 11183495
 Report No. RPT.01
 Date 3/21/2019

Figure 4.5



5. Opening Year – Project Build Out Year

The Panorama cruise vessel will be start the typical service on December 14, 2019. Due to December being the last month in the year, it was decided to use 2020 as the Opening Year for a more conservative analysis. In addition, all improvements will be completed before this date in accommodating the larger cruise vessel at the existing terminal.

5.1 Ambient Growth

Ambient traffic growth is the traffic growth that will occur in the study area due to general growth in the area and overall regional growth for the Southern California area. Per the Southern California Association of Governments (SCAG) growth rates for Long Beach and the POLB Travel Demand Model (PortTAM), a growth rate of 1% per year was used.

5.2 Cumulative Conditions

In evaluating cumulative conditions, GHD reached out to the City of Long Beach and POLB for any applicable projects. Per the City of Long Beach, there were two projects that should be considered in the cumulative analysis, 100 E Ocean Boulevard and 125 Long Beach Boulevard. Per the POLB, there was one project, Middle Harbor Redevelopment Project that should be considered in the cumulative analysis.

5.2.1 100 E Ocean Boulevard Project

The 100 E Ocean Boulevard project is a mixed use hotel-residential development located in the corner of E Ocean Boulevard and Pine Avenue. The final buildout project will consists of 419 hotel rooms, 12 apartment units, and an 18,976 SF restaurant. The project is projected to open in 2021 and is expected to generate 361 vehicles in the a.m. peak hour and 437 vehicle in the p.m. peak hour. Peak period for this project is weekdays from 7-9 a.m. and 4-6 p.m. Carnival peak period is on Saturday from 9-10 a.m. and 1-2 p.m. Since the peak periods do not coincide, there will be fewer trips generated during Carnival's peak hours. Forty percent of the inbound traffic and 55% of the outbound traffic is projected to use W Ocean Blvd to access the site. These vehicles will potentially travel through West Ocean Blvd/Magnolia Ave/Queens Way (Intersection 4) and West Ocean Blvd/Golden Shore (Intersection 3) intersection. Since the opening year for this project is later than opening year for Carnival Project impact from this project is not considered a factor in the cumulative condition.

5.2.2 125 Long Beach Boulevard Project

The 125 Long Beach Boulevard project is a proposed mixed use project (residential and shopping center) located at the corner of Long Beach Boulevard and Broadway. The Opening Year 2021 consists of 218 residential units and approximately 7,300 square feet of retail use. The proposed project is expected to generate 55 a.m. peak hour trips and 72 p.m. peak hour trips during the weekday. Based on the project location north and east of our study intersections and the Opening Year after the Carnival Opening Year of 2020, no project trips were added to the study intersections.



5.2.3 Middle Harbor Redevelopment Project

The Middle Harbor Redevelopment Project would consolidate and expand Port facilities to include the existing 294-acre Project site, consisting of the Pier E terminal (170 acres), the Pier F terminal (101 acres), 18 acres of underutilized land north of the Gerald Desmond Bridge and Ocean Boulevard. This project is anticipated to be constructed over a 9 year timeframe (2011 to 2020).

Per coordination with the POLB, the Middle Harbor Development Project traffic was added to applicable intersections for the cumulative conditions. The traffic volumes for Middle Harbor Development (Figure A9) are located in **Appendix A – Traffic Volume Data**.

5.3 Opening Year 2020 Cumulative Conditions without Project

The Opening Year 2020 Cumulative Conditions without project traffic volumes were derived from the existing traffic with the ambient growth rate of 1% per year and cumulative traffic from the Middle Harbor Redevelopment Project. With the ultimate configuration of I-710 with the Gerald Desmond Bridge Replacement Project, some of the traffic volumes had to be rerouted. The Opening Year 2020 Cumulative Conditions without Project traffic volumes are located in **Appendix A: Traffic Volume Data**, Figures A5 and A6 for study intersections and mainline and ramp segments, respectively.

5.4 Opening Year 2020 Cumulative Conditions plus Project

The Opening Year 2020 Cumulative Conditions with project traffic volumes were derived from the existing traffic with the ambient growth rate of 1% per year and cumulative traffic from the Middle Harbor Redevelopment Project with the net project trips from Carnival added to the peak hours on Saturday. The Opening Year 2020 Cumulative Conditions with Project traffic volumes are located in **Appendix A: Traffic Volume Data**, Figures A7 and A8 for study intersections and mainline and ramp segments, respectively.

6. Traffic Analysis

6.1 Intersection Capacity Utilization Methodology

In following the City of Long Beach's TIA guidelines, the Intersection Capacity Utilization (ICU) methodology was used for signalized intersection. **Table 6.1** displays the Volume to Capacity (V/C) ratio thresholds for LOS. In addition, the saturation flow rates of 1,600 passenger-car-per hour-per lane (pcphpl) for through lanes and 2,880 pcphpl for dual turn lanes (i.e. 1,440 per lane for both right and left dual turn lanes) and the peak hour factor (PHF) and lane utilization of 1.0 were imputed into the traffic analysis software, *Synchro 10.0*. In addition, the existing signal timing information from the City of Long Beach was used. In capturing the lost time of 10%, the overall signalized intersection ICU results had 0.10 added to it. This method was preferred due to the lost time adjustment limitations in Synchro.



Table 6.1 ICU Level of Service Thresholds

Level of Service	Description	Volume to Capacity (V/C) ratio
A	Excellent operation. All Approaches to intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation	< 0.601
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection many occasionally be fully utilized and traffic queues start to form.	0.601 - 0.700
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	0.701 - 0.800
D	Fair operation. Vehicles are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	0.801 - 0.900
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	0.901 - 1.000
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 1.000

Per these settings and following City of Long Beach’s ICU methodology the critical V/C and LOS for each signalized study intersection was determined. The results are shown in **Section 6.2**.

For the unsignalized intersections, HCM methodology was used. As shown in **Table 6.2**, the control delay and corresponding LOS thresholds are displayed. These LOS thresholds were used for two way stop control (TWSC) and all-way stop control (AWSC) intersections.

Table 6.2 Unsignalized Intersections LOS Thresholds

Level of Service	Average Control Delay (seconds/vehicle)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Source: Highway Capacity Manual



6.2 Traffic Analysis Results

The traffic analysis for the study intersections and mainline and ramp segments were performed using the appropriate methodology per the governing agency.

6.2.1 ICU Threshold of Significance

The City of Long Beach considers LOS D as the limit for acceptable intersection operations. A significant impact by a project is considered when the resulting intersection level of service with project traffic is LOS E or F and the project traffic contributed to a V/C ratio of 0.02 or more to the critical movements.

6.2.2 Existing Conditions Intersection Traffic Analysis

As shown in **Table 6.3**, Existing Conditions (2018) were analyzed and then compared to Existing Plus Project Conditions to see if there was any significant impact with the Carnival Terminal Improvement Project. All results can be found in Appendix C – Traffic Analysis Reports

Table 6.3 Existing Conditions Signalized Study Intersections LOS

Int ID	Intersection	Control	Saturday Peak Hour	Existing		Existing Plus Project		Change in V/C	Significant Impact ²
				V/C ¹	LOS	V/C ¹	LOS		
1	Pico Ave & WB Ocean Blvd Ramps	Signal	AM	0.775	C	0.779	C	0.004	No
			PM	0.899	D	0.917	E	0.018	Yes
2	Pico Ave & Pier E St/Ocean Blvd EB Ramp	Signal	AM	0.554	A	0.554	A	0	No
			PM	0.544	A	0.544	A	0	No
3	Golden Shore/Golden Ave & W Ocean Blvd	Signal	AM	0.521	A	0.521	A	0	No
			PM	0.533	A	0.533	A	0	No
4	Queens Way/Magnolia Ave & W Ocean Blvd	Signal	AM	0.685	B	0.685	B	0	No
			PM	0.766	C	0.766	C	0	No
5	Queen Mary/S Chestnut Pl & W Shoreline Dr	Signal	AM	0.765	C	0.765	C	0	No
			PM	0.664	B	0.723	C	0.059	No
7	Pico Ave & Harbor Plaza	Signal	AM	0.625	B	0.645	B	0.020	No
			PM	0.552	A	0.553	A	0.001	No
9	Harbor Plaza & Queensway Dr	Signal	AM	0.472	A	0.525	A	0.053	No
			PM	0.436	A	0.442	A	0.006	No
10	Harbor Plaza & Harbor Scenic Dr	Signal	AM	0.420	A	0.420	A	0	No
			PM	0.420	A	0.420	A	0	No

¹ For lost time adjustment, 0.1 was added to the ICU intersection summary results.

² The City of Long Beach determines a significant impact has occurred where project traffic causes an intersection to deteriorate from an LOS D to LOS E or F, or if the project traffic causes an increase in volume-to-capacity ratio of 0.02 or greater when the intersection is operating at LOS E or F in the baseline condition.

As shown in **Table 6.3**, the Existing Conditions were compared to the Existing Plus Project Conditions. All intersections have a V/C ratio that is the same as existing or a slight increase with the additional project traffic. Furthermore, with the Existing Plus Project Conditions compared to the Existing Conditions, none of the study intersections have a significant impact except for the intersection at Pico Avenue and W Ocean Boulevard ramps. This intersection currently has a V/C ratio of 0.899 (LOS D) but with the project trips it degrades to LOS E with an increase in V/C of 0.018. It is noted that intersection currently has a temporary configuration due to the closures on W Ocean Boulevard and I-710 around Pico Avenue. All



eastbound and westbound traffic for W Ocean Boulevard and NB traffic on I-710 must travel through this intersection. However, when the GDBRP is completed, it will no longer have this configuration and traffic patterns on W Ocean Boulevard and I-710 will return.

The Existing Conditions unsignalized intersections results are shown in **Table 6.4**. All intersections are experiencing LOS A in the Existing and Existing Plus Project Conditions based on HCM methodology.

Table 6.4 Existing Conditions Unsignalized Study Intersections – LOS

Int ID	Intersection	Control	Saturday Peak Hour	Existing		Existing Plus Project		Change in Delay	Significant Impact ³
				Delay	LOS	Delay	LOS		
6	Pico Ave & S Harbor Scenic Dr On-Ramp	Free ¹	AM	1.3	A	1.8	A	0.5	No
			PM	2.2	A	3.5	A	1.3	No
8	Harbor Plaza & Queens Hwy/S Harbor Scenic Dr	TWSC ¹	AM	8.9	A	9.1	A	0.2	No
			PM	9.0	A	9.1	A	0.1	No
11	Windsor Way & Queens Hwy	AWSC ²	AM	8.5	A	8.8	A	0.3	No
			PM	8.1	A	9.4	A	1.3	No

¹HCM2010 and 6th Edition methodology does not support this type of intersection. HCM2000 methodology was used to get control delay and for free movements approach delay was used.

²HCM6th Edition methodology used for control delay.

³The City of Long Beach determines a significant impact has occurred where project traffic causes an intersection to deteriorate from an LOS D to LOS E or F.

6.2.3 Opening Conditions Intersection Traffic Analysis

As shown in **Table 6.5**, the Opening Year (2020) and Opening Year Plus Project were compared to see if there was any significant impacts with the Carnival Terminal Improvement Project. Per the City of Long Beach’s criteria, there were no significant impacts.

All signalized intersections are experiencing LOS C or better. This is due to the off-peak traffic period on Saturday and ultimate configuration of I-710 and W Ocean Boulevard after the construction for GDBRP is complete.



Table 6.5 Opening Conditions Signalized Study Intersections – LOS

Int ID	Intersection	Control	Saturday Peak Hour	2020 Opening Year		2020 Opening Year Plus Project		Change in V/C	Significant Impact ¹
				V/C	LOS	V/C	LOS		
2	Pico Ave & Pier E St/Ocean Blvd EB Ramp	Signal	AM	0.684	B	0.688	B	0.004	No
			PM	0.656	B	0.672	B	0.016	No
3	Golden Shore/Golden Ave & W Ocean Blvd	Signal	AM	0.527	A	0.527	A	0	No
			PM	0.537	A	0.537	A	0	No
4	Queens Way/Magnolia Ave & W Ocean Blvd	Signal	AM	0.686	B	0.686	B	0	No
			PM	0.773	C	0.773	C	0	No
5	Queen Mary/S Chestnut Pl & W Shoreline Dr	Signal	AM	0.774	C	0.774	C	0	No
			PM	0.671	B	0.672	B	0.001	No
7	Pico Ave & Harbor Plaza	Signal	AM	0.652	B	0.667	B	0.015	No
			PM	0.575	A	0.577	A	0.002	No
9	Harbor Plaza & Queensway Dr	Signal	AM	0.474	A	0.527	A	0.053	No
			PM	0.438	A	0.443	A	0.005	No
10	Harbor Plaza & Harbor Scenic Dr	Signal	AM	0.420	A	0.420	A	0	No
			PM	0.420	A	0.420	A	0	No

¹ For lost time adjustment, 0.1 was added to the ICU intersection summary results.

² The City of Long Beach determines a significant impact has occurred where project traffic causes an intersection to deteriorate from an LOS D to LOS E or F, or if the project traffic causes an increase in volume-to-capacity ratio of 0.02 or greater when the intersection is operating at LOS E or F in the baseline condition.

Table 6.6 displays the results for the unsignalized intersections for the Opening Year (2020) and Opening Year Plus Project. Based on HCM methodology, all intersection are experiencing LOS A with slight increases in delay for the Opening Year Plus Project Conditions.

Table 6.6 Opening Conditions Unsignalized Study Intersections – LOS

Int ID	Intersection	Control	Saturday Peak Hour	2020 Opening Year		2020 Opening Year Plus Project		Change in Delay	Significant Impact ³
				Delay	LOS	Delay	LOS		
1a*	Pico Ave & I-710 SB On-Ramp	Free ¹	AM	4.7	A	5.5	A	0.8	No
			PM	5.5	A	5.6	A	0.1	No
1	Pico Ave & WB Ocean Blvd Ramps	TWSC ²	AM	8.8	A	8.9	A	0.1	No
			PM	8.7	A	8.7	A	0	No
6	Pico Ave & S Harbor Scenic Dr On-Ramp	Free ¹	AM	1.3	A	1.8	A	0.5	No
			PM	2.3	A	3.6	A	1.3	No
8	Harbor Plaza & Queens Hwy/S Harbor Scenic Dr	TWSC ¹	AM	8.9	A	9.2	A	0.3	No
			PM	9.1	A	9.1	A	0.0	No
11	Windsor Way & Queens Hwy	AWSC ²	AM	8.5	A	8.8	A	0.3	No
			PM	8.2	A	9.4	A	1.2	No

* New intersection with the Gerald Desmond Bridge Project

¹ HCM 2010 and 6th Edition methodology does not support this type of intersection. HCM 2000 methodology was used to get control delay and for free movements approach delay was used.

² HCM 6th Edition methodology used.

³ The City of Long Beach determines a significant impact has occurred where project traffic causes an intersection to deteriorate from an LOS D to LOS E or F.



6.3 HCM 6th Edition Methodology

For the mainline and ramp segments, Highway Capacity Manual (HCM) 6th Edition methodology was followed. HCM 6th Edition calculates LOS based on density and free flow speed. As shown in **Table 6.7**, for urban freeway facilities for mainline segments (basic) and ramps (diverge and merge movements), the density thresholds by passenger car – per mile – per lane (pc/mi/ln) are then assigned a corresponding level of service. This is also similar with multilane roadway segments. However as shown in **Table 6.8**, the multilane roadway segments, have additional speed thresholds when approaching LOS E and F.

Table 6.7 Urban Freeway Density Thresholds

Urban Freeway Facility Density	
Level of Service	(pc/mi/ln)
A	≤ 11
B	> 11 - 18
C	> 18 - 26
D	> 26 - 35
E	> 35 - 45
F	> 45 or V/C ratio > 1.00

Table 6.8 Multilane LOS Thresholds

Multilane Density LOS Thresholds		
Level of Service	FFS (mph)	Density (pc/mi/ln)
A	All	≤ 11
B	All	> 11 - 18
C	All	> 18 - 26
D	All	> 26 - 35
E	60	> 35 - 40
	55	> 35 - 41
	50	> 35 - 43
	45	> 35 - 45
F	Demand Exceeds Capacity	
	60	> 40
	55	> 41
	50	> 43
	45	> 45

6.3.1 Existing Conditions Mainline and Ramp Analysis

With the Gerald Desmond Bridge Replacement Project construction, I-710 is no longer continuous through the interchange with W Ocean Boulevard and Pico Avenue. Furthermore, the direct connector ramps between W Ocean Boulevard (Downtown Long Beach) to I-710 are no longer continuous. All traffic on I-710 and W Ocean Boulevard must exit to the at grade intersection at W Ocean Boulevard and Pico



Avenue at the approaches to this interchange. This discontinuous I-710 freeway was then analyzed using the appropriate HCS method for the facility type (freeway, multilane roadway, and ramp). In addition, the mainline and ramp segments in the POLB were analyzed using multilane and ramp methodologies. All results are included in **Appendix C – Traffic Analysis Reports**.

Table 6.9 displays the mainline density summary with corresponding LOS for the study segments. All segments were analyzed using the multilane methodology except for I-710 North of S Harbor Scenic Drive ramps. At this location, I-710 was operating as a freeway and therefore this segment was analyzed as such. All mainline segments have LOS A for the Saturday a.m. and p.m. peak hours. This is attributed to the low traffic volumes with the off-peak period.

Table 6.9 Existing Without Project – Mainline Segments

Mainline Density Summary - Existing Without Project								
Segment No.	Segment Name	Direction	Number of Lanes	Free Flow ¹ Speed (mph)	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
12	I-710 North of S Harbor Scenic Dr Ramps ³	NB	3	55	4.1	A	2.6	A
		SB	2		4.5	A	5.5	A
14	S Harbor Scenic Dr South of W Ocean Blvd Off-Ramp	NB	2	55	6.7	A	4.6	A
		SB	2		4.5	A	5.5	A
15	I-710 West of Pico Ave Off-Ramp	EB	2	55	11.9	B	13.4	B
		WB	3		7.0	A	7.3	A
20	S Harbor Scenic Dr North of Queens Way	NB	2	50	4.7	A	2.3	A
		SB	2		5.2	A	5.4	A
22	SB S Harbor Scenic Dr South of Queens Way On-Ramp	SB	2	50	2.5	A	2.1	A
24	NB Queensway Dr South of Queens Way Off-Ramp	NB	3	50	4.5	A	3.3	A
25	SB Queens Hwy North of Carnival/Queen Mary Entrance	SB	3	45	3.8	A	3.1	A

¹ Free Flow Speed on Mainline

² Density is shown in passenger cars per mile per line (pcpmpl)

³ HCS Freeway Basic Segment Analysis

As shown in **Table 6.10**, all ramp merge and diverge movements are experiencing favorable LOS A rating for the Saturday a.m. and p.m. peak hours. Due to the discontinuous mainline in Existing Conditions, two on-ramps (17 and 19) have no conflict (density is zero) with the mainline starting at the ramp merge point. In addition, the ramp segment 21 has a density at almost zero (zero due to tenth digit display) with the majority of the traffic taking the two-lane ramp off to S Harbor Scenic Drive at the split.



Table 6.10 Existing Without Project – Ramp Summary

Ramp Density Summary - Existing Without Project								
Segment No.	Segment Name	Direction	Number of Lanes	Free Flow ¹ Speed (mph)	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
13	NB Harbor Scenic Dr Off-Ramp to WB W Ocean Blvd	NB	1	35	6.9	A	5.0	A
16	NB I-710 Off-Ramp to Pico Avenue	EB	2	35	4.7	A	3.8	A
17	Pico Avenue On-Ramp to SB I-710	WB	2	35	0.0	A	1.3	A
18	W Ocean Blvd Off-Ramp to Pico Ave	WB	1	35	4.4	A	6.1	A
19	Pico Ave On-Ramp to W Ocean Blvd	EB	2	35	0.0	A	0.0	A
21	Queens Way Off-Ramp to SB S Harbor Scenic Dr	SB	2	35	0.0	A	0.0	A
23	Queensway Dr Off-Ramp to Queens Way	NB	1	35	6.5	A	4.9	A

¹ Free Flow Speed on Ramp

² Density is shown in passenger cars per mile per line (pcpml)

Tables 6.11 and 6.12 display the results for the Existing Plus Project Conditions for mainline segments and ramps. With the addition of the project trips, all are still experiencing LOS A ratings and no significant impact is expected.

Table 6.11 Existing Plus Project – Mainline Segments

Mainline Density Summary - Existing Plus Project								
Segment No.	Segment Name	Direction	Number of Lanes	Free Flow ¹ Speed (mph)	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
12	I-710 North of S Harbor Scenic Dr Ramps ³	NB	3	55	5.2	A	2.7	A
		SB	2		4.8	A	6.6	A
14	S Harbor Scenic Dr South of W Ocean Blvd Off-Ramp	NB	2	55	8.3	A	4.7	A
		SB	2		4.8	A	6.6	A
15	I-710 West of Pico Ave Off-Ramp	EB	2	55	11.9	B	11.2	B
		WB	3		7.3	A	9.0	A
20	S Harbor Scenic Dr North of Queens Way	NB	2	50	6.5	A	2.5	A
		SB	2		5.5	A	6.9	A
22	SB S Harbor Scenic Dr South of Queens Way On-Ramp	SB	2	50	2.9	A	3.8	A
24	NB Queensway Dr South of Queens Way Off-Ramp	NB	3	50	6.0	A	3.8	A
25	SB Queens Hwy North of Carnival/Queen Mary Entrance	SB	3	45	4.1	A	3.4	A

¹ Free Flow Speed on Mainline

² Density is shown in passenger cars per mile per line (pcpml)

³ HCS Freeway Basic Segment Analysis



Table 6.12 Existing Plus Project – Ramp Summary

Ramp Density Summary - Existing Plus Project								
Segment No.	Segment Name	Direction	Number of Lanes	Free Flow ¹ Speed (mph)	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
13	NB Harbor Scenic Dr Off-Ramp to WB W Ocean Blvd	NB	1	35	8.5	A	5.1	A
16	NB I-710 Off-Ramp to Pico Avenue	EB	2	35	4.7	A	4.1	A
17	Pico Avenue On-Ramp to SB I-710	WB	2	35	0.0	A	1.4	A
18	W Ocean Blvd Off-Ramp to Pico Ave	WB	1	35	4.5	A	6.1	A
19	Pico Ave On-Ramp to W Ocean Blvd	EB	2	35	0.0	A	0.0	A
21	Queens Way Off-Ramp to SB S Harbor Scenic Dr	SB	2	35	0.0	A	0.0	A
23	Queensway Dr Off-Ramp to Queens Way	NB	1	35	8.3	A	5.1	A

¹ Free Flow Speed on Ramp

² Density is shown in passenger cars per mile per line (pcpmpl)

6.3.2 Opening Conditions – I-710 Mainline and Ramp Traffic Analysis

Tables 6.13 and 6.14 display the results for the Opening Conditions for mainline segments and ramps for Opening Year without Project and Opening Year Plus Project. For ease, I-710 is referred to as NB and SB even though around W Ocean Boulevard the orientation changes to be more east-west. With the addition of the project trips, all are still experiencing LOS A ratings except for the S Harbor Scenic Drive on-ramp to NB I-710 at LOS B. There is no significant impact with the project.

Table 6.13 Opening Year- I-710 Mainline

I-710 Freeway Mainline Summary												
Segment No.	Segment Name	Type	Direction	Number of Lanes	Opening Year 2020				Opening Year 2020 Plus Project			
					Saturday AM		Saturday PM		Saturday AM		Saturday PM	
					Density ¹	Level of Service	Density ¹	Level of Service	Density ¹	Level of Service	Density ¹	Level of Service
12	I-710-North of S Harbor Scenic Dr Ramps	Basic	NB	3	6.6	A	4.7	A	7.4	A	4.8	A
			SB	3	5.4	A	6.3	A	5.6	A	6.8	A
15	I-710-West of Pico Ave Off-Ramp	Basic	NB	3	5.9	A	5.4	A	5.9	A	5.5	A
			SB	3	5.2	A	6.5	A	5.4	A	6.5	A
28	I-710-North of Pico Ave On-Ramp	Basic	NB	3	3.7	A	4.3	A	3.7	A	4.3	A
			SB	3	3.0	A	5.2	A	3.0	A	5.2	A
30	I-710-South of Pico Ave On-Ramp	Basic	NB	3	3.7	A	2.9	A	3.7	A	2.9	A
			SB	3	3.6	A	4.0	A	3.8	A	4.1	A

¹ Density is shown in passenger cars per mile per line (pcpmpl)



Table 6.14 Opening Year- I-710 Ramps

I-710 Ramp Summary												
Segment No.	Segment Name	Type	Direction	Number of Lanes	Opening Year 2020				Opening Year 2020 Plus Project			
					Saturday AM		Saturday PM		Saturday AM		Saturday PM	
					Density ¹	Level of Service	Density ¹	Level of Service	Density ¹	Level of Service	Density ¹	Level of Service
26	SB I-710 Off-Ramp to S Harbor Scenic Dr	Diverge	SB	2	9.0	A	10.5	A	9.2	A	11.4	B
27	S Harbor Scenic Dr on Ramp to NB I-710	Merge	NB	2	10.7	A	7.7	A	12.0	B	7.8	A
29	Pico Ave On-Ramp to SB I-710	Merge	SB	2	6.2	A	7.0	A	6.5	A	7.1	A
33	NB I-710 Off-Ramps to W Ocean Blvd/Pico Ave	Diverge	NB	2	3.6	A	4.7	A	3.6	A	4.7	A
34	SB I-710 Off-Ramp to W Ocean Blvd	Merge	SB	2	8.4	A	10.5	A	8.7	A	10.6	A
35	NB I-710 Off-Ramps to W Ocean Blvd/Pico Ave	Diverge	NB	2	9.7	A	5.7	A	9.8	A	5.8	A

¹ Density is shown in passenger cars per mile per line (pcpmpl)

6.3.3 Opening Conditions – POLB Mainline and Ramp Traffic Analysis

In analyzing the impacts with the mainline segments and ramps on the roadway network in the Port of Long Beach, the multilane and ramp methodologies were used to obtain a level of service. **Tables 6.15 and 6.16** display the results for the Opening Conditions without Project for mainline segments and ramps. All study locations are experiencing LOS A ratings with the lower traffic peak hours on Saturday.

Table 6.15 Opening Year without Project – POLB Mainline

Mainline Density Summary - Opening Year Without Project									
Segment No	Segment Name	Direction	Number of Lanes	Free Flow ¹ Speed (mph)	Saturday AM Peak		Saturday PM Peak		
					Density ²	Level of Service	Density ²	Level of Service	
14	S Harbor Scenic Dr South of W Ocean Blvd Off-Ramp	NB	2	55	6.5	A	4.5	A	
		SB	2		5.0	A	5.9	A	
20	S Harbor Scenic Dr North of Queens Way	NB	2	55	4.1	A	2.0	A	
		SB	2		5.2	A	5.3	A	
22	SB S Harbor Scenic Dr South of Queens Way On-Ramp	SB	2	50	2.5	A	2.0	A	
24	NB Queensway Dr South of Queens Way Off-Ramp	NB	3	50	4.4	A	3.2	A	
25	SB Queens Hwy North of Carnival/Queen Mary Entrance	SB	3	45	3.3	A	3.2	A	

¹ Free Flow Speed on Mainline

² Density is shown in passenger cars per mile per line (pcpmpl)



Table 6.16 Opening Year without Project – POLB Ramps

Ramp Density Summary - Opening Year Without Project								
Segment No	Segment Name	Direction	Number of Lanes	Free Flow ¹ Speed (mph)	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
13	NB S Harbor Scenic Dr On-Ramp to WB W Ocean Blvd	NB	1	35	6.8	A	4.9	A
21	Queens Way Off-Ramp to SB S Harbor Scenic Dr	SB	2	35	0.0	A	0.0	A
23	Queens Way On-Ramp From Queensway Dr	NB	2	35	6.4	A	4.8	A
31	WB W Ocean Blvd Off-Ramp to Pico Ave	WB	1	35	3.5	A	4.7	A
32	EB W Ocean Blvd On-Ramp From Pico Ave	EB	1	35	3.4	A	4.2	A

¹ Free Flow Speed on Ramp
² Density is shown in passenger cars per mile per line (pcpmpl)

Tables 6.17 and 6.18 display the results for the Opening Plus Project Conditions for mainline segments and ramps. All study locations are still experiencing LOS A rating with the addition of project trips.

Table 6.17 Opening Year Plus Project – POLB Mainline

Mainline Density Summary - Opening Year Plus Project								
Segment No	Segment Name	Direction	Number of Lanes	Free Flow Speed	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
14	S Harbor Scenic Dr South of W Ocean Blvd Off-Ramp	NB	2	55	8.1	A	4.6	A
		SB	2		5.3	A	6.9	A
20	S Harbor Scenic Dr North of Queens Way	NB	2	55	5.7	A	2.2	A
		SB	2		5.5	A	6.6	A
22	SB S Harbor Scenic Dr South of Queens Way On-Ramp	SB	2	50	2.8	A	3.6	A
24	NB Queensway Dr South of Queens Way Off-Ramp	NB	3	50	5.8	A	3.3	A
25	SB Queens Hwy North of Carnival/Queen Mary Entrance	SB	3	45	3.6	A	3.8	A

¹ Free Flow Speed on Mainline
² Density is shown in passenger cars per mile per line (pcpmpl)



Table 6.18 Opening Year Plus Project – POLB Ramps

Ramp Density Summary - Opening Year Plus Project								
Segment No	Segment Name	Direction	Number of Lanes	Free Flow Speed	Saturday AM Peak		Saturday PM Peak	
					Density ²	Level of Service	Density ²	Level of Service
13	NB S Harbor Scenic Dr On-Ramp to WB W Ocean Blvd	NB	1	35	8.3	A	5.0	A
21	Queens Way Off-Ramp to SB S Harbor Scenic Dr	SB	2	35	0.0	A	0.0	A
23	Queens Way On-Ramp From Queensway Dr	NB	2	35	8.1	A	5.0	A
31	WB W Ocean Blvd Off-Ramp to Pico Ave	WB	1	35	3.6	A	4.7	A
32	EB W Ocean Blvd On-Ramp From Pico Ave	EB	1	35	3.4	A	4.2	A

¹ Free Flow Speed on Ramp

² Density is shown in passenger cars per mile per line (pcpmpl)

6.3.4 Queue Analysis for Off-Ramps

Per Caltrans, queue analysis needs to be performed for any off-ramps that meet a ramp terminal. This analysis is necessary in assessing if the queue from the ramp terminal would queue back onto the mainline. Within the study area, the Opening Year off-ramp from I-710 to Pico Avenue was the only off-ramp that met that criteria. For Existing Conditions, there were no off-ramps that met this criteria as I-710 is under construction with detours. As shown in **Table 6.19**, this ramp does not come close to exceeding 85% of the ramp storage length (510 feet) with an approximate queuing length of only 100 feet.

Table 6.19 I-710 Off-Ramp Queue Analysis

Ramp No.	Ramp Name	Ramp Length	85% Ramp Length	Opening Year 2020		Opening Year 2020 Plus Project		95th Percentile Queue Exceeds 85% Ramp Storage
				95th Percentile AM Queue (ft)	95th Percentile PM Queue (ft)	95th Percentile AM Queue (ft)	95th Percentile PM Queue (ft)	
33	I-710 Off-Ramp to Pico Ave	600	510	92	82	98	93	No

6.4 Vehicle Miles Traveled (VMT) Analysis

In discussions with the lead agency (City of Long Beach), Caltrans, and POLB, it was determined that a vehicle miles traveled analysis was not necessary based on the uniqueness of the Carnival site, off-peak period project impact, and limited guidelines. However, it was decided that a discussion of the VMT guidelines and overall process would be included in the TIAR.

6.4.1 VMT Guidelines and Process

California Governor Brown signed Senate Bill (SB) 743 in September 2013 which created a process to change the way transportation impacts are analyzed under CEQA. “Specifically, SB 743 requires the State Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. Particularly within areas served by transit, those alternative criteria must “promote the reduction of greenhouse gas emissions, the development of multimodal transportation



networks, and a diversity of land uses.” (Public Resources Code Section 21099(b)(1).) Measurements of transportation impacts may include “vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated.” (Ibid.)

In the 2018 CEQA guidelines it acknowledges that “generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purpose of this section, “vehicle miles traveled” refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel.” Even though the Carnival Terminal Improvement Project is not a traditional land use project, the applicable sections from CEQA would most likely fall under land use project and qualitative analysis. Per 2018 CEQA guidelines, VMT for land use projects and qualitative analysis is defined below.

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project’s vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

Caltrans has developed a 15% reduction target in VMT per capita by 2020 (compared to 2010). VMT above threshold are presumed to be a significant impact. There are overall guidelines for VMT reductions for commercial and residential developments but not for a cruise terminal. In addition, per CEQA, it is not clear if VMT analysis was intended (by statute) to only apply to Transit Priority Areas (TPAs). At this time, most agencies are still requiring congestion analysis.

6.4.2 Carnival VMT Discussion

No travel demand models are applicable for Carnival passenger travel patterns and there is only generalized data on the origin and destination (zip code or airport) of the passengers and limited data on the future passengers’ mode of travel and origin and destination (unless you base it on historical information). Furthermore, VMT analysis is typically applied to weekdays (not weekend off-peak analysis) and this project has impacts only on Saturday. Currently, there is a free circulator bus service at Queen Mary that provides a connection to the Long Beach Transit Center. However, it is unlikely that this bus service would be deemed a major transit stop or the study area would be a TPA. With the uniqueness of the project and net project trips on Saturday, VMT analysis was not performed.



6.5 Construction Analysis

6.5.1 Dredging Material

To accommodate the larger cruise vessel, Panorama, dredging and removal of sediment will be necessary. Currently, there are two proposed options for placement of the removed sediment:

- LA2 – A location in the Pacific Ocean for the dumping of dredging sediment
- Landfill Site – A location in Adelanto, CA for the dumping of dry sediment

The LA2 option will not have any direct impacts to on-site roadways due to its location in the Pacific Ocean just south of the Port of Long Beach. In transporting the dredged material, a barge in the Pacific Ocean will pick up the sediment and transport it to LA2. Therefore, this TIAR will discuss only the landfill site scenario (worst case scenario).

The land fill site option will be implemented if the sediment within the proposed dredging prism is deemed to be unsuitable for offshore placement. In this option, dredge material will be taken to a suitable upland re-handling facility in the Port of Long Beach or Port of Los Angeles area. Material will be transferred from hopper barges, into a contained area. Once in containment, the material will be dewatered through evaporative measures and loaded into trucks. From the re-handling facility, the dredge material will be transported by truck to an approved suitable landfill where it will be handled appropriately for long-term disposal.

Previous projects at the Long Beach cruise terminal have utilized Pier S which has a capacity of approximately 11,000 cubic yards. Material within the site is expected to take approximately one month to dry, once transferred to the facility. After drying and stacking is complete, material will be loaded into 16 cubic yard trucks and transported to the designated landfill at the address below. The total volume of material expected to be removed during this dredging event is approximately 30,000 cubic yards which would equate to 1,875 truck loads. Three cycles of drying, stacking, and transport are expected in the event that upland disposal is required.

These locations and capacities are assumptions based on previous dredge events in which material was removed from the Long Beach Cruise Terminal and taken to an upland site. It is unclear at this time if any of the dredging material will need to be transported off site. This worst case scenario is being discussed in the traffic impact study as a precautionary treatment. If this scenario were necessary, standard traffic control measures would be taken to minimize the short-term construction impacts. These measures would include the construction work shifts to start and end outside of peak traffic hours and truck trips would be occurring in phases during off-peak hours (night or weekends).

Approximate Upland Site Address:

2655 Pier S Lane
Long Beach, CA 90802

Landfill Site:

Soil Safe



12328 Hibiscus Rd.
Adelanto, CA 92301

6.5.2 Parking Garage Construction

The parking garage is proposed to be constructed in phases to minimize impacts to the existing facility. It is anticipated that this construction will be isolated to on-site, however, it is likely materials will have to be hauled to the site. All impacts to the public roadway network on-site or off-site will follow the traffic control measures in the California Manual on Uniform Traffic Control Devices (CA MUTCD) and be coordinated with the Port of Long Beach beforehand. All efforts will be made to minimize any short-term construction impacts and the traffic generated by construction workers' vehicles would coincide with off-peak timeframes. Therefore, the construction related impacts with the parking garage would be less than significant under CEQA.

7. Additional Analysis

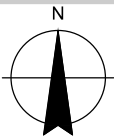
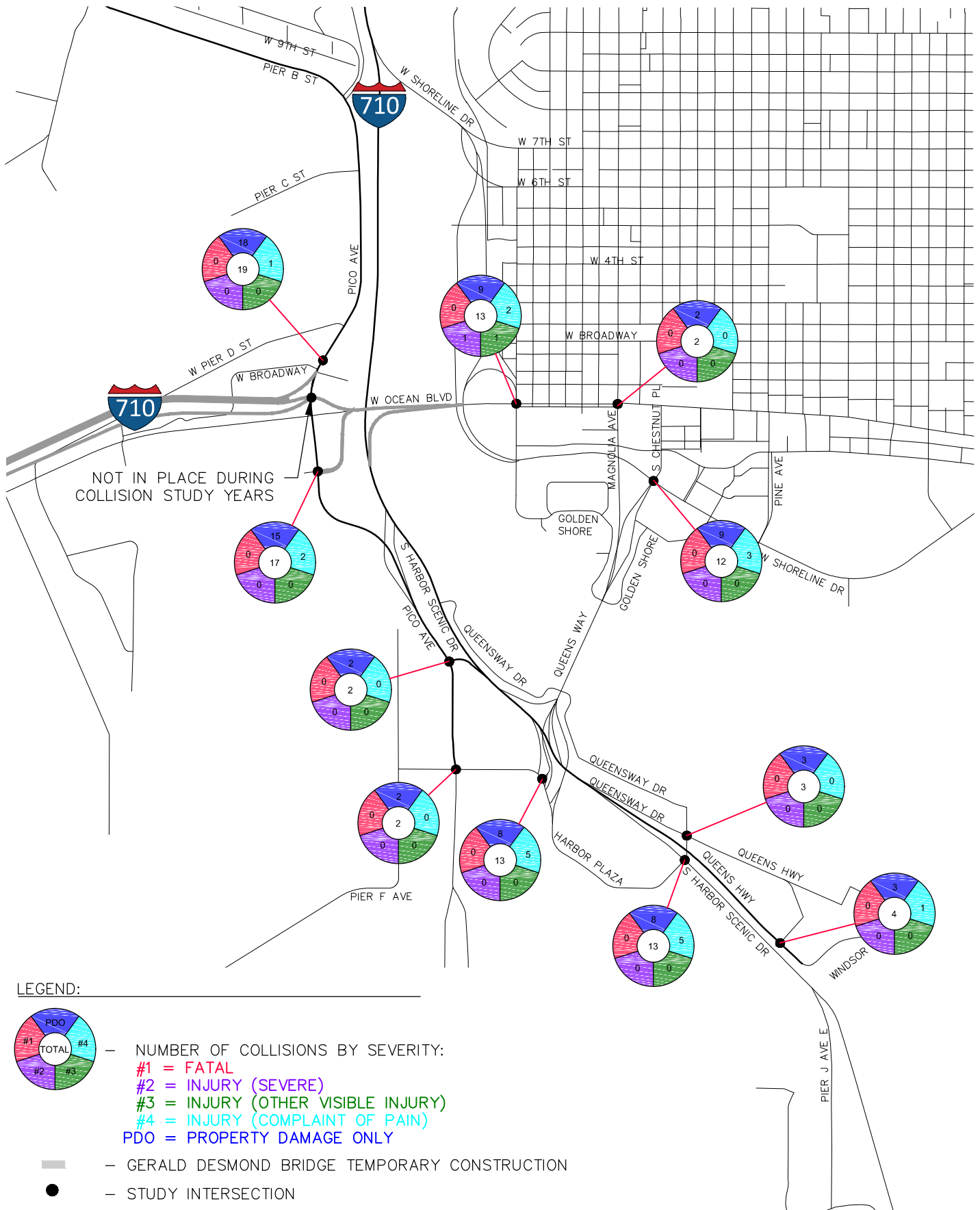
7.1 Safety Analysis

Recent 5-year collision data (2013-2017) was obtained from the Statewide Integrated Traffic Records System (SWITRS) for all study intersections. The collisions were mapped using ArcGIS to show the collisions per year, collision severity, and the bicycle and pedestrian collisions. In addition, collision summary reports were created for the study intersections in displaying the total collision, primary collision factor, and collision type.

At the Carnival main intersection, Windsor Way at Queens Highway, there were four total reported collisions in the five year study period. Of the four collisions reported, one collision involved motorists driving at unsafe speeds resulting rear-end collisions, two collision involved motorists making an improper turn, one resulting in a sideswipe and one resulting in rear-end collisions. Improper turning and rear-end collisions were the number one primary collision factor and collision type at this intersection, respectively. Of the four collisions reported, three were property damage only and one complaint of pain.

Figure 7.1 displays collision severity for all collisions within the study intersections. For the 5-year period, there were no fatalities and one severe injury collision at W Ocean Boulevard and Golden Shore. The severe injury was a vehicle/pedestrian collision. The intersection collisions by year and collision summary reports are located in **Appendix D – Collision Summary**.

As shown in **Figure 7.2**, the pedestrian and bicycle collisions are mapped by severity for the 5-year period. The intersection at W Ocean Boulevard and Golden Shore had two collisions reported with severity consisting of severe injury and other visible injury.

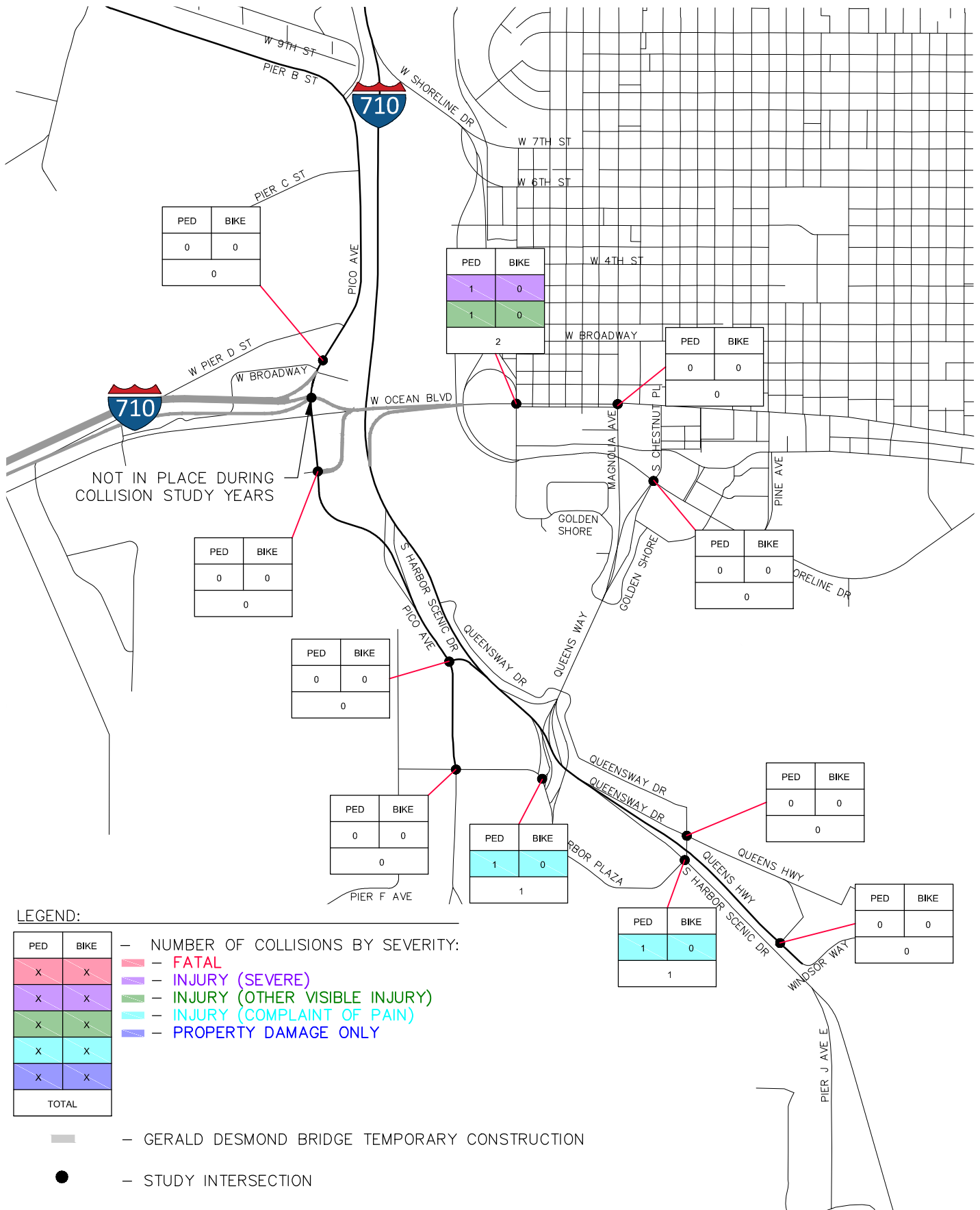


Carnival Cruise
Long Beach Cruise Terminal Improvement Project

**Intersection Collision Data:
Collisions by Severity
Years 2013 - 2017**

Project No. 11183495
Report No. RPT.01
Date 4/5/2019

Figure 7.1



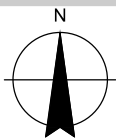
LEGEND:

PED	BIKE
X	X
X	X
X	X
X	X
X	X
TOTAL	

- NUMBER OF COLLISIONS BY SEVERITY:
- — FATAL
 - — INJURY (SEVERE)
 - — INJURY (OTHER VISIBLE INJURY)
 - — INJURY (COMPLAINT OF PAIN)
 - — PROPERTY DAMAGE ONLY

— GERALD DESMOND BRIDGE TEMPORARY CONSTRUCTION

● — STUDY INTERSECTION



Carnival Cruise
Long Beach Cruise Terminal Improvement Project

**Intersection Collision Data:
Pedestrian and Bicycle Collisions
Years 2013 - 2017**

Project No. 11183495
Report No. RPT.01
Date 2/7/2019

Figure 7.2



7.2 Bicycle and Pedestrian Activity

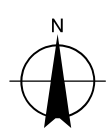
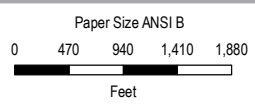
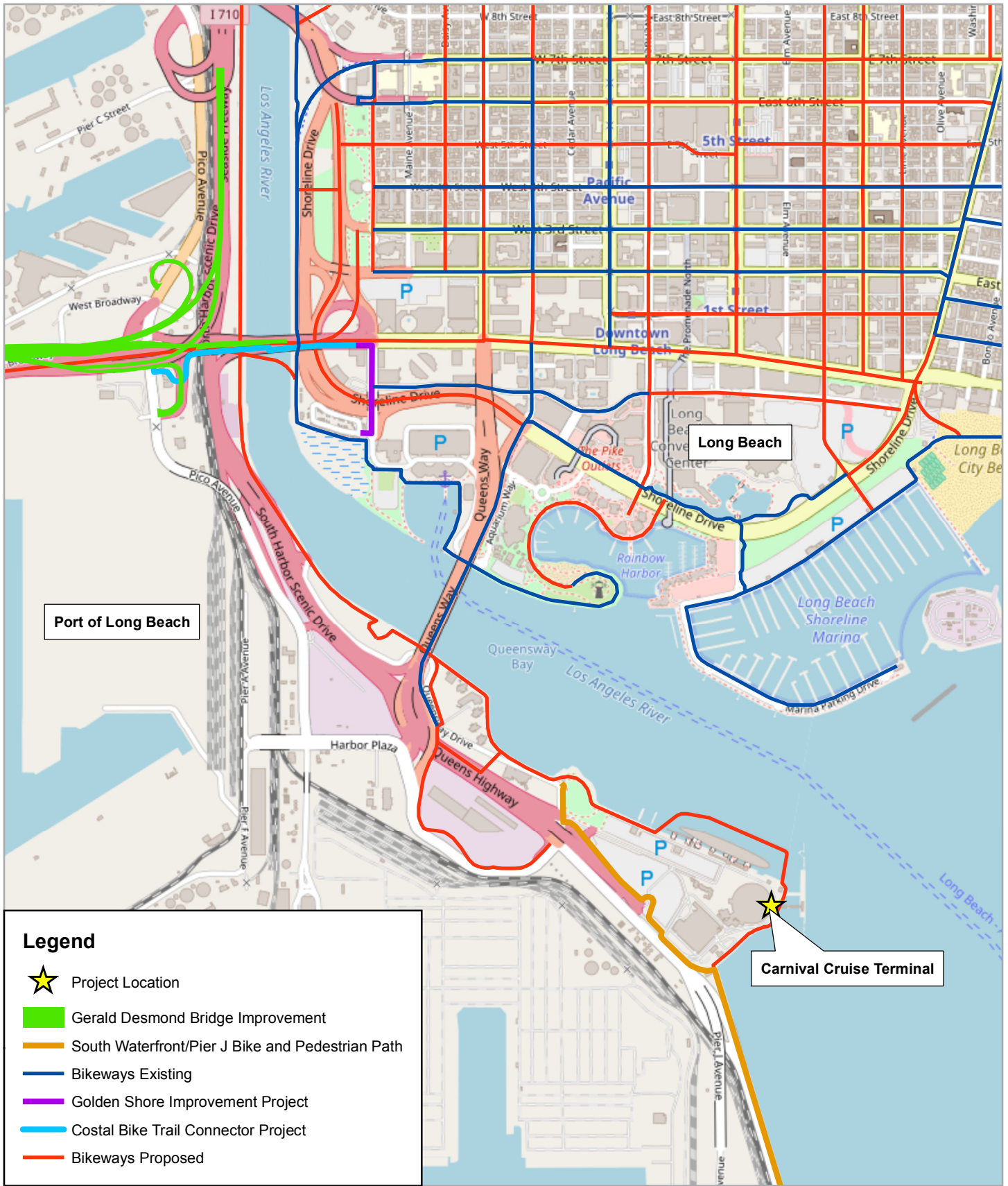
Bicycle and Pedestrian counts were collected at all study intersection. These counts can be viewed in **Appendix E – Bicycle and Pedestrian Counts, Figure E1**. The study intersections in the City of Long Beach (W Queens Boulevard at Magnolia Avenue / Queens Way and W Shoreline Drive at Queens Way / S Chestnut Place) had the highest pedestrian and bicycle volumes on the Saturday peak hours (9-10 a.m. and 1-2 p.m.).

In the POLB, the study intersection with the highest pedestrian and bicycle volumes during Saturday study periods was Harbor Plaza and Queens Way Drive / Queens Highway.

In coordination with the City of Long Beach, Active Transportation Projects (ATP) in the study area were provided at the traffic meeting on October 25, 2018. The ATP projects were as follows:

- Golden Shore Connector LA River Path to Gerald Desmond Bridge
- Ocean Boulevard Coastal Bike Trail Connector
- South Waterfront / Pier J – Bike and Pedestrian Path – Segments 2-6
- Coastal Bike Trail Connector Project

As shown in **Figure 7.3**, the South Waterfront / Pier J ATP project will provide an ADA compliant bike and pedestrian path (shared use path) from Queensway Bridge to Queensway Drive. This project closes a critical bicycle network gap between existing Class I path on the Queensway Bridge and the existing Class I bike and pedestrian path along the South Waterfront Park. This path travels along Harbor Scenic Drive, Harbor Plaza, and parts of Windsor Way to serve the Carnival main intersection at Queens Highway and Windsor Way. The project will provide a shared use path along the north side of Windsor Way on the approach to Queens Highway. At the Windsor Way and Queens Highway intersection, a crosswalk will be provided on the north leg of the intersection so the shared use path to continue along the east side of S Harbor Scenic Drive. Once these improvements are complete, the project will improve the pedestrian and bicycle connections to the LBCT.



City of Long Beach
Carnival Cruise TIAR

Project No. 11183495
Revision No. -
Date 02/08/2019

Active Transportation Projects

Figure 7.3

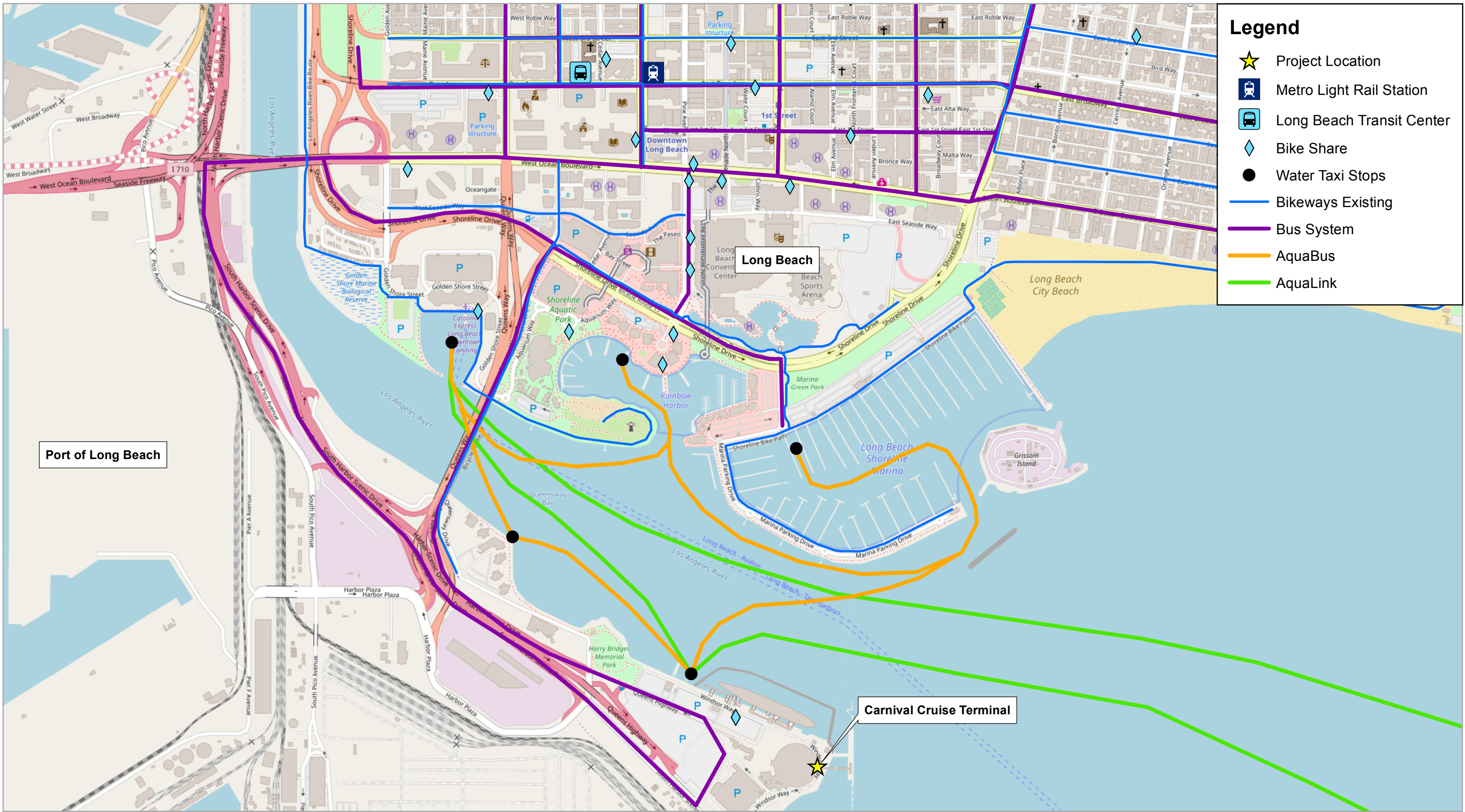


7.3 Alternate Transportation Services

Currently, there is free bus service between Downtown Long Beach and the Queen Mary. The Passport provides a free circulator bus to significant City of Long Beach destinations and connects to the main transit station and Metro Blue Line. The stop at the Queen Mary is provided for both the northbound and southbound directions on the weekdays (Monday-Friday) and weekends (Saturday and Sunday).

The weekday schedule varies but during the peak hours it typically runs every 15 minutes from 9:46 a.m. to 8:18 p.m. for the southbound direction and from 10:00 a.m. to 8:00 p.m. in the northbound direction. The weekend schedule runs every 10-12 minutes from 11:50 a.m. to 7:58 p.m. in the southbound direction and every 10 minutes in the northbound direction from 10:00 a.m. to 7:00 p.m. Further information in regards to the bus schedule and routes can be found in **Appendix F – Alternative Transportation Services**.

As shown in **Figure 7.4**, Alternative Transportation Services, there are several different modes of transit in the City of Long Beach. For the Queen Mary there is the free bus service, bike share, aqua bus and aqua link. With the LBCT adjacent to the Queen Mary these transit options are also available to the passengers and employees. In addition, **Figure F1** in the **Appendix F** displays Alternative Transportation Services for a larger area in the City of Long Beach.



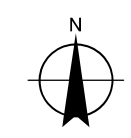
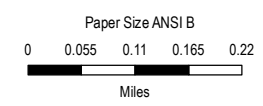
Legend

- Project Location
- Metro Light Rail Station
- Long Beach Transit Center
- Bike Share
- Water Taxi Stops
- Bikeways Existing
- Bus System
- AquaBus
- AquaLink

Port of Long Beach

Long Beach

Carnival Cruise Terminal



City of Long Beach Carnival Cruise TIA
 Alternative Transportation Services

Project No. 11181196
 Revision No. -
 Date 10/11/2018

FIGURE 7.4

\\ghdnet\ghd\US\Sacramento\Projects\11111183495 Atkins Long Beach Cruz Terminal Impl\08-GIS\Maps\Working\Improvement Projects Map.mxd
 Print date: 14 Nov 2018 - 14:58

Data source: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: esamay



7.4 Parking Assessment

Carnival has plans to increase the capacity of the current parking garage by approximately 47%. The parking structure currently has 1,396 striped stalls for passengers and employees. During peak Saturday conditions, the parking structure is at capacity and approximately 100 employee vehicles are parked at an off-site location. The parking structure has been designed to accommodate 659 additional parking stalls. The increase will provide a total of 2,055 parking stalls. In addition, the access for the fire department is proposed to have a priority lane for left turns onto S Harbor Scenic Drive (new design removes left turn conflict with having southbound through traffic left of center). This would improve the emergency services access.

Data provided by Carnival gives the average number of passengers that disembark all vessels throughout the year, the corresponding number of transactions, the mode split for arriving passengers, and the passenger capacity of the three vessels currently porting at Long Beach over the peak period. This data was used to determine an approximation of the number of passengers per vehicle that park at the current parking structure.

To determine an approximate occupancy rate per vehicle for the passengers that drive to the POLB and utilize the parking structure, the average number of passengers that disembark the vessel was reduced to accommodate for the passengers that use public transit and ride sharing services. Data collected from passengers indicates that approximately 83% drive and park cars, 5% use public transit, 5.2% use shuttles or private bus, and 6.8% use ride sharing services. It is assumed that the 17% using public transit and ride sharing services do not use the parking structure and therefore the total number of passengers that uses the parking structure and disembark the vessel was reduced by 17%. This average amount of passengers was then divided by the average number of transactions that occur. This gives an average rate of approximately 3.7 passengers per transaction. One transaction is equivalent to one vehicle.

The delivery of the Carnival Panorama is expected for December 2019. The Panorama has an average passenger capacity of 4,008 passengers. This is an increase of approximately 1,000 passengers. With the increase in passengers, the same ratio of passenger arrival behavior is assumed. The increase will require approximately 270 additional stalls to be necessary for the increased number of passengers. In addition, with the larger cruise vessel there will be an increase of staff required for the Saturday 1st shift which is from 8 a.m. to 5 p.m. There will be 38 additional staff for the Saturday shift. With the current need for 100 additional parking spaces for staff and the additional 38 staff (assuming worst case conditions with all staff driving alone (no carpool or public transit), the overall need is 270 parking stalls for passengers + 138 parking stalls for employees which equals 408 parking stalls in total. In addition, using the average occupancy of rooms (assuming no families or friends carpoled together) for the 5-day cruise schedule of 2.3 persons per room, there would be a need for 435 parking stalls + 138 parking stalls for employees, which equals 573 parking stalls. With the 659 additional parking stalls there should be sufficient parking to meet the additional demands with the larger cruise vessel.



8. Results and Conclusions

The Port of Long Beach Carnival Terminal Improvement Project will result in increased project trips during an off-peak period on a Saturday. The larger vista-class cruise ship, Panorama, is scheduled to replace the Splendor in December 2019. To accommodate the larger ship, improvements to the existing cruise terminal are proposed. These improvements include extension of the existing passenger bridge system; additional high-capacity mooring dolphins; improvement and maintenance dredge activity in the harbor; replacement of existing foam-filled fenders; and expansion of the existing parking garage.

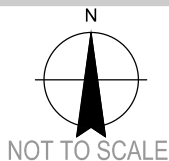
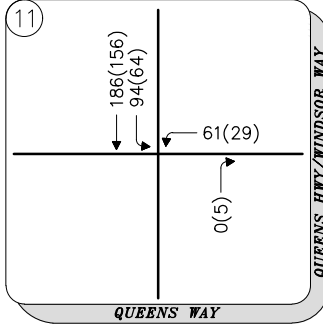
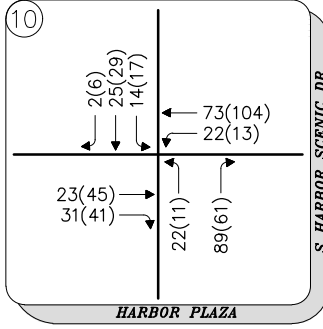
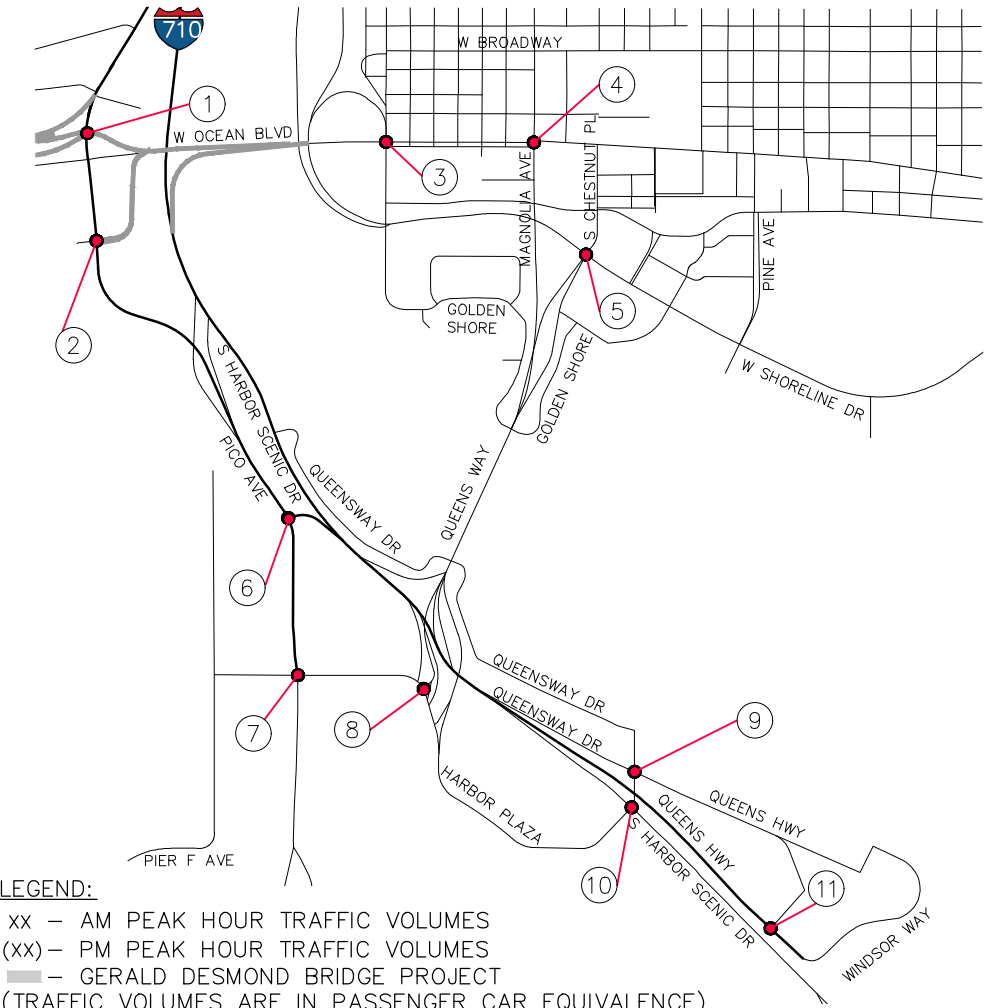
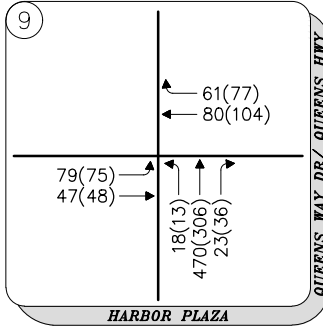
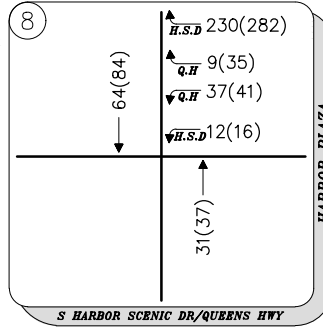
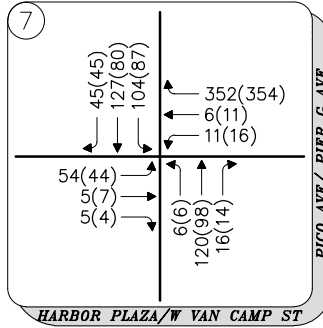
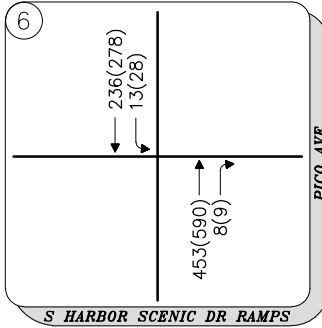
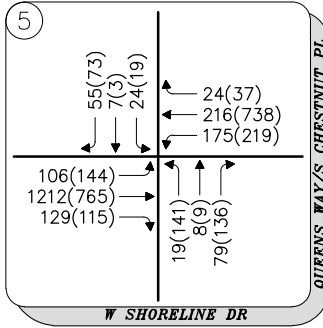
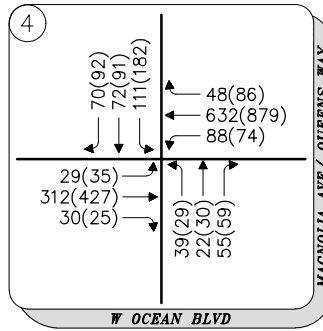
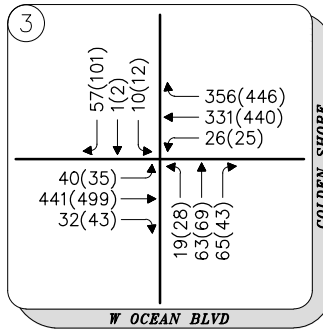
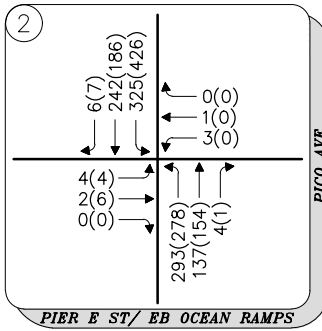
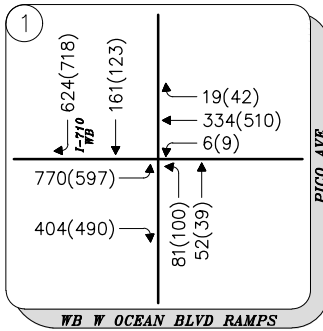
With the larger ship, an approximate increase of 1,000 passengers (33% increase) is expected to occur Saturdays. To address the additional parking needs for passengers and crew, an additional 659 parking stalls will be added to the existing parking garage for a total of 2,055 stalls. Based on current parking characteristics, this will be more than sufficient to address the increased parking needs.

After analysis, it has been determined that this project will not have a substantial impact to future traffic except for one intersection in the Existing Conditions Plus Project Scenario. The intersection at Pico Avenue and W Ocean Boulevard is currently straddling the LOS threshold between LOS D and LOS E, with LOS D. With the addition of project trips, this intersection degrades to LOS E. This is likely due to the long-term closures on W Ocean Boulevard and I-710 where the eastbound and westbound traffic on W Ocean Boulevard and NB I-710 traffic have to travel through this one intersection. To help mitigate this significant impact, it is recommended that congestion management strategies be put into place if the detour and closure conditions are still in place when the Panorama begins the cruise schedule. These strategies could include traffic signal timing modifications and monitoring of traffic during peak hours for signal adjustments, grouping passenger trips to/from the airport by buses, and alternative transportation options.

Since there is no change in the project's location and the Gerald Desmond Bridge Replacement Project should be complete by end of 2019, the access and travel patterns to the LBCT should be relatively the same during the Opening Year. Furthermore, with the City of Long Beach Active Transportation Projects in the study area, there will be more alternative transportation choices in accessing the LBCT terminal. With the South Waterfront/ Pier J improvements, the Carnival Cruise Line site will benefit from an ADA compliant shared use path (Class I) that connects Queensway Bridge and the existing Class I bike and pedestrian path along the South Waterfront Park.

Appendix A

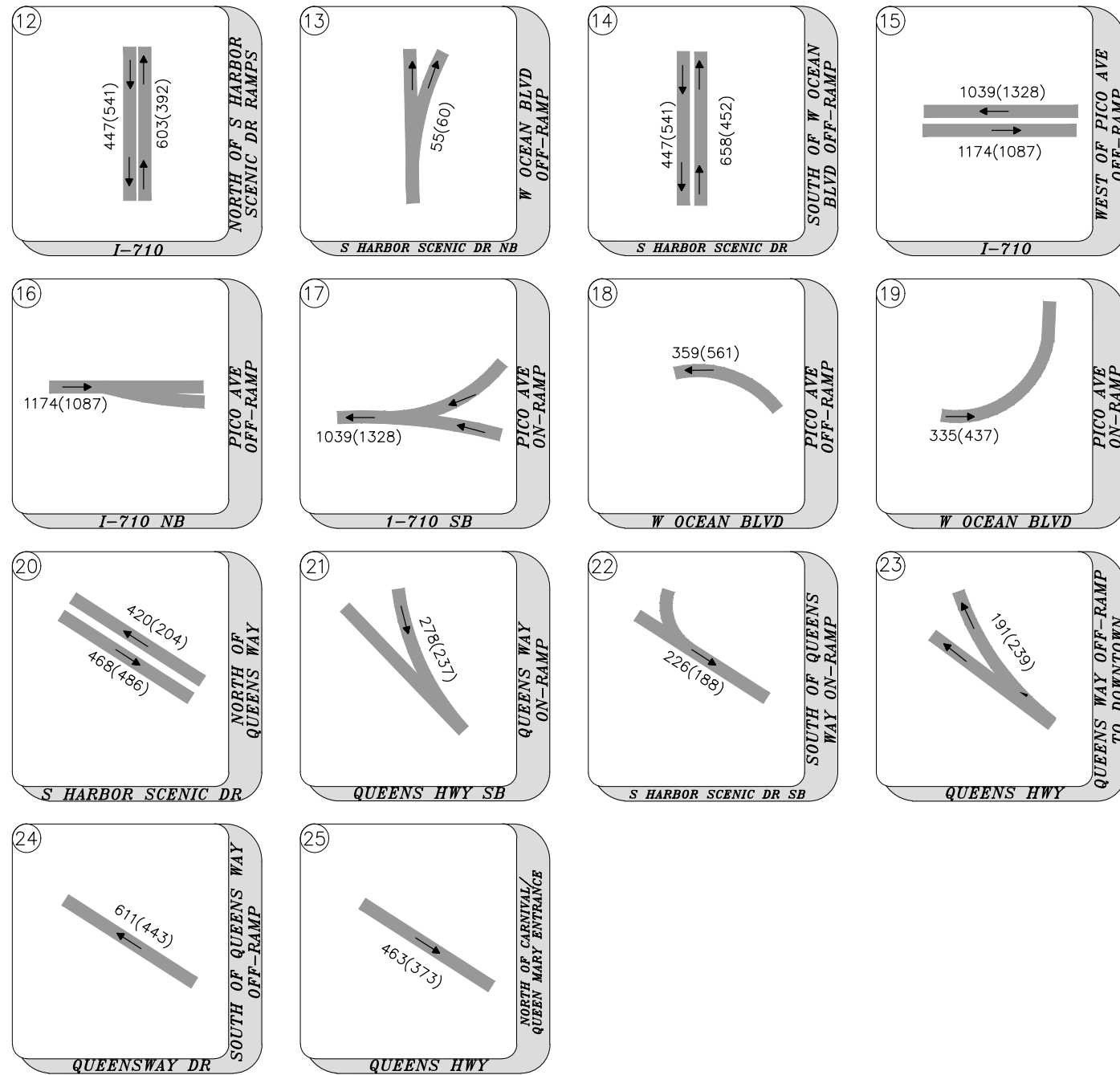
Traffic Volume Data



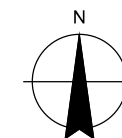
Carnival Cruise
Long Beach Cruise Terminal Improvement Project

**Existing Condition 2018
Saturday Peak Hour Volumes
Study Intersections**

Project No. 11183495
Report No. RPT.01
Date 3/11/2019

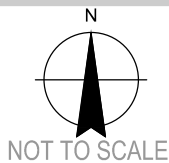


LEGEND:
 xx(xx) - AM(PM) PEAK HOUR TRAFFIC VOLUMES
 — GERALD DESMOND BRIDGE PROJECT



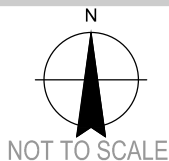
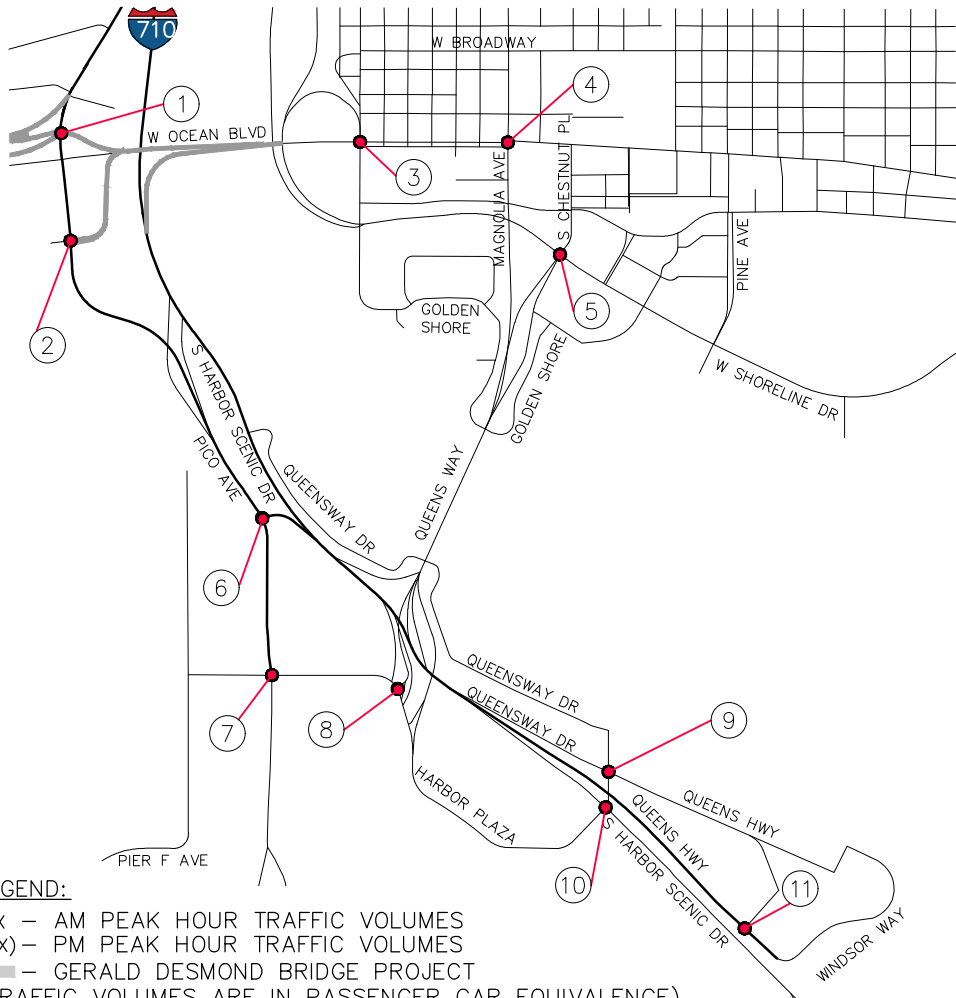
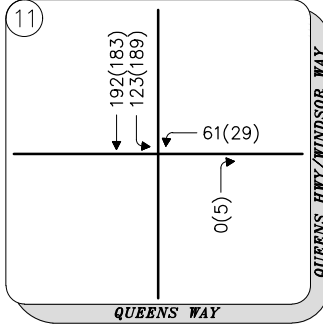
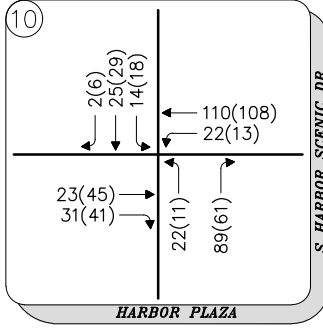
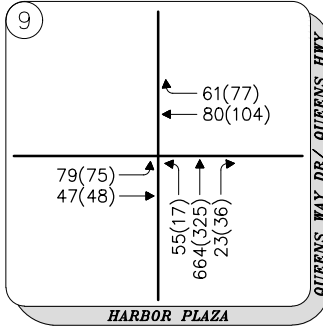
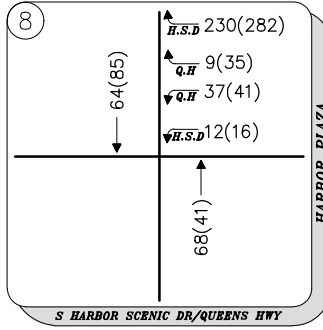
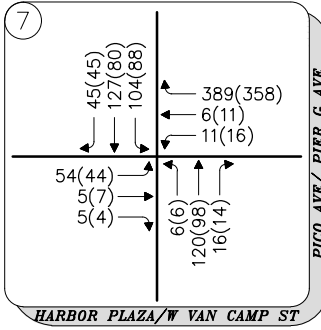
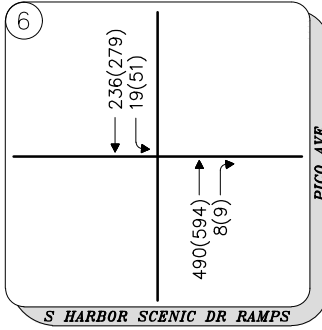
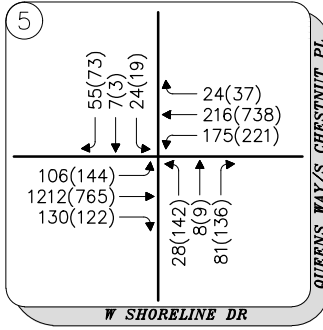
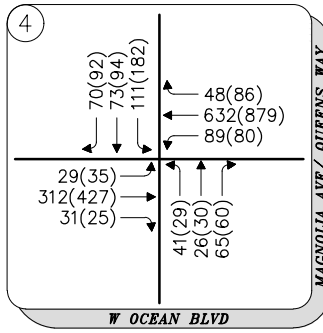
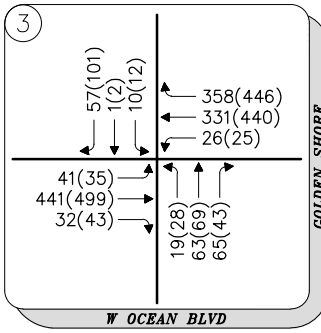
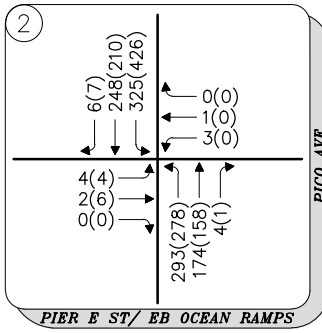
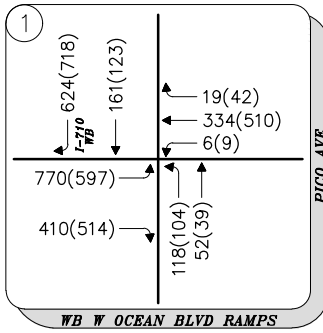
Carnival Cruise Long Beach Cruise Terminal Improvement Project
 Existing Condition 2018
 Saturday Peak Hour Volumes
 Ramps and Mainline Segments

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



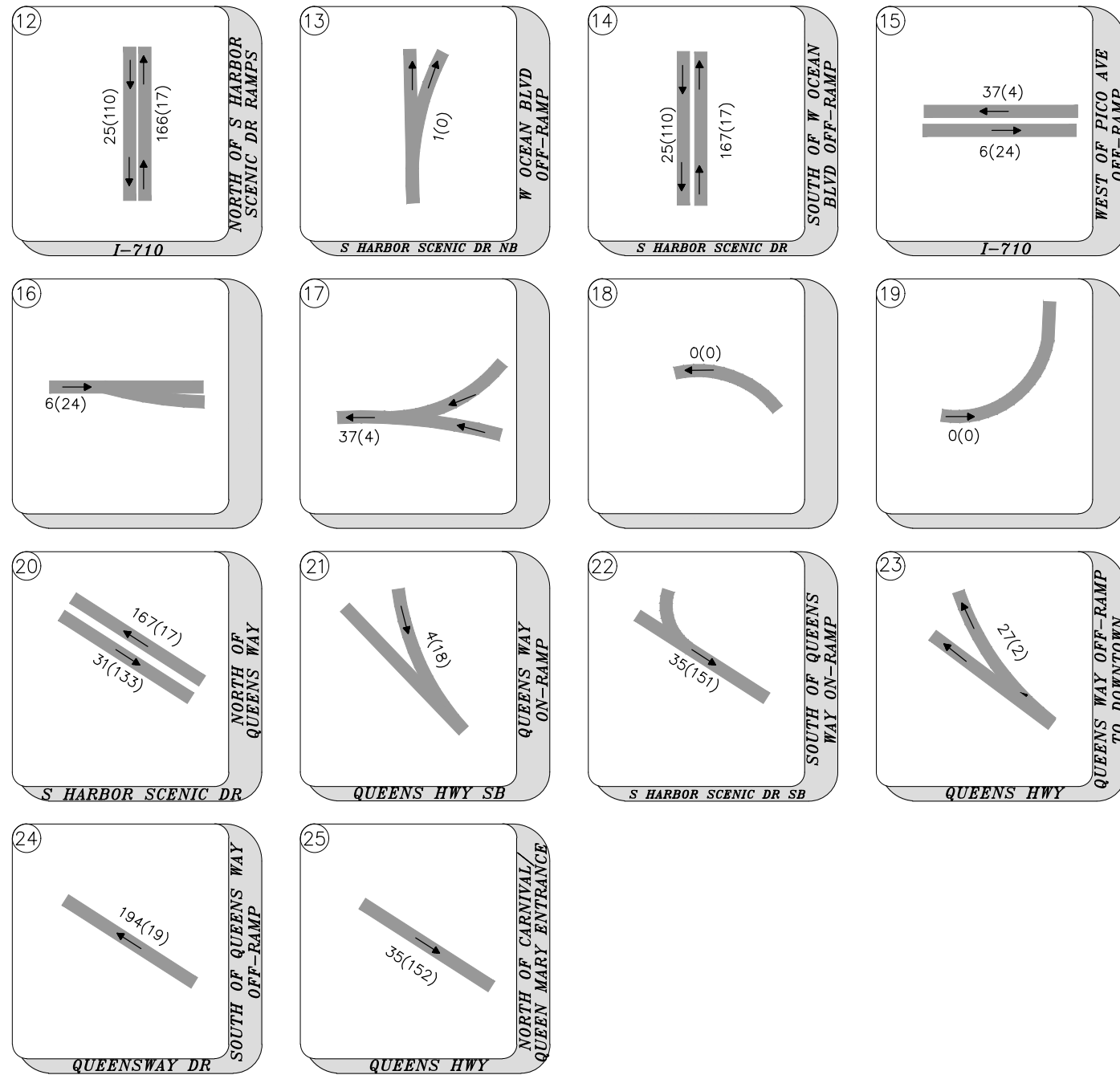
Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
Existing Condition 2018 Net Project Trips
Saturday Peak Hour Volumes
Study Intersections

