PORT of SAN DIEGO

SAN DIEGO UNIFIED PORT DISTRICT

HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

NOVEMBER 26, 2019

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DRAFT

DATE: NOVEMBER 2019

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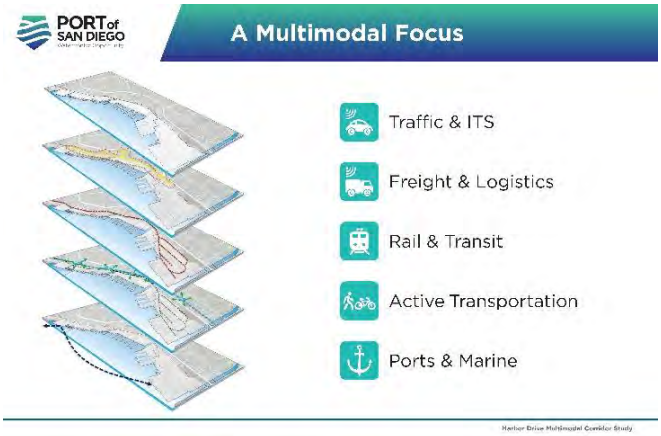
1 INTRODUCTION

1.1 STUDY BACKGROUND AND PURPOSE



The Harbor Drive corridor is a unique multimodal transportation asset for the San Diego Unified Port District (District), the cities of San Diego and National City, Naval Base San Diego, and the entire San Diego region. This Harbor Drive Multimodal Corridor Study (Study) provides a comprehensive evaluation of corridor conditions and recommendations to help the District continue to thrive as an important economic asset, while harmoniously coexisting with the neighboring residential communities and recreational resources of San Diego's mixed-use waterfront.

The corridor provides critical access to the District's Tenth Avenue Marine Terminal (TAMT) and National City Marine Terminal (NCMT), Naval Base San Diego, several large shipyards, private industries, and public recreational facilities. It accommodates the movement of District-related freight, freight moving to and from military and industrial facilities, workers moving to and from waterfront employment, visitors moving to and from recreational facilities, and travel demand from residential communities. To facilitate these complex needs, the corridor offers multiple modal options: road, rail, bicycle, pedestrian and marine vessel. However, the corridor also experiences high levels of traffic congestion and contains inadequate pedestrian, bicyclist, and parking facilities.

With such a diverse range of activities and facilities in the Harbor Drive corridor, there is a great need to view its challenges and opportunities holistically, in a way that considers and balances benefits, costs and impacts, to the greatest good of all concerned. There have been multiple studies of different aspects of the corridor, but no comprehensive effort. Because there is no single improvement that can solve all key challenges as such, this study fills a critical gap, providing a sound plan and development strategy to meet the current needs of the corridor, as well as anticipated future and emerging needs.

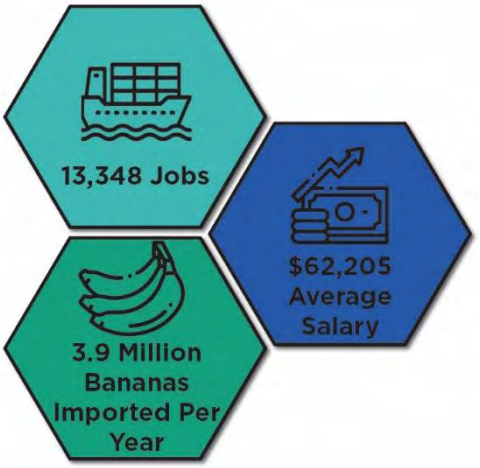
The overall goal of the Study is to identify opportunities to improve mobility, safety, and quality of life for everyone who lives, works, or plays along Harbor Drive and in the surrounding communities. Specific goals are:

- Improve community safety, mobility, and health
- Improve efficient goods movement
- Improve naval base access and circulation
- Improve shipyard access and parking
- Ensure cost effectiveness

To achieve these goals, the Study identifies potential improvement projects, large and small, that could be implemented in phases as funding becomes available. It considers all modes of transportation used by residents, visitors, and businesses in the area: foot, bicycle, passenger vehicle, bus, cargo truck, light rail, cargo rail, vessel, and military movements. Taken together, the package of recommendations provides a long-term blueprint for the future of the Harbor Drive corridor.

1.2 STUDY AREA

The Study focuses on the stretch between the TAMT and NCMT, known as San Diego's Working Waterfront (See Figure 1-1 Study Area). The District and the Harbor Drive corridor are vital economic engines for the San Diego region, generating jobs and strengthening the local and regional economies. The District's Industrial and Maritime sector accounts for 13,348 jobs with an average annual salary of approximately $62,205[1], while Naval Base San Diego supports approximately 31,000 active duty personnel, 11,500 navy civilians/contractors, and thousands of contracting shipyard jobs. Overall, the District and military have a $9.4 billion economic impact on the region and has increased 22 percent over the past four years. For example: one out of ten imported vehicles in the United States comes through NCMT; 3.9 million bananas are imported each year to the TAMT; and the study area contains two District parks, one marina, and one public boat ramp.



Naval Base San Diego is the principal homeport of the U.S. Navy's Pacific Fleet, currently at 56 Navy ships and growing, one Coast Guard cutter, seven Military Sealift Command logistical support platforms, and several research and auxiliary vessels. The base comprises over 1,600 land acres and 326 acres of water.

The study area's two residential communities are Barrio Logan—part of the City of San Diego—with approximately 6,000 residents, and National City with 60,000 residents.

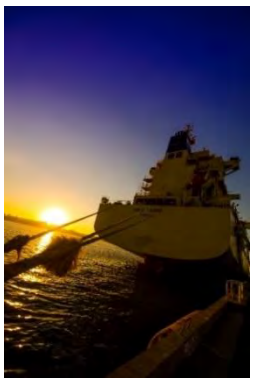


Figure 1-1 Study Area

[1] Final Report - Economic Impacts of the San Diego Unified Port District in 2017 (February 28, 2019)

1.3 REPORT ORGANIZATION

The Study is organized into the following chapters:

1. Introduction: Describes the goals and objectives of the Study, the study area, and the documents that were reviewed for this Study.
2. Existing Conditions: Examines what issues or opportunities each mode of transportation currently presents within the study area.
3. Public Outreach: Details public outreach events, processes, and results.
4. Key Challenges and Multimodal Recommendations: Describes the process for developing the evaluation criteria and proposed projects. This chapter provides recommendations for future projects in response to growth throughout the corridor.
5. Funding Options: Explains project funding options and strategies for utilizing these resources. The chapter also articulates key actions for implementing the Study.

1.4 LITERATURE REVIEW

A literature review was conducted to identify and document mobility issues and opportunities from adopted and on-going efforts that have relevance to the Corridor. The Study is consistent with and supports over thirty adopted and drafted documents including plans, reports, studies, and grant applications. The following section lists the documents and approved literature that was used to guide and inform the development of future opportunities and alternatives for the Study. A list of proposed improvements/projects within the proposed study was compiled from these documents and span the breadth of multimodal infrastructure, including pedestrian, bicycle, vehicular, and rail improvement projects. The documents researched and reviewed, as well as the types of projects found in those documents are listed in chronological order below in Table 1-1. A brief summary of each of these documents can be found in Appendix A.

Table 1-1 Literature Review

Document	Year of Pub.	Pedestrian	Bicycle	Vehicular	Rail	Policy\Other
Interstate 805/5 South Corridor Study	2005					X
Barrio Logan Truck Prohibition Resolution	2005					X
SANDAG TCIF Grant Application for Freeway Access Improvements from the TAMT/NCMT	2008			X		
SDUPD TCIF Port Access Improvements	2008			X	X	X
SANDAG TIGER Grant Application for the Vesta Street Bridge and I-15 Direct Connector Ramps	2009			X		
NASSCO Shipbuilders Assessment to the American MHS	2009					X
SDUPD TAMT Final Historical Geotechnical Summary	2010					X
National City Bicycle Master Plan	2011		X	X		
Harbor Dr Bayshore Bikeway Parking Study (KTU+A)	2011		X			X
Shipyard District Parking Structure Feasibility Study (KHA)	2011					X
National City General Plan	2011					X
TAMT Freight Action Plan	2013				X	X
City of San Diego Bicycle Master Plan	2013		X	X		
Port of San Diego Climate Action Plan	2013					X
Barrio Logan Community Plan and Draft Update	2013	X	X	X		
Barrio Logan Public Facilities Financing Plan	2014	X	X	X		
West Coast Marine Highway Market Analysis	2014					X
San Diego Port Master Plan Update Assessment Report: Vision Statement and Guiding Principles	2015					X
National City Marine Terminal Optimization Study	2015				X	
SANDAG San Diego Forward: Regional Plan	2015	X	X	X	X	
Barrio Logan Shipyard Parking Study (KTU+A)	2015			X		X

Document	Year of Pub.	Pedestrian	Bicycle	Vehicular	Rail	Policy\Other
American Association of Port Authorities (AAPA) State of Freight Infrastructure Survey	2016					X
National City Marina District Land Use Study (Balanced Plan)	2016			X	X	
TAMT Redevelopment Plan and Final Environmental Impact Report	2016			X	X	
Building Healthy Corridors: Transforming Urban and Suburban Arterials into Thriving Places	2016					X
CTC Freight Investment Program	2017					X
Department of Transportation Intermodal Study	2017					X
SDUPD Information Packet to the Board for the TAMT	2017					X
TAMT Updated Access Memorandum	2017	X		X	X	
Port of San Diego Master Plan	2017					X
Green Port Month Proclamation	2017					X
City of National City Downtown Specific Plan	2017	X	X	X	X	

2 EXISTING CONDITIONS

This section summarizes travel demand and roadway performance in the study area to understand corridor congestion during peak inbound and outbound hours to the Harbor Drive corridor. Vehicular traffic congestion in the study area is significant during peak periods as a result of a wide variety of destinations, users and schedules converging in a small area with limited capacity.

The study team employed a comprehensive methodology to understand the corridor's unique traffic conditions, combining innovative technical tools with the indispensable benefit of real-world experience by conducting:

- In-depth interviews with major employers and other relevant stakeholders.
- In-person field visits to observe actual conditions.
- Multimodal traffic counts at key roadway segments and intersections.
- Micro-simulation modeling to capture key movements and associated travel times.

These tools provided the project team with a broad understanding of the corridor's existing traffic flows, constraints and potential opportunities. This information will be used to help identify and prioritize on-road, vehicular-related issues that need to be addressed.

2.1 VEHICULAR TRAFFIC

This section summarizes travel demand and roadway performance in the study area to understand corridor congestion during peak inbound and outbound hours to the Harbor Drive corridor. Vehicular traffic congestion in the study area is significant during peak periods as a result of a wide variety of destinations, users, and schedules converging in a small area with limited capacity.

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2.1.1 CIRCULATION NETWORK

Local roadways and the regional freeway system provide an interconnected network to accommodate vehicular operations both within the corridor and externally through the region.

Table 2-1 lists five primary roadways identified by stakeholders as critical for vehicular movement during peak-hour travel as well as key trip generators that are served. Additionally, discussions with local jurisdictions resulted in the selection of 18 intersections, pictured in Figure 2-1, as locations critical for analysis. The study intersections are indicated by yellow dots in Figure 2-1, which connect to the primary roadways identified in Table 2-1 that provide access to Interstate 5.

Specific entry gates to/from Naval Base San Diego (denoted by different shades of green dots in Figure 2-1) are also identified because these gates often result in excessive queuing during peak hours, which contributes to increased travel times in the corridor. Finally, entry gates to the District's two marine terminals are identified in dark blue because they generate large amounts of freight (or truck) traffic,

although these trips are typically spread out throughout the day and are rarely concentrated during peak hour time frames.

Table 2-1 Critical Peak-Hour Roadway Corridors

Roadway	Key Trip Generators Served
Harbor Drive	Downtown San Diego Barrio Logan Tenth Avenue Marine Terminal Shipyards Naval Base San Diego Wet & Dry Sides
28th Street	Tenth Avenue Marine Terminal Shipyards Naval Base San Diego Wet & Dry Sides
32nd Street	Naval Base San Diego Wet & Dry Sides
8th Street	Naval Base San Diego Wet Side
Bay Marina Drive	National City Marine Terminal Naval Base San Diego Wet Side Private Employers and Shippers (e.g. Amazon)

Figure 2-1 Study Intersections & Naval Base San Diego Gates

2.1.2 TRAVEL DEMAND

Many factors contribute to the corridor's heavy travel demand and result in congestion during the corridor's atypical peak hours, as described below. During non-peak hours, roads in the corridor generally operate at acceptable levels.

KEY TRIP GENERATORS

Traffic is largely driven by the corridor's key employment destinations, shown in Figure 2-2:

- **Barrio Logan:** One of San Diego's historic neighborhoods featuring housing, shops, restaurants, and the César E. Chávez Campus of San Diego Continuing Education.
- **Tenth Avenue Marine Terminal:** One of two major cargo terminals that manages refrigerated containers, break bulk, and dry bulk cargo.
- **Naval Base San Diego Wet Side:** Ships, maintenance yards, and logistics facilities.
- **Naval Base San Diego Dry Side South:** Support facilities including housing, training, and medical.
- **Naval Base San Diego Dry Side North:** Retail services including exchange and commissary.
- **Shipyards:** Major tenants include NASSCO, HII, and BAE Systems, plus several associated maritime businesses.
- **National City Marine Terminal:** One of two major cargo terminals that specializes in roll-on/roll off (RORO) cargo, comprised primarily of automobiles.

Naval Base San Diego is the largest source of traffic demand, with approximately 50,000 personnel entering the base each day, mostly via private vehicles. The marine terminals and shipyards also include several thousand additional workers, many of whom also travel via private vehicles.

DEMAND VOLUMES

Multi-modal traffic counts were gathered from a variety of sources to establish the existing vehicular demand throughout the study area (see Appendix B). Analysis of these average daily traffic (ADT) counts, AM and PM peak-hour intersection counts, and peak hour queuing observations yielded two major conclusions pertaining to vehicular demand:

- **Atypical Peak Hours:** Corridor peak hours do not follow general regional patterns.
- **"Constrained Flow" Conditions:** Key intersections cannot clear traffic because of downstream queuing.

ATYPICAL PEAK HOURS

For the San Diego region, peak-hour traffic typically occurs between the hours of 7:00 AM and 9:00 AM for the morning (AM Peak Hours), and between 4:00 PM and 6:00 PM for the evening (PM Peak Hour). However, because shipyard and Navy workers typically start and end their work days earlier, the study area's peak hours are atypical of the region. Figure 2-3, shows the corridor's typical weekday traffic volumes for key roadways traveling in the "inbound" direction toward Harbor Drive and 32nd Street. It reflects the following general trends:

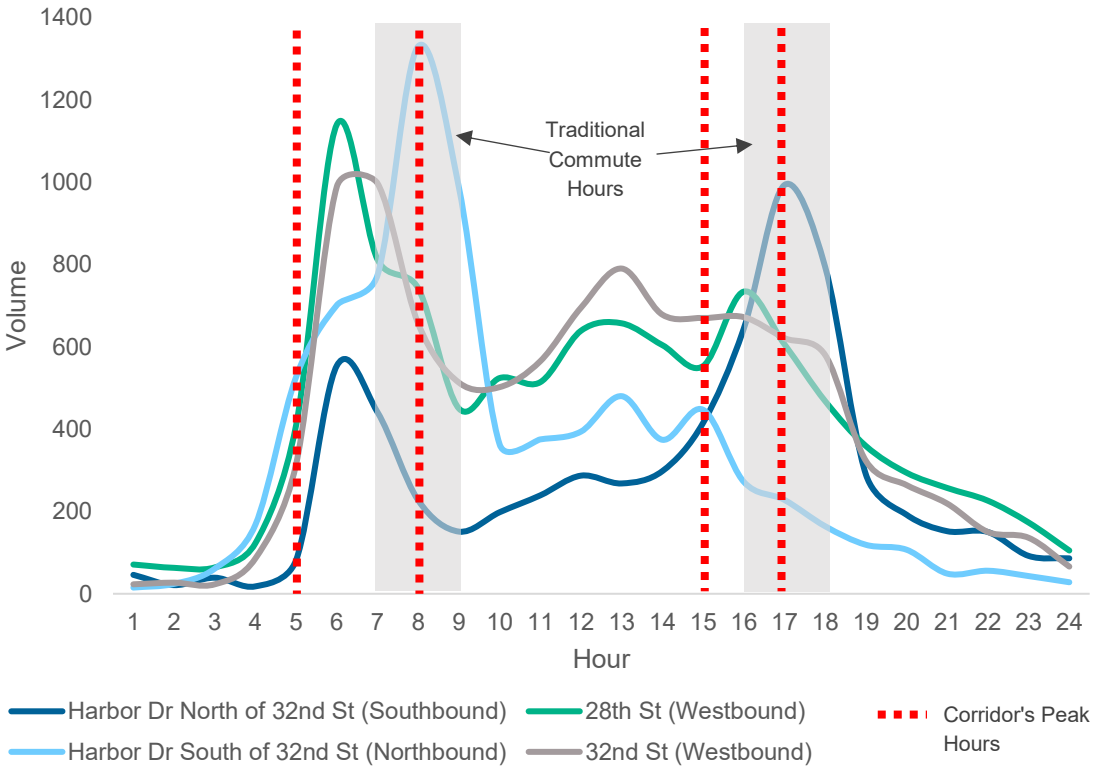
- **5:00-6:00 AM:** Early morning peaks on some study area roadways featuring inbound traffic, reflecting the early start time for many shipyard and Naval Base San Diego workers. Specific arterials include 28th Street and 32nd Street.
- **6:00-7:00 AM:** Additional early morning peaks on inbound study area roadways occur in the southern portion of the study area, also reflecting early start times for various personnel. Specific arterials include 8th Street and Bay Marina Drive.
- **7:00-8:00 AM:** A traditional morning peak on northbound Harbor Drive, mainly reflecting "spillover" traffic from congested I-5 and Coronado Bridge and by regional commuters heading northbound to downtown San Diego.

- **3:00-4:00 PM:** Slight peaks in the early afternoon, mainly reflecting shipyard shift changes.
- **4:00-5:00 PM:** A traditional evening peak on southbound Harbor Drive, mainly reflecting “spillover” traffic from congested I-5 by regional commuters heading southbound out of downtown San Diego.

The variability of peaks across time, direction, and arterial indicates that conventional peak-hour intersection analysis is insufficient to capture the corridor’s true performance. A complete understanding of existing conditions therefore requires additional types of analysis across longer periods. **Therefore, for the purposes of this corridor analysis, a composite AM peak hour was developed using manual adjustments to reflect the composite peak hour flows from 5:00-8:00 AM. In the PM peak hour, the peak study period was between the hours of 3:00-5:00 PM.**

Figure 2-2 Key Traffic Generators & Security Gates

Figure 2-3 Typical Inbound Traffic Volumes



"CONSTRAINED FLOW" CONDITIONS

To verify the intersection and ADT counts, the project team conducted field visits to observe the actual operations of the roadway network. The team observed that most intersections in the critical peak-hour roadway corridors (Figure 2-2) did not clear all vehicles during standard signal operations. Rather, significant numbers of vehicles were unable to cross through the intersections within the allotted "green time" as a result of queuing further downstream.

This downstream queuing causes the traffic counts to under-report the true demand for these roadways during the peak hour—because the number of cars passing the count location is limited by the downstream obstruction (e.g. security gates). This further suggests that conventional peak-hour intersection and roadway segment analysis is insufficient to capture the true performance of the corridor.

2.1.3 ROADWAY PERFORMANCE

This study augmented traditional traffic measures with additional analyses to provide a complete picture of corridor roadway performance as a result of the corridor's heavy and varied demand and "constrained flow" conditions in peak hours. From field observations, interviews with stakeholders, and technical analysis, the project team identified a wide range of infrastructure factors that influence the corridor roadway performance during peak hours. These include:

- Queuing from gate inspections at Naval Base San Diego (AM peak hour only).
- Barriers to "internal" circulation among the three areas of Naval Base San Diego (Wet Side, Dry Side North, and Dry Side South).
- Multiple at-grade rail crossings and related signal timing disruptions, mainly from the San Diego Trolley during peak periods.

- Roadway capacity at specific locations.
- High pedestrian crossing volumes at several intersections.

FACTORS INFLUENCING ROADWAY PERFORMANCE

QUEUING AT NAVAL BASE SAN DIEGO SECURITY GATES

As shown in Figure 2-2, the Naval Base San Diego has multiple security gates that provide access to the base. These gates process most of the approximately 25,000 personnel who enter each day.

Under the typical inspection protocol, a sentry checks security credentials for each vehicle in succession. During peak hours, the highest-traffic gates employ multiple lanes and dual-stacked sentries that allow two vehicles to be processed simultaneously in each lane. The average processing rate is approximately 250-350 vehicles per hour, per lane. Appendix C contains a table detailing the number of lanes and sentries at each gate and observed processing rates.

CONGESTION QUEUING

Figure 2-4 shows the congestion stemming from Naval Base San Diego security gates during a typical weekday morning peak. The heaviest congestion occurs on the following roads:

- 28th Street
- 32nd Street
- I-15 / I-5 Off-ramp onto 32nd Street
- 8th Street
- Civic Center Drive
- Harbor Drive
- Tidelands Avenue

Cesar E. Chavez Parkway, Bay Marina Drive, and other roads in the study area generally are not affected by gate queuing.

The shipyards and the marine terminals also have several security gates, but—unlike Naval Base San Diego—many employees park outside these gates, so they typically do not create queues that back up through approach roadways and intersections.

TURN-POCKET STORAGE CAPACITY

A secondary effect of gate queuing comes when queues extend beyond their designated turning lanes and spill into adjacent through lanes. Along major vehicular corridors in the peak AM period (5:00-8:00 AM), the demand for these critical turning movements often exceeds the capacity of the designated lanes. As a result, traffic queues spill back into the main travel lanes, degrading service for other movements. Based on a travel time analysis, excessive queuing affects the following intersection turn-pockets:

- **Northbound Harbor Drive:** Left-turn pockets at Belt Street, 32nd Street, and 8th Street.
- **Southbound Harbor Drive:** Right-turn pockets at Belt Street and 32nd Street.
- **Westbound National Avenue:** Left-turn pocket at 28th Street.
- **Northbound Tidelands Avenue:** Left-turn pocket at 19th Street.

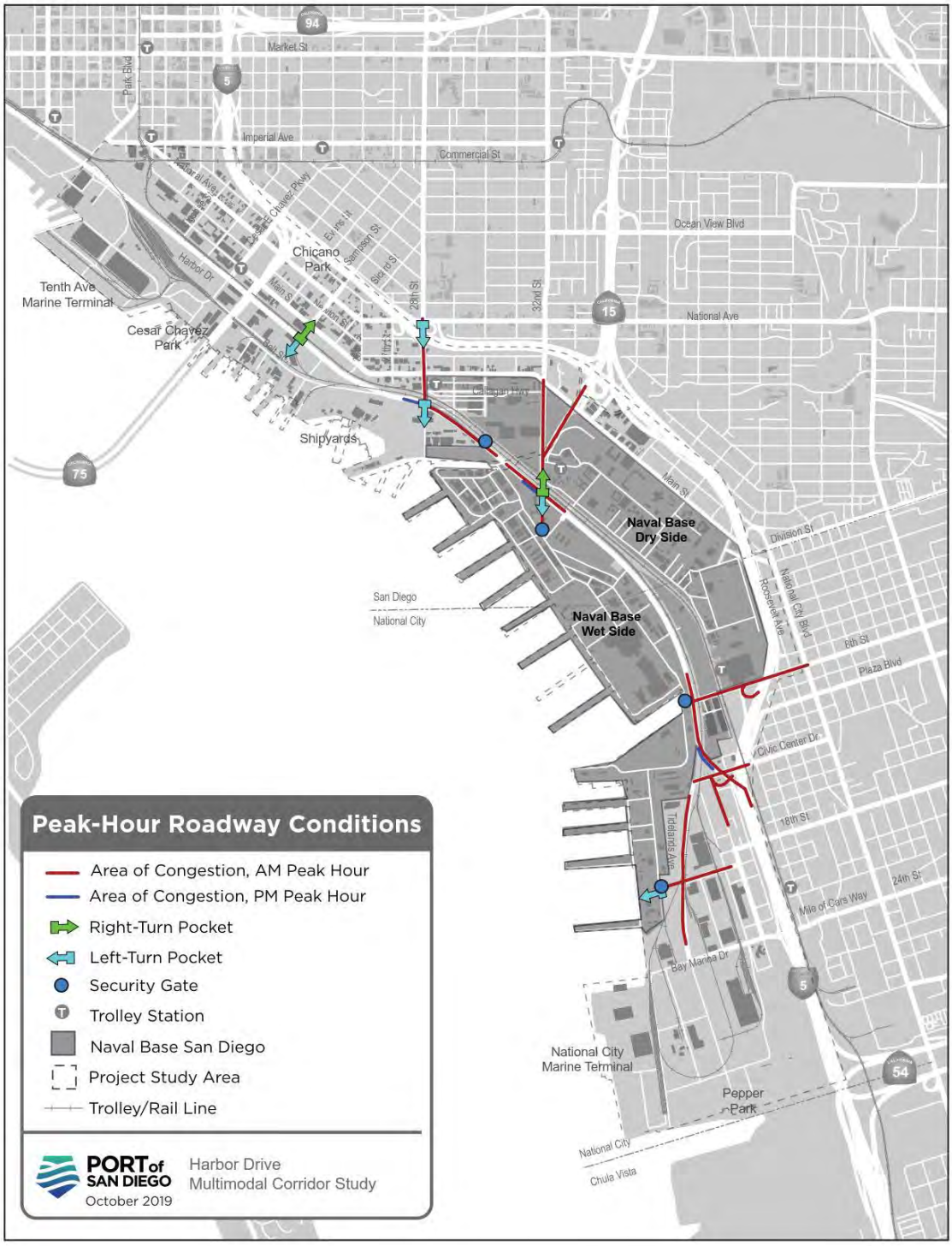
NAVAL BASE SAN DIEGO BISECTED BY PUBLIC STREETS

From a traffic perspective, Naval Base San Diego effectively operates as three separate bases connected by public roadways. Figure 2-2 shows each area and its associated access points.

Driving between these base areas—a very common movement for Navy employees, contractors, and dependents—requires exiting a security gate, traveling through busy public roadways, and then entering

another security gate. Because this “internal” base traffic relies on public streets, additional trips are added to the surrounding roadway network.

Figure 2-4 Peak-Hour Roadway Conditions



AT-GRADE RAIL CROSSINGS

The corridor contains several at-grade rail crossings. These can reduce roadway performance by causing delays when crossing gates are down, limiting the number of vehicles that can pass through adjacent intersections. Additionally, trains approaching at-grade rail crossings activate signal preemption—observed to be approximately 60 seconds on average—that overrides the standard signal timing.[2] This creates inefficiencies in signal timing plans and limits the intersections' abilities to clear vehicles from critical roads onto and through Harbor Drive.

The corridor's at-grade rail crossings are:

- Sigsbee Street
- Beardsley Street
- Cesar E. Chavez Parkway
- Sampson Street
- Schley Street
- 28th Street
- 32nd Street
- 8th Street
- Civic Center Drive

Rail signal pre-emption does contribute slightly to increased travel times during the AM peak period, especially at the 28th Street and Civic Center Drive crossings. However, as described above, the driver of congestion remains downstream queuing—unrelated to the at-grade rail crossings.

HIGH PEDESTRIAN CROSSING VOLUMES

A high volume of pedestrians crossing Harbor Drive in both the morning and evening peak hours, particularly at 28th Street, is a result of several shipyard parking lots being located outside the shipyard security gates along the east side of Harbor Drive.[3] This high pedestrian volume exceeds the capacity of the adjoining sidewalks and crosswalks, and results in large pedestrian crossing widths across the intersection legs. This decreases roadway capacity for vehicles to turn onto and queue along Harbor Drive.

LACK OF INTELLIGENT TRANSPORTATION SYSTEMS

Corridor roadway operations also suffer from the inefficiencies of conventional traffic control equipment. The existing traffic signal infrastructure along Harbor Drive is older and, for the most part, lacks the more contemporary upgrades that provide for more efficient traffic operations. The existing traffic signal control technology allows the traffic signals to react to the presence of vehicles or pedestrians with pre-timed phasing to provide green time for each movement. However, this method of traffic signal operation does not aid in the efficient movement of traffic or goods along the corridor.

Based on the City of San Diego's Traffic Signal Communications Master Plan (CMP), 2014, only two of the traffic signals within the City limits are communicating with the City's centralized Transportation Management Center (TMC). The signals within the City of National City, are controlled by their traffic signal system and do not communicate with the City of San Diego traffic signals. The current state of the traffic signal system along the corridor shows that there is little communication between the signals and

[2] The average gate down time of approximately 60 seconds can vary widely—sometimes lasting three minutes or longer—based on many factors including the presence of trains in both directions (activating the gates back-to-back), long boarding times by passengers at adjacent stations, and obstructions or other safety concerns in the railway.

[3] According to the *Barrio Logan Shipyard Parking Study (October 2015),* the District's three shipyards and CP Kelco currently have an estimated 4,043 dedicated parking spaces for their employees, with 3,284 spaces (81%) located on the east side of Harbor Drive.

timing of the signals along the corridor is not as efficient as it could be, which would mean better green light progression through the corridor and better management of the signals during times of peak demand on the roadway. The City's CMP outlined a plan to upgrade and enhance traffic signals in the region. Additionally, the area of Harbor Drive within the City has deficiency upgrades planned in the short-term as well as communication upgrades planned in the future, depending on funding.

Generally, effective traffic signal corridor management includes additional elements beyond a typical stand-alone traffic signal. These elements include:

- High-speed fiber-optic communications between traffic signals as well as to a central management center
- Adaptive Traffic Signal control at each signal that provides a response and traffic management based on real-time traffic data at the intersection

Additionally, there are other Intelligent Transportation System elements that could be deployed in the corridor to provide for future-ready opportunities that allow for both vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications and management.

PEAK-HOUR ROADWAY CONDITIONS

As described in Section 2.1.2, traditional peak-hour intersection delay is an ineffective measure of performance because of the corridor's "constrained flow" conditions characterized by downstream queuing. However, to provide a basis for comparison to other studies, the project team did calculate peak-hour intersection delay using standard methodologies from the Highway Capacity Manual. The peak hour was calculated using manual adjustments to reflect a composite peak hour of the different peak periods featured throughout the study area. Further discussion of these adjustments can be found in the Appendix B. Traffic counts at intersections and roadway segments and signal timing sheets from the City of San Diego, City of National City, and Caltrans are used as input to the analysis. The resulting delay and level-of-service results—showing degraded traffic conditions throughout the corridor—are available in Appendix D.

Traditional level-of-service delay calculations can be an incomplete measure of the extent and causes of poor roadway performance in cases where downstream queueing causes constrained flow conditions, like along key arterials in the project study area. Therefore, the project team additionally conducted an analysis of travel times along the critical corridor routes listed in Table 2-2. The methodology utilized *Synchro 9.2* and *SimTraffic* analysis software and included calibration of the model to match the observed queue lengths from field observations.

The results indicate that travel times in the AM peak hour are significantly greater than the PM peak hour—by as much as 612 percent. This primarily is the result of two factors:

- Outbound (PM) traffic is not restricted by security gates, which is the most significant constraining factor during the AM peak period.
- Work start times in the corridor are generally clustered in a narrow window of time, which concentrates arriving traffic in the morning. By contrast, work departure times tend to vary—based on extended days, half days, off-site meetings, etc.—and are therefore departing traffic is spread over a longer period in the afternoon and evening.

HARBOR DRIVE: CESAR E. CHAVEZ PARKWAY TO CIVIC CENTER DRIVE

In the corridor's AM composite peak hour, northbound queues entering Naval Base San Diego at 32nd Street (Gate 6) and 8th Street (Gate 9) are affecting northbound through travel times by spilling over into through lanes. In the southbound direction, the same problem occurs, but not to the same extent.

In the PM peak hour, travel times typically are free-flow; however, sometimes Harbor Drive is used as an alternative route when southbound I-5 southbound is particularly congested.

Travel times:

- **Northbound:** 21 minutes AM / 10 minutes PM
- **Southbound:** 22 minutes AM / 12 minutes PM

28TH STREET: NATIONAL AVENUE TO HARBOR DRIVE

This key roadway is affected by many complementary factors, including: limited capacity of the westbound left-turn lane to Harbor Drive; significant weaving by vehicles exiting the I-5 southbound off-ramp to make left turns on Main Street or Harbor Drive; heavy pedestrian volumes at the Harbor Drive intersection as a result of the adjacent Harborside Trolley Station and access to the shipyards; and the adjacent rail at-grade crossing.

Travel times:

- **Westbound:** 12 minutes AM / 4 minutes PM
- **Eastbound:** 3 minutes AM / 5 minutes PM

32ND STREET: NAVAL BASE SAN DIEGO GATE 23 (CALLAGAN HWY, DRY SIDE NORTH) TO HARBOR DRIVE

The primary factor affecting travel time on 32nd Street is heavy demand to enter the main gate of Naval Base San Diego (Gate 6).

Travel times:

- **Westbound:** 29 minutes AM / 4 minutes PM
- **Eastbound:** 1-minute AM / 2 minutes PM

8TH STREET: NATIONAL CITY BOULEVARD TO HARBOR DRIVE

The primary factor affecting travel time on 8th Street is heavy demand to enter the Gate 9 of Naval Base San Diego. In the AM peak hour, additional degradation comes from congestion at the I-5 northbound ramp.

Travel times:

- **Westbound:** 25 minutes AM / 4 minutes PM
- **Eastbound:** 3 minutes AM / 6 minutes PM

BAY MARINA DRIVE: I-5 RAMPS TO TIDELANDS AVENUE

This street leading to the National City Marine Terminal has no significant roadway performance issues during peak hours.

Travel times:

- **Westbound:** 3 minutes AM / 3 minutes PM
- **Eastbound:** 3 minutes AM / 3 minutes PM

Table 2-2 through Table 2-6 contain additional details on the lengths and travel times of each segment of the study area corridors. This allows for the identification of individual pinch points, although further analysis would be required to isolate the specific causes of congestion in each segment (e.g. geometry, intersection operations, and gate queueing).

Table 2-2 Travel Time Along Harbor Drive

Segment	Length (Feet)	AM Peak Hour Travel Time (Minutes)		PM Peak Hour Travel Time (Minutes)		Difference in Travel Time, AM Peak vs. PM Peak
		Through Segment	Through Arterial	Through Segment	Through Arterial	
Harbor Drive (Northbound)						
Civic Center Drive to 8th Street	1,720	5.9	20.5	1.1	9.9	107%
8th Street to Vesta Street	3,240	1.8		1.7		
Vesta Street to 32nd Street	2,400	7.7		1.9		
32nd Street to Belt Street	1,660	0.9		0.6		
Belt Street to 28th Street	1,510	1.0		1.1		
28th Street to Schley Street	1,820	0.8		0.8		
Schley Street to Sampson Street	1,290	0.8		0.9		
Sampson Street to Cesar E Chavez Parkway	1,940	1.6		1.8		
Harbor Drive (Southbound)						
Cesar E Chavez Parkway to Sampson Street	1,940	1.0	21.6	1.0	12.2	77%
Sampson Street to Schley Street	1,290	0.5		0.6		
Schley Street to 28th Street	1,820	1.9		1.0		
28th Street to Belt Street	1,510	3.4		0.9		
Belt Street to 32nd Street	1,660	9.6		2.8		
32nd Street to Vesta Street	2,400	1.1		1.2		
Vesta Street to 8th Street	3,240	2.6		2.5		
8th Street to Civic Center Drive	1,720	1.5		2.2		

Table 2-3 Travel Time Along 28th Street

Segment	Length (Feet)	AM Peak Hour Travel Time (Minutes)		PM Peak Hour Travel Time (Minutes)		Difference in Travel Time, AM Peak vs. PM Peak
		Through Segment	Through Arterial	Through Segment	Through Arterial	
28th Street (Westbound)						
National Avenue to I-5 Southbound Off-Ramp	440	4.4	11.8	0.8	3.4	247%
I-5 Southbound Off-Ramp to Boston Avenue	320	1.8		0.4		
Boston Avenue to Main Street	380	1.8		0.9		
Main Street to Naval Base San Diego Gate 15	370	2.0		0.3		
Naval Base San Diego Gate 15 to Rail Crossing	140	1.0		0.4		
Rail Crossing to Harbor Drive	170	0.8		0.6		
28th Street (Eastbound)						
Harbor Drive to Rail Crossing	170	0.2	2.8	0.5	5.4	-48%
Rail Crossing to Naval Base San Diego Gate 15	140	0.1		0.3		
Naval Base San Diego Gate 15 to Main Street	370	0.7		2.6		
Main Street to Boston Avenue	380	0.7		0.7		
Boston Avenue to I-5 Southbound Off-Ramp	320	0.2		0.2		
I-5 Southbound Off-Ramp to National Avenue	440	0.9		1.1		

Table 2-4 Travel Time Along 32nd Street

Segment	Length (Feet)	AM Peak Hour Travel Time (Minutes)		PM Peak Hour Travel Time (Minutes)		Difference in Travel Time, AM Peak vs. PM Peak
		Through Segment	Through Arterial	Through Segment	Through Arterial	
32nd Street (Westbound)						
Naval Base San Diego Gate 23 to Norman Scott Road	1,600	17.2	29.2	1.9	4.1	612%
Norman Scott Road to Trolley Crossing	350	3.0		0.6		
Rail Crossing to Harbor Drive	330	9.0		1.6		
32nd Street (Eastbound)						
Harbor Drive to Rail Crossing	350	0.5	1.4	0.5	1.8	-22%
Trolley Crossing to Norman Scott Road	350	0.9		1.3		
Norman Scott Road to Naval Base San Diego Gate 23	*No Data Available*					

Table 2-5 Travel Time Along 8th Street

Segment	Length (Feet)	AM Peak Hour Travel Time (Minutes)		PM Peak Hour Travel Time (Minutes)		Difference in Travel Time, AM Peak vs. PM Peak
		Through Segment	Through Arterial	Through Segment	Through Arterial	
8th Street (Westbound)						
National City Boulevard to Roosevelt Avenue	340	3.7	25.0	0.7	3.8	558%
Roosevelt Avenue to I-5 Northbound Ramps	320	2.9		0.2		
I-5 Northbound Ramps to I-5 Southbound Ramps	840	9.5		0.3		
I-5 Southbound Ramps to NEX Driveway	270	1.2		0.1		
NEX Driveway to Rail Crossing	150	0.5		0.4		
Rail Crossing to 8th Street Station Parking Lot	170	0.5		0.2		
8th Street Station Parking Lot to Harbor Drive	440	6.7		1.9		
8th Street (Eastbound)						
Harbor Drive to 8th Street Station Parking Lot	440	0.3	3.1	0.3	6.0	-487%
8th Street Station Parking Lot to Rail Crossing	170	0.3		0.4		
Rail Crossing to NEX Driveway	150	0.1		0.1		
NEX Driveway to I-5 Southbound Ramps	270	0.4		0.4		
I-5 Southbound Ramps to I-5 Northbound Ramps	840	0.4		2.6		
I-5 Northbound Ramps to Roosevelt Avenue	320	0.7		1.2		
Roosevelt Avenue to National City Boulevard	340	0.9		1.0		

Table 2-6 Travel Time Along Bay Marina Drive

Segment	Length (Feet)	AM Peak Hour Travel Time (Minutes)		PM Peak Hour Travel Time (Minutes)		Difference in Travel Time, AM Peak vs. PM Peak
		Through Segment	Through Arterial	Through Segment	Through Arterial	
Bay Marina Drive (Westbound)						
I-5 Northbound Ramps to I-5 Southbound Ramps	320	0.7	2.6	0.6	2.6	0%
I-5 Southbound Ramps to Cleveland Avenue	370	0.7		0.8		
Cleveland Avenue to Marina Way	350	0.3		0.3		
Marina Way to Haffley Avenue	540	0.3		0.2		
Haffley Avenue to Tidelands Avenue	740	0.6		0.7		
Bay Marina Drive (Eastbound)						
Tidelands Avenue to Haffley Avenue	740	0.3	3.1	0.3	3.3	-6%
Haffley Avenue to Marina Way	540	0.3		0.4		
Marina Way to Cleveland Avenue	350	0.8		0.8		
Cleveland Avenue to I-5 Southbound Ramps	370	0.9		1.0		
I-5 Southbound Ramps to I-5 Northbound Ramps	320	0.8		0.8		

2.2 FREIGHT TRAFFIC

Although freight movements do not significantly impact traffic congestion in the study area, the coordination of these elements with passenger traffic and other modes will allow for a comprehensive evaluation of existing issues and opportunities. This section summarizes the primary routes and existing flows of the study area's three freight modes: truck, rail, and marine.

2.2.1 TRUCK

This section outlines the corridor's freight truck routes and major movements, plus a brief discussion of truck on-street parking and challenges in the southern study area.

KEY ROUTES & PROHIBITIONS

Figure 2-5 illustrates the preferred and prohibited truck routes in the study area. The preferred designated truck route runs along Harbor Drive, then connects to adjacent freeways I-5 and SR 15 via 28th or 32nd Streets (City of San Diego) or 8th Street (City of National City).

In Barrio Logan, City of San Diego ordinances—most recently updated in December 2018—prohibit trucks from several key roads as depicted in Figure 2-5. However, community members have continued to report violations, indicating the need for greater enforcement. Pedestrian hazards, congestion, noise, and pollution associated with these freight flows cause concern for local residents.

TRUCK MOVEMENTS

Demand for truck movements is primarily driven by the Port of San Diego, Naval Base San Diego and the shipyards. These facilities serve as key origins and destinations for truck freight.

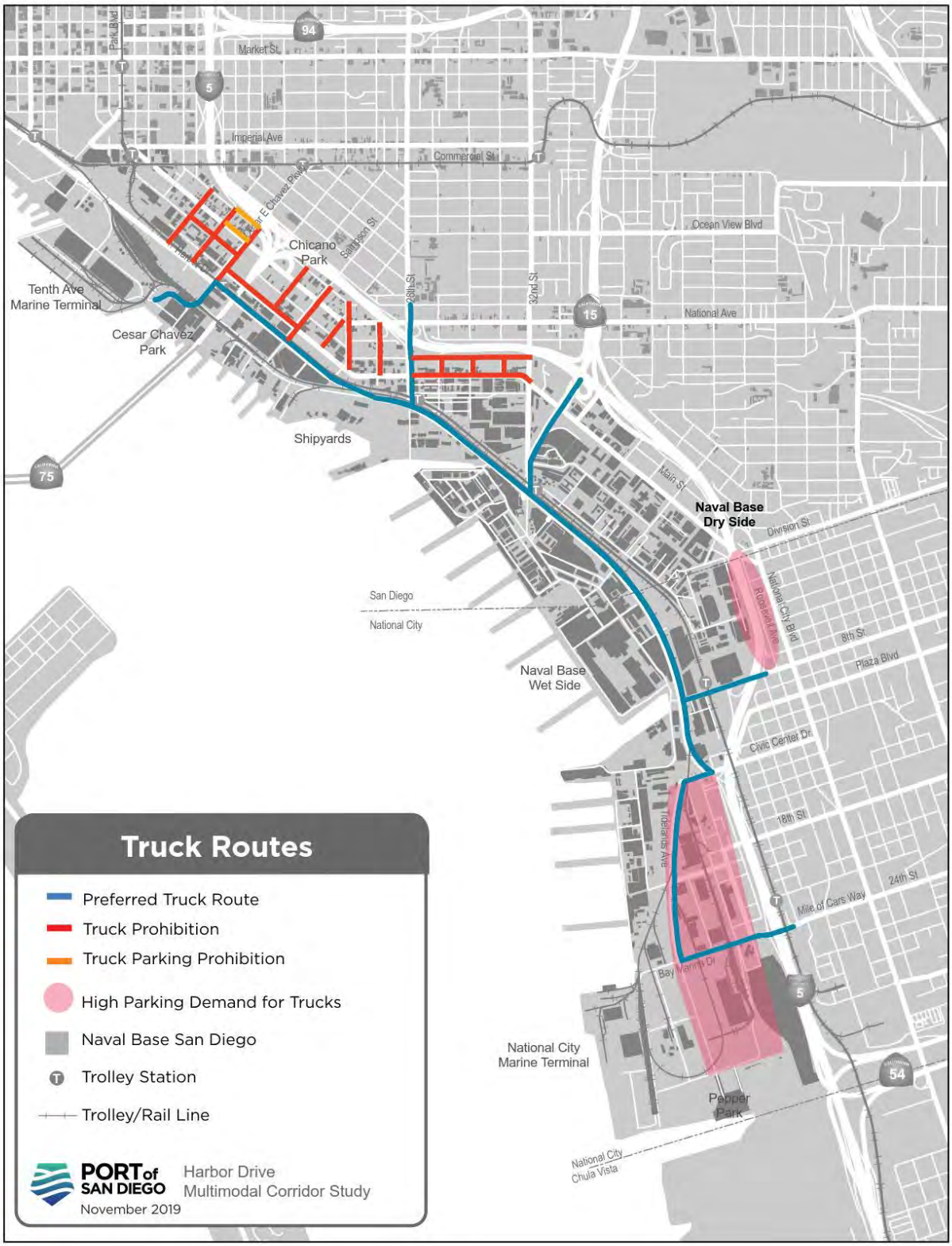
PORT OF SAN DIEGO

Approximately 90 percent of cargo from the Tenth Avenue Marine Terminal (TAMT) is transported by truck and 10 percent by rail. Currently, truck movements in and out of the terminal total between 200 to 300 trucks per day. Approximately 20 to 30 trucks per day carrying refrigerated containers are transported between TAMT and the National Distribution Center along Harbor Drive.

At NCMT, in-and-out freight movements of vehicles total about 50 per day[4]. Most autos—imported by key tenant Pasha Automotive Services—arrive by vessel and are transported to inland destinations by truck or rail. Inbound vehicles undergo pre-delivery inspection, vehicle customization, accessory installation and quality control review at NCMT. Each truck carries an average of eight vehicles.

[4] National City Marine Terminal Optimization Study, Final Report, September 4, 2015.

Figure 2-5 Truck Routes



The primary truck-related issues for the Port of San Diego include:

- **Enforcement:** Ensuring trucks follow designated routes and minimize impacts to residential neighborhoods.
- **Peak Hour Vehicular Congestion on Designated Truck Routes:** Designated truck routes overlap with vehicular routes, causing congestion.
- **Pavement Conditions:** Deteriorating pavement along the southern portion of Harbor Drive is a cause for concern for freight movement.
- **Rail Crossing Blockages:** BNSFs train-building schedule affects truck routes at TAMT, most notably at 9 am and 6 pm.
- **Lack of Intelligent Transportation Systems (ITS):** The corridor's conventional traffic control equipment is dated and lacks the real-time management capabilities of ITS—such as freight signal priority—which can increase the capacity of existing roadways.
- **Truck On-Street Parking:** Discussed below.

NAVAL BASE SAN DIEGO

Inbound freight movement to Naval Base San Diego is mainly comprised of food, construction materials, equipment, and parts. These commodities primarily arrive by truck, with a small fraction arriving by barge and rail.

The Defense Logistics Agency (DLA) receives approximately 125 trucks per week—or an average of 25 trucks per day—at the Naval Base San Diego Wet Side, entering through Gate 6A on Harbor Drive just south of 32nd Street. These shipments generally originate in New Cumberland, Pennsylvania, or Tracy, California. DLA's operations typically occur during weekdays, with only urgent deliveries on weekends. There is a potential to divert a portion of this truck traffic to waterborne shipments depending on cost and logistics.