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019

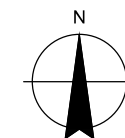


Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
**Existing Condition 2018 + Project
 Saturday Peak Hour Volumes
 Study Intersections**

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019

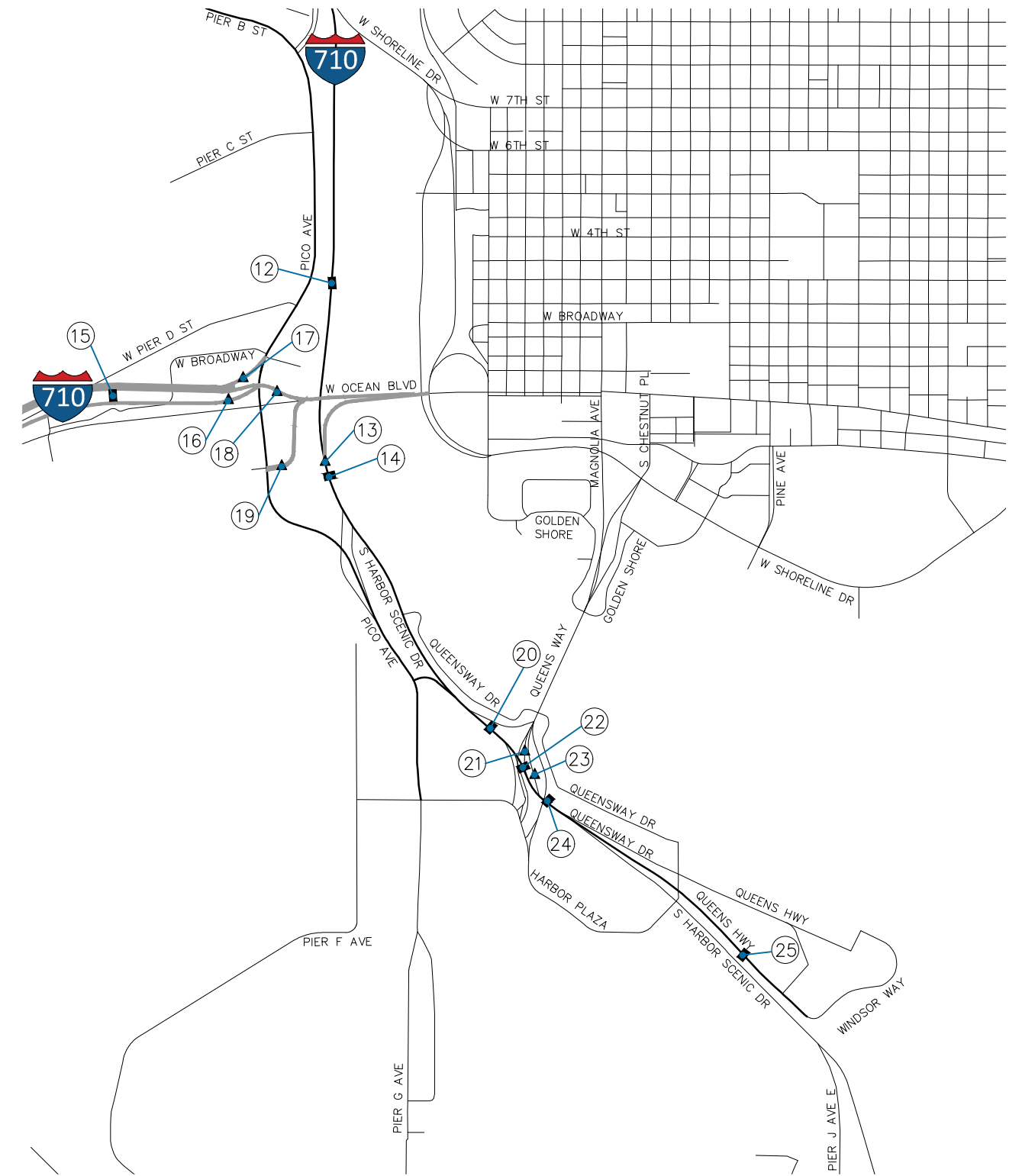
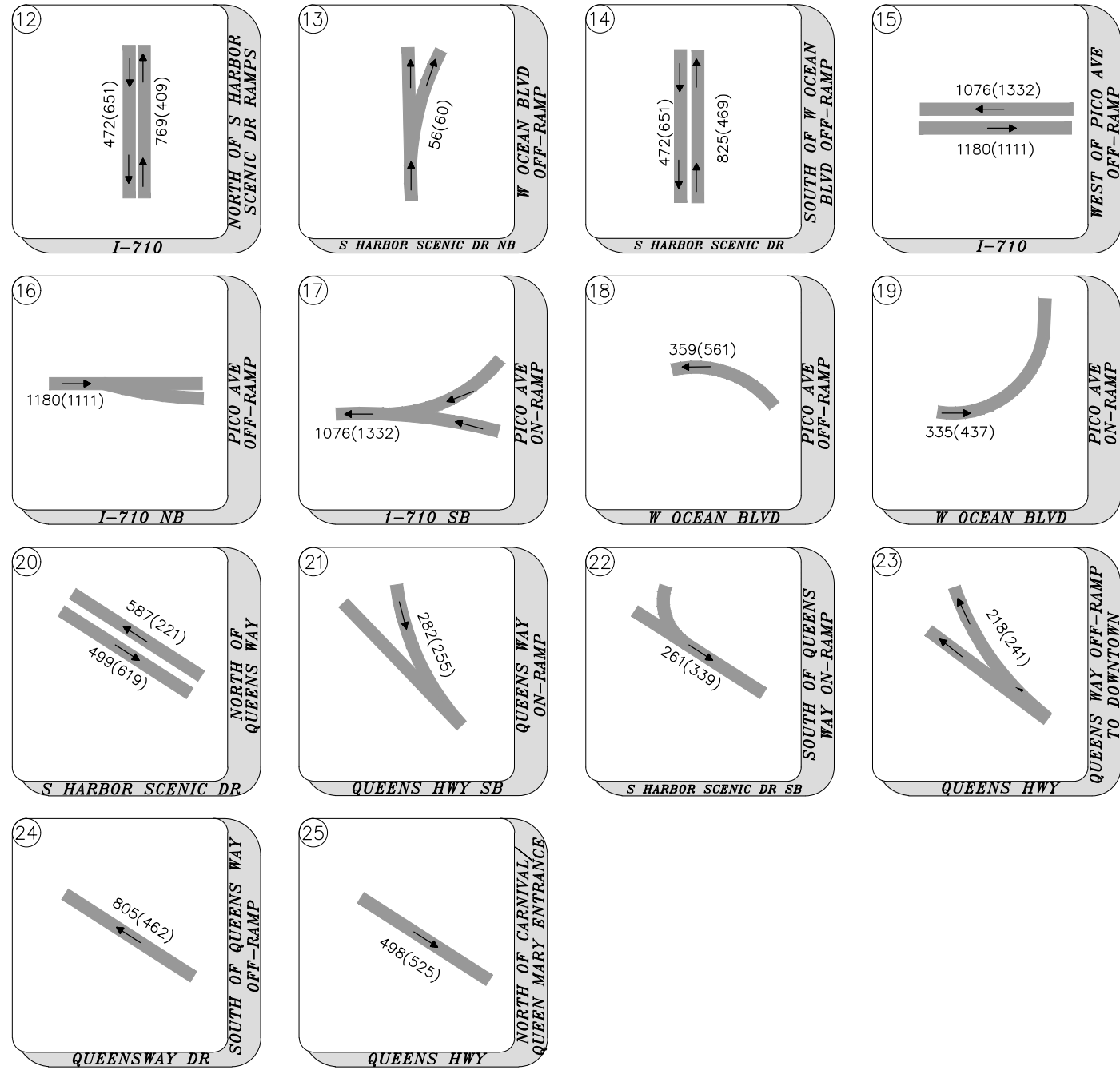


LEGEND:
 xx(xx) - AM(PM) PEAK HOUR TRAFFIC VOLUMES
 — GERALD DESMOND BRIDGE PROJECT

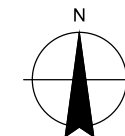


Carnival Cruise Long Beach Cruise Terminal Improvement Project
 Existing Condition 2018 Net Project Trips Saturday Peak Hour Volumes Ramps and Mainline Segments

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019

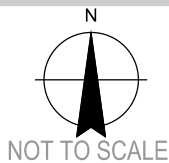


LEGEND:
 xx(xx) - AM(PM) PEAK HOUR TRAFFIC VOLUMES
 — GERALD DESMOND BRIDGE PROJECT



Carnival Cruise Long Beach Cruise Terminal Improvement Project
Existing Condition 2018 + Project Saturday Peak Hour Volumes Ramps and Mainline Segments

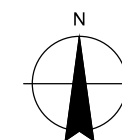
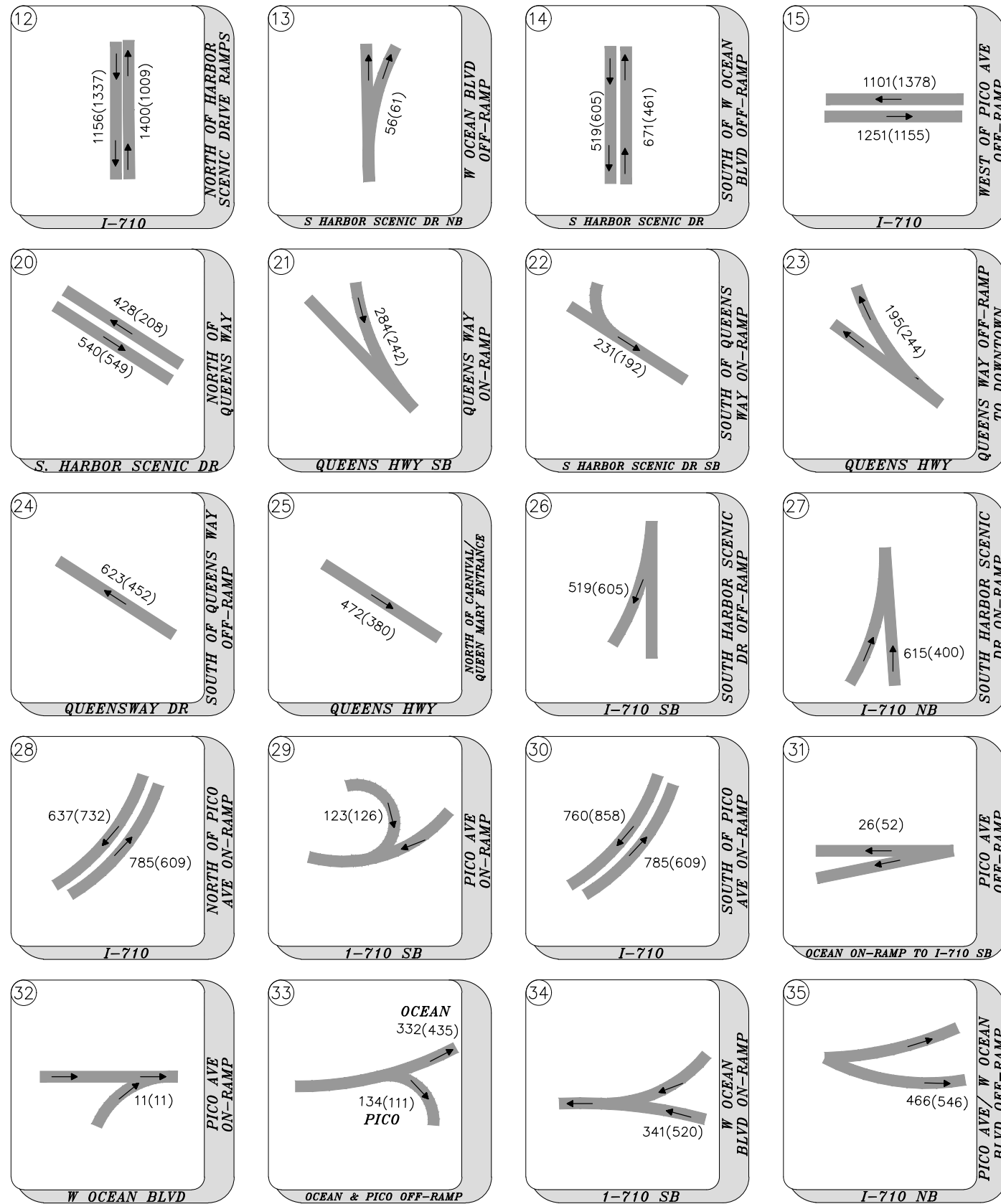
Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



Carnival Cruise
 Long Beach Cruise Terminal Improvement Project

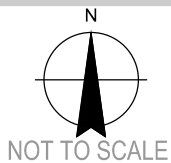
**Opening Year 2020
 Saturday Peak Hour Volumes
 Study Intersections**

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



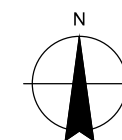
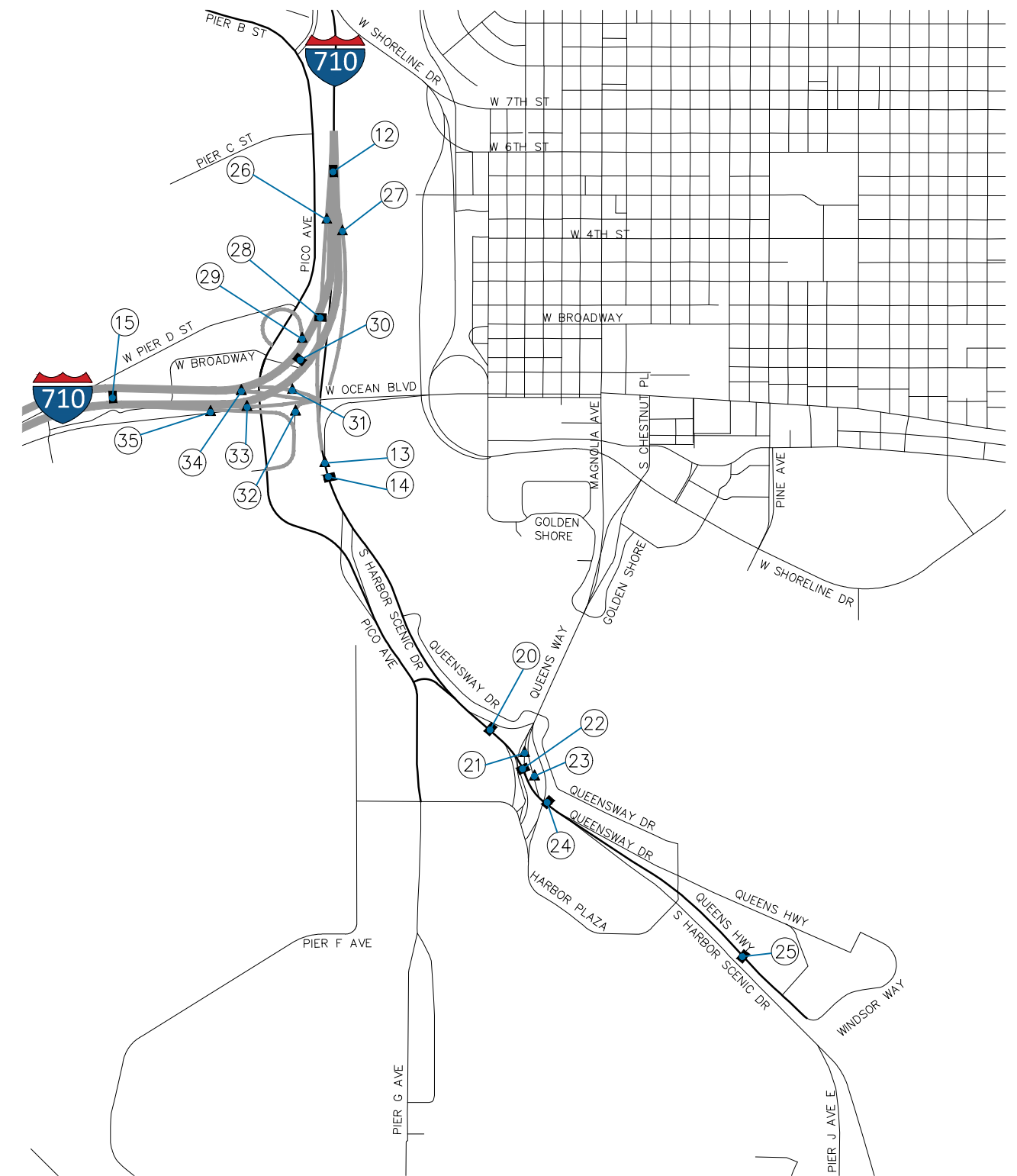
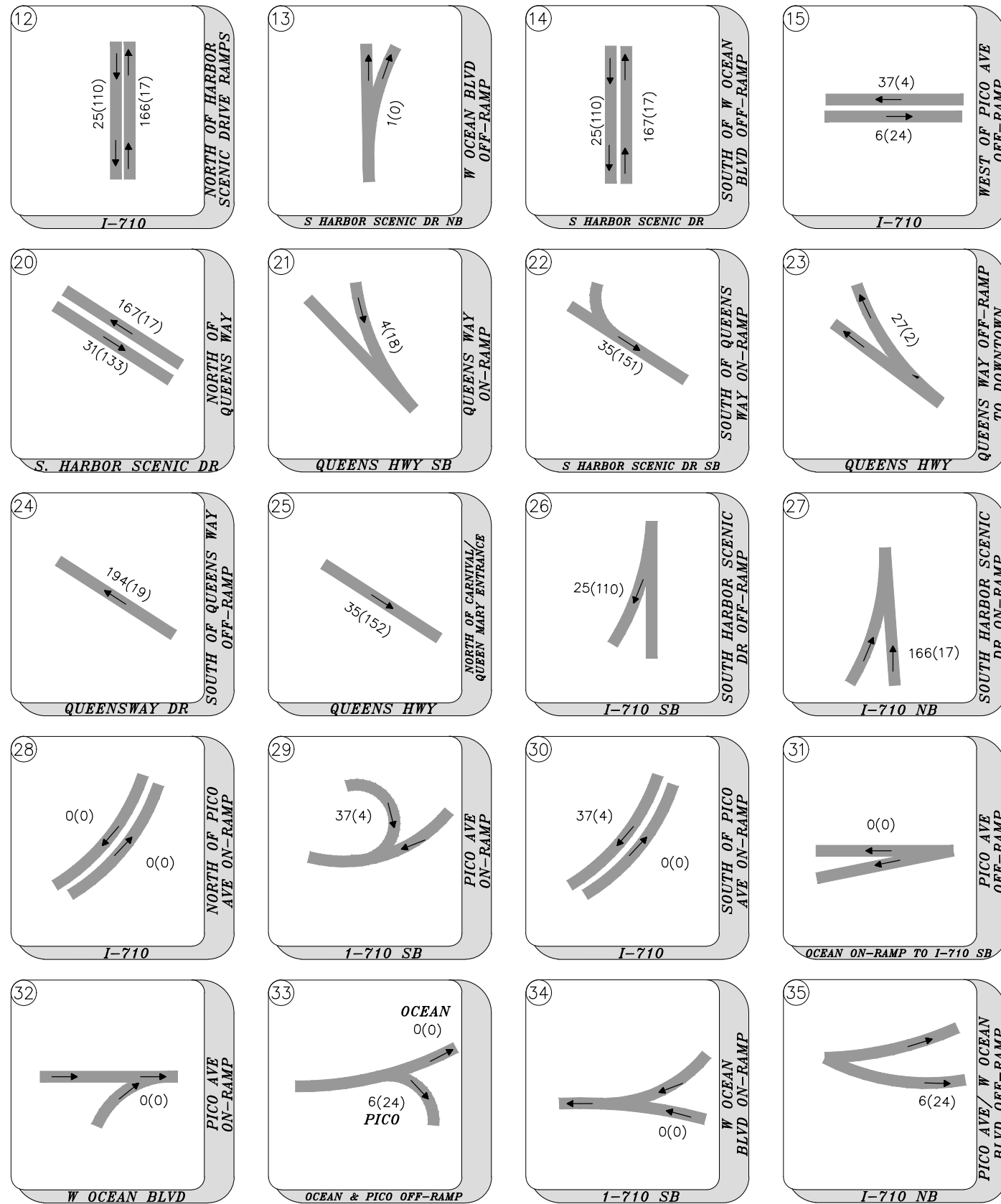
Carnival Cruise Long Beach Cruise Terminal Improvement Project
 Opening Year 2020
 Saturday Peak Hour Volumes Ramps and Mainline Segments

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



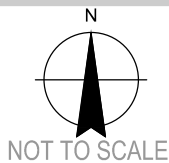
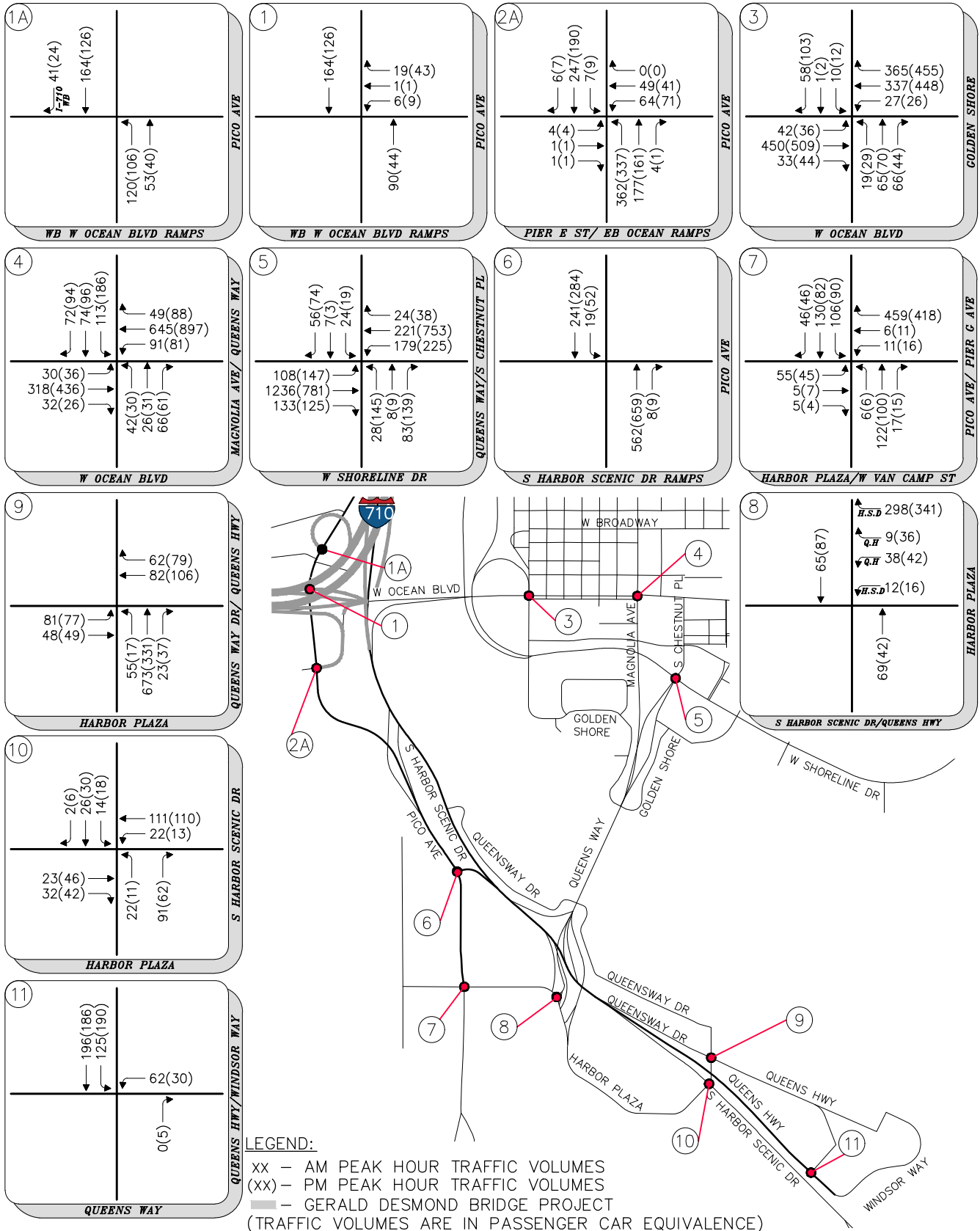
Carnival Cruise
 Long Beach Cruise Terminal Improvement Project
Opening Year 2020 Net Project Trips
Saturday Peak Hour Volumes
Study Intersections

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



Carnival Cruise Long Beach Cruise
Terminal Improvement Project
Opening Year 2020 Net Project trips
Saturday Peak Hour Volumes
Ramps and Mainline Segments

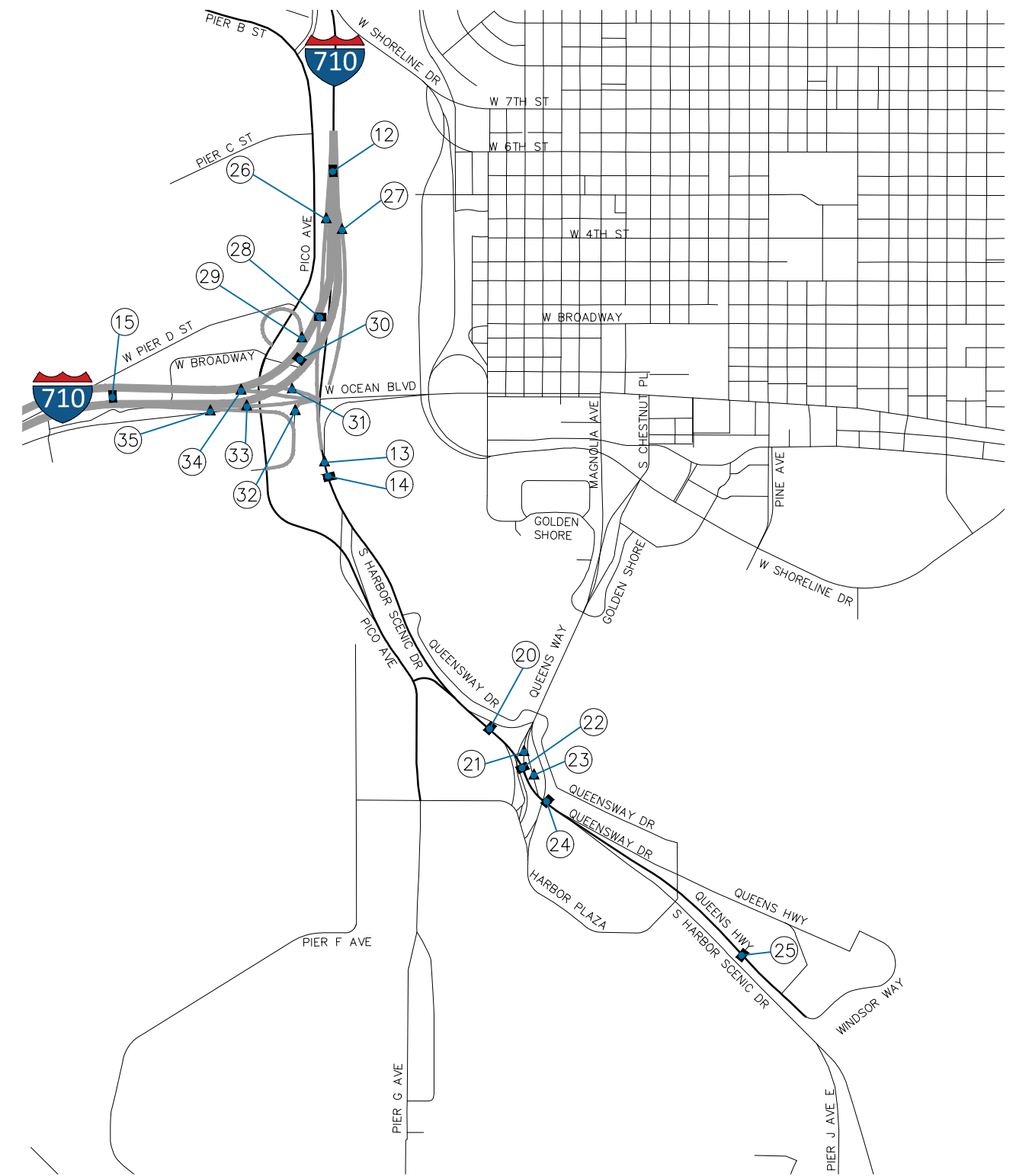
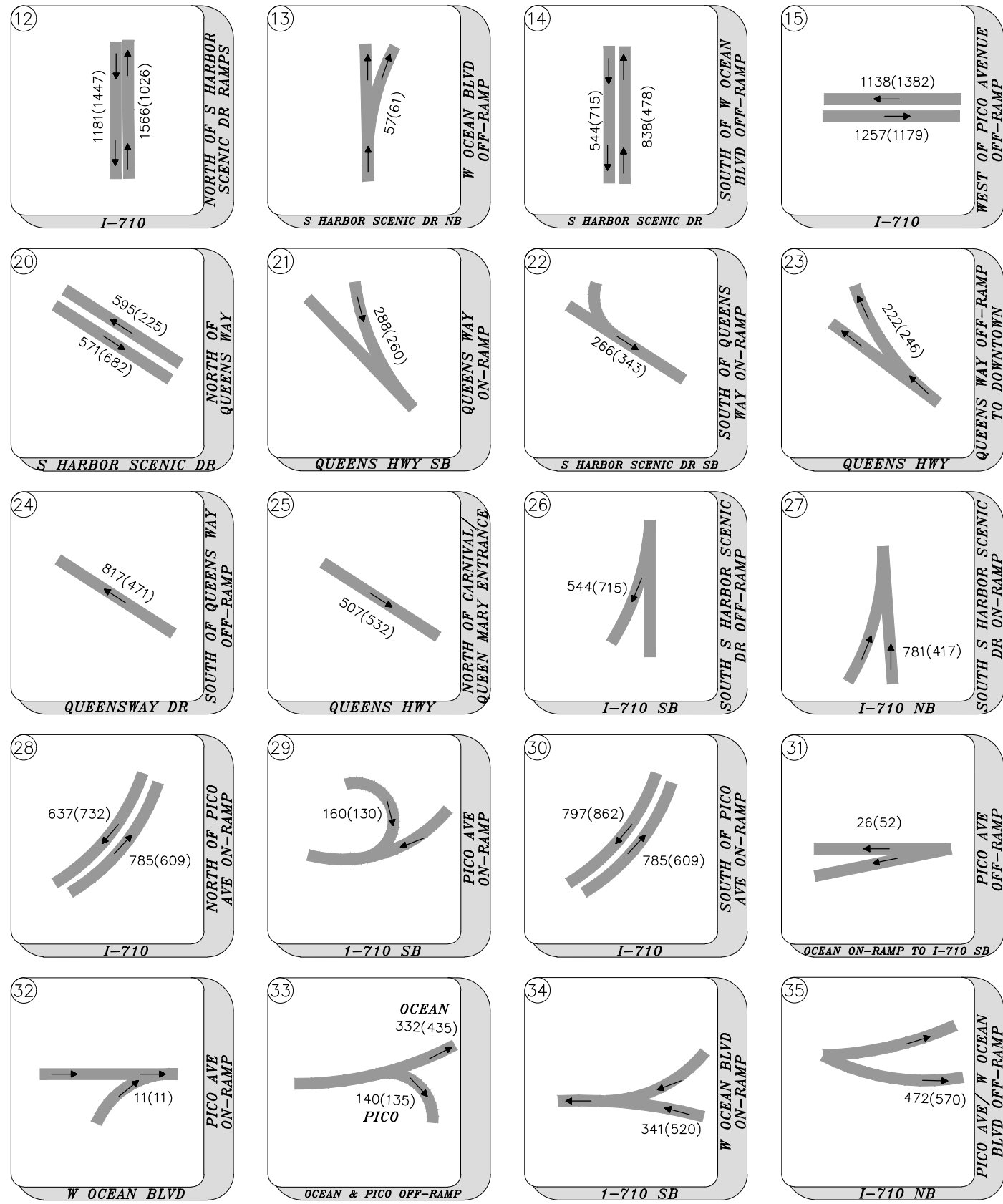
Project No. 11183495
Report No. RPT.01
Date 3/11/2019



Carnival Cruise
 Long Beach Cruise Terminal Improvement Project

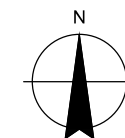
**Opening Year 2020 + Project
 Saturday Peak Hour Volumes
 Study Intersections**

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



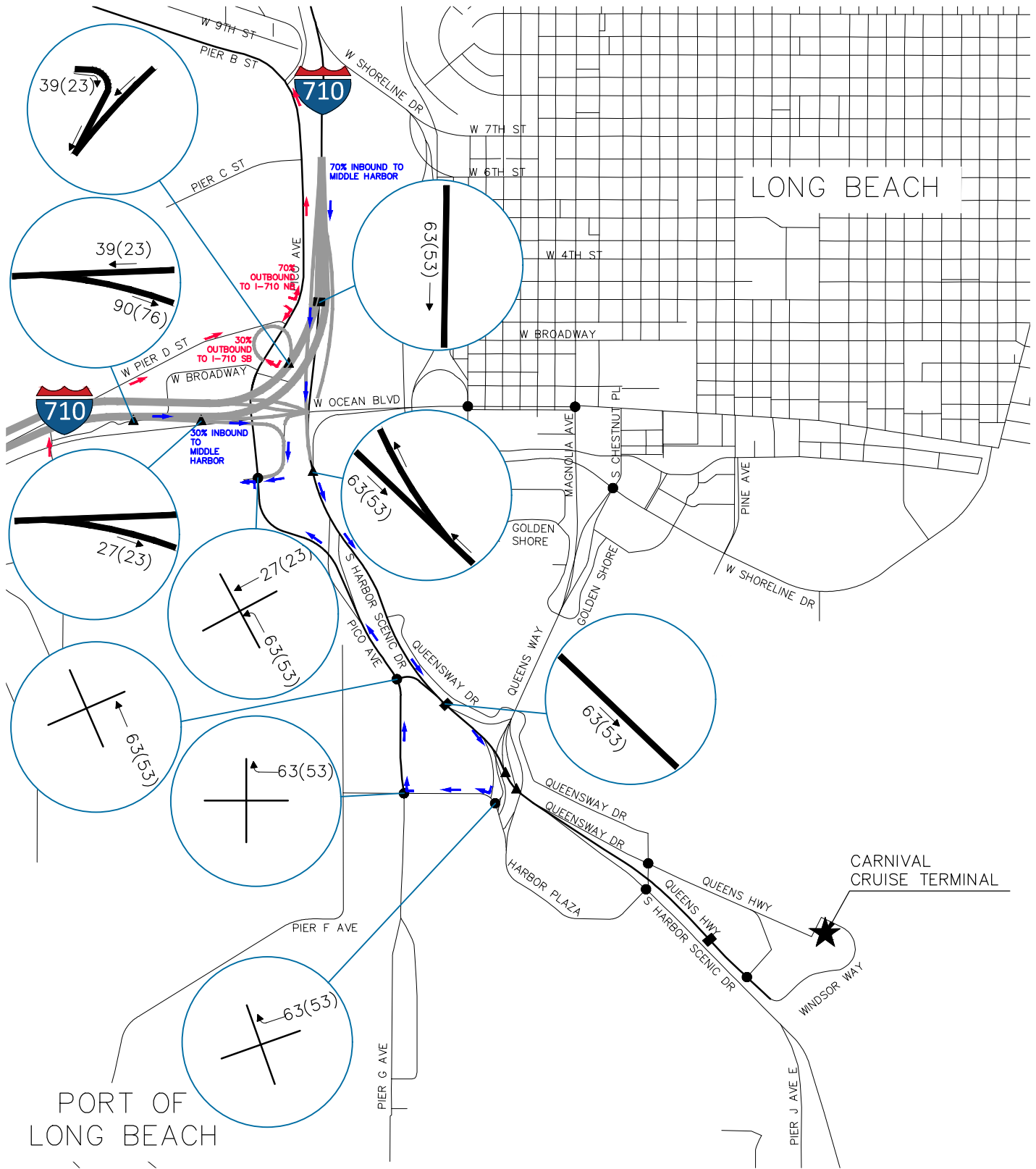
LEGEND:
 xx - AM PEAK HOUR TRAFFIC VOLUMES
 (xx) - PM PEAK HOUR TRAFFIC VOLUMES
 ■ - GERALD DESMOND BRIDGE PROJECT

STUDY SEGMENTS 16-19 HAVE BEEN PERMANENTLY CLOSED OR MOVED UNDER ULTIMATE CONFIGURATION



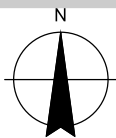
Carnival Cruise Long Beach Cruise Terminal Improvement Project
 Opening Year 2020 + Project Saturday Peak Hour Volumes Ramps and Mainline Segments

Project No. 11183495
 Report No. RPT.01
 Date 3/11/2019



LEGEND:

- GERALD DESMOND BRIDGE PROJECT
- STUDY INTERSECTION
- MAINLINE SEGMENT
- ▲ RAMP SEGMENT
- XX — AM VOLUMES
- (XX) — PM VOLUMES



Carnival Cruise
Long Beach Cruise Terminal Improvement Project

Project No. 11183495
Report No. RPT.01
Date 3/11/2019

Opening year 2020
Saturday Peak Hour Volumes
Middle Harbor Project

A13

Traffic Count
Saturday AM

Intersection No:		1		Name: PICO AVE/ WB W OCEAN BLVD OFF RAMP/I -710 RAMPS							North/South Street:		Pico Ave						
Count Date:		1/5/2019		Peak Hour:		9:00 AM - 10:00 AM					East/West Street:		Ocean Blvd WB Ramps						
Vehicle Type	PCE	Time	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)				
			Left	Thru	Right*	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	0	7	47	0	0	74	5	0	4	1	0	0	53	0	68	0	
		09:15 AM	0	11	60	0	2	63	7	0	5	6	0	0	52	0	74	0	
		09:30 AM	0	4	71	0	0	87	4	0	3	2	0	0	68	0	76	0	
		09:45 AM	0	4	65	0	4	82	1	0	3	7	0	0	79	0	88	0	
		Total	0	26	243	0	6	306	17	0	15	16	0	0	252	0	306	0	
Large 2 Axle Vehicle	1.2	09:00 AM	0	1	0	0	0	2	0	0	2	0	0	0	0	0	0	0	
		09:15 AM	0	0	1	0	0	2	0	0	0	0	0	0	1	0	0	0	
		09:30 AM	0	0	2	0	0	1	0	0	0	0	0	0	1	0	4	0	
		09:45 AM	0	0	1	0	0	2	0	0	3	0	0	0	3	0	1	0	
		Total	0	1	4	0	0	7	0	0	5	0	0	0	5	0	5	0	
3 Axle Vehicle	2	09:00 AM	0	1	10	0	0	2	0	0	3	0	0	0	4	0	4	0	
		09:15 AM	0	0	8	0	0	2	0	0	3	1	0	0	2	0	4	0	
		09:30 AM	0	1	6	0	0	3	0	0	5	1	0	0	0	0	5	0	
		09:45 AM	0	1	4	0	0	0	0	0	1	1	0	0	6	0	5	0	
		Total	0	3	28	0	0	7	0	0	12	3	0	0	12	0	18	0	
4+ axle Trucks	2	09:00 AM	0	19	40	0	0	1	1	0	3	4	0	0	63	0	4	0	
		09:15 AM	0	18	45	0	0	0	0	0	3	3	0	0	50	0	4	0	
		09:30 AM	0	9	37	0	0	0	0	0	8	5	0	0	67	0	9	0	
		09:45 AM	0	18	38	0	0	1	0	0	4	3	0	0	61	0	9	0	
		Total	0	64	160	0	0	2	1	0	18	15	0	0	241	0	26	0	
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		09:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		Total	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			0	94	435	0	6	323	18	0	50	34	0	0	513	0	357	0	
PCE Total			0	161	624	0	6	334	19	0	81	52	0	0	770	0	404	0	

* Pico Avenue Southbound Right is I-710 WB on-ramp from Pico Avenue; Permanent detour for mainline I-710 connector.

Traffic Count
Saturday AM

Intersection No:		2		Name: PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST							North/South Street:		Pico Ave						
Count Date:		1/5/2019		Peak Hour:			9:00 AM - 10:00 AM				East/West Street:		Pier E St / EB Ocean Blvd Ramps						
Vehicle Type	PCE	Time	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	70	11	0	0	0	0	0	0	0	4	0	0	0	1	0	0	
		09:15 AM	68	17	3	0	0	0	0	0	1	6	2	0	2	1	0	0	
		09:30 AM	69	11	0	0	0	0	0	0	1	8	1	0	0	0	0	0	
		09:45 AM	95	11	1	0	2	0	0	0	1	7	1	0	2	0	0	0	
		Total	302	50	4	0	2	0	0	0	3	25	4	0	4	2	0	0	
Large 2 Axle Vehicle	1.2	09:00 AM	0	4	0	0	1	1	0	0	8	5	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	1	2	0	0	0	0	0	0	4	2	0	0	0	0	0	0	
		09:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	1	7	0	0	1	1	0	0	12	7	0	0	0	0	0	0	
3 Axle Vehicle	2	09:00 AM	2	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	
		09:15 AM	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	
		09:30 AM	3	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0	
		09:45 AM	3	3	0	0	0	0	0	0	0	7	0	0	0	0	0	0	
		Total	8	12	0	0	0	0	0	0	0	20	0	0	0	0	0	0	
4+ axle Trucks	2	09:00 AM	1	20	0	0	0	0	0	0	27	6	0	0	0	0	0	0	
		09:15 AM	0	21	0	0	0	0	0	0	38	7	0	0	0	0	0	0	
		09:30 AM	0	19	1	0	0	0	0	0	24	11	0	0	0	0	0	0	
		09:45 AM	0	20	0	0	0	0	0	0	49	8	0	0	0	0	0	0	
		Total	1	80	1	0	0	0	0	0	138	32	0	0	0	0	0	0	
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	09:00 AM	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			314	149	5	42	3	1	0	0	153	84	4	0	4	2	0		
PCE Total			325	242	6	84	3	1	0	0	293	137	4	0	4	2	0		

Traffic Count
Saturday AM

Intersection No:		3		Name:		GOLDEN SHORE/ W OCEAN BLVD				North/South Street:		Golden Shore/Golden Avenue						
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		West Ocean Boulevard						
Vehicle Type	PCE	Time	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	09:00 AM	2	1	2	1	4	68	88	2	2	36	11	1	8	75	8	0
		09:15 AM	2	0	17	0	11	95	96	0	4	10	21	0	10	97	10	0
		09:30 AM	4	0	14	0	2	68	69	0	4	7	17	0	10	156	2	0
		09:45 AM	2	0	24	0	4	87	99	1	9	6	10	2	12	96	6	0
		Total	10	1	57	1	21	318	352	3	19	59	59	3	40	424	26	0
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
		09:15 AM	0	0	0	0	1	2	0	0	0	1	0	0	0	2	0	0
		09:30 AM	0	0	0	0	0	0	3	0	0	1	0	0	0	1	0	0
		09:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	1	4	3	0	0	2	0	0	0	6	0	0
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Buses	2	09:00 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0
		09:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
		09:30 AM	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0
		09:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0
		Total	0	0	0	0	2	2	0	0	0	1	2	0	0	2	3	0
Shuttle Buses	2	09:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0
Bicycles	0	09:00 AM	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
		09:15 AM	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		Total	1	1	0	0	0	1	0	0	0	2	9	0	0	0	0	0
Grand Total			10	1	57	1	24	326	355	3	19	62	62	3	40	435	29	0
PCE Total			10	1	57	1	26	331	356	3	19	63	65	3	40	441	32	0

Traffic Count
Saturday AM

Intersection No:		4		Name:		QUEENS WAY/ W OCEAN BLVD				North/South Street:		Queens Way/Magnolia Ave						
Count Date:		1/5/2019		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		West Ocean Blvd						
Vehicle Type	PCE	Time	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	09:00 AM	19	19	17	0	20	139	9	0	10	3	20	0	7	77	5	0
		09:15 AM	20	20	9	3	22	150	11	0	7	5	11	10	8	66	12	5
		09:30 AM	35	9	14	5	17	160	14	0	7	1	11	8	6	61	4	6
		09:45 AM	36	18	23	6	16	153	10	3	9	5	11	10	8	79	7	0
		Total	110	66	63	14	75	602	44	3	33	14	53	28	29	283	28	11
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	1	0	1	3	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
		09:45 AM	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
		Total	1	0	1	0	1	5	2	0	0	0	0	0	0	1	0	0
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
		09:15 AM	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
		Total	0	0	1	0	0	5	1	0	0	0	0	0	0	8	0	0
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	2	09:00 AM	0	0	0	0	1	3	0	0	0	1	0	0	0	1	0	0
		09:15 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	1	0	0
		09:30 AM	0	1	0	0	0	1	0	0	0	2	0	0	0	1	0	0
		09:45 AM	0	0	0	0	2	1	0	0	0	0	1	0	0	1	0	0
		Total	0	2	0	0	4	6	0	0	0	4	1	0	0	4	0	0
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0
		09:30 AM	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0
		09:45 AM	0	0	2	0	1	0	0	0	1	0	0	0	0	1	0	0
		Total	0	1	2	0	2	1	0	0	3	0	0	0	0	2	1	0
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		09:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
		09:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
		09:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
		Total	0	0	0	0	0	2	2	0	0	0	0	0	1	5	0	0
Grand Total			111	69	67	14	82	619	47	3	36	18	54	28	29	298	29	11
PCE Total			111	72	70	14	88	632	48	3	39	22	55	28	29	312	30	11

Traffic Count
Saturday AM

Intersection No:		5		Name: CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR							North/South Street:		Queen Mary/ Chestnut Place						
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM					East/West Street:		West Shoreline Drive						
Vehicle Type	PCE	Time	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	5	0	15	1	26	35	0	7	8	0	5	7	13	259	19	0	
		09:15 AM	5	0	14	2	42	57	8	2	4	1	21	2	28	303	33	0	
		09:30 AM	7	4	14	2	52	49	8	1	3	3	33	0	27	273	45	0	
		09:45 AM	7	3	12	0	48	71	8	0	4	4	18	0	38	361	28	0	
		Total	24	7	55	5	168	212	24	10	19	8	77	9	106	1196	125	0	
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	
		09:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	1	2	0	0	0	0	0	0	0	3	0	0	
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		09:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	
		09:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	
Bicycles	0	09:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		09:30 AM	1	0	0	0	0	0	5	0	0	0	3	0	0	1	0	0	
		09:45 AM	0	0	0	0	0	2	1	0	0	2	1	0	0	0	0	0	
		Total	1	1	0	0	0	2	6	0	0	2	4	0	0	2	0	0	
Grand Total			24	7	55	5	172	215	24	10	19	8	78	9	106	1205	127	0	
PCE Total			24	7	55	5	175	216	24	10	19	8	79	9	106	1212	129	0	

Traffic Count
Saturday AM

Intersection No:		6		Name:		PICO AVE/ S HARBOR SCENIC DR RAMP				North/South Street:		Harbor Plaza							
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		South Harbor Scenic Drive Ramps							
Vehicle Type	PCE	Time	Pico Blvd (SB)				South Harbor Scenic Drive Ramps (WB)				Pico Blvd (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	1	7	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0
		09:15 AM	5	18	0	1	0	0	0	0	0	13	2	0	0	0	0	0	0
		09:30 AM	4	11	0	0	0	0	0	0	0	10	1	0	0	0	0	0	0
		09:45 AM	1	22	0	0	0	0	0	0	0	12	3	0	0	0	0	0	0
		Total	11	58	0	1	0	0	0	0	0	52	6	0	0	0	0	0	0
Large 2 Axle Vehicle	1.2	09:00 AM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		Total	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
3 Axle Vehicle	2	09:00 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
		09:15 AM	0	1	0	1	0	0	0	0	0	4	0	0	0	0	0	0	0
		09:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
		Total	0	6	0	1	0	0	0	0	0	9	0	0	0	0	0	0	0
4+ axle Trucks	2	09:00 AM	0	17	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0
		09:15 AM	0	21	0	0	0	0	0	0	0	48	0	0	0	0	0	0	0
		09:30 AM	1	23	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0
		09:45 AM	0	21	0	0	0	0	0	0	0	45	1	0	0	0	0	0	0
		Total	1	82	0	0	0	0	0	0	0	189	1	0	0	0	0	0	0
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			12	148	0	44	0	0	0	0	254	7	0	0	0	0	0		
PCE Total			13	236	0	87	0	0	0	0	453	8	0	0	0	0	0		

Traffic Count
Saturday AM

Intersection No:		7		Name: PICO AVE/ PIER G AVE/ W VAN CAMP ST/HARBOR PLAZA							North/South Street:		Pico Ave						
Count Date:		1/5/2019		Peak Hour:		9:00 AM - 10:00 AM					East/West Street:		Harbor Plaza						
Vehicle Type	PCE	Time	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenue (NB)				Harbor Plaza (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	6	0	1	0	2	0	7	0	0	1	2	0	2	2	0	0	
		09:15 AM	8	2	1	0	2	1	7	0	0	0	0	0	0	1	0	0	
		09:30 AM	5	7	1	0	1	5	7	0	0	4	4	0	2	0	1	0	
		09:45 AM	5	3	2	0	2	0	9	0	0	3	3	0	2	2	0	0	
		Total	24	12	5	0	7	6	30	0	0	8	9	0	6	5	1	0	
Large 2 Axle Vehicle	1.2	09:00 AM	1	1	1	0	0	0	0	0	0	2	1	0	0	0	0	0	
		09:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	2	1	2	0	0	0	0	0	0	3	1	0	0	0	0	0	
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	
		09:15 AM	6	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	
		09:30 AM	2	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0	
		09:45 AM	4	0	0	0	0	0	8	0	0	3	0	0	0	0	0	0	
		Total	12	0	1	0	0	0	25	0	0	3	1	0	0	0	0	0	
4+ axle Trucks	2	09:00 AM	7	11	2	0	0	0	41	0	0	11	0	0	7	0	1	0	
		09:15 AM	8	18	7	0	1	0	25	0	2	16	2	0	6	0	0	0	
		09:30 AM	3	13	4	0	0	0	32	0	0	20	0	0	5	0	0	0	
		09:45 AM	9	15	5	0	1	0	38	0	1	4	0	0	6	0	1	0	
		Total	27	57	18	0	2	0	136	0	3	51	2	0	24	0	2	0	
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			65	70	26	0	9	6	191	0	3	65	13	0	30	5	3	0	
PCE Total			104	127	45	0	11	6	352	0	6	120	16	0	54	5	5	0	

Traffic Count
Saturday AM

Intersection No:		8		Name:		HARBOR PLAZA/ QUEENS HWY				North/South Street:		Harbor Plaza							
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		Dead End/ Queens Highway Off Ramp							
Vehicle Type	PCE	Time	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	0	5	0	0	5	0	3	0	0	5	0	0	0	0	0	0	0
		09:15 AM	0	11	0	0	9	0	0	0	0	7	0	0	0	0	0	0	0
		09:30 AM	0	10	0	0	9	0	4	0	0	7	0	0	0	0	0	0	0
		09:45 AM	0	14	0	0	8	0	2	0	0	4	0	0	0	0	0	0	0
		Total	0	40	0	0	31	0	9	0	0	23	0	0	0	0	0	0	0
Large 2 Axel Vehicle	1.2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Axel Vehicle	2	09:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
		09:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	7	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
4+ axel Trucks	2	09:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		09:45 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		Total	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	52	0	0	34	0	9	0	0	27	0	0	0	0	0	0	
PCE Total			0	64	0	0	37	0	9	0	0	31	0	0	0	0	0	0	

Traffic Count
Saturday AM

Intersection No:		8		Name: HARBOR PLAZA/ S HARBOR SCEIND DR OFF RAMPS							North/South Street:		Harbor Plaza					
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		South Harbor Scenic Dr Off Ramp						
Vehicle Type	PCE	Time	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	09:00 AM	0	0	0	0	4	0	7	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	2	0	4	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	2	0	6	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	2	0	5	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	10	0	22	0	0	0	0	0	0	0	0	0
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Axle Vehicle	2	09:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	28	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	103	0	0	0	0	0	0	0	0	0
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	0	0	0	11	0	126	0	0	0	0	0	0	0	0	0
PCE Total			0	0	0	0	12	0	230	0	0	0	0	0	0	0	0	0

Traffic Count
Saturday AM

Intersection No:		9		Name:		QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		Queensway Drive/ Queens Highway						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				Queensway Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	09:00 AM	0	21	7	0	3	82	4	0	22	5	6	0	0	0	1	0
		09:15 AM	0	10	22	0	4	88	5	0	16	4	12	0	0	0	0	0
		09:30 AM	1	29	22	0	4	126	2	0	16	7	4	0	0	0	1	0
		09:45 AM	0	11	10	0	7	113	4	0	16	2	5	0	0	0	0	0
		Total	1	71	61	0	18	409	15	0	70	18	27	0	0	0	2	0
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	3	0	0	2	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	4	0	0	2	0	0	0	0	0	0	0
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
		Total	0	0	0	0	0	3	0	0	1	0	1	0	0	0	0	0
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	4	0	0	2	0	0	0	0	0	0	0
Buses	2	09:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	09:00 AM	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	1	0	0	0	5	1	0	0	0	0	0	0	0	0	0
		Total	1	2	0	0	0	20	1	0	0	0	0	0	0	0	0	0
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	4	0	2	0	0	0	0	0	0	0
		09:45 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	3	0	0	0	0	0	4	0	2	0	0	0	0	0	0	0
Grand Total			2	73	61	0	18	441	19	0	75	18	28	0	0	0	2	0
PCE Total			3	75	61	0	18	470	23	0	78	18	29	0	0	0	2	0

Traffic Count
Saturday AM

Intersection No:		10		Name: S HARBOR SCENIC DR/ HARBOR PLAZA							North/South Street:		Harbor Plaza						
Count Date:		11/17/2018		Peak Hour: 9:00 AM - 10:00 AM							East/West Street:		South Harbor Scenic dDrive						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				South Harbor Scenic Drive (SB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	09:00 AM	4	22	0	0	3	0	29	0	0	4	3	0	4	2	0	0	
		09:15 AM	2	14	0	0	3	0	19	0	0	8	7	0	2	7	0	0	
		09:30 AM	6	25	0	0	7	0	20	0	0	4	5	0	1	5	0	0	
		09:45 AM	10	12	0	0	1	0	17	0	0	5	8	0	3	5	0	0	
		Total	22	73	0	0	14	0	85	0	0	21	23	0	10	19	0	0	
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
		09:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		Total	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	
		09:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	2	1	0	
		Total	0	0	0	0	3	0	0	0	0	1	0	0	1	3	1	0	
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		09:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	
		09:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	
Grand Total			22	73	0	0	18	0	88	0	0	22	27	0	12	22	1	0	
PCE Total			22	73	0	0	22	0	89	0	0	23	31	0	14	25	2	0	

Traffic Count
Saturday AM

Intersection No:		11		Name:		QUEENS HWY/WINDSOR WAY				North/South Street:		Queens Way/ Dead End						
Count Date:		11/17/2018		Peak Hour:		9:00 AM - 10:00 AM				East/West Street:		Queens Highway/ Windsor Way						
Vehicle Type	PCE	Time	Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)				Queens Highway (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	09:00 AM	21	0	0	0	0	0	0	0	0	0	0	0	22	43	0	0
		09:15 AM	10	0	0	0	0	0	0	0	0	0	0	0	21	47	0	0
		09:30 AM	12	0	0	0	0	0	0	0	0	0	0	0	9	42	0	0
		09:45 AM	18	0	0	0	0	0	0	0	0	0	0	0	42	21	0	0
		Total	61	0	0	0	0	0	0	0	0	0	0	0	94	153	0	0
Large 2 Axle Vehicle	1.2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
3 Axle Vehicle	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axle Trucks	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Shuttle Buses	2	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0
Bicycles	0	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			61	0	0	0	0	0	0	0	0	0	0	94	170	0	0	
PCE Total			61	0	0	0	0	0	0	0	0	0	0	94	186	0	0	

Traffic Count
Mainline Saturday AM

Segment No:	14													Direction:	Northbound
Segment Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP													Date:	11/17/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
09:00 AM	2	46	28	2	14	0	0	4	2	1	18	0	0	152	
09:15 AM	4	58	42	4	11	5	0	1	4	0	12	1	0	180	
09:30 AM	3	51	34	1	10	1	0	2	0	0	9	0	1	135	
09:45 AM	4	73	42	2	13	2	0	3	0	0	17	0	0	191	
Total	13	228	146	9	48	8	0	10	6	1	56	1	1	527	
PCE Total	13	228	175	18	58	16	0	20	12	2	112	2	2	658	

Segment No:	24													Direction:	Northbound
Segment Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP													Date:	11/17/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
09:00 AM	3	70	22	2	9	1	0	4	1	0	0	0	0	126	
09:15 AM	22	74	31	4	5	0	0	2	2	0	0	0	0	155	
09:30 AM	6	88	27	1	9	0	0	3	1	0	0	0	0	147	
09:45 AM	22	106	37	1	7	0	0	0	0	0	0	0	0	183	
Total	53	338	117	8	30	1	0	9	4	0	0	0	0	560	
PCE Total	53	338	140	16	36	2	0	18	8	0	0	0	0	611	

Segment No:	25													Direction:	Southbound
Segment Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE													Date:	11/17/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
09:00 AM	2	62	18	2	4	0	0	0	0	0	0	0	0	94	
09:15 AM	3	70	21	2	5	0	0	2	0	0	0	0	0	112	
09:30 AM	8	92	25	1	3	0	0	1	0	0	0	0	0	138	
09:45 AM	5	88	15	1	3	0	0	0	1	0	0	0	0	119	
Total	18	312	79	6	15	0	0	3	1	0	0	0	0	434	
PCE Total	18	312	95	12	18	0	0	6	2	0	0	0	0	463	

Traffic Count
Ramp Saturday AM

Segment No:	13													Direction:	Northbound
Segment Name:	NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLVD													Date:	11/17/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
09:00 AM	2	4	1	1	0	0	0	0	0	0	0	0	0	9	
09:15 AM	3	8	1	0	0	0	0	0	0	0	0	0	0	12	
09:30 AM	2	10	2	1	0	0	0	0	0	0	0	0	0	16	
09:45 AM	3	12	1	0	1	0	0	0	0	0	0	0	0	17	
Total	10	34	5	2	1	0	0	0	0	0	0	0	0	52	
PCE Total	10	34	6	4	1	0	0	0	0	0	0	0	0	55	

Segment No:	21													Direction:	Southbound
Segment Name:	QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR													Date:	11/17/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
09:00 AM	2	37	11	2	3	0	0	0	0	0	0	0	0	60	
09:15 AM	3	40	14	1	3	0	0	0	0	0	0	0	0	65	
09:30 AM	3	59	15	1	3	0	0	0	0	0	0	0	0	86	
09:45 AM	3	48	9	1	3	0	0	0	0	0	0	0	0	67	
Total	11	184	49	5	12	0	0	0	0	0	0	0	0	261	
PCE Total	11	184	59	10	14	0	0	0	0	0	0	0	0	278	

Segment No:	23													Direction:	Northbound
Segment Name:	QUEENSWAY DR OFF-RAMP TO QUEENS WAY													Date:	11/17/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
09:00 AM	0	21	3	1	5	0	0	1	0	0	0	0	0	35	
09:15 AM	18	19	8	0	1	0	0	0	0	0	0	0	0	48	
09:30 AM	6	26	7	1	2	0	0	0	0	0	0	0	0	45	
09:45 AM	18	28	11	0	4	0	0	0	0	0	0	0	0	64	
Total	42	94	29	2	12	0	0	1	0	0	0	0	0	180	
PCE Total	42	94	35	4	14	0	0	2	0	0	0	0	0	191	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	1			Name:	PICO AVE/WB W OCEAN BLVD/I-710 RAMPS				North/South Street:	Pico Avenue							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	WB Ocean Blvd Ramps							
Scenario	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	0	161	624	0	6	334	19	0	81	52	0	0	770	0	404	0	
Background Projects																	
Project Trips									37				6				
Existing Condition 2018 + Project	0	161	624	0	6	334	19	0	118	52	0	0	770	0	410	0	
Opening Year 2020 ¹	0	164	0	0	6	1	19	0	0	53	0	0	0	0	0	0	
Opening Year 2020 + Project	0	164	0	0	6	1	19	0	0	90	0	0	0	0	0	0	

1 Intersection is Configured Differently under Opening Year 2020 Condition. For Additional Eastbound and Westbound Turning Volume see ntersection 1A

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	1A			Name:	PICO AVE/ W OCEAN BLVD RAMPS				North/South Street:	Pico Avenue						
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	WB Ocean Blvd Ramps						
Scenario	Pico Ave (SB)				Dead End (WB)				Pico Ave (NB)				I-710 On Ramp - No Approach (EB)			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Existing Condition 2018 ^{1, 2, 3, 4}	0	161	1	0	0	0	0	0	81	52	0	0	0	0	0	0
Background Projects	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Trips	0								37							
Existing Condition 2018 + Project	0	161	1	0	0	0	0	0	118	52	0	0	0	0	0	0
Opening Year 2020	0	164	40	0	0	0	0	0	83	53	0	0	0	0	0	0
Opening Year 2020 + Project	0	164	40	0	0	0	0	0	120	53	0	0	0	0	0	0

1 SBT volume is based on intersection #1 SBT

2 NBL volume is based on intersection #1 NBL

3 NBT volume is based on intersection #1 NBT

4 Intersection is configured differently under existing configuration, for volume at existing configuration see intersection #1 (Existing Condition 2018)

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	2			Name:	PICO AVE/ W OCEAN BLVD ON-RAMP/PIER E ST				North/South Street:	Pico Avenue							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	EB Ocean Blvd Ramps							
Scenario	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	325	242	6	84	3	1	0	0	293	137	4	0	4	2	0	0	
Background Projects																	
Project Trips	6								37								
Existing Condition 2018 + Project	325	248	6	84	3	1	0	0	293	174	4	0	4	2	0	0	
Opening Year 2020 ¹																	
Opening Year 2020 + Project																	

1 Intersection is Configured Differently under Opening Year 2020 Condition. For Volume see ntersection 2A

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	2A			Name:	PICO AVE/ PIER E ST/ I-710 OFF-RAMP				North/South Street:	Pico Avenue							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	EB Ocean Blvd Ramps							
Scenario	Pico Ave (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018 ^{1, 2, 3, 4, 5}	7	242	6	0	57	21	0	0	293	137	4	0	4	1	1	0	
Background Projects	0	0	0	0	0	27	0	0	63	0	0	0	0	0	0	0	
Project Trips	0				6				37								
Existing Condition 2018 + Project	7	242	6	0	63	21	0	0	293	174	4	0	4	1	1	0	
Opening Year 2020	7	247	6	0	58	49	0	0	362	140	4	0	4	1	1	0	
Opening Year 2020 + Project	7	247	6	0	64	49	0	0	362	177	4	0	4	1	1	0	

1 SBL volume is based on 2% of intersection #2 SBL movement. This movement is effected by redistributed traffic through Middle Harbor Project

2 SBT volume is based on intersection #2 SBT

3 SBR volume is based on intersection #2 SBR

4 West bound volume is based on current traffic detour through intersection #1 and #2. It is assumed that vehicles turning right at existing intersection #1 that do not turn left at existing intersection #2 will take the I-710 Pico Avenue off-ramp (westbound movement). Turning movements would be proportionate to existing turning movement

5 Northbound and Eastbound movements are based on Northbound and eastbound movements at Intersection #2

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	3			Name:	GOLDEN SHORE/ W OCEAN BLVD				North/South Street:	Golden Shore/Golden Avenue							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	West Ocean Boulevard							
Scenario	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	10	1	57	1	26	331	356	3	19	63	65	3	40	441	32	0	
Background Projects																	
Project Trips					2								1				
Existing Condition 2018 + Project	10	1	57	1	26	331	358	3	19	63	65	3	41	441	32	0	
Opening Year 2020	10	1	58	1	27	337	363	3	19	65	66	3	41	450	33	0	
Opening Year 2020 + Project	10	1	58	1	27	337	365	3	19	65	66	3	42	450	33	0	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	4			Name:	QUEEENS WAY/W OCEAN BLVD				North/South Street:	Queens Way/Magnolia Ave							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	West Ocean Blvd							
Scenario	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	111	72	70	14	88	632	48	3	39	22	55	28	29	312	30	11	
Background Projects																	
Project Trips	1				1				2 4 10				1				
Existing Condition 2018 + Project	111	73	70	14	89	632	48	3	41	26	65	28	29	312	31	11	
Opening Year 2020	113	73	72	14	90	645	49	3	40	22	56	29	30	318	31	11	
Opening Year 2020 + Project	113	74	72	14	91	645	49	3	42	26	66	29	30	318	32	11	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	5			Name:	CHESTNUT PL/QUEENS WAY RAMPS/W SHORELINE DR				North/South Street:	Queen Mary/ Chestnut Place							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	West Shoreline Drive							
Scenario	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	24	7	55	5	175	216	24	10	19	8	79	9	106	1212	129	0	
Background Projects																	
Project Trips									9		2				1		
Existing Condition 2018 + Project	24	7	55	5	175	216	24	10	28	8	81	9	106	1212	130	0	
Opening Year 2020	24	7	56	5	179	221	24	10	19	8	81	9	108	1236	132	0	
Opening Year 2020 + Project	24	7	56	5	179	221	24	10	28	8	83	9	108	1236	133	0	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	6			Name:	PICO AVE/S HARBOR SCEHIC DR ON-RAMP				North/South Street:	Harbor Plaza							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	South Harbor Scenic Drive Ramps							
Scenario	Pico Blvd (SB)				South Harbor Scenic Drive Ramps (WB)				Pico Blvd (NB)				Dead End (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	13	236	0	87	0	0	0	0	0	453	8	0	0	0	0	0	
Background Projects	0	0	0	0	0	0	0	0	0	63	0	0	0	0	0	0	
Project Trips	6	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	
Existing Condition 2018 + Project	19	236	0	87	0	0	0	0	0	490	8	0	0	0	0	0	
Opening Year 2020	13	241	0	89	0	0	0	0	0	525	8	0	0	0	0	0	
Opening Year 2020 + Project	19	241	0	89	0	0	0	0	0	562	8	0	0	0	0	0	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	7			Name:	PICO AVE/S HARBOR SCENIC DR OFF-RAMPS/QUEENS W				North/South Street:								
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:								
Scenario	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenue (NB)				Harbor Plaza (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	104	127	45	0	11	6	352	0	6	120	16	0	54	5	5	0	
Background Projects	0	0	0	0	0	0	63	0	0	0	0	0	0	0	0	0	
Project Trips	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	
Existing Condition 2018 + Project	104	127	45	0	11	6	389	0	6	120	16	0	54	5	5	0	
Opening Year 2020	106	130	46	0	11	6	422	0	6	122	17	0	55	5	5	0	
Opening Year 2020 + Project	106	130	46	0	11	6	459	0	6	122	17	0	55	5	5	0	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	8 Q.H			Name:	PICO AVE/QUEENS WAY OFF-RAMPS				North/South Street:	Harbor Plaza						
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	Queens Highway						
Scenario	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Existing Condition 2018 ¹	0	64	0	0	37	0	9	0	0	31	0	0	0	0	0	0
Background Projects																
Project Trips										37						
Existing Condition 2018 + Project	0	64	0	0	37	0	9	0	0	68	0	0	0	0	0	0
Opening Year 2020	0	65	0	0	38	0	9	0	0	32	0	0	0	0	0	0
Opening Year 2020 + Project	0	65	0	0	38	0	9	0	0	69	0	0	0	0	0	0

¹ Harbor Scenic Drive volumes are shown in 8 H.S.D worksheet

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	8 H.S.D			Name:	PICO AVE/S HARBOR SCENIC DR OFF-RAMPS				North/South Street:	Harbor Plaza							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	Harbor Scenic Drive Ramps							
Scenario	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018 ¹	0	0	0	0	12	0	230	0	0	0	0	0	0	0	0	0	
Background Projects	0	0	0	0	0	0	63	0	0	0	0	0	0	0	0	0	
Project Trips																	
Existing Condition 2018 + Project																	
Opening Year 2020	0	0	0	0	12	0	298	0	0	0	0	0	0	0	0	0	
Opening Year 2020 + Project	0	0	0	0	12	0	298	0	0	0	0	0	0	0	0	0	

1 Queens Way volumes are shown in 8 Q.H worksheet

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	9			Name:	QUEENSWAY DR/QUEENS HWY/HARBOR PLAZA				North/South Street:	Harbor Plaza							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	Queensway Drive/ Queens Highway							
Scenario	Queensway Drive (SB)				Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	0	0	0	0	0	80	61	0	18	470	23	0	79	47	0	0	
Background Projects																	
Project Trips									37	194							
Existing Condition 2018 + Project	0	0	0	0	0	80	61	0	55	664	23	0	79	47	0	0	
Opening Year 2020	0	0	0	0	0	82	62	0	18	479	23	0	81	48	0	0	
Opening Year 2020 + Project	0	0	0	0	0	82	62	0	55	673	23	0	81	48	0	0	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	10			Name:	S HARBOR SCENIC DR/HARBOR PLAZA				North/South Street:	Harbor Plaza							
				Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	South Harbor Scenic Drive							
Scenario	South Harbor Scenic Drive (SB)				Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	14	25	2	0	22	73	0	0	22	0	89	0	0	23	31	0	
Background Projects																	
Project Trips					37												
Existing Condition 2018 + Project	14	25	2	0	22	110	0	0	22	0	89	0	0	23	31	0	
Opening Year 2020	14	26	2	0	22	74	0	0	22	0	91	0	0	23	32	0	
Opening Year 2020 + Project	14	26	2	0	22	111	0	0	22	0	91	0	0	23	32	0	

Traffic Volume Calculation
Intersections Saturday AM

Intersection No:	11				Name:	QUEENS HWY/WINDSOR WAY				North/South Street:	Queens Way/ Dead End					
					Peak Hour:	9:00 AM - 10:00 AM				East/West Street:	Queens Highway/ Windsor Way					
Scenario	Queens Highway (SB)				Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Existing Condition 2018	94	186	0	0	61	0	0	0	0	0	0	0	0	0	0	0
Background Projects																
Project Trips	29	6														
Existing Condition 2018 + Project	123	192	0	0	61	0	0	0	0	0	0	0	0	0	0	0
Opening Year 2020	96	190	0	0	62	0	0	0	0	0	0	0	0	0	0	0
Opening Year 2020 + Project	125	196	0	0	62	0	0	0	0	0	0	0	0	0	0	0

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	12	Name:	I-710-NORTH OF S HARBOR SCENIC DR RAMPS
Directions:	Southbound/Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	603	447	
Background Projects	0	63	
Project Trips	166	25	
Existing Condition 2018 + Project	769	472	
Opening Year 2020 ²	1400	1156	
Opening Year 2020 + Project	1566	1181	

- 1 Existing Northbound volume derived from difference of volume between Segment# 14 and Segment# 13
Existing Southbound volume derived from Segment# 14. No additional access between #14 and #12
- 2 Opening Year 2020 Northbound volume is a sum of existing volume with 1% per year growth factor and Segment #30
Opening Year 2020 Southbound volume is a sum of Segment #28 and #26

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	14	Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP	
Directions:	Southbound/ Northbound	Peak Hour:	9:00 AM - 10:00 AM	
Scenario	Northbound	Southbound		
Existing Condition 2018 ¹	658	447		
Background Projects	0	63		
Project Trips	167	25		
Existing Condition 2018 + Project	825	472		
Opening Year 2020	671	519		
Opening Year 2020 + Project	838	544		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	15	Name:	I-710-WEST OF PICO AVE OFF-RAMP
Directions:	Eastbound/Westbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	1174	1039	
Background Projects	27	39	
Project Trips	6	37	
Existing Condition 2018 + Project	1180	1076	
Opening Year 2020 ²	1251	1101	
Opening Year 2020 + Project	1257	1138	

- 1 Northbound existing volume Derived from approach volume at Intersection #1 (EBR + EBL)
Southbound existing volume Derived from turning volume at Intersection #2 (SBR + WBT + NBL)
- 2 Northbound opening Year 2020 volume is derived from sum of Segment# 30 and Segment# 35
Southbound opening year 2020 volume is derived from sum of Segment# 30 and Segment# 34

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	20	Name:	S HARBOR SCENIC DR-NORTH OF QUEENS WAY
Directions:	Northbound/Southbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ^{1, 2}	420	468	
Background Projects	0	63	
Project Trips	167	31	
Existing Condition 2018 + Project	587	499	
Opening Year 2020	428	540	
Opening Year 2020 + Project	595	571	

1 Northbound volume is difference of volume at Segment #24 and Segment #23

2 Southbound volume is sum of Intersection #8 (WBR H.S.D and WBL H.S.D) and Intersection #22

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	22	Name:	SB S HARBOR SCENIC DR-SOUTH OF QUEENS WAY OFF RAMP
Directions:	Southbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹		226	
Background Projects		0	
Project Trips		35	
Existing Condition 2018 + Project		261	
Opening Year 2020		231	
Opening Year 2020 + Project		266	

1 Approach volume for Intersection#10 + (volume at Segment #25 - volume at Segment #21)

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	24	Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP
Directions:	Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	611		
Background Projects	0		
Project Trips	194		
Existing Condition 2018 + Project	805		
Opening Year 2020	623		
Opening Year 2020 + Project	817		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	25	Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE
Directions:	Southbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹		463	
Background Projects		0	
Project Trips		35	
Existing Condition 2018 + Project		498	
Opening Year 2020		472	
Opening Year 2020 + Project		507	

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	28	Name:	I-710-NORTH OF PICO AVE ON-RAMP
Directions:	Southbound/Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹			
Background Projects	0	0	
Project Trips	0	0	
Existing Condition 2018 + Project	0	0	
Opening Year 2020 ^{2,3}	785	637	
Opening Year 2020 + Project	785	637	

1 Northbound volume is derived from Segment #30, No Northbound off ramps between segments

2 Southbound volume is difference between Segment #30 Volume and Segment #28 volume

3 Segment is closed under existing condition

Traffic Volume Calculation
Mainline Saturday AM

Segment no:	30	Name:	I-710-SOUTH OF PICO AVE ON-RAMP
Directions:	Southbound/Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound	Southbound	
Existing Condition 2018 ^{1, 2, 3}	770	624	
Background Projects	0	39	
Project Trips	0	37	
Existing Condition 2018 + Project	770	661	
Opening Year 2020	785	760	
Opening Year 2020 + Project	785	797	

- 1 Intersection #1 EBR movement is assumed to be a detour of NB movement
- 2 Intersection #1 SBR movement is assumed to be a detour for SB Movement
- 3 Segment is closed under existing condition

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	13	Name:	NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLVD
Directions:	Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound		
Existing Condition 2018 ¹	55		
Background Projects	0		
Project Trips	1		
Existing Condition 2018 + Project	56		
Opening Year 2020	56		
Opening Year 2020 + Project	57		

¹ Traffic count available. See Appendix A

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	16	Name:	NB I-710 OFF-RAMP TO PICO AVE
Directions:	Eastbound		9:00 AM - 10:00 AM
Scenario	Eastbound		
Existing Condition 2018 ¹	1174		
Background Projects	0		
Project Trips	6		
Existing Condition 2018 + Project	1180		
Opening Year 2020 ²	1198		
Opening Year 2020 + Project ²	1204		

1 Volume derieved from Intersection #1 eastbound approach volume (EBR + EBL)

2 Segment is permanantly closed under ultimate configueration

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	17	Name:	PICO AVE ON RAMP TO SB I-710
Directions:	Westbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Westbound		
Existing Condition 2018 ¹	1039		
Background Projects	0		
Project Trips	37		
Existing Condition 2018 + Project	1076		
Opening Year 2020 ²	1060		
Opening Year 2020 + Project ²	0		

1 Volume derieved from intersection #1 turning volume (NBR + SBL+ WBT)

2 Segment is permanantly closed under ultimate configueration (Opening Year 2020)

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	18	Name:	W OCEAN BLVD OF-RAMP TO PICO AVE
Directions:	Westbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Westbound		
Existing Condition 2018 ¹	359		
Background Projects	0		
Project Trips	0		
Existing Condition 2018 + Project	359		
Opening Year 2020 ²	366		
Opening Year 2020 + Project ²	366		

1 Volume derieved from Intersection #1 Westbound approach volume (WBR + WBT + EBL)

2 Segment is permanantly closed under ultimate configueration (Opening Year 2020)

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	19	Name:	PICO AVE ON-RAMP TO W OCEAN BLVD
Directions:	Eastbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Eastbound		
Existing Condition 2018 ¹	331		
Background Projects	0		
Project Trips	0		
Existing Condition 2018 + Project	331		
Opening Year 2020 ²	338		
Opening Year 2020 + Project ²	338		

1 Volume derieved from Intersection #2 turning volume (NBR + EBT + SBL)

2 Segment is permanantly closed under ultimate configueration

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	21	Name:	QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR
Directions:	Southbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Southbound		
Existing Condition 2018 ¹	278		
Background Projects	0		
Project Trips	4		
Existing Condition 2018 + Project	282		
Opening Year 2020	284		
Opening Year 2020 + Project	288		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	23	Name:	QUEENSWAY DR OFF-RAMP TO QUEENS WAY
Directions:	Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound		
Existing Condition 2018 ¹	191		
Background Projects	0		
Project Trips	27		
Existing Condition 2018 + Project	218		
Opening Year 2020	195		
Opening Year 2020 + Project	222		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	26	Name:	SB I-710 OFF-RAMP TO S HARBOR SCENIC DR
Directions:	Southbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Southbound		
Existing Condition 2018 ¹	447		
Background Projects	63		
Project Trips	25		
Existing Condition 2018 + Project	472		
Opening Year 2020	519		
Opening Year 2020 + Project	544		

1 Existing volume is same as Segment #14 Southbound volume, all other access is closed under Existing Configuration

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	27	Name:	S HARBOR SCENIC DR ON RAMP TO NB I-710
Directions:	Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound		
Existing Condition 2018 ¹			
Background Projects	0		
Project Trips	166		
Existing Condition 2018 + Project ¹			
Opening Year 2020 ²	947		
Opening Year 2020 + Project	1113		

1 Ramp is closed under existing condition

2 Volume Based on Mainline Segment #12, #15 and Ramp Segments #35, #31. (#27 = #12-(#15-#35-#31))

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	29	Name:	PICO AVE ON-RAMP TO SB I-710
Directions:	Southbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Southbound		
Existing Condition 2018 ¹			
Background Projects	39		
Project Trips	37		
Existing Condition 2018 + Project ¹			
Opening Year 2020 ²	123		
Opening Year 2020 + Project	160		

1 Ramp does not exist under existing condition

2 Volume is derived from Intersection 1A turning volume (SBR + NBL) and background project

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	31	Name:	WB W OCEAN BLVD OFF-RAMP TO PICO AVE
Directions:	Northbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Northbound		
Existing Condition 2018 ^{1, 2}	25		
Background Projects			
Project Trips	0		
Existing Condition 2018 + Project ¹			
Opening Year 2020	26		
Opening Year 2020 + Project	26		

1 Ramp is configured differently under Existing Condition, See Segment #16 Under Existing Condition 2018

2 Based on Westbound approach volume at Intersection #2 (Westbound through traffic to I-710 Southbound excluded)

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	32	Name:	PICO AVE ON-RAMP TO EB W OCEAN BLVD
Directions:	Eastbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Eastbound		
Existing Condition 2018 ¹	0		
Background Projects	0		
Project Trips	0		
Existing Condition 2018 + Project ¹	0		
Opening Year 2020 ²	11		
Opening Year 2020 + Project	11		

1 Ramp is closed under existing condition

2 Based on Eastbound traffic volume at Intersection #2A (Opening Year 2020) (NBR + EBT + SBL)

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	33	Name:	NB I-710 OFF-RAMP TO W OCEAN BLVD/PICO AVE
Directions:	Eastbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Ocean	Pico	
Existing Condition 2018 ¹	325		
Background Projects	0	27	
Project Trips	0	6	
Existing Condition 2018 + Project ¹	0	0	
Opening Year 2020 ²	332	134	
Opening Year 2020 + Project	332	140	

1 Ramp is configured differently under existing condition, See Segment #16 under Existing Condition 2018

2 Ocean volume is based on turning movement at Intersection #2 SBR (Traffic is detoured under existing condition)

Pico volumes are based on Intersection 2A (Opening Year 2020) Westbound approach volumes

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	34	Name:	SB I-710 OFF-RAMP TO W OCEAN BLVD
Directions:	Westbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Westbound		
Existing Condition 2018 ¹	334		
Background Projects	0		
Project Trips	0		
Existing Condition 2018 + Project ¹	334		
Opening Year 2020	341		
Opening Year 2020 + Project	341		

1 Based on Intersection #1 turning volume (WBT)

Traffic Volume Calculation
Ramp Saturday AM

Segment no:	35	Name:	NB I-710 OFF-RAMP TO W OCEAN BLVD/PICO AVE (COMBINED)
Directions:	Eastbound	Peak Hour:	9:00 AM - 10:00 AM
Scenario	Eastbound		
Existing Condition 2018 ¹	325		
Background Projects	27		
Project Trips	6		
Existing Condition 2018 + Project ¹	0		
Opening Year 2020	466		
Opening Year 2020 + Project	472		

1 Based on Segment #33 combined volume

Traffic Count
Saturday PM

Intersection No:		1		Name: PICO AVE/ WB W OCEAN BLVD OFF RAMP/I -710 RAMPS							North/South Street:		Pico Ave					
Count Date:		1/5/2019		Peak Hour:		1:00 PM - 2:00 PM					East/West Street:		Ocean Blvd WB Ramps					
Vehicle Type	PCE	Time	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)			
			Left	Thru	Right*	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	0	11	92	0	6	127	13	0	5	5	0	0	81	0	122	0
		01:15 PM	0	7	76	0	1	118	13	0	7	3	0	0	106	0	101	0
		01:30 PM	0	6	80	0	2	153	7	0	8	1	0	1	91	0	115	0
		01:45 PM	0	8	84	0	0	86	5	0	9	4	0	0	82	1	94	0
		Total	0	32	332	0	9	484	38	0	29	13	0	1	360	1	432	0
Large 2 Axle Vehicle	1.2	01:00 PM	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
		01:30 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
		Total	0	1	2	0	0	3	0	0	1	0	0	0	4	0	0	0
3 Axle Vehicle	2	01:00 PM	0	2	11	0	0	3	0	0	0	1	0	0	5	0	3	0
		01:15 PM	0	2	3	0	0	1	0	0	2	1	0	0	8	0	3	0
		01:30 PM	0	1	3	0	0	3	1	0	3	0	0	0	4	0	6	0
		01:45 PM	0	1	6	0	0	1	0	0	1	1	0	0	3	0	7	0
		Total	0	6	23	0	0	8	1	0	6	3	0	0	20	0	19	0
4+ axle Trucks	2	01:00 PM	0	7	42	0	0	0	0	0	7	2	0	0	15	0	0	0
		01:15 PM	0	11	44	0	0	0	0	0	3	1	0	0	11	0	3	0
		01:30 PM	0	10	40	0	0	1	1	0	9	3	0	0	29	0	2	0
		01:45 PM	0	11	42	0	0	0	0	0	10	4	0	0	40	0	2	0
		Total	0	39	168	0	0	1	1	0	29	10	0	0	95	0	7	0
Buses	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
		Total	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
		Total	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	78	526	0	9	498	40	0	65	26	0	1	480	1	461	0
PCE Total			0	123	718	0	9	510	42	0	100	39	0	1	597	1	490	0

* Pico Avenue Southbound Right is I-710 WB on-ramp from Pico Avenue; Permanent detour for mainline I-710 connector.