Outbound freight movement is comprised of construction materials and food by barge—typically destined for the Navy's offshore training facility at San Clemente Island—plus the removal of Nimitz Channel dredge spoils by truck.

SHIPYARDS

Truck movements to and from the shipyards—including NASSCO, BAE Systems, and HII—consist primarily of supply van movements. They generally run between 11 pm and 1 am to avoid daytime traffic. Typical freight movement issues for the shipyards include:

- Trucks parking in marked bicycle lanes.
- The provision and management of truck loading zones.
- Occasional truck queuing at Belt and Sampson Streets, which conflicts with Navy personnel bus loading at the same location.

TRUCK ON-STREET PARKING

On-street parking by trucks is common in the southern study area. As shown in Figure 2-5, common areas for truck parking include:

- Roosevelt Avenue between Division Street and 8th Street.
- Tidelands Avenue, Cleveland Avenue, and other roadways in the study area.

Truck staging areas are important to the marine terminal operations and provide economic benefits by increasing the efficiency of goods movement. However, truck parking on public roadways also creates impacts in the surrounding community including loss of parking, visual impacts, noise, and occasional blockages of bicycle lanes.

2.2.2 RAIL

SERVICES & ROUTES

As shown in Figure 2-6, the Port and marine-related facilities on San Diego Bay are served by the Class I Burlington North Santa Fe (BNSF) railroad on the San Diego Subdivision rail network. This network is crucial to freight transport to and from San Diego. The majority of BSNF trains operate at night, with operations typically occurring in two windows: 9:00-11:00 AM and 7:00 PM-12:00 AM.

BNSF has trackage rights and operates its trains on tracks owned and dispatched by the North County Transit District (NCTD) and Southern California Regional Rail Authority (SCRRA). Freight rail capacity on the San Diego Subdivision line is constrained as a result of passenger train operations including NCTD's COASTER, SCRRA's Metrolink and Amtrak's Pacific Surfliner services.

Both SCRRA and NCTD establish absolute work windows for BNSF that are published a year in advance. Maintenance on the San Diego Subdivision line also constrains freight service, typically two weekends per month as well as one or two Thursdays.

BNSF also interchanges with the Class III San Diego & Imperial Valley (SDIY) Railroad, which freight operator Genesee & Wyoming acquired in 2012. The SDIY provides service from central San Diego to the international border at San Ysidro—approximately 14 miles south—as well as service to Santee, approximately 19 miles east.

AT-GRADE CROSSINGS

There are two primary at-grade crossings in the study area impacting the freight rail system:

- Harbor Drive at 5th Avenue
- Cesar E. Chavez Parkway at 25th Street

BNSF trains are required to clear at-grade crossings within ten minutes, which presents a major hindrance to switching activity. Moreover, re-opening of the at-grade crossing [to vehicular traffic] at the intersection Harbor Drive and Park Boulevard—which has already been approved for construction—is a significant concern to freight rail operators as it is likely to create additional impacts to rail operations.

RAIL FACILITIES

There are currently four key freight rail facilities in the study area.

ON-DOCK RAIL FACILITIES AT TAMT

The on-dock rail facilities at TAMT are comprised of:

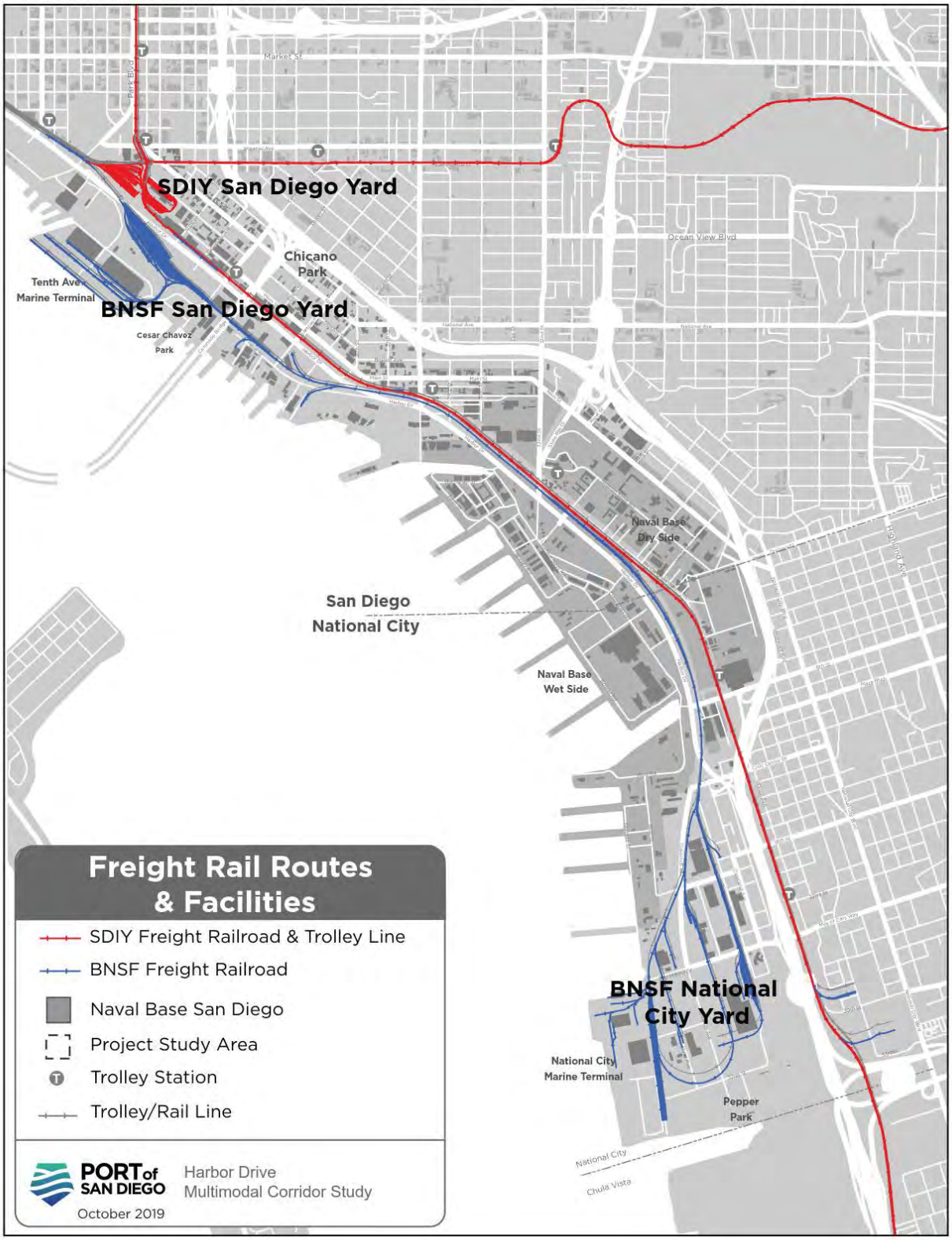
- Four storage and switching tracks that feed into the BNSF 10th Avenue San Diego Yard.
- On terminal laydown areas and warehouses served by rail spurs.

ON-DOCK RAIL FACILITIES AT NCMT

NCMT has the following rail facilities:

- **Rail Ladder:** Six on-dock tracks that are used for storage and (un)loading operations.

Figure 2-6 Freight Rail Routes & Facilities



The combined holding capacity of these tracks at NCMT is approximately 143 railcars, with an effective capacity of approximately 120 railcars. The tracks from the storage yard, NCMT and NDC converge as they head north near Tidelands Avenue and Civic Center Drive.

The existing balloon track between (west of) National Distribution Center and the on-dock rail at NCMT allows inbound and outbound rail cars to be switched to or from the loading tracks. This track is also used to load trains. There are plans to add a connector rail track that connects the on-dock NCMT rail to the BNSF National City Yard, east of the National Distribution Center. Currently, switching operations, which contribute to evening noise, at the BNSF National City Yard block traffic passing through the at-grade crossing at Bay Marina Drive. The extended loop track will instead allow rail operators to load and switch trains within terminal premises, thereby leaving the at-grade crossing clear for traffic.

OFF-DOCK BNSF RAIL FACILITIES NEAR TAMT

Known as the BNSF 10th Avenue San Diego Yard, this facility adjacent to TAMT includes:

- Holding capacity of approximately 285 rail cars, which is adequate to service the loading and unloading of up to 18,000 tons per vessel.
- Maximum train length of 8,000 feet.
- Average train lengths of 7,000 to 8,000 feet.

The BNSF Yard can accommodate 25 car lengths. Tracks at the facility cannot be extended as a result of at-grade crossings in the area.

OFF-DOCK BNSF RAIL FACILITIES NEAR NCMT

- **National Distribution Center (NDC):** Balloon track; one storage track west of NDC.
- **BNSF National City Yard:** Eight storage and switching tracks east of NDC.

SAN DIEGO & IMPERIAL VALLEY (SDIY) SAN DIEGO YARD

The San Diego & Imperial Valley (SDIY) San Diego Yard provides interchange with BNSF rail lines through the BNSF 10th Avenue San Diego Yard. The yard currently has a capacity of 100 cars and conducts joint operations with the San Diego Trolley as it is adjacent to the 12th and Imperial Transit Center.

RAIL MOVEMENTS

Rail freight service in the study area consists of 4 to 6 BNSF trains per day—2 to 3 inbound. and 2 to 3 outbound. Capacity is limited to 8 trains per day, four trains each inbound and outbound.

BNSF trains serving facilities in the study area are either auto or manifest trains. Auto trains have an average length of 7,000 to 8,000 feet, which consists of approximately 75 to 85 railcars. A railcar can carry between 10 to 24 vehicles depending on type of car (e.g. bi-level, tri-level, auto max) and type of vehicle. Manifest trains are typically shorter and consist of mixed rail cars carrying a variety of cargo including lumber, cement, chemicals, and industrial products. In some instances, automobiles are loaded onto manifest trains.

Typical rail freight service in the study area includes:

- One to two inbound and outbound auto trains per day.
- One inbound and outbound manifest train per day.

The Pasha Group is the largest rail customer, with Chevron (ethanol) and CalPortland Cement as the second- and third-largest customers, respectively. Overall, approximately 40 percent of Pasha's vehicles are transported inland by rail. Currently NCMT averages one train per day, with the capacity to accommodate one additional inbound train and two additional inbound/outbound trains.

2.2.3 MARINE

WATERWAY ACCESS

The Main Ship Navigation Corridor in San Diego Bay, shown in Figure 2-7, provides direct access to the Pacific Ocean. The U.S. Army Corps of Engineers (USACOE) maintains the waterway, which ranges from approximately 55 feet deep at mean lower low water (MLLW) at the entrance to approximately 35 feet deep at National City Marine Terminal, the southern terminus of the federal navigation waterway.

The marine facilities in the study area are situated along the waterway's Central Bay Channel. Its depth ranges from 35 to 42 feet MLLW and is between 600 and 1,800 feet wide—generally becoming shallower and narrower between TAMT and NCMT. As the Port of San Diego is one of 17 U.S. military strategic ports, the USACOE maintains sufficient channel depth at and between both NCMT and TAMT to allow passage of U.S. military vessels critical to the nation's defense.

The Coronado Bridge—the only bridge spanning San Diego Bay—has a vertical clearance of approximately 195 feet MLLW at its two middle channel openings and horizontal clearance of approximately 600 feet.

MARINE FACILITIES

Each of the study area's major marine locations—TAMT, NCMT, the shipyards, and Naval Base San Diego—contains significant facilities to support its operations.

TAMT

In 2017, approximately 1.16 million metric tons of marine cargo flowed through TAMT, 63% of the total processed by the Port of San Diego. TAMT is comprised of eight berths with a total of 4,419 feet of usable berthing space:

- Berths 10-1 and 10-2 on the north side of the facility contain 1,118 feet of berthing space. They have an alongside water depth of 31 feet MLLW.
- Berths 3-6 on the west side of the facility contain 2,580 feet of berthing space. They have an alongside water depth of 42 feet MLLW.
- Berths 7 and 8 on the south side of the facility contain 721 feet of berthing space. They have an alongside water depth of 42 feet MLLW in some areas.

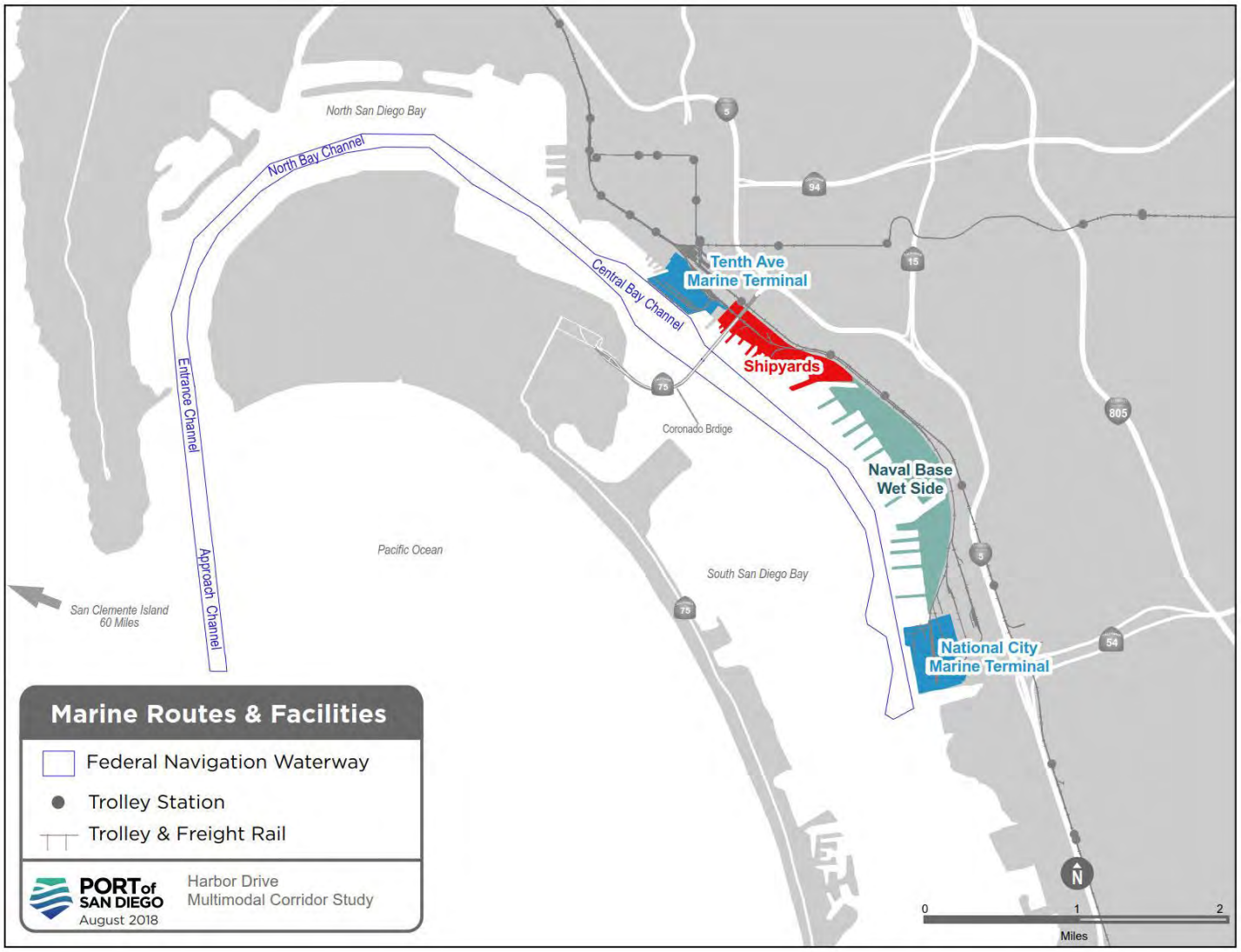
The facility has one flexible mobile harbor crane and an on-dock shore power and fueling facility. There is a bulkloader located at Berths 7 and 8, which is used to load bulk export cargo and is directly connected to a 33,000 metric ton bulk storage silo complex.

NCMT

NCMT saw 0.68 million metric tons of cargo in 2017, or 37% of the Port's total. NCMT has eight nominal berths with a total of 4,926 feet of berthing space:

- Berths 24-1 and 24-2 on the north side of the facility contain approximately 1,400 feet of berthing space, with alongside water depths ranging from 20 feet MLLW to 35 feet MLLW. Pasha Hawaii Transport Lines is the primary customer, operating automobile pure car carriers (PCCs), and pure car and truck carriers (PCTCs) from Berth 24-2.
- Berths 24-1, 24-2 and 24-3 on the west side of the facility contain approximately 2,024 feet of berthing space with alongside water depths of 35 feet MLLW. PCCs and PCTCs are the primary users.

Figure 2-7 Marine Routes & Facilities



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- Berths 24-10 and 24-11 on the south side of the facility contain 1,503 feet of berthing space. They have alongside water depths of 35 feet MLLW. PCCs, PCTCs, and Coastwise Barge are the primary customers.
- Adjacent to Berth 24-11, a small berth near the facility's lumber yard can accommodate barges and other shallow-draft vessels.

SHIPYARDS

NASSCO has an alongside water depth of roughly 29 feet MLLW, with the following facilities:

- Eight fully serviced berths ranging from 600 to 1,000 feet long
- Graving dock 1,000 feet long and 174 feet wide
- Floating drydock 820 feet long and 136 feet wide
- Ten whirly/portal cranes with individual lift capacities of 300 tons.

The BAE Systems shipyard contains four piers with a total berthing length of 2,085 feet. The alongside water depth at this facility ranges from 21 feet to 35 feet MLLW. This shipyard also contains two dry docks with lift capacities of 55,000 long tons and 26,000 long tons respectively.

Huntington Ingalls Industries Technical Solutions' San Diego Shipyard, known for many years as HII shipyard, includes six piers ranging from 175 feet to 700 feet in length. The alongside water depth at this facility ranges from 20 feet to 34 feet MLLW. The facility is mainly designed for pier-side repair and maintenance of U.S. Naval and Military Sealift Command vessels.

NAVAL BASE SAN DIEGO

Naval Base San Diego has eleven berthing piers and a mole pier, all on its Wet Side. These piers are used to berth surface ships, support vessels and barges, as well as for ship repair activities. Most complex ship repair activity takes place at Pier 13, with contractor materials and supplies stored on the pier during work periods. Pier 13 also serves as a ship support service hub where supplies and equipment are loaded onto barges. Barges from Pier 13 generally travel from San Diego to San Clemente Island.

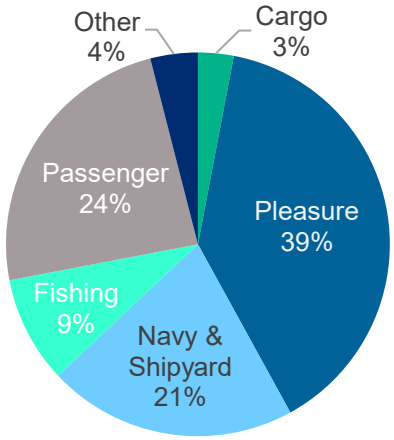
Piers 1-8, 10, 12, and 13 collectively contain approximately 31,190 feet of berthing space, while the Mole Pier contains roughly 2,170 feet of berthing space. Alongside water depth at these facilities ranges from 20 feet MLLW to 54 feet MLLW. Naval Base San Diego also has approximately four floating cranes that can be relocated to cater to the various piers as needed.

MARINE MOVEMENTS

San Diego Bay has an average of 470 vessel transits (arrivals and departures) per week, based on analysis of MarineTraffic 2019 data. As shown in Figure 2-8, pleasure crafts account for the largest share of marine movements on San Diego Bay, followed by passenger vessels, and Navy and shipyard traffic. Of the passenger vessel traffic, approximately two cruise vessels transit the Bay each week.

There are typically 1-2 cargo vessel arrivals and departures per day in San Diego Bay. On average, cargo vessels arrive at TAMT every 2-3 days and at NCMT every 1-2 days. The Port has sufficient capacity to support additional cargo vessels for a potential Marine Highway service that could reduce truck traffic on the Harbor Drive corridor.

Figure 2-8 Marine Movements on San Diego Bay



2.3 PUBLIC TRANSIT

The study area is centrally located along San Diego's busiest transit corridor and adjacent to the downtown area with many transportation hubs. However, corridor transit ridership remains relatively low as a share of commute trips, resulting from many factors including local gaps in coverage as well as the limited reach of transit regionwide. This section describes the corridor's transit service, reviews ridership, and concludes with a summary of issues and opportunities.

2.3.1 SERVICE

The San Diego Metropolitan Transit System (MTS) provides public transit service in the study area and throughout most of the San Diego region. Figure 2-9 and Table 2-7 show the MTS rail and bus lines serving the study area.

LIGHT RAIL

MTS's flagship service is the 54-mile San Diego Trolley light rail system, anchored by the Blue Line connecting downtown San Diego to the U.S.-Mexico border. The Blue Line provides core transit service in the study corridor, running parallel to Harbor Drive and stopping at six stations in the study area. It also offers MTS's most frequent service, with trains arriving every 7.5 minutes during the morning and evening peak periods.

Two other Trolley lines—Orange and Green—connect to the Blue Line at the 12th & Imperial Transit Center near the study area's northern boundary. They run every 15 minutes all day.

LOCAL BUS

MTS local buses also operate in the study area, with three key lines (12, 901, 929) serving Barrio Logan and nine others providing connections to Trolley stations from nearby communities.

Bus service frequencies vary widely based on demand. The most popular lines run every 12-15 minutes during peak periods, while lower-demand routes run every 30 or 60 minutes all day.

2.3.2 RIDERSHIP

Table 2-7 shows average weekday ridership for the corridor's six trolley stations and connecting bus lines. Figure 2-10 is a heat map depicting transit activity, represented by total ridership (boardings plus alightings) at each station and stop in the study area. Key findings include:

- With more than 57,000 weekday passengers, Blue Line ridership is substantially higher than any other route in the MTS system, including all buses serving the study area.
- The corridor's busiest bus line is Local Bus 929, which runs roughly parallel to the Blue Line through Barrio Logan, National City and Chula Vista. It serves 7,500 riders each weekday, further underscoring the importance of the north-south corridor to regional mobility.
- Most east-west bus lines are moderately successful, with around 2,000-6,000 daily riders. Many riders use these local buses to access the Blue Line Trolley stations.
- Ridership activity is highest near Trolley stations and in Barrio Logan, making these areas strong candidates for "first mile/last mile" (bicycle and pedestrian) access improvements.
- The proportion of study area residents traveling to work via transit, carpool, biking or walking is 40% in Barrio Logan, 28% for Naval Base San Diego and 20% in National City. *(Source: SANDAG/HUD Healthy Communities Assessment Tool.)*

Figure 2-9 Transit Service

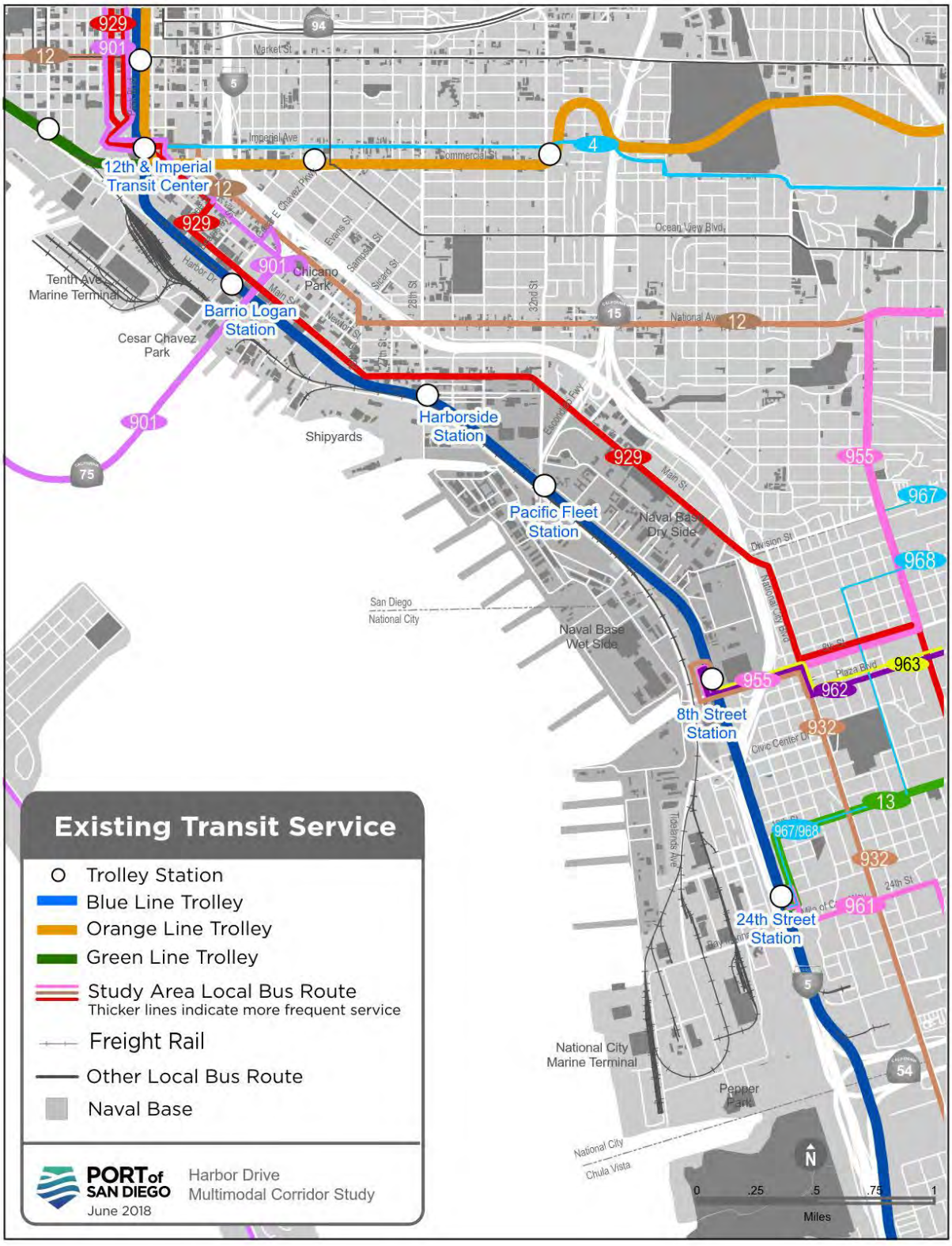


Table 2-7 Transit Stations & Service

Station	Key Destinations Nearby	Connecting Services	Average Weekday Ridership[1]	Weekday Service Frequency (Mins.)	
				Peak	Off-Peak
12th & Imperial Transit Center	Downtown Barrio Logan	Blue Line Trolley	7,113[1]	7.5	15
		Orange Line Trolley	4,960[1]	15	15
		Green Line Trolley	4,263[1]	15	15
		Local Bus 4	2,451	30	30
		Local Bus 12	4,051	15	15
		Local Bus 901	2,695	15	30
		Local Bus 929	7,526	12-15	15
Barrio Logan (Cesar E. Chavez Parkway)	Barrio Logan Tenth Avenue Marine Terminal Shipyards	Blue Line Trolley	1,356[1]	7.5	15
Harborside (28th Street)	Shipyards	Blue Line Trolley	1,169[1]	7.5	15
Pacific Fleet (32nd Street)	Naval Base San Diego Wet Side Naval Base San Diego Dry Side	Blue Line Trolley	684[1]	7.5	15
8th Street	Naval Base San Diego Wet Side	Blue Line Trolley	1,776[1]	7.5	15
		Local Bus 932	4,033	15	15
		Local Bus 955	4,814	12-15	12-15
		Local Bus 962	1,540	15	15
		Local Bus 963	821	30	30
24th Street	Naval Base San Diego Wet Side National City Marine Terminal	Blue Line Trolley	2,190[1]	7.5	15
		Local Bus 13	6,152	12-15	12-15
		Local Bus 961	2,110	15	15
		Local Bus 967	214	60	60
		Local Bus 968	211	60	60

Note 1: Trolley ridership is shown separately for each station. Bus ridership is shown for the entire line.

Source: San Diego MTS, 2018.

Figure 2-10 Transit Ridership Activity

2.3.3 ISSUES & OPPORTUNITIES FOR TRANSIT

The study area contains a mix of high-capacity and local transit service that is more comprehensive than in many other parts of the San Diego region. However, gaps in service still exist in the study area, and corridor transit ridership remains low compared to the number of daily commuters and automobile trips. Notable transit findings are summarized below.

COVERAGE & GAPS

Transit coverage varies throughout the study area, with a mix of strong service and notable gaps:

- The northern study area, centered around Barrio Logan, has relatively strong transit service, with three bus lines supplementing the Blue Line Trolley.
- The Naval Base San Diego main gates near 32nd Street (both Wet and Dry Sides) are well served by the Blue Line's Pacific Fleet Station. Similarly, the shipyard businesses are mostly well served by the Barrio Logan and Harborside stations. However, as a result of space constraints, no buses serve these stations, limiting transit access from many adjacent communities.
- Two pedestrian bridges spanning the intersection of Harbor Drive and 32nd Street provide grade-separated access between the Blue Line Pacific Fleet Station and Naval Base San Diego Gate 5A, the main pedestrian entrance to the Wet Side. However, these bridges are not ADA accessible, lack sufficient clearance for some freight trucks and are slated to be removed as part of the Bayshore Bikeway.
- While the 8th Street Station and Naval Base San Diego Gate 9 (Wet Side) are only 800 feet apart, the gate is restricted to automobiles and lacks facilities for pedestrian entry.
- Outside Barrio Logan, most local bus lines primarily function as feeders between the Trolley and communities to the east—terminating at the 8th Street and 24th Street Trolley stations near the eastern edge of the study area, rather than continuing west to the waterfront. This creates significant "last mile" access gaps between transit and waterfront destinations.
- With no connecting bus services, accessing waterfront destinations from the 24th Street Station—including the National City Marine Terminal, Naval Base San Diego Gate 13 (19th Street, Wet Side) and numerous surrounding businesses—requires long and circuitous travel to cross I-5, increasing travel time and further discouraging transit use.

OTHER BARRIERS TO CORRIDOR TRANSIT USE

Many additional factors influence corridor transit use, including:

- Bus service regularly experiences delays because of traffic congestion along study roadways (refer to Section 1, Vehicular Traffic).
- The 8th Street Station is particularly impacted as a result of congested conditions on 8th Street and surrounding roads, with frequent impacts to bus service.
- Because transit users typically begin and end their trips as pedestrians or cyclists, transit use is influenced by the quality of surrounding active transportation networks. The study area has many facilities of varying quality (refer to Section 2.4, Bicycle & Pedestrian).
- Most Trolley stations in the corridor do not have parking areas, and the limited parking available at the 8th Street Station is often at capacity.
- Many corridor employees work extremely early or late hours, or have irregular schedules, which can discourage transit usage because of limited service options.
- Lack of transit coverage in other parts of the region—especially the suburban-style communities where many corridor employees live—pose a "first mile" access problem to potential transit customers.
- Many Naval Base San Diego employees routinely need to bring equipment or luggage to or from work, which is more difficult on transit.

2.4 BICYCLE & PEDESTRIAN

This chapter addresses the bicycle and pedestrian environment in the study area. It is organized into three sections that answer these key planning questions:

- **Demand:** Where do cyclists and pedestrians want to go?
- **Network & Access:** How accessible are these locations?
- **Quality & Safety:** What is the quality and safety of the cycling or walking experience?

2.4.1 DEMAND

KEY LOCATIONS

Like all transportation modes, demand for bicycle and pedestrian travel is driven by the presence of key origins and destinations in proximity to each other—typically places of employment, housing, recreational resources and commercial/retail centers.

The San Diego Trolley light-rail system is a vital resource for bicycle and pedestrian mobility in the corridor, providing first- and last-mile access via six corridor stations. These stations are where many bicycle and pedestrian trips in the study area begin and end.

As shown in Figure 2-11, the Harbor Drive corridor's key destinations include several high-intensity activity centers:

- **Barrio Logan:** One of San Diego's historic neighborhoods featuring housing, shops, and restaurants.
- **Tenth Avenue Marine Terminal:** One of two major cargo terminals.
- **Shipyards:** Major tenants include NASSCO, HII, and BAE Systems, plus several associated maritime businesses.
- **Naval Base San Diego Wet Side:** Ships, maintenance yards, and logistics facilities.
- **Naval Base San Diego Dry Side North:** Retail services including exchange and commissary.
- **Naval Base San Diego Dry Side South:** Support facilities including housing, training, and medical.
- **National City Marine Terminal:** One of two major cargo terminals.

Figure 2-11 Key Locations

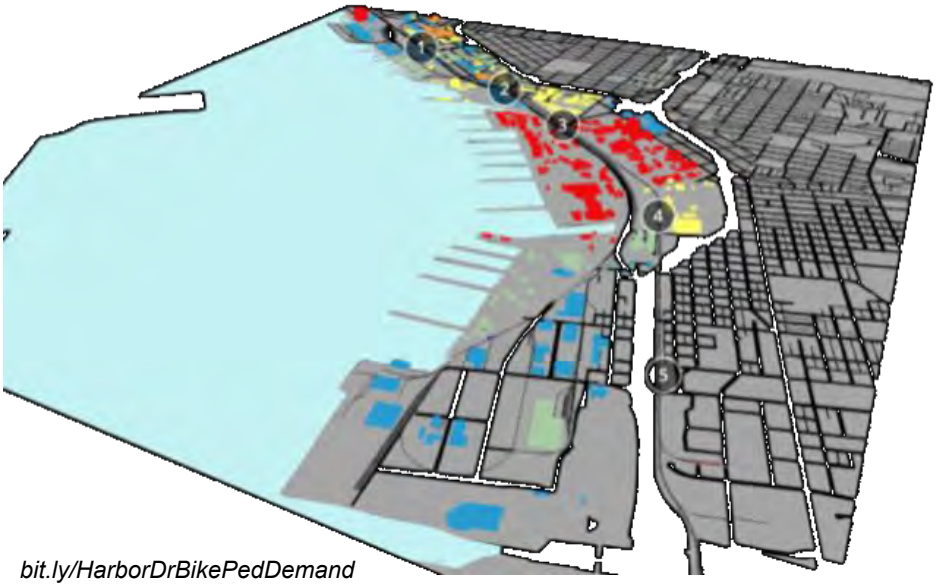
COMMUTE DEMAND

The most significant driver of travel demand is access to employment. The San Diego Association of Governments (SANDAG) maintains a regional transportation model that estimates commute trips by mode based on a wide array of inputs including the locations of jobs and housing and the quality of transportation options.

Figure 2-12 is an interactive map—available at **bit.ly/HarborDrBikePedDemand**—depicting the modeled demand in the corridor for bicycle and pedestrian commute travel on a typical weekday. Figure 2-13 and Figure 2-14 separate the bicycle and pedestrian modes into two static maps. Key findings include:

- Naval Base San Diego is the source of highest demand for both modes, which is consistent with its extremely high number of jobs relative to other corridor employment centers.
  - Centered around primary access points at 32nd Street, the Wet Side and Dry Side South are by far the largest drivers of demand.
  - The retail-oriented Dry Side North and southern piers of the Wet Side (south of Civic Center Drive) also show high demand, outperforming most other parts of the study area.
- Barrio Logan exhibits relatively high pedestrian and bicycle commute demand, stemming largely from its growing neighborhood retail, services, and educational opportunities.
- Other key destinations, including NASSCO, HII, and BAE Systems, also represent fairly significant bicycle and pedestrian potential with a high number of jobs and other opportunities. The San Diego Trolley stations represent vital infrastructure that facilitates first- and last-mile connections for potential bicycle and pedestrian commuters.

Figure 2-12 Interactive Map of Bicycle & Pedestrian Commute Demand



bit.ly/HarborDrBikePedDemand

Figure 2-13 Bicycle Commute Demand

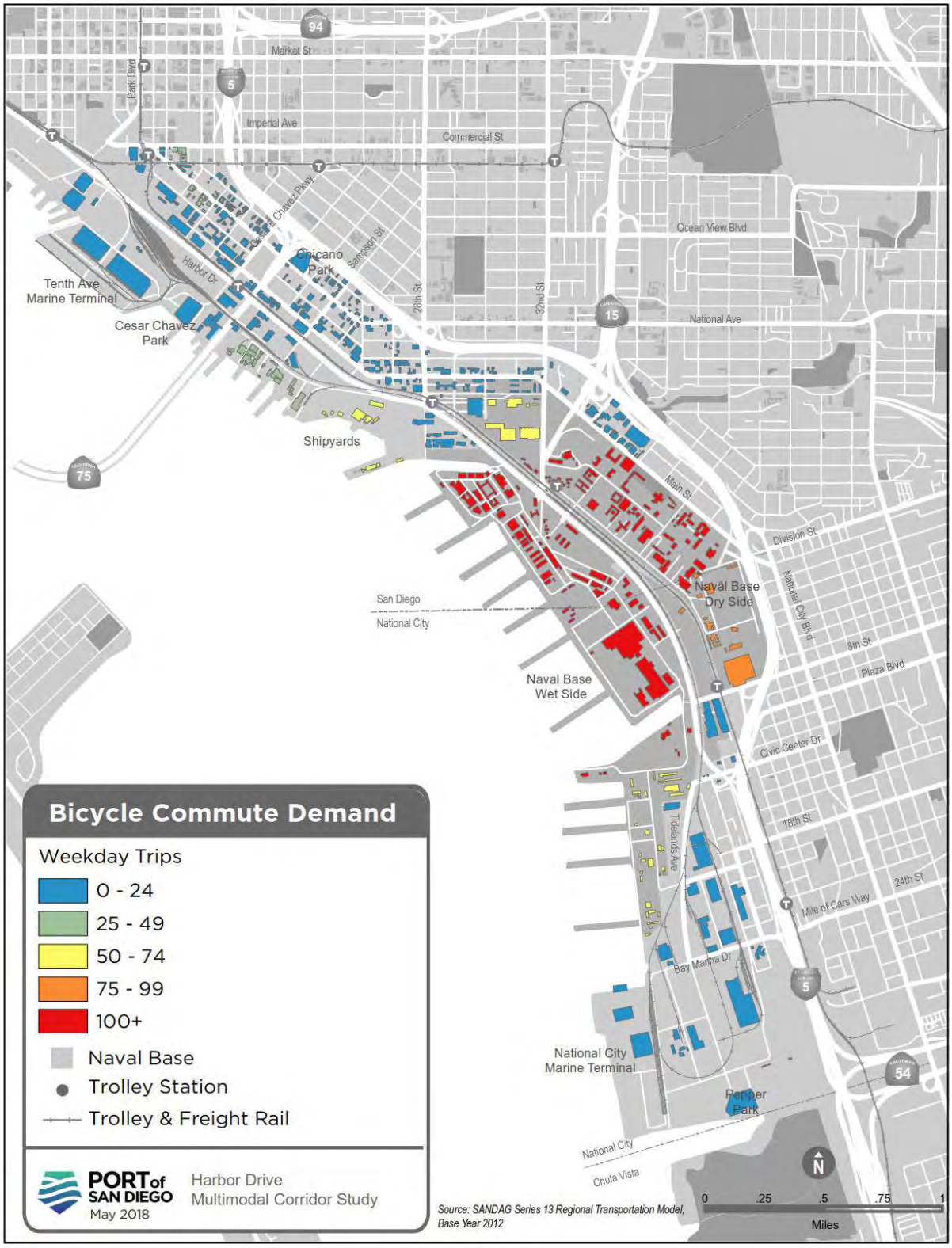
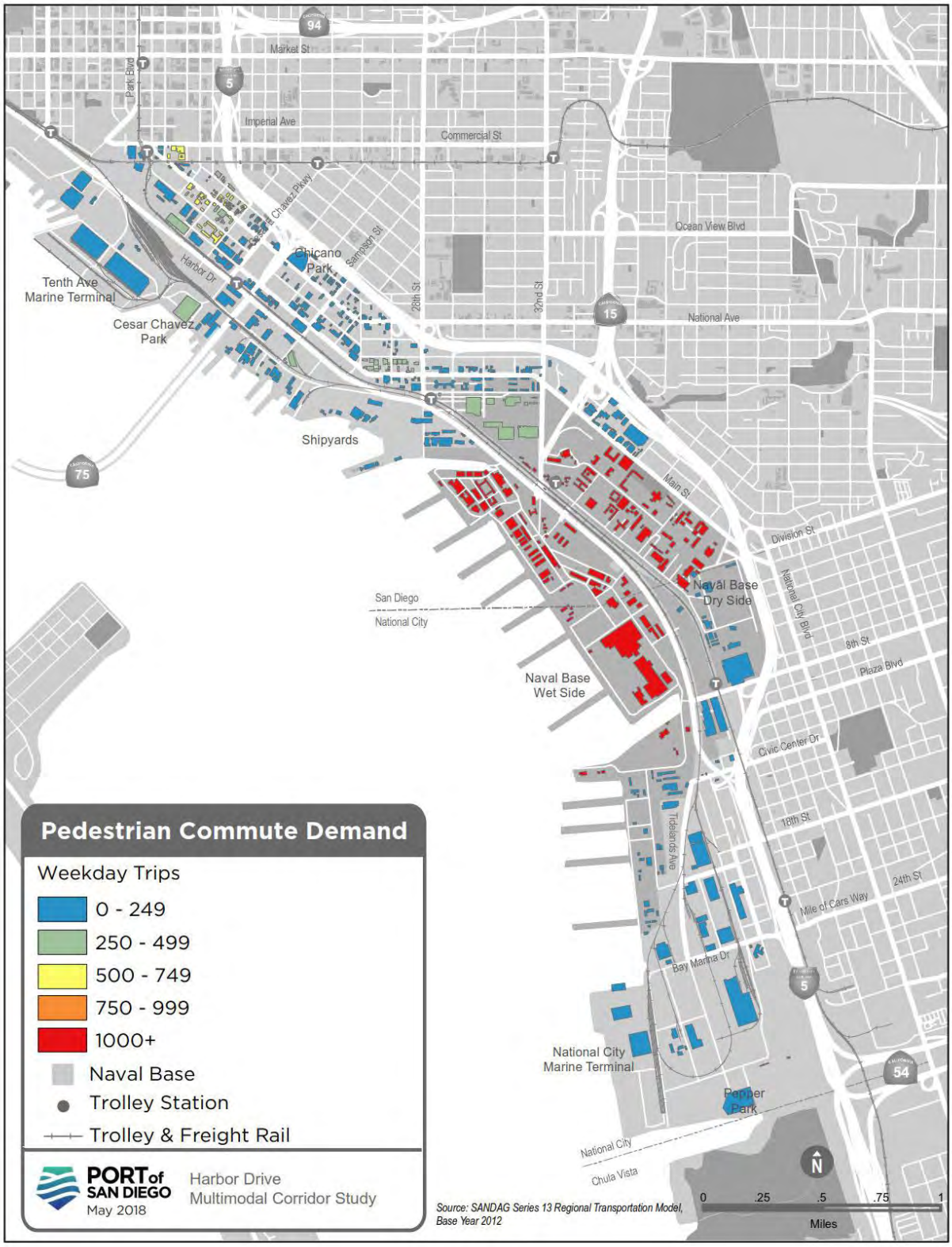


Figure 2-14 Pedestrian Commute Demand



2.4.2 NETWORK & ACCESS

Figure 2-15 illustrates the study area's existing and planned bicycle and pedestrian network.

BICYCLE NETWORK

The bicycle network is anchored by one major north-south route connected to an array of existing and planned east-west facilities.

Harbor Drive is the primary north-south corridor and part of the Bayshore Bikeway, a 24-mile path around San Diego Bay being implemented in phases by SANDAG. Key elements of the Bayshore Bikeway in the study area include:

- A new segment of protected bikeway between 32nd Street and Civic Center Drive that opened in 2018, creating a new high-quality link in the center of the study area.
- North of 32nd Street, striped bicycle lanes connecting to downtown San Diego, with upgrades to protected bikeways under development.
- South of Civic Center Drive, interim bicycle lanes on Tidelands Avenue pending the selection and construction of a final protected alignment several blocks to the east, along Marina Way and McKinley or Cleveland Avenues. Planning for this segment is underway in coordination with the ongoing *National City Marina District Balanced Land Use Plan.*

The corridor's other bicycle facilities are primarily east-west running, providing access to and from communities in San Diego and National City. They are largely incomplete as shown in Figure 2-15, with each city gradually implementing its own bicycle master plan.

PEDESTRIAN NETWORK

The pedestrian network consists mainly of sidewalks along city streets, plus a few segments of off-road trails and bridges. Several gaps and deficiencies exist—described more in the next section—but overall the off-road/off-street pedestrian network is relatively comprehensive, allowing for travel through most of the study area.

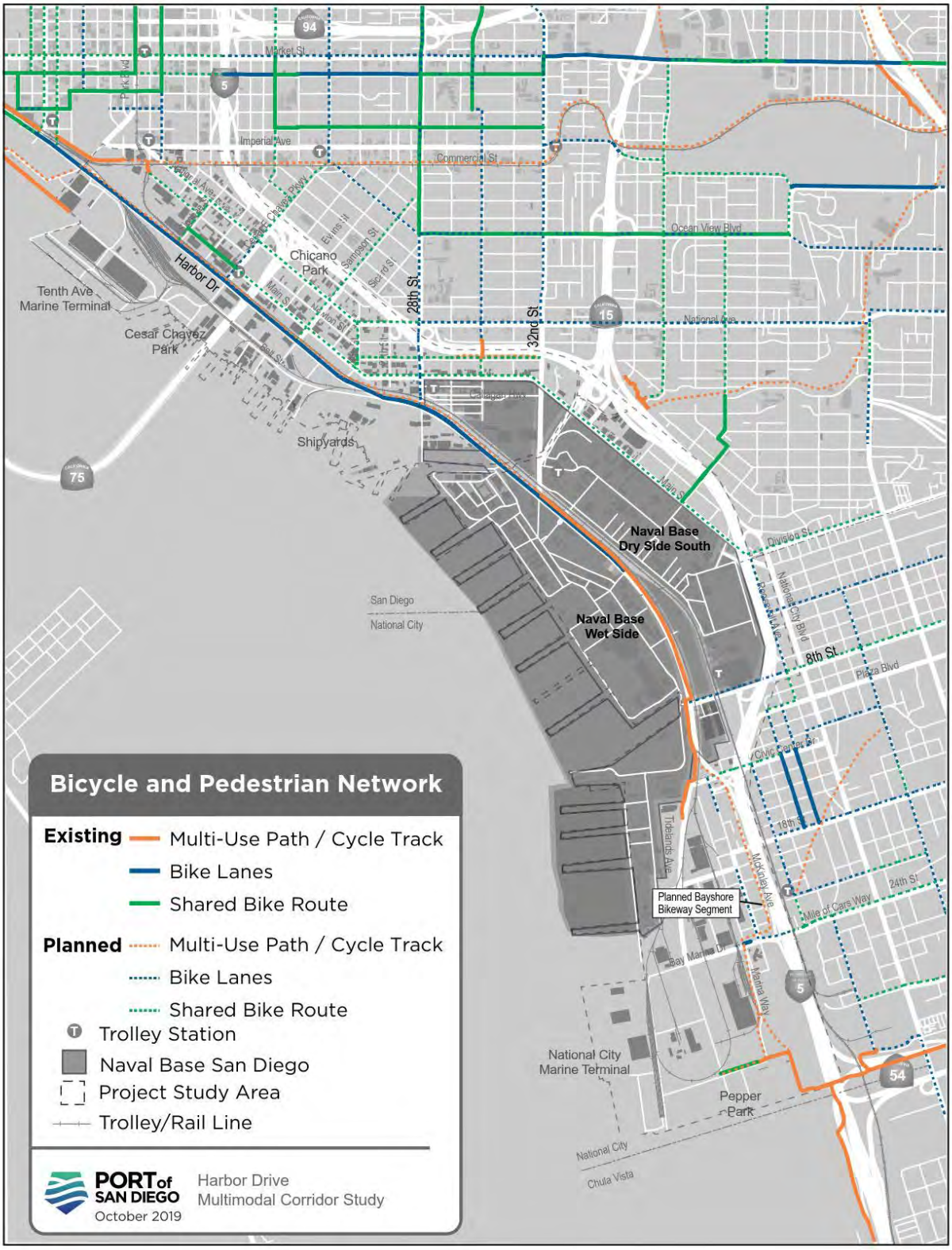
This study placed special focus on primary pedestrian routes between Trolley stations and key destinations because of the importance of the Trolley to pedestrian mobility. These routes are important pathways and often require pedestrians to cross both railroad tracks and heavily congested streets.