Traffic Count
Saturday PM

Intersection No:		2		Name: PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST								North/South Street:		Pico Ave					
Count Date:		1/5/2019		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Pier E St / EB Ocean Blvd Ramps							
Vehicle Type	PCE	Time	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	103	19	1	0	0	0	0	0	3	9	1	0	2	2	0	0	
		01:15 PM	96	18	2	0	0	0	0	0	2	11	0	0	1	1	0	0	
		01:30 PM	115	10	4	0	0	0	0	0	1	8	0	0	0	1	0	0	
		01:45 PM	89	10	0	0	0	0	0	0	0	11	0	0	1	2	0	0	
		Total	403	57	7	0	0	0	0	0	0	6	39	1	0	4	6	0	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		01:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
3 Axel Vehicle	2	01:00 PM	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
		01:15 PM	1	4	0	0	0	0	0	0	0	3	0	0	0	0	0	0	
		01:30 PM	3	3	0	0	0	0	0	0	1	6	0	0	0	0	0	0	
		01:45 PM	4	5	0	0	0	0	0	0	0	6	0	0	0	0	0	0	
		Total	8	17	0	0	0	0	0	0	0	1	17	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	0	8	0	0	0	0	0	0	29	9	0	0	0	0	0	0	
		01:15 PM	0	14	0	0	0	0	0	0	28	6	0	0	0	0	0	0	
		01:30 PM	0	12	0	0	0	0	0	0	34	13	0	0	0	0	0	0	
		01:45 PM	1	12	0	0	0	0	0	0	44	12	0	0	0	0	0	0	
		Total	1	46	0	0	0	0	0	0	135	40	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			415	122	7	0	0	0	0	142	97	1	0	4	6	0	0		
PCE Total			426	186	7	0	0	0	0	278	154	1	0	4	6	0	0		

Traffic Count
Saturday PM

Intersection No:		3		Name:		GOLDEN SHORE/ W OCEAN BLVD				North/South Street:		Golden Shore/Golden Avenue						
Count Date:		11/17/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		West Ocean Boulevard						
Vehicle Type	PCE	Time	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	3	0	24	0	4	93	105	1	10	27	10	0	12	118	9	0
		01:15 PM	1	0	11	0	6	113	108	0	5	15	13	0	9	125	6	0
		01:30 PM	2	1	30	1	4	102	101	0	10	13	9	4	7	130	7	2
		01:45 PM	4	1	34	0	5	110	127	1	1	10	7	2	4	109	5	0
		Total	10	2	99	1	19	418	441	2	26	65	39	6	32	482	27	2
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
		01:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	1	2	0	0
		Total	0	0	0	0	0	8	1	0	0	0	0	0	1	4	0	0
3 Axle Vehicle	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4+ axle Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		Total	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	1	1	1	0	1	1	1	0	0	0	2	0
		01:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	2	3	0
		01:30 PM	0	0	0	0	1	1	0	0	0	0	1	0	0	0	1	0
		01:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
		Total	1	0	0	0	3	2	1	0	1	1	2	0	0	3	8	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	2	0	0	0	1	0	0	1	3	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
Grand Total			11	2	100	1	22	432	444	2	27	67	41	6	34	492	35	2
PCE Total			12	2	101	1	25	440	446	2	28	69	43	6	35	499	43	2

Traffic Count
Saturday PM

Intersection No:		4		Name:		QUEENS WAY/ W OCEAN BLVD				North/South Street:		Queens Way/Magnolia Ave						
Count Date:		1/5/2019		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		West Ocean Blvd						
Vehicle Type	PCE	Time	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	39	16	21	1	14	220	9	0	11	6	21	7	7	99	5	9
		01:15 PM	36	25	23	3	19	258	18	1	5	6	12	6	11	94	9	3
		01:30 PM	51	20	19	2	27	242	19	2	4	9	9	9	8	114	8	0
		01:45 PM	54	19	20	9	10	117	40	9	5	9	14	6	5	100	3	5
		Total	180	80	83	15	70	837	86	12	25	30	56	28	31	407	25	17
Large 2 Axle Vehicle	1.2	01:00 PM	0	1	0	0	0	2	0	0	0	0	1	0	2	0	0	0
		01:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	1	1	0	0	5	0	0	0	0	0	1	0	2	0	0
3 Axle Vehicle	2	01:00 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:30 PM	0	0	1	1	0	2	0	0	0	0	0	0	1	2	0	0
		01:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0
		Total	0	1	3	1	0	5	0	0	0	0	0	0	1	5	0	0
4+ axle Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		01:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		01:15 PM	0	1	0	0	0	1	0	0	0	0	1	0	0	2	0	0
		01:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		Total	0	3	0	0	0	4	0	0	0	0	0	1	0	5	0	0
Shuttle Buses	2	01:00 PM	1	1	0	0	1	4	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	1	3	0	0	1	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		Total	1	1	0	0	2	9	0	0	1	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		01:15 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0
		01:30 PM	0	0	2	0	0	1	1	0	0	0	0	0	0	2	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	2	2	0	0	2	2	0	0	0	0	0	0	4	0	0
Grand Total			181	86	88	16	72	860	86	12	27	30	58	28	34	417	25	17
PCE Total			182	91	92	17	74	879	86	12	29	30	59	28	35	427	25	17

Traffic Count
Saturday PM

Intersection No:		5		Name: CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR							North/South Street:		Queen Mary/ Chestnut Place						
Count Date:		11/17/2018		Peak Hour:		1:00 PM - 2:00 PM					East/West Street:		West Shoreline Drive						
Vehicle Type	PCE	Time	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	8	0	18	8	42	183	10	15	32	3	34	3	49	187	43	0	
		01:15 PM	5	1	16	0	50	167	10	8	30	1	31	0	27	176	21	0	
		01:30 PM	3	1	16	0	57	162	12	4	40	1	32	2	34	198	24	0	
		01:45 PM	3	1	23	3	58	217	5	10	38	4	37	0	34	183	23	0	
		Total	19	3	73	11	207	729	37	37	140	9	134	5	144	744	111	0	
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	
		Total	0	0	0	0	0	4	0	0	1	0	0	0	0	1	2	0	
3 Axle Vehicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4+ axle Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
Buses	2	01:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	
		01:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
		01:45 PM	0	0	0	0	2	1	0	0	0	0	0	0	0	2	0	0	
		Total	0	0	0	0	6	1	0	0	0	0	0	0	0	7	0	0	
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	0	
Bicycles	0	01:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	
		01:15 PM	0	0	0	0	1	0	0	0	0	2	2	0	0	0	0	0	
		01:30 PM	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	1	0	0	1	0	2	0	0	2	4	0	0	2	0	0	
Grand Total			19	3	73	11	213	735	37	37	141	9	135	5	144	755	114	0	
PCE Total			19	3	73	11	219	738	37	37	141	9	136	5	144	765	115	0	

Traffic Count
Saturday PM

Intersection No:		6		Name:		PICO AVE/ S HARBOR SCENIC DR RAMPS				North/South Street:		Harbor Plaza						
Count Date:		11/17/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		South Harbor Scenic Drive Ramps						
Vehicle Type	PCE	Time	Harbor Plaza(SB)				South Harbor Scenic Drive Ramps (WB)				Harbor Plaza (NB)				Dead End (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	5	16	0	0	0	0	0	0	0	20	4	0	0	0	0	0
		01:15 PM	3	22	0	0	0	0	0	0	0	19	3	0	0	0	0	0
		01:30 PM	3	20	0	0	0	0	0	0	0	10	2	0	0	0	0	0
		01:45 PM	1	16	0	0	0	0	0	0	0	34	0	0	0	0	0	0
		Total	12	74	0	0	0	0	0	0	0	83	9	0	0	0	0	0
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		01:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0
3 Axle Vehicle	2	01:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
		01:45 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
		Total	0	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0
4+ axle Trucks	2	01:00 PM	3	23	0	0	0	0	0	0	0	66	0	0	0	0	0	0
		01:15 PM	1	26	0	0	0	0	0	0	0	52	0	0	0	0	0	0
		01:30 PM	1	30	0	0	0	0	0	0	0	61	0	0	0	0	0	0
		01:45 PM	3	18	0	0	0	0	0	0	0	68	0	0	0	0	0	0
		Total	8	97	0	0	0	0	0	0	0	247	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			20	177	0	0	0	0	0	0	337	9	0	0	0	0	0	
PCE Total			28	278	0	0	0	0	0	0	590	9	0	0	0	0	0	

Traffic Count
Saturday PM

Intersection No:		7		Name: PICO AVE/ PIER G AVE/ W VAN CAMP ST/HARBOR PLAZA							North/South Street:		Pico Ave						
Count Date:		1/5/2019		Peak Hour:		1:00 PM - 2:00 PM					East/West Street:		Harbor Plaza						
Vehicle Type	PCE	Time	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenue (NB)				Harbor Plaza (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	14	7	2	0	3	0	11	0	0	6	1	0	1	1	0	0	
		01:15 PM	11	5	3	0	1	4	10	0	1	1	1	0	0	0	0	0	
		01:30 PM	3	4	5	0	3	2	13	0	1	4	1	1	6	1	0	0	
		01:45 PM	7	4	2	0	3	2	8	0	2	24	7	0	4	3	2	0	
		Total	35	20	12	0	10	8	42	0	4	35	10	1	11	5	2	0	
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	
		Total	0	0	1	0	0	1	0	0	0	1	2	0	1	0	0	0	
3 Axle Vehicle	2	01:00 PM	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
		01:15 PM	4	0	0	0	0	0	4	0	1	1	0	0	0	0	0	0	
		01:30 PM	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	
		01:45 PM	3	0	0	0	0	0	6	0	0	0	0	0	1	0	0	0	
		Total	13	0	0	0	0	0	16	0	1	1	0	0	1	0	0	0	
4+ axle Trucks	2	01:00 PM	3	8	3	0	1	0	28	0	0	6	0	0	2	0	0	0	
		01:15 PM	3	6	4	0	1	0	31	0	0	7	1	0	4	1	1	0	
		01:30 PM	5	9	5	0	1	0	44	0	0	10	0	0	3	0	0	0	
		01:45 PM	2	7	4	0	0	1	37	0	0	7	0	0	6	0	0	0	
		Total	13	30	16	0	3	1	140	0	0	30	1	0	15	1	1	0	
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			61	50	29	0	13	10	198	0	5	67	13	1	28	6	3	0	
PCE Total			87	80	45	0	16	11	354	0	6	98	14	1	44	7	4	0	

Traffic Count
Saturday PM

Intersection No:		8		Name:		HARBOR PLAZA/ QUEENS HWY				North/South Street:		Harbor Plaza						
Count Date:		11/17/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Dead End/ Queens Highway Off Ramp						
Vehicle Type	PCE	Time	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	0	14	0	0	12	0	2	0	0	11	0	0	0	0	0	0
		01:15 PM	0	14	0	0	8	0	4	0	0	4	0	0	0	0	0	0
		01:30 PM	0	19	0	0	9	0	2	0	0	6	0	0	0	0	0	1
		01:45 PM	0	15	0	0	12	0	27	1	0	7	0	0	0	0	0	0
		Total	0	62	0	0	41	0	35	1	0	28	0	0	0	0	0	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		01:45 PM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0
3 Axel Vehicle	2	01:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		Total	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		01:15 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
		01:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	5	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	75	0	0	41	0	35	1	0	33	0	0	0	0	0	1
PCE Total			0	84	0	0	41	0	35	1	0	37	0	0	0	0	0	1

Traffic Count
Saturday PM

Intersection No:		8		Name: HARBOR PLAZA/ S HARBOR SCEIND DR OFF RAMPS							North/South Street:		Harbor Plaza					
Count Date:		11/17/2018		Peak Hour:			1:00 PM - 2:00 PM				East/West Street:		South Harbor Scenic Dr Off Ramp					
Vehicle Type	PCE	Time	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	0	0	0	0	2	0	5	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	2	0	5	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	2	0	5	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	8	0	18	0	0	0	0	0	0	0	0	0
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Axle Vehicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
4+ axle Trucks	2	01:00 PM	0	0	0	0	1	0	31	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	1	0	28	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	2	0	132	0	0	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	0	0	0	12	0	150	0	0	0	0	0	0	0	0	0
PCE Total			0	0	0	0	16	0	282	0	0	0	0	0	0	0	0	0

Traffic Count
Saturday PM

Intersection No:		9		Name:		QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/17/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Queensway Drive/ Queens Highway						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				Queensway Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	2	35	7	0	5	77	3	0	24	8	7	0	0	0	0	0
		01:15 PM	1	17	27	0	4	74	5	1	17	3	6	1	0	0	0	0
		01:30 PM	2	29	25	0	2	58	2	0	16	6	1	0	0	0	0	0
		01:45 PM	3	15	16	0	2	75	8	0	17	11	6	0	0	0	0	0
		Total	8	96	75	0	13	284	18	1	74	28	20	1	0	0	0	0
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
3 Axle Vehicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axle Trucks	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	3	6	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0
		Total	0	0	1	0	0	6	3	0	0	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Grand Total			8	96	76	0	13	295	27	1	75	28	20	1	0	0	0	
PCE Total			8	96	77	0	13	306	36	1	75	28	20	1	0	0	0	

Traffic Count
Saturday PM

Intersection No:		10		Name:							S HARBOR SCENIC DR/ HARBOR PLAZA							North/South Street:		Harbor Plaza			
Count Date:		11/17/2018		Peak Hour:							1:00 PM - 2:00 PM							East/West Street:		South Harbor Scenic dDrive			
Vehicle Type	PCE	Time	Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				South Harbor Scenic Drive (SB)								
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds					
Passenger Cars	1	01:00 PM	3	38	0	0	3	0	19	0	0	14	9	0	6	6	2	0					
		01:15 PM	4	20	0	0	2	0	13	0	0	9	8	0	4	3	1	1					
		01:30 PM	2	26	0	0	3	0	11	0	0	11	10	0	2	8	0	0					
		01:45 PM	3	14	0	0	3	0	16	0	0	10	14	0	5	10	1	0					
		Total	12	98	0	0	11	0	59	0	0	44	41	0	17	27	4	1					
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0					
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		Total	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0					
3 Axle Vehicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0					
4+ axle Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0					
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0					
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Grand Total			12	98	0	0	11	0	60	0	0	44	41	0	17	28	5	1					
PCE Total			12	98	0	0	11	0	60	0	0	44	41	0	17	29	6	1					

Traffic Count
Saturday PM

Intersection No:		11		Name:		QUEENS HWY/WINDSOR WAY				North/South Street:		Queens Way/ Dead End						
Count Date:		11/17/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Queens Highway/ Windsor Way						
Vehicle Type	PCE	Time	Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)				Queens Highway (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	22	51	0	0
		01:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	9	40	0	0
		01:30 PM	20	0	0	0	0	1	1	0	0	0	0	0	20	29	0	0
		01:45 PM	8	0	0	0	0	0	0	0	0	0	0	0	13	18	0	0
		Total	29	0	0	0	0	1	4	0	0	0	0	0	64	138	0	0
Large 2 Axle Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Axle Vehicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			29	0	0	0	0	1	4	0	0	0	0	0	64	147	0	0
PCE Total			29	0	0	0	0	1	4	0	0	0	0	0	64	156	0	0

Traffic Count
Mainline Saturday PM

Segment No:	14					Direction:	Northbound								
Segment Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP					Date:	11/17/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	3	39	21	6	9	0	0	1	2	0	16	0	0	128	
01:15 PM	1	47	33	2	9	2	0	0	0	0	18	1	0	144	
01:30 PM	1	29	13	2	5	2	0	1	1	0	10	0	0	84	
01:45 PM	1	21	15	2	5	1	0	1	1	0	19	0	1	96	
Total	6	136	82	12	28	5	0	3	4	0	63	1	1	341	
PCE Total	6	136	98	24	34	10	0	6	8	0	126	2	2	452	

Segment No:	24					Direction:	Northbound								
Segment Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP					Date:	11/17/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	3	77	17	3	11	0	0	1	1	0	0	0	0	124	
01:15 PM	18	67	19	0	6	0	0	0	0	0	0	0	0	115	
01:30 PM	1	52	15	1	6	0	0	0	0	0	0	0	0	80	
01:45 PM	22	71	20	0	4	0	0	0	1	0	0	0	0	124	
Total	44	267	71	4	27	0	0	1	2	0	0	0	0	416	
PCE Total	44	267	85	8	32	0	0	2	4	0	0	0	0	443	

Segment No:	25					Direction:	Southbound								
Segment Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE					Date:	11/17/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	2	84	15	2	4	0	0	0	0	0	0	0	0	113	
01:15 PM	1	68	15	4	6	1	0	0	1	0	0	0	0	106	
01:30 PM	1	60	14	0	0	0	0	0	0	0	0	0	0	78	
01:45 PM	2	46	15	4	2	0	0	0	0	0	0	0	0	76	
Total	6	258	59	10	12	1	0	0	1	0	0	0	0	347	
PCE Total	6	258	71	20	14	2	0	0	2	0	0	0	0	373	

Traffic Count
Ramp Saturday PM

Segment No:	13					Direction:	Northbound								
Segment Name:	Northbound H NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLV					Date:	11/17/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	0	8	2	2	1	0	0	0	0	0	0	0	0	16	
01:15 PM	0	20	0	1	1	0	0	0	0	0	0	0	0	23	
01:30 PM	0	4	1	0	2	0	0	0	0	0	0	0	0	8	
01:45 PM	0	8	2	1	1	0	0	0	0	0	0	0	0	14	
Total	0	40	5	4	5	0	0	0	0	0	0	0	0	54	
PCE Total	0	40	6	8	6	0	0	0	0	0	0	0	0	60	

Segment No:	21					Direction:	Southbound								
Segment Name:	Southbound Q QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR					Date:	11/17/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	1	58	11	2	1	0	0	0	0	0	0	0	0	77	
01:15 PM	1	34	9	3	5	1	0	0	0	0	0	0	0	60	
01:30 PM	1	36	5	0	0	0	0	0	0	0	0	0	0	43	
01:45 PM	2	34	11	4	0	0	0	0	0	0	0	0	0	57	
Total	5	162	36	9	6	1	0	0	0	0	0	0	0	219	
PCE Total	5	162	43	18	7	2	0	0	0	0	0	0	0	237	

Segment No:	23					Direction:	Northbound								
Segment Name:	NB Quneensw: QUEENSWAY DR OFF-RAMP TO QUEENS WAY					Date:	11/17/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	2	42	6	1	6	0	0	0	0	0	0	0	0	60	
01:15 PM	18	25	5	0	1	0	0	0	0	0	0	0	0	50	
01:30 PM	1	32	7	1	3	0	0	0	0	0	0	0	0	47	
01:45 PM	22	44	10	0	3	0	0	0	0	0	0	0	0	82	
Total	43	143	28	2	13	0	0	0	0	0	0	0	0	229	
PCE Total	43	143	34	4	16	0	0	0	0	0	0	0	0	239	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	1			Name:	PICO AVE/WB W OCEAN BLVD/I-710 RAMPS				North/South Street:	Pico Avenue							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	WB Ocean Blvd Ramps							
Scenario	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)				
	Left	Thru	Right*	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	0	123	718	0	9	510	42	0	100	39	0	1	597	1	490	0	
Background Projects																	
Project Trips									4				24				
Existing Condition 2018 + Project	0	123	718	0	9	510	42	0	104	39	0	1	597	1	514	0	
Opening Year 2020 ¹	0	126	0	0	9	1	43	0	0	40	0	0	0	0	0	0	
Opening Year 2020 + Project	0	126	0	0	9	1	43	0	0	44	0	0	0	0	0	0	

1 Intersection is Configured Differently under Opening Year 2020 Condition. For Additional Eastbound and Westbound Turning Volume see ntersection 1A

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	1A			Name:	PICO AVE/ W OCEAN BLVD RAMPS				North/South Street:	Pico Avenue						
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	WB Ocean Blvd Ramps						
Scenario	Pico Ave (SB)				Dead End (WB)				Pico Ave (NB)				I-710 On Ramp - No Approach (EB)			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Existing Condition 2018 ^{1, 2, 3, 4}	0	123	1	0	0	0	0	0	100	39	0	0	0	0	0	0
Background Projects	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Trips									4							
Existing Condition 2018 + Project	0	123	1	0	0	0	0	0	104	39	0	0	0	0	0	0
Opening Year 2020	0	126	24	0	0	0	0	0	102	40	0	0	0	0	0	0
Opening Year 2020 + Project	0	126	24	0	0	0	0	0	106	40	0	0	0	0	0	0

1 SBT volume is based on intersection #1 SBT

2 NBL volume is based on intersection #1 NBL

3 NBT volume is based on intersection #1 NBT

4 Intersection is configured differently under existing configuration, for volume at existing configuration see intersection #1 (Existing Condition 2018)

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	2			Name:	PICO AVE/ W OCEAN BLVD ON-RAMP/PIER E ST				North/South Street:	Pico Avenue							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	EB Ocean Blvd Ramps							
Scenario	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	426	186	7	0	0	0	0	0	278	154	1	0	4	6	0	0	
Background Projects																	
Project Trips	24								4								
Existing Condition 2018 + Project	426	210	7	0	0	0	0	0	278	158	1	0	4	6	0	0	
Opening Year 2020 ¹																	
Opening Year 2020 + Project																	

1 Intersection is Configured Differently under Opening Year 2020 Condition. For Volume see ntersection 2A

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	2A			Name:	PICO AVE/ PIER E ST/ I-710 OFF-RAMP				North/South Street:	Pico Avenue							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	EB Ocean Blvd Ramps							
Scenario	Pico Ave (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018 ^{1, 2, 3, 4, 5}	9	186	7	0	46	17	0	0	278	154	1	0	4	1	1	0	
Background Projects	0	0	0	0	0	23	0	0	53	0	0	0	0	0	0	0	
Project Trips					24				4								
Existing Condition 2018 + Project	9	186	7	0	70	17	0	0	278	158	1	0	4	1	1	0	
Opening Year 2020	9	190	7	0	47	41	0	0	337	157	1	0	4	1	1	0	
Opening Year 2020 + Project	9	190	7	0	71	41	0	0	337	161	1	0	4	1	1	0	

1 SBL volume is based on 2% of intersection #2 SBL movement. This movement is effected by redistributed traffic through Middle Harbor Project

2 SBT volume is based on intersection #2 SBT

3 SBR volume is based on intersection #2 SBR

4 West bound volume is based on current traffic detour through intersection #1 and #2. It is assumed that vehicles turning right at existing intersection #1 that do not turn left at existing intersection #2 will take the I-710 Pico Avenue off-ramp (westbound movement). Turning movements would be proportionate to existing turning movement

5 Northbound and Eastbound movements are based on Northbound and eastbound movements at Intersection #2

Northbound and Eastbound movements are based on Northbound and eastbound movements at Intersection #2

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	3			Name:	GOLDEN SHORE/ W OCEAN BLVD				North/South Street:	Golden Shore/Golden Avenue							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	West Ocean Boulevard							
Scenario	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	12	2	101	1	25	440	446	2	28	69	43	6	35	499	43	2	
Background Projects																	
Project Trips																	
Existing Condition 2018 + Project	12	2	101	1	25	440	446	2	28	69	43	6	35	499	43	2	
Opening Year 2020	12	2	103	1	26	448	455	2	29	70	44	6	36	509	44	2	
Opening Year 2020 + Project	12	2	103	1	26	448	455	2	29	70	44	6	36	509	44	2	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	4				Name:	QUEEENS WAY/W OCEAN BLVD				North/South Street:	Queens Way/Magnolia Ave							
					Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	West Ocean Blvd							
Scenario	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)					
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Existing Condition 2018	182	91	92	17	74	879	86	12	29	30	59	28	35	427	25	17		
Background Projects																		
Project Trips	3				6				1				0					
Existing Condition 2018 + Project	182	94	92	17	80	879	86	12	29	30	60	28	35	427	25	17		
Opening Year 2020	186	93	94	17	75	897	88	12	30	31	60	29	36	436	26	17		
Opening Year 2020 + Project	186	96	94	17	81	897	88	12	30	31	61	29	36	436	26	17		

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	5			Name:	CHESTNUT PL/QUEENS WAY RAMPS/W SHORELINE DR				North/South Street:	Queen Mary/ Chestnut Place							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	West Shoreline Drive							
Scenario	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	19	3	73	11	219	738	37	37	141	9	136	5	144	765	115	0	
Background Projects																	
Project Trips					2				1				7				
Existing Condition 2018 + Project	19	3	73	11	221	738	37	37	142	9	136	5	144	765	122	0	
Opening Year 2020	19	3	74	11	223	753	38	38	144	9	139	5	147	781	118	0	
Opening Year 2020 + Project	19	3	74	11	225	753	38	38	145	9	139	5	147	781	125	0	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	6			Name:	PICO AVE/S HARBOR SCEHIC DR ON-RAMP				North/South Street:	Harbor Plaza							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	South Harbor Scenic Drive Ramps							
Scenario	Pico Blvd (SB)				South Harbor Scenic Drive Ramps (WB)				Pico Blvd (NB)				Dead End (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	28	278	0	0	0	0	0	0	0	590	9	0	0	0	0	0	
Background Projects	0	0	0	0	0	0	0	0	0	53	0	0	0	0	0	0	
Project Trips	23	1								4							
Existing Condition 2018 + Project	51	279	0	0	0	0	0	0	0	594	9	0	0	0	0	0	
Opening Year 2020	29	283	0	0	0	0	0	0	0	655	9	0	0	0	0	0	
Opening Year 2020 + Project	52	284	0	0	0	0	0	0	0	659	9	0	0	0	0	0	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	7			Name:	PICO AVE/S HARBOR SCENIC DR OFF-RAMPS/QUEENS W				North/South Street:								
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:								
Scenario	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenue (NB)				Harbor Plaza (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	87	80	45	0	16	11	354	0	6	98	14	1	44	7	4	0	
Background Projects	0	0	0	0	0	0	53	0	0	0	0	0	0	0	0	0	
Project Trips	1				4												
Existing Condition 2018 + Project	88	80	45	0	16	11	358	0	6	98	14	1	44	7	4	0	
Opening Year 2020	89	82	46	0	16	11	414	0	6	100	15	1	45	7	4	0	
Opening Year 2020 + Project	90	82	46	0	16	11	418	0	6	100	15	1	45	7	4	0	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	8			Name:	PICO AVE/QUEENS WAY OFF-RAMPS				North/South Street:	Harbor Plaza							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	Queens Highway							
Scenario	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018 ¹	0	84	0	0	41	0	35	1	0	37	0	0	0	0	0	0	1
Background Projects																	
Project Trips	1								4								
Existing Condition 2018 + Project	0	85	0	0	41	0	35	1	0	41	0	0	0	0	0	0	1
Opening Year 2020	0	86	0	0	42	0	36	1	0	38	0	0	0	0	0	0	1
Opening Year 2020 + Project	0	87	0	0	42	0	36	1	0	42	0	0	0	0	0	0	1

¹ Harbor Scenic Drive volumes are shown in 8 H.S.D worksheet

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	8 A			Name:	PICO AVE/S HARBOR SCENIC DR OFF-RAMPS				North/South Street:	Harbor Plaza							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	Harbor Scenic Drive Ramps							
Scenario	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018 ¹	0	0	0	0	16	0	282	0	0	0	0	0	0	0	0	0	
Background Projects	0	0	0	0	0	0	53	0	0	0	0	0	0	0	0	0	
Project Trips																	
Existing Condition 2018 + Project	0	0	0	0	16	0	282	0	0	0	0	0	0	0	0	0	
Opening Year 2020	0	0	0	0	16	0	341	0	0	0	0	0	0	0	0	0	
Opening Year 2020 + Project	0	0	0	0	16	0	341	0	0	0	0	0	0	0	0	0	

1 Queens Way volumes are shown in 8 Q.H worksheet

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	9			Name:	QUEENSWAY DR/QUEENS HWY/HARBOR PLAZA				North/South Street:	Harbor Plaza							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	Queensway Drive/ Queens Highway							
Scenario	Queensway Drive (SB)				Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	0	0	0	0	0	104	77	0	13	306	36	1	75	48	0	1	
Background Projects																	
Project Trips									4	19							
Existing Condition 2018 + Project	0	0	0	0	0	104	77	0	17	325	36	1	75	48	0	1	
Opening Year 2020	0	0	0	0	0	106	79	0	13	312	37	1	77	49	0	1	
Opening Year 2020 + Project	0	0	0	0	0	106	79	0	17	331	37	1	77	49	0	1	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	10			Name:	S HARBOR SCENIC DR/HARBOR PLAZA				North/South Street:	Harbor Plaza							
				Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	South Harbor Scenic Drive							
Scenario	South Harbor Scenic Drive (SB)				Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Existing Condition 2018	17	29	6	1	13	104	0	0	11	0	61	0	0	45	41	0	
Background Projects																	
Project Trips	1				4												
Existing Condition 2018 + Project	18	29	6	1	13	108	0	0	11	0	61	0	0	45	41	0	
Opening Year 2020	17	30	6	1	13	106	0	0	11	0	62	0	0	46	42	0	
Opening Year 2020 + Project	18	30	6	1	13	110	0	0	11	0	62	0	0	46	42	0	

Traffic Volume Calculation
Intersections Saturday PM

Intersection No:	11				Name:	QUEENS HWY/WINDSOR WAY				North/South Street:	Queens Way/ Dead End					
					Peak Hour:	1:00 PM - 2:00 PM				East/West Street:	Queens Highway/ Windsor Way					
Scenario	Queens Highway (SB)				Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Existing Condition 2018	64	156	0	0	29	0	0	0	0	0	5	0	0	0	0	0
Background Projects																
Project Trips	125	27														
Existing Condition 2018 + Project	189	183	0	0	29	0	0	0	0	0	5	0	0	0	0	0
Opening Year 2020	65	159	0	0	30	0	0	0	0	0	5	0	0	0	0	0
Opening Year 2020 + Project	190	186	0	0	30	0	0	0	0	0	5	0	0	0	0	0

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	12	Name:	I-710-NORTH OF S HARBOR SCENIC DR RAMPS
Directions:	Southbound/Northbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	392	541	
Background Projects	0	53	
Project Trips	17	110	
Existing Condition 2018 + Project	409	651	
Opening Year 2020 ²	1009	1337	
Opening Year 2020 + Project	1026	1447	

- 1 Existing Northbound volume derived from difference of volume between Segment# 14 and Segment# 13
Existing Southbound volume derived from Segment# 14. No additional access between #14 and #12
- 2 Opening Year 2020 Northbound volume is a sum of existing volume with 1% per year growth factor and Segment #30
Opening Year 2020 Southbound volume is a sum of Segment #28 and #26

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	14	Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP
Directions:	Southbound/ Northbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	452	541	
Background Projects	0	53	
Project Trips	17	110	
Existing Condition 2018 + Project	469	651	
Opening Year 2020	461	605	
Opening Year 2020 + Project	478	715	

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	15	Name:	I-710-WEST OF PICO AVE OFF-RAMP
Directions:	Eastbound/Westbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	1087	1328	
Background Projects	23	23	
Project Trips	24	4	
Existing Condition 2018 + Project	1111	1332	
Opening Year 2020 ²	1155	1378	
Opening Year 2020 + Project	1179	1382	

- 1 Northbound existing volume Derived from approach volume at Intersection #1 (EBR + EBL)
Southbound existing volume Derived from turning volume at Intersection #2 (SBR + WBT + NBL)
- 2 Northbound opening Year 2020 volume is derived from sum of Segment# 30 and Segment# 35
Southbound opening year 2020 volume is derived from sum of Segment# 30 and Segment# 34

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	20	Name:	S HARBOR SCENIC DR-NORTH OF QUEENS WAY
Directions:	Northbound/Southbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ^{1, 2}	204	486	
Background Projects	0	53	
Project Trips	17	133	
Existing Condition 2018 + Project	221	619	
Opening Year 2020	208	549	
Opening Year 2020 + Project	225	682	

1 Northbound volume is difference of volume at Segment #24 and Segment #23

2 Southbound volume is sum of Intersection #8 (WBR H.S.D and WBL H.S.D) and Intersection #22

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	22	Name:	SB S HARBOR SCENIC DR-SOUTH OF QUEENS WAY OFF RAMP
Directions:	Southbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹		188	
Background Projects		0	
Project Trips		151	
Existing Condition 2018 + Project		339	
Opening Year 2020		192	
Opening Year 2020 + Project		343	

1 Approach volume for Intersection#10 + (volume at Segment #25 - volume at Segment #21)

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	24	Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP
Directions:	Northbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹	443		
Background Projects	0		
Project Trips	19		
Existing Condition 2018 + Project	462		
Opening Year 2020	452		
Opening Year 2020 + Project	471		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	25	Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE
Directions:	Southbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹		373	
Background Projects		0	
Project Trips		152	
Existing Condition 2018 + Project		525	
Opening Year 2020		380	
Opening Year 2020 + Project		532	

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	28	Name:	I-710-NORTH OF PICO AVE ON-RAMP
Directions:	Southbound/Northbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ¹			
Background Projects	0	0	
Project Trips	0	0	
Existing Condition 2018 + Project	0	0	
Opening Year 2020 ^{2,3}	609	732	
Opening Year 2020 + Project	609	732	

1 Northbound volume is derived from Segment #30, No Northbound off ramps between segments

2 Southbound volume is difference between Segment #30 Volume and Segment #28 volume

3 Segment is closed under existing condition

Traffic Volume Calculation
Mainline Saturday PM

Segment no:	30	Name:	I-710-SOUTH OF PICO AVE ON-RAMP
Directions:	Southbound/Northbound	Peak Hour:	1:00 PM - 2:00 PM
Scenario	Northbound	Southbound	
Existing Condition 2018 ^{1, 2, 3}	597	718	
Background Projects	0	23	
Project Trips	0	4	
Existing Condition 2018 + Project	0	722	
Opening Year 2020	609	858	
Opening Year 2020 + Project	609	862	

- 1 Intersection #1 EBR movement is assumed to be a detour of NB movement
- 2 Intersection #1 SBR movement is assumed to be a detour for SB Movement
- 3 Segment is closed under existing condition

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	13	Name:	NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLVD
Directions:	Northbound	Peak Hour:	
Scenario	Northbound		
Existing Condition 2018 ¹	60		
Background Projects			
Project Trips	0		
Existing Condition 2018 + Project	60		
Opening Year 2020	61		
Opening Year 2020 + Project	61		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	16	Name:	NB I-710 OFF-RAMP TO PICO AVE
Directions:	Eastbound		
Scenario	Eastbound		
Existing Condition 2018 ¹	1087		
Background Projects			
Project Trips	24		
Existing Condition 2018 + Project	1111		
Opening Year 2020 ²	1109		
Opening Year 2020 + Project ²	1133		

1 Volume derieved from Intersection #1 eastbound approach volume (EBR + EBL)

2 Segment is permanantly closed under ultimate configueration

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	17	Name:	PICO AVE ON RAMP TO SB I-710
Directions:	Westbound	Peak Hour:	
Scenario	Westbound		
Existing Condition 2018 ¹	1328		
Background Projects			
Project Trips	4		
Existing Condition 2018 + Project	1332		
Opening Year 2020 ²	1355		
Opening Year 2020 + Project ²	1359		

1 Volume derieved from intersection #1 turning volume (NBR + SBL+ WBT)

2 Segment is permanantly closed under ultimate configueration (Opening Year 2020)

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	18	Name:	W OCEAN BLVD OF-RAMP TO PICO AVE
Directions:	Westbound	Peak Hour:	
Scenario	Westbound		
Existing Condition 2018 ¹	561		
Background Projects			
Project Trips			
Existing Condition 2018 + Project	561		
Opening Year 2020 ²	572		
Opening Year 2020 + Project ²	572		

1 Volume derieved from Intersection #1 Westbound approach volume (WBR + WBT + EBL)

2 Segment is permanantly closed under ultimate configueration (Opening Year 2020)

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	19	Name:	PICO AVE ON-RAMP TO W OCEAN BLVD
Directions:	Eastbound	Peak Hour:	
Scenario	Eastbound		
Existing Condition 2018 ¹	437		
Background Projects			
Project Trips			
Existing Condition 2018 + Project	437		
Opening Year 2020 ²	446		
Opening Year 2020 + Project ²	446		

1 Volume derieved from Intersection #2 turning volume (NBR + EBT + SBL)

2 Segment is permanantly closed under ultimate configueration

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	21	Name:	QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR
Directions:	Southbound	Peak Hour:	
Scenario	Southbound		
Existing Condition 2018 ¹	237		
Background Projects			
Project Trips	18		
Existing Condition 2018 + Project	255		
Opening Year 2020	242		
Opening Year 2020 + Project	260		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	23	Name:	QUEENSWAY DR OFF-RAMP TO QUEENS WAY
Directions:	Northbound	Peak Hour:	
Scenario	Northbound		
Existing Condition 2018 ¹	239		
Background Projects			
Project Trips	2		
Existing Condition 2018 + Project	241		
Opening Year 2020	244		
Opening Year 2020 + Project	246		

1 Traffic count available. See Appendix A

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	26	Name:	SB I-710 OFF-RAMP TO S HARBOR SCENIC DR
Directions:	Southbound	Peak Hour:	
Scenario	Southbound		
Existing Condition 2018 ¹	541		
Background Projects	53		
Project Trips	110		
Existing Condition 2018 + Project	651		
Opening Year 2020	605		
Opening Year 2020 + Project	715		

1 Existing volume is same as Segment #14 Southbound volume, all other access is closed under Existing Configuration

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	27	Name:	S HARBOR SCENIC DR ON RAMP TO NB I-710
Directions:	Northbound	Peak Hour:	
Scenario	Northbound		
Existing Condition 2018 ¹			
Background Projects			
Project Trips	17		
Existing Condition 2018 + Project ¹			
Opening Year 2020 ²	835		
Opening Year 2020 + Project	852		

1 Ramp is closed under existing condition

2 Volume Based on Mainline Segment #12, #15 and Ramp Segments #35, #31. (#27 = #12-(#15-#35-#31))

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	29	Name:	PICO AVE ON-RAMP TO SB I-710
Directions:	Southbound	Peak Hour:	
Scenario	Southbound		
Existing Condition 2018 ¹			
Background Projects	23		
Project Trips	4		
Existing Condition 2018 + Project ¹			
Opening Year 2020 ²	126		
Opening Year 2020 + Project	130		

1 Ramp does not exist under existing condition

2 Volume is derived from Intersection 1A turning volume (SBR + NBL) and background project

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	31	Name:	WB W OCEAN BLVD OFF-RAMP TO PICO AVE
Directions:	Northbound	Peak Hour:	
Scenario	Northbound		
Existing Condition 2018 ^{1, 2}	51		
Background Projects			
Project Trips	0		
Existing Condition 2018 + Project ¹			
Opening Year 2020	52		
Opening Year 2020 + Project	52		

1 Ramp is configured differently under Existing Condition, See Segment #16 Under Existing Condition 2018

2 Based on Westbound approach volume at Intersection #2 (Westbound through traffic to I-710 Southbound excluded)

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	32	Name:	PICO AVE ON-RAMP TO EB W OCEAN BLVD
Directions:	Eastbound	Peak Hour:	
Scenario	Eastbound		
Existing Condition 2018 ¹			
Background Projects			
Project Trips			
Existing Condition 2018 + Project ¹			
Opening Year 2020 ²	11		
Opening Year 2020 + Project	11		

1 Ramp is closed under existing condition

2 Based on Eastbound traffic volume at Intersection #2A (Opening Year 2020) (NBR + EBT + SBL)

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	33	Name:	NB I-710 OFF-RAMP TO W OCEAN BLVD/PICO AVE	
Directions:	Eastbound	Peak Hour:		
Scenario	Ocean	Pico		
Existing Condition 2018 ¹	426			
Background Projects	0	23		
Project Trips	0	24		
Existing Condition 2018 + Project ¹	426			
Opening Year 2020 ²	435	111		
Opening Year 2020 + Project	435	135		

1 Ramp is configured differently under existing condition, See Segment #16 under Existing Condition 2018

2 Ocean volume is based on turning movement at Intersection #2 SBR (Traffic is detoured under existing condition)

Pico volumes are based on Intersection 2A (Opening Year 2020) Westbound approach volumes

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	34	Name:	SB I-710 OFF-RAMP TO W OCEAN BLVD
Directions:	Westbound	Peak Hour:	
Scenario	Westbound		
Existing Condition 2018 ¹	510		
Background Projects			
Project Trips			
Existing Condition 2018 + Project ¹			
Opening Year 2020	520		
Opening Year 2020 + Project	520		

1 Based on Intersection #1 turning volume (WBT)

Traffic Volume Calculation
Ramp Saturday PM

Segment no:	35	Name:	NB I-710 OFF-RAMP TO W OCEAN BLVD/PICO AVE (COMBINED)
Directions:	Eastbound	Peak Hour:	
Scenario	Eastbound		
Existing Condition 2018 ¹	426		
Background Projects	23		
Project Trips	24		
Existing Condition 2018 + Project ¹	426		
Opening Year 2020	546		
Opening Year 2020 + Project	570		

1 Based on Segment #33 combined volume

Traffic Count
Thursday AM

Intersection No:		1		Name: PICO AVE/ WB W OCEAN BLVD OFF RAMP/I -710 RAMPS							North/South Street:		Pico Ave					
Count Date:		12/11/2018		Peak Hour:		8:00 AM - 9:00 AM					East/West Street:		Ocean Blvd WB Ramps					
Vehicle Type	PCE	Time	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)			
			Left	Thru	Right*	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	8:00 AM	0	18	157	0	1	171	10	0	10	8	0	0	120	0	206	0
		8:15 AM	0	14	123	0	0	146	6	0	13	13	0	0	120	0	197	0
		8:30 AM	0	9	102	0	1	166	7	0	4	4	0	0	88	0	152	0
		8:45 AM	0	13	79	0	0	120	2	0	5	15	0	0	98	0	160	0
		Total	0	54	461	0	2	603	25	0	32	40	0	0	426	0	715	0
Bobtails	1.2	8:00 AM	0	1	10	0	0	0	0	0	10	1	0	0	3	0	4	0
		8:15 AM	0	2	11	0	0	0	0	0	4	0	0	0	7	0	1	0
		8:30 AM	0	1	17	0	0	0	0	0	8	5	0	0	2	0	3	0
		8:45 AM	0	1	12	0	0	0	0	0	4	4	0	0	2	0	3	0
		Total	0	5	50	0	0	0	0	0	26	10	0	0	14	0	11	0
Chassis	2	8:00 AM	0	12	13	0	0	1	0	0	3	0	0	0	1	0	3	0
		8:15 AM	0	9	20	0	0	0	0	0	4	2	0	0	0	0	4	0
		8:30 AM	0	15	14	0	0	0	0	0	2	2	0	0	2	0	7	0
		8:45 AM	0	18	11	0	0	0	0	0	8	3	0	0	1	0	10	0
		Total	0	54	58	0	0	1	0	0	17	7	0	0	4	0	24	0
Container Trucks	2	8:00 AM	0	2	62	0	0	0	0	0	0	0	0	0	26	0	2	0
		8:15 AM	0	6	70	0	0	0	0	0	3	0	0	0	43	0	7	0
		8:30 AM	0	7	89	0	0	1	0	0	1	0	0	0	47	0	5	0
		8:45 AM	0	4	79	0	0	1	0	0	2	1	0	0	44	0	5	0
		Total	0	19	300	0	0	2	0	0	6	1	0	0	160	0	19	0
Others	2	8:00 AM	0	12	6	0	0	2	1	0	2	2	0	0	5	0	2	0
		8:15 AM	0	5	8	0	0	3	0	0	1	7	0	0	7	0	2	0
		8:30 AM	0	3	12	0	0	1	0	0	0	7	0	0	5	0	2	0
		8:45 AM	0	6	8	0	0	4	0	0	1	2	0	0	2	0	1	0
		Total	0	26	34	0	0	10	1	0	4	18	0	0	19	0	7	0
	0	8:00 AM																
		8:15 AM																
		8:30 AM																
		8:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	8:00 AM																
		8:15 AM																
		8:30 AM																
		8:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	158	903	0	2	616	26	0	85	76	0	0	623	0	776	0
PCE Total			0	258	1305	0	2	629	27	0	117	104	0	0	809	0	828	0

* Pico Avenue Southbound Right is I-710 WB on-ramp from Pico Avenue; Permanent detour for mainline I-710 connector.

Traffic Count
Thursday AM

Intersection No:		2		Name: PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST							North/South Street:		Pico Ave						
Count Date:		12/11/2018		Peak Hour:		8:00 AM - 9:00 AM					East/West Street:		Pier E St / EB Ocean Blvd Ramps						
Vehicle Type	PCE	Time	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	8:00 AM	187	23	5	0	2	0	0	0	1	18	0	0	0	1	0	0	
		8:15 AM	202	18	2	0	1	0	0	0	0	28	0	0	0	0	0	0	
		8:30 AM	147	12	0	0	0	1	0	0	0	14	2	0	0	0	0	0	
		8:45 AM	161	17	0	0	0	0	1	0	0	10	0	0	0	0	0	1	
		Total	697	70	7	0	3	1	1	0	0	1	70	2	0	0	1	1	0
Bobtails	1.2	8:00 AM	0	5	0	0	0	0	0	0	0	9	0	0	0	0	0	0	
		8:15 AM	0	3	0	0	0	0	0	0	0	7	0	0	0	0	0	0	
		8:30 AM	0	5	0	0	0	0	0	0	0	10	0	0	0	0	0	0	
		8:45 AM	0	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0	
		Total	0	16	0	0	0	0	0	0	0	0	32	0	0	0	0	0	0
Chassis	2	8:00 AM	0	13	0	0	0	0	0	0	23	4	0	0	0	0	0	0	
		8:15 AM	1	14	0	0	0	1	0	0	23	4	0	0	0	0	0	0	
		8:30 AM	0	22	0	0	0	0	0	0	19	6	0	0	0	0	0	0	
		8:45 AM	0	25	1	0	0	0	0	0	22	12	0	0	0	0	0	0	
		Total	1	74	1	0	0	1	0	0	0	87	26	0	0	0	0	0	0
Container Trucks	2	8:00 AM	0	6	0	0	0	0	0	0	24	0	0	0	0	0	0	0	
		8:15 AM	0	13	0	0	0	0	0	0	31	2	0	0	0	0	0	0	
		8:30 AM	0	12	0	0	0	0	0	0	26	2	0	0	0	0	0	0	
		8:45 AM	0	8	0	0	0	0	0	0	28	3	0	0	0	0	0	0	
		Total	0	39	0	0	0	0	0	0	0	109	7	0	0	0	0	0	0
Others	2	8:00 AM	2	7	0	0	0	0	0	0	1	4	1	0	0	0	0	0	
		8:15 AM	2	5	0	0	1	0	0	0	0	6	0	0	0	0	0	0	
		8:30 AM	0	3	0	0	0	0	0	0	0	5	0	0	0	0	0	0	
		8:45 AM	2	3	0	0	0	0	0	0	1	5	0	0	0	0	0	0	
		Total	6	18	0	0	1	0	0	0	0	2	20	1	0	0	0	0	0
	0	8:00 AM																	
		8:15 AM																	
		8:30 AM																	
		8:45 AM																	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	8:00 AM																	
		8:15 AM																	
		8:30 AM																	
		8:45 AM																	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			704	217	8	0	4	2	1	0	199	155	3	0	0	1	1	0	
PCE Total			711	351	9	0	5	3	1	0	397	214	4	0	0	1	1	0	

Traffic Count
Thursday AM

Intersection No:		3		Name:		GOLDEN SHORE/ W OCEAN BLVD				North/South Street:		Golden Shore/Golden Avenue						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		West Ocean Boulevard						
Vehicle Type	PCE	Time	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	08:00 AM	1	0	17	1	19	147	123	1	4	7	26	2	27	225	32	0
		08:15 AM	1	1	13	0	43	202	119	3	5	6	38	3	29	192	36	0
		08:30 AM	1	0	14	0	22	167	135	4	6	7	29	2	19	147	17	0
		08:45 AM	2	2	10	0	21	132	104	5	8	14	23	6	32	154	17	0
		Total	5	3	54	1	105	648	481	13	23	34	116	13	107	718	102	0
Large 2 Axle Vehicle	1.2	08:00 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	4	0	0	2	0	0	0	0	0	0
		08:30 AM	0	0	1	0	0	0	1	0	0	1	0	0	0	2	1	0
		08:45 AM	0	0	0	0	0	2	3	0	0	0	0	0	1	3	0	0
		Total	0	0	1	0	0	3	9	0	0	3	0	0	1	5	1	0
3 Axle Vehicle	2	08:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
		08:45 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0
		Total	0	0	0	0	1	4	1	0	0	1	1	0	0	0	0	0
4+ axle Trucks	2	08:00 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
		08:45 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0
		Total	0	0	1	0	1	2	4	0	0	0	0	0	0	2	0	0
Buses	2	08:00 AM	0	0	0	0	1	1	0	0	0	0	2	0	0	1	1	0
		08:15 AM	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0
		08:30 AM	0	0	0	0	2	1	0	0	0	0	1	0	0	0	1	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	4	2	0	0	0	0	4	0	0	3	2	0
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0
		08:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0
		Total	0	0	0	0	0	1	1	0	0	0	9	0	0	1	0	0
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		08:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
Grand Total			5	3	56	1	111	660	496	13	23	38	130	13	108	729	105	0
PCE Total			5	3	57	1	117	670	504	13	23	40	144	13	108	736	107	0

Traffic Count
Thursday AM

Intersection No:		4		Name:		QUEENS WAY/ W OCEAN BLVD				North/South Street:		Queens Way/Magnolia Ave						
Count Date:		6/7/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		West Ocean Blvd						
Vehicle Type	PCE	Time	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	08:00 AM	32	23	45	0	37	303	38	0	4	7	10	0	21	139	5	0
		08:15 AM	34	15	55	0	31	320	38	0	5	7	10	0	28	115	7	0
		08:30 AM	37	22	49	0	42	317	41	0	9	3	11	0	15	107	4	0
		08:45 AM	52	32	44	0	26	208	23	0	7	7	21	0	13	104	11	0
		Total	155	91	194	0	135	1147	140	0	25	24	52	0	77	465	26	0
Large 2 Axle Vehicle	1.2	08:00 AM	1	0	1	0	0	3	1	0	0	0	0	0	0	3	0	0
		08:15 AM	1	0	1	0	0	4	1	0	0	0	0	0	0	3	0	0
		08:30 AM	1	0	1	0	0	4	1	0	1	0	0	0	0	2	0	0
		08:45 AM	1	1	1	0	0	2	0	0	1	0	0	0	0	2	1	0
		Total	4	2	3	0	1	13	3	0	2	0	0	0	0	11	2	0
3 Axle Vehicle	2	08:00 AM																
		08:15 AM																
		08:30 AM																
		08:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axle Trucks	2	08:00 AM																
		08:15 AM																
		08:30 AM																
		08:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	2	08:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0
		08:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
		08:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
		08:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
		Total	0	0	0	0	0	6	0	0	0	0	0	0	0	15	0	0
Shuttle Buses	2	08:00 AM																
		08:15 AM																
		08:30 AM																
		08:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	08:00 AM																
		08:15 AM																
		08:30 AM																
		08:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			159	93	197	0	136	1166	143	0	28	24	52	0	77	491	28	0
PCE Total			160	93	198	0	136	1174	144	0	29	24	52	0	77	508	28	0

Traffic Count
Thursday AM

Intersection No:		5		Name: CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR							North/South Street:		Queen Mary/ Chestnut Place						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM					East/West Street:		West Shoreline Drive						
Vehicle Type	PCE	Time	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	08:00 AM	2	1	23	0	20	122	21	3	2	0	6	0	49	92	17	0	
		08:15 AM	1	0	24	2	20	74	22	2	4	0	10	2	47	82	20	0	
		08:30 AM	1	2	24	0	21	80	18	3	5	1	7	1	37	67	18	0	
		08:45 AM	0	1	22	4	15	86	20	1	5	1	6	2	31	88	17	0	
		Total	4	4	93	6	76	362	81	9	16	2	29	5	164	329	72	0	
Large 2 Axle Vehicle	1.2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
		08:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	2	2	0	0	
		08:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	3	0	0	0	
		08:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	
		Total	0	0	0	0	1	3	0	0	0	0	0	0	0	10	2	0	0
3 Axle Vehicle	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
4+ axle Trucks	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Shuttle Buses	2	08:00 AM	0	0	0	0	1	0	3	0	1	0	0	0	0	1	0	0	
		08:15 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	
		08:30 AM	0	0	0	0	1	0	2	0	0	0	0	0	1	0	0	0	
		08:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	
		Total	0	0	1	0	2	0	8	0	1	0	0	0	0	4	1	0	0
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		Total	0	1	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0
Grand Total			4	4	94	6	79	367	89	9	17	2	30	5	164	345	75	0	
PCE Total			4	4	95	6	81	370	97	9	18	2	31	5	164	353	76	0	

Traffic Count
Thursday AM

Intersection No:		6		Name:		PICO AVE/ S HARBOR SCENIC DR RAMPS				North/South Street:		Pico Ave							
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		South Harbor Scenic Drive Ramps							
Vehicle Type	PCE	Time	Pico Blvd (SB)				South Harbor Scenic Drive Ramps (WB)				Pico Blvd (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	08:00 AM	7	18	0	0	0	0	0	0	0	29	1	0	0	0	0	0	
		08:15 AM	7	24	0	0	0	0	0	0	0	22	1	0	0	0	0	0	
		08:30 AM	8	27	0	0	0	0	0	0	0	16	1	0	0	0	0	0	
		08:45 AM	6	31	0	0	0	0	0	0	0	18	2	0	0	0	0	0	
		Total	28	100	0	0	0	0	0	0	0	85	5	0	0	0	0	0	0
Large 2 Axle Vehicle	1.2	08:00 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		08:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
3 Axle Vehicle	2	08:00 AM	1	3	0	0	0	0	0	0	0	15	0	0	0	0	0	0	
		08:15 AM	1	8	0	0	0	0	0	0	0	9	0	0	0	0	0	0	
		08:30 AM	5	5	0	0	0	0	0	0	0	13	0	0	0	0	0	0	
		08:45 AM	1	4	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0
		Total	8	20	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0
4+ axle Trucks	2	08:00 AM	4	23	0	0	0	0	0	0	0	34	0	0	0	0	0	0	
		08:15 AM	4	30	0	0	0	0	0	0	0	40	0	0	0	0	0	0	
		08:30 AM	3	19	0	0	0	0	0	0	0	48	0	0	0	0	0	0	
		08:45 AM	7	21	0	0	0	0	0	0	0	41	0	0	0	0	0	0	
		Total	18	93	0	0	0	0	0	0	0	163	0	0	0	0	0	0	0
Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			54	216	0	0	0	0	0	0	298	5	0	0	0	0	0		
PCE Total			80	330	0	0	0	0	0	0	508	5	0	0	0	0	0		

Traffic Count
Thursday AM

Intersection No:		7		Name: PICO AVE/ PIER G AVE/ W VAN CAMP ST/HARBOR PLAZA							North/South Street:		Pico Ave					
Count Date:		12/11/2018		Peak Hour:		8:00 AM - 9:00 AM					East/West Street:		Harbor Plaza					
Vehicle Type	PCE	Time	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenue (NB)				Harbor Plaza (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	8:00 AM	11	0	10	0	2	4	17	0	2	1	2	0	13	6	3	0
		8:15 AM	16	2	4	0	3	8	23	0	1	0	3	0	5	6	2	0
		8:30 AM	6	4	12	0	4	4	9	0	0	0	3	0	6	6	0	0
		8:45 AM	7	0	9	0	3	8	7	0	1	0	0	0	9	2	0	0
		Total	40	6	35	0	12	24	56	0	4	1	8	0	33	20	5	0
Bobtails	1.2	8:00 AM	5	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0
		8:15 AM	3	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
		8:30 AM	2	1	0	0	1	0	9	0	0	0	1	0	0	0	0	0
		8:45 AM	2	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0
		Total	12	1	0	0	1	0	36	0	0	0	1	0	0	0	0	0
Chassis	2	8:00 AM	2	9	3	0	0	0	19	0	0	10	0	0	2	0	1	0
		8:15 AM	5	9	2	0	0	1	17	0	0	4	0	0	2	0	0	0
		8:30 AM	4	9	1	0	0	0	20	0	0	4	0	0	0	0	0	0
		8:45 AM	6	10	5	0	1	0	20	0	0	14	1	0	5	0	0	0
		Total	17	37	11	0	1	1	76	0	0	32	1	0	9	0	1	0
Container Trucks	2	8:00 AM	2	2	1	0	1	0	32	0	0	1	0	0	2	0	0	0
		8:15 AM	4	5	4	0	0	0	26	0	0	3	0	0	1	0	0	0
		8:30 AM	3	3	1	0	0	0	21	0	0	5	0	0	2	0	0	0
		8:45 AM	4	5	1	0	0	0	26	0	0	5	0	0	2	0	0	0
		Total	13	15	7	0	1	0	105	0	0	14	0	0	7	0	0	0
Others	2	8:00 AM	3	17	7	0	0	0	3	0	0	11	0	0	5	0	0	0
		8:15 AM	0	16	7	0	0	0	2	0	0	12	0	0	6	0	0	0
		8:30 AM	2	9	5	0	0	0	1	0	0	20	1	0	13	0	0	0
		8:45 AM	0	9	4	0	1	0	2	0	0	12	1	0	8	0	0	0
		Total	5	51	23	0	1	0	8	0	0	55	2	0	32	0	0	0
	0	8:00 AM																
		8:15 AM																
		8:30 AM																
		8:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	8:00 AM																
		8:15 AM																
		8:30 AM																
		8:45 AM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			87	110	76	0	16	25	281	0	4	102	12	0	81	20	6	0
PCE Total			124	213	117	0	19	26	477	0	4	203	15	0	129	20	7	0

Traffic Count
Thursday AM

Intersection No:		8		Name:		HARBOR PLAZA/ QUEENS HWY				North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		Dead End/ Queens Highway Off Ramp						
Vehicle Type	PCE	Time	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	08:00 AM	0	8	0	0	19	0	4	0	0	16	0	0	0	0	0	0
		08:15 AM	0	21	0	0	15	0	3	0	0	5	0	0	0	0	0	0
		08:30 AM	0	28	0	0	12	0	6	0	0	9	0	0	0	0	0	0
		08:45 AM	0	14	0	0	9	0	10	0	0	4	0	0	0	0	0	0
		Total	0	71	0	0	55	0	23	0	0	34	0	0	0	0	0	0
Large 2 Axel Vehicle	1.2	08:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
3 Axel Vehicle	2	08:00 AM	0	5	0	0	0	0	0	0	0	10	0	0	0	0	0	0
		08:15 AM	0	6	0	0	0	0	0	0	0	6	0	0	0	0	0	0
		08:30 AM	0	4	0	0	0	0	0	0	0	9	0	0	0	0	0	0
		08:45 AM	0	2	0	0	0	0	0	0	0	8	0	0	0	0	0	0
		Total	0	17	0	0	0	0	0	0	0	33	0	0	0	0	0	0
4+ axel Trucks	2	08:00 AM	0	6	0	0	0	0	0	0	0	8	0	0	0	0	0	0
		08:15 AM	0	3	0	0	0	0	0	0	0	15	0	0	0	0	0	0
		08:30 AM	0	6	0	0	0	0	0	0	0	16	0	0	0	0	0	0
		08:45 AM	0	8	0	0	0	0	0	0	0	15	0	0	0	0	0	0
		Total	0	23	0	0	0	0	0	0	0	54	0	0	0	0	0	0
Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	111	0	0	55	0	23	0	0	122	0	0	0	0	0	
PCE Total			0	151	0	0	55	0	23	0	0	209	0	0	0	0	0	

Traffic Count
Thursday AM

Intersection No:		8		Name: HARBOR PLAZA/ S HARBOR SCEIND DR OFF RAMPS							North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM					East/West Street:		South Harbor Scenic Dr Off Ramp						
Vehicle Type	PCE	Time	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	08:00 AM	0	0	0	0	1	0	6	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	1	0	6	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	5	0	16	0	0	0	0	0	0	0	0	0	
Large 2 Axle Vehicle	1.2	08:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
3 Axle Vehicle	2	08:00 AM	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	4	0	3	0	0	0	0	0	0	0	0	0	
4+ axle Trucks	2	08:00 AM	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	2	0	6	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	2	0	36	0	0	0	0	0	0	0	0	0	
Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			0	0	0	0	11	0	57	0	0	0	0	0	0	0	0	0	
PCE Total			0	0	0	0	17	0	96	0	0	0	0	0	0	0	0	0	

Traffic Count
Thursday AM

Intersection No:		9		Name: QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA							North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM					East/West Street:		Queensway Drive/ Queens Highway						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				Queensway Drive (SB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	08:00 AM	0	2	5	0	1	65	2	0	18	4	0	0	0	0	0	0	
		08:15 AM	0	0	2	0	1	88	0	0	23	5	1	0	0	0	0	0	
		08:30 AM	0	3	2	0	2	63	1	0	9	8	2	0	0	0	0	0	
		08:45 AM	0	1	8	0	0	83	1	0	13	6	5	0	0	0	0	0	
		Total	0	6	17	0	4	299	4	0	63	23	8	0	0	0	0	0	
Large 2 Axle Vehicle	1.2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
		08:30 AM	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	
		Total	0	1	0	0	0	0	0	0	5	1	0	0	0	0	0	0	
3 Axle Vehicle	2	08:00 AM	0	0	0	0	0	1	0	0	9	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	
		08:30 AM	0	0	1	0	0	0	0	0	10	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	
		Total	0	0	1	0	0	1	0	0	33	0	0	0	0	0	0	0	
4+ axle Trucks	2	08:00 AM	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	1	0	0	35	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	2	0	0	47	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	3	0	0	136	0	0	0	0	0	0	0	
Buses	2	08:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			0	7	18	0	4	303	6	0	237	24	8	0	0	0	0		
PCE Total			0	7	19	0	4	307	8	0	407	24	8	0	0	0	0		

Traffic Count
Thursday AM

Intersection No:		10		Name:		S HARBOR SCENIC DR/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		South Harbor Scenic Drive						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				South Harbor Scenic Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	08:00 AM	0	2	0	0	6	0	15	0	0	1	23	0	1	13	0	0
		08:15 AM	1	0	0	0	5	0	19	0	0	4	22	0	2	12	0	0
		08:30 AM	1	3	0	0	4	0	7	0	0	6	14	0	3	8	1	0
		08:45 AM	0	0	0	0	2	1	11	0	0	8	11	0	3	4	2	0
		Total	2	5	0	0	17	1	52	0	0	19	70	0	9	37	3	0
Large 2 Axle Vehicle	1.2	08:00 AM	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0
		08:15 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0
		08:30 AM	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0
		08:45 AM	0	0	0	0	2	0	1	0	0	0	2	0	1	0	0	0
		Total	0	1	0	0	4	0	3	0	0	2	5	0	1	1	0	0
3 Axle Vehicle	2	08:00 AM	0	0	0	0	10	0	6	0	0	0	3	0	0	7	0	0
		08:15 AM	0	0	0	0	8	0	6	0	0	0	5	0	0	7	0	0
		08:30 AM	0	0	0	0	11	0	11	0	0	0	4	0	0	8	0	0
		08:45 AM	0	0	0	0	7	0	10	0	0	0	2	0	0	10	0	0
		Total	0	0	0	0	36	0	33	0	0	0	14	0	0	32	0	0
4+ axle Trucks	2	08:00 AM	0	0	0	0	6	0	19	0	0	1	3	0	0	49	0	0
		08:15 AM	0	0	0	0	17	0	37	0	0	2	6	0	0	57	0	0
		08:30 AM	0	0	0	0	15	0	32	0	0	0	6	0	0	50	0	0
		08:45 AM	0	0	0	0	15	0	47	0	0	0	7	0	1	64	2	0
		Total	0	0	0	0	53	0	135	0	0	3	22	0	1	220	2	0
Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			2	6	0	0	110	1	223	0	0	24	111	0	11	290	5	0
PCE Total			2	6	0	0	200	1	392	0	0	27	148	0	12	542	7	0

Traffic Count
Thursday AM

Intersection No:		11		Name:		QUEENS HWY/WINDSOR WAY				North/South Street:		Queens Way/ Dead End						
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		Queens Highway/ Windsor Way						
Vehicle Type	PCE	Time	Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)				Queens Highway (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	08:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	3	20	0	0
		08:15 AM	5	0	0	0	0	0	1	0	0	0	0	0	6	27	0	0
		08:30 AM	2	0	0	0	0	0	1	0	0	0	0	0	13	30	0	0
		08:45 AM	8	0	0	0	0	0	1	0	0	0	0	0	14	23	0	0
		Total	16	0	0	0	0	0	3	0	0	0	0	0	36	100	0	0
Large 2 Axle Vehicle	1.2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
3 Axle Vehicle	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4+ axle Trucks	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
Bicycles	0	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			16	0	0	0	0	0	3	0	0	0	0	36	112	0	0	
PCE Total			16	0	0	0	0	0	3	0	0	0	0	36	122	0	0	

Traffic Count
Mainline Thursday AM

Segment No:	14					Direction:	Northbound								
Segment Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
08:00 AM	2	44	20	1	9	11	0	2	13	1	3	0	0	143	
08:15 AM	1	57	26	3	13	9	0	2	25	0	6	0	0	195	
08:30 AM	3	43	22	2	10	11	0	4	27	1	5	0	1	186	
08:45 AM	8	57	26	2	12	15	0	1	35	4	2	0	0	229	
Total	14	201	94	8	44	46	0	9	100	6	16	0	1	539	
PCE Total	14	201	113	16	53	92	0	18	200	12	32	0	2	753	

Segment No:	24					Direction:	Northbound								
Segment Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
08:00 AM	1	52	20	1	17	12	1	2	12	1	0	0	0	155	
08:15 AM	7	83	19	1	17	8	0	1	23	0	0	0	1	201	
08:30 AM	0	58	22	0	10	8	0	0	26	0	0	0	0	164	
08:45 AM	2	76	20	0	8	16	0	3	25	4	0	0	1	210	
Total	10	269	81	2	52	44	1	6	86	5	0	0	2	558	
PCE Total	10	269	97	4	62	88	2	12	172	10	0	0	4	731	

Segment No:	25					Direction:	Southbound								
Segment Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
08:00 AM	0	29	10	2	2	0	0	0	2	0	0	0	0	51	
08:15 AM	0	40	11	1	2	0	0	0	1	0	0	0	0	60	
08:30 AM	0	48	10	3	3	0	0	0	2	0	0	0	0	74	
08:45 AM	1	40	11	1	2	0	0	0	0	0	0	0	0	59	
Total	1	157	42	7	9	0	0	0	5	0	0	0	0	221	
PCE Total	1	157	50	14	11	0	0	0	10	0	0	0	0	243	

Traffic Count
Ramp Thursday AM

Segment No:	13													Direction:	Northbound
Segment Name:	NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLVD													Date:	11/15/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
08:00 AM	0	8	0	1	1	0	0	0	0	0	0	0	0	11	
08:15 AM	0	7	3	0	0	0	0	0	0	0	0	0	0	11	
08:30 AM	0	5	0	0	1	0	0	0	0	0	0	0	0	6	
08:45 AM	0	5	0	0	0	0	0	1	0	0	0	0	0	7	
Total	0	25	3	1	2	0	0	1	0	0	0	0	0	32	
PCE Total	0	25	4	2	2	0	0	2	0	0	0	0	0	35	

Segment No:	21													Direction:	Southbound
Segment Name:	QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR													Date:	11/15/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
08:00 AM	0	14	7	1	1	0	0	0	1	0	0	0	0	28	
08:15 AM	0	26	6	1	2	0	0	0	0	0	0	0	0	38	
08:30 AM	0	30	8	1	2	0	0	0	1	0	0	0	0	46	
08:45 AM	1	20	7	0	1	0	0	0	0	0	0	0	0	31	
Total	1	90	28	3	6	0	0	0	2	0	0	0	0	130	
PCE Total	1	90	34	6	7	0	0	0	4	0	0	0	0	142	

Segment No:	23													Direction:	Northbound
Segment Name:	QUEENSWAY DR OFF-RAMP TO QUEENS WAY													Date:	11/15/2018
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
08:00 AM	0	13	4	1	6	0	1	0	0	0	0	0	0	29	
08:15 AM	0	23	9	0	3	0	0	0	0	0	0	0	0	37	
08:30 AM	0	11	7	0	2	0	0	0	0	0	0	0	0	22	
08:45 AM	0	14	2	0	1	1	0	0	0	1	0	0	0	22	
Total	0	61	22	1	12	1	1	0	0	1	0	0	0	99	
PCE Total	0	61	26	2	14	2	2	0	0	2	0	0	0	110	

Traffic Count
Thursday PM

Intersection No:		1		Name:							PICO AVE/ WB W OCEAN BLVD OFF RAMP/I -710 RAMPS							North/South Street:		Pico Ave			
Count Date:		Adjstuted		Peak Hour:			1:00 PM - 2:00 PM				East/West Street:		Ocean Blvd WB Ramps										
Vehicle Type	PCE	Time	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)								
			Left	Thru	Right*	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds					
Passenger Cars	1	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total																					
Bobtails	1.2	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total																					
Chassis	2	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total																					
Container Trucks	2	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total																					
Others	2	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total																					
	0	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	0	01:00 PM																					
		01:15 PM																					
		01:30 PM																					
		01:45 PM																					
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Grand Total			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
PCE Total			0	267	1350	0	4	557	41	0	264	135	0	0	1237	0	921	0					

* Pico Avenue Southbound Right is I-710 WB on-ramp from Pico Avenue; Permanent detour for mainline I-710 connector.

Traffic Count
Thursday PM

Intersection No:		2		Name: PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST						North/South Street:		Pico Ave						
Count Date:		Adjstuted		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Pier E St / EB Ocean Blvd Ramps						
Vehicle Type	PCE	Time	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenu (NB)				Pier E Street (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total																
Bobtails	1.2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total																
Chassis	2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total																
Container Trucks	2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total																
Others	2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total																
	0	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PCE Total			697	285	3	0	4	0	3	0	342	323	10	0	3	1	1	0

Traffic Count
Thursday PM

Intersection No:		3		Name:		GOLDEN SHORE/ W OCEAN BLVD				North/South Street:		Golden Shore/Golden Avenue						
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		West Ocean Boulevard						
Vehicle Type	PCE	Time	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	1	2	8	0	21	123	111	1	10	82	39	2	12	101	9	0
		01:15 PM	2	0	9	0	20	81	79	0	3	30	33	1	8	115	5	0
		01:30 PM	2	0	8	1	15	108	99	0	4	19	35	5	18	115	8	0
		01:45 PM	2	0	12	1	14	108	108	2	8	18	20	4	8	124	11	0
		Total	7	2	37	2	70	420	397	3	25	149	127	12	46	455	33	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	3	0	0	0	0	1	0	0	0	1	0	0
		01:15 PM	0	0	0	0	1	0	1	0	1	0	3	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
		Total	0	0	0	0	4	0	2	0	1	1	3	0	1	2	0	0
3 Axel Vechicle	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	1	0	0	0	2	0	0	0	0	0	0	1	0	0
Buses	2	01:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0
		01:15 PM	0	0	0	0	1	0	1	0	0	2	0	0	0	1	1	0
		01:30 PM	0	0	0	0	1	2	1	0	0	0	1	0	0	0	1	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0
		Total	0	0	1	0	2	3	2	0	0	2	2	0	1	2	4	0
Shuttle Buses	2	01:00 PM	1	0	0	0	0	2	0	0	0	1	1	0	0	1	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	1	0	0	0	0	2	0	0	0	2	3	0	0	1	0	0
Bicylces	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			8	2	39	2	76	428	404	3	26	154	135	12	48	461	37	0
PCE Total			9	2	41	2	79	436	409	3	26	158	141	12	49	465	41	0

Traffic Count
Thursday PM

Intersection No:		4		Name:		QUEENS WAY/ W OCEAN BLVD				North/South Street:		Queens Way/Magnolia Ave						
Count Date:		Adjusted		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		West Ocean Blvd						
Vehicle Type	PCE	Time	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	33	8	26	0	15	116	20	0	14	14	12	0	14	165	6	0
		01:15 PM	32	12	30	0	7	86	17	0	17	8	15	0	16	156	3	0
		01:30 PM	43	8	34	0	8	127	13	0	12	17	14	0	16	167	3	0
		01:45 PM	31	6	30	0	10	137	12	0	12	11	17	0	17	183	7	0
		Total	139	34	120	0	40	467	62	0	55	50	57	0	65	671	19	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		01:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		01:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		Total	1	0	1	0	0	3	0	0	1	0	0	0	1	2	0	0
3 Axel Vechicle	2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
		01:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
		01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
		01:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
		Total	0	0	0	0	0	3	0	0	0	0	0	0	0	7	0	0
Shuttle Buses	2	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	01:00 PM																
		01:15 PM																
		01:30 PM																
		01:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			140	34	121	0	40	474	62	0	56	50	57	0	66	680	19	0
PCE Total			141	34	121	0	40	478	62	0	56	50	57	0	66	687	19	0

Traffic Count
Thursday PM

Intersection No:		5		Name: CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR							North/South Street:		Queen Mary/ Chestnut Place						
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM					East/West Street:		West Shoreline Drive						
Vehicle Type	PCE	Time	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	7	4	18	2	21	69	11	7	15	1	29	5	21	89	24	0	
		01:15 PM	2	3	12	2	19	55	6	4	21	2	21	2	13	68	17	0	
		01:30 PM	5	1	5	0	21	61	11	3	25	1	19	3	21	91	30	0	
		01:45 PM	2	2	5	1	6	70	10	5	25	1	26	1	23	87	24	0	
		Total	16	10	40	5	67	255	38	19	86	5	95	11	78	335	95	0	
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	
		01:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	1	1	0	
		01:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
		01:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	1	0	1	4	0	0	0	0	0	0	1	3	1	0	
3 Axel Vechicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		01:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
		01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0	
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		01:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	1	2	0	0	0	0	0	0	0	1	1	0	
Buses	2	01:00 PM	0	0	0	0	1	10	0	0	0	0	0	0	0	1	0	0	
		01:15 PM	0	0	0	0	3	7	0	0	0	0	0	0	0	1	0	0	
		01:30 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	
		01:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	5	22	0	0	0	0	0	0	0	4	0	0	
Shuttle Buses	2	01:00 PM	0	1	1	0	0	2	0	0	0	1	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	1	2	1	0	0	0	1	0	0	0	1	0	
		01:30 PM	0	0	0	0	1	0	0	0	1	0	1	0	0	1	1	0	
		01:45 PM	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	0	
		Total	0	1	1	0	2	5	1	0	3	1	3	0	0	2	2	0	
Bicylces	0	01:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		01:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
Grand Total			16	11	42	5	76	291	39	19	89	6	98	11	79	347	99	0	
PCE Total			16	12	43	5	84	324	40	19	92	7	101	11	79	357	102	0	

Traffic Count
Thursday PM

Intersection No:		6		Name:		PICO AVE/ S HARBOR SCENIC DR RAMPS				North/South Street:		Harbor Plaza							
Count Date:		11/15/2018		Peak Hour:		8:00 AM - 9:00 AM				East/West Street:		South Harbor Scenic Drive Ramps							
Vehicle Type	PCE	Time	Pico Blvd (SB)				South Harbor Scenic Drive Ramps (WB)				Pico Blvd (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	1	37	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0
		01:15 PM	4	34	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0
		01:30 PM	9	23	0	0	0	0	0	0	0	22	2	0	0	0	0	0	0
		01:45 PM	3	25	0	0	0	0	0	0	0	40	1	0	0	0	0	0	0
		Total	17	119	0	0	0	0	0	0	0	0	115	3	0	0	0	0	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
		01:15 PM	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
		01:30 PM	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
		01:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	3	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
3 Axel Vechicle	2	01:00 PM	1	6	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0
		01:15 PM	2	4	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0
		01:30 PM	1	5	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0
		01:45 PM	2	5	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0
		Total	6	20	0	0	0	0	0	0	0	66	0	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	3	18	0	0	0	0	0	0	32	1	0	0	0	0	0	0	0
		01:15 PM	7	21	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0
		01:30 PM	10	22	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0
		01:45 PM	4	27	0	0	0	0	0	0	49	0	0	0	0	0	0	0	0
		Total	24	88	0	0	0	0	0	0	0	172	1	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			47	230	0	0	0	0	0	0	358	4	0	0	0	0	0	0	
PCE Total			77	339	0	0	0	0	0	0	597	5	0	0	0	0	0	0	

Traffic Count
Thursday PM

Intersection No:		7	Name:								PICO AVE/ PIER G AVE/ W VAN CAMP ST/HARBOR PLAZA								North/South Street:		Pico Ave	
Count Date:		Adjstuted	Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Harbor Plaza											
Vehicle Type	PCE	Time	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenu (NB)				Harbor Plaza (EB)							
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds				
Passenger Cars	1	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total																				
Bobtails	1.2	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total																				
Chassis	2	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total																				
Container Trucks	2	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total																				
Others	2	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total																				
	0	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	0	01:00 PM																				
		01:15 PM																				
		01:30 PM																				
		01:45 PM																				
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Grand Total			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
PCE Total			128	176	83	0	28	21	627	0	11	209	28	0	175	54	9	0				

Traffic Count
Thursday PM

Intersection No:		8		Name:		HARBOR PLAZA/ QUEENS HWY				North/South Street:		Harbor Plaza							
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Dead End/ Queens Highway Off Ramp							
Vehicle Type	PCE	Time	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	0	28	0	0	22	0	13	0	0	17	0	0	0	0	0	0	0
		01:15 PM	0	29	0	0	14	0	10	0	0	18	0	0	0	0	0	0	0
		01:30 PM	0	14	0	0	20	0	1	0	0	12	0	0	0	0	0	0	0
		01:45 PM	0	24	0	0	7	0	13	0	0	16	0	0	0	0	0	0	0
		Total	0	95	0	0	63	0	37	0	0	63	0	0	0	0	0	0	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
3 Axel Vechicle	2	01:00 PM	0	7	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
		01:15 PM	0	4	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0
		01:30 PM	0	4	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
		01:45 PM	0	4	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
		Total	0	19	0	0	0	0	0	0	0	54	0	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0
		01:15 PM	0	5	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0
		01:30 PM	0	10	0	0	1	0	0	0	0	17	0	0	0	0	0	0	0
		01:45 PM	0	8	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0
		Total	0	23	0	0	1	0	0	0	0	52	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	138	0	0	65	0	37	0	0	170	0	0	0	0	0	0	
PCE Total			0	180	0	0	67	0	37	0	0	276	0	0	0	0	0	0	

Traffic Count
Thursday PM

Intersection No:		8		Name: HARBOR PLAZA/ S HARBOR SCEIND DR OFF RAMPS							North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM					East/West Street:		South Harbor Scenic Dr Off Ramp						
Vehicle Type	PCE	Time	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	01:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	4	0	6	0	0	0	0	0	0	0	0	0	
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
3 Axel Vechicle	2	01:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	61	0	0	0	0	0	0	0	0	0	
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicylces	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			0	0	0	0	5	0	71	0	0	0	0	0	0	0	0	0	
PCE Total			0	0	0	0	6	0	134	0	0	0	0	0	0	0	0	0	

Traffic Count
Thursday PM

Intersection No:		9		Name:		QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Queensway Drive/ Queens Highway						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				Queensway Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	0	11	43	0	0	40	4	0	18	5	7	0	0	0	0	0
		01:15 PM	0	7	30	0	3	38	1	1	11	8	8	1	0	0	0	0
		01:30 PM	1	5	16	0	3	40	2	0	17	7	3	0	0	0	0	0
		01:45 PM	0	5	7	0	1	41	1	0	14	7	4	0	0	0	0	0
		Total	1	28	96	0	7	159	8	1	60	27	22	1	0	0	0	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	2	0	0	1	1	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	3	0	0	4	1	0	0	0	0	0	0
3 Axel Vechicle	2	01:00 PM	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	1	2	0	0	20	0	0	0	0	0	0	0
		01:30 PM	0	0	0	1	0	0	0	0	31	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0
		Total	0	0	0	1	1	2	0	0	92	0	0	0	0	0	0	0
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	1	0	0	53	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0
		Total	0	0	0	0	0	1	0	0	148	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0
		01:15 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		Total	0	0	5	0	0	1	3	0	0	2	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
Bicylces	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			1	28	101	1	8	168	12	1	304	30	22	1	0	0	0	
PCE Total			1	28	106	2	9	175	16	1	545	32	22	1	0	0	0	

Traffic Count
Thursday PM

Intersection No:		10		Name:		S HARBOR SCENIC DR/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		South Harbor Scenic dDrive						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				South Harbor Scenic Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	5	5	0	0	6	0	22	0	0	7	27	0	1	9	1	0
		01:15 PM	2	5	0	0	7	0	10	0	0	11	21	0	3	7	0	1
		01:30 PM	4	3	0	0	5	0	19	0	0	6	14	0	1	5	2	0
		01:45 PM	4	2	0	0	11	0	16	0	0	8	13	0	3	3	0	0
		Total	15	15	0	0	29	0	67	0	0	32	75	0	8	24	3	1
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	1	0	2	0	0	0	0	0	0	1	0	0
		01:15 PM	0	0	0	0	2	0	1	0	0	1	0	0	0	1	0	0
		01:30 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
		Total	0	0	0	0	4	0	3	0	0	2	3	0	0	2	0	0
3 Axel Vechicle	2	01:00 PM	0	0	0	0	11	0	15	0	0	0	3	0	0	7	0	0
		01:15 PM	1	1	0	0	8	0	22	0	0	0	3	0	0	7	0	0
		01:30 PM	0	0	0	0	16	0	25	0	0	1	1	0	1	6	0	0
		01:45 PM	0	0	0	0	19	0	26	0	0	0	3	0	0	4	0	0
		Total	1	1	0	0	54	0	88	0	0	1	10	0	1	24	0	0
4+ axel Trucks	2	01:00 PM	0	0	0	0	14	0	18	0	0	0	1	0	0	71	0	0
		01:15 PM	0	0	0	0	6	0	44	0	0	0	5	0	0	57	0	0
		01:30 PM	0	0	0	0	17	0	49	0	0	0	9	0	0	69	0	0
		01:45 PM	0	0	0	0	17	0	48	0	0	0	8	0	0	98	2	0
		Total	0	0	0	0	54	0	159	0	0	0	23	0	0	295	2	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			16	16	0	0	141	0	317	0	0	36	111	0	10	345	5	1
PCE Total			17	17	0	0	250	0	565	0	0	38	145	0	12	664	7	1

Traffic Count
Thursday PM

Intersection No:		11		Name:		QUEENS HWY/WINDSOR WAY				North/South Street:		Queens Way/ Dead End						
Count Date:		11/15/2018		Peak Hour:		1:00 PM - 2:00 PM				East/West Street:		Queens Highway/ Windsor Way						
Vehicle Type	PCE	Time	Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)				Queens Highway (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	01:00 PM	3	0	0	0	0	0	3	0	0	0	0	0	31	26	0	0
		01:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	32	26	0	0
		01:30 PM	4	0	0	0	0	0	4	0	0	0	0	0	29	20	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	24	22	0	0
		Total	8	0	0	0	0	0	7	0	0	0	0	0	116	94	0	0
Large 2 Axel Vehicle	1.2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
3 Axel Vechicle	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4+ axel Trucks	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
Bicyclces	0	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			9	0	0	0	0	7	0	0	0	0	0	116	102	0	0	
PCE Total			10	0	0	0	0	7	0	0	0	0	0	116	109	0	0	

Traffic Count
Mainline Thursday PM

Segment No:	14					Direction:	Northbound								
Segment Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	4	59	24	5	10	18	0	5	11	3	2	0	0	192	
01:15 PM	5	33	23	6	16	23	0	1	22	3	6	0	1	209	
01:30 PM	1	47	18	9	20	29	0	2	41	3	8	0	3	284	
01:45 PM	1	36	16	2	18	33	0	0	34	4	7	0	1	240	
Total	11	175	81	22	64	103	0	8	108	13	23	0	5	613	
PCE Total	11	175	97	44	77	206	0	16	216	26	46	0	10	924	

Segment No:	24					Direction:	Northbound								
Segment Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	0	74	12	3	12	14	0	2	12	3	0	0	1	173	
01:15 PM	0	62	13	3	12	21	0	1	29	2	0	0	0	204	
01:30 PM	1	73	12	6	15	30	0	0	40	3	0	0	1	266	
01:45 PM	0	49	18	0	12	28	0	0	29	3	0	0	0	205	
Total	1	258	55	12	51	93	0	3	110	11	0	0	2	596	
PCE Total	1	258	66	24	61	186	0	6	220	22	0	0	4	848	

Segment No:	25					Direction:	Southbound								
Segment Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	0	58	15	1	5	0	0	0	0	0	0	0	0	84	
01:15 PM	0	55	7	2	4	0	0	0	0	0	0	0	0	72	
01:30 PM	0	62	14	1	3	0	0	0	0	0	0	0	0	84	
01:45 PM	1	56	8	0	2	1	0	0	0	0	0	0	0	71	
Total	1	231	44	4	14	1	0	0	0	0	0	0	0	295	
PCE Total	1	231	53	8	17	2	0	0	0	0	0	0	0	312	

Traffic Count
Ramp Thursday PM

Segment No:	13					Direction:	Northbound								
Segment Name:	Northbound H NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLV					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	0	9	2	0	1	0	0	0	0	0	0	0	0	13	
01:15 PM	0	6	2	0	1	0	0	0	0	0	0	0	0	10	
01:30 PM	0	7	3	0	1	0	0	0	0	0	0	0	0	12	
01:45 PM	0	2	1	1	0	0	0	0	0	0	0	0	0	5	
Total	0	24	8	1	3	0	0	0	0	0	0	0	0	36	
PCE Total	0	24	10	2	4	0	0	0	0	0	0	0	0	39	

Segment No:	21					Direction:	Southbound								
Segment Name:	Southbound Q QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	0	33	7	0	4	0	0	0	0	0	0	0	0	46	
01:15 PM	0	25	5	2	4	0	0	0	0	0	0	0	0	40	
01:30 PM	0	31	5	1	1	0	0	0	0	0	0	0	0	40	
01:45 PM	0	32	5	0	1	0	0	0	0	0	0	0	0	39	
Total	0	121	22	3	10	0	0	0	0	0	0	0	0	156	
PCE Total	0	121	26	6	12	0	0	0	0	0	0	0	0	165	

Segment No:	23					Direction:	Northbound								
Segment Name:	NB Queensw: QUEENSWAY DR OFF-RAMP TO QUEENS WAY					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
01:00 PM	0	33	6	0	4	0	0	0	0	0	0	0	0	45	
01:15 PM	0	27	4	0	3	0	0	0	0	0	0	0	0	35	
01:30 PM	0	36	3	0	4	0	0	0	0	0	0	0	0	44	
01:45 PM	0	21	8	0	2	0	0	0	0	0	0	0	0	33	
Total	0	117	21	0	13	0	0	0	0	0	0	0	0	151	
PCE Total	0	117	25	0	16	0	0	0	0	0	0	0	0	158	

Traffic Count
Thursday 4PM

Intersection No:		1		Name: PICO AVE/ WB W OCEAN BLVD OFF RAMP/I -710 RAMPS							North/South Street:		Pico Ave						
Count Date:		12/11/2018		Peak Hour:		4:00 PM - 5:00 PM					East/West Street:		Ocean Blvd WB Ramps						
Vehicle Type	PCE	Time	Pico Avenue (SB)				W. Ocean Blvd (WB)				Pico Avenue (NB)				W. Ocean Blvd (EB)				
			Left	Thru	Right*	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	4:00 PM	0	21	130	0	2	144	1	0	11	4	0	0	137	0	302	0	
		4:15 PM	0	24	106	0	1	169	3	0	29	15	0	0	162	0	364	0	
		4:30 PM	0	38	213	0	4	160	1	0	22	9	0	0	187	0	397	0	
		4:45 PM	0	40	196	0	3	178	8	0	46	18	0	0	223	0	396	0	
		Total	0	123	645	0	10	651	13	0	108	46	0	0	709	0	1459	0	
Bobtails	1.2	4:00 PM	0	1	10	0	0	0	0	0	12	6	0	0	9	0	2	0	
		4:15 PM	0	1	5	0	0	0	0	0	11	4	0	0	13	0	2	0	
		4:30 PM	0	0	5	0	0	0	0	0	5	7	0	0	4	0	4	0	
		4:45 PM	0	0	5	0	0	0	1	0	9	6	0	0	6	0	3	0	
		Total	0	2	25	0	0	0	1	0	37	23	0	0	32	0	11	0	
Chassis	2	4:00 PM	0	7	12	0	0	0	0	0	3	2	0	0	4	0	3	0	
		4:15 PM	0	5	5	0	0	0	0	0	9	1	0	0	3	0	2	0	
		4:30 PM	0	4	7	0	0	0	0	0	9	2	0	0	4	0	2	0	
		4:45 PM	0	4	4	0	0	0	0	0	6	0	0	0	3	0	5	0	
		Total	0	20	28	0	0	0	0	0	27	5	0	0	14	0	12	0	
Container Trucks	2	4:00 PM	0	2	34	0	0	0	0	0	2	5	0	0	75	0	3	0	
		4:15 PM	0	2	38	0	0	0	0	0	4	6	0	0	46	0	6	0	
		4:30 PM	0	2	29	0	0	0	0	0	3	3	0	0	47	0	4	0	
		4:45 PM	0	2	40	0	0	1	0	0	0	3	0	0	32	0	4	0	
		Total	0	8	141	0	0	1	0	0	9	17	0	0	200	0	17	0	
Others	2	4:00 PM	0	4	3	0	0	1	1	0	1	11	0	0	4	0	3	0	
		4:15 PM	0	1	4	0	0	4	0	0	1	4	0	0	8	0	3	0	
		4:30 PM	0	1	3	0	0	1	0	0	0	12	0	0	1	0	3	0	
		4:45 PM	0	0	2	0	0	1	0	0	1	1	0	0	3	0	2	0	
		Total	0	6	12	0	0	7	1	0	3	28	0	0	16	0	11	0	
	0	4:00 PM																	
		4:15 PM																	
		4:30 PM																	
		4:45 PM																	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	4:00 PM																	
		4:15 PM																	
		4:30 PM																	
		4:45 PM																	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			0	159	851	0	10	659	15	0	184	119	0	0	971	0	1510	0	
PCE Total			0	193	1037	0	10	667	16	0	230	174	0	0	1207	0	1552	0	

* Pico Avenue Southbound Right is I-710 WB on-ramp from Pico Avenue; Permanent detour for mainline I-710 connector.