Four pedestrian bridges—one of which is internal to Naval Base San Diego—enhance mobility and safety by providing access across key network barriers and separating pedestrians (including cyclists walking their bikes) from auto/truck traffic:

- Across I-5 at 30th Street
- Across Harbor Drive at 32nd Street
- Across 32nd Street at Harbor Drive
- *Internal to Naval Base San Diego:* Across Harbor Drive, between 32nd and Vesta Streets (connects Wet Side and Dry Side South)

However, the two pedestrian bridges spanning the intersection of Harbor Drive and 32nd Street will be removed as part of the Bayshore Bikeway project. While their removal improves some vertical clearance issues for freight trucks in the corridor—15.6 feet over Harbor Drive and 14.8 feet over 32nd Street—their removal creates an access challenge for pedestrian connections between the Blue Line Trolley's Pacific Fleet Station and Naval Base San Diego Gate 5A, the main pedestrian entrance to the Wet Side.

Figure 2-15 Bicycle & Pedestrian Network

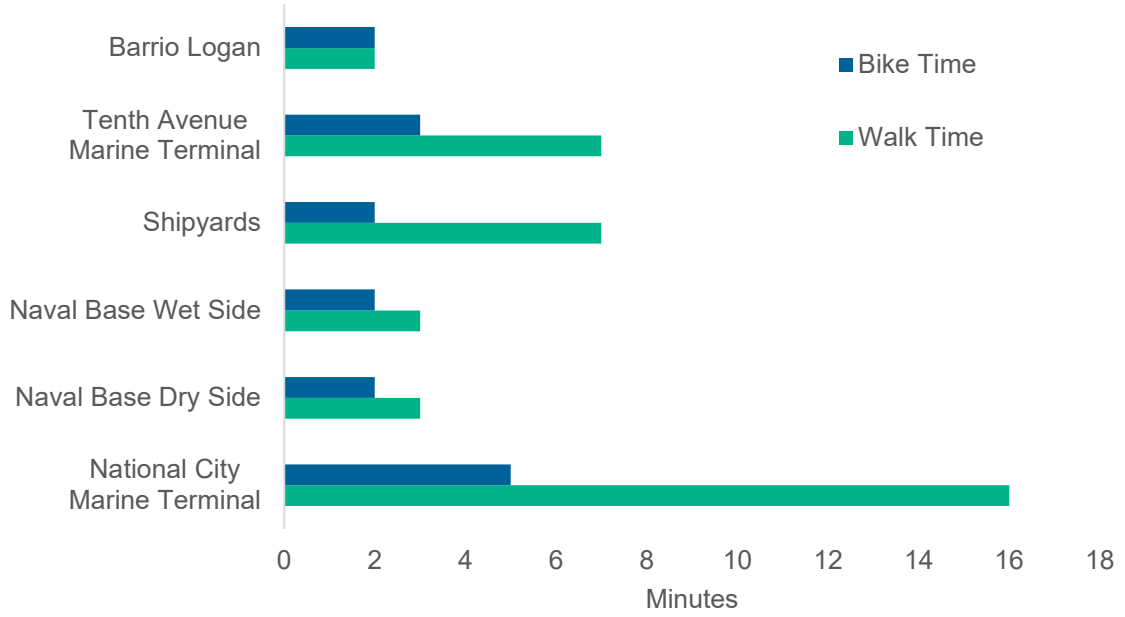


BICYCLE & PEDESTRIAN ACCESS

While the entire network is important to corridor mobility, certain routes serve higher demand because they connect key origins and destinations. Of particular importance are routes to and from the San Diego Trolley stations, which represent significant access points for bicycles and pedestrians in the corridor.

Figure 2-16 shows typical travel times for cycling and walking between the corridor's key destinations and the nearest Trolley station. The results show the study area is well served by its six Trolley stations. Each of the key destinations is within about a five-minute walk to the nearest trolley station, except the National City Marine Terminal.

Figure 2-16 Typical Travel Times from Nearest Trolley Station



2.4.3 QUALITY & SAFETY

The assessment of bicycle and pedestrian quality and safety combines multiple sources to develop an overall picture of the corridor's bicycle and pedestrian conditions. This process consolidates multiple analyses into a single, aggregated picture that allows patterns to emerge—showing where facility gaps, safety data, and community input converge into focus areas most in need of improvements.

BICYCLE NETWORK QUALITY

Figure 2-17 depicts Level of Traffic Stress (LTS), a widely accepted measure of the quality of a bicycle facility. LTS combines several factors including facility width, the number of traffic lanes and the average speed of traffic.

As shown in the map, LTS scores range from a low-stress rating of 1 (comfortable for all riders) to a high-stress rating of 4 (only for highly confident riders). Key findings in the study area include:

- Most main roads—which are often the only available routes to key destinations—are high-stress for bicycles, characterized by heavy auto/truck traffic and a lack of protected facilities.
- The new segment of protected bikeway on Harbor Drive—part of the Bayshore Bikeway—upgraded that segment to LTS 1. This is a significant improvement in an otherwise high-stress area. Similar upgrades to adjoining segments are currently in development.

— Most two-lane local roads are relatively low-stress (LTS 2) because of their smaller size and lower traffic speeds.

PEDESTRIAN NETWORK QUALITY

The pedestrian network is relatively comprehensive, with sidewalks lining most streets and crossing facilities at most signalized intersections. However, the network does contain gaps and deficiencies, including:

— Missing sidewalks
— Missing crosswalks or crossing signals
— Missing pedestrian gates at rail crossings
— Areas where pedestrian demand significantly exceeds capacity, especially near shipyards
— Areas where existing infrastructure is outdated or below current standards
— Areas of frequent conflict with auto/truck traffic

NETWORK GAPS & DEFICIENCIES

Figure 2-18 shows gaps and deficiencies in the combined bicycle and pedestrian network, compiled from a broad range of sources including analysis by the project team as well as broad stakeholder input. Appendix **Error! Reference source not found.** contains a detailed map and table describing all identified i ssues.

COLLISION DATA

Figure 2-19 is a density map of bicycle and pedestrian collisions reported to the Statewide Integrated Traffic Records System (SWITRS) for the five-year period 2013-2017. Appendix E contains a detailed map and table describing all collisions, plus two additional SWITRS heat maps separating the bicycle and pedestrian data.

Most collisions involve vehicular traffic, with many occurring at or near intersections where drivers, cyclists, and pedestrians frequently interact. In general, pedestrian-involved collisions were more prevalent than bicycle-involved collisions, with many incidents clustered around several key hotspots associated with heavy pedestrian traffic:

— 28th Street, especially at Main Street and Harbor Drive
— Cesar Chavez Parkway
— Sampson Street
— Commercial Street and National Avenue at 16th and 17th Streets

COMBINED ANALYSIS OF QUALITY & SAFETY

The quality and safety analyses converge in Figure 2-20, which aggregates sources to produce a combined density map of all quality and safety issues. This provides a single, simple picture depicting the areas of highest concern for bicycles and pedestrians, which include:

— Commercial Street and National Avenue at 16th and 17th Streets
— Harbor Drive at Sigsbee Street, Beardsley Street and Cesar E. Chavez Parkway
— Sampson Street
— Harbor Drive at Schley Street
— 28th Street
— Civic Center Drive

Figure 2-17 Bicycle Network Quality: Level of Traffic Stress

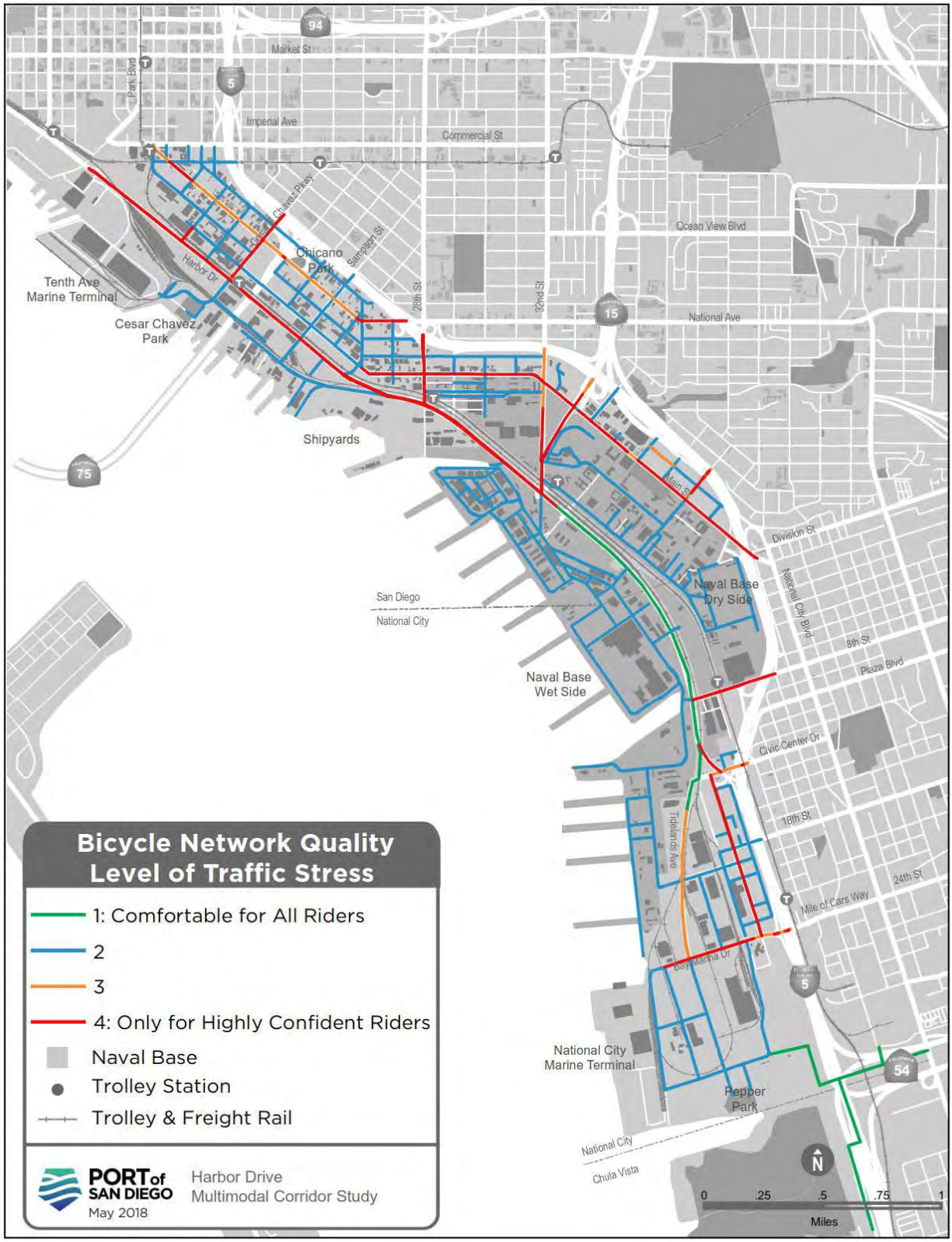


Figure 2-18 Bicycle & Pedestrian Network Gaps & Deficiencies

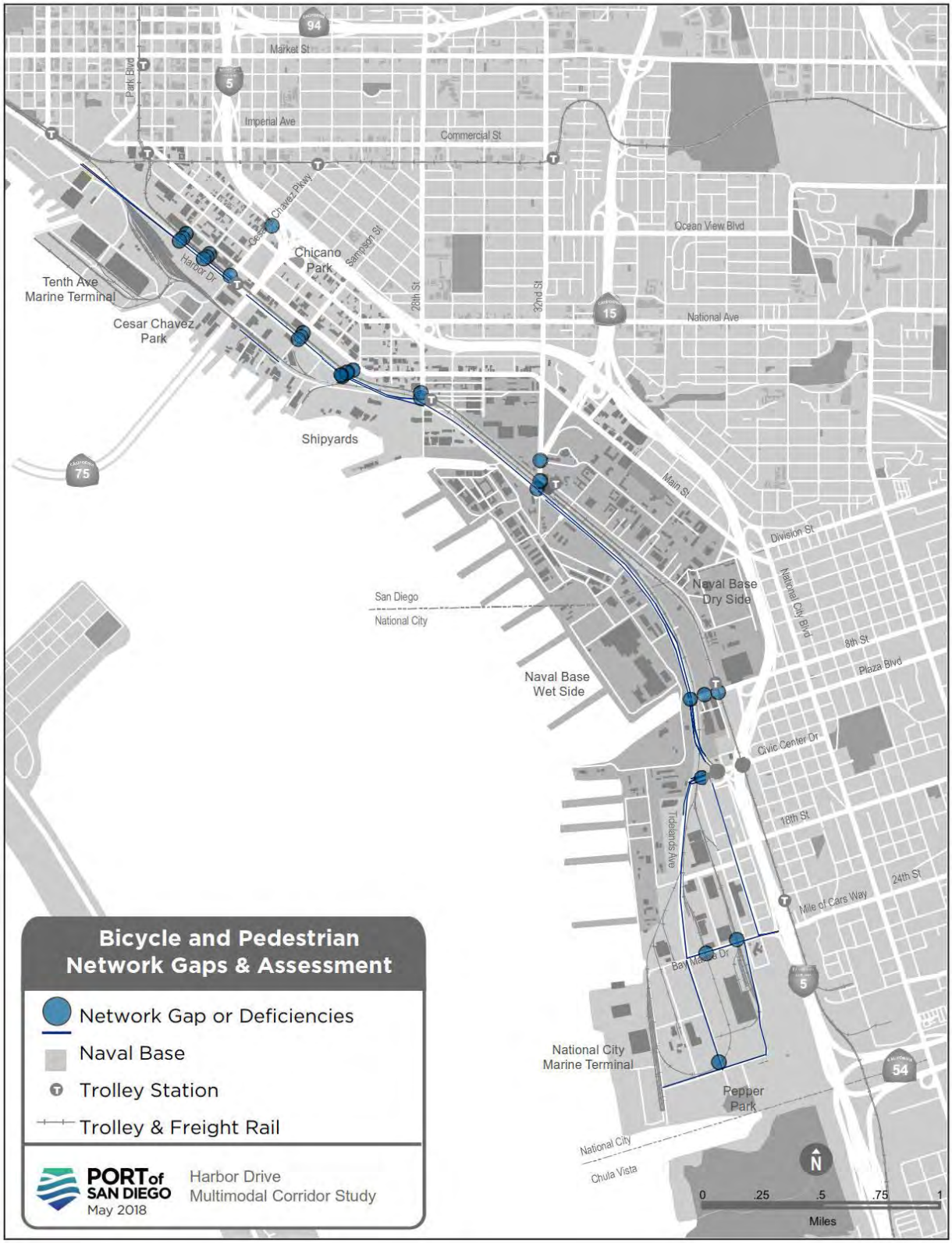
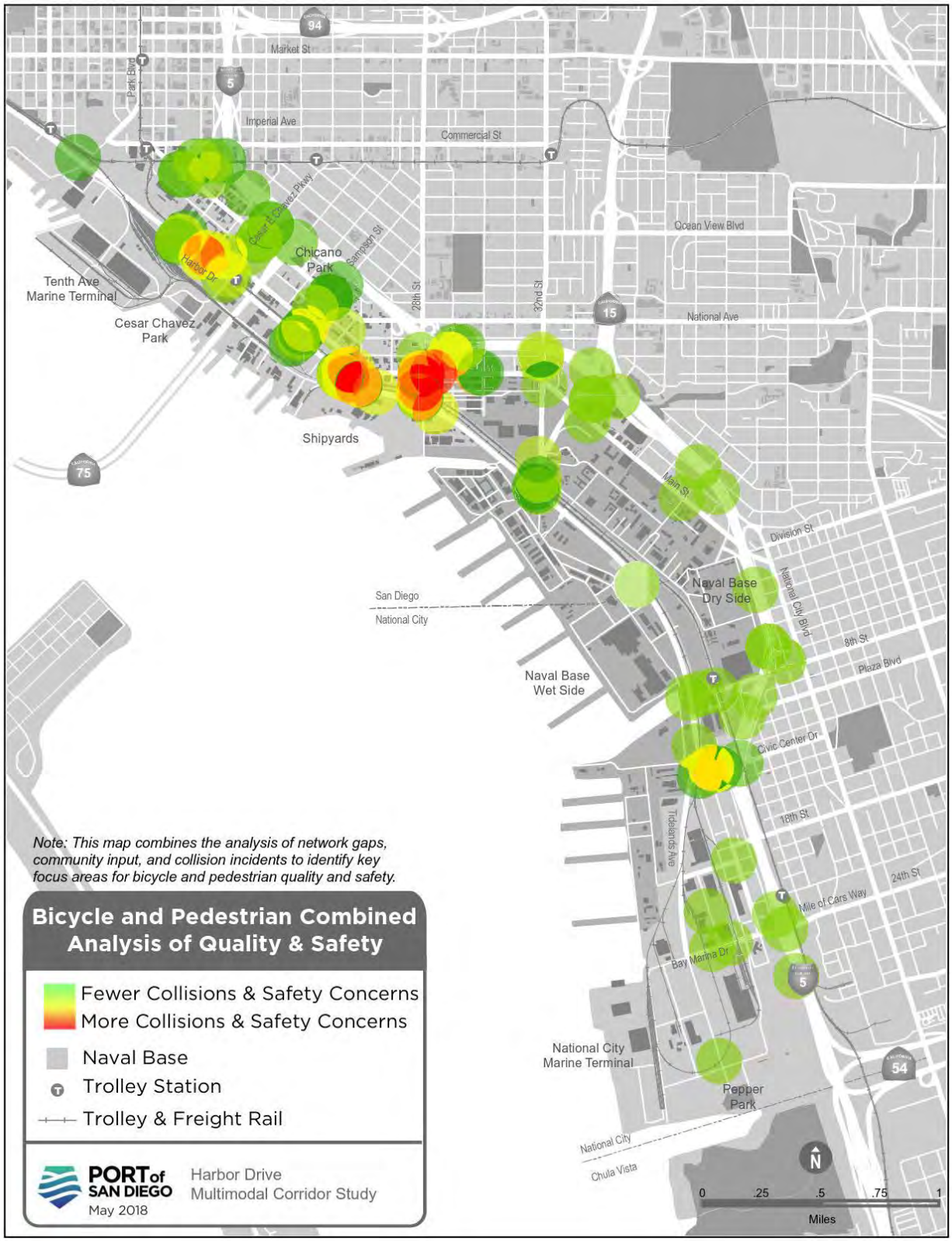


Figure 2-19 Bicycle & Pedestrian Collision Data

Figure 2-20 Bicycle & Pedestrian Combined Analysis of Quality & Safety



2.5 ON-STREET PARKING

With numerous employment and community destinations and few off-street options, the corridor's on-street parking is in heavy demand. This section briefly reviews on-street parking conditions in the corridor, summarizing the existing sources of demand and major constraints to supply. The project team did not conduct new parking counts, but instead relied on previous studies commissioned by the Port of San Diego and outreach to stakeholders.

2.5.1 SHIPYARD PARKING SHORTAGE

Figure 2-21 depicts the areas of highest parking demand in the corridor. In the northern study area, this demand is largely driven by commutes to and from the shipyards. Contributing factors include:

- The off-street parking capacities of the three largest shipyard businesses are significantly smaller than the number of workers reporting to the busiest shifts.
- Navy personnel working in the shipyards during their ships' repair periods are not mandated to utilize parking or shuttle options.
- Contractors are not eligible for off-street shipyard parking.

The closest on-street parking to the shipyards is along Harbor Drive between Sampson Street and 32nd Street. These spaces fill up quickly each day, pushing many commuters deeper into the Barrio Logan community to park their cars.

The *Shipyard District Parking Structure Feasibility Study* recommended a net increase of 2,124 parking spaces to serve shipyard demand, which would accommodate current needs plus planned growth. To accomplish this, the study proposed a new parking structure and identified two potential sites as shown in Figure 2-22.

2.5.2 IMPACTS TO BARRIO LOGAN

The shipyard parking shortage results in "spillover" parking demand in Barrio Logan, with hundreds of workers seeking on-street parking each day. The busiest demand is generally around 6:00 am, coinciding with the start of the first daily shift. This creates impacts in the community that are felt by residents, businesses, and visitors.

Some streets in Barrio Logan—mainly portions of Evans Street, National Avenue, Newton Avenue, and Boston Avenue—are insulated from this parking demand through a residential permit parking district. A few additional areas have time-limited parking (e.g. two hours) to accommodate local businesses. While these programs help to preserve some parking for local uses, they also intensify demand for the limited amount of unrestricted parking that remains (such as Cesar E. Chavez Park).

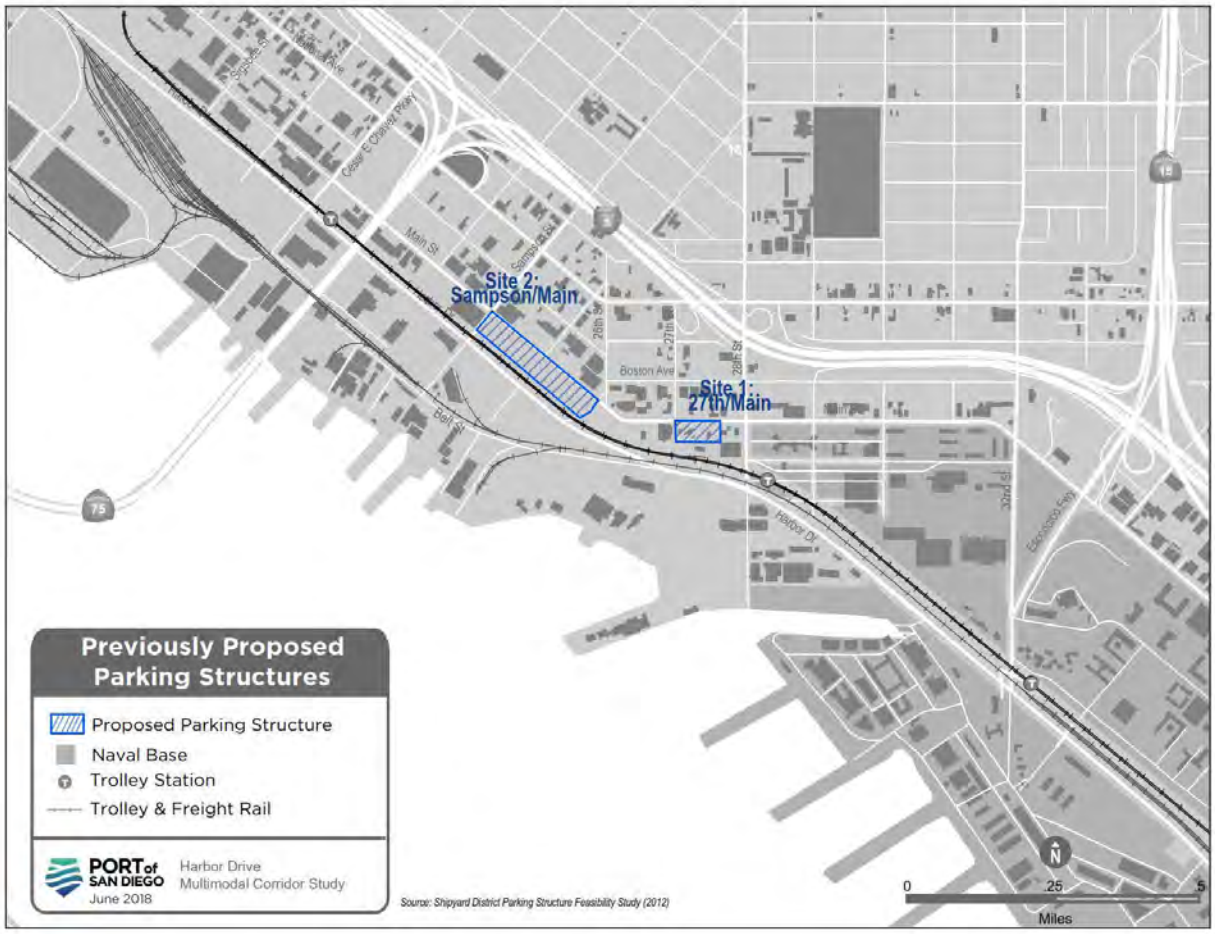
2.5.3 TRUCK ON-STREET PARKING

Figure 2-21 also shows high demand for on-street parking for trucks in the southern study area, generally in support of nearby industrial operations.

These truck freight movements, including designated routes and associated on-street parking demand, are discussed further in Section 2.2.1.

Figure 2-21 Areas of High Parking Demand

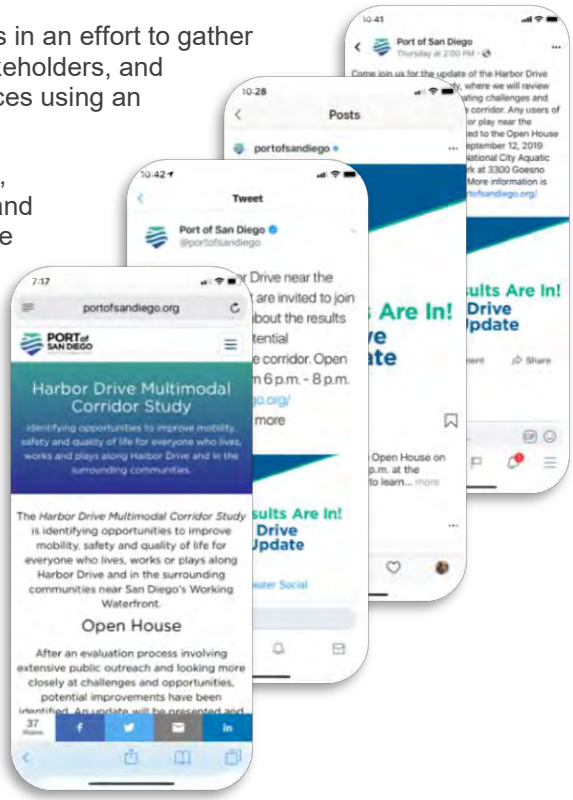
Figure 2-22 Previously Proposed Parking Structures



3 PUBLIC OUTREACH

The planning process included a number of public outreach activities in an effort to gather information and feedback from a broad range of local residents, stakeholders, and city staff. The project's outreach program strived to reach all audiences using an integrated approach that combines a variety of outreach methods.

Community engagement materials for the workshops included flyers, emails, and social media posts that were published in both English and Spanish. The Unified District Port of San Diego dedicated a webpage specifically for the Study that provides details on project objectives, upcoming events, and Study results. The following sections further describe the Study's public outreach approach.



3.1 PUBLIC WORKSHOP

As part of the robust public outreach process for the Study, two interactive open house-style public workshops were held to communicate project goals, objectives, and results:

- February 21, 2018, 4:00 p.m. - 7:00 p.m. at the San Diego Continuing Education Cesar E. Chavez Campus in Barrio Logan
- September 12, 2019, 6:00 p.m. - 8:30 p.m. at the National City Aquatic Center

The public workshops allowed the project team members to efficiently reach out to large numbers of community members. At the workshops, boards were displayed with the Study goals, process, schedule, existing conditions, and proposed enhancements. As attendees studied the boards at their own pace, project team members were available to explain objectives and answer any questions. An interactive area with table maps and comment cards allowed the public to provide feedback and ask questions. The workshops allowed community members the opportunity to provide feedback on the assumed and proposed enhancements throughout the corridor.

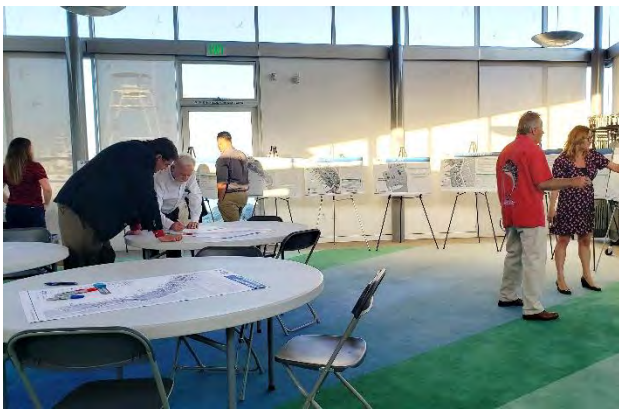
The first public workshop received twenty (20) comments while the second received sixteen (16). The comments mostly focused on the following key issues:

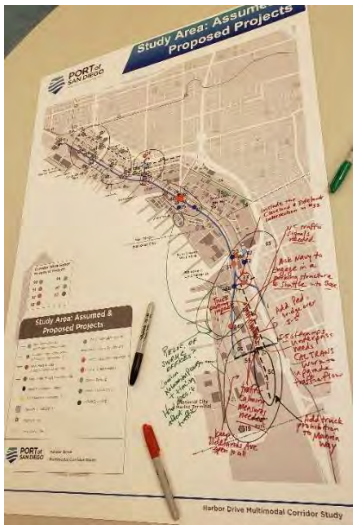
- Questions about accessibility, parking, and traffic calming solutions throughout the corridor
- Concerns about trucks driving through residential areas
- Questions about active transportation improvements such as pedestrian and bike lanes

The public workshops were advertised via posted fliers and through the District's social media outlets.

Open House Number 1

Open House Number 2





3.2 POP-UP OUTREACH

Pop-up outreach events are a creative method to engage community members who do not normally participate in traditional workshops. The project team identified existing community gathering spots and events and reached the communities on their terms in an effort to obtain more input. Project team members attended three events:

- February 17, 2018, at the Carnival in the Park in Cesar E. Chavez Park, Barrio Logan
- March 11, 2018, at the Mariachi Festival in Pepper Park, National City
- September 13, 2019, at the South County Economic Development Council Summit in Downtown San Diego

Carnival in the Park

Mariachi Festival and Competition

South County Economic Development Council Summit

3.3 TECHNICAL WORKING GROUP

The project Technical Working Group (TWG) consisted of staff from neighboring jurisdictions and other stakeholder agencies, including the District, California Department of Transportation (Caltrans), City of San Diego, City of National City, California Coastal Commission, U.S. Navy, San Diego Association of Governments (SANDAG), San Diego Metropolitan Transit System (MTS), and Barrio Logan Planning Group.

TWG met three times during the Study to advise and consult on technical design issues and opportunities and several times in smaller group settings to refine and finalize the Study's recommendations. The TWG played a pivotal role in developing the Study and was an active participant throughout the process. The TWG reviewed the initial results of literature and data investigation, identified any additional literature or data that should be included, and established a basis for detailed follow-up data interviews with key stakeholders as needed. The TWG also reviewed and provided input to the project work plan, outreach plan, evaluation performance measures, design options, and the development of design concepts. In addition to the TWG meetings, additional meetings were held to foster interagency coordination on specific projects that were identified in the Study.

3.4 BOARD MEETING

The project team presented its findings to the Board of Port Commissioners at a meeting on December 10, 2019, that was also attended by key stakeholders and the District's executive leadership group. The presentation reviewed the Study's goals, process, outreach efforts, key findings, and recommendations.

4 KEY CHALLENGES & MULTIMODAL RECOMMENDATIONS

Harbor Drive is a vibrant, regionally significant, multi-purpose arterial that has many opportunities and challenges. It is an important main road for the Barrio Logan Community, it is a significant spine for the working water front, and it is an important connector for those working and visiting Naval Base San Diego. The Existing Conditions analysis identified a comprehensive list of existing issues and opportunities. This analysis coupled with public outreach, and meetings with the Technical Working Group revealed a wide range of key challenges that limit mobility and access in the study area across all modes of transportation and goods movement. These key challenges provided the framework by which newly proposed or enhanced projects were developed, so as to improve or solve these challenges. The challenges themselves fit into five broad categories:

- Community safety, mobility and health
- Goods movement
- Naval Base access and circulation
- Shipyard access and parking
- Transit first/last mile access

Each category is listed below with summaries of the specific issues that contribute to it. Also included are the evaluation metrics that are utilized to evaluate the efficacy of projects in their improvement/solving of these key challenges.

4.1 COMMUNITY SAFETY, MOBILITY, & HEALTH

Several key issues were identified as affecting community safety, mobility, and health within the study area. These issues include:

A. Truck-related congestion, noise and pollution in residential areas
B. Truck- and employee-related parking in Barrio Logan and National City
C. Auto-related traffic congestion
D. Limited bicycle infrastructure and pedestrian enhancements in key areas
E. Limited electric vehicle charging infrastructure

The Existing Conditions analysis in Section 2, outlined the observed causes of both truck-related congestion and auto-related congestion within the study area. However, through public outreach and in working with the TWG, it was determined that this congestion led to detrimental impacts to not just mobility through the area, but to the community's safety and health. High emissions and polution stemming from both types of congestion are a detriment to air quality and are only expected to grow as the communities and businesses in the area grow. Congestion is projected to increase while conversely the existing bicycle and pedestrian infrastructure is below standard in multiple areas, and incapable of handling existing or future capacity as the need for mode shifts occur.

EVALUATION METRICS

To address the key challenges to community safety, mobility, and health, the project team established four separate evaluation metrics to determine the efficacy of any newly proposed projects on this particular key challenge. These evaluation metrics are:

1. Quantitative reduction in pollution levels
2. Quantitative increase in bicycle, pedestrian and first/last mile connections, faciities, and amenitites

3. Qualitative decrease in pedestrian and cyclist injuries
4. Quantitative vehicle miles traveled

4.2 GOODS MOVEMENT

Goods movement to and from the Working Waterfront is affected by several key issues:

A. Congestion along designated truck routes between District terminals and Interstate 5
B. Poor pavement conditions cause wear and tear on trucks and goods
C. Limited areas for designated truck parking and loading facilities
D. Rail crossing conflicts with truck routes
E. Layout of NCMT and adjacent properties creates inefficiencies in goods movement and intermodal transfers

While truck and auto congestion was identified as an issue for community safety, health, and mobility, congestion along designated truck routes is a significant issue for the efficient movement of goods to and from the Working Waterfront. While truck traffic is typically conducted during off-peak hours, as discussed in Existing Conditions, the lack of ITS infrastructure to facilitate better movement, along with rail crossing conflicts, reduce the efficiency of movement through the corridor. Goods, especially produce, are susceptible to damage from the poor pavement conditions and other inefficiencies exist throughout the study area that affect the movement of freight.

EVALUATION METRICS

Similar to the key challenges affecting community safety, health, and mobility, the project team established three evaluation metrics to determine whether newly proposed projects meet the challenge of improving goods movement throughout the study area. These evaluation metrics are:

1. Quantitative reduction in travel times and improvements in roadway level of service
2. Qualitative roadway condition assessment
3. Quantitative vehicle miles traveled

4.3 NAVAL BASE ACCESS & CIRCULATION

Access to Naval Base San Diego is affected by significant roadway congestion, especially in the morning peak period, caused by many interrelated issues. These issues include:

A. Queuing associated with demand entering the Naval Base on Harbor Dr. and connecting roadways including 28th St., 32nd St., 8th St., and Civic Center Dr.
B. At-grade rail crossings conflict with traffic flow
C. Internal trips within the Naval Base (e.g. Wet Side to Dry Side) use public roadways

Most employees and residents of Naval Base San Diego tend to use personal vehicles as their primary mode of travel because of 1) geographic dispersion, 2) housing sites, 3) affordability, and 4) cultural dynamism. The complexity of high vehicular demand into the naval base and through the study area, coinciding with the three identified key issues, causes significant impacts to travel times in the area, and the roadway infrastructure itself. More specifically, excess queueing from the existing naval gates, coupled with the other issues identified, results in queues and stopped vehicles in travel lanes throughout the study area. These issues are expected to become greater with the Navy's growth expected to more than double in the region as part of the "Pivot to the Pacific," plan.

EVALUATION METRICS

To determine the efficacy of projects that seek to solve the key challenges pertaining to naval base access and circulation, the project team developed the following evaluation metrics:

1. Quantitative reduction in travel times and improvements in roadway level of service
2. Qualitative assessment of multimodal access

4.4 SHIPYARD ACCESS & PARKING

Access between the study area's shipyards and related businesses is affected by several key issues:

A. High pedestrian and traffic volume conflicts crossing Harbor Dr. during peak hours
B. Limited bicycle infrastructure and pedestrian enhancements on routes to and from shipyards
C. High on-street parking demand for shipyard employees, contractors, and related military personnel

Unlike Naval Base employees, the mode split for employees at the shipyards and related businesses is slightly more diversified between personal vehicles and other forms of transportation. As such, greater pedestrian demand and the lack of pedestrian and bicycle infrastructure propagates a health and safety hazard for the area. In addition to these issues, finding adequate parking space is still a critical issue for the majority of employees who still use personal vehicles.

EVALUATION METRICS

To determine the efficacy of projects that seek to solve the key challenges pertaining to shipyard access and parking, the project team developed the following evaluation metrics:

1. Optimize Parking
2. Qualitative assessment of multimodal access

4.5 TRANSIT FIRST/LAST MILE ACCESS

Access between the study area's key attractors and transit stations is affected by several key factors:

A. Limited bicycle infrastructure and pedestrian enhancements on key first/last mile corridors
B. High pedestrian and traffic volume conflicts crossing Harbor Dr. during peak hours
C. Opportunity for enhanced pedestrian and bicycle entry facilities at Naval Base Gate 9 (8th St.)
D. Lack of infrastructure to support new mobility services (e.g. ridesharing, bikes, and scooters)

While a lack of transit first/last mile access is a major issue in and of itself within the project study area, the evaluation of such challenges is included through the analysis of the other four goals above. More specifically, qualitative assessments of multimodal access as it pertains to both naval base and shipyard access encompasses the heart of first/last mile connectivity. Similarly, community safety, mobility, and health goals specifically evaluate the quantitative increase in bicycle and pedestrian first/last mile connections. As such, other than identifying what the key challenges are to transit first/last mile access, no further evaluation metrics were developed.

4.6 COST EFFECTIVENESS

Once projects are identified, a high-level cost analysis is required to be able to differentiate the cost efficiency of certain projects over others. At this stage of planning, a number of variables are unknown and as such, an overall cost effectiveness score is utilized.

4.7 STUDY AREA: ASSUMED AND PROPOSED PROJECTS

The compilation of the Assumed and Proposed Projects is comprised of a full list of projects, both assumed and newly proposed, that address the key challenges identified in Sections 4.1 - 4.6.

ASSUMED FUTURE PROJECTS

As discussed in Section 1.4, the project team conducted an expansive and extensive literature review process which included community plans, capital improvement plans, public facilities financing plans, long range studies, and other planning documents see page 7 for the full list). This process coupled with collaborative work with the TWG members produced a comprehensive list of assumed future projects that are reasonably expected to be a part of the future "Harbor Drive South Corridor."

As part of this process a number of projects that appear in previous guidance documents were removed from the ultimate project list for this study as a result of engineering feasibility concerns as worked out between the project team, or because of other factors. A sampling of these excluded projects and the reason behind this exclusion are discussed below.

BLUE LINE GRADE SEPARATION AT CESAR CHAVEZ PARKWAY:

- While this project is found in the San Diego Forward Regional Transportation Plan (RTP), it is found ONLY in the "Unconstrained" list. As such, the funding is not appropriated for the grade separation in the future and as such was excluded from the project list.
- In juxtaposition, the Blue Line Grade Separations at 28th Street and 32nd Street are found in the "Constrained" list from the RTP, and as such were assumed to be reasonable and included in the project list.
- Similar high dollar projects without feasible funding sources were excluded.

32ND STREET TO HARBOR DRIVE FLYOVER RAMP

- This project was conceived as part of a goods movement grant application several years ago and was reevaluated as part of this project.
- With the potential conflict of a flyover ramp with an elevated MTS Blue Line Grade Separation at this location, as well as cost/funding concerns and analysis questions pertaining to the project's cost effectiveness, this project was removed as infeasible.
- Similar projects that have clear conflicts with reasonably assumed projects or have other engineering concerns were excluded as part of this study.

OTHER CONCURRENT STUDIES CONSIDERED, BUT NOT INCLUDED AT THIS TIME

Additionally, there are other concurrent studies that are exploring potential improvement projects in the study area. These are also listed below and have not been assumed under future baseline conditions because these other studies are not substantially complete, and the improvement may change or be eliminated.

ELEVATESD 2020

- Elevate SD 2020 is a collaborative effort led by the San Diego Metropolitan Transit System to find immediate transportation solutions that have a long-term impact for San Diegans. Projects and priorities identified in the outreach process could shape a potential funding measure, which is being considered by the MTS Board of Directors for 2020. The planning project is in the process of obtaining public input on a set potential project. These projects include:

  MTS Ferry Line:

  - This project is currently in development by MTS. As such, without further development, this project was too hard to quantify for the purposes of this study.
  - Similar projects that are in development but have yet to be thoroughly vetted were excluded from the project list.

CALTRANS INTEGRATED CORRIDOR MANAGEMENT PLAN

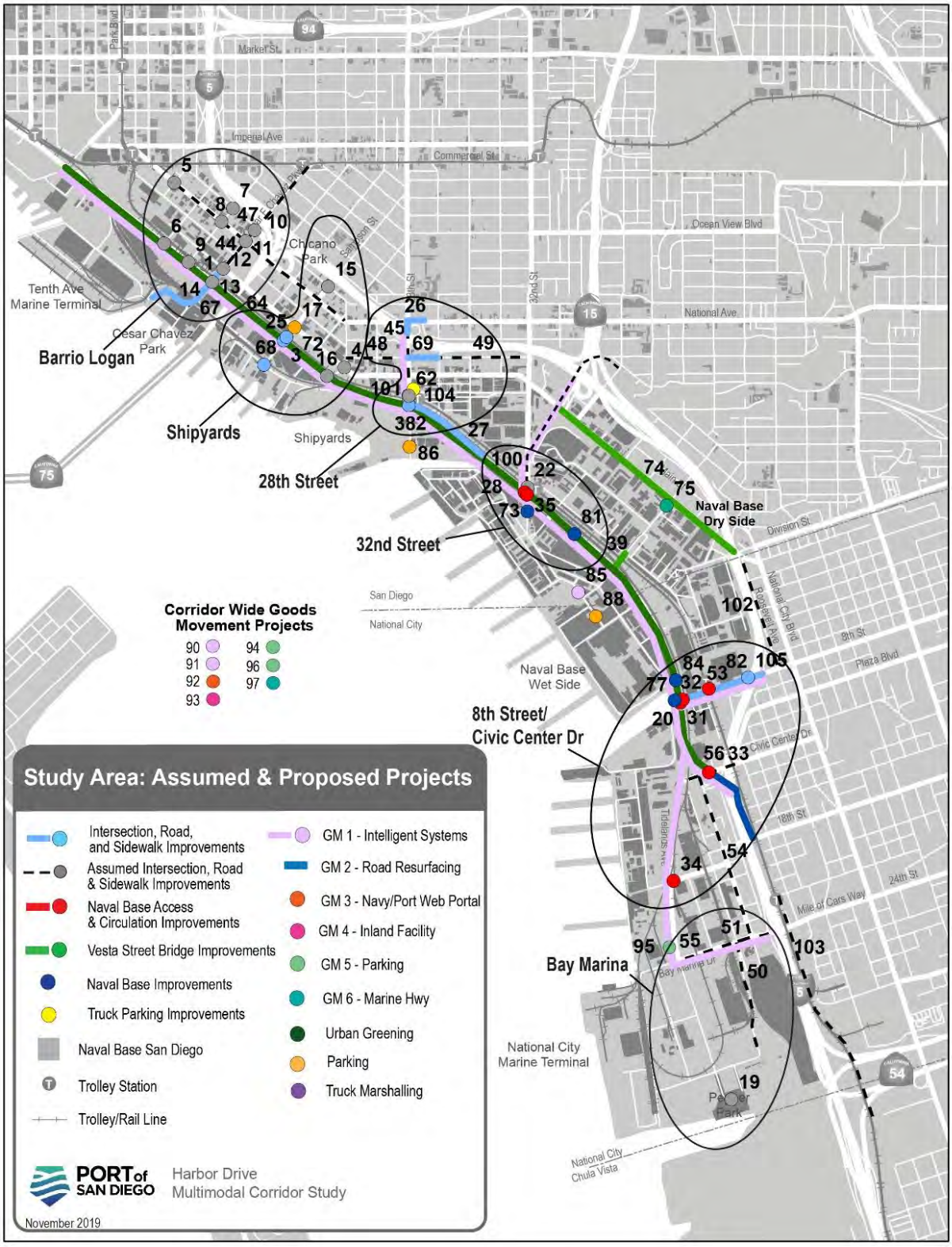
- This study, while not yet underway, will consider multimodal improvements to the I-5 corridor south of I-8. Caltrans will lead this study and, as a part of the TWG for this project, the improvement projects identified by this project are intended to be coordinated with the upcoming effort.

NEW/ENHANCED PROJECTS

In addition to using this study as a nexus to compile assumed projects across TWG partner jurisdictions, the project team also developed a series of new or enhanced projects to address and solve these same key issues and challenges. The newly developed projects underwent a high-level engineering and cost feasibility analysis with the project team. The vetting of these projects culminated in approval by the TWG and were subsequently presented to the public.

The combined list of assumed and new/enhanced projects comprises the “Universe of Ideas” and can be found in Figure 4-1.

Figure 4-1 Study Area: Assumed and Proposed Projects



4.8 BACKGROUND ASSUMPTIONS AND METHODOLOGY

Projects were evaluated based on the metrics identified in Sections 4.1 – 4.6. However, because assumed projects are already reasonably expected to be completed, this study only evaluates the "newly proposed projects." Harvey ball diagrams are utilized to explain both the qualitative and quantitative efficacy of the newly developed projects, based on the metrics established. A complete evaluation of both newly proposed and previously proposed projects can be found in the appendix.

EVALUATION METRICS METHODOLOGY

A Harvey Ball diagram is utilized to communicate the effectiveness of a particular set of projects and is based on either a quantitative or qualitative analysis. The primary quantitative tool used by the project team was a high-level travel time analysis within Trafficware's Synchro and Sim Traffic software. This section elaborates on some of the high-level methodology pertaining to the travel time analysis. Further detail can be found in the appendix.

FORECASTING

The Horizon Year of 2050 was determined to be the ideal year to analyze the effectiveness of newly proposed projects in the future. Using the documents analyzed as part of the literature review process, the project team ran new SANDAG models to reflect the expected land use and network changes up to the year 2050. This included changing the expected employment and population numbers in Traffic Analysis Zones (TAZ) in the following areas:

- Tenth Avenue Marine Terminal Area
- Shipyards Area
- Naval Base Growth (as part of the "Pivot to the Pacific")
- National City Bayfront

Because SANDAG's base model included updates based on the Barrio Logan Community Plan (2013 Draft), no further changes were made to those TAZs. Details on the specific land use/growth assumptions and the justifications for those changes from the SANDAG Base 2050 Model can be found in Appendix F.

In addition to new model runs, the project team performed volume adjustments and growth to bring the turning movement and ADT counts utilized in the Existing Conditions analysis to Horizon Year 2050 conditions. Additional information pertaining to this process can be found in Appendix F.