Traffic Count
Thursday 4PM

Intersection No:		2		Name: PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST							North/South Street:		Pico Ave						
Count Date:		12/11/2018		Peak Hour:		4:00 PM - 5:00 PM					East/West Street:		Pier E St / EB Ocean Blvd Ramps						
Vehicle Type	PCE	Time	Pico Avenue (SB)				WB Ocean Blvd Ramps (WB)				Pico Avenue (NB)				Pier E Street (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	4:00 PM	273	16	4	0	0	0	0	0	0	13	1	0	8	13	0	0	
		4:15 PM	352	36	10	0	0	0	2	0	0	26	0	0	9	4	1	0	
		4:30 PM	350	43	15	0	0	0	0	0	1	27	0	0	4	4	0	0	
		4:45 PM	390	30	15	0	0	0	0	0	4	47	1	0	10	8	2	0	
		Total	1365	125	44	0	0	0	2	0	5	113	2	0	31	29	3	0	
Bobtails	1.2	4:00 PM	0	3	0	0	0	0	0	0	18	0	0	0	0	0	0	0	
		4:15 PM	0	3	0	0	0	0	0	0	15	0	0	0	0	0	0	0	
		4:30 PM	0	4	0	0	0	0	0	0	14	0	0	0	0	0	0	0	
		4:45 PM	0	4	0	0	0	0	0	0	12	0	0	0	0	0	0	0	
		Total	0	14	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0
Chassis	2	4:00 PM	0	9	0	0	0	0	0	0	4	0	0	0	0	0	0	0	
		4:15 PM	0	7	0	0	0	0	0	0	8	9	0	0	0	0	0	0	
		4:30 PM	0	4	0	0	0	0	0	0	11	13	0	0	0	0	0	0	
		4:45 PM	0	9	0	0	0	0	0	0	10	4	0	0	0	0	0	0	
		Total	0	29	0	0	0	0	0	0	35	30	0	0	0	0	0	0	0
Container Trucks	2	4:00 PM	0	6	0	0	0	0	0	0	7	0	0	0	0	0	0	0	
		4:15 PM	0	7	0	0	0	0	0	0	13	8	0	0	0	0	0	0	
		4:30 PM	0	8	0	0	0	0	0	0	14	5	1	0	0	0	0	0	
		4:45 PM	0	7	0	0	0	0	0	0	24	5	0	0	0	0	0	0	
		Total	0	28	0	0	0	0	0	0	65	25	1	0	0	0	0	0	0
Others	2	4:00 PM	5	7	0	0	0	0	0	0	11	0	0	0	0	0	0	0	
		4:15 PM	4	3	0	0	0	0	0	0	7	0	0	0	0	0	0	0	
		4:30 PM	2	4	0	0	0	0	0	0	13	0	0	0	0	0	0	0	
		4:45 PM	2	3	0	0	0	0	0	0	4	0	0	0	0	0	0	0	
		Total	13	17	0	0	0	0	0	0	1	35	0	0	0	0	0	0	0
	0																		
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0																		
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			1378	213	44	0	0	2	0	106	262	3	0	31	29	3	0		
PCE Total			1391	290	44	0	0	2	0	207	364	4	0	31	29	3	0		

Traffic Count
Thursday 4PM

Intersection No:		3		Name:		GOLDEN SHORE/ W OCEAN BLVD				North/South Street:		Golden Shore/Golden Avenue						
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		West Ocean Boulevard						
Vehicle Type	PCE	Time	Golden Avenue (SB)				West Ocean Blvd (WB)				Golden Shore (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	04:00 PM	4	0	6	0	11	140	106	1	14	48	33	2	27	329	16	0
		04:15 PM	2	3	15	1	8	159	104	2	12	42	19	4	35	282	14	0
		04:30 PM	3	1	14	0	8	151	132	3	30	75	20	3	31	305	16	0
		04:45 PM	0	1	13	0	16	134	116	7	18	68	25	4	27	323	15	0
		Total	9	5	48	1	43	584	458	13	74	233	97	13	120	1239	61	0
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	
		04:15 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	
		Total	0	0	0	0	1	1	5	0	0	1	1	0	0	2	1	0
3 Axel Vechicle	2	04:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Buses	2	04:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	
		04:15 PM	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	
		04:45 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	
		Total	0	0	0	0	3	2	0	0	0	0	2	0	0	3	4	
Shuttle Buses	2	04:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	2	0		
		04:15 PM	0	0	0	0	0	1	1	0	0	0	1	0	0	0		
		04:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	1		
		04:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
		Total	2	0	0	0	0	1	1	0	0	0	3	0	0	3		
Bicyclces	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		04:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0		
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
		Total	0	0	0	0	0	1	0	0	0	0	0	0	0	1		
Grand Total			11	5	48	1	47	589	465	13	75	234	103	13	120	1247	66	0
PCE Total			13	5	48	1	50	593	468	13	76	234	108	13	120	1253	70	0

Traffic Count
Thursday 4PM

Intersection No:		4		Name:		QUEENS WAY/ W OCEAN BLVD				North/South Street:		Queens Way/Magnolia Ave						
Count Date:		6/7/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		West Ocean Blvd						
Vehicle Type	PCE	Time	Magnolia Ave (SB)				West Ocean Blvd (WB)				Queens Way (NB)				West Ocean Blvd (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	04:00 PM	54	17	38	0	13	200	31	0	13	19	16	0	28	243	6	0
		04:15 PM	58	21	50	0	15	208	19	0	16	18	23	0	20	282	4	0
		04:30 PM	47	15	64	0	28	211	24	0	18	22	19	0	30	304	7	0
		04:45 PM	51	22	58	0	12	198	25	0	23	25	24	0	23	341	5	0
		Total	208	75	211	0	68	818	99	0	69	84	82	0	99	1170	22	0
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
		04:30 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
		04:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
		Total	1	0	2	0	0	6	0	0	1	0	0	0	1	4	0	0
3 Axel Vechicle	2	04:00 PM																
		04:15 PM																
		04:30 PM																
		04:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM																
		04:15 PM																
		04:30 PM																
		04:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	2	04:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
		04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
		04:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
		04:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
		Total	0	0	0	0	0	6	0	0	0	0	0	0	0	12	0	0
Shuttle Buses	2	04:00 PM																
		04:15 PM																
		04:30 PM																
		04:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	04:00 PM																
		04:15 PM																
		04:30 PM																
		04:45 PM																
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			210	75	213	0	68	830	99	0	70	84	82	0	101	1185	22	0
PCE Total			211	75	214	0	68	837	99	0	70	84	82	0	102	1198	22	0

Traffic Count
Thursday 4PM

Intersection No:		5		Name: CHESTNUT PL/ QUEENS WAY RAMPS/ W SHORELINE DR							North/South Street:		Queen Mary/ Chestnut Place						
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM					East/West Street:		West Shoreline Drive						
Vehicle Type	PCE	Time	Chestnut Place (SB)				West Shoreline Drive (WB)				Queen Mary (NB)				West Shoreline Drive (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	04:00 PM	7	1	22	0	8	62	7	2	25	2	39	3	21	141	13	0	
		04:15 PM	16	1	15	1	11	57	5	5	20	4	43	2	26	143	20	0	
		04:30 PM	8	1	34	0	13	61	15	2	27	3	47	2	29	169	13	0	
		04:45 PM	5	1	15	0	7	36	10	6	10	8	74	2	24	154	20	0	
		Total	36	4	86	1	39	216	37	15	82	17	203	9	100	607	66	0	
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0
3 Axel Vechicle	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Buses	2	04:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	
		04:15 PM	0	0	0	0	2	1	0	0	0	0	0	0	0	1	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
		04:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	
		Total	0	0	0	0	5	1	0	0	0	0	0	0	0	4	0	0	
Shuttle Buses	2	04:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	
		04:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	1	0	0	4	3	0	0	0	0	0	0	1	0	0	
Bicycles	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	
		Total	0	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	
Grand Total			36	4	87	1	44	223	40	15	82	17	204	9	101	614	67	0	
PCE Total			36	4	88	1	49	228	43	15	82	17	204	9	102	620	68	0	

Traffic Count
Thursday 4PM

Intersection No:		6		Name:		PICO AVE/ S HARBOR SCENIC DR RAMPS				North/South Street:		Harbor Plaza							
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		South Harbor Scenic Drive Ramps							
Vehicle Type	PCE	Time	Pico Blvd (SB)				South Harbor Scenic Drive Ramps (WB)				Pico Blvd (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	04:00 PM	4	16	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0
		04:15 PM	3	16	0	0	0	0	0	0	0	27	1	0	0	0	0	0	0
		04:30 PM	5	46	0	0	0	0	1	0	0	48	2	0	0	0	0	0	0
		04:45 PM	11	46	0	0	0	0	0	0	0	77	0	0	0	0	0	0	0
		Total		23	124	0	0	0	0	1	0	0	174	3	0	0	0	0	0
Large 2 Axel Vehicle	1.2	04:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total		0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
3 Axel Vechicle	2	04:00 PM	2	2	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
		04:15 PM	2	4	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0
		04:30 PM	2	6	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0
		04:45 PM	3	4	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0
		Total		9	16	0	0	0	0	0	0	45	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM	5	18	0	0	0	0	0	0	0	43	0	0	0	0	0	0	0
		04:15 PM	10	13	0	0	0	0	0	0	0	28	1	0	0	0	0	0	0
		04:30 PM	2	9	0	0	0	0	0	0	0	35	1	0	0	0	0	0	0
		04:45 PM	2	7	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0
		Total		19	47	0	0	0	0	0	0	129	2	0	0	0	0	0	0
Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			52	188	0	0	0	0	1	0	0	349	5	0	0	0	0	0	
PCE Total			81	251	0	0	0	0	1	0	0	523	7	0	0	0	0	0	

Traffic Count
Thursday 4PM

Intersection No:		7		Name: PICO AVE/ PIER G AVE/ W VAN CAMP ST/HARBOR PLAZA							North/South Street:		Pico Ave					
Count Date:		12/11/2018		Peak Hour:		4:00 PM - 5:00 PM					East/West Street:		Harbor Plaza					
Vehicle Type	PCE	Time	Pico Avenue (SB)				Harbor Plaza (WB)				Pico Avenue (NB)				Harbor Plaza (EB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	4:00 PM	7	6	4	0	1	1	10	0	0	4	5	0	9	11	0	0
		4:15 PM	20	8	6	0	5	4	12	0	2	0	5	0	9	8	3	0
		4:30 PM	29	13	7	0	4	3	19	0	5	14	14	0	20	14	1	0
		4:45 PM	28	9	11	0	6	2	47	0	3	27	25	0	19	13	0	0
		Total	84	36	28	0	16	10	88	0	10	45	49	0	57	46	4	0
Bobtails	1.2	4:00 PM	2	0	0	0	0	1	18	0	0	0	0	0	1	0	0	0
		4:15 PM	3	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0
		4:30 PM	3	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0
		4:45 PM	6	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0
		Total	14	0	0	0	0	1	63	0	0	0	0	0	1	0	0	0
Chassis	2	4:00 PM	4	1	0	0	0	0	8	0	0	1	0	0	0	0	0	0
		4:15 PM	3	4	1	0	0	1	15	0	1	2	0	0	1	0	0	0
		4:30 PM	2	1	1	0	0	1	20	0	0	4	0	0	2	0	0	0
		4:45 PM	5	2	1	0	0	0	7	0	0	3	0	0	2	0	0	0
		Total	14	8	3	0	0	2	50	0	1	10	0	0	5	0	0	0
Container Trucks	2	4:00 PM	4	3	0	0	0	1	18	0	0	2	0	0	0	0	0	0
		4:15 PM	1	3	0	0	0	2	18	0	0	4	0	0	0	0	0	0
		4:30 PM	3	4	2	0	2	0	24	0	0	4	0	0	2	0	1	0
		4:45 PM	2	3	1	0	0	0	19	0	0	1	0	0	0	2	0	0
		Total	10	13	3	0	2	3	79	0	0	11	0	0	2	2	1	0
Others	2	4:00 PM	3	17	3	0	0	0	3	0	2	16	0	0	1	1	0	0
		4:15 PM	0	6	5	0	0	0	1	0	0	12	0	0	6	0	0	0
		4:30 PM	1	4	2	0	0	0	1	0	0	9	0	0	7	0	0	0
		4:45 PM	0	3	1	0	0	0	0	0	0	2	0	0	4	0	1	0
		Total	4	30	11	0	0	0	5	0	2	39	0	0	18	1	1	0
	0																	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0																	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			126	87	45	0	18	16	285	0	13	105	49	0	83	49	6	0
PCE Total			157	138	62	0	20	21	432	0	16	165	49	0	108	52	8	0

Traffic Count
Thursday 4PM

Intersection No:		8		Name:		HARBOR PLAZA/ QUEENS HWY				North/South Street:		Harbor Plaza							
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		Dead End/ Queens Highway Off Ramp							
Vehicle Type	PCE	Time	Harbor Plaza (SB)				Queens Highway off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	04:00 PM	0	19	0	0	9	0	4	0	0	13	0	0	0	0	0	0	0
		04:15 PM	0	28	0	0	10	0	12	0	0	8	0	0	0	0	0	0	0
		04:30 PM	0	39	0	0	16	0	7	0	0	18	0	0	0	0	0	0	0
		04:45 PM	0	44	0	0	18	0	11	0	0	40	0	0	0	0	0	0	0
		Total	0	130	0	0	53	0	34	0	0	79	0	0	0	0	0	0	0
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
		Total	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
3 Axel Vechicle	2	04:00 PM	0	1	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0
		04:15 PM	0	3	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0
		04:30 PM	0	4	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0
		04:45 PM	0	7	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0
		Total	0	15	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM	0	10	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
		04:15 PM	0	4	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0
		04:30 PM	0	2	0	0	1	0	0	0	0	15	0	0	0	0	0	0	0
		04:45 PM	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
		Total	0	19	0	0	1	0	0	0	0	52	0	0	0	0	0	0	0
Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			0	165	0	0	55	0	34	0	0	173	0	0	0	0	0	0	
PCE Total			0	199	0	0	56	0	34	0	0	266	0	0	0	0	0	0	

Traffic Count
Thursday 4PM

Intersection No:		8		Name: HARBOR PLAZA/ S HARBOR SCEIND DR OFF RAMPS							North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM					East/West Street:		South Harbor Scenic Dr Off Ramp						
Vehicle Type	PCE	Time	Harbor Plaza (SB)				South Harbor Scenic Dr Off Ramp (WB)				Harbor Plaza (NB)				Dead End (EB)				
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Passenger Cars	1	04:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	1	0	7	0	0	0	0	0	0	0	0	0	
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3 Axel Vechicle	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
4+ axel Trucks	2	04:00 PM	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	
Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shuttle Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicylces	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total			0	0	0	0	1	0	44	0	0	0	0	0	0	0	0	0	
PCE Total			0	0	0	0	1	0	81	0	0	0	0	0	0	0	0	0	

Traffic Count
Thursday 4PM

Intersection No:		9		Name:		QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		Queensway Drive/ Queens Highway						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				Queens Highway (NB)				Harbor Plaza (EB)				Queensway Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	04:00 PM	1	4	7	1	1	30	3	0	44	4	1	1	0	0	0	0
		04:15 PM	0	1	8	0	1	27	3	0	34	0	0	0	0	0	0	0
		04:30 PM	0	1	11	0	2	56	6	1	48	4	2	1	0	0	0	0
		04:45 PM	0	4	12	0	1	28	3	0	130	3	0	0	0	0	0	0
		Total	1	10	38	1	5	141	15	1	256	11	3	2	0	0	0	0
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0
		Total	0	0	1	0	0	1	0	0	4	0	0	0	0	0	0	0
3 Axel Vechicle	2	04:00 PM	0	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	71	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM	0	1	0	0	0	0	0	0	48	1	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0
		Total	0	1	0	0	0	0	0	0	140	1	0	0	0	0	0	0
Buses	2	04:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicylces	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			1	11	39	1	5	142	19	1	471	12	3	2	0	0	0	
PCE Total			1	12	39	1	5	142	23	1	683	13	3	2	0	0	0	

Traffic Count
Thursday 4PM

Intersection No:		10		Name:		S HARBOR SCENIC DR/ HARBOR PLAZA				North/South Street:		Harbor Plaza						
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		South Harbor Scenic dDrive						
Vehicle Type	PCE	Time	Harbor Plaza (WB)				South Harbor Scenic Drive (NB)				Harbor Plaza (EB)				South Harbor Scenic Drive (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	04:00 PM	1	3	0	0	10	0	39	0	0	6	7	0	2	13	0	1
		04:15 PM	0	3	0	0	3	0	30	0	0	5	10	0	1	16	1	0
		04:30 PM	0	2	0	0	14	0	47	0	0	6	25	0	4	28	2	1
		04:45 PM	3	2	0	0	36	0	133	0	0	2	18	0	4	19	2	0
		Total	4	10	0	0	63	0	249	0	0	19	60	0	11	76	5	2
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
		Total	0	0	0	0	2	0	2	0	0	1	0	0	0	0	0	0
3 Axel Vechicle	2	04:00 PM	0	0	0	0	9	0	20	0	0	0	1	0	0	9	0	0
		04:15 PM	0	0	0	0	17	0	23	0	0	0	2	0	0	5	0	0
		04:30 PM	0	0	0	0	7	0	14	0	0	0	3	0	0	7	0	0
		04:45 PM	0	0	0	0	5	0	8	0	0	0	2	0	0	12	0	0
		Total	0	0	0	0	38	0	65	0	0	0	8	0	0	33	0	0
4+ axel Trucks	2	04:00 PM	0	1	0	0	20	0	48	0	0	1	6	0	0	43	0	0
		04:15 PM	0	0	0	0	16	0	47	0	0	0	2	0	1	43	1	0
		04:30 PM	0	0	0	0	13	0	32	0	0	0	3	0	0	34	0	0
		04:45 PM	0	0	0	0	1	0	11	0	0	0	3	0	0	34	0	0
		Total	0	1	0	0	50	0	138	0	0	1	14	0	1	154	1	0
Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			4	11	0	0	153	0	454	0	0	21	82	0	12	263	6	2
PCE Total			4	12	0	0	241	0	657	0	0	22	104	0	13	450	7	2

Traffic Count
Thursday 4PM

Intersection No:		11		Name:		QUEENS HWY/WINDSOR WAY				North/South Street:		Queens Way/ Dead End						
Count Date:		11/15/2018		Peak Hour:		4:00 PM - 5:00 PM				East/West Street:		Queens Highway/ Windsor Way						
Vehicle Type	PCE	Time	Queens Highway (WB)				Windsor Way (NB)				Dead End (EB)				Queens Highway (SB)			
			Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
Passenger Cars	1	04:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	5	11	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	5	0	0
		04:30 PM	1	0	0	0	0	0	1	0	0	0	0	0	2	12	0	0
		04:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	5	4	0	0
		Total	2	0	0	0	0	0	2	0	0	0	0	0	18	32	0	0
Large 2 Axel Vehicle	1.2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Axel Vechicle	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ axel Trucks	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shuttle Buses	2	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Bicyclces	0	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			2	0	0	0	0	0	2	0	0	0	0	18	33	0	0	
PCE Total			2	0	0	0	0	0	2	0	0	0	0	18	34	0	0	

Traffic Count
Mainline Thursday 4PM

Segment No:	14					Direction:	Northbound								
Segment Name:	S HARBOR SCENIC DR-SOUTH OF W OCEAN BLVD OFF-RAMP					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
04:00 PM	4	36	13	2	7	23	0	5	36	2	9	0	1	220	
04:15 PM	2	39	17	3	9	28	1	1	38	5	5	0	1	236	
04:30 PM	6	53	23	3	13	21	0	0	25	2	4	0	0	212	
04:45 PM	5	56	35	3	19	15	0	0	9	0	2	0	0	184	
Total	17	184	88	11	48	87	1	6	108	9	20	0	2	581	
PCE Total	17	184	106	22	58	174	2	12	216	18	40	0	4	852	

Segment No:	24					Direction:	Northbound								
Segment Name:	NB QUEENSWAY DR-SOUTH OF QUEENS WAY OFF-RAMP					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
04:00 PM	0	67	9	1	15	23	0	3	34	2	0	0	0	222	
04:15 PM	5	62	15	0	11	27	0	2	36	3	0	0	0	234	
04:30 PM	4	77	25	1	16	18	0	2	21	3	0	0	0	220	
04:45 PM	3	114	43	0	16	11	0	2	10	0	0	0	0	234	
Total	12	320	92	2	58	79	0	9	101	8	0	0	0	681	
PCE Total	12	320	110	4	70	158	0	18	202	16	0	0	0	910	

Segment No:	25					Direction:	Southbound								
Segment Name:	SB QUEENS HWY-NORTH OF CARNIVAL/QUEEN MARY ENTRANCE					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
04:00 PM	1	32	4	1	0	1	0	0	1	0	0	0	0	44	
04:15 PM	0	24	6	1	1	0	0	0	0	0	0	0	0	34	
04:30 PM	0	33	4	1	1	0	0	0	0	0	0	0	0	41	
04:45 PM	0	22	5	2	0	0	0	0	0	0	0	0	0	32	
Total	1	111	19	5	2	1	0	0	1	0	0	0	0	140	
PCE Total	1	111	23	10	2	2	0	0	2	0	0	0	0	151	

Traffic Count
Ramp Thursday 4PM

Segment No:	13					Direction:	Northbound								
Segment Name:	Northbound H NB S HARBOR SCENIC DR OFF-RAMP TO WB W OCEAN BLV					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2	2	
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
04:00 PM	0	6	0	0	1	0	0	0	0	0	0	0	0	7	
04:15 PM	0	9	0	1	0	0	0	0	0	0	0	0	0	11	
04:30 PM	0	9	0	1	0	0	0	0	0	0	0	0	0	11	
04:45 PM	0	7	1	0	2	0	0	0	0	0	0	0	0	11	
Total	0	31	1	2	3	0	0	0	0	0	0	0	0	37	
PCE Total	0	31	1	4	4	0	0	0	0	0	0	0	0	40	

Segment No:	21					Direction:	Southbound								
Segment Name:	Southbound Q. QUEENS WAY OFF-RAMP TO SB S HARBOR SCENIC DR					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
04:00 PM	0	21	2	1	0	0	0	0	1	0	0	0	0	27	
04:15 PM	0	18	4	1	1	0	0	0	0	0	0	0	0	26	
04:30 PM	0	23	3	1	1	0	0	0	0	0	0	0	0	30	
04:45 PM	0	16	4	2	0	0	0	0	0	0	0	0	0	25	
Total	0	78	13	5	2	0	0	0	1	0	0	0	0	99	
PCE Total	0	78	16	10	2	0	0	0	2	0	0	0	0	108	

Segment No:	23					Direction:	Northbound								
Segment Name:	NB Quneensw: QUEENSWAY DR OFF-RAMP TO QUEENS WAY					Date:	11/15/2018								
PCE	1	1	1.2	2	1.2	2	2	2	2	2	2	2	2		
Vehicle Type	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
04:00 PM	0	36	3	1	3	0	0	0	0	0	0	0	0	45	
04:15 PM	0	35	11	0	6	0	0	0	0	0	0	0	0	55	
04:30 PM	1	39	10	0	4	0	0	0	0	0	0	0	0	57	
04:45 PM	1	59	18	0	8	0	0	0	0	0	0	0	0	91	
Total	2	169	42	1	21	0	0	0	0	0	0	0	0	235	
PCE Total	2	169	50	2	25	0	0	0	0	0	0	0	0	249	

Appendix B

Trip Generation Calculations

Trip Generation Calculation
Passengers Saturday

Passengers												
2018 Weekend - Saturday			Passengers Disembark					Passengers Embark				
			Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total	Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total
Inbound Trips		100%	83.1%	5.2%	5.0%	6.7%		83.1%	5.2%	5.0%	6.7%	
Persons	3012	3012	0	157	151	203	510	2502	157	151	203	3013
Average Occup.			2.2	2.2	5.0	2.2		2.2	2.2	5.0	2.2	
PCE			1.0	1.5	0	1.0		1.0	1.5	0	1.0	
#Vehicles (PCEs)			0.00	106.79	0.00	92.28	199.07	1137.44	106.79	0.00	92.28	1336.51
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0	0	0	0	0	0	0	0	0	0.00
7-8 a.m.	1.22%	0.00%	0	1.30	0.00	1.12	2.42	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	34.64%	0.00%	0	36.99	0.00	31.97	68.96	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	51.93%	0.00%	0	55.46	0.00	47.92	103.38	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	5.77%	0.01%	0	6.16	0.00	5.33	11.49	0.10	0.01	0.00	0.01	0.12
11 a.m.-12 p.m.	6.44%	19.91%	0	6.88	0.00	5.94	12.82	226.46	21.26	0.00	18.37	266.09
12-1 p.m.	0.00%	28.14%	0	0.00	0.00	0.00	0.00	320.09	30.05	0.00	25.97	376.11
1-2 p.m.	0.00%	34.27%	0	0.00	0.00	0.00	0.00	389.85	36.60	0.00	31.63	458.08
2-3 p.m.	0.00%	15.62%	0	0.00	0.00	0.00	0.00	177.68	16.68	0.00	14.41	208.77
3-4 p.m.	0.00%	2.05%	0	0.00	0.00	0.00	0.00	23.27	2.18	0.00	1.89	27.34
4-5 p.m.	0.00%	0.00%	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5-6 p.m.	0.00%	0.00%	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Passengers												
2018 Weekend - Saturday			Passengers Disembark					Passengers Embark				
			Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total	Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total
Outbound Trips		100%	83.1%	5.2%	5.0%	6.7%		83.1%	5.2%	5.0%	6.7%	
Persons	3012	3012	2502	157	151	203	3013	0	157	151	203	510
Average Occup.			2.2	2.2	5.0	2.2		2.2	2.2	5.0	2.2	
PCE			1.0	1.5	0.0	1.0		1.0	1.5	0.0	1.0	
#Vehicles (PCEs)			1137.44	106.79	0.00	92.28	1336.51	0.00	106.79	0.00	92.28	199.07
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	1.22%	0.00%	13.85	1.30	0.00	1.12	16.28	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	34.64%	0.00%	394.01	36.99	0.00	31.97	462.97	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	51.93%	0.00%	590.68	55.46	0.00	47.92	694.06	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	5.77%	0.01%	65.64	6.16	0.00	5.33	77.13	0.00	0.01	0.00	0.01	0.02
11 a.m.-12 p.m.	6.44%	19.91%	73.25	6.88	0.00	5.94	86.07	0.00	21.26	0.00	18.37	39.63
12-1 p.m.	0.00%	28.14%	0.00	0.00	0.00	0.00	0.00	0.00	30.05	0.00	25.97	56.02
1-2 p.m.	0.00%	34.27%	0.00	0.00	0.00	0.00	0.00	0.00	36.60	0.00	31.63	68.23
2-3 p.m.	0.00%	15.62%	0.00	0.00	0.00	0.00	0.00	0.00	16.68	0.00	14.41	31.10
3-4 p.m.	0.00%	2.05%	0.00	0.00	0.00	0.00	0.00	0.00	2.18	0.00	1.89	4.07
4-5 p.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5-6 p.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

¹ Parked Cars are quantified as an outbound trip for disembark and inbound trip for embark. This includes personal and rental cars.

² Public Transit is already present on the transportation system. Therefore, no additional project trips are generated.

Trip Generation Calculation
Passengers Saturday

Passengers												
2020 Weekend - Saturday			Passengers Disembark					Passengers Embark				
			Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total	Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total
Inbound Trips		100%	83.1%	5.2%	5.0%	6.7%		83.1%	5.2%	5.0%	6.7%	
Persons	4008	4008	0	208	200	270	679	3330	208	200	270	4009
Average Occup.			2.2	2.2	5.0	2.2		2.2	2.2	5.0	2.2	
PCE			1.0	1.5	0	1.0		1.0	1.5	0	1.0	
#Vehicles (PCEs)			0.00	142.10	0.00	122.79	264.89	1513.57	142.10	0.00	122.79	1778.46
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	1.22%	0.00%	0.00	1.73	0.00	1.50	3.23	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	34.64%	0.00%	0.00	49.22	0.00	42.54	91.76	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	51.93%	0.00%	0.00	73.79	0.00	63.77	137.56	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	5.77%	0.01%	0.00	8.20	0.00	7.09	15.29	0.13	0.01	0.00	0.01	0.16
11 a.m.-12 p.m.	6.44%	19.91%	0.00	9.15	0.00	7.91	17.06	301.34	28.29	0.00	24.45	354.08
12-1 p.m.	0.00%	28.14%	0.00	0.00	0.00	0.00	0.00	425.93	39.99	0.00	34.55	500.48
1-2 p.m.	0.00%	34.27%	0.00	0.00	0.00	0.00	0.00	518.77	48.70	0.00	42.09	609.56
2-3 p.m.	0.00%	15.62%	0.00	0.00	0.00	0.00	0.00	236.43	22.20	0.00	19.18	277.81
3-4 p.m.	0.00%	2.05%	0.00	0.00	0.00	0.00	0.00	30.96	2.91	0.00	2.51	36.38
4-5 p.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5-6 p.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020 Weekend - Saturday			Passengers Disembark					Passengers Embark				
Outbound Trips		100%	83.1%	5.2%	5.0%	6.7%		83.1%	5.2%	5.0%	6.7%	
Persons	4008	4008	3330	208	200	270	4009	0	208	200	270	679
Average Occup.			2.2	2.2	5.0	2.2		2.2	2.2	5.0	2.2	
PCE			1.0	1.5	0	1.0		1.0	1.5	0	1.0	
#Vehicles (PCEs)			1513.57	142.10	0.00	122.79	1778.46	0.00	142.10	0.00	122.79	264.89
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	1.22%	0.00%	18.43	1.73	0.00	1.50	21.66	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	34.64%	0.00%	524.31	49.22	0.00	42.54	616.07	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	51.93%	0.00%	786.01	73.79	0.00	63.77	923.57	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	5.77%	0.01%	87.35	8.20	0.00	7.09	102.64	0.00	0.01	0.00	0.01	0.02
11 a.m.-12 p.m.	6.44%	19.91%	97.47	9.15	0.00	7.91	114.53	0.00	28.29	0.00	24.45	52.74
12-1 p.m.	0.00%	28.14%	0.00	0.00	0.00	0.00	0.00	0.00	39.99	0.00	34.55	74.54
1-2 p.m.	0.00%	34.27%	0.00	0.00	0.00	0.00	0.00	0.00	48.70	0.00	42.09	90.79
2-3 p.m.	0.00%	15.62%	0.00	0.00	0.00	0.00	0.00	0.00	22.20	0.00	19.18	41.38
3-4 p.m.	0.00%	2.05%	0.00	0.00	0.00	0.00	0.00	0.00	2.91	0.00	2.51	5.42
4-5 p.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5-6 p.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

¹ Parked Cars are quantified as an outbound trip for disembark and inbound trip for embark. This includes personal and rental cars.

² Public Transit is already present on the transportation system. Therefore, no additional project trips are generated.

Trip Generation calculation
Employees and Trucks Saturday

Saturday - 2018		Carnival Employees			2018 Weekend		Supply Trucks			Total
		Carpool	Drive Alone	Public Transit			Delivery Van (LDT2)	Box Truck (LHD2)	Tractor Trailer (HDV)	
Inbound Trips		12%	69%	19%	Inbound Trips					
Persons	252	30	174	48	Supply Truck #	32	3	9	20	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		15.12	173.88	0	#Vehicles/PCE		3.00	10.80	40.00	242.80
Hour	Employee %				Hour	Truck %				
6-7 a.m.	80%	3.00	44.00	0.00	6-7 a.m.	30%	0.90	3.24	12.00	63.14
7-8 a.m.	17%	9.00	89.00	0.00	7-8 a.m.	30%	0.90	3.24	12.00	114.14
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.16	8.00	10.76
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	10%	0.30	1.08	4.00	5.38
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	5%	0.15	0.54	2.00	2.69
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	5%	0.15	0.54	2.00	2.69
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	0	0.00	0.00	0.00	0.00
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	0	0.00	0.00	0.00	0.00
2-3 p.m.	3%	0.00	4.00	0.00	2-3 p.m.	0	0.00	0.00	0.00	4.00
3-4 p.m.	0	0.00	0.00	0.00	3-4 p.m.	0	0.00	0.00	0.00	0.00
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
Outbound Trips		12%	69%	19%	Outbound Trips					
Persons		30	174	48	Supply Truck #	32	3	9	20	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		15.12	173.88	0.00	#Vehicles/PCE		3.00	10.80	40.00	242.80
Hour	Employee %				Hour	Truck %				
6-7 a.m.	0	0.00	0.00	0.00	6-7 a.m.	0	0.00	0.00	0.00	0.00
7-8 a.m.	0	0.00	0.00	0.00	7-8 a.m.	20%	0.60	2.16	8.00	10.76
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.16	8.00	10.76
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	20%	0.60	2.16	8.00	10.76
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	15%	0.45	1.62	6.00	8.07
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	15%	0.45	1.62	6.00	8.07
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	5%	0.15	0.54	2.00	2.69
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	5%	0.15	0.54	2.00	2.69
2-3 p.m.	80%	12.10	139.10	0.00	2-3 p.m.	0	0.00	0.00	0.00	151.20
3-4 p.m.	17%	2.57	29.56	0.00	3-4 p.m.	0	0.00	0.00	0.00	32.13
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
7-8 p.m.	0	0.00	0.00	0.00	7-8 p.m.	0	0.00	0.00	0.00	0.00
8-9 p.m.	0	0.00	0.00	0.00	8-9 p.m.	0	0.00	0.00	0.00	0.00
9-10 p.m.	0	0.00	0.00	0.00	9-10 p.m.	0	0.00	0.00	0.00	0.00
10-11 p.m.	0	0.00	0.00	0.00	10-11 p.m.	0	0.00	0.00	0.00	0.00
11 p.m.-12 a.m.	3%	0.45	5.22	0.00	11 p.m.-12 a.m.	0	0.00	0.00	0.00	5.67

Trip Generation calculation
Employees and Trucks Saturday

Saturday - 2020		Carnival Employees			2020 Weekend		Supply Trucks			Total
		Carpool	Drive Alone	Public Transit			Delivery Van (LDT2)	Box Truck (LHD2)	Tractor Trailer (HDV)	
Inbound Trips		12%	69%	19%	Inbound Trips					
Persons	290	35	200	55	Supply Truck #	36	3	11	24	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		17.40	200.10	0.00	#Vehicles/PCE		3.00	13.20	48.00	281.70
Hour	Employee %				Hour	Truck %				
6-7 a.m.	80%	3.00	44.00	0.00	6-7 a.m.	30%	0.90	3.96	14.40	66.26
7-8 a.m.	17%	9.00	89.00	0.00	7-8 a.m.	30%	0.90	3.96	14.40	117.26
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.64	9.60	12.84
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	10%	0.30	1.32	4.80	6.42
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	5%	0.15	0.66	2.40	3.21
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	5%	0.15	0.66	2.40	3.21
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	0	0.00	0.00	0.00	0.00
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	0	0.00	0.00	0.00	0.00
2-3 p.m.	3%	0.00	4.00	0.00	2-3 p.m.	0	0.00	0.00	0.00	4.00
3-4 p.m.	0	0.00	0.00	0.00	3-4 p.m.	0	0.00	0.00	0.00	0.00
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
Outbound Trips		12%	69%	19%	Outbound Trips					
Persons		35	200	55	Supply Truck #	32	3	11	24	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		17.40	200.10	0	#Vehicles/PCE		3.00	13.20	48.00	281.70
Hour	Employee %				Hour	Truck %				
6-7 a.m.	0	0.00	0.00	0.00	6-7 a.m.	0	0.00	0.00	0.00	0.00
7-8 a.m.	0	0.00	0.00	0.00	7-8 a.m.	20%	0.60	2.64	9.60	12.84
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.64	9.60	12.84
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	20%	0.60	2.64	9.60	12.84
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	15%	0.45	1.98	7.20	9.63
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	15%	0.45	1.98	7.20	9.63
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	5%	0.15	0.66	2.40	3.21
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	5%	0.15	0.66	2.40	3.21
2-3 p.m.	80%	13.92	160.08	0.00	2-3 p.m.	0	0.00	0.00	0.00	174.00
3-4 p.m.	17%	2.96	34.02	0.00	3-4 p.m.	0	0.00	0.00	0.00	36.98
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
7-8 p.m.	0	0.00	0.00	0.00	7-8 p.m.	0	0.00	0.00	0.00	0.00
8-9 p.m.	0	0.00	0.00	0.00	8-9 p.m.	0	0.00	0.00	0.00	0.00
9-10 p.m.	0	0.00	0.00	0.00	9-10 p.m.	0	0.00	0.00	0.00	0.00
10-11 p.m.	0	0.00	0.00	0.00	10-11 p.m.	0	0.00	0.00	0.00	0.00
11 p.m.-12 a.m.	3%	0.52	6.00	0.00	11 p.m.-12 a.m.	0	0.00	0.00	0.00	6.53

Embark and Disembark Summary - Saturday

Disembark											Total	Percent
Time	9/8/2018	9/15/2018	9/22/2018	9/29/2018	10/6/2018	10/13/2018	10/27/2018	11/3/2018	11/10/2018	11/17/2018		
6:00am											0	0.00%
6:30am	0	0	0	0	0	0	0	0	0	0	0	0.00%
7:00am	0	0	0	0	0	0	0	0	0	0	0	0.00%
7:37am	0	3.0	0	9	0	106	0	18	0	232	368	1.22%
8:00am	0	219	5	384	67	373	101	398	311	487	2345	7.76%
8:45am	1016	1097	887	959	364	972	915	588	697	628	8123	26.88%
9:20am	617	702	755	716	1428	673	704	672	634	655	7556	25.00%
9:46am	533	572	511	393	695	663	445	625	336	486	5259	17.40%
9:54am	278	247	185	116	117	200	85	269	601	780	2878	9.52%
10:05am	222	245	257	274	283	263	200	0	0	0	1744	5.77%
11:00am	382	253	0	540	486	285	0	0	0	0	1946	6.44%
11:30am	0	0	0	0	0	0	0	0	0	0	0	0.00%
12:00pm	0	0	0	0	0	0	0	0	0	0	0	0.00%
12:30pm	0	0	0	0	0	0	0	0	0	0	0	0.00%
1:00pm	0	0	0	0	0	0	0	0	0	0	0	0.00%
1:30pm							0	0	0	0	0	0.00%

Hour	Disembark	Percent	Embark	Percent
6-7 a.m.	0	0.00%	0	0%
7-8 a.m.	368	1.22%	0	0.00%
8-9 a.m.	10468	34.64%	0	0.00%
9-10 a.m.	15693	51.93%	0	0.00%
10-11 a.m.	1744	5.77%	3	0.01%
11 a.m.-12 p.m.	1946	6.44%	6755	19.91%
12-1 p.m.	0	0.00%	9548	28.14%
1-2 p.m.	0	0.00%	11629	34.27%
2-3 p.m.	0	0.00%	5300	15.62%
3-4 p.m.	0	0.00%	694	2.05%
4-5 p.m.	0	0.00%	0	0.00%
5-6 p.m.	0	0.00%	0	0.00%

Embark											Total	Percent
Time	9/8/2018	9/15/2018	9/22/2018	9/29/2018	10/6/2018	10/13/2018	10/27/2018	11/3/2018	11/10/2018	11/17/2018		
9:00am											0	0.00%
9:30am											0	0.00%
10:00am											0	0.00%
10:30am	0	0	0	0	0	0	0	0	0	3	3	0.01%
11:00am	261	343	279	351	284	494	323	355	449	295	3434	11.36%
11:30am	205	337	284	338	344	452	314	409	310	328	3321	10.99%
12:00pm	417	354	397	483	463	560	388	347	451	615	4475	14.81%
12:30pm	491	578	515	482	575	431	524	473	530	474	5073	16.79%
1:00pm	646	610	692	580	609	552	612	529	589	808	6227	20.61%
1:30pm	642	561	333	616	693	348	555	529	510	615	5402	17.88%
2:00pm	411	396	628	350	404	155	381	417	308	251	3701	12.25%
2:30pm	204	128	199	158	115	108	82	298	196	111	1599	5.29%
3:00pm	46	63	42	95	42	33	33	30	50	100	534	1.77%
3:15pm	13	11	20	0	5	14	16	16	3	20	118	0.39%
3:30pm	5	5	2	0	10	3	0	12	4	1	42	0.14%
4:00pm	0	0	0	0	0	0	0	0	0	0	0	0.00%
4:30pm	0	0	0	0	0	0	0	0	0	0	0	0.00%
5:00pm	0	0	0	0	0	0	0	0	0	0	0	0.00%
5:30pm		0	0	0	0	0	0	0	0	0	0	0.00%
6:00pm												

Trip Generation calculation
Passengers Thursday

Passengers												
2018 Weekday -Thursday			Passengers Disembark					Passengers Embark				
			Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total	Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total
Inbound Trips		100%	83.08%	5.20%	5.00%	6.74%		83.08%	5.20%	5.00%	6.74%	
Persons	2056	2056	0.00	106.91	102.80	138.57	348.29	1708.12	106.91	102.80	138.57	2056.41
Average Occup.			2.3	2.3	5.0	2.3		2.3	2.3	5.0	2.3	
PCE			1.0	1.5	0	1.0		1.0	1.5	0.0	1.0	
#Vehicles (PCEs)			0.00	69.73	0.00	60.25	129.97	742.66	69.73	0.00	60.25	872.64
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	21.26%	0.00%	0	14.82	0.00	12.81	27.63	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	44.45%	0.00%	0	30.99	0.00	26.78	57.78	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	34.29%	0.00%	0	23.91	0.00	20.66	44.57	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	0.00%	0.24%	0	0.00	0.00	0.00	0.00	1.78	0.17	0.00	0.14	2.09
11 a.m.-12 p.m.	0.00%	8.27%	0	0.00	0.00	0.00	0.00	61.41	5.77	0.00	4.98	72.15
12-1 p.m.	0.00%	18.93%	0	0.00	0.00	0.00	0.00	140.58	13.20	0.00	11.40	165.18
1-2 p.m.	0.00%	24.61%	0	0.00	0.00	0.00	0.00	182.78	17.16	0.00	14.83	214.77
2-3 p.m.	0.00%	21.33%	0	0.00	0.00	0.00	0.00	158.41	14.87	0.00	12.85	186.13
3-4 p.m.	0.00%	15.26%	0	0.00	0.00	0.00	0.00	113.34	10.64	0.00	9.19	133.17
4-5 p.m.	0.00%	8.19%	0	0.00	0.00	0.00	0.00	60.86	5.71	0.00	4.94	71.51
5-6 p.m.	0.00%	3.17%	0	0.00	0.00	0.00	0.00	23.51	2.21	0.00	1.91	27.63
2018 Weekday- Thursday			Passengers Disembark					Passengers Embark				
Outbound Trips		100%	83.08%	5.20%	5.00%	6.74%		83.08%	5.20%	5.00%	6.74%	
Persons	2056	2056	1708.12	106.91	102.80	138.57	2056.41	0.00	106.91	102.80	138.57	348.29
Average Occup.			2.3	2.3	5.0	2.3		2.3	2.3	5.0	2.3	
PCE			1.0	1.5	0.0	1.0		1.0	1.5	0.0	1.0	
#Vehicles (PCEs)			742.66	69.73	0.00	60.25	872.64	0.00	69.73	0.00	60.25	129.97
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	21.26%	0.00%	157.86	14.82	0.00	12.81	185.49	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	44.45%	0.00%	330.13	30.99	0.00	26.78	387.91	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	34.29%	0.00%	254.67	23.91	0.00	20.66	299.24	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	0.00%	0.24%	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.14	0.31
11 a.m.-12 p.m.	0.00%	8.27%	0.00	0.00	0.00	0.00	0.00	0.00	5.77	0.00	4.98	10.75
12-1 p.m.	0.00%	18.93%	0.00	0.00	0.00	0.00	0.00	0.00	13.20	0.00	11.40	24.60
1-2 p.m.	0.00%	24.61%	0.00	0.00	0.00	0.00	0.00	0.00	17.16	0.00	14.83	31.99
2-3 p.m.	0.00%	21.33%	0.00	0.00	0.00	0.00	0.00	0.00	14.87	0.00	12.85	27.72
3-4 p.m.	0.00%	15.26%	0.00	0.00	0.00	0.00	0.00	0.00	10.64	0.00	9.19	19.84
4-5 p.m.	0.00%	8.19%	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	4.94	10.65
5-6 p.m.	0.00%	3.17%	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.00	1.91	4.11

¹ Parked Cars are quantified as an outbound trip for disembark and inbound trip for embark. This includes personal and rental cars.

² Public Transit is already present on the transportation system. Therefore, no additional project trips are generated.

Trip Generation calculation
Passengers Thursday

Passengers												
2020 Weekday -Thursday			Passengers Disembark					Passengers Embark				
			Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total	Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total
Inbound Trips		100%	83.1%	5.2%	5.0%	6.7%		83.1%	5.2%	5.0%	6.7%	
Persons	2056	2056	0.00	106.91	102.80	138.57	348.29	1708.12	106.91	102.80	138.57	2056.41
Average Occup.			2.3	2.3	5.0	2.3		2.3	2.3	5.0	2.3	
PCE			1.0	1.5	0	1.0		1.0	1.5	0.0	1.0	
#Vehicles (PCEs)			0.00	69.73	0.00	60.25	129.97	742.66	69.73	0.00	60.25	872.64
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	21.26%	0.00%	0.00	14.82	0.00	12.81	27.63	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	44.45%	0.00%	0.00	30.99	0.00	26.78	57.78	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	34.29%	0.00%	0.00	23.91	0.00	20.66	44.57	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	0.00%	0.24%	0.00	0.00	0.00	0.00	0.00	1.78	0.17	0.00	0.14	2.09
11 a.m.-12 p.m.	0.00%	8.27%	0.00	0.00	0.00	0.00	0.00	61.41	5.77	0.00	4.98	72.15
12-1 p.m.	0.00%	18.93%	0.00	0.00	0.00	0.00	0.00	140.58	13.20	0.00	11.40	165.18
1-2 p.m.	0.00%	24.61%	0.00	0.00	0.00	0.00	0.00	182.78	17.16	0.00	14.83	214.77
2-3 p.m.	0.00%	21.33%	0.00	0.00	0.00	0.00	0.00	158.41	14.87	0.00	12.85	186.13
3-4 p.m.	0.00%	15.26%	0.00	0.00	0.00	0.00	0.00	113.34	10.64	0.00	9.19	133.17
4-5 p.m.	0.00%	8.19%	0.00	0.00	0.00	0.00	0.00	60.86	5.71	0.00	4.94	71.51
5-6 p.m.	0.00%	3.17%	0.00	0.00	0.00	0.00	0.00	23.51	2.21	0.00	1.91	27.63
2020 Weekday- Thursday			Passengers Disembark					Passengers Embark				
			Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total	Parked Cars ¹	Shuttle/Private Bus	Public Transit ²	Drop off/Taxi/Ride Sharing	Total
Outbound Trips		100%	83.1%	5.2%	5.0%	6.7%		83.1%	5.2%	5.0%	6.7%	
Persons	2056	2056	1708.12	106.91	102.80	138.57	2056.41	0.00	106.91	102.80	138.57	348.29
Average Occup.			2.3	2.3	5.0	2.3		2.3	2.3	5.0	2.3	
PCE			1.0	1.5	0.0	1.0		1.0	1.5	0.0	1.0	
#Vehicles (PCEs)			742.66	69.73	0.00	60.25	872.64	0.00	69.73	0.00	60.25	129.97
Hour	Visitor % Disembark	Visitor % Embark										
6-7 a.m.	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7-8 a.m.	21.26%	0.00%	157.86	14.82	0.00	12.81	185.49	0.00	0.00	0.00	0.00	0.00
8-9 a.m.	44.45%	0.00%	330.13	30.99	0.00	26.78	387.91	0.00	0.00	0.00	0.00	0.00
9-10 a.m.	34.29%	0.00%	254.67	23.91	0.00	20.66	299.24	0.00	0.00	0.00	0.00	0.00
10-11 a.m.	0.00%	0.24%	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.14	0.31
11 a.m.-12 p.m.	0.00%	8.27%	0.00	0.00	0.00	0.00	0.00	0.00	5.77	0.00	4.98	10.75
12-1 p.m.	0.00%	18.93%	0.00	0.00	0.00	0.00	0.00	0.00	13.20	0.00	11.40	24.60
1-2 p.m.	0.00%	24.61%	0.00	0.00	0.00	0.00	0.00	0.00	17.16	0.00	14.83	31.99
2-3 p.m.	0.00%	21.33%	0.00	0.00	0.00	0.00	0.00	0.00	14.87	0.00	12.85	27.72
3-4 p.m.	0.00%	15.26%	0.00	0.00	0.00	0.00	0.00	0.00	10.64	0.00	9.19	19.84
4-5 p.m.	0.00%	8.19%	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	4.94	10.65
5-6 p.m.	0.00%	3.17%	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.00	1.91	4.11

¹ Parked Cars are quantified as an outbound trip for disembark and inbound trip for embark. This includes personal and rental cars.

² Public Transit is already present on the transportation system. Therefore, no additional project trips are generated.

Trip Generation calculation
Employees and Trucks Thursday

Thursday - 2018 and 2020		Carnival Employees			2018 Weekday		Supply Trucks			Total
		Carpool	Drive Alone	Public Transit			Delivery Van (LDT2)	Box Truck (LHD2)	Tractor Trailer (HDV)	
Inbound Trips		12%	69%	19%	Inbound Trips					
Persons	198	24	137	38	Supply Truck #	36	3	9	24	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		11.88	136.62	0	#Vehicles/PCE		3.00	10.80	48.00	210.30
Hour	Employee %				Hour	Truck %				
6-7 a.m.	80%	9.50	109.30	0.00	6-7 a.m.	30%	0.90	0.03	14.40	134.13
7-8 a.m.	17%	2.02	23.23	0.00	7-8 a.m.	30%	0.90	0.03	14.40	40.58
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	0.02	9.60	10.22
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	10%	0.30	0.01	4.80	5.11
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	5%	0.15	0.01	2.40	2.56
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	5%	0.15	0.01	2.40	2.56
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	0	0.00	0.00	0.00	0.00
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	0	0.00	0.00	0.00	0.00
2-3 p.m.	3%	0.36	4.10	0.00	2-3 p.m.	0	0.00	0.00	0.00	4.46
3-4 p.m.	0	0.00	0.00	0.00	3-4 p.m.	0	0.00	0.00	0.00	0.00
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
Outbound Trips		12%	69%	19%	Outbound Trips					
Persons	198	24	137	38	Supply Truck #	36	3	9	24	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		11.88	136.62	0	#Vehicles/PCE		3.00	10.80	48.00	210.30
Hour	Employee %				Hour	Truck %				
6-7 a.m.	0	0.00	0.00	0.00	6-7 a.m.	0	0.00	0.00	0.00	0.00
7-8 a.m.	0	0.00	0.00	0.00	7-8 a.m.	20%	0.60	2.16	9.60	12.36
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.16	9.60	12.36
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	20%	0.60	2.16	9.60	12.36
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	15%	0.45	1.62	7.20	9.27
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	15%	0.45	1.62	7.20	9.27
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	5%	0.15	0.54	2.40	3.09
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	5%	0.15	0.54	2.40	3.09
2-3 p.m.	80%	9.50	109.30	0.00	2-3 p.m.	0	0.00	0.00	0.00	118.80
3-4 p.m.	17%	2.02	23.23	0.00	3-4 p.m.	0	0.00	0.00	0.00	25.25
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
7-8 p.m.	0	0.00	0.00	0.00	7-8 p.m.	0	0.00	0.00	0.00	0.00
8-9 p.m.	0	0.00	0.00	0.00	8-9 p.m.	0	0.00	0.00	0.00	0.00
9-10 p.m.	0	0.00	0.00	0.00	9-10 p.m.	0	0.00	0.00	0.00	0.00
10-11 p.m.	0	0.00	0.00	0.00	10-11 p.m.	0	0.00	0.00	0.00	0.00
11 p.m.-12 a.m.	3%	0.36	4.10	0.00	11 p.m.-12 a.m.	0	0	0	0	4

Trip Generation calculation
Employees and Trucks Thursday

Saturday - 2018		Carnival Employees			2018 Weekend		Supply Trucks			Total
		Carpool	Drive Alone	Public Transit			Delivery Van (LDT2)	Box Truck (LHD2)	Tractor Trailer (HDV)	
Inbound Trips		12%	69%	19%	Inbound Trips					
Persons	252	30	174	48	Supply Truck #	32	3	9	20	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		15.12	173.88	0	#Vehicles/PCE		3.00	10.80	40.00	242.80
Hour	Employee %				Hour	Truck %				
6-7 a.m.	80%	3.00	44.00	0.00	6-7 a.m.	30%	0.90	3.24	12.00	63.14
7-8 a.m.	17%	9.00	89.00	0.00	7-8 a.m.	30%	0.90	3.24	12.00	114.14
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.16	8.00	10.76
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	10%	0.30	1.08	4.00	5.38
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	5%	0.15	0.54	2.00	2.69
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	5%	0.15	0.54	2.00	2.69
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	0	0.00	0.00	0.00	0.00
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	0	0.00	0.00	0.00	0.00
2-3 p.m.	3%	0.00	4.00	0.00	2-3 p.m.	0	0.00	0.00	0.00	4.00
3-4 p.m.	0	0.00	0.00	0.00	3-4 p.m.	0	0.00	0.00	0.00	0.00
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
Outbound Trips		12%	69%	19%	Outbound Trips					
Persons		30	174	48	Supply Truck #	32	3	9	20	
Average Occup.		2	1	N/A	Factor to PCE		1.0	1.2	2.0	
#Vehicles/PCEs		15.12	173.88	0.00	#Vehicles/PCE		3.00	10.80	40.00	242.80
Hour	Employee %				Hour	Truck %				
6-7 a.m.	0	0.00	0.00	0.00	6-7 a.m.	0	0.00	0.00	0.00	0.00
7-8 a.m.	0	0.00	0.00	0.00	7-8 a.m.	20%	0.60	2.16	8.00	10.76
8-9 a.m.	0	0.00	0.00	0.00	8-9 a.m.	20%	0.60	2.16	8.00	10.76
9-10 a.m.	0	0.00	0.00	0.00	9-10 a.m.	20%	0.60	2.16	8.00	10.76
10-11 a.m.	0	0.00	0.00	0.00	10-11 a.m.	15%	0.45	1.62	6.00	8.07
11 a.m.-12 p.m.	0	0.00	0.00	0.00	11 a.m.-12 p.m.	15%	0.45	1.62	6.00	8.07
12-1 p.m.	0	0.00	0.00	0.00	12-1 p.m.	5%	0.15	0.54	2.00	2.69
1-2 p.m.	0	0.00	0.00	0.00	1-2 p.m.	5%	0.15	0.54	2.00	2.69
2-3 p.m.	80%	12.10	139.10	0.00	2-3 p.m.	0	0.00	0.00	0.00	151.20
3-4 p.m.	17%	2.57	29.56	0.00	3-4 p.m.	0	0.00	0.00	0.00	32.13
4-5 p.m.	0	0.00	0.00	0.00	4-5 p.m.	0	0.00	0.00	0.00	0.00
5-6 p.m.	0	0.00	0.00	0.00	5-6 p.m.	0	0.00	0.00	0.00	0.00
7-8 p.m.	0	0.00	0.00	0.00	7-8 p.m.	0	0.00	0.00	0.00	0.00
8-9 p.m.	0	0.00	0.00	0.00	8-9 p.m.	0	0.00	0.00	0.00	0.00
9-10 p.m.	0	0.00	0.00	0.00	9-10 p.m.	0	0.00	0.00	0.00	0.00
10-11 p.m.	0	0.00	0.00	0.00	10-11 p.m.	0	0.00	0.00	0.00	0.00
11 p.m.-12 a.m.	3%	0.45	5.22	0.00	11 p.m.-12 a.m.	0	0.00	0.00	0.00	5.67

Embark and Disembark Summary - Thursday

Disembark

Time	9/6/2018	9/13/2018	9/20/2018	9/27/2018	10/4/2018	10/11/2018	10/18/2018	10/25/2018	11/1/2018	11/8/2018	11/15/2018	Total	Percent
6:00am												0	0.00%
6:30am	0		0	0	0	0	0	0	0	0	0	0	0.00%
7:00am	1	0	0	126	94	2	0	2	0	1	47	273	1.06%
7:37am	166	504.0	532	516	581	668	450	461	360	475	491	5204	20.20%
8:00am	464	415	334	303	651	338	348	383	501	573	450	4760	18.47%
8:45am	806	686	598	701	429	656	758	828	449	287	496	6694	25.98%
9:20am	610	611	663	469	586	666	668	571	418	499	395	6156	23.89%
9:46am	321	60	186	223	0	193	224	0	390	407	427	2431	9.43%
9:54am	21		22	0	0	0	1	0	172	0	33	249	0.97%
10:05am							0	0	0	0	0	0	0.00%
11:00am							0	0	0	0	0	0	0.00%
11:30am							0	0	0	0	0	0	0.00%
12:00pm							0	0	0	0	0	0	0.00%
12:30pm							0	0	0	0	0	0	0.00%
1:00pm							0	0	0	0	0	0	0.00%
1:30pm							0	0	0	0	0	0	0.00%

Hour	Disembark	Percent	Embark	Percent
6-7 a.m.	0	0.00%	0	0.00%
7-8 a.m.	5477	21.26%	0	0.00%
8-9 a.m.	11454	44.45%	0	0.00%
9-10 a.m.	8836	34.29%	0	0.00%
10-11 a.m.	0	0.00%	62	0.24%
11 a.m.-12 p.m.	0	0.00%	2139	8.27%
12-1 p.m.	0	0.00%	4897	18.93%
1-2 p.m.	0	0.00%	6367	24.61%
2-3 p.m.	0	0.00%	5518	21.33%
3-4 p.m.	0	0.00%	3948	15.26%
4-5 p.m.	0	0.00%	2120	8.19%
5-6 p.m.	0	0.00%	819	3.17%

Embark

Time	9/6/2018	9/13/2018	9/20/2018	9/27/2018	10/4/2018	10/11/2018	10/18/2018	10/25/2018	11/1/2018	11/8/2018	11/15/2018	Total	Percent
9:00am												0	0.00%
9:30am												0	0.00%
10:00am												0	0.00%
10:30am	4	2	4	0	2	35	3	4	5	1	2	62	0.24%
11:00am	49	137	52	84	114	61	48	74	27	117	71	834	3.22%
11:30am	133	121	83	61	182	181	64	151	116	102	111	1305	5.04%
12:00pm	230	182	202	181	186	193	179	198	175	141	148	2015	7.79%
12:30pm	238	299	200	352	215	285	288	281	203	303	218	2882	11.14%
1:00pm	322	309	311	256	309	248	341	241	254	242	345	3178	12.28%
1:30pm	335	279	234	334	324	264	328	255	314	252	270	3189	12.33%
2:00pm	179	259	292	230	221	180	245	255	217	243	318	2639	10.20%
2:30pm	307	241	287	284	204	258	175	223	328	343	229	2879	11.13%
3:00pm	125	151	247	188	262	206	245	206	245	182	249	2306	8.91%
3:30pm	200	134	241	201	205	128	100	122	70	131	110	1642	6.35%
4:00pm	92	82	168	100	123	57	129	78	181	93	104	1207	4.67%
4:30pm	51	38	42	81	46	26	147	133	113	89	147	913	3.53%
5:00pm	21	20	14	34	38	17	88	79	68	89	85	553	2.14%
5:15pm	0	1	9	4	2	0	36	26	46	57	53	234	0.90%
5:30pm	0	0	4	0	0	2	6	8	4	1	7	32	0.12%
6:00pm												0	0.00%

Trip Generation Summary

Trip Generation
2018 Existing Year

Thursday - 2018	Daily	AM Peak (8-9 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	2426	68	400	468	215	35	250
Autos and Light Duty Trucks	2029	27	358	385	198	15	213
Heavy Vehicles (PCEs)	397	41	43	84	17	20	37

Saturday - 2018	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	3557	109	705	814	458	71	529
Autos and Light Duty Trucks	3028	48	639	687	421	32	453
Heavy Vehicles (PCEs)	529	61	66	126	37	39	76

2020 Opening Year

Thursday - 2020	Daily	AM Peak (8-9 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	2426	68	400	468	215	35	250
Autos and Light Duty Trucks	2029	27	358	385	198	15	213
Heavy Vehicles (PCEs)	397	41	43	84	17	20	37

Saturday - 2020	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	4650	144	936	1080	610	94	704
Autos and Light Duty Trucks	3959	64	850	914	561	42	603
Heavy Vehicles (PCEs)	691	80	86	166	49	52	101

Net Project Trips

Net Project Trips- Saturday	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	1093	35	231	266	152	23	175
Autos and Light Duty Trucks	931	16	211	227	140	10	150
Heavy Vehicles (PCEs)	162	19	20	39	12	13	25

Net Project Trips- Thursday	Daily	AM Peak (9-10 a.m.)			PM Peak (1-2 p.m.)		
		In	Out	Total	In	Out	Total
Total (PCEs)	0	0	0	0	0	0	0
Autos and Light Duty Trucks	0	0	0	0	0	0	0
Heavy Vehicles (PCEs)	0	0	0	0	0	0	0

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
LOS ANGELES	3485	39.90%
LONG BEACH	810	9.27%
SAN DIEGO	122	1.40%
SANTA ANA	96	1.10%
STOCKTON	93	1.06%
FRESNO	85	0.97%
BAKERSFIELD	79	0.90%
RIVERSIDE	78	0.89%
OAKLAND	77	0.88%
SACRAMENTO	74	0.85%
VICTORVILLE	69	0.79%
LANCASTER	62	0.71%
MODESTO	57	0.65%
CHULA VISTA	54	0.62%
MORENO VALLEY	52	0.60%
HUNTINGTON BEACH	49	0.56%
SAN JOSE	49	0.56%
HESPERIA	47	0.54%
FONTANA	45	0.52%
ANAHEIM	43	0.49%
HEMET	42	0.48%
ONTARIO	42	0.48%
PALMDALE	42	0.48%
APPLE VALLEY	41	0.47%
OXNARD	38	0.44%
REDLANDS	38	0.44%
RANCHO CUCAMONGA	37	0.42%
VAN NUYS	35	0.40%
WHITTIER	33	0.38%
CORONA	32	0.37%
EL CAJON	32	0.37%
BEAUMONT	30	0.34%
INGLEWOOD	30	0.34%
MURRIETA	29	0.33%
SAN FRANCISCO	29	0.33%
SAN JACINTO	29	0.33%
GLENDALE	28	0.32%
MENIFEE	26	0.30%
MISSION VIEJO	26	0.30%
GARDEN GROVE	25	0.29%
OCEANSIDE	25	0.29%
TEMECULA	25	0.29%
WEST COVINA	25	0.29%
BUENA PARK	24	0.27%
BRENTWOOD	23	0.26%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
FULLERTON	23	0.26%
TORRANCE	23	0.26%
CATHEDRAL CITY	22	0.25%
VENTURA	22	0.25%
PACOIMA	21	0.24%
SAN BERNARDINO	21	0.24%
UPLAND	21	0.24%
COMPTON	20	0.23%
ROSEVILLE	20	0.23%
VISALIA	20	0.23%
YUCAIPA	20	0.23%
CARSON	19	0.22%
FAIRFIELD	19	0.22%
ORANGE	19	0.22%
PERRIS	19	0.22%
VALLEJO	19	0.22%
ATWATER	18	0.21%
CHINO	18	0.21%
SAN PEDRO	18	0.21%
SANTEE	18	0.21%
CHOWCHILLA	17	0.19%
DOWNEY	17	0.19%
INDIO	17	0.19%
MONTEREY PARK	17	0.19%
NORTHRIDGE	17	0.19%
PASADENA	17	0.19%
SIMI VALLEY	17	0.19%
VACAVILLE	17	0.19%
VALENCIA	17	0.19%
DIAMOND BAR	16	0.18%
LA MESA	16	0.18%
LAKESWOOD	16	0.18%
SAN YSIDRO	16	0.18%
SANTA MARIA	16	0.18%
BURBANK	15	0.17%
CHINO HILLS	15	0.17%
CLOVIS	15	0.17%
HACIENDA HEIGHTS	15	0.17%
RANCHO CORDOVA	15	0.17%
RIDGECREST	15	0.17%
SAN MATEO	15	0.17%
SOUTH GATE	15	0.17%
SUN CITY	15	0.17%
ANTIOCH	14	0.16%
EL MONTE	14	0.16%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
ELK GROVE	14	0.16%
HAYWARD	14	0.16%
IRVINE	14	0.16%
LAKE FOREST	14	0.16%
SANTA CLARITA	14	0.16%
VISTA	14	0.16%
CARLSBAD	13	0.15%
GRASS VALLEY	13	0.15%
LA PUENTE	13	0.15%
MARINA	13	0.15%
OAKLEY	13	0.15%
POMONA	13	0.15%
ROWLAND HEIGHTS	13	0.15%
SEASIDE	13	0.15%
SYLMAR	13	0.15%
YORBA LINDA	13	0.15%
ALHAMBRA	12	0.14%
CANOGA PARK	12	0.14%
LA HABRA	12	0.14%
LA VERNE	12	0.14%
MANTECA	12	0.14%
MILPITAS	12	0.14%
NORTH HOLLYWOOD	12	0.14%
PICO RIVERA	12	0.14%
PITTSBURG	12	0.14%
RIALTO	12	0.14%
SAN JUAN CAPISTRANO	12	0.14%
SAN PABLO	12	0.14%
SEAL BEACH	12	0.14%
SPRING VALLEY	12	0.14%
SUISUN CITY	12	0.14%
BALDWIN PARK	11	0.13%
COVINA	11	0.13%
FALLBROOK	11	0.13%
HOLLISTER	11	0.13%
MISSION HILLS	11	0.13%
RIVERBANK	11	0.13%
SANGER	11	0.13%
AUBURN	10	0.11%
CITRUS HEIGHTS	10	0.11%
DUARTE	10	0.11%
FREMONT	10	0.11%
LAGUNA NIGUEL	10	0.11%
LOMPOC	10	0.11%
MONTCLAIR	10	0.11%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
NORWALK	10	0.11%
SALINAS	10	0.11%
ANDERSON	9	0.10%
ARTESIA	9	0.10%
CULVER CITY	9	0.10%
EL DORADO HILLS	9	0.10%
HANFORD	9	0.10%
HIGHLAND	9	0.10%
LIVERMORE	9	0.10%
NEWBURY PARK	9	0.10%
SANTA ROSA	9	0.10%
THOUSAND OAKS	9	0.10%
WESTMINSTER	9	0.10%
YUBA CITY	9	0.10%
ARCADIA	8	0.09%
BLOOMINGTON	8	0.09%
CERES	8	0.09%
CERRITOS	8	0.09%
CHATSWORTH	8	0.09%
COLTON	8	0.09%
ESCALON	8	0.09%
FORT BRAGG	8	0.09%
GLEN DORA	8	0.09%
LINCOLN	8	0.09%
LOS BANOS	8	0.09%
NORTH HIGHLANDS	8	0.09%
OROVILLE	8	0.09%
PANORAMA CITY	8	0.09%
SAN GABRIEL	8	0.09%
SHERMAN OAKS	8	0.09%
TRABUCO CANYON	8	0.09%
ADELANTO	7	0.08%
ALISO VIEJO	7	0.08%
BARSTOW	7	0.08%
FOLSOM	7	0.08%
HARBOR CITY	7	0.08%
IONE	7	0.08%
MADERA	7	0.08%
PASO ROBLES	7	0.08%
SIGNAL HILL	7	0.08%
TURLOCK	7	0.08%
TUSTIN	7	0.08%
WILDOMAR	7	0.08%
AMERICAN CANYON	6	0.07%
ARROYO GRANDE	6	0.07%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
AZUSA	6	0.07%
BELLFLOWER	6	0.07%
CAMARILLO	6	0.07%
CANYON COUNTRY	6	0.07%
CARMICHAEL	6	0.07%
COALINGA	6	0.07%
CONCORD	6	0.07%
COSTA MESA	6	0.07%
ENCINO	6	0.07%
ESCONDIDO	6	0.07%
HAWTHORNE	6	0.07%
KELSEYVILLE	6	0.07%
LAKE ELSINORE	6	0.07%
MONTEBELLO	6	0.07%
MOORPARK	6	0.07%
NATIONAL CITY	6	0.07%
NEWHALL	6	0.07%
NORTH HILLS	6	0.07%
PLAYA VISTA	6	0.07%
REDONDO BEACH	6	0.07%
REDWOOD CITY	6	0.07%
SAN DIMAS	6	0.07%
SONORA	6	0.07%
WATSONVILLE	6	0.07%
WEST SACRAMENTO	6	0.07%
WILMINGTON	6	0.07%
ANTELOPE	5	0.06%
ATASCADERO	5	0.06%
CRESTLINE	5	0.06%
CUPERTINO	5	0.06%
DALY CITY	5	0.06%
GARDENA	5	0.06%
JAMUL	5	0.06%
LA MIRADA	5	0.06%
LOMITA	5	0.06%
MARYSVILLE	5	0.06%
PALM DESERT	5	0.06%
PALM SPRINGS	5	0.06%
PALO ALTO	5	0.06%
PATTERSON	5	0.06%
PLYMOUTH	5	0.06%
RANCHO MIRAGE	5	0.06%
ROSEMEAD	5	0.06%
SAN MARCOS	5	0.06%
SANTA CLARA	5	0.06%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
SOUTH LAKE TAHOE	5	0.06%
SUN VALLEY	5	0.06%
TRACY	5	0.06%
VALLEY CENTER	5	0.06%
WALNUT	5	0.06%
WINCHESTER	5	0.06%
WOODLAND HILLS	5	0.06%
COTTONWOOD	4	0.05%
DENAIR	4	0.05%
DISCOVERY BAY	4	0.05%
FILLMORE	4	0.05%
FORT IRWIN	4	0.05%
FOUNTAIN VALLEY	4	0.05%
FREEDOM	4	0.05%
GALT	4	0.05%
HUNTINGTON PARK	4	0.05%
IMPERIAL	4	0.05%
LAKESIDE	4	0.05%
OAKHURST	4	0.05%
PIEDMONT	4	0.05%
PIONEER	4	0.05%
PLACERVILLE	4	0.05%
REDDING	4	0.05%
RESEDA	4	0.05%
ROSAMOND	4	0.05%
SAN CLEMENTE	4	0.05%
SAN FERNANDO	4	0.05%
SANTA CRUZ	4	0.05%
SUTTER CREEK	4	0.05%
TEHACHAPI	4	0.05%
TULARE	4	0.05%
VALLEY SPRINGS	4	0.05%
WEED	4	0.05%
WEST HILLS	4	0.05%
ALAMEDA	3	0.03%
ARVIN	3	0.03%
BANNING	3	0.03%
BENICIA	3	0.03%
BIG BEAR CITY	3	0.03%
BIG PINE	3	0.03%
CLAREMONT	3	0.03%
COACHELLA	3	0.03%
DELHI	3	0.03%
FELTON	3	0.03%
LAGUNA HILLS	3	0.03%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
LAGUNA WOODS	3	0.03%
LANDERS	3	0.03%
LEMOORE	3	0.03%
LIVINGSTON	3	0.03%
MAMMOTH LAKES	3	0.03%
MANHATTAN BEACH	3	0.03%
MENTONE	3	0.03%
NEVADA CITY	3	0.03%
NEWARK	3	0.03%
NIPOMO	3	0.03%
OCEANO	3	0.03%
PORTER RANCH	3	0.03%
RAMONA	3	0.03%
RICHMOND	3	0.03%
RIPON	3	0.03%
SAN LUIS OBISPO	3	0.03%
SAN MIGUEL	3	0.03%
SANTA PAULA	3	0.03%
SOMIS	3	0.03%
STUDIO CITY	3	0.03%
UNION CITY	3	0.03%
WEST HOLLYWOOD	3	0.03%
ACTON	2	0.02%
ALTADENA	2	0.02%
APTOS	2	0.02%
ARBUCKLE	2	0.02%
ARMONA	2	0.02%
AVALON	2	0.02%
AVERY	2	0.02%
BERKELEY	2	0.02%
BIG BEAR LAKE	2	0.02%
BLUE JAY	2	0.02%
BONITA	2	0.02%
BREA	2	0.02%
BROWNS VALLEY	2	0.02%
CALEXICO	2	0.02%
CAMBRIA	2	0.02%
CAMPBELL	2	0.02%
CAPISTRANO BEACH	2	0.02%
CARPINTERIA	2	0.02%
CORONADO	2	0.02%
DEATH VALLEY	2	0.02%
DINUBA	2	0.02%
FAIR OAKS	2	0.02%
FARMERSVILLE	2	0.02%

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
FRENCH CAMP	2	0.02%
GOLETA	2	0.02%
GRANADA HILLS	2	0.02%
GRAND TERRACE	2	0.02%
GRIDLEY	2	0.02%
GROVELAND	2	0.02%
GUADALUPE	2	0.02%
GUSTINE	2	0.02%
HERMOSA BEACH	2	0.02%
HOMELAND	2	0.02%
INDIAN WELLS	2	0.02%
KINGSBURG	2	0.02%
LA CANADA FLINTRIDGE	2	0.02%
LA QUINTA	2	0.02%
LATHROP	2	0.02%
LOCKEFORD	2	0.02%
LODI	2	0.02%
LOS ALTOS	2	0.02%
LYNWOOD	2	0.02%
MARIPOSA	2	0.02%
MECCA	2	0.02%
MERCED	2	0.02%
MIRA LOMA	2	0.02%
MONTEREY	2	0.02%
NAPA	2	0.02%
NEEDLES	2	0.02%
NEWPORT BEACH	2	0.02%
PACIFICA	2	0.02%
PARAMOUNT	2	0.02%
PISMO BEACH	2	0.02%
PLACENTIA	2	0.02%
POLLOCK PINES	2	0.02%
PORTERVILLE	2	0.02%
POWAY	2	0.02%
RANCHO SANTA FE	2	0.02%
RANCHO SANTA MARGARITA	2	0.02%
RAYMOND	2	0.02%
RODEO	2	0.02%
SAINT HELENA	2	0.02%
SALIDA	2	0.02%
SAN BRUNO	2	0.02%
SAN JUAN BAUTISTA	2	0.02%
SAN LEANDRO	2	0.02%
SAN LORENZO	2	0.02%
SAN RAFAEL	2	0.02%

Trip Distribution by Cities in California

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
SANTA BARBARA	2	0.02%
SANTA FE SPRINGS	2	0.02%
SANTA MARGARITA	2	0.02%
SELMA	2	0.02%
SHAFTER	2	0.02%
SHASTA LAKE	2	0.02%
SOLVANG	2	0.02%
SOMERSET	2	0.02%
SOUTH EL MONTE	2	0.02%
SPRINGVILLE	2	0.02%
SQUAW VALLEY	2	0.02%
SUSANVILLE	2	0.02%
TARZANA	2	0.02%
TEMPLE CITY	2	0.02%
THOUSAND PALMS	2	0.02%
TRAVIS AFB	2	0.02%
TUJUNGA	2	0.02%
TWENTYNINE PALMS	2	0.02%
TWIN PEAKS	2	0.02%
VENICE	2	0.02%
WALNUT CREEK	2	0.02%
WESTLAKE VILLAGE	2	0.02%
WILLITS	2	0.02%
WINNETKA	2	0.02%
WOODBIDGE	2	0.02%
YUCCA VALLEY	2	0.02%
BOULDER CREEK	1	0.01%
CALIFORNIA CITY	1	0.01%
CAPITOLA	1	0.01%
CHICO	1	0.01%
COOL	1	0.01%
CROCKETT	1	0.01%
CYPRESS	1	0.01%
EL CENTRO	1	0.01%
EL DORADO	1	0.01%
EL SEGUNDO	1	0.01%
EL SOBRANTE	1	0.01%
ELVERTA	1	0.01%
ENCINITAS	1	0.01%
GROVER BEACH	1	0.01%
HERALD	1	0.01%
HUGHSON	1	0.01%
KERMAN	1	0.01%
LAWNDALE	1	0.01%
LEMON GROVE	1	0.01%

<u>City of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers</u> ¹
LONG BARN	1	0.01%
LOOMIS	1	0.01%
LOS ALAMITOS	1	0.01%
LOS GATOS	1	0.01%
LOS OSOS	1	0.01%
MARINA DEL REY	1	0.01%
MARTINEZ	1	0.01%
MAYWOOD	1	0.01%
MENLO PARK	1	0.01%
MONROVIA	1	0.01%
MORRO BAY	1	0.01%
NEWPORT COAST	1	0.01%
OAK PARK	1	0.01%
PACIFIC GROVE	1	0.01%
PALOS VERDES PENINSULA	1	0.01%
PEARBLOSSOM	1	0.01%
PHELAN	1	0.01%
PORT HUENEME	1	0.01%
RIO VISTA	1	0.01%
ROCKLIN	1	0.01%
RUNNING SPRINGS	1	0.01%
SOUTH PASADENA	1	0.01%
STANTON	1	0.01%
WEST POINT	1	0.01%
WHITETHORN	1	0.01%
TOTAL	8,734	100.00%

1. These percentages of passengers per city were derived from taking the most recent past 4 Saturdays (10/06/2018, 10/13/2018, 10/27/2018 and 11/03/2018) passenger arrival information based on zip code. If a passenger was from out of state or provided flight information, the zip code of the arrival airport in CA was used in calculating the percentage per county/city. This information was then assigned to the roadway networks based on shortest trip for the passenger trip distribution.