TRAVEL TIME ANALYSIS

Similar to the travel time analysis conducted as part of the Existing Conditions section, the travel time calculated within Sim Traffic is based off of the original model calibrated for the existing condition, and then reapplied with new 2050 volumes based on the forecasting methodology. The travel time analysis calculates an average travel speed between intersections, including the delay experienced at each intersection. These travel speeds are then summed to provide and average travel speed and time for a particular corridor. Details on the assumptions built into the travel time analysis model can be found in Appendix D.

AIR QUALITY ANALYSIS

As part of the SimTraffic module in Trafficware's software, SimTraffic calculates a preliminary CO, NOx, and VOC calculation based on the amount of time vehicles are traveling on the network, and their expected fuel economy. This emissions calculation, while limited to only the traffic analyzed during the

peak hour, is an effective tool for providing a relative comparison to emissions as a whole. Further information into SimTraffic's emissions calculations can be found in Appendix G.

4.9 PROJECTS BY AREA

The Study team grouped the majority of the projects by geographical area. The reason for this is to assist in consolidating projects for funding, design, and construction purposes. There is efficiency in designing and constructing similar projects that are geographically close to each other, of a similar nature, and that are in the same jurisdiction. These groupings remain flexible; they can be assembled together into projects, they can be done individually, or they can be clustered with other future improvements that are not currently identified. All of the projects are beneficial and complementary. The Study is not prioritizing one assemblage over another, rather the purpose of the compilation is to create logical groupings by geographical area, illustrate their relative benefits based on performance metrics, and line agencies up for future funding opportunities.

4.9.1 BARRIO LOGAN

The projects in this section pertain to the northwestern most portion of the Barrio Logan community and the areas around the Tenth Avenue Marine Terminal. A map of the area and related projects are found in Figure 4-2. The comprehensive list of projects for Barrio Logan and the corresponding evaluation matrix are found in Table 4-1.

The majority of the assumed projects in this grouping come from the Barrio Logan Community Plan (2013 Draft) and are also found in the local Public Facilities Financing Plan. The Barrio Logan Community Plan (2013 Draft) was adopted by the San Diego City Council on September 17, 2013. In 2014, the Community Plan and associated ordinances were rescinded by a referendum petition and citywide vote. The current Community Plan for the Barrio Logan community is the 1978 Barrio Logan Community Plan. As part of the Barrio Logan Community Plan (2013 Draft) update process, the Barrio Logan Public Facilities Financing Plan and Final Programmatic Environmental Impact Report (PEIR) and Technical Studies were adopted by City Council on September 17, 2013. The 2013 Barrio Logan Public Facilities Financing Plan for the Barrio Logan Community and the PEIR remains certified.

The project team proposes one additional project because of the extensive planning already provided by the City of San Diego for this area. The project will evaluate and improve vehicular ingress/egress movements at driveways along Cesar Chavez Parkway near the Tenth Avenue Marine Terminal to improve safety and operations. This will improve safety for pedestrians, bicyclists, motorists, and freight operators. This also has a positive impact on first/last mile access to the trolley stop located at Harbor Drive and Cesar Chavez Parkway and therefore has the potential to increase transit ridership for employees of the Tenth Avenue Marine Terminal and other businesses and residences in the area, helping to reduce neighborhood parking impacts and reducing greenhouse gas emissions. Barrio Logan will also benefit from the Urban Greening project (Table 4-10) which will improve the walkability and safety of Harbor Drive by improving sidewalks, adding street trees and landscaping, and providing green infrastructure to manage stormwater. The "greening" can help reduce pollution, ameliorate the urban heat island effect, enhance pedestrian safety by providing a buffer, and improve the aesthetic quality of the corridor. In addition to these improvements, the suggested projects listed in Table 4-7 will improve the movement of goods in the area which should result in freight trucks only using the designated freight routes. This will help in the reduction of greenhouse gas emissions and improve safety. Parking improvements in the neighborhood (Table 4-9) such as a permit parking system, electric vehicle charging stations, and parking structures may also alleviate community impacts of working waterfront related parking.

Figure 4-2 Barrio Logan Improvements

Table 4-1 Project List and Evaluation Matrix

Map ID	Description	Status
14	Cesar Chavez Pkwy: Evaluate ingress/egress from driveways near Tenth Avenue Marine Terminal to improve safety and operations.	New/Enhanced
5	National Ave & 16th St: New traffic signal to improve operations and bike/ped access.	Assumed
6	Sigsbee St & Harbor Dr: New traffic signal to improve operations and bike/ped access.	Assumed
7	Beardsley St & Logan Ave: New traffic signal to improve operations and bike/ped access.	Assumed
8	Beardsley St & National Ave: New traffic signal to improve operations and bike/ped access.	Assumed
9	Beardsley St & Harbor Dr: Modification of raised median to restrict EB and SB left turns.	Assumed
10	Cesar Chavez Pkwy & Logan Ave: Reconfiguration of intersection to improve operations and bike/ped access.	Assumed
11	Cesar Chavez Pkwy & National Ave: Reconfiguration of intersection to accommodate exclusive WB and EB right turn lanes.	Assumed
12	Cesar Chavez Pkwy & Main St: Reconfiguration of intersection to accommodate exclusive WB right turn lanes.	Assumed
13*	Cesar Chavez Pkwy & Harbor Dr: Reconfiguration of intersection to improve operations and bike/ped access.	Assumed
44	Cesar Chavez Pkwy: Raised median between Harbor Dr and Logan Ave.	Assumed
47	National Ave: Traffic calming measures between 16th St and 26th St. Initial study assumed curb extensions at four locations, new traffic signal, and 2 signal modifications.	Assumed
67*	Cesar Chavez Pkwy: Urban greening and walkability improvements along Cesar Chavez Pkwy between 25th St and Cesar Chavez Park. Consistent with planned Bay to Park Link.	Assumed

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◔
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	○
	3	Qualitative decrease in pedestrian and cyclist injuries	○
	4	Quantitative vehicle miles traveled	○
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◔
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	○
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	○
	2	Qualitative assessment of multimodal access	○
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	◕

4.9.2 SHIPYARDS

The projects in this section pertain to the areas referred to as the working waterfront including the shipyards and the central portion of the Barrio Logan community. A map of the area and related projects are found in Figure 4-3. The comprehensive list of projects and the corresponding evaluation matrix are found in Table 4-2.

Similar to the Barrio Logan group of projects, half of the projects in this group come from the Barrio Logan Community Plan (2013 Draft) and are also found in the Public Facilities Financing Plan. As part of the development of additional projects for this area, special consideration was given to the high number of employees accessing the working waterfront as pedestrians from parking lots and on-street parking northeast of the shipyards. The proposed projects will help the safety of intersections and the crossing of the trolley tracks for pedestrians, bicyclists, and motorists. This improves walkability, first/last mile connection, and access to the shipyards. Also, the addition of a parking structure (Table 4-9) at the intersection of Sampson and Main Street can aid in the reduction of parking impacts to this area and the reduction of greenhouse gas emissions by eliminating the time motorists spend circling around the block looking for on-street parking. For the proposed projects in this area, the team evaluated that they would provide low to moderate benefits to community safety, mobility, and health; goods movement; and shipyard access; all at an effective cost.

Figure 4-3 Shipyards Improvements

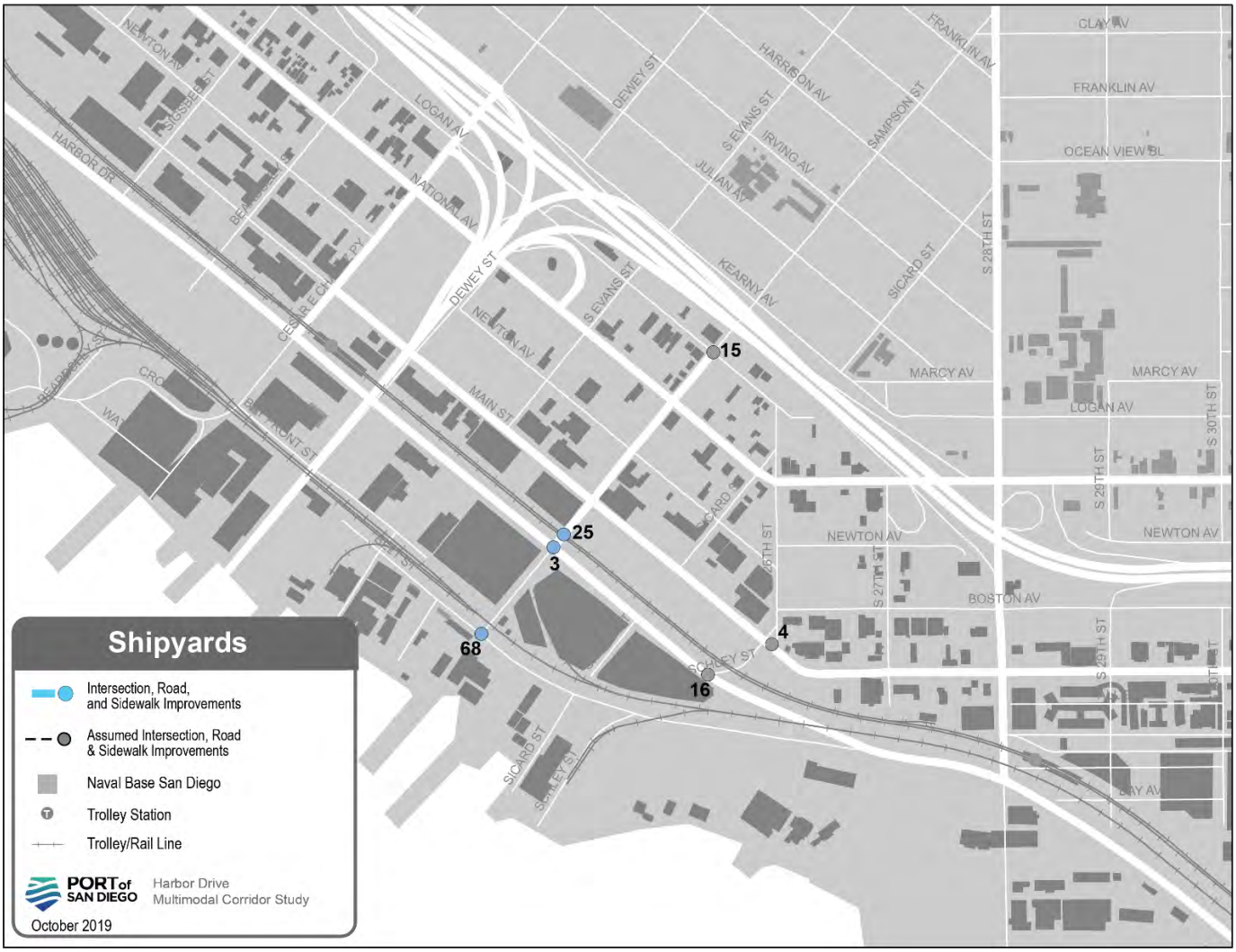


Table 4-2 Project List and Evaluation Matrix

Map ID	Description	Status
3	Sampson St & Harbor Dr: Reconfigure intersection to improve ADA and bike/ped access to the shipyards and to facilitate safer crossing across MTS trolley rails.	New/Enhanced
25	Sampson St BNSF Rail Crossing: New sidewalks and pedestrian crossing gates along the rail corridor crossing.	New/Enhanced
68	Belt St & Sampson St: Develop additional bus/truck loading, parking, and queueing areas to facilitate better drop-off movements.	New/Enhanced
4	Schley St & 26th St: Diverter island on 26th St to restrict NB traffic from Schley St.	Assumed
15	Sampson St & Logan Ave: New traffic signal and restriping to accommodate exclusive left turn lanes in SB and NB directions.	Assumed
16	Schley St & Harbor Dr: Reconfiguration of intersection to improve operations and bike/ped access to shipyards.	Assumed

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◔
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	◔
	3	Qualitative decrease in pedestrian and cyclist injuries	◔
	4	Quantitative vehicle miles traveled	◔
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◔
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	○
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	○
	2	Qualitative assessment of multimodal access	○
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	◕
V. Cost Effectiveness	1	Quantitative capital cost	◕

4.9.3 28TH STREET

The projects in this section benefit the area around 28th Street, Harbor Drive, and Main Street. 28th Street is a part of the official truck route through the study area and functions as a community arterial, linking Barrio Logan to the I-5 freeway, as well as a primary mode of access for employees of the shipyards and the Naval Base San Diego. A map of the area and related projects are found in Figure 4-4. The comprehensive list of projects for 28th Street and the corresponding evaluation matrix are found in Table 4-3 .

Similar to the Barrio Logan group of projects, approximately half of the projects in this group come from the Barrio Logan Community Plan (2013 Draft) and the Public Facilities Financing Plan. As part of the development of projects for this area, a multimodal approach was used to improve the needs of personal and commercial vehicles accessing the freeway and employee centers (Table 4-3 projects #26, #27 & #69) while also improving the pedestrian and bicyclist environment (Table 4-3 projects #38 & #101). Benefits of these projects include:

- Improving the safety and access for pedestrians, bicyclists, and motorists while also enhancing first/last mile access to the trolley station.
- Positively impacting the movement of goods along 28th Street.
- Providing moderate benefits to community safety, mobility and health; significant improvements to multimodal access to the Naval Base San Diego and shipyards; and minor improvements to goods movement, all at an effective cost.

Figure 4-4 28th Street Improvements

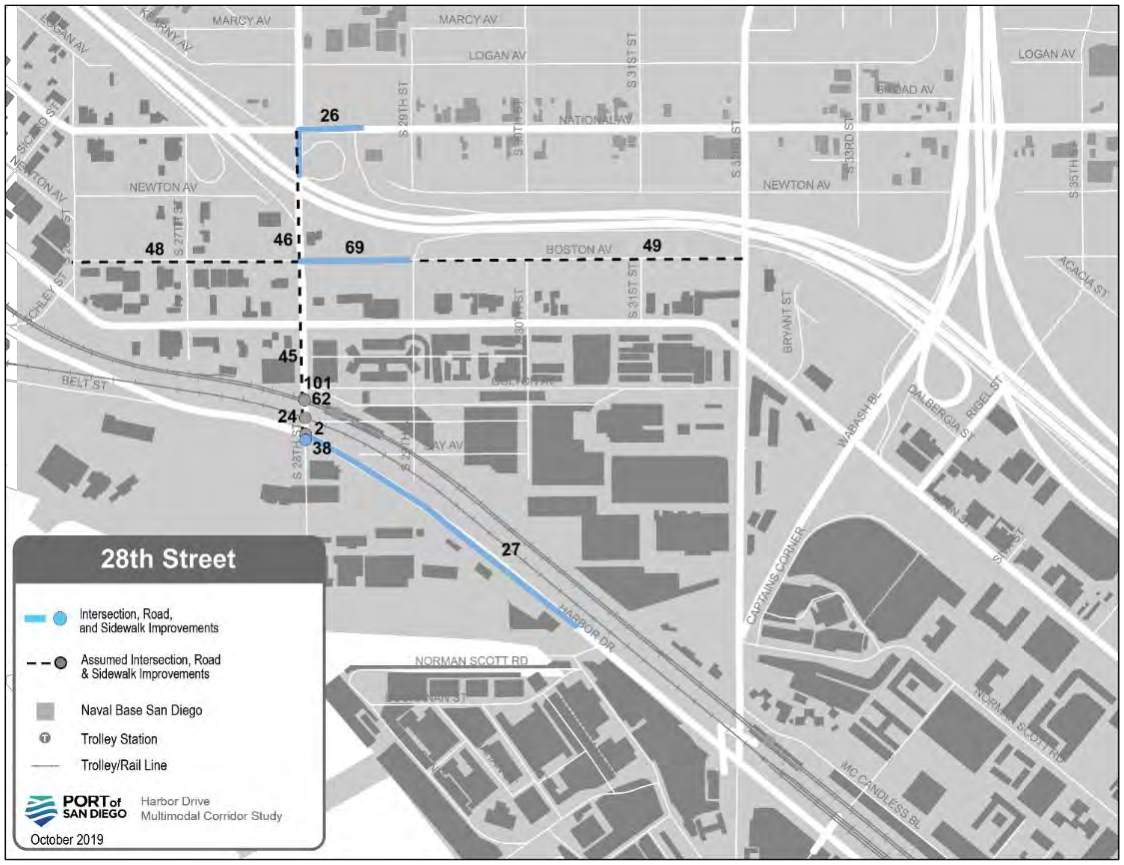


Table 4-3 Project List and Evaluation Matrix

Map ID	Description	Status
26	28th St & National Ave: Relocation of I-5 NB On-Ramp from 28th Street to National Avenue. Reconfiguration of intersection to square up 28th Street/National Avenue On-Ramp and alleviate queueing issues for WB vehicles.	New/Enhanced
27	Harbor Drive from 28th Street to Belt Street Naval Gate: Add 3rd lane on SB Harbor Drive to accommodate queuing.	New/Enhanced
38*	28th St & Harbor Dr: Enhanced pedestrian facilities including widened crosswalks, curb extensions, curb ramps, and curb ramps.	New/Enhanced
101	Improve uncontrolled pedestrian crossing at Naval Gate north of Harborside Trolley Station.	New/Enhanced
69	Reconfigure I-5 South on-ramp to better facilitate access to SB I-5, to reduce community impacts and improve freight mobility.	New/Enhanced
2	28th St & Harbor Dr: Reconfiguration of intersection to provide dual EB left turn lanes.	Assumed
24	28th St: Installation of quad gates and pedestrian gates at rail crossing to improve visibility and operations.	Assumed
45	28th St: Reconfiguration to increase capacity and improve access between Harbor Dr and Main St.	Assumed
46	28th St: Reconfiguration to increase capacity and improve access between Main St and National Ave. Initial study assumed 2 NB and 3 SB lanes with raised median.	Assumed
48	Boston Ave: Traffic calming improvements including potential bike boulevard between 26th St and 28th St.	Assumed
49	Boston Ave: Class I bikeway/multi-use path between 29th St and 32nd St.	Assumed
62	28th St Rail Grade Separation: Grade separation of rail corridor at 28th St crossing.	Assumed

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◑
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	◑
	3	Qualitative decrease in pedestrian and cyclist injuries	◑
	4	Quantitative vehicle miles traveled	◔
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◔
	2	Qualitative roadway condition assessment	◔
	3	Quantitative vehicle miles traveled	◔
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	◑
	2	Qualitative assessment of multimodal access	◕
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	◕
V. Cost Effectiveness	1	Quantitative capital cost	◕

4.9.4 32ND STREET

The projects in this section benefit the area around 32nd Street and Harbor Drive. 32nd Street is the primary vehicular mode of access into Naval Base San Diego and is also a part of the official truck route through the study area. The direct access ramp onto the I-15 freeway also makes 32nd Street an access arterial for the Barrio Logan community. A map of the area and related projects are found in Figure 4-5. The comprehensive list of projects for 32nd Street and the corresponding evaluation matrix are found in Table 4-4.

The majority of land uses surrounding this area are US Navy based. As such, the Barrio Logan Community Plan (2013 Draft) does not feature any roadway infrastructure projects in the area. However, the two projects assumed for the area are regional and provide multimodal accessibility to the corridor (Table 4-4 projects #22 & #100). The projects improve mobility, safety, and access for pedestrians, bicyclists, and motorists. The implementation of the SANDAG Bayshore Bikeway Barrio Logan segment, which will include a Class I bike facility and removal of the existing pedestrian bridges with new at-grade ADA compliant pedestrian facilities, will enhance bicyclist and pedestrian safety and mobility. These projects also improve the first/last mile access to the Pacific Fleet Trolley Station as well as freight movement through the area. The proposed urban greening project for Harbor Drive will enhance pedestrian and bicyclist safety along this corridor and will improve the air quality and aesthetics of the area.

Figure 4-5 32nd Street Improvements

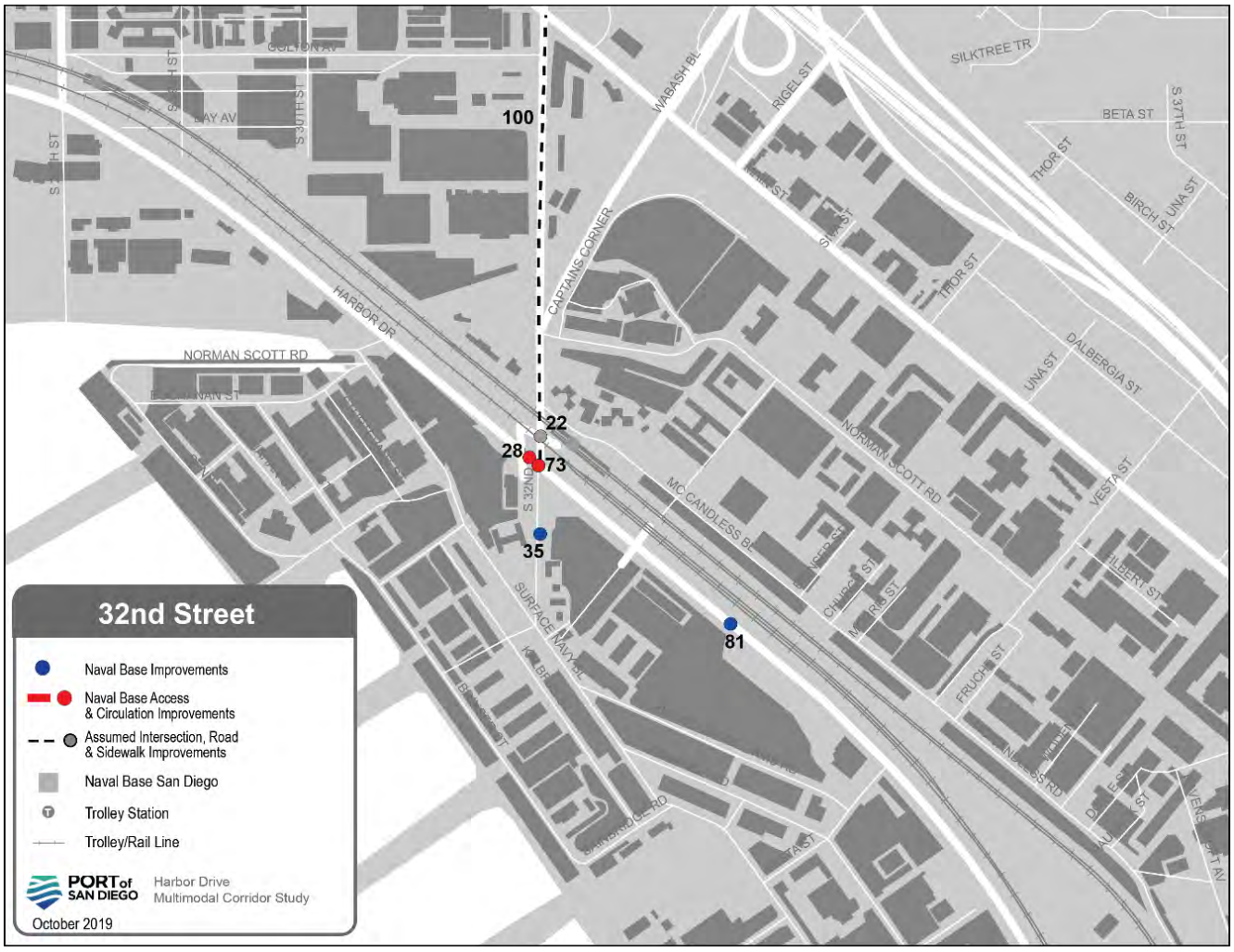


Table 4-4 Project List and Evaluation Matrix

Map ID	Description	Status
28	32nd St & Harbor Dr: - Additional and/or extended left-turn pocket from EB Harbor Dr to 32nd St to improve operations for all movements by shortening phase time for left turns. - Additional and/or extended left-turn pocket from WB Harbor Drive to Naval Base Gate 6 (32nd St). - Additional right-turn pocket from SB 32nd St to Harbor Dr. - Additional right-turn pocket from EB Harbor Drive to Naval Base Gate 6 (32nd St).	New/Enhanced
35	Naval Base Gate 6 (32nd St): Operational improvements including capacity expansions where feasible and real-time wait signs. Coordinate with future military construction project for gate infrastructure.	New/Enhanced
73	32nd St & Harbor Dr: - Immediate: Implementation of the current SANDAG Bayshore Bikeway Barrio Logan segment design that includes a Class I bike facility, removal of the existing pedestrian bridges with new at-grade ADA compliant pedestrian facilities including: pedestrian pop-outs and advanced preemption to provide adequate clearance time for pedestrians and vehicular traffic along with associated improvements. - Mid-term: Rehabilitation and opening of existing Navy gate at Pacific Fleet Trolley Station/McCandless Blvd including ADA, pedestrian and bicycle access to accompany the closure of the current pedestrian access at 32nd Street. The improvements would include associated ADA and bicycle improvements at the existing pedestrian bridge from dry to wet side of Naval Base San Diego. - Long-Term: As part of project development of Blue Line Trolley Grade Separation, explore new pedestrian access from Pacific Fleet Station to Naval Base San Diego.	New/Enhanced
81	Harbor Dr: Left-turn pocket from WB Harbor Drive to Naval Base Gate 6A (truck-only gate south of 32nd St).	New/Enhanced
22	32nd St Rail Grade Separation: Grade separation of rail corridor at 32nd St crossing.	Assumed
100	Chollas Creek to Bayshore Bikeway from Chollas Creek Park to Harbor Drive: Ensure coordinated design between Chollas Creek Bikeway and Bayshore Bikeway.	Assumed

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◑
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	◑
	3	Qualitative decrease in pedestrian and cyclist injuries	◑
	4	Quantitative vehicle miles traveled	◔
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◑
	2	Qualitative roadway condition assessment	◔
	3	Quantitative vehicle miles traveled	◔
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	◑
	2	Qualitative assessment of multimodal access	◕
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	◕

4.9.5 8TH STREET/CIVIC CENTER DRIVE

The projects in this section are in the area around the 8th Street and Civic Center Drive. 8th Street provides a vehicular mode of access into Naval Base San Diego and is also a part of the official truck route through the study area. 8th Street also provides access to the I-5 freeway and is one of the primary access points for residents of National City. The 8th Street Trolley Station has access off of 8th Street and is a transfer station for different users, both bus and personal vehicles. A map of the area including related projects is found in Figure 4-6. The comprehensive list of projects for 8th Street/Civic Center and the corresponding evaluation matrix are found in Figure 4-5.