Trip Distribution by Counties in California

<u>County of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers¹</u>
LOS ANGELES	5270	60.34%
SAN BERNARDINO	509	5.83%
RIVERSIDE	467	5.35%
ORANGE	457	5.23%
SAN DIEGO	377	4.32%
SACRAMENTO	147	1.68%
SAN JOAQUIN	131	1.50%
ALAMEDA	129	1.48%
FRESNO	124	1.42%
VENTURA	121	1.39%
KERN	108	1.24%
STANISLAUS	95	1.09%
CONTRA COSTA	94	1.08%
SANTA CLARA	81	0.93%
SOLANO	73	0.84%
PLACER	40	0.46%
MONTEREY	39	0.45%
SAN LUIS OBISPO	39	0.45%
MERCED	36	0.41%
SANTA BARBARA	36	0.41%
TULARE	32	0.37%
SAN MATEO	31	0.35%
MADERA	30	0.34%
SAN FRANCISCO	29	0.33%
EL DORADO	24	0.27%
SANTA CRUZ	21	0.24%
AMADOR	20	0.23%
SHASTA	19	0.22%
NEVADA	16	0.18%
KINGS	14	0.16%
SAN BENITO	13	0.15%
BUTTE	11	0.13%
MENDOCINO	10	0.11%
NAPA	10	0.11%
SONOMA	9	0.10%
SUTTER	9	0.10%
TUOLUMNE	9	0.10%
CALAVERAS	7	0.08%
IMPERIAL	7	0.08%
YUBA	7	0.08%
LAKE	6	0.07%
YOLO	6	0.07%
INYO	5	0.06%
SISKIYOU	4	0.05%
MONO	3	0.03%

<u>County of Origin</u>	<u>Number of Passengers</u>	<u>Percent of Passengers</u> ¹
COLUSA	2	0.02%
LASSEN	2	0.02%
MARIN	2	0.02%
MARIPOSA	2	0.02%
HUMBOLDT	1	0.01%
Total	8,734	100.00%

1. These percentages of passengers per county were derived from taking the most recent past 4 Saturdays (10/06/2018, 10/13/2018, 10/27/2018 and 11/03/2018) passenger arrival information based on zip code. If a passenger was from out of state or provided flight information, the zip code of the arrival airport in CA was used in calculating the percentage per county/city. This information was then assigned to the roadway networks based on shortest trip for the passenger trip distribution.

Mode Choice on Passenger Booking Record		
<u>Catagories</u>	<u>Number of Passengers</u>	<u>Percentage</u>
Airport Shuttle	2,613	5.18%
Bus	2,510	4.98%
Family/ Friends Drop Off	558	1.11%
Personal Vehicle	41,721	82.76%
Rental Cars	163	0.32%
Taxicab	2,841	5.64%
Train	8	0.02%
Total	50,415	
Mode Choice Catagories used for Trip Generation		
<u>Catagories</u>	<u>Percentage</u>	
Parked Cars	83.08%	
Shuttle/ Private Bus	5.18%	
Public Transit	5.00%	
Drop off/Taxi/Ride Sharing	6.74%	
<p>1. Parked Cars percentages are based on "Personal Vehicle" and "Rental Car" percentages of passenger booking record</p> <p>2. Shuttle/Private Bus percentages is based on "Airport Shuttle" percentage of passenger booking record</p> <p>3. Public transit percentage is based on "Bus" and "Train" percentages of passenger booking record</p> <p>3. Drop off/Taxi/Ride Sharing percentage is based on "Family/Friends Drop Off" and "Taxicab" percentages of passenger booking record</p>		



















Appendix C

Traffic Analysis Reports

Existing Condition 2018

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	770	0	404	6	334	19	81	52	0	0	161	0
Future Volume (vph)	770	0	404	6	334	19	81	52	0	0	161	0
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1440	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		140	90		0	0		0
Storage Lanes	3		1	0		0	2		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850		0.992							
Flt Protected	0.950				0.999		0.950					
Satd. Flow (prot)	4104	0	1360	0	3171	0	2736	3200	0	0	1600	0
Flt Permitted	0.950				0.999		0.950					
Satd. Flow (perm)	4104	0	1360	0	3171	0	2736	3200	0	0	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			404		4							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			420			796			402	
Travel Time (s)		5.3			9.5			18.1			9.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	770	0	404	6	334	19	81	52	0	0	161	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	770	0	404	0	359	0	81	52	0	0	161	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		64			36			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	
Protected Phases	4			8	8		5	2			6	
Permitted Phases			4									
Detector Phase	4		4	8	8		5	2			6	
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		6.0	15.0			15.0	
Minimum Split (s)	20.1		20.1	20.1	20.1		11.1	20.1			20.1	
Total Split (s)	50.0		50.0	40.0	40.0		15.0	30.0			30.0	
Total Split (%)	37.0%		37.0%	29.6%	29.6%		11.1%	22.2%			22.2%	

Existing Condition 2018

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

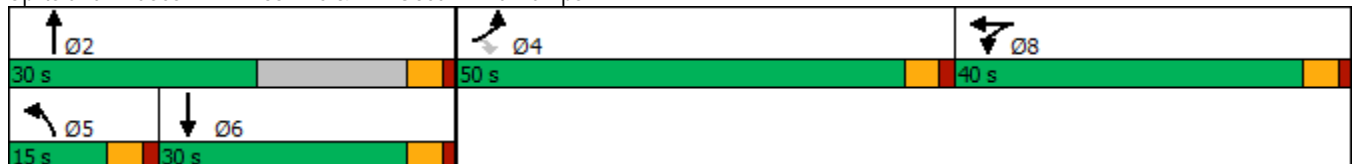
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	44.9		44.9	34.9	34.9		9.9	24.9			24.9	
Yellow Time (s)	3.6		3.6	3.6	3.6		3.6	3.6			3.6	
All-Red Time (s)	1.5		1.5	1.5	1.5		1.5	1.5			1.5	
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0			0.0	
Total Lost Time (s)	5.1		5.1		5.1		5.1	5.1			5.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)	0.2		0.2	4.0	4.0		2.0	5.0			5.0	
Minimum Gap (s)	0.2		0.2	2.0	2.0		2.0	3.0			3.0	
Time Before Reduce (s)	0.0		0.0	0.5	0.5		0.5	0.5			0.5	
Time To Reduce (s)	0.0		0.0	0.1	0.1		0.1	0.1			0.1	
Recall Mode	None		None	None	None		None	Min			Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	19.8		19.8		17.4		7.5	27.4			17.6	
Actuated g/C Ratio	0.25		0.25		0.22		0.09	0.34			0.22	
v/c Ratio	0.76		0.63		0.52		0.32	0.05			0.46	
Control Delay	34.8		8.2		32.7		42.0	18.9			35.1	
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	
Total Delay	34.8		8.2		32.7		42.0	18.9			35.1	
LOS	C		A		C		D	B			D	
Approach Delay		25.6			32.7			32.9			35.1	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 80.5
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 28.4
 Intersection LOS: C
 Intersection Capacity Utilization 67.5%
 ICU Level of Service C
 Analysis Period (min) 15
 * User Entered Value






















Splits and Phases: 1: Pico Ave & WB Ocean Blvd Ramps



Existing Condition 2018

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	0	3	1	0	293	137	4	325	242	6
Future Volume (vph)	4	2	0	3	1	0	293	137	4	325	242	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		40	0		0	0		0	350		0
Storage Lanes	1		1	0		0	1		0	2		0
Taper Length (ft)	25			25			25			100		
Lane Util. 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
Ped Bike Factor								0.996			0.996	
Flt Protected	0.950				0.964		0.950			0.950		
Satd. Flow (prot)	1520	1600	0	0	1542	0	1520	3187	0	2736	3187	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	1600	1600	0	0	1600	0	1520	3187	0	2736	3187	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								3				3
Link Speed (mph)		30			30			30				30
Link Distance (ft)		404			742			1144				796
Travel Time (s)		9.2			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	4	2	0	3	1	0	293	137	4	325	242	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	2	0	0	4	0	293	141	0	325	248	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1		11.1	11.1		9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0		25.0	25.0		40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%		21.7%	21.7%		34.8%	26.1%		43.5%	43.5%	

Existing Condition 2018

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

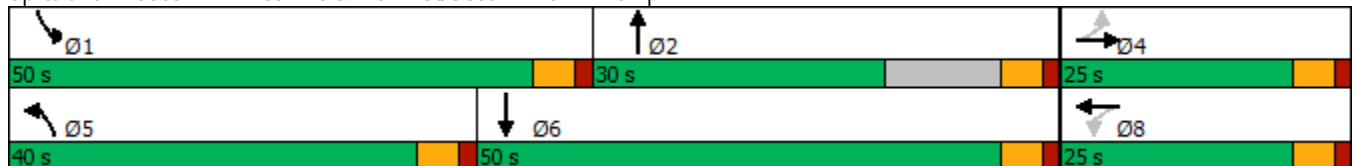
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9		19.9	19.9		34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1					5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)				4.0	4.0							4.0
Flash Dont Walk (s)				25.0	25.0							25.0
Pedestrian Calls (#/hr)				0	0							0
Act Effect Green (s)	6.4	6.4			6.4		13.6	13.5		11.5	11.4	
Actuated g/C Ratio	0.17	0.17			0.17		0.36	0.36		0.31	0.31	
v/c Ratio	0.01	0.01			0.01		0.53	0.12		0.39	0.25	
Control Delay	18.2	18.5			18.2		14.2	9.3		13.3	12.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	18.2	18.5			18.2		14.2	9.3		13.3	12.5	
LOS	B	B			B		B	A		B	B	
Approach Delay		18.3			18.3			12.6			12.9	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 115
 Actuated Cycle Length: 37.3
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 12.8
 Intersection LOS: B
 Intersection Capacity Utilization 45.4%
 ICU Level of Service A
 Analysis Period (min) 15
 * User Entered Value























Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Existing Condition 2018

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	441	32	26	331	356	19	63	65	10	1	57
Future Volume (vph)	40	441	32	26	331	356	19	63	65	10	1	57
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor												
Frt		0.990			0.955	0.850		0.924				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4752	0	1520	3056	1360	1520	2957	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.757			0.727		
Satd. Flow (perm)	1520	4752	0	1520	3056	1360	1211	2957	0	1163	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			90	214		65				73
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	40	441	32	26	331	356	19	63	65	10	1	57
Shared Lane Traffic (%)						40%						
Lane Group Flow (vph)	40	473	0	26	473	214	19	128	0	10	1	57
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

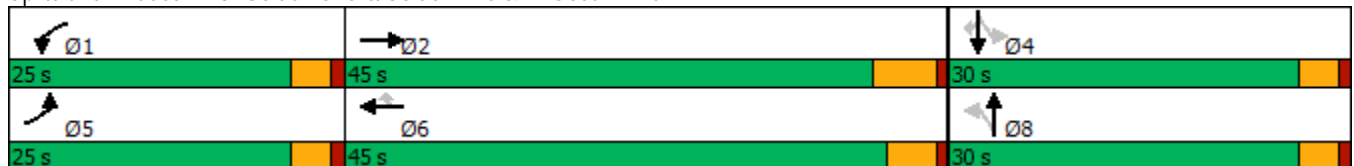
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	5.9	26.2		5.5	25.1	25.1	6.7	6.7		6.7	6.7	6.7
Actuated g/C Ratio	0.14	0.63		0.13	0.61	0.61	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.19	0.16		0.13	0.25	0.24	0.10	0.24		0.05	0.00	0.20
Control Delay	19.1	5.2		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.1	5.2		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.5
LOS	B	A		B	A	A	B	B		B	B	A
Approach Delay		6.3			5.4			11.8			8.2	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	41.4
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.25
Intersection Signal Delay:	6.5
Intersection LOS:	A
Intersection Capacity Utilization:	42.1%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd


























Existing Condition 2018

Lanes, Volumes, Timings

Existing Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	312	30	88	632	48	39	22	55	111	72	70
Future Volume (vph)	29	312	30	88	632	48	39	22	55	111	72	70
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4738	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.425			0.555			0.710			0.485		
Satd. Flow (perm)	680	4738	0	888	4800	1360	1136	3200	1360	776	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				63			68			70
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	29	312	30	88	632	48	39	22	55	111	72	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	342	0	88	632	48	39	22	55	111	72	70
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.0	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings

Existing Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

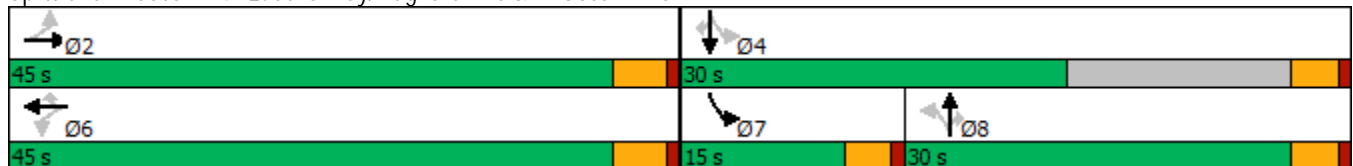
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	22.3	22.3		22.3	22.3	22.3	7.5	7.5	7.5	17.2	17.0	17.0
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.15	0.15	0.15	0.36	0.35	0.35
v/c Ratio	0.09	0.16		0.22	0.29	0.07	0.22	0.04	0.21	0.28	0.06	0.13
Control Delay	10.4	8.4		11.5	9.6	2.7	24.1	20.5	7.7	12.5	10.3	4.2
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	10.4	8.4		11.5	9.6	2.7	24.1	20.5	7.7	12.5	10.3	4.2
LOS	B	A		B	A	A	C	C	A	B	B	A
Approach Delay		8.6			9.4			15.6			9.6	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	48.4
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.29
Intersection Signal Delay:	9.7
Intersection LOS:	A
Intersection Capacity Utilization:	58.5%
ICU Level of Service:	B
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Existing Condition 2018

Lanes, Volumes, Timings

Existing Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1212	129	175	216	24	19	8	79	24	7	55
Future Volume (vph)	106	1212	129	175	216	24	19	8	79	24	7	55
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Fr _t			0.850			0.850			0.850			0.850
Fl _t Protected	0.950			0.950			0.950	0.979			0.963	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1566	1360	0	1541	1360
Fl _t Permitted	0.950			0.950			0.737	0.858			0.765	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1179	1373	1360	0	1224	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			129			54			79			68
Link Speed (mph)		40			40			30				30
Link Distance (ft)		1182			1066			1058				209
Travel Time (s)		20.1			18.2			24.0				4.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	106	1212	129	175	216	24	19	8	79	24	7	55
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	106	1212	129	175	216	24	13	14	79	0	31	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
5: Queen Mary/S Chestnut PI & W Shoreline Dr

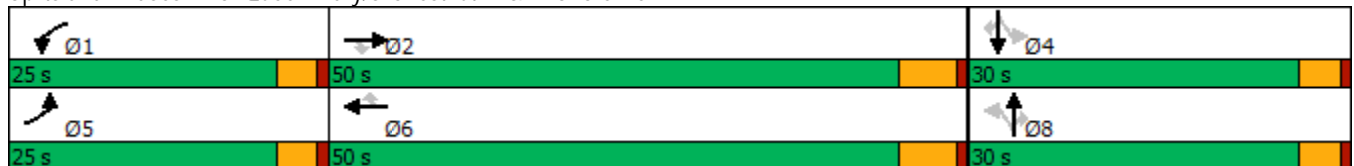
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	7.4	35.2	35.2	9.2	41.6	41.6	7.6	7.6	7.6		7.4	7.4
Actuated g/C Ratio	0.12	0.56	0.56	0.15	0.66	0.66	0.12	0.12	0.12		0.12	0.12
v/c Ratio	0.33	0.68	0.16	0.44	0.07	0.03	0.09	0.09	0.34		0.22	0.25
Control Delay	32.7	13.3	2.3	32.0	6.5	0.7	31.8	31.4	12.9		34.1	10.1
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	32.7	13.3	2.3	32.0	6.5	0.7	31.8	31.4	12.9		34.1	10.1
LOS	C	B	A	C	A	A	C	C	B		C	B
Approach Delay		13.7			16.9			17.7			18.7	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 63.2
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 14.8
 Intersection LOS: B
 Intersection Capacity Utilization 66.5%
 ICU Level of Service C
 Analysis Period (min) 15
 * User Entered Value









Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Existing Condition 2018

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp






















Existing Conditions
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	453	8	13	236
Future Volume (Veh/h)	0	0	453	8	13	236
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	453	8	13	236
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)	1200					
pX, platoon unblocked						
vC, conflicting volume	601	230			461	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601	230			461	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	431	778			1111	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	302	159	92	157		
Volume Left	0	0	13	0		
Volume Right	0	8	0	0		
cSH	1700	1700	1111	1700		
Volume to Capacity	0.18	0.09	0.01	0.09		
Queue Length 95th (ft)	0	0	1	0		
Control Delay (s)	0.0	0.0	1.3	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		0.5			
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			22.6%		ICU Level of Service	A
Analysis Period (min)			15			

Existing Condition 2018

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	5	5	11	6	352	6	120	16	104	127	45
Future Volume (vph)	54	5	5	11	6	352	6	120	16	104	127	45
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.925			0.853			0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1480	0	1520	2730	0	1520	3142	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.676			0.670		
Satd. Flow (perm)	2736	1480	0	1520	2730	0	1082	3142	0	1072	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			352			16				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	54	5	5	11	6	352	6	120	16	104	127	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	10	0	11	358	0	6	136	0	104	127	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

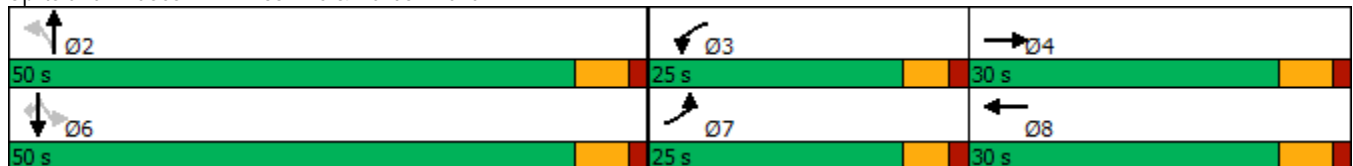
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.5	10.4		5.0	8.4		11.4	11.4		11.4	11.4	11.4
Actuated g/C Ratio	0.15	0.29		0.14	0.24		0.32	0.32		0.32	0.32	0.32
v/c Ratio	0.13	0.02		0.05	0.39		0.02	0.13		0.30	0.25	0.09
Control Delay	16.4	9.9		17.4	4.2		10.7	9.5		13.6	12.0	2.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	16.4	9.9		17.4	4.2		10.7	9.5		13.6	12.0	2.0
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		15.3			4.6			9.5			11.0	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	35.5
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.39
Intersection Signal Delay:	8.3
Intersection LOS:	A
Intersection Capacity Utilization:	52.5%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	















Splits and Phases: 7: Pico Ave & Harbor Plaza



Existing Condition 2018

HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive
























Existing Conditions
AM Peak Hour

							
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	 	 	 			 	
Traffic Volume (veh/h)	49	239	31	0	0	64	
Future Volume (Veh/h)	49	239	31	0	0	64	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	49	239	31	0	0	64	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)	40						
Median type			None		None		
Median storage (veh)							
Upstream signal (ft)						1019	
pX, platoon unblocked							
vC, conflicting volume	63	16			31		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	63	16			31		
tC, single (s)	6.8	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	95	78			100		
cM capacity (veh/h)	941	1067			1595		
Direction, Lane #	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	24	24	239	16	16	32	32
Volume Left	24	24	0	0	0	0	0
Volume Right	0	0	239	0	0	0	0
cSH	941	941	0	1700	1700	1700	1700
Volume to Capacity	0.03	0.03	Err	0.01	0.01	0.02	0.02
Queue Length 95th (ft)	2	2	Err	0	0	0	0
Control Delay (s)	8.9	8.9	Err	0.0	0.0	0.0	0.0
Lane LOS	A	A	F				
Approach Delay (s)	Err		0.0		0.0		
Approach LOS	F						
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			19.9%	ICU Level of Service		A	
Analysis Period (min)			15				

Existing Condition 2018

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  		 	 			 	 
Traffic Volume (vph)	0	0	0	18	470	23	79	47	0	0	80	61
Future Volume (vph)	0	0	0	18	470	23	79	47	0	0	80	61
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.993							0.850
Flt Protected					0.998		0.950	0.987				
Satd. Flow (prot)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Flt Permitted					0.998		0.950	0.987				
Satd. Flow (perm)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5							164
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		558			376			248			301	
Travel Time (s)		12.7			8.5			5.6			6.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	18	470	23	79	47	0	0	80	61
Shared Lane Traffic (%)							22%					
Lane Group Flow (vph)	0	0	0	0	511	0	62	64	0	0	80	61
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Carnival TIA
GHD

Synchro 10 Report

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Conditions
AM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Conditions
AM Peak Hour

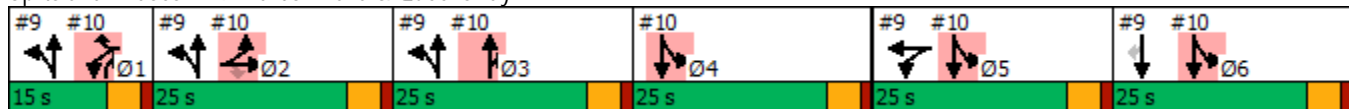


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effect Green (s)					15.5		34.5	34.5			8.4	8.4
Actuated g/C Ratio					0.19		0.42	0.42			0.10	0.10
v/c Ratio					0.57		0.10	0.10			0.25	0.21
Control Delay					33.5		13.2	13.1			39.0	1.7
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					33.5		13.2	13.1			39.0	1.7
LOS					C		B	B			D	A
Approach Delay					33.5			13.1			22.9	
Approach LOS					C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	82.7
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	28.3
Intersection LOS:	C
Intersection Capacity Utilization:	37.2%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr



Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr




























Existing Conditions
AM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Existing Condition 2018

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  				 		 			 	 
Traffic Volume (vph)	14	25	2	22	0	89	0	23	31	22	73	0
Future Volume (vph)	14	25	2	22	0	89	0	23	31	22	73	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.989	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3165	0
Flt Permitted	0.950			0.950							0.989	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3165	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	25	2	22	0	89	0	23	31	22	73	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	25	2	22	0	89	0	23	31	0	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Conditions
AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

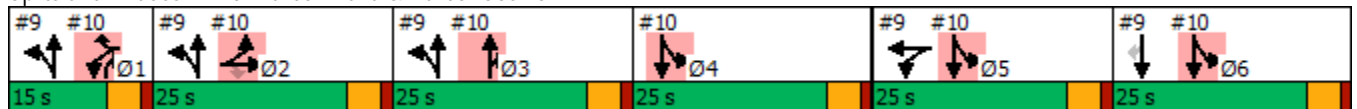
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.1	8.1	8.1	8.6		8.6		8.1	16.7			41.6
Actuated g/C Ratio	0.10	0.10	0.10	0.10		0.10		0.10	0.20			0.50
v/c Ratio	0.09	0.05	0.01	0.14		0.21		0.07	0.08			0.06
Control Delay	39.1	37.4	0.0	38.6		1.1		37.8	0.4			3.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	39.1	37.4	0.0	38.6		1.1		37.8	0.4			3.9
LOS	D	D	A	D		A		D	A			A
Approach Delay		36.1				8.5		16.4				3.9
Approach LOS		D				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	82.7
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	12.2
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Conditions
AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Existing Condition 2018

HCM 6th AWSC
11: Windsor Way & Queens HwyExisting Conditions
AM Peak Hour

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑		↔	↔↔	
Traffic Vol, veh/h	94	186	0	0	61	0
Future Vol, veh/h	94	186	0	0	61	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	94	186	0	0	61	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	8.6	0	7.8
HCM LOS	A	-	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	60%	0%	0%	100%	100%
Vol Thru, %	40%	100%	100%	0%	0%
Vol Right, %	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	124	0	31	31
LT Vol	94	0	0	31	31
Through Vol	62	124	0	0	0
RT Vol	0	0	0	0	0
Lane Flow Rate	156	124	0	30	30
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.213	0.159	0	0.048	0.034
Departure Headway (Hd)	4.906	4.604	4.74	5.688	3.98
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	729	775	0	633	905
Service Time	2.659	2.358	2.749	3.388	1.68
HCM Lane V/C Ratio	0.214	0.16	0	0.047	0.033
HCM Control Delay	9	8.2	7.7	8.7	6.8
HCM Lane LOS	A	A	N	A	A
HCM 95th-tile Q	0.8	0.6	0	0.2	0.1

Existing Condition 2018

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	597	0	490	9	510	42	100	39	0	0	123	0
Future Volume (vph)	597	0	490	9	510	42	100	39	0	0	123	0
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1440	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		140	90		0	0		0
Storage Lanes	3		1	0		0	2		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. 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
Ped Bike Factor			0.850		0.989							
Flt Protected	0.950				0.999		0.950					
Satd. Flow (prot)	4104	0	1360	0	3162	0	2736	3200	0	0	1600	0
Flt Permitted	0.950				0.999		0.950					
Satd. Flow (perm)	4104	0	1360	0	3162	0	2736	3200	0	0	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			490		6							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			420			796			402	
Travel Time (s)		5.3			9.5			18.1			9.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	300%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	597	0	490	9	510	42	100	39	0	0	123	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	597	0	490	0	561	0	100	39	0	0	123	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		64			36			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	
Protected Phases	4			8	8		5	2			6	
Permitted Phases			4									
Detector Phase	4		4	8	8		5	2			6	
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		6.0	15.0			15.0	
Minimum Split (s)	20.1		20.1	20.1	20.1		11.1	20.1			20.1	
Total Split (s)	50.0		50.0	40.0	40.0		15.0	30.0			30.0	
Total Split (%)	37.0%		37.0%	29.6%	29.6%		11.1%	22.2%			22.2%	

Existing Condition 2018

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

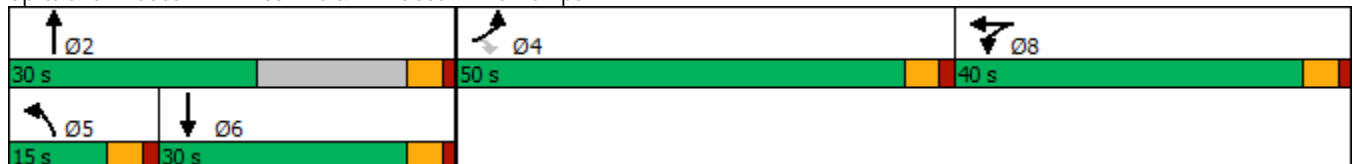
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	44.9		44.9	34.9	34.9		9.9	24.9			24.9	
Yellow Time (s)	3.6		3.6	3.6	3.6		3.6	3.6			3.6	
All-Red Time (s)	1.5		1.5	1.5	1.5		1.5	1.5			1.5	
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0			0.0	
Total Lost Time (s)	5.1		5.1		5.1		5.1	5.1			5.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)	0.2		0.2	4.0	4.0		2.0	5.0			5.0	
Minimum Gap (s)	0.2		0.2	2.0	2.0		2.0	3.0			3.0	
Time Before Reduce (s)	0.0		0.0	0.5	0.5		0.5	0.5			0.5	
Time To Reduce (s)	0.0		0.0	0.1	0.1		0.1	0.1			0.1	
Recall Mode	None		None	None	None		None	Min			Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	17.7		17.7		21.7		7.9	26.7			16.6	
Actuated g/C Ratio	0.22		0.22		0.26		0.10	0.33			0.20	
v/c Ratio	0.67		0.72		0.67		0.38	0.04			0.38	
Control Delay	35.4		10.3		32.0		43.3	20.7			36.2	
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	
Total Delay	35.4		10.3		32.0		43.3	20.7			36.2	
LOS	D		B		C		D	C			D	
Approach Delay		24.1			32.0			37.0			36.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 81.9
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 28.1
 Intersection LOS: C
 Intersection Capacity Utilization 79.9%
 ICU Level of Service D
 Analysis Period (min) 15
 * User Entered Value






















Splits and Phases: 1: Pico Ave & WB Ocean Blvd Ramps



Existing Condition 2018

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Existing Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	6	0	0	0	0	278	154	1	426	186	7
Future Volume (vph)	4	6	0	0	0	0	278	154	1	426	186	7
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		40	0		0	0		0	350		0
Storage Lanes	1		1	0		0	1		0	2		0
Taper Length (ft)	25			25			25			100		
Lane Util. 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
Ped Bike Factor								0.999			0.995	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1520	1600	0	0	1600	0	1520	3197	0	2736	3184	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	1600	1600	0	0	1600	0	1520	3197	0	2736	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								1				4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		404			742			1144				796
Travel Time (s)		9.2			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	4	6	0	0	0	0	278	154	1	426	186	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	6	0	0	0	0	278	155	0	426	193	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1		11.1	11.1		9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0		25.0	25.0		40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%		21.7%	21.7%		34.8%	26.1%		43.5%	43.5%	

Existing Condition 2018

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

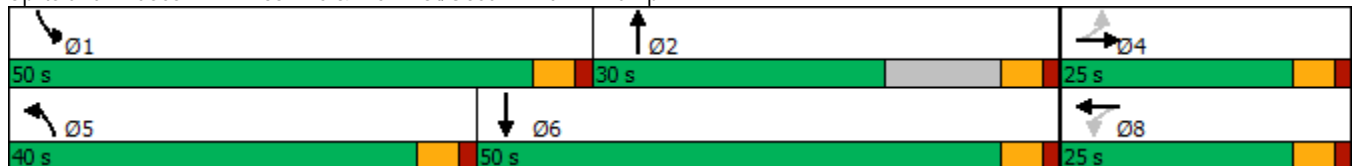
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9		19.9	19.9		34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1					5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)				4.0	4.0							4.0
Flash Dont Walk (s)				25.0	25.0							25.0
Pedestrian Calls (#/hr)				0	0							0
Act Effect Green (s)	6.3	6.3					11.6	10.7		12.1	11.2	
Actuated g/C Ratio	0.18	0.18					0.33	0.30		0.34	0.32	
v/c Ratio	0.01	0.02					0.55	0.16		0.45	0.19	
Control Delay	16.2	16.3					14.9	11.4		11.3	11.4	
Queue Delay	0.0	0.0					0.0	0.0		0.0	0.0	
Total Delay	16.2	16.3					14.9	11.4		11.3	11.4	
LOS	B	B					B	B		B	B	
Approach Delay		16.3						13.6			11.3	
Approach LOS		B						B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 115
 Actuated Cycle Length: 35.1
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 12.3
 Intersection LOS: B
 Intersection Capacity Utilization 44.4%
 ICU Level of Service A
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Existing Condition 2018

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	499	43	25	440	446	28	69	43	12	2	101
Future Volume (vph)	35	499	43	25	440	446	28	69	43	12	2	101
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor												
Fr _t		0.988			0.957	0.850		0.942				0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4742	0	1520	3062	1360	1520	3014	0	1520	1600	1360
Fl _t Permitted	0.950			0.950			0.757			0.685		
Satd. Flow (perm)	1520	4742	0	1520	3062	1360	1211	3014	0	1096	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			79	272		43				101
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	35	499	43	25	440	446	28	69	43	12	2	101
Shared Lane Traffic (%)						39%						
Lane Group Flow (vph)	35	542	0	25	614	272	28	112	0	12	2	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

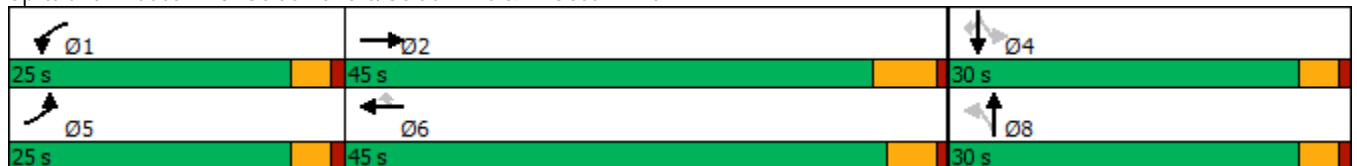
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	6.0	28.4		5.7	27.3	27.3	7.2	7.2		7.2	7.2	7.2
Actuated g/C Ratio	0.14	0.65		0.13	0.62	0.62	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.17	0.18		0.13	0.32	0.29	0.14	0.21		0.07	0.01	0.33
Control Delay	21.5	5.0		21.8	6.3	2.4	20.4	13.6		19.7	19.0	9.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	21.5	5.0		21.8	6.3	2.4	20.4	13.6		19.7	19.0	9.0
LOS	C	A		C	A	A	C	B		B	B	A
Approach Delay		6.0			5.6			15.0			10.3	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	43.9
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	6.8
Intersection LOS:	A
Intersection Capacity Utilization:	43.3%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd



Existing Condition 2018

Lanes, Volumes, Timings

Existing Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	427	25	74	879	86	29	30	59	182	91	92
Future Volume (vph)	35	427	25	74	879	86	29	30	59	182	91	92
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.992				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4762	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.322			0.502			0.698			0.481		
Satd. Flow (perm)	515	4762	0	803	4800	1360	1117	3200	1360	770	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				86			68			80
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	35	427	25	74	879	86	29	30	59	182	91	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	452	0	74	879	86	29	30	59	182	91	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7		4
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	5.7	5.7	5.7	5.0	5.7	5.7
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.5	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings

Existing Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

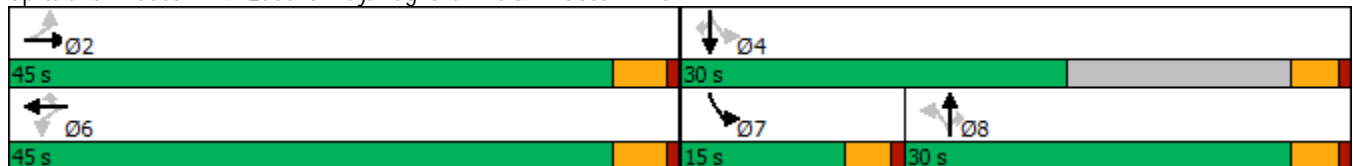
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	27.2	27.2		27.2	27.2	27.2	7.3	7.3	7.3	21.4	21.2	21.2
Actuated g/C Ratio	0.47	0.47		0.47	0.47	0.47	0.13	0.13	0.13	0.37	0.37	0.37
v/c Ratio	0.14	0.20		0.19	0.39	0.12	0.20	0.07	0.25	0.44	0.08	0.17
Control Delay	10.3	8.7		10.4	10.2	2.7	30.1	26.2	10.2	18.7	14.1	6.3
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	10.3	8.7		10.4	10.2	2.7	30.1	26.2	10.2	18.7	14.1	6.3
LOS	B	A		B	B	A	C	C	B	B	B	A
Approach Delay		8.8			9.6			19.1			14.4	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	57.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	10.8
Intersection LOS:	B
Intersection Capacity Utilization:	66.6%
ICU Level of Service:	C
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Existing Condition 2018

Lanes, Volumes, Timings

Existing Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	765	115	219	738	37	141	9	136	19	3	73
Future Volume (vph)	144	765	115	219	738	37	141	9	136	19	3	73
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.958			0.959	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1533	1360	0	1534	1360
Flt Permitted	0.950			0.950			0.743	0.736			0.772	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1189	1178	1360	0	1235	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			54			136			73
Link Speed (mph)		40			40			30				30
Link Distance (ft)		1182			1066			1058				209
Travel Time (s)		20.1			18.2			24.0				4.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	144	765	115	219	738	37	141	9	136	19	3	73
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	144	765	115	219	738	37	75	75	136	0	22	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	custom	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1				8				4
Permitted Phases			2		6	6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
5: Queen Mary/S Chestnut PI & W Shoreline Dr

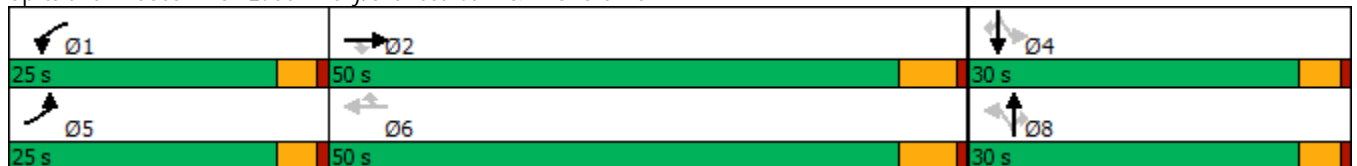
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	8.0	21.9	21.9	9.6	26.2	26.2	9.6	9.6	9.6		9.6	9.6
Actuated g/C Ratio	0.14	0.39	0.39	0.17	0.47	0.47	0.17	0.17	0.17		0.17	0.17
v/c Ratio	0.37	0.61	0.19	0.46	0.33	0.06	0.36	0.37	0.39		0.10	0.25
Control Delay	27.4	16.1	3.8	26.3	10.9	2.6	28.5	28.7	9.1		23.9	9.3
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	27.4	16.1	3.8	26.3	10.9	2.6	28.5	28.7	9.1		23.9	9.3
LOS	C	B	A	C	B	A	C	C	A		C	A
Approach Delay		16.3			13.9			19.3			12.7	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 55.6
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 15.6
 Intersection LOS: B
 Intersection Capacity Utilization 56.4%
 ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Existing Condition 2018

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp

Existing Conditions
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Volume (veh/h)	0	0	590	9	28	278
Future Volume (Veh/h)	0	0	590	9	28	278
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	590	9	28	278
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			1200			
pX, platoon unblocked						
vC, conflicting volume	790	300			599	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	790	300			599	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			97	
cM capacity (veh/h)	322	703			988	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	393	206	121	185		
Volume Left	0	0	28	0		
Volume Right	0	9	0	0		
cSH	1700	1700	988	1700		
Volume to Capacity	0.23	0.12	0.03	0.11		
Queue Length 95th (ft)	0	0	2	0		
Control Delay (s)	0.0	0.0	2.2	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		0.9			
Approach LOS						
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			36.5%		ICU Level of Service A	
Analysis Period (min)			15			

Existing Condition 2018

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	7	4	16	11	354	6	98	14	87	80	45
Future Volume (vph)	44	7	4	16	11	354	6	98	14	87	80	45
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.945			0.855			0.981				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1512	0	1520	2736	0	1520	3139	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.705			0.685		
Satd. Flow (perm)	2736	1512	0	1520	2736	0	1128	3139	0	1096	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			354			14				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	7	4	16	11	354	6	98	14	87	80	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	11	0	16	365	0	6	112	0	87	80	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

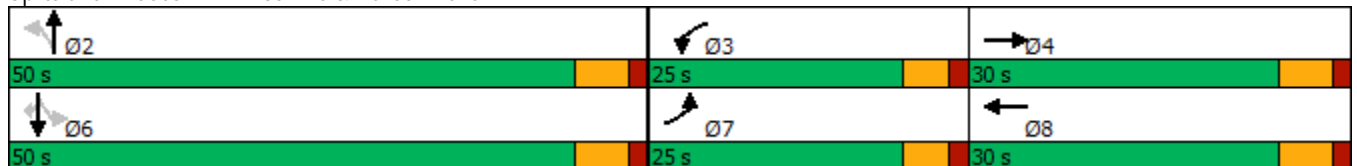
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.2	10.2		5.1	8.3		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.15	0.29		0.15	0.24		0.31	0.31		0.31	0.31	0.31
v/c Ratio	0.11	0.02		0.07	0.39		0.02	0.11		0.25	0.16	0.09
Control Delay	15.7	9.9		16.4	4.1		11.0	9.6		13.2	11.5	2.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.7	9.9		16.4	4.1		11.0	9.6		13.2	11.5	2.2
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		14.5			4.7			9.7			10.2	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	34.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.39
Intersection Signal Delay:	7.7
Intersection LOS:	A
Intersection Capacity Utilization:	45.2%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 7: Pico Ave & Harbor Plaza



Existing Condition 2018

HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive
























Existing Conditions
PM Peak Hour

	↑	↗	↘	↓	↙	↖		
Movement	NBT	NBR	SBL	SBT	SWL	SWR		
Lane Configurations	↑↑			↑↑	↗↘	↗↘		
Traffic Volume (veh/h)	37	0	0	84	57	317		
Future Volume (Veh/h)	37	0	0	84	57	317		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	37	0	0	84	57	317		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)							40	
Median type	None			None				
Median storage (veh)								
Upstream signal (ft)	1019							
pX, platoon unblocked								
vC, conflicting volume			37			79	18	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			37			79	18	
tC, single (s)			4.1			6.8	6.9	
tC, 2 stage (s)								
tF (s)			2.2			3.5	3.3	
p0 queue free %			100			94	70	
cM capacity (veh/h)			1587			920	1062	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3	
Volume Total	18	18	42	42	28	28	317	
Volume Left	0	0	0	0	28	28	0	
Volume Right	0	0	0	0	0	0	317	
cSH	1700	1700	1700	1700	920	920	0	
Volume to Capacity	0.01	0.01	0.02	0.02	0.03	0.03	Err	
Queue Length 95th (ft)	0	0	0	0	2	2	Err	
Control Delay (s)	0.0	0.0	0.0	0.0	9.0	9.0	Err	
Lane LOS					A	A	F	
Approach Delay (s)	0.0			0.0	Err			
Approach LOS					F			
Intersection Summary								
Average Delay			Err					
Intersection Capacity Utilization			23.2%	ICU Level of Service		A		
Analysis Period (min)			15					

Existing Condition 2018

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  		 	 			 	 
Traffic Volume (vph)	0	0	0	13	306	36	75	48	0	0	104	77
Future Volume (vph)	0	0	0	13	306	36	75	48	0	0	104	77
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.985							0.850
Flt Protected					0.998		0.950	0.988				
Satd. Flow (prot)	0	0	0	0	4719	0	1520	1581	0	0	3200	1360
Flt Permitted					0.998		0.950	0.988				
Satd. Flow (perm)	0	0	0	0	4719	0	1520	1581	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							164
Link Speed (mph)		30			30			30				30
Link Distance (ft)		558			376			248				301
Travel Time (s)		12.7			8.5			5.6				6.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	0	0	0	13	306	36	75	48	0	0	104	77
Shared Lane Traffic (%)							20%					
Lane Group Flow (vph)	0	0	0	0	355	0	60	63	0	0	104	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Conditions
PM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	12.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

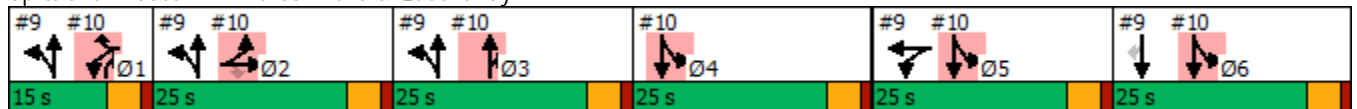
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effect Green (s)					12.2		31.6	31.6			9.1	9.1
Actuated g/C Ratio					0.16		0.41	0.41			0.12	0.12
v/c Ratio					0.47		0.10	0.10			0.28	0.25
Control Delay					32.4		9.9	9.9			37.0	2.0
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					32.4		9.9	9.9			37.0	2.0
LOS					C		A	A			D	A
Approach Delay					32.4			9.9			22.1	
Approach LOS					C			A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	77.4
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.47
Intersection Signal Delay:	25.4
Intersection LOS:	C
Intersection Capacity Utilization:	33.6%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr



Lanes, Volumes, Timings
 9: Harbor Plaza & Queensway Dr

Existing Conditions
 PM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)		6.0		
Flash Dont Walk (s)		14.0		
Pedestrian Calls (#/hr)		0		
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Existing Condition 2018

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	29	6	11	0	61	0	45	41	13	104	0
Future Volume (vph)	17	29	6	11	0	61	0	45	41	13	104	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.994	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3181	0
Flt Permitted	0.950			0.950							0.994	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3181	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	17	29	6	11	0	61	0	45	41	13	104	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	29	6	11	0	61	0	45	41	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	24.8	24.8	24.8	12.8		12.8		12.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Carnival TIA
GHD

Synchro 10 Report

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Conditions
PM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

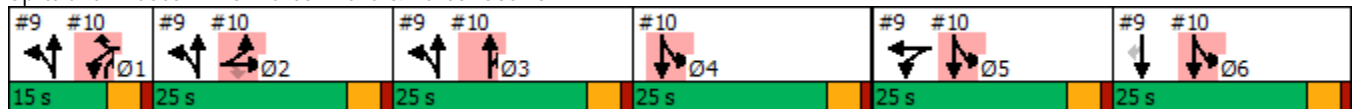
Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)	6.0	6.0	6.0									
Flash Dont Walk (s)	14.0	14.0	14.0									
Pedestrian Calls (#/hr)	0	0	0									
Act Effect Green (s)	8.3	8.3	8.3	8.8		8.8		8.3	18.5			39.6
Actuated g/C Ratio	0.11	0.11	0.11	0.11		0.11		0.11	0.24			0.51
v/c Ratio	0.10	0.06	0.02	0.06		0.13		0.13	0.10			0.07
Control Delay	37.9	36.1	0.2	36.2		0.6		36.9	0.5			2.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	37.9	36.1	0.2	36.2		0.6		36.9	0.5			2.6
LOS	D	D	A	D		A		D	A			A
Approach Delay		32.5				6.1		19.5				2.6
Approach LOS		C				A		B				A

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 77.4
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.47
 Intersection Signal Delay: 12.6
 Intersection LOS: B
 Intersection Capacity Utilization 32.0%
 ICU Level of Service A
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Conditions
PM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Existing Condition 2018

HCM 2010 AWSC
11: Windsor Way & Queens HwyExisting Conditions
PM Peak Hour

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔		↔	↔↔	
Traffic Vol, veh/h	64	156	0	5	29	0
Future Vol, veh/h	64	156	0	5	29	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	64	156	0	5	29	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	8.2	7	7.5
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	55%	0%	0%	100%	100%
Vol Thru, %	45%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	104	5	15	15
LT Vol	64	0	0	15	15
Through Vol	52	104	0	0	0
RT Vol	0	0	5	0	0
Lane Flow Rate	116	104	5	14	14
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.156	0.132	0.005	0.022	0.015
Departure Headway (Hd)	4.829	4.553	3.904	5.544	3.839
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	744	788	901	650	938
Service Time	2.551	2.275	1.995	3.244	1.539
HCM Lane V/C Ratio	0.156	0.132	0.006	0.022	0.015
HCM Control Delay	8.4	8	7	8.4	6.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.6	0.5	0	0.1	0

Existing Condition 2018
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	SAT AM - 12_NB.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	223	pc/h/ln
Adjusted Capacity, cadj	2250	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	10	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	603	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	10	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2250	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Driver Population CAF	1.000	

Existing Condition 2018

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	603	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	223	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	223	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.1	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 15:22:02

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	SAT AM - 12_SB.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	248	pc/h/ln
Adjusted Capacity, cadj	2250	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	10	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	447	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	10	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2250	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Driver Population CAF	1.000	

Existing Condition 2018

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	447	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	248	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	248	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.5	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 15:29:48

Existing Condition 2018
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	SAT PM - 12_NB.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	145	pc/h/ln
Adjusted Capacity, cadj	2250	pc/h/ln
Speed, S	55.0	mi/h
Density, D	2.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	10	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	392	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	10	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2250	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Driver Population CAF	1.000	

Existing Condition 2018

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	392	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	145	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	145	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	2.6	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 15:27:32

Existing Condition 2018
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	SAT PM - 12_SB.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	300	pc/h/ln
Adjusted Capacity, cadj	2250	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	10	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	541	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	10	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2250	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Driver Population CAF	1.000	

Existing Condition 2018

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	541	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	300	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	300	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 15:28:35

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	731	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	6.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	658	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	658	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	366	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	366	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	6.7	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	658	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	366	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.24	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:44:24

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v	497	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	447	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	447	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	248	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	248	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	447	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	248	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.04	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:44:42

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	502	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	452	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	452	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	251	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	251	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.6	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	452	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	251	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.05	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:01:52

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v	601	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	541	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	541	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	300	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	300	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	541	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	301	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.14	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:02:20

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: EB

LOS and Performance Measures

Flow rate, v ₉₅	1304	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	11.9	pc/mi/ln
Level of Service, LOS	B	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1174	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1174	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	652	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	652	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	11.9	pc/mi/ln
Level of service, LOS	B	

Bicycle Level of Service

Hourly Directional Volume, V	1174	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	652	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.53	
Bicycle LOS	C	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 3/7/2019 12:52:02

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: WB

LOS and Performance Measures

Flow rate, v	1154	pc/h/ln
Capacity, C	6300	pc/h/ln
Speed, S	55.0	mi/h
Density, D	7.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1039	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1039	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	385	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	385	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	7.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	1039	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	385	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.26	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 3/7/2019 12:50:51

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: EB

LOS and Performance Measures

Flow rate, v ₉₅	1476	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	13.4	pc/mi/ln
Level of Service, LOS	B	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1328	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1328	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	738	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	738	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	13.4	pc/mi/ln
Level of service, LOS	B	

Bicycle Level of Service

Hourly Directional Volume, V	1328	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	738	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.59	
Bicycle LOS	C	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:08:37

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: WB

LOS and Performance Measures

Flow rate, v	1208	pc/h/ln
Capacity, C	6300	pc/h/ln
Speed, S	55.0	mi/h
Density, D	7.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1087	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1087	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	403	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	403	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	7.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	1087	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	403	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.29	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:09:18

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	467	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	4.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	420	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	420	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	234	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	234	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	4.7	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	420	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	233	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.01	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:43:19

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	520	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	468	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	468	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	260	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	260	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	5.2	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	468	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	260	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.06	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:43:37

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	227	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	204	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	204	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	114	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	114	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	204	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	113	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.64	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:11:04

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v	540	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	486	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	486	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	270	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	270	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	5.4	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	486	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	270	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.08	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:11:54

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	251	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	226	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	226	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	126	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	126	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	226	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	126	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.70	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:49:30

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	209	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	188	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	188	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	104	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	104	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.1	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	188	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	104	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.60	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:14:10

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	679	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	4.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	611	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	611	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	226	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	226	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	4.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	611	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	226	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.99	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:53:55

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	492	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	443	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	443	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	164	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	164	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	443	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	164	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.83	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:16:14

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	514	pc/h/ln
Capacity, C	5700	pc/h/ln
Speed, S	45.0	mi/h
Density, D	3.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	463	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	45.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	45.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	45.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	45.0	mi/h
Capacity, c	1900	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	1900	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	463	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	171	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	171	pc/h/ln
Free-Flow Speed, FFS	45.0	mi/h
Capacity, c	1900	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	45.0	mi/h
Density, D	3.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	463	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	171	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.85	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 14:59:01

Existing Condition 2018
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	414	pc/h/ln
Capacity, C	5700	pc/h/ln
Speed, S	45.0	mi/h
Density, D	3.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	373	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	45.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	45.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	45.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018

Adjusted Free-flow Speed, FFSadj	45.0	mi/h
Capacity, c	1900	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	1900	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	373	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	138	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	138	pc/h/ln
Free-Flow Speed, FFS	45.0	mi/h
Capacity, c	1900	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	45.0	mi/h
Density, D	3.1	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	373	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	138	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.74	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/30/2019 15:17:58

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	6.9	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	7.4	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	658		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	658	55	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	731	61	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	731		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	731	4500	No
vR	61	2000	No
v12	731	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	731	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	6.9	pc/mi/ln
Density in Off-Ramp Influence Area, DR	6.9	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	731	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	731	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.433	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.4	mi/h
Density Across All Lanes, D	7.4	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 15:55:52

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREeway DIVERGE ANALYSIS

File Name:	SAT PM - 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	5.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	5.1	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	452		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	452	60	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	502	67	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	502		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	502	4500	No
vR	67	2000	No
v12	502	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	502		pc/h
Length of Deceleration Lane, LA	400		ft
Density in Off-Ramp Influence Area, DR	5.0		pc/mi/ln
Density in Off-Ramp Influence Area, DR	5.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	502		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	502		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.434		
Average Speed in Ramp Influence Area, SR	49.4		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	49.4		mi/h
Density Across All Lanes, D	5.1		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 15:56:47

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 16.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.7	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	0	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	47.9	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	47.9	mi/h
Density Across All Lanes, D	9.1	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1174		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1174	1174	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1304	1304	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.450		
Flow Rate in Lanes 1 and 2, v12	1304		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	1304	6750	No
vR	1304	4000	No
v12	1304	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1304	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	4.7	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.7	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1304	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1304	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.545	
Average Speed in Ramp Influence Area, SR	47.9	mi/h
Average Flow in Outer Lanes, vOA	0	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	47.9	mi/h
Density Across All Lanes, D	9.1	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 12:21:36

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 16.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	3.8	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	0	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	48.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	48.0	mi/h
Density Across All Lanes, D	8.4	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1087		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1087	1087	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1208	1208	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.450		
Flow Rate in Lanes 1 and 2, v12	1208		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	1208	6750	No
vR	1208	4000	No
v12	1208	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1208	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	3.8	pc/mi/ln
Density in Off-Ramp Influence Area, DR	3.8	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1208	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1208	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.537	
Average Speed in Ramp Influence Area, SR	48.0	mi/h
Average Flow in Outer Lanes, vOA	0	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	48.0	mi/h
Density Across All Lanes, D	8.4	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 3/7/2019 14:31:52

Existing Condition 2018
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT AM - 17.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	10.9	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	0	1039	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	0	1154	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018

	Actual	Maximum	Violation?
vFO	1154	4500	No
vR	1154	4000	No
vR12	1154	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	1154		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Length of Acceleration Lane, LA	2400		ft
Density in On-Ramp Influence Area, DR	0.0		pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Length of Acceleration Lane, LA	2400		ft
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	0		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1154		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for On-Ramp, MS	0.165		
Average Speed in Ramp Influence Area, SR	52.9		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	52.9		mi/h
Density Across All Lanes, D	10.9		pc/mi/ln

Managed Lane Analysis

Managed Lane Type	Continuous Access		
Number of Lanes	1	ln	
Free-Flow Speed	75.4	mi/h	
Terrain Type	Level		
Percent Grade	-	%	
Grade Length	-	mi	
Demand Volume, VML	0	veh/h	
Peak Hour Factor, PHF	0.94		
Percent Total Trucks	0.00	%	
Percent Single-Unit Trucks, SUT	-	%	
Percent Tractor-Trailers, TT	-	%	
Proportion of Total Trucks, PT	0.0000		
Heavy Vehicle PCE, ET	2.000		
Heavy Vehicle Adjustment Factor, fHV	1.000		
Demand Flow Rate, vpML	0	pc/h/ln	
Driver Population	All Familiar		

Existing Condition 2018

Driver Population SAF	1.000	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Weather Type CAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Free-Flow Speed	75.4	mi/h
Adjusted Capacity	1804	pc/mi/ln
Breakpoint, BPML	501	pc/mi/ln
Speed 1, S1	75.4	mi/h
Speed 2, S2	0.0	mi/h
Speed 3, S3	0.0	mi/h
Indicator Variable, Ic	0	
Space-Mean Speed, SML	75.4	mi/h
Density, DML	0.0	pc/mi/ln
Level of Service, LOSML	A	

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:37:38

Existing Condition 2018
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT PM - 17.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	1.3	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	44.5	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	44.5	mi/h	
Density Across All Lanes, D	16.6	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	45.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	0	1328	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	0	1476	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018

	Actual	Maximum	Violation?
vFO	1476	4500	No
vR	1476	4000	No
vR12	1476	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	1476		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Length of Acceleration Lane, LA	2400		ft
Density in On-Ramp Influence Area, DR	1.3		pc/mi/ln
Density in On-Ramp Influence Area, DR	1.3		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	45.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Length of Acceleration Lane, LA	2400		ft
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	0		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1476		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for On-Ramp, MS	0.170		
Average Speed in Ramp Influence Area, SR	44.5		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	44.5		mi/h
Density Across All Lanes, D	16.6		pc/mi/ln

Managed Lane Analysis

Managed Lane Type	Continuous Access		
Number of Lanes	1	ln	
Free-Flow Speed	75.4	mi/h	
Terrain Type	Level		
Percent Grade	-	%	
Grade Length	-	mi	
Demand Volume, VML	0	veh/h	
Peak Hour Factor, PHF	0.94		
Percent Total Trucks	0.00	%	
Percent Single-Unit Trucks, SUT	-	%	
Percent Tractor-Trailers, TT	-	%	
Proportion of Total Trucks, PT	0.0000		
Heavy Vehicle PCE, ET	2.000		
Heavy Vehicle Adjustment Factor, fHV	1.000		
Demand Flow Rate, vpML	0	pc/h/ln	
Driver Population	All Familiar		

Existing Condition 2018

Driver Population SAF	1.000	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Weather Type CAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Free-Flow Speed	75.4	mi/h
Adjusted Capacity	1804	pc/mi/ln
Breakpoint, BPML	501	pc/mi/ln
Speed 1, S1	75.4	mi/h
Speed 2, S2	0.0	mi/h
Speed 3, S3	0.0	mi/h
Indicator Variable, Ic	0	
Space-Mean Speed, SML	75.4	mi/h
Density, DML	0.0	pc/mi/ln
Level of Service, LOSML	A	

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:38:13

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 18.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.4	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	14	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	43.6	mi/h
Average Speed in Outer Lanes of Freeway, SO	49.4	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	43.8	mi/h
Density Across All Lanes, D	3.4	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	45.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	407		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	407	359	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	452	399	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.730		
Flow Rate in Lanes 1 and 2, v12	438		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	452	6750	No
vR	399	2000	No
v12	438	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	438	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.4	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.4	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	45.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	452	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	438	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.464	
Average Speed in Ramp Influence Area, SR	43.6	mi/h
Average Flow in Outer Lanes, vOA	14	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	49.4	mi/h
Average Speed for On-Ramp Junction, S	43.8	mi/h
Density Across All Lanes, D	3.4	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:55:29

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 18.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	6.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	3	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	43.5	mi/h
Average Speed in Outer Lanes of Freeway, SO	49.4	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	43.5	mi/h
Density Across All Lanes, D	4.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	45.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	569		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	569	561	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	632	623	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.716		
Flow Rate in Lanes 1 and 2, v12	629		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	632	6750	No
vR	623	2000	No
v12	629	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	629	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	6.1	pc/mi/ln
Density in Off-Ramp Influence Area, DR	6.1	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	45.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	632	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	629	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.484	
Average Speed in Ramp Influence Area, SR	43.5	mi/h
Average Flow in Outer Lanes, vOA	3	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	49.4	mi/h
Average Speed for On-Ramp Junction, S	43.5	mi/h
Density Across All Lanes, D	4.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/30/2019 16:19:37

Existing Condition 2018
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT AM - 19.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	3.5	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	0	331		veh/h
Peak Hour Factor, PHF	0.90	0.90		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	0	368		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018

	Actual	Maximum	Violation?
vFO	368	4500	No
vR	368	4000	No
vR12	368	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	368	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0	pc/h
Length of Acceleration Lane, LA	2400	ft
Density in On-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Length of Acceleration Lane, LA	2400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	0	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	368	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.159	
Average Speed in Ramp Influence Area, SR	52.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	52.9	mi/h
Density Across All Lanes, D	3.5	pc/mi/ln

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 3/5/2019 16:21:56

Existing Condition 2018
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT PM - 19.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	4.5	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	0	433		veh/h
Peak Hour Factor, PHF	0.90	0.90		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	0	481		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018

	Actual	Maximum	Violation?
vFO	481	4500	No
vR	481	4000	No
vR12	481	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	481	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0	pc/h
Length of Acceleration Lane, LA	2400	ft
Density in On-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Length of Acceleration Lane, LA	2400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	0	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	481	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.159	
Average Speed in Ramp Influence Area, SR	52.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	52.9	mi/h
Density Across All Lanes, D	4.5	pc/mi/ln

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 3/5/2019 16:22:40

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	501		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	501	278	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	557	309	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	557		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	557	4500	No
vR	309	4000	No
v12	557	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	557	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	557	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	557	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.456	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	5.7	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:31:45

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	6.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	527		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	527	237	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	586	263	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	586		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	586	4500	No
vR	263	4000	No
v12	586	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	586	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	586	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	586	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.452	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	6.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:30:24

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	6.5	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.2	mi/h
Density Across All Lanes, D	6.9	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	611		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	611	191	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	679	212	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	679		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	679	4500	No
vR	212	2000	No
v12	679	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	679	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	6.5	pc/mi/ln
Density in Off-Ramp Influence Area, DR	6.5	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	679	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	679	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.447	
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.2	mi/h
Density Across All Lanes, D	6.9	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 08:03:45

Existing Condition 2018
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.9	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	443		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	443	239	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	492	266	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	492		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018

Capacity Checks

	Actual	Maximum	Violation?
vF	492	4500	No
vR	266	2000	No
v12	492	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	492	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.9	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.9	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	492	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	492	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.452	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	5.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 08:04:39



















Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

1: Pico Ave & WB Ocean Blvd Ramps

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	770	0	410	6	334	19	118	52	0	0	161	0
Future Volume (vph)	770	0	410	6	334	19	118	52	0	0	161	0
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1440	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		140	90		0	0		0
Storage Lanes	3		1	0		0	2		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850		0.992							
Flt Protected	0.950				0.999		0.950					
Satd. Flow (prot)	4104	0	1360	0	3171	0	2736	3200	0	0	1600	0
Flt Permitted	0.950				0.999		0.950					
Satd. Flow (perm)	4104	0	1360	0	3171	0	2736	3200	0	0	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			410		4							
Link Speed (mph)		30			30			30				30
Link Distance (ft)		234			420			796				402
Travel Time (s)		5.3			9.5			18.1				9.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	770	0	410	6	334	19	118	52	0	0	161	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	770	0	410	0	359	0	118	52	0	0	161	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		64			36			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Split	NA		Prot	NA				NA
Protected Phases	4			8	8		5	2				6
Permitted Phases			4									
Detector Phase	4		4	8	8		5	2				6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		6.0	15.0				15.0
Minimum Split (s)	20.1		20.1	20.1	20.1		11.1	20.1				20.1
Total Split (s)	50.0		50.0	40.0	40.0		15.0	30.0				30.0
Total Split (%)	37.0%		37.0%	29.6%	29.6%		11.1%	22.2%				22.2%

Existing Condition 2018 + Project

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

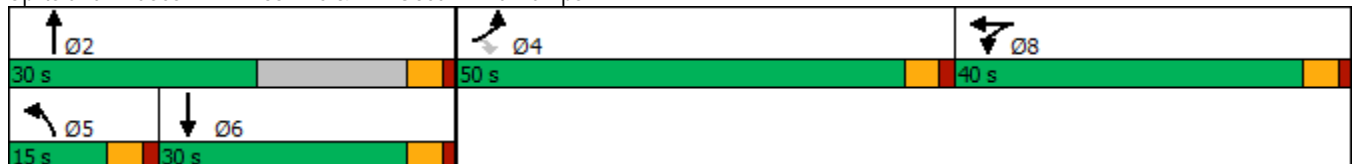
Existing Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	44.9		44.9	34.9	34.9		9.9	24.9			24.9	
Yellow Time (s)	3.6		3.6	3.6	3.6		3.6	3.6			3.6	
All-Red Time (s)	1.5		1.5	1.5	1.5		1.5	1.5			1.5	
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0			0.0	
Total Lost Time (s)	5.1		5.1		5.1		5.1	5.1			5.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)	0.2		0.2	4.0	4.0		2.0	5.0			5.0	
Minimum Gap (s)	2.0		2.0	2.0	2.0		2.0	3.0			3.0	
Time Before Reduce (s)	0.0		0.0	0.5	0.5		0.5	0.5			0.5	
Time To Reduce (s)	0.0		0.0	0.1	0.1		0.1	0.1			0.1	
Recall Mode	None		None	None	None		None	Min			Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	19.9		19.9		17.4		8.2	30.9			17.5	
Actuated g/C Ratio	0.24		0.24		0.21		0.10	0.37			0.21	
v/c Ratio	0.79		0.65		0.54		0.44	0.04			0.48	
Control Delay	37.1		8.4		34.1		43.8	18.8			36.4	
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	
Total Delay	37.1		8.4		34.1		43.8	18.8			36.4	
LOS	D		A		C		D	B			D	
Approach Delay		27.2			34.1			36.1			36.4	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type:	Other
Cycle Length:	135
Actuated Cycle Length:	83.8
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	30.1
Intersection LOS:	C
Intersection Capacity Utilization:	67.9%
ICU Level of Service:	C
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 1: Pico Ave & WB Ocean Blvd Ramps



Existing Condition 2018 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Existing Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	0	3	1	0	293	174	4	325	242	6
Future Volume (vph)	4	2	0	3	1	0	293	174	4	325	242	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		40	0		0	0		0	350		0
Storage Lanes	1		1	0		0	1		0	2		0
Taper Length (ft)	25			25			25			100		
Lane Util. 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
Ped Bike Factor												
Flt								0.997			0.996	
Flt Protected	0.950				0.964		0.950			0.950		
Satd. Flow (prot)	1520	1600	0	0	1542	0	1520	3190	0	2736	3187	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	1600	1600	0	0	1600	0	1520	3190	0	2736	3187	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								2				3
Link Speed (mph)		30			30			30				30
Link Distance (ft)		404			742			1144				796
Travel Time (s)		9.2			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	2	0	3	1	0	293	174	4	325	242	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	2	0	0	4	0	293	178	0	325	248	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1		11.1	11.1		9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0		25.0	25.0		40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%		21.7%	21.7%		34.8%	26.1%		43.5%	43.5%	

Existing Condition 2018 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

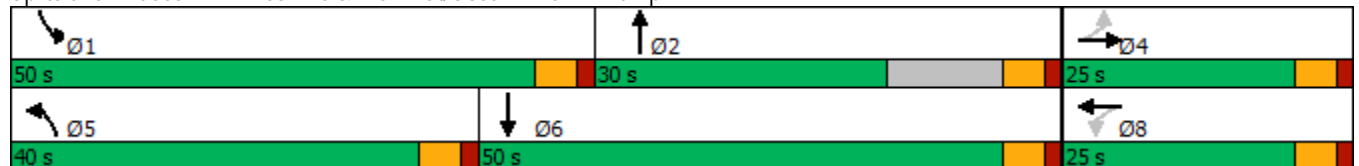
Existing Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9		19.9	19.9		34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1			5.1		5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)				4.0	4.0							4.0
Flash Dont Walk (s)				25.0	25.0							25.0
Pedestrian Calls (#/hr)				0	0							0
Act Effect Green (s)	6.4	6.4			6.4		13.6	13.5		11.5	11.4	
Actuated g/C Ratio	0.17	0.17			0.17		0.36	0.36		0.31	0.31	
v/c Ratio	0.01	0.01			0.01		0.53	0.15		0.39	0.25	
Control Delay	18.2	18.5			18.2		14.2	9.4		13.3	12.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	18.2	18.5			18.2		14.2	9.4		13.3	12.5	
LOS	B	B			B		B	A		B	B	
Approach Delay		18.3			18.3			12.4			12.9	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	37.3
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization:	45.4%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

























Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

3: Golden Shore/Golden Ave & W Ocean Blvd

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	441	32	26	331	358	19	63	65	10	1	57
Future Volume (vph)	41	441	32	26	331	358	19	63	65	10	1	57
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor												
Fr _t		0.990			0.955	0.850		0.924				0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4752	0	1520	3056	1360	1520	2957	0	1520	1600	1360
Fl _t Permitted	0.950			0.950			0.757			0.727		
Satd. Flow (perm)	1520	4752	0	1520	3056	1360	1211	2957	0	1163	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			92	215		65				73
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	41	441	32	26	331	358	19	63	65	10	1	57
Shared Lane Traffic (%)						40%						
Lane Group Flow (vph)	41	473	0	26	474	215	19	128	0	10	1	57
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

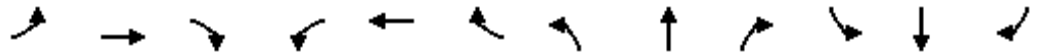
Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

3: Golden Shore/Golden Ave & W Ocean Blvd

AM Peak Hour

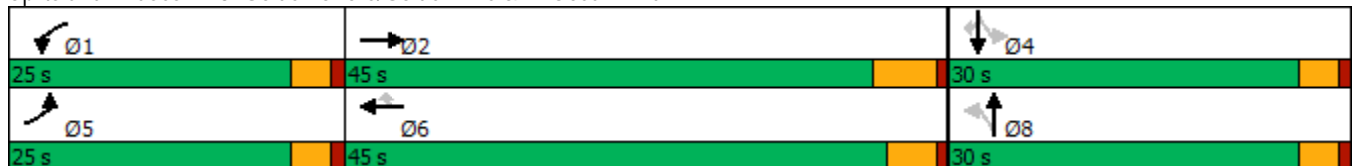


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effct Green (s)	5.9	26.2		5.5	25.1	25.1	6.7	6.7		6.7	6.7	6.7
Actuated g/C Ratio	0.14	0.63		0.13	0.61	0.61	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.19	0.16		0.13	0.25	0.24	0.10	0.24		0.05	0.00	0.20
Control Delay	19.2	5.2		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.2	5.2		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.5
LOS	B	A		B	A	A	B	B		B	B	A
Approach Delay		6.3			5.4			11.8			8.2	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	41.4
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.25
Intersection Signal Delay:	6.5
Intersection LOS:	A
Intersection Capacity Utilization:	42.1%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd



Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	312	31	89	632	48	41	26	65	111	73	70
Future Volume (vph)	29	312	31	89	632	48	41	26	65	111	73	70
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4733	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.425			0.555			0.709			0.430		
Satd. Flow (perm)	680	4733	0	888	4800	1360	1134	3200	1360	688	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				68			73			70
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	29	312	31	89	632	48	41	26	65	111	73	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	343	0	89	632	48	41	26	65	111	73	70
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.5	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

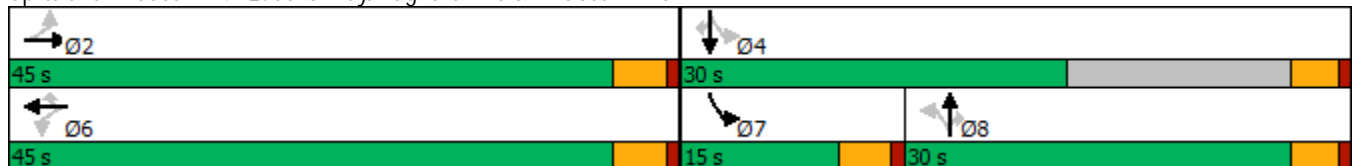
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	10.6	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.4	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.4	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		None	None	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	27.1	27.1		27.1	27.1	27.1	7.6	7.6	7.6	17.1	17.5	17.5
Actuated g/C Ratio	0.54	0.54		0.54	0.54	0.54	0.15	0.15	0.15	0.34	0.35	0.35
v/c Ratio	0.08	0.13		0.18	0.24	0.06	0.24	0.05	0.24	0.30	0.07	0.13
Control Delay	10.4	8.3		11.4	9.4	2.3	24.6	20.6	8.5	13.1	10.2	4.1
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	10.4	8.3		11.4	9.4	2.3	24.6	20.6	8.5	13.1	10.2	4.1
LOS	B	A		B	A	A	C	C	A	B	B	A
Approach Delay		8.5			9.2			15.9			9.8	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	49.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.30
Intersection Signal Delay:	9.7
Intersection LOS:	A
Intersection Capacity Utilization:	58.5%
ICU Level of Service:	B
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1212	130	175	216	24	28	8	81	24	7	55
Future Volume (vph)	106	1212	130	175	216	24	28	8	81	24	7	55
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Fr _t			0.850			0.850			0.850			0.850
Fl _t Protected	0.950			0.950			0.950	0.973			0.963	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1557	1360	0	1541	1360
Fl _t Permitted	0.950			0.950			0.737	0.810			0.763	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1179	1296	1360	0	1221	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130			54			81			68
Link Speed (mph)		40			40			30				30
Link Distance (ft)		1182			1066			1058				209
Travel Time (s)		20.1			18.2			24.0				4.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	106	1212	130	175	216	24	28	8	81	24	7	55
Shared Lane Traffic (%)							37%					
Lane Group Flow (vph)	106	1212	130	175	216	24	18	18	81	0	31	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

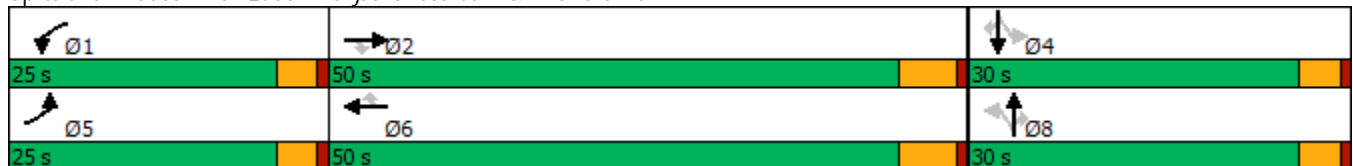
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	7.4	35.1	35.1	9.2	41.6	41.6	7.6	7.6	7.6		7.4	7.4
Actuated g/C Ratio	0.12	0.56	0.56	0.15	0.66	0.66	0.12	0.12	0.12		0.12	0.12
v/c Ratio	0.33	0.68	0.16	0.44	0.07	0.03	0.13	0.12	0.35		0.22	0.25
Control Delay	32.7	13.3	2.3	31.9	6.5	0.7	32.6	32.1	12.9		34.1	10.1
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	32.7	13.3	2.3	31.9	6.5	0.7	32.6	32.1	12.9		34.1	10.1
LOS	C	B	A	C	A	A	C	C	B		C	B
Approach Delay		13.7			16.9			18.9			18.7	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	63.2
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	14.9
Intersection LOS:	B
Intersection Capacity Utilization:	66.5%
ICU Level of Service:	C
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Existing Condition 2018 + Project

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp

Existing Plus Project Conditions
AM Peak Hour
































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Volume (veh/h)	0	0	490	8	19	236
Future Volume (Veh/h)	0	0	490	8	19	236
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	490	8	19	236
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			1200			
pX, platoon unblocked						
vC, conflicting volume	650	249			498	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	650	249			498	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			98	
cM capacity (veh/h)	399	757			1076	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	327	171	98	157		
Volume Left	0	0	19	0		
Volume Right	0	8	0	0		
cSH	1700	1700	1076	1700		
Volume to Capacity	0.19	0.10	0.02	0.09		
Queue Length 95th (ft)	0	0	1	0		
Control Delay (s)	0.0	0.0	1.8	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		0.7			
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			28.3%		ICU Level of Service	A
Analysis Period (min)			15			

Existing Condition 2018 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza













Existing Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 		 	 	 
Traffic Volume (vph)	54	5	5	11	6	389	6	120	16	104	127	45
Future Volume (vph)	54	5	5	11	6	389	6	120	16	104	127	45
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.925			0.852			0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1480	0	1520	2726	0	1520	3142	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.676			0.670		
Satd. Flow (perm)	2736	1480	0	1520	2726	0	1082	3142	0	1072	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			389			16				89
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	54	5	5	11	6	389	6	120	16	104	127	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	10	0	11	395	0	6	136	0	104	127	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.8	13.8		9.8	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Existing Condition 2018 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

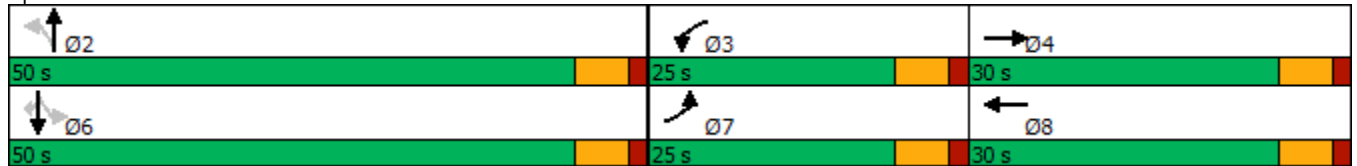
Existing Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.2	24.2		19.2	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	4.3	4.3		4.3	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.5	10.6		5.1	8.5		11.6	11.6		11.6	11.6	11.6
Actuated g/C Ratio	0.15	0.29		0.14	0.24		0.32	0.32		0.32	0.32	0.32
v/c Ratio	0.13	0.02		0.05	0.42		0.02	0.13		0.30	0.25	0.09
Control Delay	16.8	10.1		17.9	4.2		11.2	9.7		14.0	12.3	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	16.8	10.1		17.9	4.2		11.2	9.7		14.0	12.3	1.7
LOS	B	B		B	A		B	A		B	B	A
Approach Delay		15.7			4.6			9.8			11.2	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	36
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.42
Intersection Signal Delay:	8.3
Intersection LOS:	A
Intersection Capacity Utilization:	54.5%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 7: Pico Ave & Harbor Plaza



Existing Condition 2018 + Project
























HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic DriveExisting Plus Project Conditions
AM Peak Hour

	↑	↖	↗	↓	↙	↘	
Movement	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	↑↑			↑↑	↖↗	↖↗	
Traffic Volume (veh/h)	68	0	0	64	49	239	
Future Volume (Veh/h)	68	0	0	64	49	239	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	68	0	0	64	49	239	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)						40	
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)				1019			
pX, platoon unblocked							
vC, conflicting volume			68			100	34
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			68			100	34
tC, single (s)			4.1			6.8	6.9
tC, 2 stage (s)							
tF (s)			2.2			3.5	3.3
p0 queue free %			100			95	77
cM capacity (veh/h)			1546			894	1038
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3
Volume Total	34	34	32	32	24	24	239
Volume Left	0	0	0	0	24	24	0
Volume Right	0	0	0	0	0	0	239
cSH	1700	1700	1700	1700	894	894	0
Volume to Capacity	0.02	0.02	0.02	0.02	0.03	0.03	Err
Queue Length 95th (ft)	0	0	0	0	2	2	Err
Control Delay (s)	0.0	0.0	0.0	0.0	9.1	9.1	Err
Lane LOS					A	A	F
Approach Delay (s)	0.0			0.0	Err		
Approach LOS					F		
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			19.9%	ICU Level of Service		A	
Analysis Period (min)			15				

Existing Condition 2018 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  		 	 			 	 
Traffic Volume (vph)	0	0	0	55	664	23	79	47	0	0	80	61
Future Volume (vph)	0	0	0	55	664	23	79	47	0	0	80	61
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.995							0.850
Flt Protected					0.996		0.950	0.987				
Satd. Flow (prot)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Flt Permitted					0.996		0.950	0.987				
Satd. Flow (perm)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3							164
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		558			376			248			301	
Travel Time (s)		12.7			8.5			5.6			6.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	55	664	23	79	47	0	0	80	61
Shared Lane Traffic (%)							22%					
Lane Group Flow (vph)	0	0	0	0	742	0	62	64	0	0	80	61
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Existing Condition 2018 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Plus Project Conditions
AM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

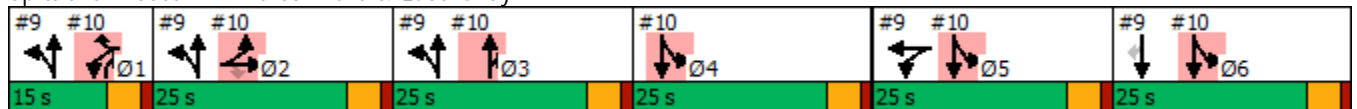
Existing Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effct Green (s)					20.3		34.3	34.3			8.4	8.4
Actuated g/C Ratio					0.23		0.39	0.39			0.10	0.10
v/c Ratio					0.67		0.10	0.10			0.26	0.22
Control Delay					34.7		13.8	13.8			40.6	1.8
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					34.7		13.8	13.8			40.6	1.8
LOS					C		B	B			D	A
Approach Delay					34.7			13.8			23.8	
Approach LOS					C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	87.5
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	30.6
Intersection LOS:	C
Intersection Capacity Utilization:	42.5%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr



Lanes, Volumes, Timings
 9: Harbor Plaza & Queensway Dr

Existing Plus Project Conditions
 AM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Existing Condition 2018 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	25	2	22	0	89	0	23	31	22	110	0
Future Volume (vph)	14	25	2	22	0	89	0	23	31	22	110	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.992	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3174	0
Flt Permitted	0.950			0.950							0.992	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3174	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	25	2	22	0	89	0	23	31	22	110	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	25	2	22	0	89	0	23	31	0	132	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Plus Project Conditions
AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

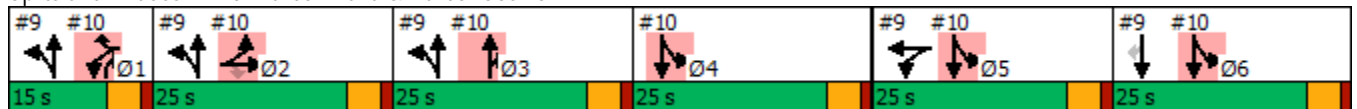
Existing Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.0	8.0	8.0	8.6		8.6		8.0	16.6			46.5
Actuated g/C Ratio	0.09	0.09	0.09	0.10		0.10		0.09	0.19			0.53
v/c Ratio	0.10	0.06	0.01	0.15		0.21		0.08	0.09			0.08
Control Delay	40.4	38.6	0.0	40.0		1.2		39.0	0.5			2.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	40.4	38.6	0.0	40.0		1.2		39.0	0.5			2.8
LOS	D	D	A	D		A		D	A			A
Approach Delay		37.3				8.9		16.9				2.8
Approach LOS		D				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	87.5
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	11.2
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Plus Project Conditions
AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Existing Condition 2018 + Project

HCM 6th AWSC
11: Windsor Way & Queens Hwy

Existing Plus Project Conditions
AM Peak Hour

Intersection

Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑		↔	↔↔	
Traffic Vol, veh/h	123	192	0	0	61	0
Future Vol, veh/h	123	192	0	0	61	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	123	192	0	0	61	0
Number of Lanes	0	2	0	1	2	0



















Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9	0	7.9
HCM LOS	A	-	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	66%	0%	0%	100%	100%
Vol Thru, %	34%	100%	100%	0%	0%
Vol Right, %	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	187	128	0	31	31
LT Vol	123	0	0	31	31
Through Vol	64	128	0	0	0
RT Vol	0	0	0	0	0
Lane Flow Rate	187	128	0	30	30
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.256	0.164	0	0.049	0.034
Departure Headway (Hd)	4.933	4.604	4.777	5.772	4.063
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	724	774	0	624	887
Service Time	2.689	2.36	2.785	3.472	1.763
HCM Lane V/C Ratio	0.258	0.165	0	0.048	0.034
HCM Control Delay	9.4	8.3	7.8	8.8	6.9
HCM Lane LOS	A	A	N	A	A
HCM 95th-tile Q	1	0.6	0	0.2	0.1

Existing Condition 2018 + Project

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	597	0	514	9	510	42	104	39	0	0	123	0
Future Volume (vph)	597	0	514	9	510	42	104	39	0	0	123	0
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1440	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		140	90		0	0		0
Storage Lanes	3		1	0		0	2		0	0		0
Taper Length (ft)	25			25			50			25		
Lane Util. 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
Ped Bike Factor			0.850		0.989							
Flt Protected	0.950				0.999		0.950					
Satd. Flow (prot)	4104	0	1360	0	3162	0	2736	3200	0	0	1600	0
Flt Permitted	0.950				0.999		0.950					
Satd. Flow (perm)	4104	0	1360	0	3162	0	2736	3200	0	0	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			514		6							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			420			796			402	
Travel Time (s)		5.3			9.5			18.1			9.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	300%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	597	0	514	9	510	42	104	39	0	0	123	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	597	0	514	0	561	0	104	39	0	0	123	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		64			36			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	
Protected Phases	4			8	8		5	2			6	
Permitted Phases			4									
Detector Phase	4		4	8	8		5	2			6	
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		6.0	15.0			15.0	
Minimum Split (s)	20.1		20.1	20.1	20.1		11.1	20.1			20.1	
Total Split (s)	50.0		50.0	40.0	40.0		15.0	30.0			30.0	
Total Split (%)	37.0%		37.0%	29.6%	29.6%		11.1%	22.2%			22.2%	

Existing Condition 2018 + Project

Lanes, Volumes, Timings
1: Pico Ave & WB Ocean Blvd Ramps

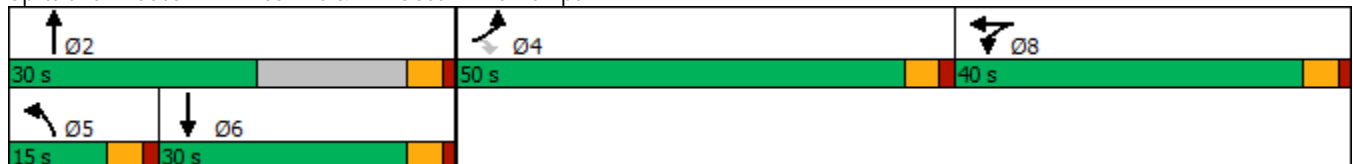
Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	44.9		44.9	34.9	34.9		9.9	24.9			24.9	
Yellow Time (s)	3.6		3.6	3.6	3.6		3.6	3.6			3.6	
All-Red Time (s)	1.5		1.5	1.5	1.5		1.5	1.5			1.5	
Lost Time Adjust (s)	0.0		0.0		0.0		0.0	0.0			0.0	
Total Lost Time (s)	5.1		5.1		5.1		5.1	5.1			5.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)	0.2		0.2	4.0	4.0		2.0	5.0			5.0	
Minimum Gap (s)	0.2		0.2	2.0	2.0		2.0	3.0			3.0	
Time Before Reduce (s)	0.0		0.0	0.5	0.5		0.5	0.5			0.5	
Time To Reduce (s)	0.0		0.0	0.1	0.1		0.1	0.1			0.1	
Recall Mode	None		None	None	None		None	Min			Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	17.5		17.5		21.6		7.9	29.5			16.4	
Actuated g/C Ratio	0.21		0.21		0.26		0.09	0.35			0.19	
v/c Ratio	0.70		0.74		0.69		0.40	0.03			0.40	
Control Delay	36.8		10.8		33.2		43.7	20.7			36.6	
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	
Total Delay	36.8		10.8		33.2		43.7	20.7			36.6	
LOS	D		B		C		D	C			D	
Approach Delay		24.8			33.2			37.4			36.6	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 84.3
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 28.9
 Intersection LOS: C
 Intersection Capacity Utilization 81.7%
 ICU Level of Service D
 Analysis Period (min) 15
 * User Entered Value






















Splits and Phases: 1: Pico Ave & WB Ocean Blvd Ramps



Existing Condition 2018 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	6	0	0	0	0	278	158	1	426	210	7
Future Volume (vph)	4	6	0	0	0	0	278	158	1	426	210	7
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		40	0		0	0		0	350		0
Storage Lanes	1		1	0		0	1		0	2		0
Taper Length (ft)	25			25			25			100		
Lane Util. 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
Ped Bike Factor								0.999			0.995	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1520	1600	0	0	1600	0	1520	3197	0	2736	3184	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	1600	1600	0	0	1600	0	1520	3197	0	2736	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								1				4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		404			742			1144				796
Travel Time (s)		9.2			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	4	6	0	0	0	0	278	158	1	426	210	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	6	0	0	0	0	278	159	0	426	217	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1		11.1	11.1		9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0		25.0	25.0		40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%		21.7%	21.7%		34.8%	26.1%		43.5%	43.5%	

Existing Condition 2018 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

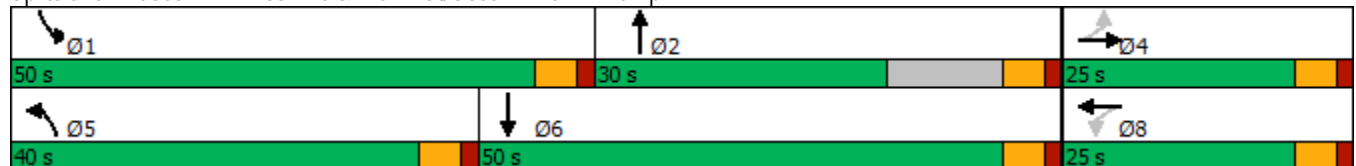
Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9		19.9	19.9		34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.1	5.1					5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)				4.0	4.0							4.0
Flash Dont Walk (s)				25.0	25.0							25.0
Pedestrian Calls (#/hr)				0	0							0
Act Effect Green (s)	6.4	6.4					13.0	12.1		12.0	11.2	
Actuated g/C Ratio	0.18	0.18					0.36	0.33		0.33	0.31	
v/c Ratio	0.01	0.02					0.51	0.15		0.47	0.22	
Control Delay	17.5	17.5					13.9	10.6		12.7	12.0	
Queue Delay	0.0	0.0					0.0	0.0		0.0	0.0	
Total Delay	17.5	17.5					13.9	10.6		12.7	12.0	
LOS	B	B					B	B		B	B	
Approach Delay		17.5						12.7			12.4	
Approach LOS		B						B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 115
 Actuated Cycle Length: 36.4
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 12.6
 Intersection LOS: B
 Intersection Capacity Utilization 44.4%
 ICU Level of Service A
 Analysis Period (min) 15
 * User Entered Value



























Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Existing Condition 2018 + Project

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	35	499	43	25	440	446	28	69	43	12	2	101
Future Volume (vph)	35	499	43	25	440	446	28	69	43	12	2	101
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor												
Frt		0.988			0.957	0.850		0.942				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4742	0	1520	3062	1360	1520	3014	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.757			0.690		
Satd. Flow (perm)	1520	4742	0	1520	3062	1360	1211	3014	0	1104	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			79	272		43				101
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	35	499	43	25	440	446	28	69	43	12	2	101
Shared Lane Traffic (%)						39%						
Lane Group Flow (vph)	35	542	0	25	614	272	28	112	0	12	2	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Existing Condition 2018 + Project

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

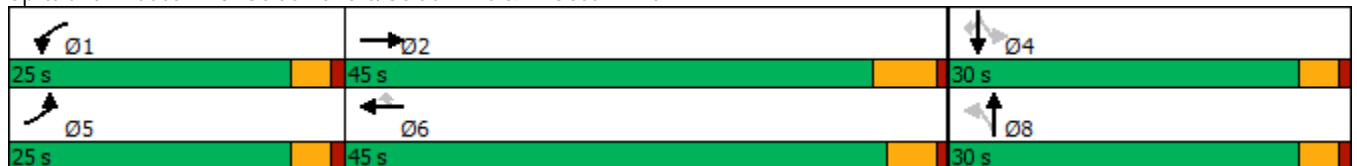
Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	5.9	27.2		5.7	26.1	26.1	7.0	7.0		7.0	7.0	7.0
Actuated g/C Ratio	0.14	0.64		0.13	0.61	0.61	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.17	0.18		0.12	0.32	0.29	0.14	0.21		0.07	0.01	0.33
Control Delay	20.3	5.2		20.4	6.5	2.5	19.2	12.8		18.3	17.5	8.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	20.3	5.2		20.4	6.5	2.5	19.2	12.8		18.3	17.5	8.6
LOS	C	A		C	A	A	B	B		B	B	A
Approach Delay		6.1			5.7			14.1			9.8	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	42.6
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	6.8
Intersection LOS:	A
Intersection Capacity Utilization:	43.3%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd



Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project

4: Queens Way/Magnolia Ave & W Ocean Blvd

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	427	25	80	879	86	29	30	60	182	94	92
Future Volume (vph)	35	427	25	80	879	86	29	30	60	182	94	92
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.992				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4762	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.322			0.502			0.696			0.483		
Satd. Flow (perm)	515	4762	0	803	4800	1360	1114	3200	1360	773	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				86			68			80
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	35	427	25	80	879	86	29	30	60	182	94	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	452	0	80	879	86	29	30	60	182	94	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7		4
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.0	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project

4: Queens Way/Magnolia Ave & W Ocean Blvd

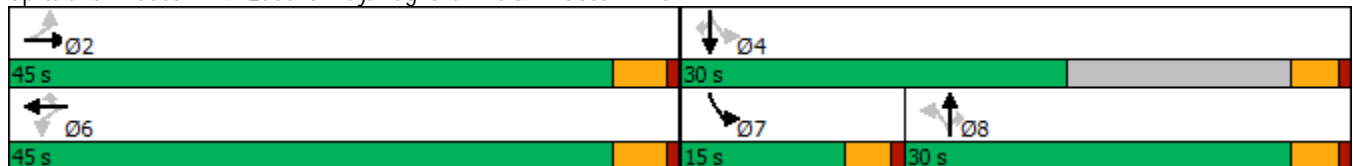
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	27.6	27.6		27.6	27.6	27.6	7.4	7.4	7.4	21.5	21.3	21.3
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.13	0.13	0.13	0.37	0.37	0.37
v/c Ratio	0.14	0.20		0.21	0.38	0.12	0.20	0.07	0.26	0.44	0.08	0.17
Control Delay	10.3	8.7		10.5	10.2	2.7	30.1	26.3	10.3	18.9	14.3	6.3
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	10.3	8.7		10.5	10.2	2.7	30.1	26.3	10.3	18.9	14.3	6.3
LOS	B	A		B	B	A	C	C	B	B	B	A
Approach Delay		8.8			9.6			19.2			14.6	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	58
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization:	66.6%
ICU Level of Service:	C
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Existing Condition 2018 + Project

Lanes, Volumes, Timings

Existing Plus Project

5: Queen Mary/S Chestnut PI & W Shoreline Dr

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	765	122	221	738	37	142	9	136	19	3	73
Future Volume (vph)	144	765	122	221	738	37	142	9	136	19	3	73
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.958			0.959	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1533	1360	0	1534	1360
Flt Permitted	0.950			0.950			0.743	0.735			0.769	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1189	1176	1360	0	1230	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			127			140			140
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1182			1066			1058			209	
Travel Time (s)		20.1			18.2			24.0			4.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	144	765	122	221	738	37	142	9	136	19	3	73
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	144	765	122	221	738	37	75	76	136	0	22	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	15.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings
5: Queen Mary/S Chestnut PI & W Shoreline Dr

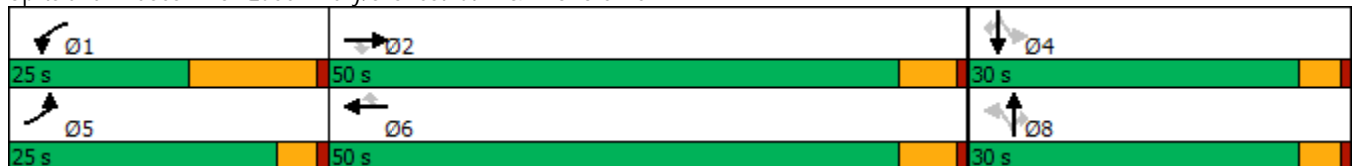
Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	14.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	10.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	11.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	8.3	24.0	24.0	10.0	33.1	33.1	10.0	10.0	10.0		10.0	10.0
Actuated g/C Ratio	0.13	0.37	0.37	0.15	0.50	0.50	0.15	0.15	0.15		0.15	0.15
v/c Ratio	0.42	0.65	0.21	0.53	0.31	0.05	0.41	0.42	0.42		0.12	0.22
Control Delay	33.1	20.6	4.1	32.7	10.2	0.1	35.2	35.6	9.9		28.7	1.9
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	33.1	20.6	4.1	32.7	10.2	0.1	35.2	35.6	9.9		28.7	1.9
LOS	C	C	A	C	B	A	D	D	A		C	A
Approach Delay		20.4			14.9			23.3			8.1	
Approach LOS		C			B			C			A	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 65.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 18.0
 Intersection LOS: B
 Intersection Capacity Utilization 62.3%
 ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value







Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Existing Condition 2018 + Project

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp






























Existing Plus Project
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↓↓
Traffic Volume (veh/h)	0	0	594	9	51	279
Future Volume (Veh/h)	0	0	594	9	51	279
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	594	9	51	279
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			1200			
pX, platoon unblocked						
vC, conflicting volume	840	302			603	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	840	302			603	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			95	
cM capacity (veh/h)	292	701			984	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	396	207	144	186		
Volume Left	0	0	51	0		
Volume Right	0	9	0	0		
cSH	1700	1700	984	1700		
Volume to Capacity	0.23	0.12	0.05	0.11		
Queue Length 95th (ft)	0	0	4	0		
Control Delay (s)	0.0	0.0	3.5	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		1.5			
Approach LOS						
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			37.4%		ICU Level of Service	A
Analysis Period (min)			15			

Existing Condition 2018 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 		 	 	 
Traffic Volume (vph)	44	7	4	16	11	358	6	98	14	88	80	45
Future Volume (vph)	44	7	4	16	11	358	6	98	14	88	80	45
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.945			0.854			0.981				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1512	0	1520	2733	0	1520	3139	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.705			0.685		
Satd. Flow (perm)	2736	1512	0	1520	2733	0	1128	3139	0	1096	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			358			14				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	7	4	16	11	358	6	98	14	88	80	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	11	0	16	369	0	6	112	0	88	80	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Existing Condition 2018 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

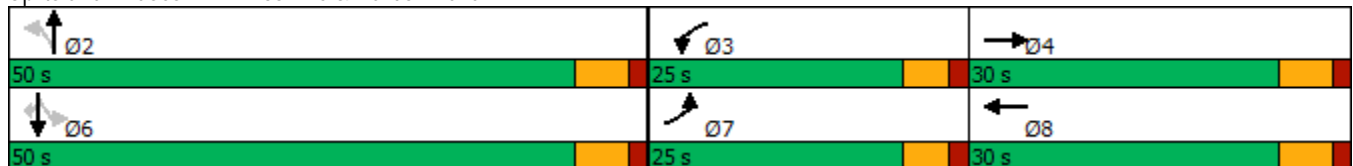
Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.2	10.2		5.1	8.3		10.9	10.9		10.9	10.9	10.9
Actuated g/C Ratio	0.15	0.29		0.15	0.24		0.31	0.31		0.31	0.31	0.31
v/c Ratio	0.11	0.02		0.07	0.40		0.02	0.11		0.26	0.16	0.09
Control Delay	15.8	9.9		16.5	4.1		11.0	9.6		13.2	11.5	2.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.8	9.9		16.5	4.1		11.0	9.6		13.2	11.5	2.2
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		14.6			4.7			9.7			10.2	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	34.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	7.7
Intersection LOS:	A
Intersection Capacity Utilization:	45.3%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 7: Pico Ave & Harbor Plaza



Existing Condition 2018 + Project

HCM Unsignalized Intersection Capacity Analysis

8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive

Existing Plus Project
PM Peak Hour

	↑	↗	↘	↓	↙	↖	
Movement	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	↑↑			↑↑	↗↘	↖↗	
Traffic Volume (veh/h)	41	0	0	85	57	317	
Future Volume (Veh/h)	41	0	0	85	57	317	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	41	0	0	85	57	317	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							40
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)	1019						
pX, platoon unblocked							
vC, conflicting volume			41		84	20	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			41		84	20	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		94	70	
cM capacity (veh/h)			1581		915	1059	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3
Volume Total	20	20	42	42	28	28	317
Volume Left	0	0	0	0	28	28	0
Volume Right	0	0	0	0	0	0	317
cSH	1700	1700	1700	1700	915	915	0
Volume to Capacity	0.01	0.01	0.03	0.03	0.03	0.03	Err
Queue Length 95th (ft)	0	0	0	0	2	2	Err
Control Delay (s)	0.0	0.0	0.0	0.0	9.1	9.1	Err
Lane LOS					A	A	F
Approach Delay (s)	0.0	0.0		Err			
Approach LOS					F		
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			23.2%	ICU Level of Service			A
Analysis Period (min)	15						

Existing Condition 2018 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	325	36	75	48	0	0	104	77
Future Volume (vph)	0	0	0	17	325	36	75	48	0	0	104	77
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.986							0.850
Flt Protected					0.998		0.950	0.988				
Satd. Flow (prot)	0	0	0	0	4723	0	1520	1581	0	0	3200	1360
Flt Permitted					0.998		0.950	0.988				
Satd. Flow (perm)	0	0	0	0	4723	0	1520	1581	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					12							164
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		558			376			248			301	
Travel Time (s)		12.7			8.5			5.6			6.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	17	325	36	75	48	0	0	104	77
Shared Lane Traffic (%)							20%					
Lane Group Flow (vph)	0	0	0	0	378	0	60	63	0	0	104	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Plus Project
PM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

Existing Plus Project
PM Peak Hour

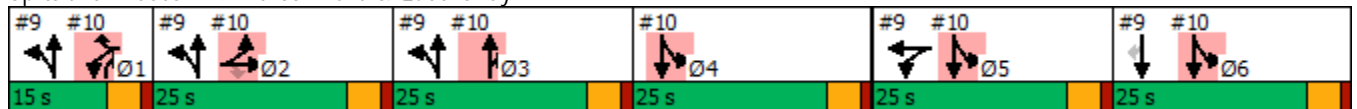


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effect Green (s)					12.7		31.7	31.7			9.1	9.1
Actuated g/C Ratio					0.16		0.41	0.41			0.12	0.12
v/c Ratio					0.49		0.10	0.10			0.28	0.25
Control Delay					32.6		9.8	9.7			37.4	2.0
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					32.6		9.8	9.7			37.4	2.0
LOS					C		A	A			D	A
Approach Delay					32.6			9.8			22.3	
Approach LOS					C			A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	78
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.49
Intersection Signal Delay:	25.8
Intersection LOS:	C
Intersection Capacity Utilization:	34.2%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr



Lanes, Volumes, Timings
 9: Harbor Plaza & Queensway Dr

Existing Plus Project
 PM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Existing Condition 2018 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	29	6	11	0	61	0	45	41	13	108	0
Future Volume (vph)	18	29	6	11	0	61	0	45	41	13	108	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor			0.850			0.850			0.850			
Frt Protected	0.950			0.950							0.995	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3184	0
Frt Permitted	0.950			0.950							0.995	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30				30
Link Distance (ft)		683			645			537				248
Travel Time (s)		11.6			11.0			12.2				5.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	18	29	6	11	0	61	0	45	41	13	108	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	29	6	11	0	61	0	45	41	0	121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Plus Project
PM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Existing Condition 2018 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

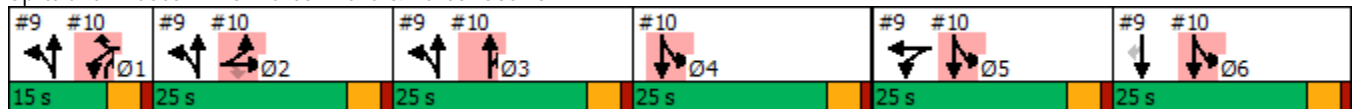
Existing Plus Project
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.4	8.4	8.4	8.8		8.8		8.3	18.6			40.2
Actuated g/C Ratio	0.11	0.11	0.11	0.11		0.11		0.11	0.24			0.52
v/c Ratio	0.11	0.06	0.02	0.06		0.13		0.13	0.10			0.07
Control Delay	38.3	36.4	0.2	36.6		0.6		37.3	0.5			2.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	38.3	36.4	0.2	36.6		0.6		37.3	0.5			2.6
LOS	D	D	A	D		A		D	A			A
Approach Delay		32.9				6.1		19.7				2.6
Approach LOS		C				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	78
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.49
Intersection Signal Delay:	12.6
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

Existing Plus Project
PM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Existing Condition 2018 + Project

HCM 6th AWSC
11: Windsor Way & Queens Hwy

Existing Plus Project
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑		↔	↔↔	
Traffic Vol, veh/h	189	183	0	5	29	0
Future Vol, veh/h	189	183	0	5	29	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	189	183	0	5	29	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9.5	7.2	7.9
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	76%	0%	0%	100%	100%
Vol Thru, %	24%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	122	5	15	15
LT Vol	189	0	0	15	15
Through Vol	61	122	0	0	0
RT Vol	0	0	5	0	0
Lane Flow Rate	250	122	5	14	14
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.342	0.154	0.006	0.024	0.017
Departure Headway (Hd)	4.931	4.553	4.146	5.912	4.203
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	730	787	868	609	857
Service Time	2.661	2.283	2.15	3.612	1.903
HCM Lane V/C Ratio	0.342	0.155	0.006	0.023	0.016
HCM Control Delay	10.2	8.1	7.2	8.8	7
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.5	0.5	0	0.1	0.1

BASIC FREEWAY SEGMENT ANALYSIS

File Name: SAT AM - 12_NB.xuf
Analyst: ECS
Agency: GHD
Jurisdiction: Caltrans
Date: 1/31/2019
Analysis Year: Existing Plus Project
Time Period Analyzed: Saturday AM Peak
Project Description: Carnival Cruise TIAR
Units: U.S. Customary

LOS and Performance Measures

Flow Rate, vp	285	pc/h/ln
Adjusted Capacity, cadj	2250	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	10	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	769	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	10	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2250	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Driver Population CAF	1.000	

Existing Condition 2018 + Project

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	769	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	285	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	285	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 15:13:55

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	SAT AM - 12_SB.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	262	pc/h/ln
Adjusted Capacity, cadj	2250	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	10	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	472	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	10	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2250	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Driver Population CAF	1.000	

Existing Condition 2018 + Project

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	472	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	262	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	262	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.8	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 15:15:22

BASIC FREEWAY SEGMENT ANALYSIS

File Name: SAT PM - 12_NB.xuf
Analyst: ECS
Agency: GHD
Jurisdiction: Caltrans
Date: 1/31/2019
Analysis Year: Existing Plus Project
Time Period Analyzed: Saturday PM Peak
Project Description: Carnival Cruise TIAR
Units: U.S. Customary

LOS and Performance Measures

Flow Rate, vp 151 pc/h/ln
Adjusted Capacity, cadj 2250 pc/h/ln
Speed, S 55.0 mi/h
Density, D 2.7 pc/mi/ln
Level of Service, LOS A

Step 1: Input Data

Number of Lanes, N 3 ln
Lane Width 12 ft
Segment Length - ft
Terrain Type Level
 Percent Grade - %
 Grade Length - mi
Right-Side Lateral Clearance 10 ft
Total Ramp Density, TRD 0.00 ramps/mi

Demand Volume 409 veh/h
Peak Hour Factor, PHF 0.90
Percent Total Trucks 0.00 %
 Percent Single-Unit Trucks, SUT - %
 Percent Tractor-Trailers, TT - %

Step 2: Estimate and Adjust FFS

Estimating FFS
Measured or Base FFS Base
Base Free-Flow Speed, BFFS 55.0 mi/h
Lane Width 12 ft
 Lane Width Adjustment, fLW 0.0 mi/h
Right-Side Lateral Clearance 10 ft
 Right-Side Lateral Clearance Adj., fRLC 0.0 mi/h
Total Ramp Density, TRD 0.00 ramps/mi
 TRD Adjustment 0.0 mi/h
Free-Flow Speed, FFS 55.0 mi/h

Speed Adjustments
Driver Population All Familiar
 Driver Population SAF 1.000
Weather Type Non-Severe Weather
 Weather Type SAF 1.000
Final Speed Adjustment Factor, SAF 1.000
Adjusted Free-Flow Speed, FFSadj 55.0 mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj 55.0 mi/h
Capacity, c 2250 pc/h/ln

Capacity Adjustments
Driver Population All Familiar
 Driver Population CAF 1.000

Existing Condition 2018 + Project

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	409	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	151	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	151	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	2.7	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 15:22:29

BASIC FREEWAY SEGMENT ANALYSIS

File Name: SAT PM - 12_SB.xuf
Analyst: ECS
Agency: GHD
Jurisdiction: Caltrans
Date: 1/31/2019
Analysis Year: Existing Plus Project
Time Period Analyzed: Saturday PM Peak
Project Description: Carnival Cruise TIAR
Units: U.S. Customary

LOS and Performance Measures

Flow Rate, vp 362 pc/h/ln
Adjusted Capacity, cadj 2250 pc/h/ln
Speed, S 55.0 mi/h
Density, D 6.6 pc/mi/ln
Level of Service, LOS A

Step 1: Input Data

Number of Lanes, N 2 ln
Lane Width 12 ft
Segment Length - ft
Terrain Type Level
 Percent Grade - %
 Grade Length - mi
Right-Side Lateral Clearance 10 ft
Total Ramp Density, TRD 0.00 ramps/mi

Demand Volume 651 veh/h
Peak Hour Factor, PHF 0.90
Percent Total Trucks 0.00 %
 Percent Single-Unit Trucks, SUT - %
 Percent Tractor-Trailers, TT - %

Step 2: Estimate and Adjust FFS

Estimating FFS
Measured or Base FFS Base
Base Free-Flow Speed, BFFS 55.0 mi/h
Lane Width 12 ft
 Lane Width Adjustment, fLW 0.0 mi/h
Right-Side Lateral Clearance 10 ft
 Right-Side Lateral Clearance Adj., fRLC 0.0 mi/h
Total Ramp Density, TRD 0.00 ramps/mi
 TRD Adjustment 0.0 mi/h
Free-Flow Speed, FFS 55.0 mi/h

Speed Adjustments
Driver Population All Familiar
 Driver Population SAF 1.000
Weather Type Non-Severe Weather
 Weather Type SAF 1.000
Final Speed Adjustment Factor, SAF 1.000
Adjusted Free-Flow Speed, FFSadj 55.0 mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj 55.0 mi/h
Capacity, c 2250 pc/h/ln

Capacity Adjustments
Driver Population All Familiar
 Driver Population CAF 1.000

Existing Condition 2018 + Project

Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	651	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	362	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	362	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2250	pc/h/ln
Breakpoint, BP	1800	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	6.6	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 15:23:16

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	917	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	8.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	825	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	825	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	458	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	458	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	8.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	825	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	458	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.35	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:16:15

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name: SAT AM - 14.xuf
 Analyst: ECS
 Agency: GHD
 Jurisdiction: POLB/COLB
 Date: 1/31/2019
 Analysis Year: Existing Plus Project
 Time Period Analyzed: Saturday AM Peak
 Project Description: Carnival Cruise TIAR
 Units: U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	524	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	472	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	472	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	262	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	262	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	472	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	262	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.07	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:16:35

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	521	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	469	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	469	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	260	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	260	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.7	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	469	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	261	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.07	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:24:17

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name: SAT PM - 14.xuf
 Analyst: ECS
 Agency: GHD
 Jurisdiction: POLB/COLB
 Date: 1/31/2019
 Analysis Year: Existing Plus Project
 Time Period Analyzed: Saturday PM Peak
 Project Description: Carnival Cruise TIAR
 Units: U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	723	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	6.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	651	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	651	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	362	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	362	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	6.6	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	651	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	362	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.23	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:24:37

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: EB

LOS and Performance Measures

Flow rate, v	1311	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	11.9	pc/mi/ln
Level of Service, LOS	B	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1180	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1180	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	656	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	656	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	11.9	pc/mi/ln
Level of service, LOS	B	

Bicycle Level of Service

Hourly Directional Volume, V	1180	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	656	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.53	
Bicycle LOS	C	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:17:28

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: WB

LOS and Performance Measures

Flow rate, v	1196	pc/h/ln
Capacity, C	6300	pc/h/ln
Speed, S	55.0	mi/h
Density, D	7.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1076	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1076	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	399	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	399	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	7.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	1076	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	399	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.28	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:17:50

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: EB

LOS and Performance Measures

Flow rate, v ₉₅	1234	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	11.2	pc/mi/ln
Level of Service, LOS	B	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1111	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1111	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	617	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	617	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	11.2	pc/mi/ln
Level of service, LOS	B	

Bicycle Level of Service

Hourly Directional Volume, V	1111	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	617	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.50	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:25:23

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 15.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: WB

LOS and Performance Measures

Flow rate, v	1480	pc/h/ln
Capacity, C	6300	pc/h/ln
Speed, S	55.0	mi/h
Density, D	9.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	1332	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1332	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	493	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	493	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	9.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	1332	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	493	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.39	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:25:57

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	652	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	6.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	587	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	587	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	326	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	326	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	6.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	587	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	326	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.18	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:18:38

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	554	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	499	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	499	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	277	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	277	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	5.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	499	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	277	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.10	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:19:06

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	246	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	221	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	221	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	123	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	123	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	221	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	123	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.68	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:26:50

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	688	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	6.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	619	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	619	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	344	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	344	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	6.9	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	619	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	344	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.21	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:27:10

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	290	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	261	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	261	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	145	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	145	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.9	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	261	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	145	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.77	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:20:04

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v ₉₅	377	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	339	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	339	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	188	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	188	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	339	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	188	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.90	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:30:41

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	894	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	6.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	805	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	805	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	298	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	298	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	6.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	805	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	298	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.13	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:20:48

Existing Condition 2018 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v ₉₅	377	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	339	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	339	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	188	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	188	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	339	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	188	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.90	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:27:56

Existing Condition 2018 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT AM - 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	553	pc/h/ln
Capacity, C	5700	pc/h/ln
Speed, S	45.0	mi/h
Density, D	4.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	498	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	45.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	45.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	45.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	45.0	mi/h
Capacity, c	1900	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	1900	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	498	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	184	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	184	pc/h/ln
Free-Flow Speed, FFS	45.0	mi/h
Capacity, c	1900	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	45.0	mi/h
Density, D	4.1	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	498	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	184	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.89	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:21:36

Existing Condition 2018 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	SAT PM - 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	513	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	462	veh/h
Peak Hour Factor, PHF	0.90	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Existing Condition 2018 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	462	veh/h
Peak Hour Factor, PHF	0.90	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	171	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	171	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.4	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	462	veh
Peak Hour Factor, PHF	0.90	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	171	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.85	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 15:28:45

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	8.5	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	9.3	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	825		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	825	55	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	917	61	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	917		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	917	4500	No
vR	61	2000	No
v12	917	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	917		pc/h
Length of Deceleration Lane, LA	400		ft
Density in Off-Ramp Influence Area, DR	8.5		pc/mi/ln
Density in Off-Ramp Influence Area, DR	8.5		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	917		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	917		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.433		
Average Speed in Ramp Influence Area, SR	49.4		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	49.4		mi/h
Density Across All Lanes, D	9.3		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:04:50

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	5.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	5.3	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	469		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	469	60	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	521	67	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	521		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	521	4500	No
vR	67	2000	No
v12	521	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	521	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	5.1	pc/mi/ln
Density in Off-Ramp Influence Area, DR	5.1	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	521	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	521	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.434	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.4	mi/h
Density Across All Lanes, D	5.3	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:22:26

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 16.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.7	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	0	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	47.9	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	47.9	mi/h
Density Across All Lanes, D	9.1	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1180		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1180	1180	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1311	1311	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.450		
Flow Rate in Lanes 1 and 2, v12	1311		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	1311	6750	No
vR	1311	4000	No
v12	1311	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1311		pc/h
Length of Deceleration Lane, LA	1200		ft
Density in Off-Ramp Influence Area, DR	4.7		pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.7		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	1311		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1311		pc/h
Number of Outer Lanes on Freeway, NO	1		ln
Speed Index for Off-Ramp, DS	0.546		
Average Speed in Ramp Influence Area, SR	47.9		mi/h
Average Flow in Outer Lanes, vOA	0		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3		mi/h
Average Speed for On-Ramp Junction, S	47.9		mi/h
Density Across All Lanes, D	9.1		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:07:17

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 16.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/30/2019
Analysis Year:	Existing
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	0	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	48.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	48.0	mi/h
Density Across All Lanes, D	8.6	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1111		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1111	1111	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1234	1234	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.450		
Flow Rate in Lanes 1 and 2, v12	1234		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	1234	6750	No
vR	1234	4000	No
v12	1234	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1234	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	4.1	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.1	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1234	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1234	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.539	
Average Speed in Ramp Influence Area, SR	48.0	mi/h
Average Flow in Outer Lanes, vOA	0	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	48.0	mi/h
Density Across All Lanes, D	8.6	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:23:17

Existing Condition 2018 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT AM - 17.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	0		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.8	mi/h	
Average Speed in Outer Lanes of Freeway, SO	55.0	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.8	mi/h	
Density Across All Lanes, D	7.6	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	0	1076	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	0	1196	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	0.555		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018 + Project

	Actual	Maximum	Violation?
vFO	1196	6750	No
vR	1196	4000	No
vR12	1196	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	1196		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Length of Acceleration Lane, LA	2400		ft
Density in On-Ramp Influence Area, DR	0.0		pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Length of Acceleration Lane, LA	2400		ft
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	0		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1196		pc/h
Number of Outer Lanes on Freeway, NO	1		ln
Speed Index for On-Ramp, MS	0.166		
Average Speed in Ramp Influence Area, SR	52.8		mi/h
Average Flow in Outer Lanes, vOA	0		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	55.0		mi/h
Average Speed for On-Ramp Junction, S	52.8		mi/h
Density Across All Lanes, D	7.6		pc/mi/ln

Managed Lane Analysis

Managed Lane Type	Continuous Access		
Number of Lanes	1	ln	
Free-Flow Speed	75.4	mi/h	
Terrain Type	Level		
Percent Grade	-	%	
Grade Length	-	mi	
Demand Volume, VML	0	veh/h	
Peak Hour Factor, PHF	0.94		
Percent Total Trucks	0.00	%	
Percent Single-Unit Trucks, SUT	-	%	
Percent Tractor-Trailers, TT	-	%	
Proportion of Total Trucks, PT	0.0000		
Heavy Vehicle PCE, ET	2.000		
Heavy Vehicle Adjustment Factor, fHV	1.000		
Demand Flow Rate, vpML	0	pc/h/ln	
Driver Population	All Familiar		

Existing Condition 2018 + Project

Driver Population SAF	1.000	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Weather Type CAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Free-Flow Speed	75.4	mi/h
Adjusted Capacity	1804	pc/mi/ln
Breakpoint, BPML	501	pc/mi/ln
Speed 1, S1	75.4	mi/h
Speed 2, S2	0.0	mi/h
Speed 3, S3	0.0	mi/h
Indicator Variable, Ic	0	
Space-Mean Speed, SML	75.4	mi/h
Density, DML	0.0	pc/mi/ln
Level of Service, LOSML	A	

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:09:00

Existing Condition 2018 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT PM - 17.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	1.4	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	0		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.8	mi/h	
Average Speed in Outer Lanes of Freeway, SO	55.0	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.8	mi/h	
Density Across All Lanes, D	9.3	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	0	1332	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	0	1480	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	0.555		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018 + Project

	Actual	Maximum	Violation?
vFO	1480	6750	No
vR	1480	4000	No
vR12	1480	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	1480		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Length of Acceleration Lane, LA	2400		ft
Density in On-Ramp Influence Area, DR	1.4		pc/mi/ln
Density in On-Ramp Influence Area, DR	1.4		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Length of Acceleration Lane, LA	2400		ft
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	0		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1480		pc/h
Number of Outer Lanes on Freeway, NO	1		ln
Speed Index for On-Ramp, MS	0.170		
Average Speed in Ramp Influence Area, SR	52.8		mi/h
Average Flow in Outer Lanes, vOA	0		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	55.0		mi/h
Average Speed for On-Ramp Junction, S	52.8		mi/h
Density Across All Lanes, D	9.3		pc/mi/ln

Managed Lane Analysis

Managed Lane Type	Continuous Access		
Number of Lanes	1	ln	
Free-Flow Speed	75.4	mi/h	
Terrain Type	Level		
Percent Grade	-	%	
Grade Length	-	mi	
Demand Volume, VML	0	veh/h	
Peak Hour Factor, PHF	0.94		
Percent Total Trucks	0.00	%	
Percent Single-Unit Trucks, SUT	-	%	
Percent Tractor-Trailers, TT	-	%	
Proportion of Total Trucks, PT	0.0000		
Heavy Vehicle PCE, ET	2.000		
Heavy Vehicle Adjustment Factor, fHV	1.000		
Demand Flow Rate, vpML	0	pc/h/ln	
Driver Population	All Familiar		

Existing Condition 2018 + Project

Driver Population SAF	1.000	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Weather Type CAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Free-Flow Speed	75.4	mi/h
Adjusted Capacity	1804	pc/mi/ln
Breakpoint, BPML	501	pc/mi/ln
Speed 1, S1	75.4	mi/h
Speed 2, S2	0.0	mi/h
Speed 3, S3	0.0	mi/h
Indicator Variable, Ic	0	
Space-Mean Speed, SML	75.4	mi/h
Density, DML	0.0	pc/mi/ln
Level of Service, LOSML	A	

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:48:59

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 18.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.5	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	43.6	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	43.6	mi/h
Density Across All Lanes, D	5.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	45.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	407		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	407	359	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	452	399	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	452		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	452	4500	No
vR	399	2000	No
v12	452	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	452		pc/h
Length of Deceleration Lane, LA	400		ft
Density in Off-Ramp Influence Area, DR	4.5		pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.5		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	45.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	452		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	452		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.464		
Average Speed in Ramp Influence Area, SR	43.6		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	43.6		mi/h
Density Across All Lanes, D	5.2		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:15:30

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 18.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	6.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	3	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	43.5	mi/h
Average Speed in Outer Lanes of Freeway, SO	49.4	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	43.5	mi/h
Density Across All Lanes, D	4.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	45.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	569		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	569	561	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	632	623	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.716		
Flow Rate in Lanes 1 and 2, v12	629		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	632	6750	No
vR	623	2000	No
v12	629	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	629	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	6.1	pc/mi/ln
Density in Off-Ramp Influence Area, DR	6.1	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	45.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	632	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	629	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.484	
Average Speed in Ramp Influence Area, SR	43.5	mi/h
Average Flow in Outer Lanes, vOA	3	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	49.4	mi/h
Average Speed for On-Ramp Junction, S	43.5	mi/h
Density Across All Lanes, D	4.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:25:14

Existing Condition 2018 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT AM - 19.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	3.5	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	0	331	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	0	368	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018 + Project

	Actual	Maximum	Violation?
vFO	368	4500	No
vR	368	4000	No
vR12	368	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	368		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Length of Acceleration Lane, LA	2400		ft
Density in On-Ramp Influence Area, DR	0.0		pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Length of Acceleration Lane, LA	2400		ft
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	0		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	368		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for On-Ramp, MS	0.159		
Average Speed in Ramp Influence Area, SR	52.9		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	52.9		mi/h
Density Across All Lanes, D	3.5		pc/mi/ln

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 3/5/2019 16:23:43

Existing Condition 2018 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT PM - 19.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	4.5	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	0		veh/h
Peak Hour Factor, PHF	0.90		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	0	433	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	0	481	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	0		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Existing Condition 2018 + Project

	Actual	Maximum	Violation?
vFO	481	4500	No
vR	481	4000	No
vR12	481	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	481		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Length of Acceleration Lane, LA	2400		ft
Density in On-Ramp Influence Area, DR	0.0		pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Length of Acceleration Lane, LA	2400		ft
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	0		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	0		pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	481		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for On-Ramp, MS	0.159		
Average Speed in Ramp Influence Area, SR	52.9		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	52.9		mi/h
Density Across All Lanes, D	4.5		pc/mi/ln

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 3/5/2019 16:24:30

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	505		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	505	282	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	561	313	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	561		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	561	4500	No
vR	313	4000	No
v12	561	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	561		pc/h
Length of Deceleration Lane, LA	1200		ft
Density in Off-Ramp Influence Area, DR	0.0		pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	561		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	561		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.456		
Average Speed in Ramp Influence Area, SR	49.1		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	49.1		mi/h
Density Across All Lanes, D	5.7		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:32:32

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	6.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	545		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	545	255	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	606	283	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	606		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	606	4500	No
vR	283	4000	No
v12	606	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	606		pc/h
Length of Deceleration Lane, LA	1200		ft
Density in Off-Ramp Influence Area, DR	0.0		pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	606		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	606		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.453		
Average Speed in Ramp Influence Area, SR	49.1		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	49.1		mi/h
Density Across All Lanes, D	6.2		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:27:50

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	8.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.2	mi/h
Density Across All Lanes, D	9.1	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	805		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	805	218	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	894	242	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	894		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	894	4500	No
vR	242	2000	No
v12	894	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	894		pc/h
Length of Deceleration Lane, LA	400		ft
Density in Off-Ramp Influence Area, DR	8.3		pc/mi/ln
Density in Off-Ramp Influence Area, DR	8.3		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	894		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	894		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.450		
Average Speed in Ramp Influence Area, SR	49.2		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	49.2		mi/h
Density Across All Lanes, D	9.1		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:21:26

Existing Condition 2018 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	Existing Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	5.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	462		veh/h
Peak Hour Factor, PHF	0.90		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	462	241	veh/h
Peak Hour Factor, PHF	0.90	0.90	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	513	268	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	513		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Existing Condition 2018 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	513	4500	No
vR	268	2000	No
v12	513	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	513		pc/h
Length of Deceleration Lane, LA	400		ft
Density in Off-Ramp Influence Area, DR	5.1		pc/mi/ln
Density in Off-Ramp Influence Area, DR	5.1		veh/mi/ln
Level of Service, LOS	A		

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0		mi/h
Ramp Free-Flow Speed, SFR	35.0		mi/h
Driver Population	All Familiar		
Driver Population SAF	1.000		
Weather Type	Non-Severe Weather		
Weather Type SAF	1.000		
Final Speed Adjustment Factor, SAF	1.000		
Demand Flow Rate on Freeway, vF	513		pc/h
Demand Flow Rate in Lanes 1 and 2, v12	513		pc/h
Number of Outer Lanes on Freeway, NO	0		ln
Speed Index for Off-Ramp, DS	0.452		
Average Speed in Ramp Influence Area, SR	49.1		mi/h
Average Flow in Outer Lanes, vOA	-		pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-		mi/h
Average Speed for On-Ramp Junction, S	49.1		mi/h
Density Across All Lanes, D	5.2		pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 1/31/2019 16:33:34

Opening Year 2020

HCM 6th TWSC

2020 Conditions

1: Pico Ave & WB Ocean Blvd Ramps/WB Ocean Blvd Off Ramp

AM Peak Hour

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↵	↵		↵	↑↑			↑↑	
Traffic Vol, veh/h	0	0	0	6	1	19	0	53	0	0	164	0
Future Vol, veh/h	0	0	0	6	1	19	0	53	0	0	164	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	50	120	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	6	1	19	0	53	0	0	164	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	191	217	82	135	217	27	164	0	-	-	-	0
Stage 1	164	164	-	53	53	-	-	-	-	-	-	-
Stage 2	27	53	-	82	164	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	757	685	968	828	685	1049	1427	-	0	0	-	-
Stage 1	828	766	-	959	855	-	-	-	0	0	-	-
Stage 2	993	855	-	923	766	-	-	-	0	0	-	-
Platoon blocked, %	-											
Mov Cap-1 Maneuver	743	685	968	828	685	1049	1427	-	-	-	-	-
Mov Cap-2 Maneuver	743	685	-	828	685	-	-	-	-	-	-	-
Stage 1	828	766	-	959	855	-	-	-	-	-	-	-
Stage 2	974	855	-	923	766	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB			
HCM Control Delay, s	0		8.8		0			0			
HCM LOS	A		A								

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1WBLn2	SBT	SBR
Capacity (veh/h)	1427	-	- 828 1022	-	-
HCM Lane V/C Ratio	-	-	- 0.007 0.02	-	-
HCM Control Delay (s)	0	-	0 9.4 8.6	-	-
HCM Lane LOS	A	-	A A A	-	-
HCM 95th %tile Q(veh)	0	-	- 0 0.1	-	-

Opening Year 2020

HCM Unsignalized Intersection Capacity Analysis
1a: Pico Ave & WB Ocean Blvd On Ramp

2020 Conditions
AM Peak Hour

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	83	53	164	40
Future Volume (Veh/h)	0	0	83	53	164	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	83	53	164	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				1264		
pX, platoon unblocked						
vC, conflicting volume	376	102	204			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	376	102	204			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	94			
cM capacity (veh/h)	567	940	1380			
Direction, Lane #						
	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	83	26	26	109	95	
Volume Left	83	0	0	0	0	
Volume Right	0	0	0	0	40	
cSH	1380	1700	1700	1700	1700	
Volume to Capacity	0.06	0.02	0.02	0.06	0.06	
Queue Length 95th (ft)	5	0	0	0	0	
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	4.7			0.0		
Approach LOS						
Intersection Summary						
Average Delay	1.9					
Intersection Capacity Utilization	19.0%			ICU Level of Service	A	
Analysis Period (min)	15					

Opening Year 2020

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

2020 Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	1	58	49	0	362	140	4	7	247	6
Future Volume (vph)	4	1	1	58	49	0	362	140	4	7	247	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	150		0	0		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			50			25			50		
Lane Util. 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
Ped Bike Factor			0.850					0.996			0.996	
Flt Protected		0.962			0.974		0.950			0.950		
Satd. Flow (prot)	0	1539	1360	0	1558	1600	1520	3187	0	1368	3187	0
Flt Permitted		0.780			0.828		0.950			0.950		
Satd. Flow (perm)	0	1248	1360	0	1325	1600	1520	3187	0	1368	3187	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117					3				3
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		465			742			1144			796	
Travel Time (s)		10.6			16.9			26.0			18.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	1	1	58	49	0	362	140	4	7	247	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	5	1	0	107	0	362	144	0	7	253	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1	11.1	11.1	11.1	11.1	9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	34.8%	26.1%		43.5%	43.5%	

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

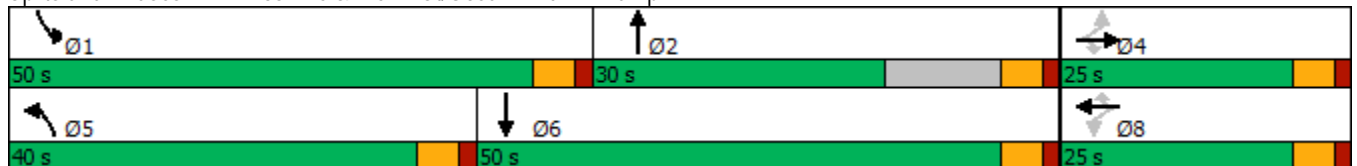
2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9	19.9	19.9	19.9	19.9	34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1			5.1	5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)				4.0	4.0	4.0						4.0
Flash Dont Walk (s)				25.0	25.0	25.0						25.0
Pedestrian Calls (#/hr)				0	0	0						0
Act Effect Green (s)		10.9	10.9			11.2		22.0	40.0		10.9	12.8
Actuated g/C Ratio		0.19	0.19			0.19		0.38	0.68		0.19	0.22
v/c Ratio		0.02	0.00			0.42		0.63	0.07		0.03	0.36
Control Delay		24.2	0.0			30.4		22.5	6.8		28.0	24.4
Queue Delay		0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay		24.2	0.0			30.4		22.5	6.8		28.0	24.4
LOS		C	A			C		C	A		C	C
Approach Delay		20.2				30.4		18.0				24.5
Approach LOS		C				C		B				C

Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	58.6
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	21.5
Intersection LOS:	C
Intersection Capacity Utilization:	58.4%
ICU Level of Service:	B
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Opening Year 2020

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	450	33	27	337	363	19	65	66	10	1	58
Future Volume (vph)	41	450	33	27	337	363	19	65	66	10	1	58
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor		0.97										
Frt		0.990			0.955	0.850		0.924				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4590	0	1520	3056	1360	1520	2957	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.757			0.727		
Satd. Flow (perm)	1520	4590	0	1520	3056	1360	1211	2957	0	1163	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			91	218		66				73
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)			41									
Confl. Bikes (#/hr)			450									
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	41	450	33	27	337	363	19	65	66	10	1	58
Shared Lane Traffic (%)						40%						
Lane Group Flow (vph)	41	483	0	27	482	218	19	131	0	10	1	58
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

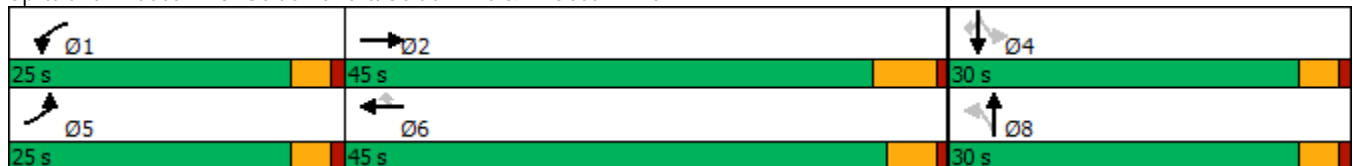
2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	5.9	26.2		5.6	25.1	25.1	6.7	6.7		6.7	6.7	6.7
Actuated g/C Ratio	0.14	0.63		0.14	0.61	0.61	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.19	0.17		0.13	0.26	0.24	0.10	0.24		0.05	0.00	0.21
Control Delay	19.2	5.3		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.2	5.3		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.6
LOS	B	A		B	A	A	B	B		B	B	A
Approach Delay		6.4			5.4			11.8			8.3	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	41.4
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.26
Intersection Signal Delay:	6.5
Intersection LOS:	A
Intersection Capacity Utilization:	42.7%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd



Opening Year 2020

Lanes, Volumes, Timings

2020 Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	318	31	90	645	49	40	22	56	113	73	72
Future Volume (vph)	30	318	31	90	645	49	40	22	56	113	73	72
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4738	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.420			0.552			0.709			0.487		
Satd. Flow (perm)	672	4738	0	883	4800	1360	1134	3200	1360	779	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				63			68			72
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	30	318	31	90	645	49	40	22	56	113	73	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	349	0	90	645	49	40	22	56	113	73	72
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7		4
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.5	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings

2020 Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

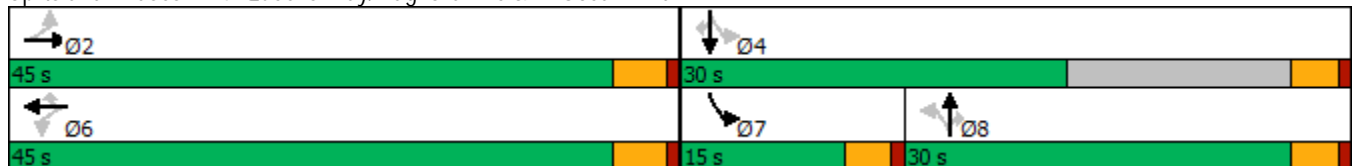
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	22.6	22.6		22.6	22.6	22.6	7.6	7.6	7.6	17.4	17.2	17.2
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.16	0.16	0.16	0.36	0.35	0.35
v/c Ratio	0.10	0.16		0.22	0.29	0.07	0.23	0.04	0.21	0.29	0.07	0.14
Control Delay	10.4	8.4		11.6	9.7	2.8	24.5	20.8	7.9	12.8	10.5	4.2
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	10.4	8.4		11.6	9.7	2.8	24.5	20.8	7.9	12.8	10.5	4.2
LOS	B	A		B	A	A	C	C	A	B	B	A
Approach Delay		8.6			9.5			15.9			9.8	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	48.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.29
Intersection Signal Delay:	9.8
Intersection LOS:	A
Intersection Capacity Utilization:	58.6%
ICU Level of Service:	B
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd


































Opening Year 2020

Lanes, Volumes, Timings

2020 Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	  			 			 	 
Traffic Volume (vph)	108	1236	132	179	221	24	19	8	81	24	7	56
Future Volume (vph)	108	1236	132	179	221	24	19	8	81	24	7	56
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Fr _t			0.850			0.850			0.850			0.850
Fl _t Protected	0.950			0.950			0.950	0.979			0.963	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1566	1360	0	1541	1360
Fl _t Permitted	0.950			0.950			0.737	0.858			0.765	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1179	1373	1360	0	1224	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130			54			81			68
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1182			1066			1058			209	
Travel Time (s)		20.1			18.2			24.0			4.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	108	1236	132	179	221	24	19	8	81	24	7	56
Shared Lane Traffic (%)							30%					
Lane Group Flow (vph)	108	1236	132	179	221	24	13	14	81	0	31	56
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
5: Queen Mary/S Chestnut PI & W Shoreline Dr

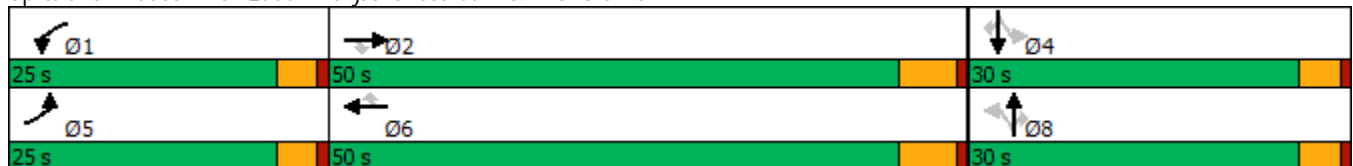
2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	7.5	36.5	36.5	9.3	43.0	43.0	7.6	7.6	7.6		7.4	7.4
Actuated g/C Ratio	0.12	0.57	0.57	0.14	0.67	0.67	0.12	0.12	0.12		0.11	0.11
v/c Ratio	0.34	0.68	0.16	0.46	0.07	0.03	0.09	0.09	0.35		0.22	0.26
Control Delay	33.5	13.3	2.3	32.7	6.4	0.7	32.5	32.1	13.1		34.9	10.4
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	33.5	13.3	2.3	32.7	6.4	0.7	32.5	32.1	13.1		34.9	10.4
LOS	C	B	A	C	A	A	C	C	B		C	B
Approach Delay		13.8			17.2			17.9			19.2	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 64.6
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 14.9
 Intersection LOS: B
 Intersection Capacity Utilization 67.4%
 ICU Level of Service C
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Opening Year 2020

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp

2020 Conditions
AM Peak Hour
































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Volume (veh/h)	0	0	525	8	13	241
Future Volume (Veh/h)	0	0	525	8	13	241
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	525	8	13	241
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			1200			
pX, platoon unblocked						
vC, conflicting volume	676	266			533	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	676	266			533	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	387	738			1045	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	350	183	93	161		
Volume Left	0	0	13	0		
Volume Right	0	8	0	0		
cSH	1700	1700	1045	1700		
Volume to Capacity	0.21	0.11	0.01	0.09		
Queue Length 95th (ft)	0	0	1	0		
Control Delay (s)	0.0	0.0	1.3	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		0.5			
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			22.7%		ICU Level of Service A	
Analysis Period (min)			15			

Opening Year 2020

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

2020 Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 		 	 	 
Traffic Volume (vph)	55	5	5	11	6	422	6	122	17	106	130	46
Future Volume (vph)	55	5	5	11	6	422	6	122	17	106	130	46
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.925			0.852			0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1480	0	1520	2726	0	1520	3142	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.674			0.668		
Satd. Flow (perm)	2736	1480	0	1520	2726	0	1078	3142	0	1069	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			422			17				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	55	5	5	11	6	422	6	122	17	106	130	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	10	0	11	428	0	6	139	0	106	130	46
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings 7: Pico Ave & Harbor Plaza

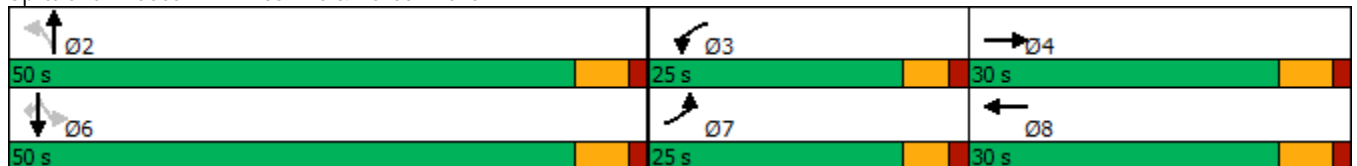
2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.5	10.7		5.1	8.7		11.6	11.6		11.6	11.6	11.6
Actuated g/C Ratio	0.15	0.30		0.14	0.24		0.32	0.32		0.32	0.32	0.32
v/c Ratio	0.13	0.02		0.05	0.44		0.02	0.14		0.31	0.25	0.09
Control Delay	16.8	9.8		17.9	4.1		11.2	9.7		14.0	12.3	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	16.8	9.8		17.9	4.1		11.2	9.7		14.0	12.3	2.1
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		15.7			4.4			9.7			11.3	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other				
Cycle Length:	105				
Actuated Cycle Length:	36				
Natural Cycle:	70				
Control Type:	Actuated-Uncoordinated				
Maximum v/c Ratio:	0.44				
Intersection Signal Delay:	8.1			Intersection LOS:	A
Intersection Capacity Utilization	55.2%			ICU Level of Service	B
Analysis Period (min)	15				
* User Entered Value					

Splits and Phases: 7: Pico Ave & Harbor Plaza



Opening Year 2020

HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive





















2020 Conditions
AM Peak Hour

	↑	↗	↖	↓	↙	↘	
Movement	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	↑↑			↑↑	↗↖	↗↖	
Traffic Volume (veh/h)	32	0	0	65	50	307	
Future Volume (Veh/h)	32	0	0	65	50	307	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	32	0	0	65	50	307	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)						40	
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)	1019						
pX, platoon unblocked							
vC, conflicting volume			32		64	16	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			32		64	16	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		95	71	
cM capacity (veh/h)			1593		939	1066	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3
Volume Total	16	16	32	32	25	25	307
Volume Left	0	0	0	0	25	25	0
Volume Right	0	0	0	0	0	0	307
cSH	1700	1700	1700	1700	939	939	0
Volume to Capacity	0.01	0.01	0.02	0.02	0.03	0.03	Err
Queue Length 95th (ft)	0	0	0	0	2	2	Err
Control Delay (s)	0.0	0.0	0.0	0.0	8.9	8.9	Err
Lane LOS					A	A	F
Approach Delay (s)	0.0			0.0	Err		
Approach LOS					F		
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			22.8%	ICU Level of Service		A	
Analysis Period (min)			15				

Opening Year 2020

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						 	
Traffic Volume (vph)	0	0	0	18	479	23	81	48	0	0	82	62
Future Volume (vph)	0	0	0	18	479	23	81	48	0	0	82	62
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.993							0.850
Flt Protected					0.998		0.950	0.987				
Satd. Flow (prot)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Flt Permitted					0.998		0.950	0.987				
Satd. Flow (perm)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5							164
Link Speed (mph)		30			30			30				30
Link Distance (ft)		558			376			248				301
Travel Time (s)		12.7			8.5			5.6				6.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	0	0	0	18	479	23	81	48	0	0	82	62
Shared Lane Traffic (%)							22%					
Lane Group Flow (vph)	0	0	0	0	520	0	63	66	0	0	82	62
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Carnival TIA
GHD

Synchro 10 Report

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Conditions
AM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

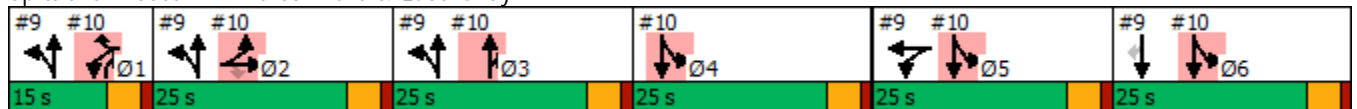
2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead					Lag	Lag	
Lead-Lag Optimize?				Yes	Yes					Yes	Yes	
Vehicle Extension (s)				3.0	3.0					3.0	3.0	
Minimum Gap (s)				3.0	3.0					3.0	3.0	
Time Before Reduce (s)				0.0	0.0					0.0	0.0	
Time To Reduce (s)				0.0	0.0					0.0	0.0	
Recall Mode				None	None					None	None	
Walk Time (s)				6.0	6.0					6.0	6.0	
Flash Dont Walk (s)				14.0	14.0					14.0	14.0	
Pedestrian Calls (#/hr)				0	0					0	0	
Act Effct Green (s)					15.6		34.5	34.5			8.4	8.4
Actuated g/C Ratio					0.19		0.42	0.42			0.10	0.10
v/c Ratio					0.58		0.10	0.10			0.25	0.22
Control Delay					33.6		13.3	13.3			39.1	1.8
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					33.6		13.3	13.3			39.1	1.8
LOS					C		B	B			D	A
Approach Delay					33.6			13.3			23.0	
Approach LOS					C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	82.9
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	28.4
Intersection LOS:	C
Intersection Capacity Utilization:	37.4%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr



Lanes, Volumes, Timings
 9: Harbor Plaza & Queensway Dr

2020 Conditions
 AM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Opening Year 2020

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	26	2	22	0	91	0	23	32	22	74	0
Future Volume (vph)	14	26	2	22	0	91	0	23	32	22	74	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.989	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3165	0
Flt Permitted	0.950			0.950							0.989	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3165	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	26	2	22	0	91	0	23	32	22	74	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	26	2	22	0	91	0	23	32	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Carnival TIA
GHD

Synchro 10 Report

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

2020 Conditions
AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

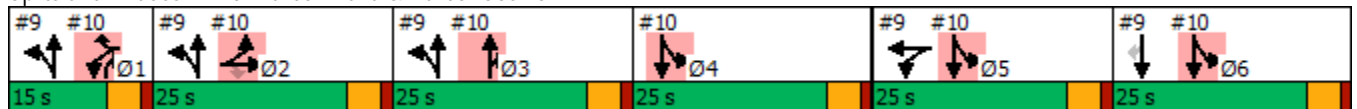
2020 Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.1	8.1	8.1	8.6		8.6		8.1	16.7			41.8
Actuated g/C Ratio	0.10	0.10	0.10	0.10		0.10		0.10	0.20			0.50
v/c Ratio	0.09	0.06	0.01	0.14		0.21		0.07	0.09			0.06
Control Delay	39.3	37.5	0.0	38.7		1.4		37.9	0.4			3.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	39.3	37.5	0.0	38.7		1.4		37.9	0.4			3.5
LOS	D	D	A	D		A		D	A			A
Approach Delay		36.3				8.6		16.1				3.5
Approach LOS		D				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	82.9
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	12.2
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
 10: Harbor Plaza & Harbor Scenic Dr

2020 Conditions
 AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Opening Year 2020

HCM 6th AWSC
11: Windsor Way & Queens Hwy

2020 Conditions
AM Peak Hour

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑		↔	↔↔	
Traffic Vol, veh/h	96	190	0	0	62	0
Future Vol, veh/h	96	190	0	0	62	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	96	190	0	0	62	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	8.7	0	7.8
HCM LOS	A	-	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	60%	0%	0%	100%	100%
Vol Thru, %	40%	100%	100%	0%	0%
Vol Right, %	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	159	127	0	31	31
LT Vol	96	0	0	31	31
Through Vol	63	127	0	0	0
RT Vol	0	0	0	0	0
Lane Flow Rate	159	127	0	31	31
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.217	0.162	0	0.049	0.034
Departure Headway (Hd)	4.91	4.608	4.747	5.7	3.992
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	728	774	0	632	902
Service Time	2.661	2.36	2.756	3.4	1.692
HCM Lane V/C Ratio	0.218	0.164	0	0.049	0.034
HCM Control Delay	9	8.3	7.8	8.7	6.8
HCM Lane LOS	A	A	N	A	A
HCM 95th-tile Q	0.8	0.6	0	0.2	0.1

Opening Year 2020

HCM 6th TWSC

2020 Conditions

1: Pico Ave & WB Ocean Blvd Ramps/WB Ocean Blvd Off Ramp

PM Peak Hour

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕			↕	↕
Traffic Vol, veh/h	0	0	0	9	1	43	0	40	0	0	126	0
Future Vol, veh/h	0	0	0	9	1	43	0	40	0	0	126	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	50	120	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	9	1	43	0	40	0	0	126	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	147	166	63	103	166	20	126	0	-	-	-	0
Stage 1	126	126	-	40	40	-	-	-	-	-	-	-
Stage 2	21	40	-	63	126	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	813	730	995	872	730	1060	1473	-	0	0	-	-
Stage 1	870	796	-	976	866	-	-	-	0	0	-	-
Stage 2	1000	866	-	946	796	-	-	-	0	0	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	779	730	995	872	730	1060	1473	-	-	-	-	-
Mov Cap-2 Maneuver	779	730	-	872	730	-	-	-	-	-	-	-
Stage 1	870	796	-	976	866	-	-	-	-	-	-	-
Stage 2	958	866	-	946	796	-	-	-	-	-	-	-











Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8.7	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1WBLn2	SBT	SBR
Capacity (veh/h)	1473	-	- 872 1049	-	-
HCM Lane V/C Ratio	-	-	- 0.01 0.042	-	-
HCM Control Delay (s)	0	-	0 9.2 8.6	-	-
HCM Lane LOS	A	-	A A A	-	-
HCM 95th %tile Q(veh)	0	-	- 0 0.1	-	-

Opening Year 2020

HCM Unsignalized Intersection Capacity Analysis
1a: Pico Ave & WB Ocean Blvd On Ramp























2020 Conditions
PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	102	40	126	24
Future Volume (Veh/h)	0	0	102	40	126	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	102	40	126	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume	362	75	150			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362	75	150			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	93			
cM capacity (veh/h)	572	978	1444			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	102	20	20	84	66	
Volume Left	102	0	0	0	0	
Volume Right	0	0	0	0	24	
cSH	1444	1700	1700	1700	1700	
Volume to Capacity	0.07	0.01	0.01	0.05	0.04	
Queue Length 95th (ft)	6	0	0	0	0	
Control Delay (s)	7.7	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	5.5			0.0		
Approach LOS						
Intersection Summary						
Average Delay	2.7					
Intersection Capacity Utilization	18.4%			ICU Level of Service	A	
Analysis Period (min)	15					

Opening Year 2020

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

2020 Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	1	47	41	0	337	157	1	9	190	7
Future Volume (vph)	4	1	1	47	41	0	337	157	1	9	190	7
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	150		0	0		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			50			25			50		
Lane Util. 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
Ped Bike Factor												
Frt			0.850					0.999			0.995	
Flt Protected		0.962			0.974		0.950			0.950		
Satd. Flow (prot)	0	1539	1360	0	1558	1600	1520	3197	0	1368	3184	0
Flt Permitted		0.767			0.830		0.950			0.950		
Satd. Flow (perm)	0	1227	1360	0	1328	1600	1520	3197	0	1368	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117					1				4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		465			742			1144				796
Travel Time (s)		10.6			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	4	1	1	47	41	0	337	157	1	9	190	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	5	1	0	88	0	337	158	0	9	197	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1	11.1	11.1	11.1	11.1	9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	34.8%	26.1%		43.5%	43.5%	

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

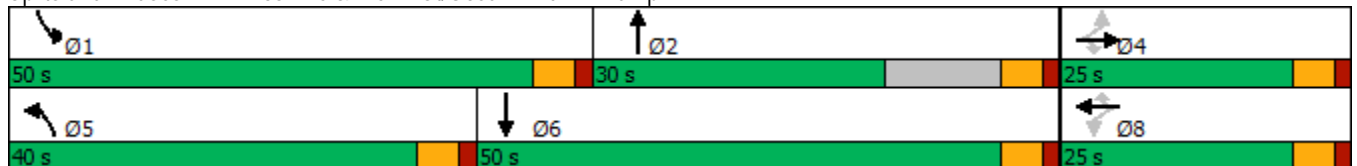
2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9	19.9	19.9	19.9	19.9	34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)				4.0	4.0	4.0						4.0
Flash Dont Walk (s)				25.0	25.0	25.0						25.0
Pedestrian Calls (#/hr)				0	0	0						0
Act Effect Green (s)		9.8	9.8		9.8		18.6	35.5		10.9	11.8	
Actuated g/C Ratio		0.18	0.18		0.18		0.35	0.67		0.21	0.22	
v/c Ratio		0.02	0.00		0.36		0.63	0.07		0.03	0.28	
Control Delay		22.0	0.0		26.8		21.6	6.8		24.3	21.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		22.0	0.0		26.8		21.6	6.8		24.3	21.8	
LOS		C	A		C		C	A		C	C	
Approach Delay		18.3			26.8			16.9			21.9	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type: Other
 Cycle Length: 115
 Actuated Cycle Length: 53
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 19.3
 Intersection LOS: B
 Intersection Capacity Utilization 55.6%
 ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value























Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Opening Year 2020

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

2020 Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	509	44	26	448	455	29	70	44	12	2	103
Future Volume (vph)	36	509	44	26	448	455	29	70	44	12	2	103
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor		0.96										
Frt		0.988			0.958	0.850		0.942				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4554	0	1520	3066	1360	1520	3014	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.757			0.690		
Satd. Flow (perm)	1520	4554	0	1520	3066	1360	1211	3014	0	1104	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			79	278		44				103
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)			41									
Confl. Bikes (#/hr)			450									
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	509	44	26	448	455	29	70	44	12	2	103
Shared Lane Traffic (%)						39%						
Lane Group Flow (vph)	36	553	0	26	625	278	29	114	0	12	2	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

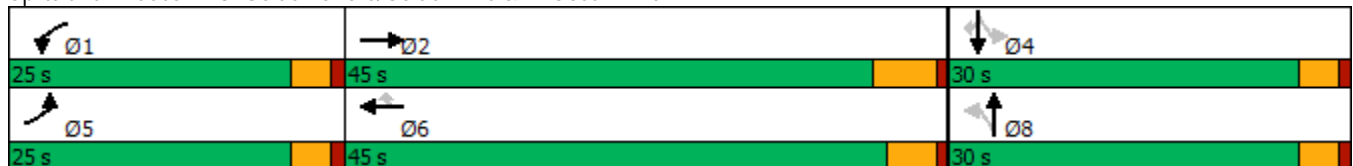
2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	6.0	27.2		5.7	26.1	26.1	7.1	7.1		7.1	7.1	7.1
Actuated g/C Ratio	0.14	0.64		0.13	0.61	0.61	0.17	0.17		0.17	0.17	0.17
v/c Ratio	0.17	0.19		0.13	0.33	0.30	0.14	0.21		0.07	0.01	0.33
Control Delay	20.4	5.3		20.5	6.6	2.5	19.3	12.9		18.4	17.5	8.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	20.4	5.3		20.5	6.6	2.5	19.3	12.9		18.4	17.5	8.6
LOS	C	A		C	A	A	B	B		B	B	A
Approach Delay		6.2			5.8			14.2			9.8	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 42.7
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.33
 Intersection Signal Delay: 6.8
 Intersection LOS: A
 Intersection Capacity Utilization 43.7%
 ICU Level of Service A
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd






























Opening Year 2020

Lanes, Volumes, Timings

2020 Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	36	436	26	75	897	88	30	31	60	186	93	94
Future Volume (vph)	36	436	26	75	897	88	30	31	60	186	93	94
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.992				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4762	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.315			0.497			0.697			0.483		
Satd. Flow (perm)	504	4762	0	795	4800	1360	1115	3200	1360	773	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				88			68			76
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	436	26	75	897	88	30	31	60	186	93	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	462	0	75	897	88	30	31	60	186	93	94
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.5	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

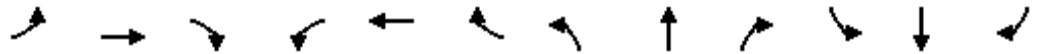
Opening Year 2020

Lanes, Volumes, Timings

2020 Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

PM Peak Hour

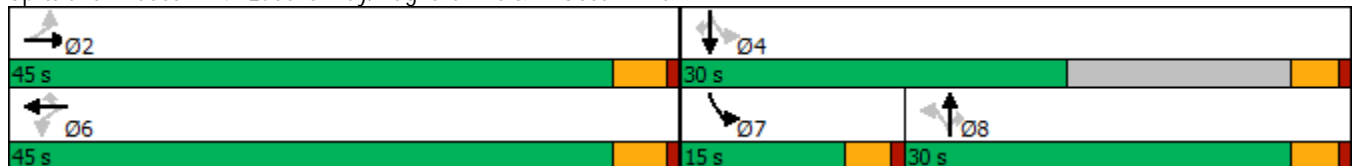


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	28.0	28.0		28.0	28.0	28.0	7.5	7.5	7.5	21.6	21.4	21.4
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.13	0.13	0.13	0.37	0.37	0.37
v/c Ratio	0.15	0.20		0.20	0.39	0.13	0.21	0.08	0.26	0.45	0.08	0.17
Control Delay	10.4	8.6		10.4	10.2	2.7	30.5	26.5	10.3	19.3	14.4	6.9
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	10.4	8.6		10.4	10.2	2.7	30.5	26.5	10.3	19.3	14.4	6.9
LOS	B	A		B	B	A	C	C	B	B	B	A
Approach Delay		8.8			9.6			19.5			15.0	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	58.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.45
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization:	67.3%
ICU Level of Service:	C
Analysis Period (min):	15
* User Entered Value	













Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Opening Year 2020

Lanes, Volumes, Timings 5: Queen Mary/S Chestnut PI & W Shoreline Dr

2020 Conditions
PM Peak Hour

Lane Group												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶↷	↶↷	↶	↶↷	↶↷↶	↶	↶	↶	↶	↶	↶	↶
Traffic Volume (vph)	147	781	118	223	753	38	144	9	139	19	3	74
Future Volume (vph)	147	781	118	223	753	38	144	9	139	19	3	74
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.958			0.959	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1533	1360	0	1534	1360
Flt Permitted	0.950			0.950			0.743	0.735			0.772	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1189	1176	1360	0	1235	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118			54			139			74
Link Speed (mph)		40			40			30				30
Link Distance (ft)		1182			1066			1058				209
Travel Time (s)		20.1			18.2			24.0				4.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	147	781	118	223	753	38	144	9	139	19	3	74
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	147	781	118	223	753	38	76	77	139	0	22	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
5: Queen Mary/S Chestnut PI & W Shoreline Dr

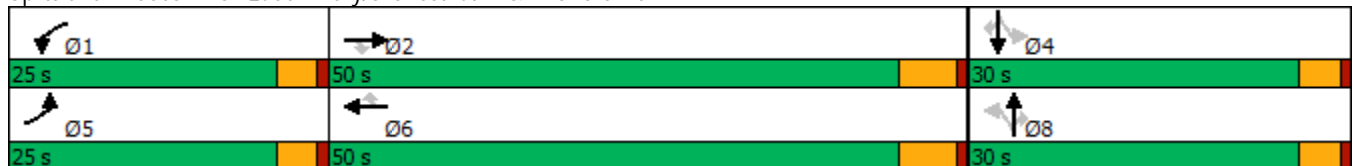
2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	8.1	22.5	22.5	9.8	26.9	26.9	9.7	9.7	9.7		9.7	9.7
Actuated g/C Ratio	0.14	0.40	0.40	0.17	0.48	0.48	0.17	0.17	0.17		0.17	0.17
v/c Ratio	0.38	0.61	0.19	0.47	0.33	0.06	0.37	0.38	0.40		0.10	0.25
Control Delay	28.0	16.3	3.8	26.8	10.9	2.6	29.2	29.5	9.2		24.4	9.4
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	28.0	16.3	3.8	26.8	10.9	2.6	29.2	29.5	9.2		24.4	9.4
LOS	C	B	A	C	B	A	C	C	A		C	A
Approach Delay		16.5			14.1			19.8			12.9	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 56.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 15.7
 Intersection LOS: B
 Intersection Capacity Utilization 57.1%
 ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Opening Year 2020

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp

2020 Conditions
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Volume (veh/h)	0	0	655	9	29	283
Future Volume (Veh/h)	0	0	655	9	29	283
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	655	9	29	283
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			1200			
pX, platoon unblocked						
vC, conflicting volume	859	332			664	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	859	332			664	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			97	
cM capacity (veh/h)	290	670			935	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	437	227	123	189		
Volume Left	0	0	29	0		
Volume Right	0	9	0	0		
cSH	1700	1700	935	1700		
Volume to Capacity	0.26	0.13	0.03	0.11		
Queue Length 95th (ft)	0	0	2	0		
Control Delay (s)	0.0	0.0	2.3	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		0.9			
Approach LOS						
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			38.8%		ICU Level of Service	A
Analysis Period (min)			15			

Opening Year 2020

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	7	4	16	11	414	6	100	15	89	82	46
Future Volume (vph)	45	7	4	16	11	414	6	100	15	89	82	46
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.945			0.854			0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1512	0	1520	2733	0	1520	3136	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.704			0.683		
Satd. Flow (perm)	2736	1512	0	1520	2733	0	1126	3136	0	1093	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			414			15				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	45	7	4	16	11	414	6	100	15	89	82	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	11	0	16	425	0	6	115	0	89	82	46
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2				6
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings 7: Pico Ave & Harbor Plaza

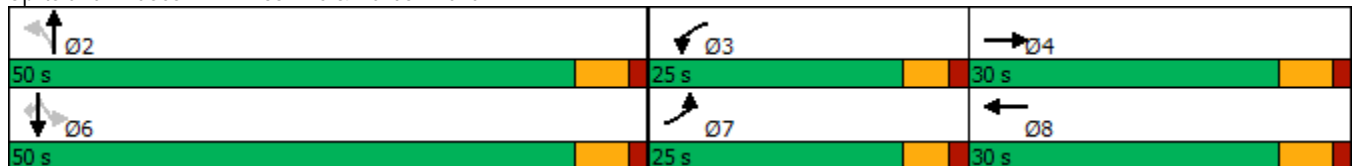
2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.3	10.4		5.1	8.6		11.0	11.0		11.0	11.0	11.0
Actuated g/C Ratio	0.15	0.30		0.15	0.25		0.31	0.31		0.31	0.31	0.31
v/c Ratio	0.11	0.02		0.07	0.43		0.02	0.12		0.26	0.16	0.10
Control Delay	16.2	9.8		16.9	4.0		11.3	9.8		13.6	11.8	2.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	16.2	9.8		16.9	4.0		11.3	9.8		13.6	11.8	2.3
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		14.9			4.5			9.9			10.5	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other				
Cycle Length:	105				
Actuated Cycle Length:	35.1				
Natural Cycle:	70				
Control Type:	Actuated-Uncoordinated				
Maximum v/c Ratio:	0.43				
Intersection Signal Delay:	7.5		Intersection LOS:	A	
Intersection Capacity Utilization	47.5%		ICU Level of Service	A	
Analysis Period (min)	15				
* User Entered Value					







Splits and Phases: 7: Pico Ave & Harbor Plaza



Opening Year 2020

HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive





















2020 Conditions
PM Peak Hour

							
Movement	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	↑↑			↑↑	↘↘	↗↗	
Traffic Volume (veh/h)	38	0	0	86	58	377	
Future Volume (Veh/h)	38	0	0	86	58	377	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	38	0	0	86	58	377	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							40
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)							1019
pX, platoon unblocked							
vC, conflicting volume			38			81	19
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			38			81	19
tC, single (s)			4.1			6.8	6.9
tC, 2 stage (s)							
tF (s)			2.2			3.5	3.3
p0 queue free %			100			94	64
cM capacity (veh/h)			1585			918	1061
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3
Volume Total	19	19	43	43	29	29	377
Volume Left	0	0	0	0	29	29	0
Volume Right	0	0	0	0	0	0	377
cSH	1700	1700	1700	1700	918	918	0
Volume to Capacity	0.01	0.01	0.03	0.03	0.03	0.03	Err
Queue Length 95th (ft)	0	0	0	0	2	2	Err
Control Delay (s)	0.0	0.0	0.0	0.0	9.1	9.1	Err
Lane LOS					A	A	F
Approach Delay (s)	0.0	0.0		Err			
Approach LOS					F		
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			25.7%	ICU Level of Service		A	
Analysis Period (min)			15				

Opening Year 2020

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						 	
Traffic Volume (vph)	0	0	0	13	312	37	77	49	0	0	106	79
Future Volume (vph)	0	0	0	13	312	37	77	49	0	0	106	79
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.985							0.850
Flt Protected					0.998		0.950	0.988				
Satd. Flow (prot)	0	0	0	0	4719	0	1520	1581	0	0	3200	1360
Flt Permitted					0.998		0.950	0.988				
Satd. Flow (perm)	0	0	0	0	4719	0	1520	1581	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13							164
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		558			376			248			301	
Travel Time (s)		12.7			8.5			5.6			6.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	13	312	37	77	49	0	0	106	79
Shared Lane Traffic (%)							20%					
Lane Group Flow (vph)	0	0	0	0	362	0	62	64	0	0	106	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Carnival TIA
GHD

Synchro 10 Report

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Opening Year 2020

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Conditions
PM Peak Hour

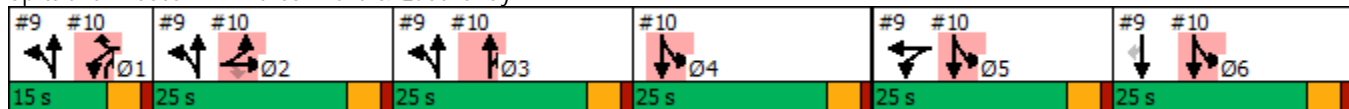


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effect Green (s)					12.2		34.6	34.6			9.0	9.0
Actuated g/C Ratio					0.15		0.43	0.43			0.11	0.11
v/c Ratio					0.50		0.09	0.09			0.30	0.27
Control Delay					33.3		10.3	10.2			37.3	2.2
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					33.3		10.3	10.2			37.3	2.2
LOS					C		B	B			D	A
Approach Delay					33.3			10.3			22.3	
Approach LOS					C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	80.3
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.50
Intersection Signal Delay:	25.9
Intersection LOS:	C
Intersection Capacity Utilization:	33.8%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr



Lanes, Volumes, Timings
 9: Harbor Plaza & Queensway Dr

2020 Conditions
 PM Peak Hour

Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Opening Year 2020

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	30	6	11	0	62	0	46	42	13	106	0
Future Volume (vph)	17	30	6	11	0	62	0	46	42	13	106	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.995	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3184	0
Flt Permitted	0.950			0.950							0.995	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	17	30	6	11	0	62	0	46	42	13	106	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	30	6	11	0	62	0	46	42	0	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Carnival TIA
GHD

Synchro 10 Report

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

2020 Conditions
PM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

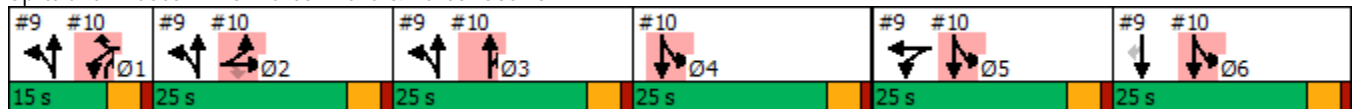
2020 Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.1	8.1	8.1	8.6		8.6		8.1	16.7			39.1
Actuated g/C Ratio	0.10	0.10	0.10	0.11		0.11		0.10	0.21			0.49
v/c Ratio	0.11	0.06	0.02	0.07		0.14		0.14	0.11			0.08
Control Delay	38.4	36.3	0.2	36.5		0.7		37.3	0.6			2.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	38.4	36.3	0.2	36.5		0.7		37.3	0.6			2.6
LOS	D	D	A	D		A		D	A			A
Approach Delay		32.9				6.1		19.8				2.6
Approach LOS		C				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	80.3
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.50
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
 10: Harbor Plaza & Harbor Scenic Dr

2020 Conditions
 PM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Opening Year 2020

HCM 6th AWSC
11: Windsor Way & Queens Hwy

2020 Conditions
PM Peak Hour

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔		↔	↔↔	
Traffic Vol, veh/h	65	159	0	5	30	0
Future Vol, veh/h	65	159	0	5	30	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	65	159	0	5	30	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	8.3	7	7.5
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	55%	0%	0%	100%	100%
Vol Thru, %	45%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	106	5	15	15
LT Vol	65	0	0	15	15
Through Vol	53	106	0	0	0
RT Vol	0	0	5	0	0
Lane Flow Rate	118	106	5	15	15
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.158	0.134	0.005	0.023	0.016
Departure Headway (Hd)	4.828	4.553	3.907	5.551	3.846
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	743	788	900	649	936
Service Time	2.554	2.279	2.002	3.251	1.546
HCM Lane V/C Ratio	0.159	0.135	0.006	0.023	0.016
HCM Control Delay	8.5	8	7	8.4	6.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.6	0.5	0	0.1	0

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 12 - 710 NB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 NB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	496	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	6.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1400	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1400	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	496	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	496	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	6.6	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 13:08:29

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 12 - 710 SB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 SB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	410	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1156	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1156	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	410	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	410	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 13:25:56

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 15 - 710 EB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	444	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1251	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1251	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	444	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	444	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.9	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 13:55:28

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 15 - 710 WB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	390	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1101	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1101	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	390	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	390	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:03:20

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 28 - 710 EB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	278	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	785	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	785	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	278	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	278	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:03:49

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 28 - 710 WB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	226	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	637	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	637	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	226	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	226	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.0	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:04:34

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 30 - 710 EB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	278	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	785	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	785	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	278	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	278	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:06:10

Opening Year 2020
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 30 - 710 WB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	270	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	760	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	760	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	270	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	270	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.6	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:08:51

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 12 - 710 NB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 NB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	358	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	4.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1009	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1009	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	358	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	358	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	4.7	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 13:35:51

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 12 - 710 SB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 SB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	474	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	6.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1337	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1337	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	474	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	474	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	6.3	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 13:53:51

Opening Year 2020
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 15 - 710 EB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	410	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1155	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1155	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	410	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	410	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:03:48

Opening Year 2020
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 15 - 710 WB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	489	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	6.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1378	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1378	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	489	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	489	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	6.5	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:04:16

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 28 - 710 EB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	324	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	4.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	609	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	609	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	324	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	324	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	4.3	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:12:10

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 28 - 710 WB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	390	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	732	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	732	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	390	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	390	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:12:40

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 30 - 710 EB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	216	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	2.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	609	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	609	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	216	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	216	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	2.9	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:13:57

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 30 - 710 WB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	304	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	4.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	858	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	858	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	304	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	304	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	4.0	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:14:39

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	714	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	6.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	671	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	671	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	357	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	357	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	6.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	671	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	357	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.23	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:00:22

Opening Year 2020
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	552	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	519	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	519	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	276	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	276	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	519	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	276	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.09	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:00:40

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	490	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	461	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	461	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	245	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	245	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	461	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	245	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.03	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:02:11

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	644	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	605	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	605	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	322	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	322	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.9	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	605	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	322	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.17	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:02:28

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	455	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	428	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	428	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	228	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	228	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.1	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	428	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	228	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.00	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:07:21

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	574	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	540	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	540	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	287	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	287	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.2	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	540	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	287	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.11	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:07:04

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	221	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	2.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	208	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	208	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	110	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	110	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	2.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	208	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	111	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.63	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:05:37

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v ₉₅	584	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	549	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	549	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	292	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	292	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	549	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	292	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.12	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:06:08

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	246	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	231	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	231	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	123	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	123	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	231	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	123	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.68	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:04:18

Opening Year 2020
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	204	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	192	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	192	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	102	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	102	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	192	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	102	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.59	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:10:34

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	663	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	4.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	623	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	623	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	221	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	221	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	4.4	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	623	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	221	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.98	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:09:44

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	481	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	452	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	452	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	160	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	160	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.2	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	452	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	160	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.82	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 1/31/2019 17:12:28

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	502	pc/h/ln
Capacity, C	5700	pc/h/ln
Speed, S	45.0	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	472	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	45.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	45.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	45.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020	
Adjusted Free-flow Speed, FFSadj	45.0	mi/h
Capacity, c	1900	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	1900	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	472	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	167	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	167	pc/h/ln
Free-Flow Speed, FFS	45.0	mi/h
Capacity, c	1900	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	45.0	mi/h
Density, D	3.7	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	472	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	167	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.84	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 13:36:31

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	404	pc/h/ln
Capacity, C	5700	pc/h/ln
Speed, S	45.0	mi/h
Density, D	3.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	380	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	45.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	45.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	45.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020		
Adjusted Free-flow Speed, FFSadj	45.0	mi/h
Capacity, c	1900	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	1900	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	380	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	135	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	135	pc/h/ln
Free-Flow Speed, FFS	45.0	mi/h
Capacity, c	1900	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	45.0	mi/h
Density, D	3.0	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	380	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	135	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.73	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 13:37:37

FREEWAY DIVERGE ANALYSIS

File Name:	Sat AM 26 - 710 WB @ Harbor Scenic Off.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Harbor Scenic
Dr Off Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	1.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	68.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	68.1	mi/h
Density Across All Lanes, D	9.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1156		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	1500		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1156	519	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1230	552	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	1230		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	1230	4800	No
vR	552	2200	No
v12	1230	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1230	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	1.3	pc/mi/ln
Density in Off-Ramp Influence Area, DR	1.3	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1230	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1230	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.218	
Average Speed in Ramp Influence Area, SR	68.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	68.1	mi/h
Density Across All Lanes, D	9.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:20:10

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat AM 27 - 710 EB @ Harbor Scenic On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Harbor Scenic
Dr On Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	7.5	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.6	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.6	mi/h
Density Across All Lanes, D	10.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	785		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	1500		ft
Length of Second Acceleration Lane, LA2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	785	615	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	835	654	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	835		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vFO	1489	4800	No
vR	654	2200	No
vR12	1489	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	654	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	835	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	7.5	pc/mi/ln
Density in On-Ramp Influence Area, DR	7.5	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	835	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	835	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1489	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.173	
Average Speed in Ramp Influence Area, SR	69.6	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.6	mi/h
Density Across All Lanes, D	10.7	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:22:05

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat AM 29 - 710 WB @ Pico On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Pico Ave On Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	9.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	65.0	mi/h
Density Across All Lanes, D	6.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	637		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	25.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	400		ft
Length of Second Acceleration Lane, LA2	-		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	637	123		veh/h
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	678	131		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	678		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vFO	809	4800	No
vR	131	1900	No
vR12	809	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	1900	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	1900	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	131	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	678	pc/h
Length of Acceleration Lane, LA	400	ft
Density in On-Ramp Influence Area, DR	9.3	pc/mi/ln
Density in On-Ramp Influence Area, DR	9.3	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	25.0	mi/h
Length of Acceleration Lane, LA	400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	678	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	678	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	809	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.310	
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	65.0	mi/h
Density Across All Lanes, D	6.2	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:23:18

FREEWAY DIVERGE ANALYSIS

File Name:	Sat AM 33 - Ocean & Pico Off Split.xuf
Analyst:	KI3
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/9/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - Ocean Blvd & Pico Ave
Off Ramp Split	
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	3.7	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.3	mi/h
Density Across All Lanes, D	3.6	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	332		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	332	134	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	353	143	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	353		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	353	4500	No
vR	143	2000	No
v12	353	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	3.7	pc/mi/ln
Density in Off-Ramp Influence Area, DR	3.7	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	353	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.441	
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	49.3	mi/h
Density Across All Lanes, D	3.6	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:15:52

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat AM 34 - 710 WB @ Ocean On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Ocean Blvd On Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	5.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.8	mi/h
Density Across All Lanes, D	8.4	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	760		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Left		
Length of First Acceleration Lane, LA or LA1	1500		ft
Length of Second Acceleration Lane, LA2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	760	341	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	809	363	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	809		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vFO	1172	4800	No
vR	363	2200	No
vR12	1172	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	363	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	809	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	5.1	pc/mi/ln
Density in On-Ramp Influence Area, DR	5.1	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	809	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	809	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1172	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.169	
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.8	mi/h
Density Across All Lanes, D	8.4	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:41:52

FREEWAY DIVERGE ANALYSIS

File Name:	Sat AM 35 - 710 EB @ Ocean & Pico Off.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Ocean Blvd & Pico Ave Off Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	2.2	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	68.3	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	68.3	mi/h
Density Across All Lanes, D	9.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	4600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1251		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	600		ft
Length of Second Deceleration Lane, LD2	600		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	1251	466		veh/h
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	1331	496		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	1331		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	1331	4800	No
vR	496	4400	No
v12	1331	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	4400	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	4400	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1331	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	2.2	pc/mi/ln
Density in Off-Ramp Influence Area, DR	2.2	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1331	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1331	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.213	
Average Speed in Ramp Influence Area, SR	68.3	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	68.3	mi/h
Density Across All Lanes, D	9.7	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:19:01

Opening Year 2020
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	Sat PM 26 - 710 WB @ Harbor Scenic Off.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Harbor Scenic
Dr Off Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	3.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	67.9	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	67.9	mi/h
Density Across All Lanes, D	10.5	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1337		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	1500		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1337	605	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1422	644	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	1422		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	1422	4800	No
vR	644	2200	No
v12	1422	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1422	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	3.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	3.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1422	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1422	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.226	
Average Speed in Ramp Influence Area, SR	67.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	67.9	mi/h
Density Across All Lanes, D	10.5	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:59:16

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat PM 27 - 710 EB @ Harbor Scenic On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Harbor Scenic
Dr On Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	4.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.8	mi/h
Density Across All Lanes, D	7.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	609		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	1500		ft
Length of Second Acceleration Lane, LA2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	609	400	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	648	426	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	648		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vFO	1074	4800	No
vR	426	2200	No
vR12	1074	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	426	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	648	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	4.3	pc/mi/ln
Density in On-Ramp Influence Area, DR	4.3	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	648	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	648	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1074	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.167	
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.8	mi/h
Density Across All Lanes, D	7.7	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 11:59:57

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat PM 29 - 710 WB @ Pico On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Pico Ave On Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	10.1	pc/mi/ln
Level of Service, LOS	B	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	65.0	mi/h
Density Across All Lanes, D	7.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data		
Number of Freeway Lanes	2	ln
Freeway Free-Flow Speed, FFS	75.4	mi/h
Segment Length	1500	ft
Multilane Highway or C-D Roadway?	Freeway	
Demand Volume, V	732	veh/h
Peak Hour Factor, PHF	0.94	

Ramp Data		
Number of Ramp Lanes	1	ln
Ramp Free-Flow Speed, SFR	25.0	mi/h
Ramp Side	Right	
Length of First Acceleration Lane, LA or LA1	400	ft
Length of Second Acceleration Lane, LA2	-	ft

Junction Components		Freeway	Ramp	
Demand Volume, V	732	126	veh/h	
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00	%	
Percent SUTs	-	-	%	
Percent TTs	-	-	%	
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-	%	
Grade Length	-	-	mi	
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	779	134	pc/h	

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps		
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000	
Flow Rate in Lanes 1 and 2, v12	779	pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vFO	913	4800	No
vR	134	1900	No
vR12	913	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	1900	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	1900	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	134	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	779	pc/h
Length of Acceleration Lane, LA	400	ft
Density in On-Ramp Influence Area, DR	10.1	pc/mi/ln
Density in On-Ramp Influence Area, DR	10.1	veh/mi/ln
Level of Service, LOS	B	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	25.0	mi/h
Length of Acceleration Lane, LA	400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	779	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	779	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	913	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.311	
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	65.0	mi/h
Density Across All Lanes, D	7.0	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 12:00:27

FREEWAY DIVERGE ANALYSIS

File Name:	Sat PM 33 - Ocean & Pico Off Split.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/31/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - Ocean Blvd & Pico Ave
Off Ramp Split	
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.6	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.3	mi/h
Density Across All Lanes, D	4.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	435		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	435	111	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	463	118	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	463		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	463	4500	No
vR	118	2000	No
v12	463	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.6	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.6	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	463	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.439	
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	49.3	mi/h
Density Across All Lanes, D	4.7	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:17:38

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat PM 34 - 710 WB @ Ocean On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Ocean Blvd On Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	7.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.6	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.6	mi/h
Density Across All Lanes, D	10.5	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	858		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Left		
Length of First Acceleration Lane, LA or LA1	1500		ft
Length of Second Acceleration Lane, LA2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	858	520	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	913	553	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	913		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vFO	1466	4800	No
vR	553	2200	No
vR12	1466	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	553	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	913	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	7.3	pc/mi/ln
Density in On-Ramp Influence Area, DR	7.3	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	913	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	913	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1466	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.173	
Average Speed in Ramp Influence Area, SR	69.6	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.6	mi/h
Density Across All Lanes, D	10.5	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 12:02:17

Opening Year 2020
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	Sat PM 35 - 710 EB @ Ocean & Pico Off.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Ocean Blvd & Pico Ave Off Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	356	pc/mi/ln
Average Speed in Ramp Influence Area, SR	68.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	82.7	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	71.8	mi/h
Density Across All Lanes, D	5.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	4600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1155		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	600		ft
Length of Second Deceleration Lane, LD2	600		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1155	546	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1229	581	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.450		
Flow Rate in Lanes 1 and 2, v12	873		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	1229	7200	No
vR	581	4400	No
v12	873	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	7200	4400	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	7200	4400	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	873	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1229	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	873	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.220	
Average Speed in Ramp Influence Area, SR	68.1	mi/h
Average Flow in Outer Lanes, vOA	356	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	82.7	mi/h
Average Speed for Off-Ramp Junction, S	71.8	mi/h
Density Across All Lanes, D	5.7	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:24:16

Opening Year 2020
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	6.8	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	7.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	671		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	671	56	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	714	60	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	714		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	714	4500	No
vR	60	2000	No
v12	714	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	714	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	6.8	pc/mi/ln
Density in Off-Ramp Influence Area, DR	6.8	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	714	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	714	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.433	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.4	mi/h
Density Across All Lanes, D	7.2	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 13:44:26

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.9	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	5.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	461		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	461	61	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	490	65	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	490		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	490	4500	No
vR	65	2000	No
v12	490	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	490	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.9	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.9	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	490	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	490	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.434	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.4	mi/h
Density Across All Lanes, D	5.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 13:47:01

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM - 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.5	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	512		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	512	284	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	545	302	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	545		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	545	4500	No
vR	302	4000	No
v12	545	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	545	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	545	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	545	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.455	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	5.5	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:06:33

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM - 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	538		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	538	242	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	572	257	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	572		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	572	4500	No
vR	257	4000	No
v12	572	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	572	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	572	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	572	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.451	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	5.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:09:03

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	6.4	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.2	mi/h
Density Across All Lanes, D	6.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	623		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	623	195	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	663	207	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	663		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	663	4500	No
vR	207	2000	No
v12	663	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	663	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	6.4	pc/mi/ln
Density in Off-Ramp Influence Area, DR	6.4	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	663	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	663	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.447	
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.2	mi/h
Density Across All Lanes, D	6.7	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:13:18

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.8	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	4.9	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	452		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	452	244	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	481	260	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	481		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	481	4500	No
vR	260	2000	No
v12	481	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	481	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.8	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.8	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	481	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	481	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.451	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	4.9	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:14:11

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM 31.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	3.5	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	104	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	51.6	mi/h
Density Across All Lanes, D	2.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	414		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	414	26	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	440	28	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.748		
Flow Rate in Lanes 1 and 2, v12	336		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	440	6750	No
vR	28	2000	No
v12	336	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	336	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	3.5	pc/mi/ln
Density in Off-Ramp Influence Area, DR	3.5	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	440	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	336	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.431	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	104	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	51.6	mi/h
Density Across All Lanes, D	2.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:17:38

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM 31.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.7	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	145	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	51.6	mi/h
Density Across All Lanes, D	4.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	580		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	580	52	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	617	55	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.742		
Flow Rate in Lanes 1 and 2, v12	472		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020

Capacity Checks

	Actual	Maximum	Violation?
vF	617	6750	No
vR	55	2000	No
v12	472	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	472	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.7	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.7	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	617	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	472	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.433	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	145	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	51.6	mi/h
Density Across All Lanes, D	4.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:18:54

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT AM 32.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	3.4	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	332		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	332		11	veh/h
Peak Hour Factor, PHF	0.94		0.94	
Percent Total Trucks	0.00		0.00	%
Percent SUTs	-		-	%
Percent TTs	-		-	%
Prop.Total Trucks, PT	0.0000		0.0000	
Heavy Vehicle PCE, ET	2.000		2.000	
Heavy Vehicle Adj., fHV	1.000		1.000	
Terrain Type	Level		Level	
Percent Grade	-		-	%
Grade Length	-		-	mi
Demand Adj.Factor, DAF	1.000		1.000	
Demand Flow Rate, v	353		12	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	353		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

	Opening Year 2020		Violation?
	Actual	Maximum	
vFO	365	4500	No
vR	12	4000	No
vR12	365	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	12	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Length of Acceleration Lane, LA	2400	ft
Density in On-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Length of Acceleration Lane, LA	2400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	353	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	365	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.159	
Average Speed in Ramp Influence Area, SR	52.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	52.9	mi/h
Density Across All Lanes, D	3.4	pc/mi/ln

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:24:29

Opening Year 2020
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT PM 32.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	4.5	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	435		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components			
	Freeway	Ramp	
Demand Volume, V	435	11	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	463	12	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	463		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

	Opening Year 2020		
	Actual	Maximum	Violation?
vFO	475	4500	No
vR	12	4000	No
vR12	475	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	12	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Length of Acceleration Lane, LA	2400	ft
Density in On-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Length of Acceleration Lane, LA	2400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	463	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	475	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.159	
Average Speed in Ramp Influence Area, SR	52.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	52.9	mi/h
Density Across All Lanes, D	4.5	pc/mi/ln

This Freeway Merge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/1/2019 14:25:39

Opening Year 2020 + Project

HCM 6th TWSC

2020 Plus Project Conditions

1: Pico Ave & WB Ocean Blvd Ramps/WB Ocean Blvd Off Ramp

AM Peak Hour

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↗			↗	↖
Traffic Vol, veh/h	0	0	0	6	1	19	0	90	0	0	164	0
Future Vol, veh/h	0	0	0	6	1	19	0	90	0	0	164	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	50	120	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	6	1	19	0	90	0	0	164	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	210	254	82	172	254	45	164	0	-	-	-	0
Stage 1	164	164	-	90	90	-	-	-	-	-	-	-
Stage 2	46	90	-	82	164	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	734	653	968	781	653	1022	1427	-	0	0	-	-
Stage 1	828	766	-	913	824	-	-	-	0	0	-	-
Stage 2	968	824	-	923	766	-	-	-	0	0	-	-
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	719	653	968	781	653	1022	1427	-	-	-	-	-
Mov Cap-2 Maneuver	719	653	-	781	653	-	-	-	-	-	-	-
Stage 1	828	766	-	913	824	-	-	-	-	-	-	-
Stage 2	949	824	-	923	766	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB			
HCM Control Delay, s	0		8.9		0			0			
HCM LOS	A		A								

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1427	-	-	781	994	-	-
HCM Lane V/C Ratio	-	-	-	0.008	0.02	-	-
HCM Control Delay (s)	0	-	0	9.6	8.7	-	-
HCM Lane LOS	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	-	-

Opening Year 2020 + Project

HCM Unsignalized Intersection Capacity Analysis
1a: Pico Ave & WB Ocean Blvd On Ramp

2020 Plus Project Conditions
AM Peak Hour

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	120	53	164	41
Future Volume (Veh/h)	0	0	120	53	164	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	120	53	164	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				1264		
pX, platoon unblocked						
vC, conflicting volume	451	102	205			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	451	102	205			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	91			
cM capacity (veh/h)	495	939	1378			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	120	26	26	109	96	
Volume Left	120	0	0	0	0	
Volume Right	0	0	0	0	41	
cSH	1378	1700	1700	1700	1700	
Volume to Capacity	0.09	0.02	0.02	0.06	0.06	
Queue Length 95th (ft)	7	0	0	0	0	
Control Delay (s)	7.9	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	5.5			0.0		
Approach LOS						
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			21.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Opening Year 2020 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

2020 Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	1	64	49	0	362	177	4	7	247	6
Future Volume (vph)	4	1	1	64	49	0	362	177	4	7	247	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	150		0	0		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			50			25			50		
Lane Util. 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
Ped Bike Factor			0.850					0.997			0.996	
Flt Protected		0.962			0.972		0.950			0.950		
Satd. Flow (prot)	0	1539	1360	0	1555	1600	1520	3190	0	1368	3187	0
Flt Permitted		0.784			0.822		0.950			0.950		
Satd. Flow (perm)	0	1254	1360	0	1315	1600	1520	3190	0	1368	3187	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117					2				3
Link Speed (mph)		30			30			30				30
Link Distance (ft)		465			742			1144				796
Travel Time (s)		10.6			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	4	1	1	64	49	0	362	177	4	7	247	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	5	1	0	113	0	362	181	0	7	253	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1	11.1	11.1	11.1	11.1	9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	34.8%	26.1%		43.5%	43.5%	

Opening Year 2020 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

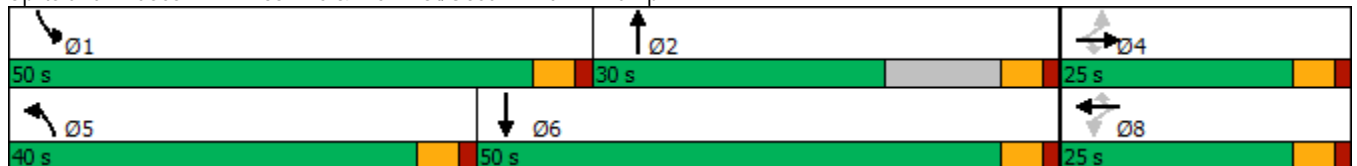
2020 Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9	19.9	19.9	19.9	19.9	34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1			5.1	5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)				4.0	4.0	4.0						4.0
Flash Dont Walk (s)				25.0	25.0	25.0						25.0
Pedestrian Calls (#/hr)				0	0	0						0
Act Effect Green (s)		11.3	11.3			11.6		22.2	40.2		10.9	12.9
Actuated g/C Ratio		0.19	0.19			0.20		0.38	0.68		0.18	0.22
v/c Ratio		0.02	0.00			0.44		0.64	0.08		0.03	0.36
Control Delay		24.0	0.0			30.7		22.8	6.9		28.4	24.8
Queue Delay		0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay		24.0	0.0			30.7		22.8	6.9		28.4	24.8
LOS		C	A			C		C	A		C	C
Approach Delay		20.0				30.7		17.5			24.9	
Approach LOS		B				C		B			C	

Intersection Summary

Area Type: Other
 Cycle Length: 115
 Actuated Cycle Length: 59.1
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 21.2 Intersection LOS: C
 Intersection Capacity Utilization 58.8% ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value























Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Opening Year 2020 + Project

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

2020 Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	450	33	27	337	365	19	65	66	10	1	58
Future Volume (vph)	42	450	33	27	337	365	19	65	66	10	1	58
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor		0.97										
Frt		0.990			0.954	0.850		0.924				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4590	0	1520	3053	1360	1520	2957	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.757			0.727		
Satd. Flow (perm)	1520	4590	0	1520	3053	1360	1211	2957	0	1163	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			96	215		66				73
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)			41									
Confl. Bikes (#/hr)			450									
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	42	450	33	27	337	365	19	65	66	10	1	58
Shared Lane Traffic (%)						41%						
Lane Group Flow (vph)	42	483	0	27	487	215	19	131	0	10	1	58
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

2020 Plus Project Conditions
AM Peak Hour

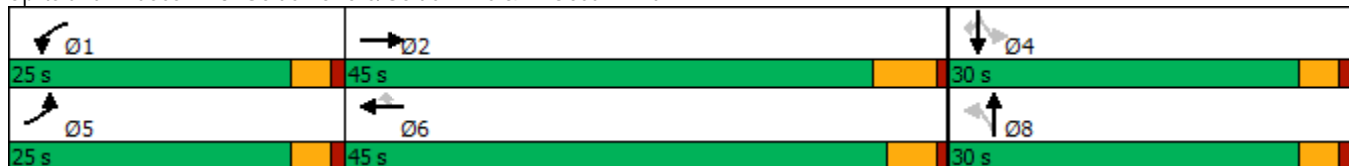


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	5.9	26.2		5.6	25.1	25.1	6.7	6.7		6.7	6.7	6.7
Actuated g/C Ratio	0.14	0.63		0.14	0.61	0.61	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.19	0.17		0.13	0.26	0.24	0.10	0.24		0.05	0.00	0.21
Control Delay	19.2	5.3		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.2	5.3		19.1	5.9	2.6	17.7	10.9		17.2	17.0	6.6
LOS	B	A		B	A	A	B	B		B	B	A
Approach Delay		6.4			5.4			11.8			8.3	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	41.4
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.26
Intersection Signal Delay:	6.5
Intersection LOS:	A
Intersection Capacity Utilization:	42.7%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd






























Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	30	318	32	91	645	49	42	26	66	113	74	72
Future Volume (vph)	30	318	32	91	645	49	42	26	66	113	74	72
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4733	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.420			0.551			0.709			0.487		
Satd. Flow (perm)	672	4733	0	882	4800	1360	1134	3200	1360	779	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				63			68			72
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	30	318	32	91	645	49	42	26	66	113	74	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	350	0	91	645	49	42	26	66	113	74	72
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.5	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

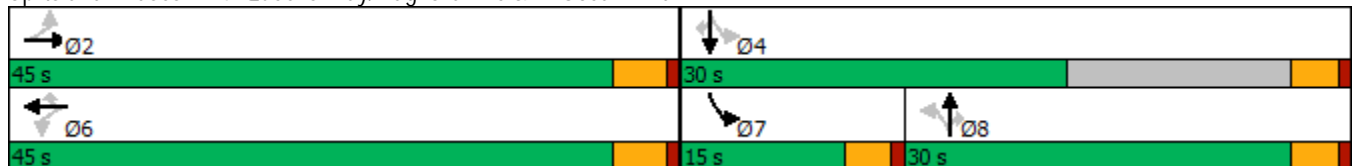
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	22.6	22.6		22.6	22.6	22.6	7.7	7.7	7.7	17.4	17.2	17.2
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.16	0.16	0.16	0.36	0.35	0.35
v/c Ratio	0.10	0.16		0.22	0.29	0.07	0.24	0.05	0.24	0.29	0.07	0.14
Control Delay	10.5	8.5		11.7	9.7	2.8	24.6	20.8	9.3	12.8	10.5	4.2
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	10.5	8.5		11.7	9.7	2.8	24.6	20.8	9.3	12.8	10.5	4.2
LOS	B	A		B	A	A	C	C	A	B	B	A
Approach Delay		8.6			9.5			16.3			9.8	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	49
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.29
Intersection Signal Delay:	9.9
Intersection LOS:	A
Intersection Capacity Utilization	58.6%
ICU Level of Service	B
Analysis Period (min)	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1236	133	179	221	24	28	8	83	24	7	56
Future Volume (vph)	108	1236	133	179	221	24	28	8	83	24	7	56
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.973			0.963	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1557	1360	0	1541	1360
Flt Permitted	0.950			0.950			0.737	0.810			0.763	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1179	1296	1360	0	1221	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			54			83			68
Link Speed (mph)		40			40			30				30
Link Distance (ft)		1182			1066			1058				209
Travel Time (s)		20.1			18.2			24.0				4.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	108	1236	133	179	221	24	28	8	83	24	7	56
Shared Lane Traffic (%)							37%					
Lane Group Flow (vph)	108	1236	133	179	221	24	18	18	83	0	31	56
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings
5: Queen Mary/S Chestnut PI & W Shoreline Dr

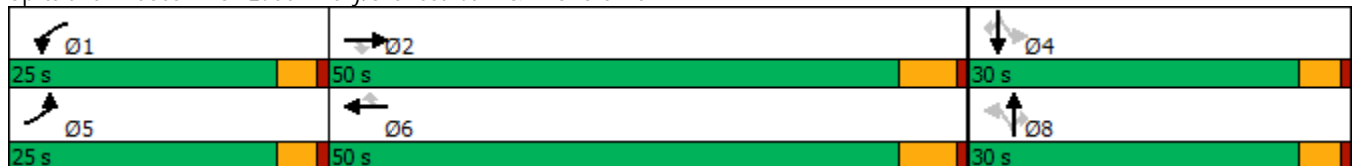
2020 Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	7.5	36.3	36.3	9.3	42.9	42.9	7.6	7.6	7.6		7.4	7.4
Actuated g/C Ratio	0.12	0.56	0.56	0.14	0.67	0.67	0.12	0.12	0.12		0.11	0.11
v/c Ratio	0.34	0.69	0.16	0.46	0.07	0.03	0.13	0.12	0.36		0.22	0.26
Control Delay	33.5	13.3	2.3	32.7	6.4	0.7	33.2	32.7	13.1		34.9	10.4
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	33.5	13.3	2.3	32.7	6.4	0.7	33.2	32.7	13.1		34.9	10.4
LOS	C	B	A	C	A	A	C	C	B		C	B
Approach Delay		13.8			17.2			19.1			19.2	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 64.5
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 15.0
 Intersection LOS: B
 Intersection Capacity Utilization 67.4%
 ICU Level of Service C
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Opening Year 2020 + Project

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp

2020 Plus Project Conditions
AM Peak Hour
































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Volume (veh/h)	0	0	562	8	19	241
Future Volume (Veh/h)	0	0	562	8	19	241
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	562	8	19	241
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	724	285			570	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	724	285			570	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			98	
cM capacity (veh/h)	358	718			1013	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	375	195	99	161		
Volume Left	0	0	19	0		
Volume Right	0	8	0	0		
cSH	1700	1700	1013	1700		
Volume to Capacity	0.22	0.11	0.02	0.09		
Queue Length 95th (ft)	0	0	1	0		
Control Delay (s)	0.0	0.0	1.8	0.0		
Lane LOS			A			
Approach Delay (s)	0.0		0.7			
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			28.5%		ICU Level of Service	A
Analysis Period (min)			15			

Opening Year 2020 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

2020 Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 		 	 	 
Traffic Volume (vph)	55	5	5	11	6	459	6	122	17	106	130	46
Future Volume (vph)	55	5	5	11	6	459	6	122	17	106	130	46
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.925			0.852			0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1480	0	1520	2726	0	1520	3142	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.674			0.668		
Satd. Flow (perm)	2736	1480	0	1520	2726	0	1078	3142	0	1069	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			459			17				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	55	5	5	11	6	459	6	122	17	106	130	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	10	0	11	465	0	6	139	0	106	130	46
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

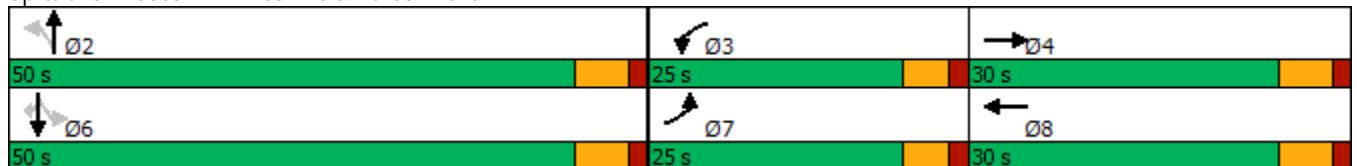
2020 Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.5	10.7		5.1	8.7		11.6	11.6		11.6	11.6	11.6
Actuated g/C Ratio	0.15	0.30		0.14	0.24		0.32	0.32		0.32	0.32	0.32
v/c Ratio	0.13	0.02		0.05	0.46		0.02	0.14		0.31	0.25	0.09
Control Delay	16.9	9.8		18.0	4.1		11.2	9.7		14.1	12.3	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	16.9	9.8		18.0	4.1		11.2	9.7		14.1	12.3	2.1
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		15.8			4.4			9.8			11.3	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 36.1
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 8.0
 Intersection LOS: A
 Intersection Capacity Utilization 56.7%
 ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 7: Pico Ave & Harbor Plaza



Opening Year 2020 + Project

HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive

2020 Plus Project Conditions
AM Peak Hour

	↑	↗	↘	↓	↙	↖	
Movement	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	↑↑			↑↑	↗↘	↗↘	
Traffic Volume (veh/h)	69	0	0	65	50	307	
Future Volume (Veh/h)	69	0	0	65	50	307	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	69	0	0	65	50	307	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)						40	
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)	1019						
pX, platoon unblocked							
vC, conflicting volume			69		102	34	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			69		102	34	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		94	70	
cM capacity (veh/h)			1545		892	1037	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3
Volume Total	34	34	32	32	25	25	307
Volume Left	0	0	0	0	25	25	0
Volume Right	0	0	0	0	0	0	307
cSH	1700	1700	1700	1700	892	892	0
Volume to Capacity	0.02	0.02	0.02	0.02	0.03	0.03	Err
Queue Length 95th (ft)	0	0	0	0	2	2	Err
Control Delay (s)	0.0	0.0	0.0	0.0	9.2	9.2	Err
Lane LOS					A	A	F
Approach Delay (s)	0.0	0.0		Err			
Approach LOS					F		
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			22.8%	ICU Level of Service		A	
Analysis Period (min)			15				

Opening Year 2020 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Plus Project Conditions
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↑	↑			↑↑	↑
Traffic Volume (vph)	0	0	0	55	673	23	81	48	0	0	82	62
Future Volume (vph)	0	0	0	55	673	23	81	48	0	0	82	62
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.995							0.850
Flt Protected					0.996		0.950	0.987				
Satd. Flow (prot)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Flt Permitted					0.996		0.950	0.987				
Satd. Flow (perm)	0	0	0	0	4757	0	1520	1579	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3							164
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		558			376			248			301	
Travel Time (s)		12.7			8.5			5.6			6.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	55	673	23	81	48	0	0	82	62
Shared Lane Traffic (%)							22%					
Lane Group Flow (vph)	0	0	0	0	751	0	63	66	0	0	82	62
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Opening Year 2020 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Plus Project Conditions
AM Peak Hour

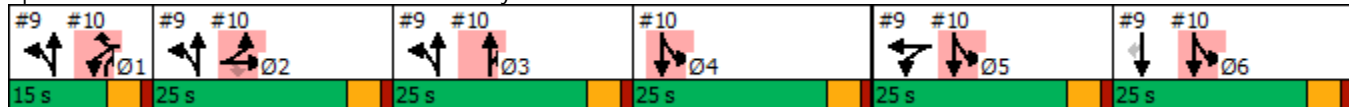


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effect Green (s)					20.3		34.3	34.3			8.4	8.4
Actuated g/C Ratio					0.23		0.39	0.39			0.10	0.10
v/c Ratio					0.68		0.11	0.11			0.27	0.22
Control Delay					35.0		13.9	13.9			40.7	1.8
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					35.0		13.9	13.9			40.7	1.8
LOS					C		B	B			D	A
Approach Delay					35.0			13.9			24.0	
Approach LOS					C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	87.5
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	30.8
Intersection LOS:	C
Intersection Capacity Utilization:	42.7%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr






























Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Opening Year 2020 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

2020 Plus Project Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  				 		 			 	 
Traffic Volume (vph)	14	26	2	22	0	91	0	23	32	22	111	0
Future Volume (vph)	14	26	2	22	0	91	0	23	32	22	111	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.992	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3174	0
Flt Permitted	0.950			0.950							0.992	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3174	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	26	2	22	0	91	0	23	32	22	111	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	26	2	22	0	91	0	23	32	0	133	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Opening Year 2020 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

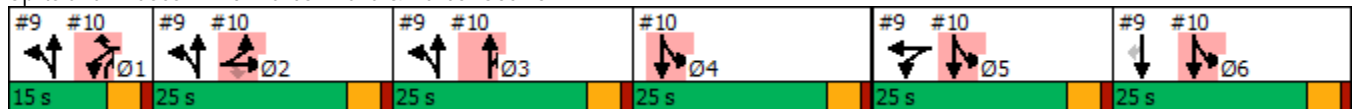
2020 Plus Project Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.0	8.0	8.0	8.6		8.6		8.0	16.6			46.5
Actuated g/C Ratio	0.09	0.09	0.09	0.10		0.10		0.09	0.19			0.53
v/c Ratio	0.10	0.06	0.01	0.15		0.22		0.08	0.09			0.08
Control Delay	40.4	38.7	0.0	40.0		1.5		39.1	0.5			2.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	40.4	38.7	0.0	40.0		1.5		39.1	0.5			2.6
LOS	D	D	A	D		A		D	A			A
Approach Delay		37.4				9.0		16.6				2.6
Approach LOS		D				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	87.5
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	11.2
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lanes, Volumes, Timings
 10: Harbor Plaza & Harbor Scenic Dr

2020 Plus Project Conditions
 AM Peak Hour

Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Intersection

Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑		↔	↔↔	
Traffic Vol, veh/h	125	196	0	0	62	0
Future Vol, veh/h	125	196	0	0	62	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	125	196	0	0	62	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9	0	7.9
HCM LOS	A	-	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	66%	0%	0%	100%	100%
Vol Thru, %	34%	100%	100%	0%	0%
Vol Right, %	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	131	0	31	31
LT Vol	125	0	0	31	31
Through Vol	65	131	0	0	0
RT Vol	0	0	0	0	0
Lane Flow Rate	190	131	0	31	31
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.261	0.167	0	0.05	0.035
Departure Headway (Hd)	4.937	4.608	4.786	5.786	4.077
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	723	774	0	623	883
Service Time	2.692	2.363	2.795	3.486	1.777
HCM Lane V/C Ratio	0.263	0.169	0	0.05	0.035
HCM Control Delay	9.4	8.3	7.8	8.8	6.9
HCM Lane LOS	A	A	N	A	A
HCM 95th-tile Q	1	0.6	0	0.2	0.1

Opening Year 2020 + Project

HCM 6th TWSC

2020 Plus Project Conditions

1: Pico Ave & WB Ocean Blvd Ramps/WB Ocean Blvd Off Ramp

PM Peak Hour

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕			↕	↕
Traffic Vol, veh/h	0	0	0	9	1	43	0	44	0	0	126	0
Future Vol, veh/h	0	0	0	9	1	43	0	44	0	0	126	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	50	120	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	9	1	43	0	44	0	0	126	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	149	170	63	107	170	22	126	0	-	-	-	0
Stage 1	126	126	-	44	44	-	-	-	-	-	-	-
Stage 2	23	44	-	63	126	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	810	727	995	867	727	1056	1473	-	0	0	-	-
Stage 1	870	796	-	970	862	-	-	-	0	0	-	-
Stage 2	998	862	-	946	796	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	776	727	995	867	727	1056	1473	-	-	-	-	-
Mov Cap-2 Maneuver	776	727	-	867	727	-	-	-	-	-	-	-
Stage 1	870	796	-	970	862	-	-	-	-	-	-	-
Stage 2	956	862	-	946	796	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	0		8.7		0		0			
HCM LOS	A		A							

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1WBLn2	SBT	SBR
Capacity (veh/h)	1473	-	-	867	1045
HCM Lane V/C Ratio	-	-	-	0.01	0.042
HCM Control Delay (s)	0	-	0	9.2	8.6
HCM Lane LOS	A	-	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.1

Opening Year 2020 + Project

HCM Unsignalized Intersection Capacity Analysis
1a: Pico Ave & WB Ocean Blvd On Ramp

2020 Plus Project Conditions
PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	106	40	126	24
Future Volume (Veh/h)	0	0	106	40	126	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	106	40	126	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume	370	75	150			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	370	75	150			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	93			
cM capacity (veh/h)	564	978	1444			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	106	20	20	84	66	
Volume Left	106	0	0	0	0	
Volume Right	0	0	0	0	24	
cSH	1444	1700	1700	1700	1700	
Volume to Capacity	0.07	0.01	0.01	0.05	0.04	
Queue Length 95th (ft)	6	0	0	0	0	
Control Delay (s)	7.7	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	5.6			0.0		
Approach LOS						
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			18.7%	ICU Level of Service		A
Analysis Period (min)			15			

Opening Year 2020 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	1	71	41	0	337	161	1	9	190	7
Future Volume (vph)	4	1	1	71	41	0	337	161	1	9	190	7
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1440	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	150		0	0		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			50			25			50		
Lane Util. 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
Ped Bike Factor			0.850					0.999			0.995	
Flt Protected		0.962			0.969		0.950			0.950		
Satd. Flow (prot)	0	1539	1360	0	1550	1600	1520	3197	0	1368	3184	0
Flt Permitted		0.782			0.805		0.950			0.950		
Satd. Flow (perm)	0	1251	1360	0	1288	1600	1520	3197	0	1368	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117					1				4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		465			742			1144				796
Travel Time (s)		10.6			16.9			26.0				18.1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	4	1	1	71	41	0	337	161	1	9	190	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	5	1	0	112	0	337	162	0	9	197	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.42	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	4.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	11.1	11.1	11.1	11.1	11.1	9.1	15.1		15.1	34.1	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	40.0	30.0		50.0	50.0	
Total Split (%)	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	34.8%	26.1%		43.5%	43.5%	

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings
2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

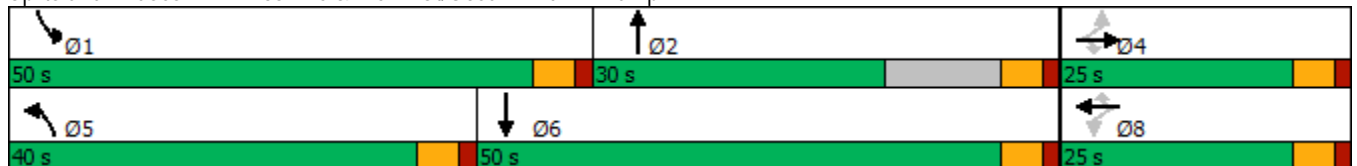
2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	19.9	19.9	19.9	19.9	19.9	34.9	24.9		44.9	44.9	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6		3.6	3.6	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1			5.1	5.1	5.1		5.1	5.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.0	4.0	
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)				4.0	4.0	4.0						4.0
Flash Dont Walk (s)				25.0	25.0	25.0						25.0
Pedestrian Calls (#/hr)				0	0	0						0
Act Effect Green (s)		11.1	11.1		11.4		19.9	36.8		10.8	11.8	
Actuated g/C Ratio		0.20	0.20		0.21		0.36	0.66		0.19	0.21	
v/c Ratio		0.02	0.00		0.43		0.62	0.08		0.03	0.29	
Control Delay		21.8	0.0		28.1		22.2	7.4		26.0	23.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		21.8	0.0		28.1		22.2	7.4		26.0	23.3	
LOS		C	A		C		C	A		C	C	
Approach Delay		18.2			28.1			17.4			23.4	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type: Other
 Cycle Length: 115
 Actuated Cycle Length: 55.6
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 20.4
 Intersection LOS: C
 Intersection Capacity Utilization 57.2%
 ICU Level of Service B
 Analysis Period (min) 15
 * User Entered Value























Splits and Phases: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp



Opening Year 2020 + Project

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

2020 Plus Project Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	509	44	26	448	455	29	70	44	12	2	103
Future Volume (vph)	36	509	44	26	448	455	29	70	44	12	2	103
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		175	80		0	75		160
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	40			25			50			40		
Lane Util. 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
Ped Bike Factor		0.96										
Frt		0.988			0.958	0.850		0.942				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4554	0	1520	3066	1360	1520	3014	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.757			0.690		
Satd. Flow (perm)	1520	4554	0	1520	3066	1360	1211	3014	0	1104	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			79	278		44				103
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1735			1132			1085				688
Travel Time (s)		39.4			25.7			24.7				15.6
Confl. Peds. (#/hr)			41									
Confl. Bikes (#/hr)			450									
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	509	44	26	448	455	29	70	44	12	2	103
Shared Lane Traffic (%)						39%						
Lane Group Flow (vph)	36	553	0	26	625	278	29	114	0	12	2	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0	20.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	9.0	26.7		9.0	24.6	24.6	10.0	10.0		10.0	10.0	10.0
Total Split (s)	25.0	45.0		25.0	45.0	45.0	30.0	30.0		30.0	30.0	30.0
Total Split (%)	25.0%	45.0%		25.0%	45.0%	45.0%	30.0%	30.0%		30.0%	30.0%	30.0%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings
3: Golden Shore/Golden Ave & W Ocean Blvd

2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	39.3		21.0	40.4	40.4	26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	3.0	4.7		3.0	3.6	3.6	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.7		4.0	4.6	4.6	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0		1.5	3.0	3.0	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		7.0					7.0	7.0				
Flash Dont Walk (s)		14.0					31.0	31.0				
Pedestrian Calls (#/hr)		0					0	0				
Act Effect Green (s)	6.0	27.2		5.7	26.1	26.1	7.1	7.1		7.1	7.1	7.1
Actuated g/C Ratio	0.14	0.64		0.13	0.61	0.61	0.17	0.17		0.17	0.17	0.17
v/c Ratio	0.17	0.19		0.13	0.33	0.30	0.14	0.21		0.07	0.01	0.33
Control Delay	20.4	5.3		20.5	6.6	2.5	19.3	12.9		18.4	17.5	8.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	20.4	5.3		20.5	6.6	2.5	19.3	12.9		18.4	17.5	8.6
LOS	C	A		C	A	A	B	B		B	B	A
Approach Delay		6.2			5.8			14.2			9.8	
Approach LOS		A			A			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	42.7
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	6.8
Intersection LOS:	A
Intersection Capacity Utilization:	43.7%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 3: Golden Shore/Golden Ave & W Ocean Blvd


























Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	436	26	81	897	88	30	31	61	186	96	94
Future Volume (vph)	36	436	26	81	897	88	30	31	61	186	96	94
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		0	185		150	120		860	100		100
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	55			70			70			60		
Lane Util. 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
Ped Bike Factor												
Frt		0.992				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	4762	0	1520	4800	1360	1520	3200	1360	1520	3200	1360
Flt Permitted	0.315			0.497			0.695			0.483		
Satd. Flow (perm)	504	4762	0	795	4800	1360	1112	3200	1360	773	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				88			68			76
Link Speed (mph)		30			30			45				25
Link Distance (ft)		1132			1722			1269				602
Travel Time (s)		25.7			39.1			19.2				16.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	36	436	26	81	897	88	30	31	61	186	96	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	462	0	81	897	88	30	31	61	186	96	94
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												Yes
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Detector Phase	2	2		6	6	6	8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	6.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	35.6	35.6		30.6	30.6	30.6	10.2	10.2	10.2	9.5	10.2	10.2
Total Split (s)	45.0	45.0		45.0	45.0	45.0	30.0	30.0	30.0	15.0	30.0	30.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	33.3%	33.3%	33.3%	16.7%	33.3%	33.3%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

4: Queens Way/Magnolia Ave & W Ocean Blvd

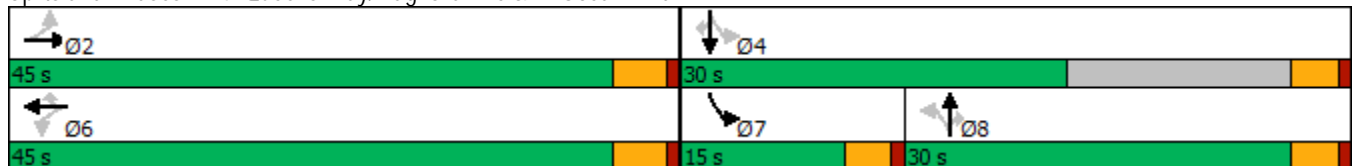
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	40.4	40.4		40.4	40.4	40.4	25.8	25.8	25.8	11.0	25.8	25.8
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.2	3.2	3.2	3.0	3.2	3.2
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	4.6	4.6	4.2	4.2	4.2	4.0	4.2	4.2
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	5.0	5.0		5.0	5.0	5.0	2.0	2.0	2.0	1.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recall Mode	Min	Min		Min	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0		19.0	19.0	19.0	29.0	29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0		0	0
Act Effect Green (s)	28.0	28.0		28.0	28.0	28.0	7.5	7.5	7.5	21.6	21.4	21.4
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.13	0.13	0.13	0.37	0.37	0.37
v/c Ratio	0.15	0.20		0.21	0.39	0.13	0.21	0.08	0.26	0.45	0.08	0.17
Control Delay	10.4	8.7		10.6	10.2	2.7	30.5	26.4	10.5	19.3	14.4	6.9
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	10.4	8.7		10.6	10.2	2.7	30.5	26.4	10.5	19.3	14.4	6.9
LOS	B	A		B	B	A	C	C	B	B	B	A
Approach Delay		8.8			9.6			19.5			14.9	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	58.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.45
Intersection Signal Delay:	11.0
Intersection LOS:	B
Intersection Capacity Utilization:	67.3%
ICU Level of Service:	C
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 4: Queens Way/Magnolia Ave & W Ocean Blvd



Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	781	125	225	753	38	145	9	139	19	3	74
Future Volume (vph)	147	781	125	225	753	38	145	9	139	19	3	74
Ideal Flow (vphpl)	1440	1600	1600	1440	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		230	180		50	200		0	65		0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	100			100			75			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.958			0.959	
Satd. Flow (prot)	2736	3200	1360	2736	4800	1360	1520	1533	1360	0	1534	1360
Flt Permitted	0.950			0.950			0.743	0.735			0.773	
Satd. Flow (perm)	2736	3200	1360	2736	4800	1360	1189	1176	1360	0	1237	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125			54			139			74
Link Speed (mph)		40			40			30				30
Link Distance (ft)		1182			1066			1058				209
Travel Time (s)		20.1			18.2			24.0				4.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	147	781	125	225	753	38	145	9	139	19	3	74
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	147	781	125	225	753	38	77	77	139	0	22	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0	6.0	5.0	5.0	5.0
Minimum Split (s)	8.0	34.5	34.5	8.0	28.5	28.5	10.2	10.2	10.2	9.2	9.2	9.2
Total Split (s)	25.0	50.0	50.0	25.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	23.8%	47.6%	47.6%	23.8%	47.6%	47.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings

2020 Plus Project Conditions

5: Queen Mary/S Chestnut PI & W Shoreline Dr

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	21.0	44.5	44.5	21.0	44.5	44.5	25.8	25.8	25.8	25.8	25.8	25.8
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.5	5.5	4.0	5.5	5.5	4.2	4.2	4.2		4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	1.5	3.0	3.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0	10.0						
Flash Dont Walk (s)		19.0	19.0		13.0	13.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effect Green (s)	8.1	22.6	22.6	9.9	27.0	27.0	9.8	9.8	9.8		9.8	9.8
Actuated g/C Ratio	0.14	0.40	0.40	0.17	0.48	0.48	0.17	0.17	0.17		0.17	0.17
v/c Ratio	0.38	0.61	0.20	0.47	0.33	0.06	0.37	0.38	0.40		0.10	0.25
Control Delay	28.1	16.3	3.8	26.9	10.9	2.6	29.3	29.5	9.2		24.4	9.4
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	28.1	16.3	3.8	26.9	10.9	2.6	29.3	29.5	9.2		24.4	9.4
LOS	C	B	A	C	B	A	C	C	A		C	A
Approach Delay		16.5			14.2			19.8			12.9	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	56.7
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	15.8
Intersection LOS:	B
Intersection Capacity Utilization:	57.2%
ICU Level of Service:	B
Analysis Period (min):	15
* User Entered Value	









Splits and Phases: 5: Queen Mary/S Chestnut PI & W Shoreline Dr



Opening Year 2020 + Project

HCM Unsignalized Intersection Capacity Analysis
6: Pico Ave & S Harbor Scenic Dr On-ramp

2020 Plus Project Conditions
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	659	9	52	284
Future Volume (Veh/h)	0	0	659	9	52	284
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	659	9	52	284
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)	1200					
pX, platoon unblocked						
vC, conflicting volume	910	334			668	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	910	334			668	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	263	668			931	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2		
Volume Total	439	229	147	189		
Volume Left	0	0	52	0		
Volume Right	0	9	0	0		
cSH	1700	1700	931	1700		
Volume to Capacity	0.26	0.13	0.06	0.11		
Queue Length 95th (ft)	0	0	4	0		
Control Delay (s)	0.0	0.0	3.6	0.0		
Lane LOS			A			
Approach Delay (s)	0.0	1.6				
Approach LOS						
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			39.8%		ICU Level of Service	A
Analysis Period (min)			15			

Opening Year 2020 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	7	4	16	11	418	6	100	15	90	82	46
Future Volume (vph)	45	7	4	16	11	418	6	100	15	90	82	46
Ideal Flow (vphpl)	1440	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	340		0	120		0	85		0	100		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	60			60			100			75		
Lane Util. 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
Ped Bike Factor												
Frt		0.945			0.854			0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2736	1512	0	1520	2733	0	1520	3136	0	1520	1600	1360
Flt Permitted	0.950			0.950			0.704			0.683		
Satd. Flow (perm)	2736	1512	0	1520	2733	0	1126	3136	0	1093	1600	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			418			15				82
Link Speed (mph)		30			30			30				30
Link Distance (ft)		635			1019			1369				1200
Travel Time (s)		14.4			23.2			31.1				27.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	45	7	4	16	11	418	6	100	15	90	82	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	11	0	16	429	0	6	115	0	90	82	46
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.42	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2				6
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	9.1	13.8		9.1	13.8		15.8	15.8		42.8	42.8	42.8
Total Split (s)	25.0	30.0		25.0	30.0		50.0	50.0		50.0	50.0	50.0
Total Split (%)	23.8%	28.6%		23.8%	28.6%		47.6%	47.6%		47.6%	47.6%	47.6%

Carnival TIA
GHD

Synchro 10 Report

Opening Year 2020 + Project

Lanes, Volumes, Timings
7: Pico Ave & Harbor Plaza

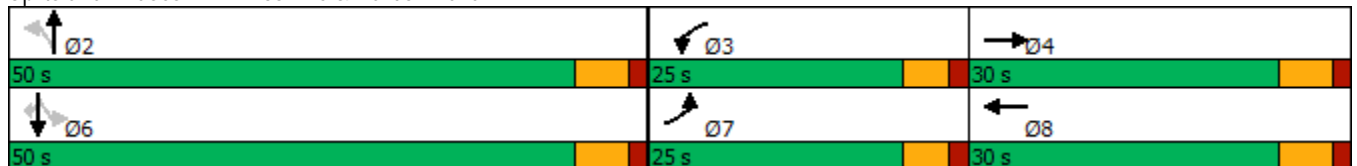
2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	19.9	24.2		19.9	24.2		44.2	44.2		44.2	44.2	44.2
Yellow Time (s)	3.6	4.3		3.6	4.3		4.3	4.3		4.3	4.3	4.3
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.1	5.8		5.1	5.8		5.8	5.8		5.8	5.8	5.8
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	2.0	3.0		2.0	3.0		4.0	4.0		4.0	4.0	4.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Time To Reduce (s)	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)		7.0								7.0	7.0	7.0
Flash Dont Walk (s)		25.0								30.0	30.0	30.0
Pedestrian Calls (#/hr)		0								0	0	0
Act Effect Green (s)	5.3	10.4		5.1	8.6		11.0	11.0		11.0	11.0	11.0
Actuated g/C Ratio	0.15	0.30		0.15	0.25		0.31	0.31		0.31	0.31	0.31
v/c Ratio	0.11	0.02		0.07	0.44		0.02	0.12		0.26	0.16	0.10
Control Delay	16.2	9.8		16.9	4.0		11.3	9.8		13.6	11.8	2.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	16.2	9.8		16.9	4.0		11.3	9.8		13.6	11.8	2.3
LOS	B	A		B	A		B	A		B	B	A
Approach Delay		14.9			4.5			9.9			10.5	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 35.1
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay: 7.5
 Intersection LOS: A
 Intersection Capacity Utilization 47.7%
 ICU Level of Service A
 Analysis Period (min) 15
 * User Entered Value







Splits and Phases: 7: Pico Ave & Harbor Plaza



Opening Year 2020 + Project

HCM Unsignalized Intersection Capacity Analysis
8: Harbor Plaza & Queens Hwy/S Harbor Scenic Drive





















2020 Plus Project Conditions
PM Peak Hour

							
Movement	NBT	NBR	SBL	SBT	SWL	SWR	
Lane Configurations	↑↑			↑↑	↘↘	↗↗	
Traffic Volume (veh/h)	42	0	0	87	58	377	
Future Volume (Veh/h)	42	0	0	87	58	377	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	42	0	0	87	58	377	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							40
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)	1019						
pX, platoon unblocked							
vC, conflicting volume			42			86	21
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			42			86	21
tC, single (s)			4.1			6.8	6.9
tC, 2 stage (s)							
tF (s)			2.2			3.5	3.3
p0 queue free %			100			94	64
cM capacity (veh/h)			1580			912	1058
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1	SW 2	SW 3
Volume Total	21	21	44	44	29	29	377
Volume Left	0	0	0	0	29	29	0
Volume Right	0	0	0	0	0	0	377
cSH	1700	1700	1700	1700	912	912	0
Volume to Capacity	0.01	0.01	0.03	0.03	0.03	0.03	Err
Queue Length 95th (ft)	0	0	0	0	2	2	Err
Control Delay (s)	0.0	0.0	0.0	0.0	9.1	9.1	Err
Lane LOS					A	A	F
Approach Delay (s)	0.0	0.0		Err			
Approach LOS					F		
Intersection Summary							
Average Delay			Err				
Intersection Capacity Utilization			25.7%	ICU Level of Service		A	
Analysis Period (min)	15						

Opening Year 2020 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

2020 Plus Project Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						 	
Traffic Volume (vph)	0	0	0	17	331	37	77	49	0	0	106	79
Future Volume (vph)	0	0	0	17	331	37	77	49	0	0	106	79
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		15
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Ped Bike Factor												
Frt					0.986							0.850
Flt Protected					0.998		0.950	0.988				
Satd. Flow (prot)	0	0	0	0	4723	0	1520	1581	0	0	3200	1360
Flt Permitted					0.998		0.950	0.988				
Satd. Flow (perm)	0	0	0	0	4723	0	1520	1581	0	0	3200	1360
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					12							164
Link Speed (mph)		30			30			30				30
Link Distance (ft)		558			376			248				301
Travel Time (s)		12.7			8.5			5.6				6.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	0	0	0	17	331	37	77	49	0	0	106	79
Shared Lane Traffic (%)							20%					
Lane Group Flow (vph)	0	0	0	0	385	0	62	64	0	0	106	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA		Split	NA			NA	Perm
Protected Phases				5	5		1 2 3	1 2 3			6	
Permitted Phases												6
Detector Phase				5	5		1 2 3	1 2 3			6	6
Switch Phase												
Minimum Initial (s)				8.0	8.0						8.0	8.0
Minimum Split (s)				24.8	24.8						24.8	24.8
Total Split (s)				25.0	25.0						25.0	25.0
Total Split (%)				17.9%	17.9%						17.9%	17.9%

Carnival TIA
GHD

Synchro 10 Report

Lane Group	Ø1	Ø2	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Peak Hour Factor				
Growth Factor				
Heavy Vehicles (%)				
Bus Blockages (#/hr)				
Parking (#/hr)				
Mid-Block Traffic (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	1	2	3	4
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	12.8	12.8	24.8	12.8
Total Split (s)	15.0	25.0	25.0	25.0
Total Split (%)	11%	18%	18%	18%

Opening Year 2020 + Project

Lanes, Volumes, Timings
9: Harbor Plaza & Queensway Dr

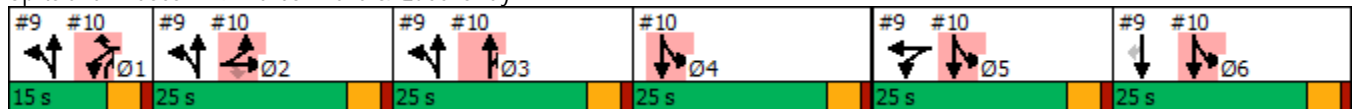
2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)				20.2	20.2						20.2	20.2
Yellow Time (s)				3.5	3.5						3.5	3.5
All-Red Time (s)				1.3	1.3						1.3	1.3
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					4.8						4.8	4.8
Lead/Lag				Lead	Lead						Lag	Lag
Lead-Lag Optimize?				Yes	Yes						Yes	Yes
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Minimum Gap (s)				3.0	3.0						3.0	3.0
Time Before Reduce (s)				0.0	0.0						0.0	0.0
Time To Reduce (s)				0.0	0.0						0.0	0.0
Recall Mode				None	None						None	None
Walk Time (s)				6.0	6.0						6.0	6.0
Flash Dont Walk (s)				14.0	14.0						14.0	14.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effect Green (s)					12.7		34.6	34.6			9.0	9.0
Actuated g/C Ratio					0.16		0.43	0.43			0.11	0.11
v/c Ratio					0.51		0.10	0.09			0.30	0.27
Control Delay					33.5		10.2	10.0			37.6	2.2
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					33.5		10.2	10.0			37.6	2.2
LOS					C		B	A			D	A
Approach Delay					33.5			10.1			22.5	
Approach LOS					C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	80.8
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	26.3
Intersection LOS:	C
Intersection Capacity Utilization:	34.3%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 9: Harbor Plaza & Queensway Dr






























Lane Group	Ø1	Ø2	Ø3	Ø4
Maximum Green (s)	10.2	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3	1.3
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	None
Walk Time (s)			6.0	
Flash Dont Walk (s)			14.0	
Pedestrian Calls (#/hr)			0	
Act Effect Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Opening Year 2020 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

2020 Plus Project Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  				 		 			 	 
Traffic Volume (vph)	18	30	6	11	0	62	0	46	42	13	110	0
Future Volume (vph)	18	30	6	11	0	62	0	46	42	13	110	0
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	75		125	235		0	0		375	0		0
Storage Lanes	1		1	1		2	0		1	0		0
Taper Length (ft)	90			90			25			25		
Lane Util. 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
Ped Bike Factor												
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950							0.995	
Satd. Flow (prot)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3184	0
Flt Permitted	0.950			0.950							0.995	
Satd. Flow (perm)	1520	4800	1360	1520	0	2720	0	3200	1360	0	3184	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			126			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		683			645			537			248	
Travel Time (s)		11.6			11.0			12.2			5.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour 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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	18	30	6	11	0	62	0	46	42	13	110	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	30	6	11	0	62	0	46	42	0	123	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Prot		Prot		NA	pt+ov	Split	NA	
Protected Phases	2	2		1		1		3	31	4 5 6	4 5 6	
Permitted Phases			2									
Detector Phase	2	2	2	1		1		3	31	4 5 6	4 5 6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0				
Minimum Split (s)	12.8	12.8	12.8	12.8		12.8		24.8				
Total Split (s)	25.0	25.0	25.0	15.0		15.0		25.0				
Total Split (%)	17.9%	17.9%	17.9%	10.7%		10.7%		17.9%				

Carnival TIA
GHD

Synchro 10 Report

Lane Group	Ø4	Ø5	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Growth Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Mid-Block Traffic (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	4	5	6
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	8.0	8.0	8.0
Minimum Split (s)	12.8	24.8	24.8
Total Split (s)	25.0	25.0	25.0
Total Split (%)	18%	18%	18%

Opening Year 2020 + Project

Lanes, Volumes, Timings
10: Harbor Plaza & Harbor Scenic Dr

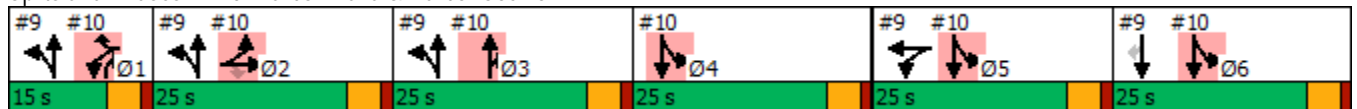
2020 Plus Project Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	20.2	20.2	20.2	10.2		10.2		20.2				
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5		3.5				
All-Red Time (s)	1.3	1.3	1.3	1.3		1.3		1.3				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	4.8	4.8	4.8	4.8		4.8		4.8				
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Minimum Gap (s)	3.0	3.0	3.0	3.0		3.0		3.0				
Time Before Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Time To Reduce (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Recall Mode	Min	Min	Min	None		None		None				
Walk Time (s)								6.0				
Flash Dont Walk (s)								14.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	8.2	8.2	8.2	8.6		8.6		8.1	16.8			39.6
Actuated g/C Ratio	0.10	0.10	0.10	0.11		0.11		0.10	0.21			0.49
v/c Ratio	0.12	0.06	0.02	0.07		0.14		0.14	0.11			0.08
Control Delay	38.7	36.5	0.2	36.8		0.7		37.6	0.6			2.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0			0.0
Total Delay	38.7	36.5	0.2	36.8		0.7		37.6	0.6			2.6
LOS	D	D	A	D		A		D	A			A
Approach Delay		33.2				6.1		19.9				2.6
Approach LOS		C				A		B				A

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	80.8
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	12.8
Intersection LOS:	B
Intersection Capacity Utilization:	32.0%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 10: Harbor Plaza & Harbor Scenic Dr



Lane Group	Ø4	Ø5	Ø6
Maximum Green (s)	20.2	20.2	20.2
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.3	1.3	1.3
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	None	None
Walk Time (s)		6.0	6.0
Flash Dont Walk (s)		14.0	14.0
Pedestrian Calls (#/hr)		0	0
Act Effect Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Intersection

Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑		↔	↔↔	
Traffic Vol, veh/h	190	186	0	5	30	0
Future Vol, veh/h	190	186	0	5	30	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	190	186	0	5	30	0
Number of Lanes	0	2	0	1	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9.6	7.2	7.9
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	75%	0%	0%	100%	100%
Vol Thru, %	25%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	252	124	5	15	15
LT Vol	190	0	0	15	15
Through Vol	62	124	0	0	0
RT Vol	0	0	5	0	0
Lane Flow Rate	252	124	5	15	15
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.345	0.157	0.006	0.025	0.018
Departure Headway (Hd)	4.93	4.553	4.15	5.922	4.213
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	728	786	866	608	855
Service Time	2.664	2.287	2.158	3.622	1.913
HCM Lane V/C Ratio	0.346	0.158	0.006	0.025	0.018
HCM Control Delay	10.3	8.1	7.2	8.8	7
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.5	0.6	0	0.1	0.1

Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 12 - 710 NB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 NB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	555	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	7.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1566	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1566	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	555	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	555	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	7.4	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:30:29

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 12 - 710 SB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 SB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	419	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1181	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1181	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	419	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	419	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.6	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 15 - 710 EB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	446	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1257	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project		
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1257	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	446	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	446	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.9	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 15 - 710 WB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	404	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1138	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1138	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	404	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	404	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.4	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 28 - 710 EB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	278	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	785	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	785	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	278	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	278	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 28 - 710 WB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	226	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.0	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	637	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	637	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	226	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	226	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.0	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:44:05

Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 30 - 710 EB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	278	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	785	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	785	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	278	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	278	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.7	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:47:19

Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat AM 30 - 710 WB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	283	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	3.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	797	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	797	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	283	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	283	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	3.8	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:50:14

Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 12 - 710 NB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 NB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	364	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	4.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1026	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020 + Project	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1026	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	364	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	364	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	4.8	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 12 - 710 SB North of Harbor Scenic.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 SB North of Harbor
Scenic Ramps	
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	513	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	6.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1447	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1447	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	513	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	513	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	6.8	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 15 - 710 EB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	418	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1179	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1179	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	418	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	418	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 15 - 710 WB West of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB West of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	490	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	6.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	1382	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

	Opening Year 2020 + Project	
Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	1382	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	490	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	490	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	6.5	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 28 - 710 EB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	324	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	4.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	609	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	609	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	324	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	324	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	4.3	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 28 - 710 WB North of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB North of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	390	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	732	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	732	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	390	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	390	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	5.2	pc/mi/ln
Level of Service, LOS	A	

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Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 30 - 710 EB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	216	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	2.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	609	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	609	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	216	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	216	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	2.9	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:49:28

Opening Year 2020 + Project
HCS7 Basic Freeway Segments Text Report

BASIC FREEWAY SEGMENT ANALYSIS

File Name:	Sat PM 30 - 710 WB South of Pico Ave.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB South of Pico Ave
Units:	U.S. Customary

LOS and Performance Measures

Flow Rate, vp	306	pc/h/ln
Adjusted Capacity, cadj	2400	pc/h/ln
Speed, S	75.4	mi/h
Density, D	4.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance	8	ft
Total Ramp Density, TRD	0.00	ramps/mi
Demand Volume	862	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	75.4	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance	8	ft
Right-Side Lateral Clearance Adj., fRLC	0.0	mi/h
Total Ramp Density, TRD	0.00	ramps/mi
TRD Adjustment	0.0	mi/h
Free-Flow Speed, FFS	75.4	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h

Step 3: Estimate and Adjust Capacity

Adjusted Free-flow Speed, FFSadj	75.4	mi/h
Capacity, c	2400	pc/h/ln

Capacity Adjustments	
Driver Population	All Familiar

Opening Year 2020 + Project

Driver Population CAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type CAF	1.000	
Incident Type	No Incident	
Incident Type CAF	1.000	
Final Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	862	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, vp	306	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, vp	306	pc/h/ln
Adjusted Free-Flow Speed, FFSadj	75.4	mi/h
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2400	pc/h/ln
Breakpoint, BP	984	pc/h/ln
Density at Capacity, Dc	45	pc/mi/ln
Mean Speed under Base Conditions, S	75.4	mi/h
Density, D	4.1	pc/mi/ln
Level of Service, LOS	A	

This Basic Freeway Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:50:54

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	891	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	8.1	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	838	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	838	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	446	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	446	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	8.1	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	838	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	446	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.34	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:39:48

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v _h	579	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	544	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	544	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	290	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	290	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	544	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	289	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.12	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:40:09

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v ₉₅	509	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	4.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	478	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020 + Project	
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	478	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	254	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	254	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	4.6	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	478	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	254	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.05	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:46:42

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 14.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v _f	761	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	6.9	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	715	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	715	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	380	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	380	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	6.9	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	715	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	380	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.26	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:46:26

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v _f	633	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.7	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	595	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	595	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	316	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	316	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.7	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	595	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	316	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.16	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:43:23

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v	607	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	5.5	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	571	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	571	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	304	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	304	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	5.5	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	571	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	304	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.14	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:43:49

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	239	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	2.2	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	225	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	225	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	120	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	120	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	2.2	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	225	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	120	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.67	
Bicycle LOS	B	

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Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 20.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 2: SB

LOS and Performance Measures

Flow rate, v _h	726	pc/h/ln
Capacity, C	4200	pc/h/ln
Speed, S	55.0	mi/h
Density, D	6.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment Length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	682	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	55.0	mi/h
Lane width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	55.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	55.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	55.0	mi/h
Capacity, c	2100	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2100	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	682	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	363	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	363	pc/h/ln
Free-Flow Speed, FFS	55.0	mi/h
Capacity, c	2100	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	55.0	mi/h
Density, D	6.6	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	682	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	363	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.23	
Bicycle LOS	B	

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Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	283	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	2.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	266	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	266	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	142	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	142	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	2.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	266	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	141	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.75	
Bicycle LOS	B	

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Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 22.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v ₉₅	365	pc/h/ln
Capacity, C	4000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	2	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	343	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020 + Project	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	343	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	2	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	182	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	182	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.6	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	343	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	2	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	182	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.88	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:51:15

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v	869	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	5.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	817	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

Opening Year 2020 + Project		
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	817	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	290	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	290	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	5.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	817	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	290	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	2.12	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:55:37

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 24.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: NB

LOS and Performance Measures

Flow rate, v _f	501	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.3	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	471	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020 + Project	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	471	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	167	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	167	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.3	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	471	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	167	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.84	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 15:52:03

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat AM 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v	539	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.6	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	507	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020 + Project	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	507	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	180	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	180	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.6	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	507	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	180	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.88	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/1/2019 16:01:16

Opening Year 2020 + Project
HCS7 Multilane Highway Segments Text Report

MULTILANE HIGHWAY SEGMENT ANALYSIS

File Name:	Sat PM 25.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/1/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

Direction 1: SB

LOS and Performance Measures

Flow rate, v _f	566	pc/h/ln
Capacity, C	6000	pc/h/ln
Speed, S	50.0	mi/h
Density, D	3.8	pc/mi/ln
Level of Service, LOS	A	

Step 1: Input Data

Number of Lanes, N	3	ln
Lane Width	12	ft
Segment length	-	ft
Terrain Type	Level	
Percent Grade	-	%
Grade Length	-	mi
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Median Type	Divided	
Access Point Density	0.0	access points/mi
Demand Volume, V	532	veh/h
Peak Hour Factor, PHF	0.94	
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%

Step 2: Estimate and Adjust FFS

Estimating FFS		
Measured or Base FFS	Base	
Base Free-Flow Speed, BFFS	50.0	mi/h
Lane Width	12	ft
Lane Width Adjustment, fLW	0.0	mi/h
Right-Side Lateral Clearance, LCR	6	ft
Left-Side Lateral Clearance, LCL	6	ft
Total Lateral Clearance, TLC	12.00	ft
Total Lateral Clearance Adjustment, fTLC	0.0	mi/h
Median Type	Divided	
Median Type Adjustment, fM	0.0	mi/h
Access Point Density	0.0	access points/mi
Access Point Density Adjustment, fA	0.0	mi/h
Free-Flow Speed, FFS	50.0	mi/h
Speed Adjustments		
Driver Population	All Familiar	
Speed Adjustment Factor, SAF	1.000	
Adjusted Free-Flow Speed, FFSadj	50.0	mi/h

Step 3: Estimate and Adjust Capacity

	Opening Year 2020 + Project	
Adjusted Free-flow Speed, FFSadj	50.0	mi/h
Capacity, c	2000	pc/h/ln
Capacity Adjustments		
Driver Population	All Familiar	
Capacity Adjustment Factor, CAF	1.000	
Adjusted Capacity, cadj	2000	pc/h/ln

Step 4: Adjust Demand Volume

Demand Volume, V	532	veh/h
Peak Hour Factor, PHF	0.94	
Number of Lanes, N	3	ln
Terrain type	Level	
Percent Grade	-	%
Grade Length	-	mi
Percent Total Trucks	0.00	%
Percent Single-Unit Trucks, SUT	-	%
Percent Tractor-Trailers, TT	-	%
Proportion of Total Trucks, PT	0.0000	
Heavy Vehicle PCE, ET	2.000	
Heavy Vehicle Adjustment, fHV	1.000	
Demand Adjustment Factor, DAF	1.000	
Demand Flow Rate, v _D	189	pc/h/ln

Steps 5 and 6: Estimate Speed and Density and Determine LOS

Demand Flow Rate, v _D	189	pc/h/ln
Free-Flow Speed, FFS	50.0	mi/h
Capacity, c	2000	pc/h/ln
Breakpoint, BP	1400	pc/h/ln
Density at Capacity, D _c	45	pc/mi/ln
Mean Speed under Base Conditions, S	50.0	mi/h
Density, D	3.8	pc/mi/ln
Level of service, LOS	A	

Bicycle Level of Service

Hourly Directional Volume, V	532	veh
Peak Hour Factor, PHF	0.94	
Number of Directional Lanes, N	3	ln
Directional Demand Flow Rate in Outside Lane, v _{OL}	189	veh/ln
Percent of Segment with Occupied On-Highway Parking, %OHP	0	
Paved Shoulder Width, W _s	6	ft
Effective Width as a Function of Traffic Volume, W _v	18	ft
Average Effective Width of Outside Lane, W _e	24	ft
Posted Speed Limit, S _p	50	mi/h
Effective Speed Factor, S _t	4.62	
Percentage of Heavy Vehicles, HV	0.0000	
Pavement Condition Rating, P	4	
Bicycle Level of Service Score, BLOS	1.90	
Bicycle LOS	B	

This Multilane Highway Segment text report was created in HCS7™ Multilane Version 7.4 on 2/5/2019 09:44:25

FREEWAY DIVERGE ANALYSIS

File Name: Sat AM 26 - 710 WB @ Harbor Scenic Off.xuf
 Analyst: ZRS
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/24/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday AM Peak Hour
 Project Description: Long Beach Terminal Improvements - I-710 WB @ Harbor Scenic
 Dr Off Ramp
 Units: U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	1.6	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	68.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	68.1	mi/h
Density Across All Lanes, D	9.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1181		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	1500		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1181	544	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1256	579	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	1256		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	1256	4800	No
vR	579	2200	No
v12	1256	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1256	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	1.6	pc/mi/ln
Density in Off-Ramp Influence Area, DR	1.6	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1256	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1256	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.220	
Average Speed in Ramp Influence Area, SR	68.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	68.1	mi/h
Density Across All Lanes, D	9.2	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:08:33

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat AM 27 - 710 EB @ Harbor Scenic On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Harbor Scenic
Dr On Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	8.8	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.5	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.5	mi/h
Density Across All Lanes, D	12.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	785		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	1500		ft
Length of Second Acceleration Lane, LA2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	785	781	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	835	831	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	835		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vFO	1666	4800	No
vR	831	2200	No
vR12	1666	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	831	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	835	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	8.8	pc/mi/ln
Density in On-Ramp Influence Area, DR	8.8	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	835	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	835	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1666	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.177	
Average Speed in Ramp Influence Area, SR	69.5	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.5	mi/h
Density Across All Lanes, D	12.0	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:10:23

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name: Sat AM 29 - 710 WB @ Pico On.xuf
 Analyst: ZRS
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/24/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday AM Peak Hour
 Project Description: Long Beach Terminal Improvements - I-710 WB @ Pico Ave On Ramp
 Units: U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	9.6	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	65.0	mi/h
Density Across All Lanes, D	6.5	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	637		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	25.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	400		ft
Length of Second Acceleration Lane, LA2	-		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	637	160		veh/h
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	678	170		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	678		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vFO	848	4800	No
vR	170	1900	No
vR12	848	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	1900	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	1900	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	170	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	678	pc/h
Length of Acceleration Lane, LA	400	ft
Density in On-Ramp Influence Area, DR	9.6	pc/mi/ln
Density in On-Ramp Influence Area, DR	9.6	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	25.0	mi/h
Length of Acceleration Lane, LA	400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	678	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	678	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	848	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.310	
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	65.0	mi/h
Density Across All Lanes, D	6.5	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:11:55

FREEWAY DIVERGE ANALYSIS

File Name: Sat AM 33 - Ocean & Pico Off Split.xuf
 Analyst: KI3
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/9/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday AM Peak Hour
 Project Description: Long Beach Terminal Improvements - Ocean Blvd & Pico Ave
 Off Ramp Split
 Units: U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	3.7	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.3	mi/h
Density Across All Lanes, D	3.6	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	332		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	332		140	veh/h
Peak Hour Factor, PHF	0.94		0.94	
Percent Total Trucks	0.00		0.00	%
Percent SUTs	-		-	%
Percent TTs	-		-	%
Prop.Total Trucks, PT	0.0000		0.0000	
Heavy Vehicle PCE, ET	2.000		2.000	
Heavy Vehicle Adj., fHV	1.000		1.000	
Terrain Type	Level		Level	
Percent Grade	-		-	%
Grade Length	-		-	mi
Demand Adj.Factor, DAF	1.000		1.000	
Demand Flow Rate, v	353		149	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	353		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	353	4500	No
vR	149	2000	No
v12	353	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	3.7	pc/mi/ln
Density in Off-Ramp Influence Area, DR	3.7	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	353	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.441	
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	49.3	mi/h
Density Across All Lanes, D	3.6	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:37:30

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name: Sat AM 34 - 710 WB @ Ocean On.xuf
 Analyst: ZRS
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/24/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday AM Peak Hour
 Project Description: Long Beach Terminal Improvements - I-710 WB @ Ocean Blvd On Ramp
 Units: U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	5.4	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.8	mi/h
Density Across All Lanes, D	8.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data		
Number of Freeway Lanes	2	ln
Freeway Free-Flow Speed, FFS	75.4	mi/h
Segment Length	1500	ft
Multilane Highway or C-D Roadway?	Freeway	
Demand Volume, V	797	veh/h
Peak Hour Factor, PHF	0.94	

Ramp Data		
Number of Ramp Lanes	1	ln
Ramp Free-Flow Speed, SFR	55.0	mi/h
Ramp Side	Left	
Length of First Acceleration Lane, LA or LA1	1500	ft
Length of Second Acceleration Lane, LA2	-	ft

Junction Components		Freeway	Ramp	
Demand Volume, V	797	341		veh/h
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	848	363		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps		
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000	
Flow Rate in Lanes 1 and 2, v12	848	pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vFO	1211	4800	No
vR	363	2200	No
vR12	1211	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	363	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	848	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	5.4	pc/mi/ln
Density in On-Ramp Influence Area, DR	5.4	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	848	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	848	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1211	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.169	
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.8	mi/h
Density Across All Lanes, D	8.7	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:14:08

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	Sat AM 35 - 710 EB @ Ocean & Pico Off.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Ocean Blvd & Pico Ave Off Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	2.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	68.3	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	68.3	mi/h
Density Across All Lanes, D	9.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	4600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1257		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	600		ft
Length of Second Deceleration Lane, LD2	600		ft

Junction Components		Freeway	Ramp	
Demand Volume, V		1257	472	veh/h
Peak Hour Factor, PHF		0.94	0.94	
Percent Total Trucks		0.00	0.00	%
Percent SUTs		-	-	%
Percent TTs		-	-	%
Prop.Total Trucks, PT		0.0000	0.0000	
Heavy Vehicle PCE, ET		2.000	2.000	
Heavy Vehicle Adj., fHV		1.000	1.000	
Terrain Type		Level	Level	
Percent Grade		-	-	%
Grade Length		-	-	mi
Demand Adj.Factor, DAF		1.000	1.000	
Demand Flow Rate, v		1337	502	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	1337		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	1337	4800	No
vR	502	4400	No
v12	1337	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	4400	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	4400	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1337	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	2.3	pc/mi/ln
Density in Off-Ramp Influence Area, DR	2.3	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1337	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1337	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.213	
Average Speed in Ramp Influence Area, SR	68.3	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	68.3	mi/h
Density Across All Lanes, D	9.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:38:43

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	Sat PM 26 - 710 WB @ Harbor Scenic Off.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Harbor Scenic
Dr Off Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	67.5	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	67.5	mi/h
Density Across All Lanes, D	11.4	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1447		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	1500		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	1447	715	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	1539	761	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	1539		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	1539	4800	No
vR	761	2200	No
v12	1539	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	1539	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	4.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1539	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	1539	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.236	
Average Speed in Ramp Influence Area, SR	67.5	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	67.5	mi/h
Density Across All Lanes, D	11.4	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:34:25

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat PM 27 - 710 EB @ Harbor Scenic On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday AM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 EB @ Harbor Scenic
Dr On Ramp	
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	4.5	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.8	mi/h
Density Across All Lanes, D	7.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	609		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	1500		ft
Length of Second Acceleration Lane, LA2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	609	417	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	648	444	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	648		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vFO	1092	4800	No
vR	444	2200	No
vR12	1092	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	444	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	648	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	4.5	pc/mi/ln
Density in On-Ramp Influence Area, DR	4.5	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	648	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	648	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1092	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.168	
Average Speed in Ramp Influence Area, SR	69.8	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.8	mi/h
Density Across All Lanes, D	7.8	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:26:55

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	Sat PM 29 - 710 WB @ Pico On.xuf
Analyst:	ZRS
Agency:	GHD
Jurisdiction:	Caltrans
Date:	1/24/2019
Analysis Year:	2020
Time Period Analyzed:	Saturday PM Peak Hour
Project Description:	Long Beach Terminal Improvements - I-710 WB @ Pico Ave On Ramp
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	10.1	pc/mi/ln
Level of Service, LOS	B	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	65.0	mi/h
Density Across All Lanes, D	7.1	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data		
Number of Freeway Lanes	2	ln
Freeway Free-Flow Speed, FFS	75.4	mi/h
Segment Length	1500	ft
Multilane Highway or C-D Roadway?	Freeway	
Demand Volume, V	732	veh/h
Peak Hour Factor, PHF	0.94	

Ramp Data		
Number of Ramp Lanes	1	ln
Ramp Free-Flow Speed, SFR	25.0	mi/h
Ramp Side	Right	
Length of First Acceleration Lane, LA or LA1	400	ft
Length of Second Acceleration Lane, LA2	-	ft

Junction Components		Freeway	Ramp	
Demand Volume, V	732	130	veh/h	
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00	%	
Percent SUTs	-	-	%	
Percent TTs	-	-	%	
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-	%	
Grade Length	-	-	mi	
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	779	138	pc/h	

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps		
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000	
Flow Rate in Lanes 1 and 2, v12	779	pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vFO	917	4800	No
vR	138	1900	No
vR12	917	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	1900	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	1900	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	138	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	779	pc/h
Length of Acceleration Lane, LA	400	ft
Density in On-Ramp Influence Area, DR	10.1	pc/mi/ln
Density in On-Ramp Influence Area, DR	10.1	veh/mi/ln
Level of Service, LOS	B	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	25.0	mi/h
Length of Acceleration Lane, LA	400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	779	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	779	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	917	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.311	
Average Speed in Ramp Influence Area, SR	65.0	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	65.0	mi/h
Density Across All Lanes, D	7.1	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:27:39

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name: Sat PM 33 - Ocean & Pico Off Split.xuf
 Analyst: ZRS
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/9/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday AM Peak Hour
 Project Description: Long Beach Terminal Improvements - Ocean Blvd & Pico Ave
 Off Ramp Split
 Units: U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.6	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.3	mi/h
Density Across All Lanes, D	4.7	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	435		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	435	135	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	463	144	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	463		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	463	4500	No
vR	144	2000	No
v12	463	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.6	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.6	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	463	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.441	
Average Speed in Ramp Influence Area, SR	49.3	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp Junction, S	49.3	mi/h
Density Across All Lanes, D	4.7	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:38:09

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name: Sat PM 34 - 710 WB @ Ocean On.xuf
 Analyst: ZRS
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/24/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday PM Peak Hour
 Project Description: Long Beach Terminal Improvements - I-710 WB @ Ocean Blvd On Ramp
 Units: U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	7.4	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	pc/mi/ln
Average Speed in Ramp Influence Area, SR	69.6	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp (Merge) Junction, S	69.6	mi/h
Density Across All Lanes, D	10.6	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data		
Number of Freeway Lanes	2	ln
Freeway Free-Flow Speed, FFS	75.4	mi/h
Segment Length	1500	ft
Multilane Highway or C-D Roadway?	Freeway	
Demand Volume, V	862	veh/h
Peak Hour Factor, PHF	0.94	

Ramp Data		
Number of Ramp Lanes	1	ln
Ramp Free-Flow Speed, SFR	55.0	mi/h
Ramp Side	Left	
Length of First Acceleration Lane, LA or LA1	1500	ft
Length of Second Acceleration Lane, LA2	-	ft

Junction Components		Freeway	Ramp	
Demand Volume, V	862	520		veh/h
Peak Hour Factor, PHF	0.94	0.94		
Percent Total Trucks	0.00	0.00		%
Percent SUTs	-	-		%
Percent TTs	-	-		%
Prop.Total Trucks, PT	0.0000	0.0000		
Heavy Vehicle PCE, ET	2.000	2.000		
Heavy Vehicle Adj., fHV	1.000	1.000		
Terrain Type	Level	Level		
Percent Grade	-	-		%
Grade Length	-	-		mi
Demand Adj.Factor, DAF	1.000	1.000		
Demand Flow Rate, v	917	553		pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps		
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-	ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000	
Flow Rate in Lanes 1 and 2, v12	917	pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vFO	1470	4800	No
vR	553	2200	No
vR12	1470	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4800	2200	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4800	2200	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	553	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	917	pc/h
Length of Acceleration Lane, LA	1500	ft
Density in On-Ramp Influence Area, DR	7.4	pc/mi/ln
Density in On-Ramp Influence Area, DR	7.4	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Length of Acceleration Lane, LA	1500	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	917	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	917	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	1470	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.173	
Average Speed in Ramp Influence Area, SR	69.6	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	69.6	mi/h
Density Across All Lanes, D	10.6	pc/mi/ln

This Freeway Merge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 10:33:34

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name: Sat PM 35 - 710 EB @ Ocean & Pico Off.xuf
 Analyst: ZRS
 Agency: GHD
 Jurisdiction: Caltrans
 Date: 1/24/2019
 Analysis Year: 2020
 Time Period Analyzed: Saturday PM Peak Hour
 Project Description: Long Beach Terminal Improvements - I-710 EB @ Ocean Blvd & Pico Ave Off Ramp
 Units: U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	356	pc/mi/ln
Average Speed in Ramp Influence Area, SR	68.0	mi/h
Average Speed in Outer Lanes of Freeway, SO	82.7	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	71.6	mi/h
Density Across All Lanes, D	5.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	75.4		mi/h
Segment Length	4600		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	1179		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	55.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	600		ft
Length of Second Deceleration Lane, LD2	600		ft

Junction Components		Freeway	Ramp	
Demand Volume, V		1179	570	veh/h
Peak Hour Factor, PHF		0.94	0.94	
Percent Total Trucks		0.00	0.00	%
Percent SUTs		-	-	%
Percent TTs		-	-	%
Prop.Total Trucks, PT		0.0000	0.0000	
Heavy Vehicle PCE, ET		2.000	2.000	
Heavy Vehicle Adj., fHV		1.000	1.000	
Terrain Type		Level	Level	
Percent Grade		-	-	%
Grade Length		-	-	mi
Demand Adj.Factor, DAF		1.000	1.000	
Demand Flow Rate, v		1254	606	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.450		
Flow Rate in Lanes 1 and 2, v12	898		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	1254	7200	No
vR	606	4400	No
v12	898	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	7200	4400	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	7200	4400	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	898	pc/h
Length of Deceleration Lane, LA	1500	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	75.4	mi/h
Ramp Free-Flow Speed, SFR	55.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	1254	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	898	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.223	
Average Speed in Ramp Influence Area, SR	68.0	mi/h
Average Flow in Outer Lanes, vOA	356	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	82.7	mi/h
Average Speed for Off-Ramp Junction, S	71.6	mi/h
Density Across All Lanes, D	5.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS™ Freeways Version 7.5 on 1/31/2019 14:39:19

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/4/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	8.3	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	9.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	838		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	838	57	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	891	61	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	891		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	891	4500	No
vR	61	2000	No
v12	891	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	891	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	8.3	pc/mi/ln
Density in Off-Ramp Influence Area, DR	8.3	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	891	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	891	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.433	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.4	mi/h
Density Across All Lanes, D	9.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/4/2019 08:54:47

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM 13.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/5/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	5.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.4	mi/h
Density Across All Lanes, D	5.2	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	478		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	478	61	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	509	65	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	509		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	509	4500	No
vR	65	2000	No
v12	509	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	509	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	5.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	5.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	509	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	509	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.434	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.4	mi/h
Density Across All Lanes, D	5.2	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:17:50

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/4/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.5	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	512		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	512	288	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	545	306	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	545		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	545	4500	No
vR	306	4000	No
v12	545	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	545	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	545	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	545	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.456	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	5.5	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/4/2019 08:57:16

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM 21.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/5/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	0.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	6.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	556		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	400		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	556	260	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	591	277	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	591		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	591	4500	No
vR	277	4000	No
v12	591	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	591	pc/h
Length of Deceleration Lane, LA	1200	ft
Density in Off-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	591	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	591	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.453	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	6.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:16:34

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT AM 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/4/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	8.1	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA pc/mi/ln	-	
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.2	mi/h
Density Across All Lanes, D	8.8	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	817		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	817	222	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	869	236	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	869		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	869	4500	No
vR	236	2000	No
v12	869	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	869	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	8.1	pc/mi/ln
Density in Off-Ramp Influence Area, DR	8.1	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	869	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	869	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.449	
Average Speed in Ramp Influence Area, SR	49.2	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.2	mi/h
Density Across All Lanes, D	8.8	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/4/2019 08:59:23

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM 23.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/5/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	5.0	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	-	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	49.1	mi/h
Density Across All Lanes, D	5.1	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	471		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	471	246	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	501	262	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	1.000		
Flow Rate in Lanes 1 and 2, v12	501		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	501	4500	No
vR	262	2000	No
v12	501	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	501	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	5.0	pc/mi/ln
Density in Off-Ramp Influence Area, DR	5.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	501	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	501	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for Off-Ramp, DS	0.452	
Average Speed in Ramp Influence Area, SR	49.1	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	49.1	mi/h
Density Across All Lanes, D	5.1	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:14:57

FREEWAY DIVERGE ANALYSIS

File Name: SAT AM 31.xuf
 Analyst: ECS
 Agency: GHD
 Jurisdiction: POLB/COLB
 Date: 2/4/2019
 Analysis Year: 2020 Plus Project
 Time Period Analyzed: Saturday AM Peak
 Project Description: Carnival Cruise TIAR
 Units: U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	3.6	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	107	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	51.6	mi/h
Density Across All Lanes, D	2.9	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	424		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	424	26	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	451	28	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.747		
Flow Rate in Lanes 1 and 2, v12	344		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	451	6750	No
vR	28	2000	No
v12	344	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	344	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	3.6	pc/mi/ln
Density in Off-Ramp Influence Area, DR	3.6	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	451	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	344	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.431	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	107	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	51.6	mi/h
Density Across All Lanes, D	2.9	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:25:55

Opening Year 2020 + Project
HCS7 Freeway Diverge Text Report

FREEWAY DIVERGE ANALYSIS

File Name:	SAT PM 31.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/5/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in Off-Ramp (Diverge) Influence Area, DR	4.7	pc/mi/ln
Level of Service, LOS	A	
Average Flow in Outer Lanes, vOA	145	
pc/mi/ln		
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for Off-Ramp (Diverge) Junction, S	51.6	mi/h
Density Across All Lanes, D	4.0	pc/mi/ln

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	3		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	580		veh/h
Peak Hour Factor, PHF	0.94		
Ramp Data			
Number of Ramp Lanes	1		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Deceleration Lane, LD or LD1	400		ft
Length of Second Deceleration Lane, LD2	-		ft
Junction Components			
	Freeway	Ramp	
Demand Volume, V	580	52	veh/h
Peak Hour Factor, PHF	0.94	0.94	
Percent Total Trucks	0.00	0.00	%
Percent SUTs	-	-	%
Percent TTs	-	-	%
Prop.Total Trucks, PT	0.0000	0.0000	
Heavy Vehicle PCE, ET	2.000	2.000	
Heavy Vehicle Adj., fHV	1.000	1.000	
Terrain Type	Level	Level	
Percent Grade	-	-	%
Grade Length	-	-	mi
Demand Adj.Factor, DAF	1.000	1.000	
Demand Flow Rate, v	617	55	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for Off-Ramps			
Adjacent Upstream On-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFD	0.742		
Flow Rate in Lanes 1 and 2, v12	472		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Opening Year 2020 + Project

Capacity Checks

	Actual	Maximum	Violation?
vF	617	6750	No
vR	55	2000	No
v12	472	4400	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	6750	2000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	6750	2000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate in Lanes 1 and 2, v12	472	pc/h
Length of Deceleration Lane, LA	400	ft
Density in Off-Ramp Influence Area, DR	4.7	pc/mi/ln
Density in Off-Ramp Influence Area, DR	4.7	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	617	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	472	pc/h
Number of Outer Lanes on Freeway, NO	1	ln
Speed Index for Off-Ramp, DS	0.433	
Average Speed in Ramp Influence Area, SR	49.4	mi/h
Average Flow in Outer Lanes, vOA	145	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	60.3	mi/h
Average Speed for On-Ramp Junction, S	51.6	mi/h
Density Across All Lanes, D	4.0	pc/mi/ln

This Freeway Diverge Segment text report was created in HCS7™ Freeways Version 7.4 on 2/5/2019 09:13:06

Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT AM 32.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/4/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday AM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	3.4	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	332		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	332		11	veh/h
Peak Hour Factor, PHF	0.94		0.94	
Percent Total Trucks	0.00		0.00	%
Percent SUTs	-		-	%
Percent TTs	-		-	%
Prop.Total Trucks, PT	0.0000		0.0000	
Heavy Vehicle PCE, ET	2.000		2.000	
Heavy Vehicle Adj., fHV	1.000		1.000	
Terrain Type	Level		Level	
Percent Grade	-		-	%
Grade Length	-		-	mi
Demand Adj.Factor, DAF	1.000		1.000	
Demand Flow Rate, v	353		12	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	353		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Opening Year 2020 + Project

	Actual	Maximum	Violation?
vFO	365	4500	No
vR	12	4000	No
vR12	365	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	12	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Length of Acceleration Lane, LA	2400	ft
Density in On-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Length of Acceleration Lane, LA	2400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	353	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	353	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	365	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.159	
Average Speed in Ramp Influence Area, SR	52.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	52.9	mi/h
Density Across All Lanes, D	3.4	pc/mi/ln

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Opening Year 2020 + Project
HCS7 Freeway Merge Text Report

FREEWAY MERGE ANALYSIS

File Name:	SAT PM 32.xuf
Analyst:	ECS
Agency:	GHD
Jurisdiction:	POLB/COLB
Date:	2/5/2019
Analysis Year:	2020 Plus Project
Time Period Analyzed:	Saturday PM Peak
Project Description:	Carnival Cruise TIAR
Units:	U.S. Customary

LOS and Performance Measures

Density in On-Ramp (Merge) Influence Area, DR	0.0	pc/mi/ln	
Level of Service, LOS	A		
Average Flow in Outer Lanes, vOA	-		pc/mi/ln
Average Speed in Ramp Influence Area, SR	52.9	mi/h	
Average Speed in Outer Lanes of Freeway, SO	-	mi/h	
Average Speed for On-Ramp (Merge) Junction, S	52.9	mi/h	
Density Across All Lanes, D	4.5	pc/mi/ln	

Step 1: Specify Inputs and Convert Demand Volumes to Demand Flow Rates

Freeway Data			
Number of Freeway Lanes	2		ln
Freeway Free-Flow Speed, FFS	55.0		mi/h
Segment Length	1500		ft
Multilane Highway or C-D Roadway?	Freeway		
Demand Volume, V	435		veh/h
Peak Hour Factor, PHF	0.94		

Ramp Data			
Number of Ramp Lanes	2		ln
Ramp Free-Flow Speed, SFR	35.0		mi/h
Ramp Side	Right		
Length of First Acceleration Lane, LA or LA1	800		ft
Length of Second Acceleration Lane, LA2	800		ft

Junction Components		Freeway	Ramp	
Demand Volume, V	435		11	veh/h
Peak Hour Factor, PHF	0.94		0.94	
Percent Total Trucks	0.00		0.00	%
Percent SUTs	-		-	%
Percent TTs	-		-	%
Prop.Total Trucks, PT	0.0000		0.0000	
Heavy Vehicle PCE, ET	2.000		2.000	
Heavy Vehicle Adj., fHV	1.000		1.000	
Terrain Type	Level		Level	
Percent Grade	-		-	%
Grade Length	-		-	mi
Demand Adj.Factor, DAF	1.000		1.000	
Demand Flow Rate, v	463		12	pc/h

Step 2: Estimate the Approaching Flow Rate in Lanes 1 and 2

Estimating Flow in Lanes 1 and 2 for On-Ramps			
Adjacent Upstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Adjacent Downstream Off-Ramp Equilibrium Distance, LEQ	-		ft
Prop. Freeway Veh. in Lanes 1 and 2, PFM	1.000		
Flow Rate in Lanes 1 and 2, v12	463		pc/h

Step 3: Estimate Capacity of Ramp-Freeway Junction and Compare Flow Rates

Capacity Checks

Opening Year 2020 + Project

	Actual	Maximum	Violation?
vFO	475	4500	No
vR	12	4000	No
vR12	475	4600	No
	Freeway	Ramp	
Unadjusted Capacity, cmd	4500	4000	pc/h
Driver Population	All Familiar	All Familiar	
Driver Population CAF	1.000	1.000	
Weather Type	Non-Severe Weather	Non-Severe Weather	
Weather Type CAF	1.000	1.000	
Incident Type	No Incident	-	
Final Capacity Adj. Factor, CAF	1.000	1.000	
Adjusted Capacity, cmda	4500	4000	pc/h

Step 4: Estimate Density in Ramp Influence Area and Determine LOS

Demand Flow Rate on Ramp, vR	12	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Length of Acceleration Lane, LA	2400	ft
Density in On-Ramp Influence Area, DR	0.0	pc/mi/ln
Density in On-Ramp Influence Area, DR	0.0	veh/mi/ln
Level of Service, LOS	A	

Step 5: Estimate Speeds in the Vicinity of Ramp-Freeway Junctions

Freeway Free-Flow Speed, FFS	55.0	mi/h
Ramp Free-Flow Speed, SFR	35.0	mi/h
Length of Acceleration Lane, LA	2400	ft
Driver Population	All Familiar	
Driver Population SAF	1.000	
Weather Type	Non-Severe Weather	
Weather Type SAF	1.000	
Final Speed Adjustment Factor, SAF	1.000	
Demand Flow Rate on Freeway, vF	463	pc/h
Demand Flow Rate in Lanes 1 and 2, v12	463	pc/h
Total Demand Flow Entering On-Ramp Infl. Area, vR12	475	pc/h
Number of Outer Lanes on Freeway, NO	0	ln
Speed Index for On-Ramp, MS	0.159	
Average Speed in Ramp Influence Area, SR	52.9	mi/h
Average Flow in Outer Lanes, vOA	-	pc/h/ln
Average Speed in Outer Lanes of Freeway, SO	-	mi/h
Average Speed for On-Ramp Junction, S	52.9	mi/h
Density Across All Lanes, D	4.5	pc/mi/ln

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Queuing and Blocking Report
Year 2020 No Project Conditions

02/01/2019

Intersection: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	L	T	TR	L	T	TR
Maximum Queue (ft)	27	24	109	209	42	34	38	109	100
Average Queue (ft)	3	2	56	106	13	5	6	59	33
95th Queue (ft)	17	12	92	171	36	21	25	98	76
Link Distance (ft)		414		1079	1079	1079		727	727
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	40		150				150		
Storage Blk Time (%)	0	0							
Queuing Penalty (veh)	0	0							

Queuing and Blocking Report
Year 2020 No Project Conditions

02/01/2019

Intersection: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	L	T	TR	L	T	TR
Maximum Queue (ft)	31	15	95	206	56	44	34	92	69
Average Queue (ft)	4	1	47	104	13	7	8	45	22
95th Queue (ft)	20	7	82	172	41	27	29	77	57
Link Distance (ft)		414		1079	1079	1079		727	727
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	40		150				150		
Storage Blk Time (%)	0	0							
Queuing Penalty (veh)	0	0							

Queuing and Blocking Report
Year 2020 Plus Project Conditions

02/01/2019

Intersection: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	L	T	TR	L	T	TR
Maximum Queue (ft)	33	19	115	212	55	42	33	102	86
Average Queue (ft)	3	1	59	114	19	7	6	61	33
95th Queue (ft)	18	10	98	186	47	27	26	98	73
Link Distance (ft)		414		1079	1079	1079		727	727
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	40		150				150		
Storage Blk Time (%)	0	0	0						
Queuing Penalty (veh)	0	0	0						

Queuing and Blocking Report
Year 2020 Plus Project Conditions

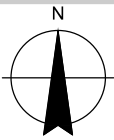
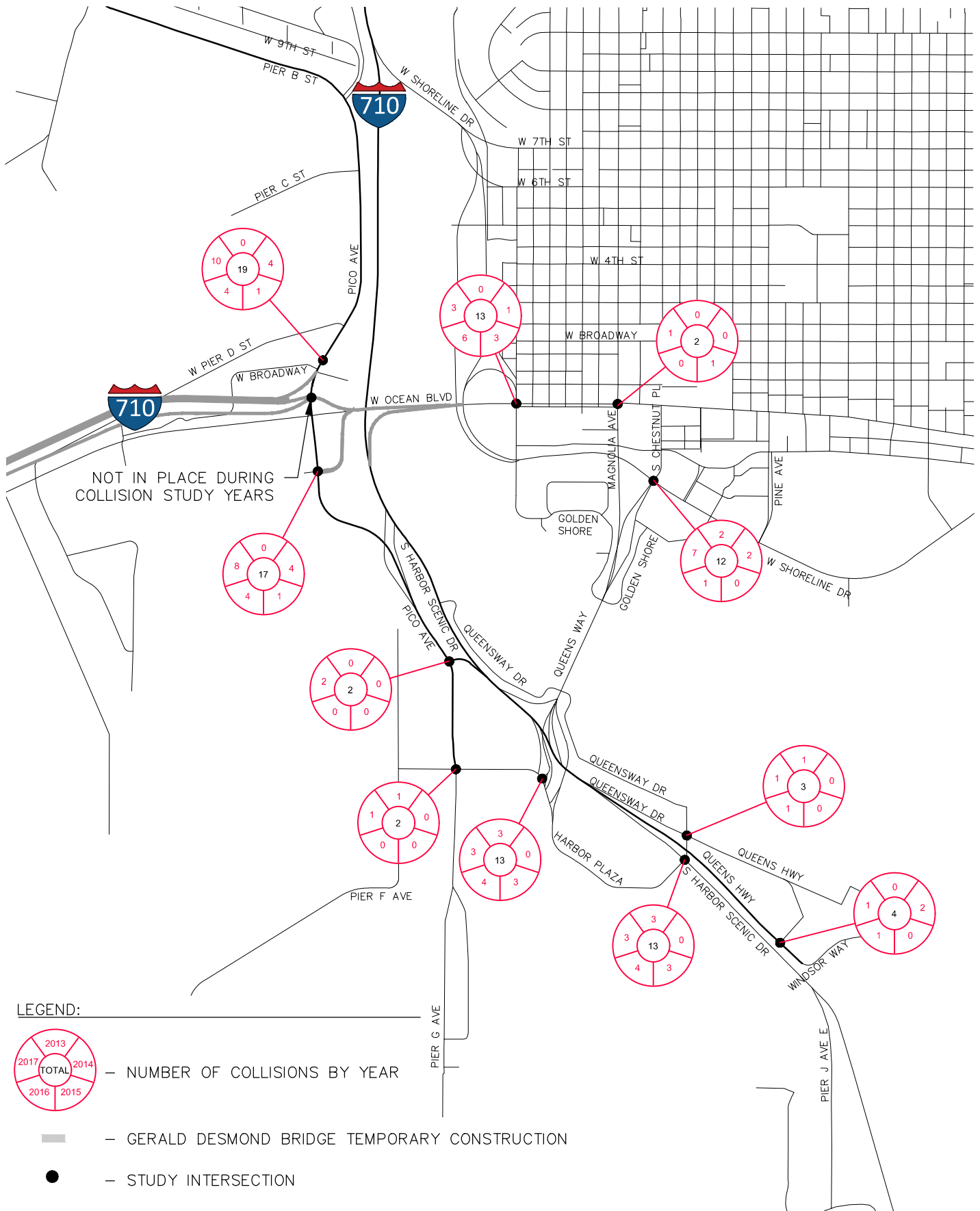
02/01/2019

Intersection: 2: Pico Ave & Pier E St/Ocean Blvd EB Ramp

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	L	T	TR	L	T	TR
Maximum Queue (ft)	28	15	106	215	50	52	38	98	83
Average Queue (ft)	3	1	56	96	16	9	9	49	26
95th Queue (ft)	17	9	93	161	42	34	32	87	67
Link Distance (ft)		414		1079	1079	1079		727	727
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	40		150				150		
Storage Blk Time (%)	0	0	0						
Queuing Penalty (veh)	0	0	0						

Appendix D

Collision Summary



Carnival Cruise
Long Beach Cruise Terminal Improvement Project

Project No. 11183495
Report No. RPT.01
Date 2/7/2019

**Intersection Collision Data:
Collisions by Year
Years 2013 - 2017**



Intersection: 1. PICO AVE/ I-710 SB ON-RAMP Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 19

COLLISION SEVERITY	Fatal Collisions: 0 (0%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%)
	Injury Collisions: 1 (5%)		Dark - ST Lights: 4 (21%)
	Severe Injury: 0 (0%)		Dark - ST Lights not functioning: 0 (0%)
	Other Visible Injury: 0 (0%)		Daylight: 15 (79%)
	Compliant of Pain 1 (100%)		Dusk - Dawn: 0 (0%)
	Injury Sub Total: 1 (100%)		Not Stated 0 (0%)
	Property Damage: 18 (95%)		Total: 19 (100%)
Total: 19 (100%)			

PRIMARY COLLISION FACTORS

Unsafe Speeds: 4 (21%)	Following Too Closely: 1 (5%)
Wrong Side of the Road: 0 (0%)	Other Hazardous Movement: 0 (0%)
Driving Under the Influence: 0 (0%)	Unsafe Starting or Backing: 0 (0%)
Pedestrian Violation: 0 (0%)	Ped or Other Under the Influence: 0 (0%)
Improper Passing: 0 (0%)	Improper Turning: 2 (11%)
Traffic Sign/Signal: 1 (5%)	Fell Asleep: 0 (0%)
Other Than Driver: 0 (0%)	Lights: 0 (0%)
Other Improper Driving: 0 (0%)	Brakes: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Other Equipment: 0 (0%)
Auto Violation of Right-of-Way: 0 (0%)	Impeding Traffic: 0 (0%)
Hazardous Parking: 0 (0%)	Unknown: 2 (11%)
Other than Driver or Ped: 0 (0%)	Not Stated: 6 (32%)
Unsafe Lane Change: 3 (16%)	Total: 19 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped: 0 (0%)	Parking Maneuver: 0 (0%)
Proceeding Straight: 7 (58%)	Entering Traffic: 0 (0%)
Ran Off Road: 0 (0%)	Other Unsafe Turning: 0 (0%)
Making Right Turn: 0 (0%)	Crossed Into Opposing Lane: 0 (0%)
Making Left Turn: 1 (8%)	Parked: 0 (0%)
Making U-Turn: 0 (0%)	Merging: 0 (0%)
Backing: 0 (0%)	Traveling Wrong Way: 0 (0%)
Slowing/Stopping: 0 (0%)	Other: 0 (0%)
Passing Other Vehicle: 0 (0%)	Not Stated: 1 (8%)
Changing Lanes: 3 (25%)	Total: 12 (100%)

COLLISION TYPES	Rear-End: 6 (32%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%)	
	Broadside: 3 (16%)		Snowy or Icy: 0 (0%)	
	Head-On: 0 (0%)		Vehicle/Ped: 0 (0%)	Dry: 18 (95%)
	Hit Object: 0 (0%)		Overturned: 2 (11%)	Wet: 1 (5%)
	Other: 0 (0%)		Not Stated: 0 (0%)	Slippery: 0 (0%)
Total: 19 (100%)	Total: 19 (100%)			

WEATHER CONDITIONS	Fog: 0 (0%)	INVOLVED WITH	Pedestrian: 0 (0%)	
	Clear: 17 (89%)		Other Motor Vehicle: 14 (74%)	
	Cloudy: 1 (5%)		Wind: 0 (0%)	Parked Vehicle: 0 (0%)
	Raining: 1 (5%)		Not Stated: 0 (0%)	Fixed Object: 4 (21%)
	Snowing: 0 (0%)		Total: 19 (100%)	Not Stated: 1 (5%)
		Other Object: 0 (0%)	Total: 19 (100%)	

NOTES AND ASSUMPTIONS:
 1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
 3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 2. PICO AVE/ W OCEAN BLVD ON-RAMP/ PIER E ST	Date of Report: 2/7/2019
Reporting Period: 1/1/2013 TO 12/31/2017	Total Number of Collisions: 17

COLLISION SEVERITY Fatal Collisions: 0 (0%) Injury Collisions: 2 (12%) Severe Injury: 0 (0%) Other Visible Injury: 0 (0%) Compliant of Pain: 2 (100%) Injury Sub Total: 2 (100%) Property Damage: 15 (88%) Total: 17 (100%)	LIGHTING CONDITIONS Dark - No ST Lights: 0 (0%) Dark - ST Lights: 4 (24%) Dark - ST Lights not functioning: 0 (0%) Daylight: 13 (76%) Dusk - Dawn: 0 (0%) Not Stated: 0 (0%) Total: 17 (100%)
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PRIMARY COLLISION FACTORS			
Unsafe Speeds:	4 (24%)	Following Too Closely:	1 (6%)
Wrong Side of the Road:	0 (0%)	Other Hazardous Movement:	0 (0%)
Driving Under the Influence:	0 (0%)	Unsafe Starting or Backing:	0 (0%)
Pedestrian Violation:	0 (0%)	Ped or Other Under the Influence:	0 (0%)
Improper Passing:	0 (0%)	Improper Turning:	1 (6%)
Traffic Sign/Signal:	1 (6%)	Fell Asleep:	0 (0%)
Other Than Driver:	0 (0%)	Lights:	0 (0%)
Other Improper Driving:	0 (0%)	Brakes:	0 (0%)
Ped Violation of Right-of-Way:	0 (0%)	Other Equipment:	0 (0%)
Auto Violation of Right-of-Way:	0 (0%)	Impeding Traffic:	0 (0%)
Hazardous Parking:	0 (0%)	Unknown:	2 (12%)
Other than Driver or Ped:	0 (0%)	Not Stated:	5 (29%)
Unsafe Lane Change:	3 (18%)	Total:	17 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT Stopped: 0 (0%) Proceeding Straight: 7 (64%) Ran Off Road: 0 (0%) Making Right Turn: 0 (0%) Making Left Turn: 1 (9%) Making U-Turn: 0 (0%) Backing: 0 (0%) Slowing/Stopping: 0 (0%) Passing Other Vehicle: 0 (0%) Changing Lanes: 2 (18%)	Parking Maneuver: 0 (0%) Entering Traffic: 0 (0%) Other Unsafe Turning: 0 (0%) Crossed Into Opposing Lane: 0 (0%) Parked: 0 (0%) Merging: 0 (0%) Traveling Wrong Way: 0 (0%) Other: 0 (0%) Not Stated: 1 (9%) Total: 11 (100%)
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COLLISION TYPES Broadside: 2 (12%) Head-On: 1 (6%) Hit Object: 0 (0%) Other: 0 (0%) Rear-End: 5 (29%) Sideswipe: 7 (41%) Vehicle/Ped: 0 (0%) Overturned: 2 (12%) Not Stated: 0 (0%) Total: 17 (100%)	ROAD SURFACE CONDITIONS Not Stated: 0 (0%) Snowy or Icy: 0 (0%) Dry: 16 (94%) Wet: 1 (6%) Slippery: 0 (0%) Total: 17 (100%)
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WEATHER CONDITIONS Clear: 15 (88%) Cloudy: 1 (6%) Raining: 1 (6%) Snowing: 0 (0%) Fog: 0 (0%) Other: 0 (0%) Wind: 0 (0%) Not Stated: 0 (0%) Total: 17 (100%)	INVOLVED WITH Pedestrian: 0 (0%) Other Motor Vehicle: 12 (71%) Parked Vehicle: 0 (0%) Fixed Object: 4 (24%) Not Stated: 1 (6%) Other Object: 0 (0%) Total: 17 (100%)
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NOTES AND ASSUMPTIONS:
 1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
 3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 3. GOLDEN SHORE/ W OCEAN BLVD Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 13

COLLISION SEVERITY	Fatal Collisions: 0 (0%) Injury Collisions: 4 (31%) Severe Injury: 1 (25%) Other Visible Injury: 1 (25%) Compliant of Pain: 2 (50%) Injury Sub Total: 4 (100%) Property Damage: 9 (69%) Total: 13 (100%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%) Dark - ST Lights: 4 (31%) Dark - ST Lights not functioning: 0 (0%) Daylight: 8 (62%) Dusk - Dawn: 1 (8%) Not Stated: 0 (0%) Total: 13 (100%)
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PRIMARY COLLISION FACTORS			
Unsafe Speeds: 1 (8%)	Wrong Side of the Road: 0 (0%)	Driving Under the Influence: 0 (0%)	Pedestrian Violation: 2 (15%)
Improper Passing: 0 (0%)	Traffic Sign/Signal: 1 (8%)	Other Than Driver: 0 (0%)	Other Improper Driving: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Auto Violation of Right-of-Way: 2 (15%)	Hazardous Parking: 0 (0%)	Other than Driver or Ped: 0 (0%)
Unsafe Lane Change: 3 (23%)	Following Too Closely: 0 (0%)	Other Hazardous Movement: 0 (0%)	Unsafe Starting or Backing: 0 (0%)
	Ped or Other Under the Influence: 0 (0%)	Improper Turning: 2 (15%)	Fell Asleep: 0 (0%)
	Lights: 0 (0%)	Brakes: 0 (0%)	Other Equipment: 0 (0%)
	Impeding Traffic: 0 (0%)	Unknown: 1 (8%)	Not Stated: 1 (8%)
	Total: 13 (100%)		

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT	Stopped: 0 (0%) Proceeding Straight: 7 (64%) Ran Off Road: 0 (0%) Making Right Turn: 1 (9%) Making Left Turn: 0 (0%) Making U-Turn: 0 (0%) Backing: 0 (0%) Slowing/Stopping: 0 (0%) Passing Other Vehicle: 1 (9%) Changing Lanes: 2 (18%)	Parking Maneuver: 0 (0%) Entering Traffic: 0 (0%) Other Unsafe Turning: 0 (0%) Crossed Into Opposing Lane: 0 (0%) Parked: 0 (0%) Merging: 0 (0%) Traveling Wrong Way: 0 (0%) Other: 0 (0%) Not Stated: 0 (0%) Total: 11 (100%)
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COLLISION TYPES	Rear-End: 2 (15%) Sideswipe: 4 (31%) Vehicle/Ped: 2 (15%) Overturned: 0 (0%) Not Stated: 1 (8%) Total: 13 (100%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%) Snowy or Icy: 0 (0%) Dry: 13 (100%) Wet: 0 (0%) Slippery: 0 (0%) Total: 13 (100%)
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WEATHER CONDITIONS	Fog: 0 (0%) Other: 0 (0%) Wind: 0 (0%) Not Stated: 0 (0%) Total: 13 (100%)	INVOLVED WITH	Pedestrian: 2 (15%) Other Motor Vehicle: 11 (85%) Parked Vehicle: 0 (0%) Fixed Object: 0 (0%) Bicyclist: 0 (0%) Other Object: 0 (0%) Total: 13 (100%)
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NOTES AND ASSUMPTIONS:
 1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
 3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 4. QUEENS WAY/ W OCEAN BLVD Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 2

COLLISION SEVERITY	Fatal Collisions: 0 (0%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%)
	Injury Collisions: 0 (0%)		Dark - ST Lights: 2 (100%)
	Severe Injury: 0 (0%)		Dark - ST Lights not functioning: 0 (0%)
	Other Visible Injury: 0 (0%)		Daylight: 0 (0%)
	Compliant of Pain 0 (0%)		Dusk - Dawn: 0 (0%)
	Injury Sub Total: 0 (0%)		Not Stated 0 (0%)
	Property Damage: 2 (100%)		Total: 2 (100%)
Total: 2 (100%)			

PRIMARY COLLISION FACTORS

Unsafe Speeds: 0 (0%)	Following Too Closely: 0 (0%)
Wrong Side of the Road: 0 (0%)	Other Hazardous Movement: 0 (0%)
Driving Under the Influence: 1 (50%)	Unsafe Starting or Backing: 0 (0%)
Pedestrian Violation: 0 (0%)	Ped or Other Under the Influence: 0 (0%)
Improper Passing: 0 (0%)	Improper Turning: 0 (0%)
Traffic Sign/Signal: 0 (0%)	Fell Asleep: 0 (0%)
Other Than Driver: 0 (0%)	Lights: 0 (0%)
Other Improper Driving: 0 (0%)	Brakes: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Other Equipment: 0 (0%)
Auto Violation of Right-of-Way: 1 (50%)	Impeding Traffic: 0 (0%)
Hazardous Parking: 0 (0%)	Unknown: 0 (0%)
Other than Driver or Ped: 0 (0%)	Not Stated: 0 (0%)
Unsafe Lane Change: 0 (0%)	Total: 2 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped: 0 (0%)	Parking Maneuver: 0 (0%)
Proceeding Straight: 1 (50%)	Entering Traffic: 0 (0%)
Ran Off Road: 0 (0%)	Other Unsafe Turning: 0 (0%)
Making Right Turn: 0 (0%)	Crossed Into Opposing Lane: 0 (0%)
Making Left Turn: 1 (50%)	Parked: 0 (0%)
Making U-Turn: 0 (0%)	Merging: 0 (0%)
Backing: 0 (0%)	Traveling Wrong Way: 0 (0%)
Slowing/Stopping: 0 (0%)	Other: 0 (0%)
Passing Other Vehicle: 0 (0%)	Not Stated: 0 (0%)
Changing Lanes: 0 (0%)	Total: 2 (100%)

COLLISION TYPES	Rear-End: 0 (0%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%)
	Broadside: 1 (50%)		Snowy or Icy: 0 (0%)
	Head-On: 0 (0%)		Dry: 2 (100%)
	Hit Object: 1 (50%)		Wet: 0 (0%)
	Other: 0 (0%)		Slippery: 0 (0%)
Total: 2 (100%)	Total: 2 (100%)		

WEATHER CONDITIONS	Fog: 0 (0%)	INVOLVED WITH	Pedestrian: 0 (0%)
	Clear: 2 (100%)		Other Motor Vehicle: 1 (50%)
	Cloudy: 0 (0%)		Parked Vehicle: 0 (0%)
	Raining: 0 (0%)		Fixed Object: 1 (50%)
	Snowing: 0 (0%)		Bicyclist: 0 (0%)
Total: 2 (100%)	Other Object: 0 (0%)	Total: 2 (100%)	

NOTES AND ASSUMPTIONS:
 1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.



Intersection: 5. CHESTNUT PL/ QUEENS WA RAMPS/ W SHORELINE DR **Date of Report:** 2/7/2019
Reporting Period: 1/1/2013 TO 12/31/2017 **Total Number of Collisions:** 12

COLLISION SEVERITY	Fatal Collisions: 0 (0%) Injury Collisions: 3 (25%) Severe Injury: 0 (0%) Other Visible Injury: 0 (0%) Compliant of Pain: 3 (100%) Injury Sub Total: 3 (100%) Property Damage: 9 (75%) Total: 12 (100%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%) Dark - ST Lights: 2 (17%) Dark - ST Lights not functioning: 0 (0%) Daylight: 9 (75%) Dusk - Dawn: 1 (8%) Not Stated: 0 (0%) Total: 12 (100%)
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PRIMARY COLLISION FACTORS			
Unsafe Speeds: 1 (8%)	Wrong Side of the Road: 0 (0%)	Driving Under the Influence: 1 (8%)	Pedestrian Violation: 0 (0%)
Improper Passing: 0 (0%)	Traffic Sign/Signal: 1 (8%)	Other Than Driver: 0 (0%)	Other Improper Driving: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Auto Violation of Right-of-Way: 3 (25%)	Hazardous Parking: 0 (0%)	Other than Driver or Ped: 0 (0%)
Unsafe Lane Change: 1 (8%)	Following Too Closely: 1 (8%)	Other Hazardous Movement: 0 (0%)	Unsafe Starting or Backing: 0 (0%)
	Ped or Other Under the Influence: 0 (0%)	Improper Turning: 1 (8%)	Fell Asleep: 0 (0%)
	Lights: 0 (0%)	Brakes: 0 (0%)	Other Equipment: 0 (0%)
	Impeding Traffic: 0 (0%)	Unknown: 2 (17%)	Not Stated: 1 (8%)
	Total: 12 (100%)		

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT	Stopped: 0 (0%) Proceeding Straight: 5 (50%) Ran Off Road: 1 (10%) Making Right Turn: 0 (0%) Making Left Turn: 2 (20%) Making U-Turn: 0 (0%) Backing: 0 (0%) Slowing/Stopping: 0 (0%) Passing Other Vehicle: 0 (0%) Changing Lanes: 1 (10%)	Parking Maneuver: 0 (0%) Entering Traffic: 1 (10%) Other Unsafe Turning: 0 (0%) Crossed Into Opposing Lane: 0 (0%) Parked: 0 (0%) Merging: 0 (0%) Traveling Wrong Way: 0 (0%) Other: 0 (0%) Not Stated: 0 (0%) Total: 10 (100%)
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COLLISION TYPES	Rear-End: 2 (17%) Sideswipe: 4 (33%) Vehicle/Ped: 0 (0%) Overturned: 0 (0%) Not Stated: 0 (0%) Total: 12 (100%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%) Snowy or Icy: 0 (0%) Dry: 12 (100%) Wet: 0 (0%) Slippery: 0 (0%) Total: 12 (100%)
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WEATHER CONDITIONS	Fog: 0 (0%) Other: 0 (0%) Wind: 0 (0%) Not Stated: 0 (0%) Total: 12 (100%)	INVOLVED WITH	Pedestrian: 0 (0%) Other Motor Vehicle: 9 (75%) Motor Vehicle on Other Roadway: 1 (8%) Fixed Object: 2 (17%) Bicyclist: 0 (0%) Other Object: 0 (0%) Total: 12 (100%)
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- NOTES AND ASSUMPTIONS:**
1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
 3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 6. PICO AVE/ S HARBOR SCENIC DR ON-RAMP Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 2

COLLISION SEVERITY	Fatal Collisions: 0 (0%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%)
	Injury Collisions: 0 (0%)		Dark - ST Lights: 1 (50%)
	Severe Injury: 0 (0%)		Dark - ST Lights not functioning: 0 (0%)
	Other Visible Injury: 0 (0%)		Daylight: 1 (50%)
	Compliant of Pain 0 (0%)		Dusk - Dawn: 0 (0%)
	Injury Sub Total: 0 (0%)		Not Stated 0 (0%)
	Property Damage: 2 (100%)		Total: 2 (100%)
	Total: 2 (100%)		

PRIMARY COLLISION FACTORS

Unsafe Speeds: 2 (100%)	Following Too Closely: 0 (0%)
Wrong Side of the Road: 0 (0%)	Other Hazardous Movement: 0 (0%)
Driving Under the Influence: 0 (0%)	Unsafe Starting or Backing: 0 (0%)
Pedestrian Violation: 0 (0%)	Ped or Other Under the Influence: 0 (0%)
Improper Passing: 0 (0%)	Improper Turning: 0 (0%)
Traffic Sign/Signal: 0 (0%)	Fell Asleep: 0 (0%)
Other Than Driver: 0 (0%)	Lights: 0 (0%)
Other Improper Driving: 0 (0%)	Brakes: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Other Equipment: 0 (0%)
Auto Violation of Right-of-Way: 0 (0%)	Impeding Traffic: 0 (0%)
Hazardous Parking: 0 (0%)	Unknown: 0 (0%)
Other than Driver or Ped: 0 (0%)	Not Stated: 0 (0%)
Unsafe Lane Change: 0 (0%)	Total: 2 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped: 0 (0%)	Parking Maneuver: 0 (0%)
Proceeding Straight: 1 (50%)	Entering Traffic: 0 (0%)
Ran Off Road: 0 (0%)	Other Unsafe Turning: 0 (0%)
Making Right Turn: 1 (50%)	Crossed Into Opposing Lane: 0 (0%)
Making Left Turn: 0 (0%)	Parked: 0 (0%)
Making U-Turn: 0 (0%)	Merging: 0 (0%)
Backing: 0 (0%)	Traveling Wrong Way: 0 (0%)
Slowing/Stopping: 0 (0%)	Other: 0 (0%)
Passing Other Vehicle: 0 (0%)	Not Stated: 0 (0%)
Changing Lanes: 0 (0%)	Total: 2 (100%)

COLLISION TYPES	Rear-End: 0 (0%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%)
	Broadside: 0 (0%)		Snowy or Icy: 0 (0%)
	Head-On: 0 (0%)		Dry: 2 (100%)
	Hit Object: 1 (50%)		Wet: 0 (0%)
	Other: 0 (0%)		Slippery: 0 (0%)
Total: 2 (100%)	Total: 2 (100%)		

WEATHER CONDITIONS	Fog: 0 (0%)	INVOLVED WITH	Pedestrian: 0 (0%)
	Clear: 2 (100%)		Other Motor Vehicle: 0 (0%)
	Cloudy: 0 (0%)		Parked Vehicle: 0 (0%)
	Raining: 0 (0%)		Fixed Object: 1 (50%)
	Snowing: 0 (0%)		Bicyclist: 0 (0%)
Total: 2 (100%)	Total: 2 (100%)		Other Object: 1 (50%)

NOTES AND ASSUMPTIONS:

1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.



Intersection: 7. PICO AVE/ PIER G AVE/ W VAN CAMP ST/ HARBOR PLAZA **Date of Report:** 2/7/2019
Reporting Period: 1/1/2013 TO 12/31/2017 **Total Number of Collisions:** 2

COLLISION SEVERITY	Fatal Collisions:	0	(0%)	LIGHTING CONDITIONS	Dark - No ST Lights:	0	(0%)
	Injury Collisions:	0	(0%)		Dark - ST Lights:	0	(0%)
	Severe Injury:	0	(0%)		Dark - ST Lights not functioning:	0	(0%)
	Other Visible Injury:	0	(0%)		Daylight:	2	(100%)
	Compliant of Pain	0	(0%)		Dusk - Dawn:	0	(0%)
	Injury Sub Total:	0	(0%)		Not Stated	0	(0%)
	Property Damage:	2	(100%)		Total:	2	(100%)
Total:	2	(100%)					

PRIMARY COLLISION FACTORS

Unsafe Speeds:	0	(0%)	Following Too Closely:	0	(0%)
Wrong Side of the Road:	0	(0%)	Other Hazardous Movement:	0	(0%)
Driving Under the Influence:	0	(0%)	Unsafe Starting or Backing:	0	(0%)
Pedestrian Violation:	0	(0%)	Ped or Other Under the Influence:	0	(0%)
Improper Passing:	0	(0%)	Improper Turning:	1	(50%)
Traffic Sign/Signal:	0	(0%)	Fell Asleep:	0	(0%)
Other Than Driver:	0	(0%)	Lights:	0	(0%)
Other Improper Driving:	0	(0%)	Brakes:	0	(0%)
Ped Violation of Right-of-Way:	0	(0%)	Other Equipment:	0	(0%)
Auto Violation of Right-of-Way:	0	(0%)	Impeding Traffic:	0	(0%)
Hazardous Parking:	0	(0%)	Unknown:	0	(0%)
Other than Driver or Ped:	0	(0%)	Not Stated:	0	(0%)
Unsafe Lane Change:	1	(50%)	Total:	2	(100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped:	0	(0%)	Parking Maneuver:	0	(0%)
Proceeding Straight:	0	(0%)	Entering Traffic:	0	(0%)
Ran Off Road:	0	(0%)	Other Unsafe Turning:	0	(0%)
Making Right Turn:	0	(0%)	Crossed Into Opposing Lane:	0	(0%)
Making Left Turn:	1	(50%)	Parked:	0	(0%)
Making U-Turn:	0	(0%)	Merging:	0	(0%)
Backing:	0	(0%)	Traveling Wrong Way:	0	(0%)
Slowing/Stopping:	0	(0%)	Other:	0	(0%)
Passing Other Vehicle:	0	(0%)	Not Stated:	0	(0%)
Changing Lanes:	1	(50%)	Total:	2	(100%)

COLLISION TYPES	Rear-End:	0	(0%)	ROAD SURFACE CONDITIONS	Not Stated:	0	(0%)
	Broadside:	0	(0%)		Snowy or Icy:	0	(0%)
	Head-On:	0	(0%)		Dry:	2	(100%)
	Hit Object:	1	(50%)		Wet:	0	(0%)
	Other:	0	(0%)		Slippery:	0	(0%)
			Total:	2	(100%)		

WEATHER CONDITIONS	Fog:	0	(0%)	INVOLVED WITH	Pedestrian:	0	(0%)
	Clear:	2	(100%)		Other Motor Vehicle:	1	(50%)
	Cloudy:	0	(0%)		Parked Vehicle:	0	(0%)
	Raining:	0	(0%)		Fixed Object:	1	(50%)
	Snowing:	0	(0%)		Bicyclist:	0	(0%)
			Total:	2	(100%)		

NOTES AND ASSUMPTIONS:

1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 8. HARBOR PLAZA/ S HARBOR SCENIC DR OFF-RAMPS/ WUENS WAY OFF RAMPS **Date of Report:** 2/7/2019
Reporting Period: 1/1/2013 TO 12/31/2017 **Total Number of Collisions:** 13

COLLISION SEVERITY	Fatal Collisions: 0 (0%) Injury Collisions: 5 (38%) Severe Injury: 0 (0%) Other Visible Injury: 0 (0%) Compliant of Pain: 5 (100%) Injury Sub Total: 5 (100%) Property Damage: 8 (62%) Total: 13 (100%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%) Dark - ST Lights: 4 (31%) Dark - ST Lights not functioning: 0 (0%) Daylight: 8 (62%) Dusk - Dawn: 1 (8%) Not Stated: 0 (0%) Total: 13 (100%)
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PRIMARY COLLISION FACTORS			
Unsafe Speeds: 3 (23%)	Wrong Side of the Road: 0 (0%)	Driving Under the Influence: 0 (0%)	Pedestrian Violation: 0 (0%)
Improper Passing: 0 (0%)	Traffic Sign/Signal: 0 (0%)	Other Than Driver: 0 (0%)	Other Improper Driving: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Auto Violation of Right-of-Way: 0 (0%)	Hazardous Parking: 0 (0%)	Other than Driver or Ped: 0 (0%)
Unsafe Lane Change: 2 (15%)	Following Too Closely: 0 (0%)	Other Hazardous Movement: 0 (0%)	Unsafe Starting or Backing: 1 (8%)
	Ped or Other Under the Influence: 0 (0%)	Improper Turning: 1 (8%)	Fell Asleep: 0 (0%)
	Lights: 0 (0%)	Brakes: 0 (0%)	Other Equipment: 0 (0%)
	Impeding Traffic: 0 (0%)	Unknown: 3 (23%)	Not Stated: 3 (23%)
	Total: 13 (100%)		

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT	Stopped: 0 (0%) Proceeding Straight: 2 (25%) Ran Off Road: 0 (0%) Making Right Turn: 1 (13%) Making Left Turn: 1 (13%) Making U-Turn: 2 (25%) Backing: 1 (13%) Slowing/Stopping: 0 (0%) Passing Other Vehicle: 0 (0%) Changing Lanes: 1 (13%)	Parking Maneuver: 0 (0%) Entering Traffic: 0 (0%) Other Unsafe Turning: 0 (0%) Crossed Into Opposing Lane: 0 (0%) Parked: 0 (0%) Merging: 0 (0%) Traveling Wrong Way: 0 (0%) Other: 0 (0%) Not Stated: 0 (0%) Total: 8 (100%)
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COLLISION TYPES	Rear-End: 3 (23%) Sideswipe: 2 (15%) Vehicle/Ped: 1 (8%) Overturned: 2 (15%) Not Stated: 1 (8%) Total: 13 (100%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%) Snowy or Icy: 0 (0%) Dry: 11 (85%) Wet: 2 (15%) Slippery: 0 (0%) Total: 13 (100%)
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WEATHER CONDITIONS	Fog: 0 (0%) Other: 0 (0%) Wind: 0 (0%) Not Stated: 0 (0%) Total: 13 (100%)	INVOLVED WITH	Pedestrian: 1 (0%) Other Motor Vehicle: 7 (15%) Non-Collision: 2 (15%) Parked Vehicle: 2 (15%) Not Stated: 1 (54%) Other Object: 0 (0%) Total: 13 (100%)
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NOTES AND ASSUMPTIONS:
1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 9. QUEENSWAY DR/ QUEENS HWY/ HARBOR PLAZA Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 3

COLLISION SEVERITY	Fatal Collisions: 0 (0%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%)
	Injury Collisions: 0 (0%)		Dark - ST Lights: 1 (33%)
	Severe Injury: 0 (0%)		Dark - ST Lights not functioning: 0 (0%)
	Other Visible Injury: 0 (0%)		Daylight: 2 (67%)
	Compliant of Pain 0 (0%)		Dusk - Dawn: 0 (0%)
	Injury Sub Total: 0 (0%)		Not Stated 0 (0%)
	Property Damage: 3 (100%)		Total: 3 (100%)
Total: 3 (100%)			

PRIMARY COLLISION FACTORS

Unsafe Speeds: 1 (33%)	Following Too Closely: 0 (0%)
Wrong Side of the Road: 0 (0%)	Other Hazardous Movement: 1 (33%)
Driving Under the Influence: 0 (0%)	Unsafe Starting or Backing: 0 (0%)
Pedestrian Violation: 0 (0%)	Ped or Other Under the Influence: 0 (0%)
Improper Passing: 0 (0%)	Improper Turning: 0 (0%)
Traffic Sign/Signal: 0 (0%)	Fell Asleep: 0 (0%)
Other Than Driver: 0 (0%)	Lights: 0 (0%)
Other Improper Driving: 0 (0%)	Brakes: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Other Equipment: 0 (0%)
Auto Violation of Right-of-Way: 0 (0%)	Impeding Traffic: 0 (0%)
Hazardous Parking: 0 (0%)	Unknown: 0 (0%)
Other than Driver or Ped: 0 (0%)	Not Stated: 0 (0%)
Unsafe Lane Change: 1 (33%)	Total: 3 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped: 0 (0%)	Parking Maneuver: 0 (0%)
Proceeding Straight: 2 (67%)	Entering Traffic: 0 (0%)
Ran Off Road: 0 (0%)	Other Unsafe Turning: 0 (0%)
Making Right Turn: 0 (0%)	Crossed Into Opposing Lane: 0 (0%)
Making Left Turn: 1 (33%)	Parked: 0 (0%)
Making U-Turn: 0 (0%)	Merging: 0 (0%)
Backing: 0 (0%)	Traveling Wrong Way: 0 (0%)
Slowing/Stopping: 0 (0%)	Other: 0 (0%)
Passing Other Vehicle: 0 (0%)	Not Stated: 0 (0%)
Changing Lanes: 0 (0%)	Total: 3 (100%)

COLLISION TYPES	Rear-End: 0 (0%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%)
	Broadside: 2 (67%)		Snowy or Icy: 0 (0%)
	Head-On: 0 (0%)		Dry: 3 (100%)
	Hit Object: 1 (33%)		Wet: 0 (0%)
	Other: 0 (0%)		Slippery: 0 (0%)
Total: 3 (100%)	Total: 3 (100%)		

WEATHER CONDITIONS	Fog: 0 (0%)	INVOLVED WITH	Pedestrian: 0 (0%)
	Clear: 3 (100%)		Other Motor Vehicle: 2 (67%)
	Cloudy: 0 (0%)		Parked Vehicle: 0 (0%)
	Raining: 0 (0%)		Fixed Object: 1 (33%)
	Snowing: 0 (0%)		Bicyclist: 0 (0%)
Total: 3 (100%)	Total: 3 (100%)		

NOTES AND ASSUMPTIONS:

1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.



Intersection: 10. S HARBOR SCENIC DR/ HARBOR PLAZA Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 13

COLLISION SEVERITY	Fatal Collisions: 0 (0%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%)
	Injury Collisions: 5 (38%)		Dark - ST Lights: 4 (31%)
	Severe Injury: 0 (0%)		Dark - ST Lights not functioning: 0 (0%)
	Other Visible Injury: 0 (0%)		Daylight: 8 (62%)
	Compliant of Pain 5 (100%)		Dusk - Dawn: 1 (8%)
	Injury Sub Total: 5 (100%)		Not Stated 0 (0%)
	Property Damage: 8 (62%)		Total: 13 (100%)
Total: 13 (100%)			

PRIMARY COLLISION FACTORS

Unsafe Speeds: 3 (23%)	Following Too Closely: 0 (0%)
Wrong Side of the Road: 0 (0%)	Other Hazardous Movement: 0 (0%)
Driving Under the Influence: 0 (0%)	Unsafe Starting or Backing: 1 (8%)
Pedestrian Violation: 0 (0%)	Ped or Other Under the Influence: 0 (0%)
Improper Passing: 0 (0%)	Improper Turning: 1 (8%)
Traffic Sign/Signal: 0 (0%)	Fell Asleep: 0 (0%)
Other Than Driver: 0 (0%)	Lights: 0 (0%)
Other Improper Driving: 0 (0%)	Brakes: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Other Equipment: 0 (0%)
Auto Violation of Right-of-Way: 0 (0%)	Impeding Traffic: 0 (0%)
Hazardous Parking: 0 (0%)	Unknown: 3 (23%)
Other than Driver or Ped: 0 (0%)	Not Stated: 3 (23%)
Unsafe Lane Change: 2 (15%)	Total: 13 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped: 0 (0%)	Parking Maneuver: 0 (0%)
Proceeding Straight: 2 (25%)	Entering Traffic: 0 (0%)
Ran Off Road: 0 (0%)	Other Unsafe Turning: 0 (0%)
Making Right Turn: 1 (13%)	Crossed Into Opposing Lane: 0 (0%)
Making Left Turn: 1 (13%)	Parked: 0 (0%)
Making U-Turn: 2 (25%)	Merging: 0 (0%)
Backing: 1 (13%)	Traveling Wrong Way: 0 (0%)
Slowing/Stopping: 0 (0%)	Other: 0 (0%)
Passing Other Vehicle: 0 (0%)	Not Stated: 0 (0%)
Changing Lanes: 1 (13%)	Total: 8 (100%)

COLLISION TYPES	Rear-End: 3 (23%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%)
	Broadside: 3 (23%)		Snowy or Icy: 0 (0%)
	Head-On: 0 (0%)		Dry: 11 (85%)
	Hit Object: 0 (0%)		Wet: 2 (15%)
	Other: 1 (8%)		Slippery: 0 (0%)
Total: 13 (100%)	Total: 13 (100%)		

WEATHER CONDITIONS	Fog: 0 (0%)	INVOLVED WITH	Pedestrian: 1 (8%)
	Clear: 11 (85%)		Other Motor Vehicle: 7 (54%)
	Cloudy: 1 (8%)		Parked Vehicle: 2 (15%)
	Raining: 1 (8%)		Fixed Object: 0 (0%)
	Snowing: 0 (0%)		Non-Collision: 2 (15%)
Total: 13 (100%)	Not Stated: 1 (8%)	Total: 13 (100%)	

- NOTES AND ASSUMPTIONS:**
1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
 3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.



Intersection: 11. QUEENS HWY/ WINDSOR WAY Date of Report: 2/7/2019
 Reporting Period: 1/1/2013 TO 12/31/2017 Total Number of Collisions: 4

COLLISION SEVERITY	Fatal Collisions: 0 (0%)	LIGHTING CONDITIONS	Dark - No ST Lights: 0 (0%)
	Injury Collisions: 1 (25%)		Dark - ST Lights: 1 (25%)
	Severe Injury: 0 (0%)		Dark - ST Lights not functioning: 0 (0%)
	Other Visible Injury: 0 (0%)		Daylight: 3 (75%)
	Compliant of Pain 1 (100%)		Dusk - Dawn: 0 (0%)
	Injury Sub Total: 1 (100%)		Not Stated 0 (0%)
	Property Damage: 3 (75%)		Total: 4 (100%)
Total: 4 (100%)			

PRIMARY COLLISION FACTORS

Unsafe Speeds: 1 (25%)	Following Too Closely: 0 (0%)
Wrong Side of the Road: 0 (0%)	Other Hazardous Movement: 0 (0%)
Driving Under the Influence: 0 (0%)	Unsafe Starting or Backing: 0 (0%)
Pedestrian Violation: 0 (0%)	Ped or Other Under the Influence: 0 (0%)
Improper Passing: 0 (0%)	Improper Turning: 2 (50%)
Traffic Sign/Signal: 0 (0%)	Fell Asleep: 0 (0%)
Other Than Driver: 0 (0%)	Lights: 0 (0%)
Other Improper Driving: 0 (0%)	Brakes: 0 (0%)
Ped Violation of Right-of-Way: 0 (0%)	Other Equipment: 0 (0%)
Auto Violation of Right-of-Way: 0 (0%)	Impeding Traffic: 0 (0%)
Hazardous Parking: 0 (0%)	Unknown: 1 (25%)
Other than Driver or Ped: 0 (0%)	Not Stated: 0 (0%)
Unsafe Lane Change: 0 (0%)	Total: 4 (100%)

MOVEMENT PRECEDING COLLISION BY PARTY AT FAULT

Stopped: 0 (0%)	Parking Maneuver: 0 (0%)
Proceeding Straight: 1 (50%)	Entering Traffic: 0 (0%)
Ran Off Road: 0 (0%)	Other Unsafe Turning: 0 (0%)
Making Right Turn: 0 (0%)	Crossed Into Opposing Lane: 0 (0%)
Making Left Turn: 0 (0%)	Parked: 0 (0%)
Making U-Turn: 1 (50%)	Merging: 0 (0%)
Backing: 0 (0%)	Traveling Wrong Way: 0 (0%)
Slowing/Stopping: 0 (0%)	Other: 0 (0%)
Passing Other Vehicle: 0 (0%)	Not Stated: 0 (0%)
Changing Lanes: 0 (0%)	Total: 2 (100%)

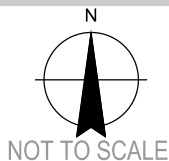
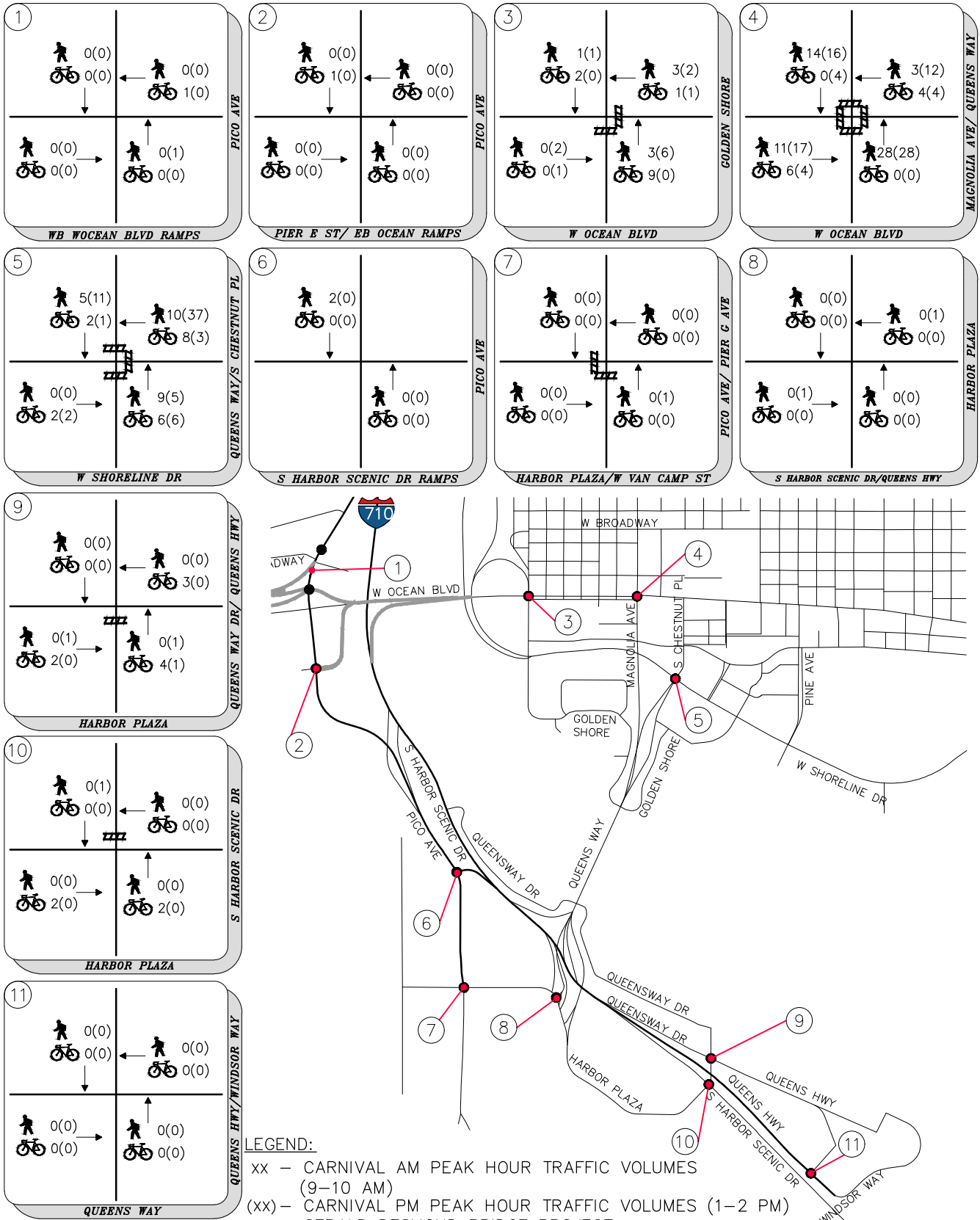
COLLISION TYPES	Rear-End: 2 (50%)	ROAD SURFACE CONDITIONS	Not Stated: 0 (0%)	
	Broadside: 1 (25%)		Snowy or Icy: 0 (0%)	
	Head-On: 0 (0%)		Vehicle/Ped: 0 (0%)	Dry: 4 (100%)
	Hit Object: 0 (0%)		Overturned: 0 (0%)	Wet: 0 (0%)
	Other: 0 (0%)		Not Stated: 0 (0%)	Slippery: 0 (0%)
Total: 4 (100%)		Total: 4 (100%)		

WEATHER CONDITIONS	Fog: 0 (0%)	INVOLVED WITH	Pedestrian: 0 (0%)	
	Clear: 4 (100%)		Other Motor Vehicle: 4 (100%)	
	Cloudy: 0 (0%)		Wind: 0 (0%)	Parked Vehicle: 0 (0%)
	Raining: 0 (0%)		Not Stated: 0 (0%)	Fixed Object: 0 (0%)
	Snowing: 0 (0%)		Total: 4 (100%)	Bicyclist: 0 (0%)
		Other Object: 0 (0%)		
		Total: 4 (100%)		

NOTES AND ASSUMPTIONS:
 1. DATA WAS GATHERED FROM THE STATEWIDE INTEGRATED TRAFFIC RECORDS SYSTEM (SWITRS).
 2. INFLUENCE AREA/FUNCTIONAL AREA WAS ASSUMED TO BE 150'.
 3. NOT ALL COLLISIONS HAVE A PARTY AT FAULT.

Appendix E

Bicycle and Pedestrian Counts



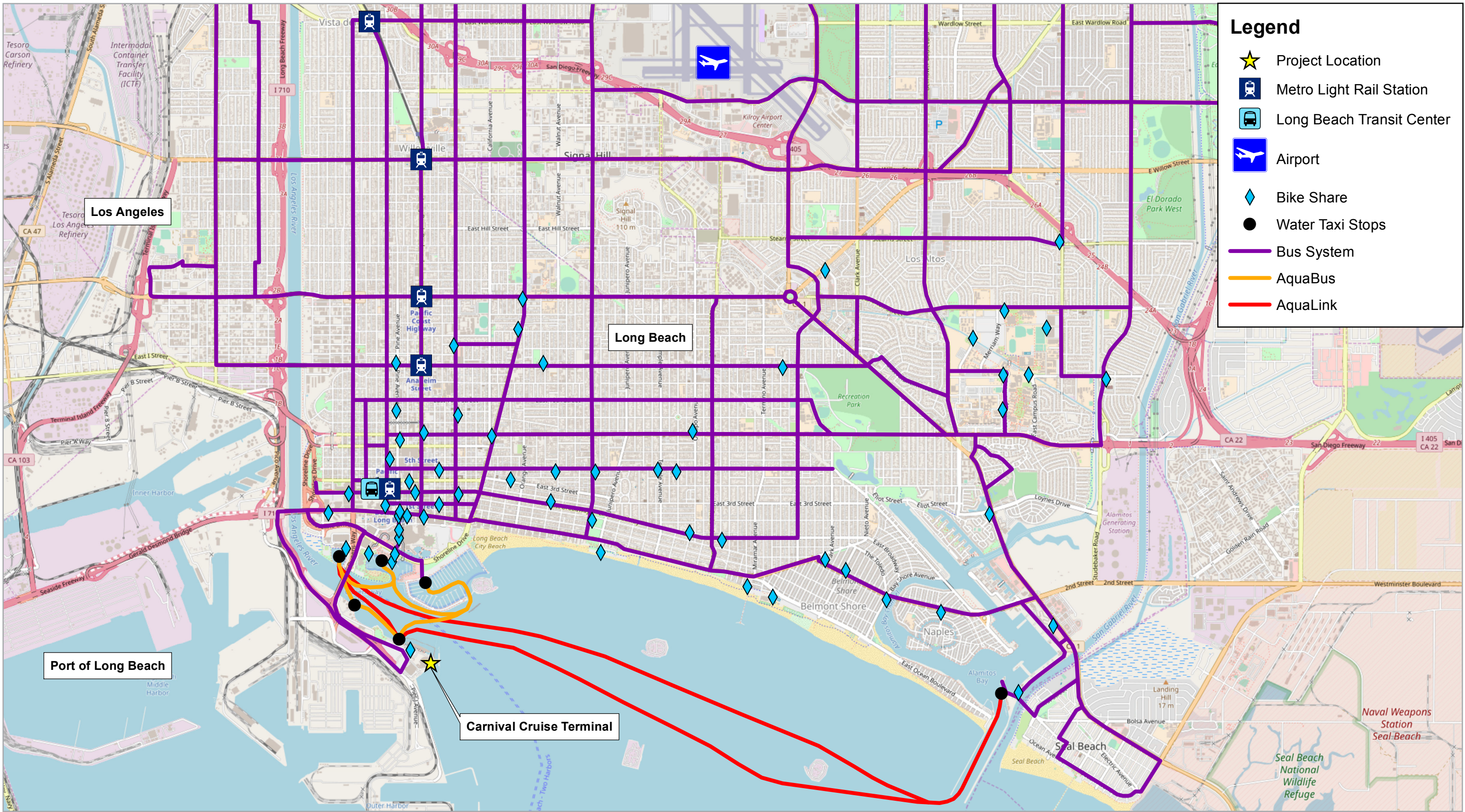
Carnival Cruise
 Long Beach Cruise Terminal Improvement Project

**Existing (2018)
 Peak Hour Pedestrian & Bicycle Volumes
 Saturday**










Project No. 11183495
 Report No. RPT.01
 Date 2/7/2019

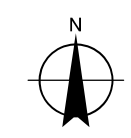
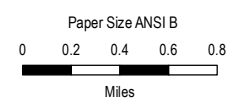
Appendix F

Alternative Transportation Services



Legend

-  Project Location
-  Metro Light Rail Station
-  Long Beach Transit Center
-  Airport
-  Bike Share
-  Water Taxi Stops
-  Bus System
-  AquaBus
-  AquaLink



Map Projection: Mercator Auxiliary Sphere
 Horizontal Datum: WGS 1984
 Grid: WGS 1984 Web Mercator Auxiliary Sphere



Carnival Cruise
Long Beach Cruise Terminal Improvement
Project
Alternate Transportation Services Map

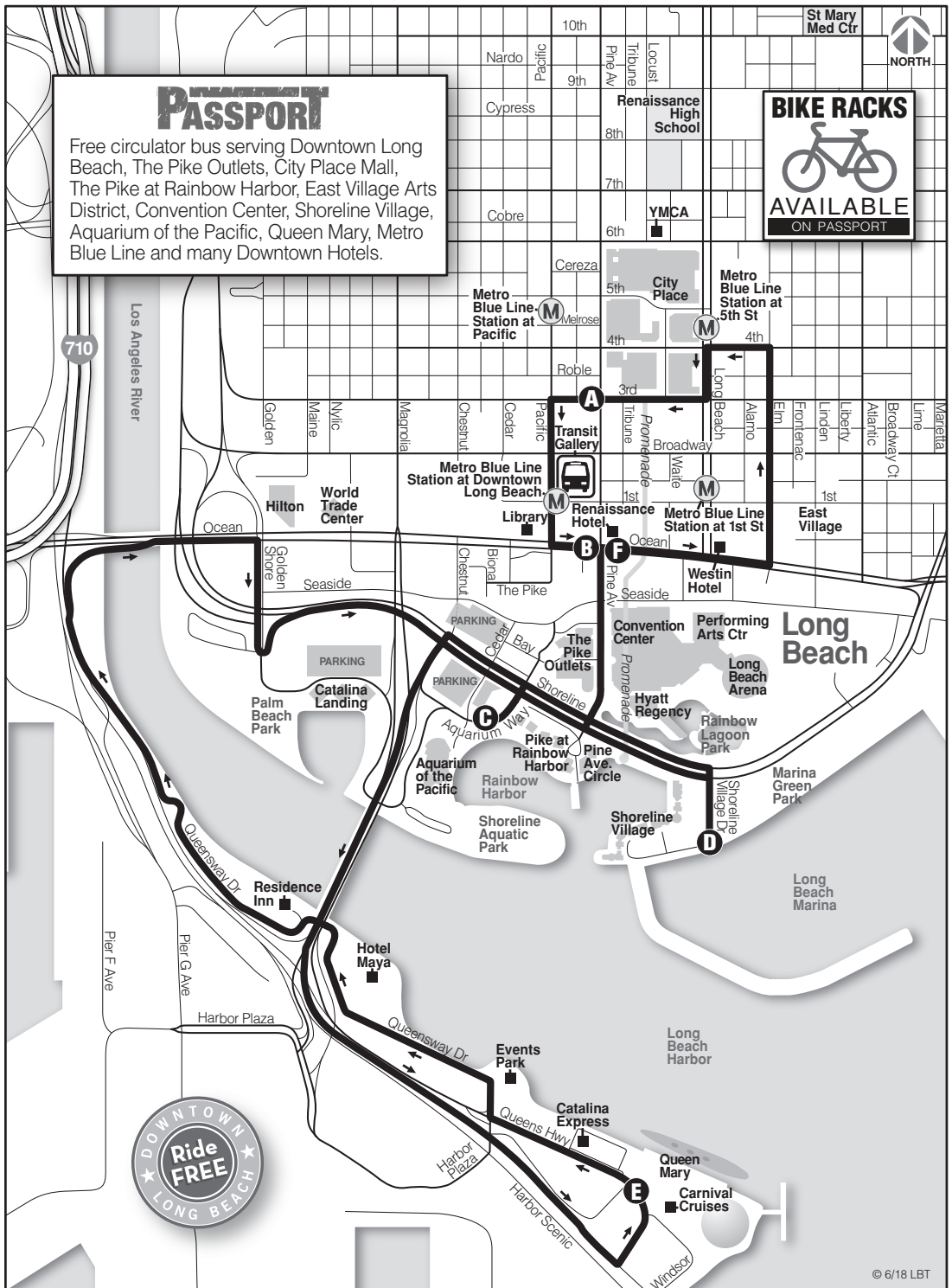
Project No. 11181196
 Revision No. -
 Date 2/7/2019

N:\US\Sacramento\Projects\11111183495 Atkins Long Beach Cruz Terminal Imp\08-GIS\Maps\Working\Transit Map.mxd
 Print date: 2 Feb 2019 - 12:16

Data source: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: esammy

Passport

Free Service between Downtown Long Beach and Queen Mary



Monday–Friday Southbound

3RD AT PINE A	OCEAN AT PINE B	SHORELINE VILLAGE D	AQUARIUM OF-PACIFIC C	QUEEN MARY E
5:08	5:12	5:16	5:21	5:27
5:57	6:01	6:05	6:10	6:16
6:27	6:31	6:35	6:40	6:46
6:57	7:01	7:05	7:10	7:16
7:27	7:31	7:35	7:40	7:46
7:57	8:01	8:05	8:10	8:16
8:27	8:31	8:35	8:40	8:46
8:57	9:01	9:05	9:10	9:16
9:27	9:31	9:35	9:40	9:46
9:42	9:46	9:50	9:55	10:01
9:57	10:01	10:05	10:10	10:16
10:11	10:15	10:19	10:24	10:30
10:27	10:31	10:35	10:40	10:46
10:42	10:46	10:50	10:55	11:01
10:57	11:01	11:05	11:10	11:16
11:14	11:18	11:22	11:27	11:33
11:29	11:33	11:37	11:42	11:48
11:44	11:48	11:52	11:57	12:03
11:59	12:03	12:07	12:12	12:18
12:14	12:18	12:22	12:27	12:33
12:29	12:33	12:37	12:42	12:48
12:44	12:48	12:52	12:57	1:03
12:59	1:03	1:07	1:12	1:18
1:14	1:18	1:22	1:27	1:33
1:29	1:33	1:37	1:43	1:49
1:44	1:48	1:52	1:58	2:04
2:00	2:04	2:08	2:14	2:20
2:15	2:19	2:23	2:29	2:35
2:30	2:34	2:38	2:44	2:50
2:45	2:49	2:53	2:59	3:05
3:00	3:04	3:08	3:14	3:20
3:15	3:19	3:23	3:29	3:35
3:30	3:34	3:38	3:44	3:50
3:45	3:49	3:53	3:59	4:05
4:00	4:04	4:08	4:14	4:20
4:15	4:19	4:23	4:29	4:35
4:30	4:34	4:38	4:44	4:50
4:45	4:49	4:53	4:59	5:05
5:00	5:04	5:08	5:14	5:20
5:15	5:19	5:23	5:29	5:35
5:30	5:34	5:38	5:43	5:49
5:45	5:49	5:53	5:58	6:04
5:59	6:03	6:07	6:12	6:18
6:14	6:18	6:22	6:27	6:33
6:29	6:33	6:37	6:42	6:48
6:44	6:48	6:52	6:57	7:03
6:59	7:03	7:07	7:12	7:18
7:14	7:18	7:22	7:27	7:33
7:29	7:33	7:37	7:42	7:48
7:44	7:48	7:52	7:57	8:03
7:59	8:03	8:07	8:12	8:18
8:29	8:33	8:37	8:42	8:48
9:08	9:12	9:16	9:21	9:27
9:26	9:30	9:34	9:39	9:45
9:56	10:00	10:04	10:09	10:15
10:26	10:30	10:34	10:39	10:45
10:56	11:00	11:04	11:09	11:15
11:56	12:00	12:04	12:09	12:15



Monday–Friday Northbound

QUEEN MARY E	AQUARIUM OF-PACIFIC C	SHORELINE VILLAGE D	OCEAN AT PINE F	3RD AT PINE A
5:30	5:41	5:44	5:48	5:57
6:30	6:41	6:44	6:48	6:57
7:00	7:11	7:14	7:18	7:27
7:30	7:41	7:44	7:48	7:57
8:00	8:11	8:14	8:18	8:27
8:30	8:41	8:44	8:48	8:57
9:00	9:11	9:14	9:18	9:27
9:30	9:41	9:44	9:48	9:57
10:00	10:11	10:14	10:18	10:27
10:15	10:26	10:29	10:33	10:42
10:30	10:41	10:44	10:48	10:57
10:45	10:56	10:59	11:04	11:14
11:00	11:11	11:14	11:19	11:29
11:15	11:26	11:29	11:34	11:44
11:30	11:41	11:44	11:49	11:59
11:45	11:56	11:59	12:04	12:14
12:00	12:11	12:14	12:19	12:29
12:15	12:26	12:29	12:34	12:44
12:30	12:41	12:44	12:49	12:59
12:45	12:56	12:59	1:04	1:14
1:00	1:11	1:14	1:19	1:29
1:15	1:26	1:29	1:34	1:44
1:30	1:41	1:45	1:50	2:00
1:45	1:56	2:00	2:05	2:15
2:00	2:11	2:15	2:20	2:30
2:15	2:26	2:30	2:35	2:45
2:30	2:41	2:45	2:50	3:00
2:45	2:56	3:00	3:05	3:15
3:00	3:11	3:15	3:20	3:30
3:15	3:26	3:30	3:35	3:45
3:30	3:41	3:45	3:50	4:00
3:45	3:56	4:00	4:05	4:15
4:00	4:11	4:15	4:20	4:30
4:15	4:26	4:30	4:35	4:45
4:30	4:41	4:45	4:50	5:00
4:45	4:56	5:00	5:05	5:15
5:00	5:11	5:15	5:20	5:30
5:15	5:26	5:30	5:35	5:45
5:30	5:41	5:44	5:49	5:59
5:45	5:56	5:59	6:04	6:14
6:00	6:11	6:14	6:19	6:29
6:15	6:26	6:29	6:34	6:44
6:30	6:41	6:44	6:49	6:59
6:45	6:56	6:59	7:04	7:14
7:00	7:11	7:14	7:19	7:29
7:15	7:26	7:29	7:34	7:44
7:30	7:41	7:44	7:49	7:59
7:45	7:56	7:59	8:04	8:14
8:00	8:11	8:14	8:19	8:29
8:20	8:31	8:34	8:39	8:49
8:40	8:51	8:54	8:59	9:08
9:00	9:10	9:13	9:17	9:26
9:30	9:40	9:43	9:47	9:56
10:00	10:10	10:13	10:17	10:26
10:30	10:40	10:43	10:47	10:56
11:00	11:10	11:13	11:17	11:26
11:30	11:40	11:43	11:47	11:56
12:30	12:40	12:43	12:47	12:56

Free Service between Downtown Long Beach and Queen Mary

Passport

Times shown are departure times – please arrive a couple minutes early.

Light Type = AM **Bold Type = PM**

Passport

Free Service between Downtown Long Beach and Queen Mary

Saturday/Sunday/Holiday Southbound

3RD AT PINE A	OCEAN AT PINE B	SHORELINE VILLAGE D	AQUARIUM OF PACIFIC G	QUEEN MARY E
5:08	5:12	5:15	5:21	5:26
5:55	5:59	6:02	6:08	6:13
6:38	6:42	6:45	6:51	6:56
6:55	6:59	7:02	7:08	7:13
7:25	7:29	7:32	7:38	7:43
7:55	7:59	8:02	8:08	8:13
8:25	8:29	8:32	8:38	8:43
8:55	8:59	9:02	9:08	9:13
9:10	9:14	9:17	9:23	9:28
9:25	9:29	9:32	9:38	9:43
9:40	9:44	9:47	9:53	9:58
9:55	9:59	10:02	10:08	10:13
10:10	10:14	10:17	10:23	10:28
10:25	10:29	10:32	10:38	10:43
10:35	10:39	10:42	10:48	10:53
10:45	10:49	10:52	10:58	11:03
10:55	10:59	11:03	11:10	11:16
11:06	11:10	11:14	11:21	11:27
11:18	11:22	11:26	11:33	11:39
11:29	11:33	11:37	11:44	11:50
11:39	11:43	11:47	11:54	12:00
11:49	11:53	11:57	12:04	12:10
11:59	12:03	12:07	12:14	12:20
12:09	12:13	12:17	12:24	12:30
<i>From 12:09 to 2:51 continues to run every 10-12 min.</i>				
2:51	2:55	3:01	3:09	3:16
3:01	3:05	3:11	3:19	3:26
3:11	3:15	3:21	3:29	3:36
3:23	3:27	3:33	3:41	3:48
3:33	3:37	3:43	3:51	3:58
3:43	3:47	3:53	4:01	4:08
3:53	3:57	4:03	4:11	4:18
4:03	4:07	4:13	4:21	4:28
4:13	4:17	4:23	4:31	4:38
4:23	4:27	4:33	4:41	4:48
4:33	4:37	4:43	4:51	4:58
4:43	4:47	4:53	5:01	5:08
4:53	4:57	5:03	5:11	5:18
5:03	5:07	5:13	5:21	5:28
5:13	5:17	5:23	5:31	5:37
5:24	5:28	5:33	5:40	5:46
5:33	5:37	5:42	5:49	5:55
5:42	5:46	5:51	5:58	6:04
5:51	5:55	6:00	6:07	6:13
6:00	6:04	6:09	6:16	6:22
6:10	6:14	6:19	6:26	6:32
6:20	6:24	6:29	6:36	6:42
6:30	6:34	6:39	6:46	6:52
6:40	6:44	6:49	6:56	7:02
6:50	6:54	6:59	7:05	7:11
7:00	7:04	7:08	7:14	7:20
7:09	7:13	7:17	7:23	7:29
7:19	7:23	7:27	7:33	7:39
7:28	7:32	7:36	7:42	7:48
7:43	7:47	7:51	7:57	8:03
7:58	8:02	8:06	8:12	8:18
8:13	8:17	8:21	8:27	8:33
8:28	8:32	8:36	8:42	8:48
8:43	8:47	8:51	8:57	9:03
8:58	9:02	9:06	9:12	9:18
9:13	9:17	9:21	9:27	9:33
9:28	9:32	9:36	9:42	9:48
9:58	10:02	10:06	10:12	10:18
10:28	10:32	10:36	10:42	10:48
10:58	11:02	11:06	11:12	11:18
11:58	12:02	12:06	12:12	12:18

Saturday/Sunday/Holiday Northbound

QUEEN MARY E	AQUARIUM OF PACIFIC G	SHORELINE VILLAGE D	OCEAN AT PINE F	3RD AT PINE A
5:30	5:40	5:44	5:48	5:55
6:30	6:40	6:44	6:48	6:55
7:00	7:10	7:14	7:18	7:25
7:30	7:40	7:44	7:48	7:55
8:00	8:10	8:14	8:18	8:25
8:30	8:40	8:44	8:48	8:55
9:00	9:10	9:14	9:18	9:25
9:30	9:40	9:44	9:48	9:55
9:45	9:55	9:59	10:03	10:10
10:00	10:10	10:14	10:18	10:25
10:10	10:20	10:24	10:28	10:35
10:20	10:30	10:34	10:38	10:45
10:30	10:40	10:44	10:48	10:55
10:40	10:50	10:54	10:58	11:06
10:50	11:00	11:05	11:10	11:18
11:00	11:11	11:16	11:21	11:29
11:10	11:21	11:26	11:31	11:39
11:20	11:31	11:36	11:41	11:49
11:30	11:41	11:46	11:51	11:59
11:40	11:51	11:56	12:01	12:09
11:50	12:01	12:06	12:11	12:19
12:00	12:11	12:16	12:21	12:29
<i>From 12:00 to 2:40 continues to run every 10 min.</i>				
2:40	2:52	2:57	3:02	3:11
2:50	3:02	3:08	3:14	3:23
3:00	3:12	3:18	3:24	3:33
3:10	3:22	3:28	3:34	3:43
3:20	3:32	3:38	3:44	3:53
3:30	3:42	3:48	3:54	4:03
3:40	3:52	3:58	4:04	4:13
3:50	4:02	4:08	4:14	4:23
4:00	4:12	4:18	4:24	4:33
4:10	4:22	4:28	4:34	4:43
4:20	4:32	4:38	4:44	4:53
4:30	4:42	4:48	4:54	5:03
4:40	4:52	4:58	5:04	5:13
4:50	5:02	5:08	5:14	5:23
5:00	5:12	5:18	5:24	5:33
5:10	5:22	5:28	5:33	5:42
5:20	5:32	5:37	5:42	5:51
5:30	5:41	5:46	5:51	6:00
5:40	5:51	5:56	6:01	6:10
5:50	6:01	6:06	6:11	6:20
6:00	6:11	6:16	6:21	6:30
6:10	6:21	6:26	6:31	6:40
6:20	6:31	6:36	6:41	6:50
6:30	6:41	6:46	6:51	7:00
6:40	6:51	6:56	7:01	7:09
6:50	7:01	7:06	7:11	7:19
7:00	7:10	7:15	7:20	7:28
7:15	7:25	7:30	7:35	7:43
7:30	7:40	7:45	7:50	7:58
7:45	7:55	8:00	8:05	8:13
8:00	8:10	8:15	8:20	8:28
8:15	8:25	8:30	8:35	8:43
8:30	8:40	8:45	8:50	8:58
8:45	8:55	9:00	9:05	9:13
9:00	9:10	9:15	9:20	9:28
9:15	9:25	9:30	9:35	9:43
9:30	9:40	9:45	9:50	9:58
9:45	9:55	10:00	10:05	10:13
10:00	10:10	10:15	10:20	10:28
10:30	10:40	10:45	10:50	10:58
11:00	11:10	11:15	11:20	11:28
11:30	11:40	11:45	11:50	11:58
12:30	12:40	12:45	12:50	12:58



Times shown are departure times – please arrive a couple minutes early.



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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