The majority of land uses surrounding 8th Street are US Navy based. However, the commercial and residential downtown area of National City sits at the northeastern portion of the study area, and results in a wide variety of travel modes through the area. The City of National City, through the National City Bicycle Master Plan and the Downtown Specific Plan has already identified several multimodal projects for the area (Table 4-5 projects #54, #56, & #102). These improvements will enhance safety and access for pedestrians and bicyclists throughout the area and will improve the first/last mile to and from the 8th Street Trolley Station. These improvements will also better connect those who commute to Naval Base San Diego from the surrounding area, giving them options of walking, biking, and a neighborhood shuttle.

As part of the development of additional projects for this area, the project team continued a multimodal approach to project development. The projects (Table 4-5 #31, #32, #33, #34, & #105) improve pedestrian and bicyclist safety and access, enhance mobility for high frequency buses and automobiles, improve goods movement, and augment first/last mile connectivity to the 8th Street Trolley Station.

For this grouping of projects, the project team evaluated that the projects would provide moderate benefits to community safety, mobility and health; significant improvements to multimodal access to the Navy, and moderate improvements to goods movement, all at an effective cost.

Figure 4-6 8th Street/Civic Center Drive Improvements

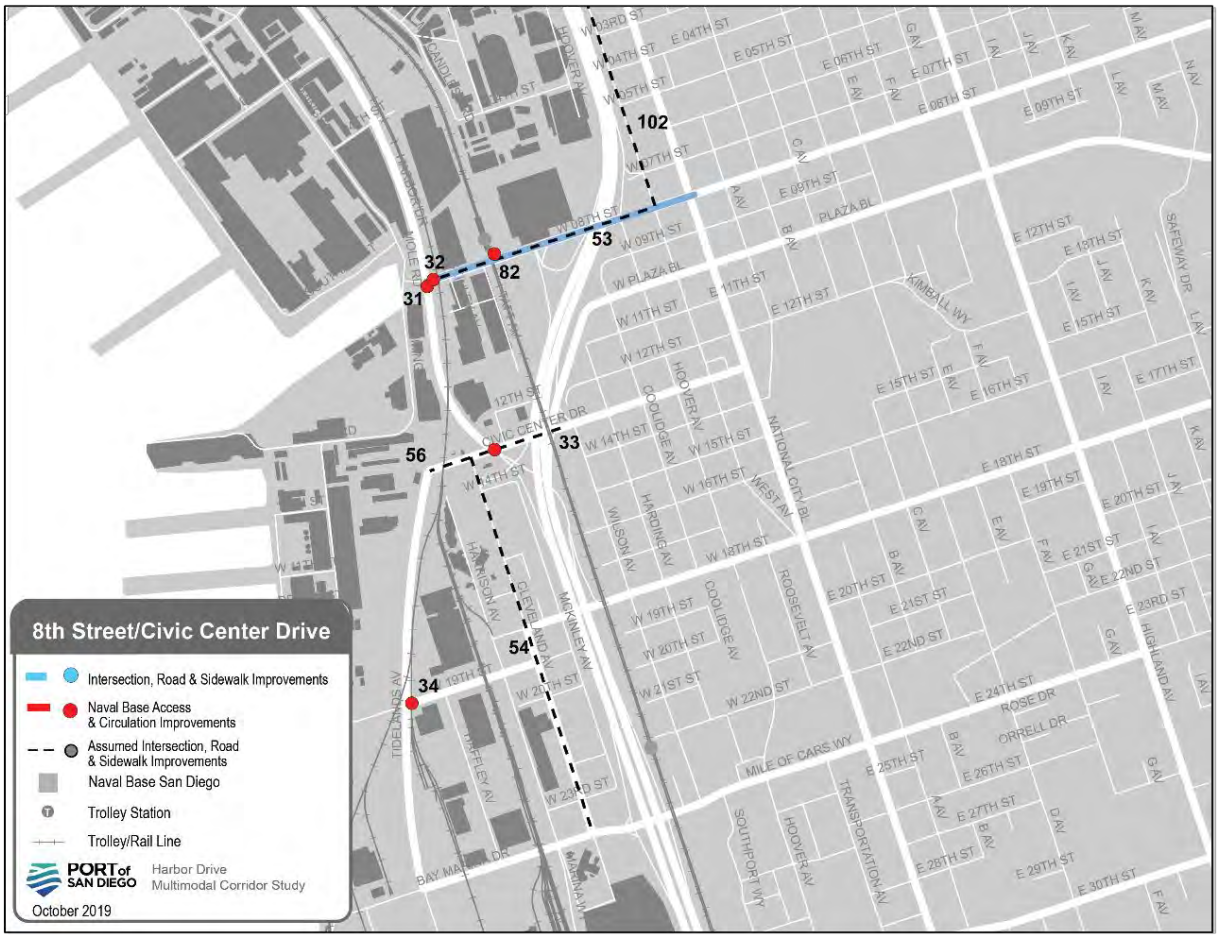


Table 4-5 Project List and Evaluation Matrix

Map ID	Description	Status
31	8th St & Harbor Dr: Additional and/or extended left-turn pocket to improve access from WB Harbor Drive to Naval Base Gate 9 (8th St).	New/Enhanced
32	8th St & Harbor Dr: Reconfiguration of WB 8th St to allow 3 through lanes Naval Base Gate 9 (8th St).	New/Enhanced
33	Civic Center Dr & Harbor Dr: Dual EB left turn lanes to increase capacity for traffic from nearby I-5 SB offramp.	New/Enhanced
34	Tidelands Ave & 19th St: Reconfiguration of intersection to add dual NB left turn lanes and exclusive SB right turn lane on Tidelands Ave for access to Naval Base Gate 13 (19th St).	New/Enhanced
53	8th St: Class II bike lanes connecting Harbor Dr, 8th St Trolley/Bus Station and National City communities. Pedestrian upgrades including rail crossing gates and curb ramps. Wayfinding facilities.	New/Enhanced
82	Facilities to provide access to Naval Base Dry Side from 8th St for bike/ped users, and automobiles if feasible.	New/Enhanced
105	Signalization of I-5 SB on/off ramp at 8th Street.	New/Enhanced
54	Cleveland Ave: Class II bike lanes connecting Civic Center Dr and Bay Marina Dr.	Assumed
56	Civic Center Dr: Class III shared bike route connecting Harbor Dr and National City communities.	Assumed
102	Roosevelt and 8th Street: Multimodal Corridor project including a multi-use path and potential Neighborhood Electric Vehicle (NEV) shuttle program.	Assumed

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◑
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	◑
	3	Qualitative decrease in pedestrian and cyclist injuries	◑
	4	Quantitative vehicle miles traveled	◔
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◑
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	◔
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	◑
	2	Qualitative assessment of multimodal access	◕
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	◕

4.9.6 BAY MARINA

The projects in this section are in the area around Bay Marina Drive in National City. Bay Marina Drive serves as the primary access point for National City Marine Terminal, the southernmost gate to Naval Base San Diego, and features Pepper Park, an important community asset for National City. A map of the area including related projects is found in Figure 4-7. The comprehensive list of projects for Bay Marina and the corresponding evaluation matrix are found in Table 4-6.

The Port of San Diego, in collaboration with the City of National City, produced the *National City Marina District Balanced Land Use* Study in 2016. This plan introduced several projects which are accounted for in the project list. Because of the work effort and stakeholder and public outreach already conducted for the National City Marina District Balanced Land Use Study, the project team provided just a slight enhancement to an already identified project (#55). Another identified project is a pedestrian bridge to the 24th Street Transit Center to provide direct multimodal access to the area (#106). The proposed and assumed projects will improve pedestrian, bicyclist, and transit access and safety in the area. It improves first/last mile connections to the 24th Street Transit Center which has the potential to increase transit ridership thus reducing greenhouse gas emissions.

For this group of proposed projects, the project team concluded that the projects would provide moderate benefits to community safety, mobility, and health and moderate improvements to multimodal access to the naval base, at a less cost-effective rate.

Figure 4-7 Bay Marina Improvements

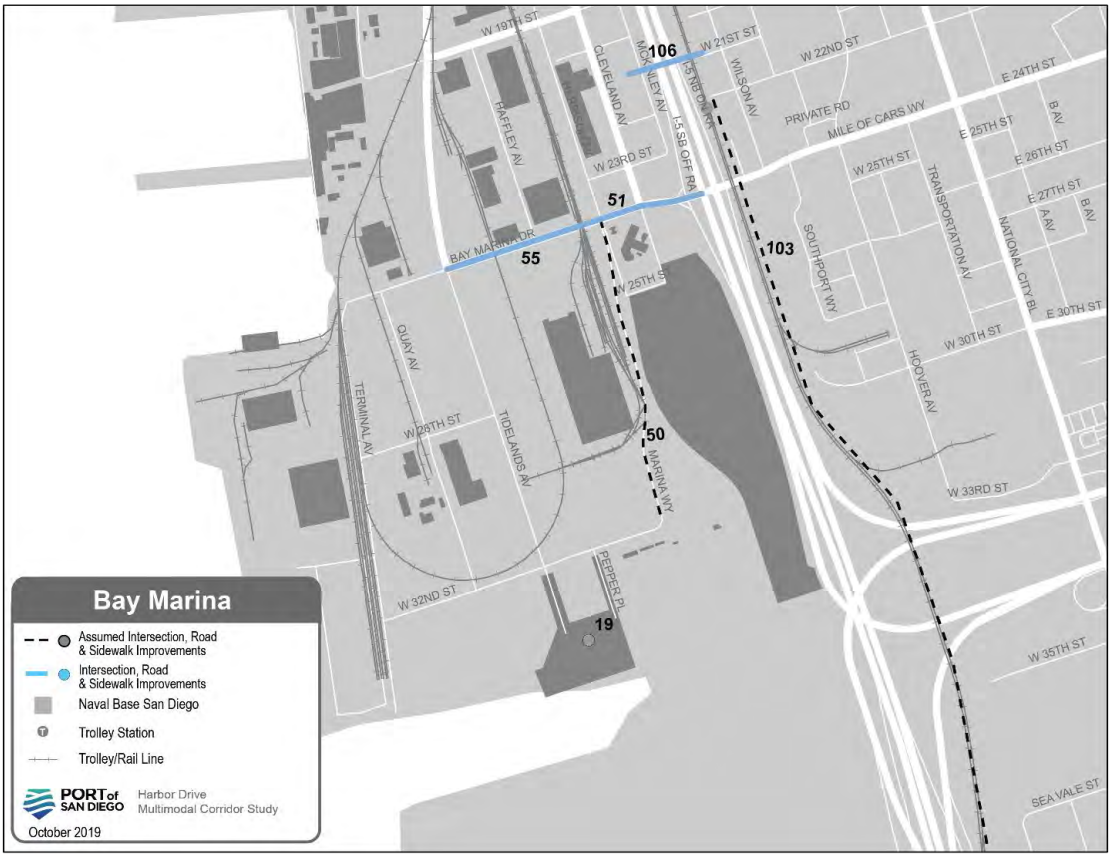


Table 4-6 Project List & Evaluation Matrix

Map ID	Description	Status
55	24th St/Bay Marina Dr: Class II bike lanes connecting NCMT, 24th St Transit Center and National City communities. Pedestrian upgrades including rail crossing gates and curb ramps. Wayfinding facilities.	New/Enhanced
106	24th Street: Pedestrian bridge across I-5 to the 24th Street Trolley Station.	New/Enhanced
19	Pepper Park: Bike/pedestrian connections to Pepper Park extension proposed in *National City Marina District Balanced Land Use Study (2016).*	Assumed
50	Bayshore Bikeway, National City: Relocation from Tidelands Ave to Marina Way and McKinley Ave.	Assumed
51	Cleveland Ave-Marina Way connection across Bay Marina Dr.	Assumed
103	Blue Line Express Lane from San Ysidro to Downtown.	Assumed

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◔
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	◑
	3	Qualitative decrease in pedestrian and cyclist injuries	◑
	4	Quantitative vehicle miles traveled	◑
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	○
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	○
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	○
	2	Qualitative assessment of multimodal access	◑
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	◔

4.10 EFFICIENT GOODS MOVEMENT

The projects in this section pertain to projects specific to the improvement of goods movement throughout the corridor, including maritime projects. A map of the area and related projects is found in Figure 4-9. The comprehensive list of projects for Efficient Goods Movement and the corresponding evaluation matrix are found in Table 4-7.

There are currently no assumed projects specific to goods movement in the area. As such, the project team developed the project list to integrate the latest in ITS technology, including Freight Signal Priority (FSP) (project #90), Freight Truck Geofencing (project #91), a Navy and Freight Community Web Portal (#92), and a host of others. Many of these projects are intended to be applied directly onto the designated truck route along Harbor Drive and the primary ingress and egress arterials. In addition to projects with an ITS component, several pertain to truck parking and resting facilities (projects #93, #94, and #96) including a potential P3 opportunity in National City (project #95). This project list also features a potential Truck Marshalling Yard (project #104) to facilitate the expansion of the San Diego Convention Center, the opening of the new convention center in Chula Vista, and a potential Marine Highway (project #97).

HARBOR DRIVE 2.0

The featured project within this group is Harbor Drive 2.0 (HD 2.0), a connected, flexible corridor, with the capability to also provide other connected capabilities along the corridor (i.e. Transit Signal Priority, etc.). The designation of a through truck route between NCMT and TAMT will provide more efficient movement of freight while maintaining the quality of life for neighborhood residents and improving public safety. The features of the designated freight route will include the following infrastructure and transportation engineering improvements along the corridor and intelligent transportation system (ITS) technologies:

- Infrastructure and transportation engineering improvements.
  - Truck queue jumps: Queue jumps are proposed for several intersections along the corridor so trucks can bypass other vehicles at these intersections. This not only allows the trucks to avoid

queue formations, it also segregates trucks from other vehicles, increasing safety. Conceptual locations for these queue jumps can be found in the exhibits found in Appendix H.

- Off-peak dedicated truck lanes: During non-personal vehicular peak hours, regular through lanes will be re-designated as truck only lanes utilizing ITS technology and wayfinding gantries. Conceptual locations for these queue jumps can be found in the exhibits found in Appendix H.
- Physical improvements: Where the right-of-way is feasible, the HD 2.0 will have separated, dedicated truck lanes at all times of day, which can also be used for transit and military vehicles. These proposed locations are shown in greater detail in the exhibits found in Appendix H.

- ITS technologies
  - Freight Signal Priority (FSP): Technology that evaluates real-time traffic conditions for a specific vehicle type, in this case trucks, and gives signal priority to these freight vehicles traveling along the designated freight route.
  - Gate Operating System (GOS): Once the Port requires queue management at the gate, the port can install a GOS that connects with its Terminal Operating System (TOS) to manage the flow of trucks through the terminals' gates. The GOS provides truck drivers at the gate with accurate automated work assignments which reduces wait times outside the gate and truck cycle times within the terminal.
  - Truck Reservation System (TRS): A TRS can be combined with a GOS to allow freight trucks to make appointments for cargo delivery or receipt within specific time windows. This system automatically disperses truck reservations over a range of time to reduce the peaking of truck traffic at the gate and avoid queuing along the designated freight route.
  - Geofencing: Geographic positioning system (GPS) and geographic information system (GIS) data, vehicle telematics and other ITS technologies can be used to track the location and path of freight vehicles prior to entering or after exiting the port. Geofencing can be used to monitor and incentivize trucks to follow designated freight routes and provide disincentives, such as limited access to the TRS, to trucks that use local residential roads.

MARINE HIGHWAY SERVICE

An alternative transportation option using the region's maritime assets is also recommended to reduce truck traffic on the corridor. The team evaluated various marine highway service options and identified a potential for specific lumber cargos to be shifted from truck to ocean-going vessel and transported from NCMT to facilities in the Pacific Northwest. U.S. vessel and barge operating companies serving the Port have expressed interest in the opportunity. Next steps include:

- Port staff coordinating with the identified carrier and shipper(s) to determine the service factors including vessel itineraries, service frequency, terminal requirements and special handling needs.
- Applying for a marine highway project designation through the America's Marine Highway (AMH) program through the U.S. Department of Transportation (USDOT), Maritime Administration (MARAD).
- Apply for AMH Program grants when the Notice of Funding Opportunity is announced, if the proposed marine highway service receives designation as a qualified marine highway project under the AMH program. The grant funds can be used to support the development and expansion of documented vessels or port and landside infrastructure.

For this group of projects, the project team determined the project would provide moderate benefits to community safety, mobility and health; significant improvements to goods movement, and at a cost-effective rate because of the ITS components.

INLAND PORT FACILITY

A portion of the Port of San Diego's cargo movements do not require any maritime assets. The movement of this cargo only requires train and truck movements that could be shifted inland away from the Port's land-constrained marine terminals. An inland port facility has the potential to provide a more efficient inland-based supply chain activity away from current coastal congestion points in and around the facilities

along Harbor Drive and enhance the logistics options that increase productivity of existing maritime and road and rail infrastructure assets.

The viability of a Port of San Diego inland facility is dependent, in part, on the volume of freight which it would attract. Demand for an inland facility in San Diego would primarily originate from Mexico and U.S. intermodal markets. One difficulty in estimating potential traffic is that the amount of traffic depends on rates and service levels, and these are unknown for a new facility. A feasibility study could identify cargo flows between the San Diego region and other global partners that could be serviced at an inland facility and evaluate whether the cost, transit and service conditions are in place to make the inland port viable for the shippers, trucking companies, and railroads.

Figure 4-8 Efficient Goods Movement

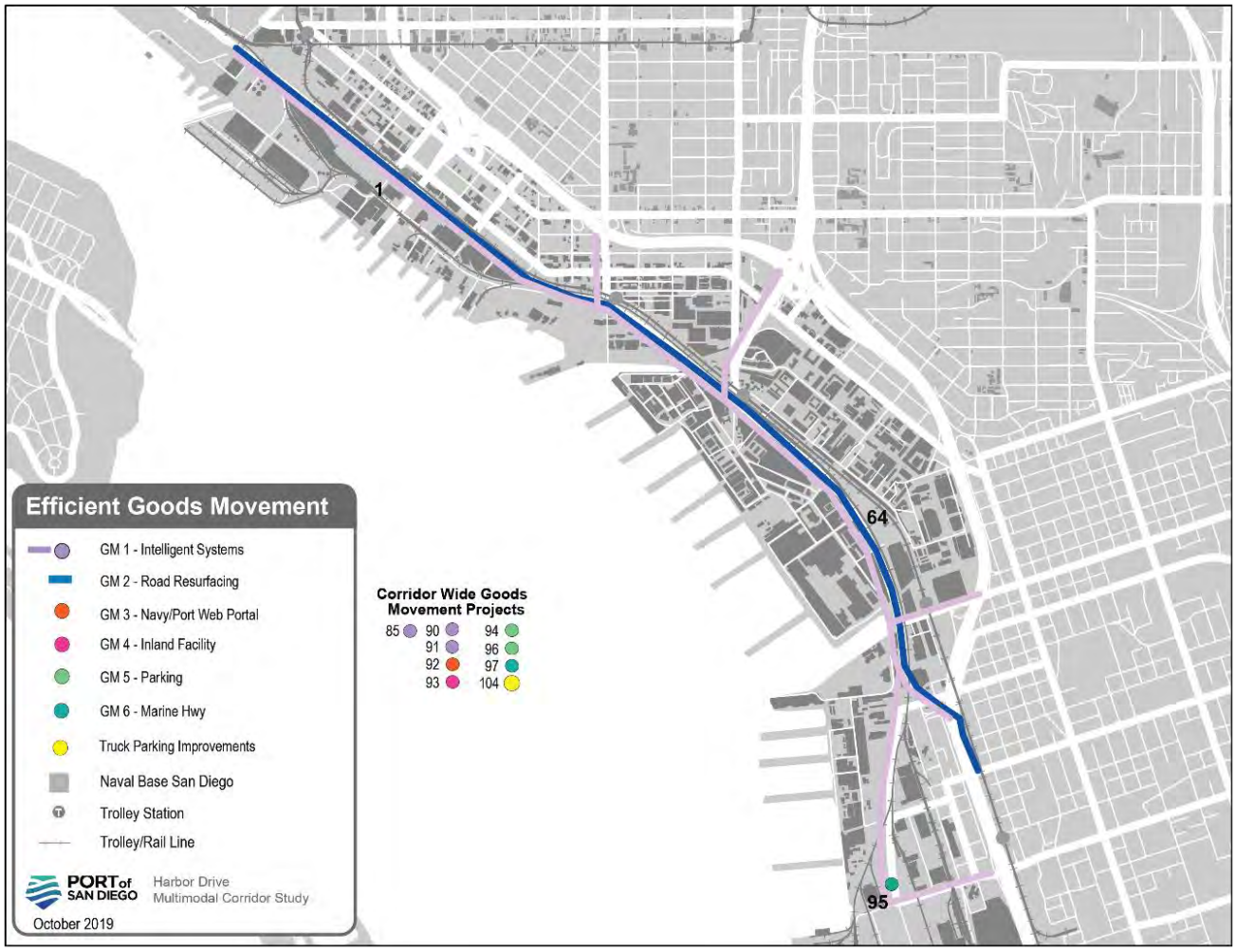


Table 4-7 Project List & Evaluation Matrix

Map ID	Description	Status
1	Harbor Drive 2.0 (HD 2.0): Dedicated lanes (where feasible) and signal priority for truck freight along Harbor Drive between TAMT/Cesar Chavez Pkwy, NCMT and connections to I-5. Includes freight signal priority (FSP), queue jumps, delineators and signage. Generally aligned in the #1 lanes and median.	New/Enhanced
64	Harbor Dr: Resurface to improve traffic and freight movements and enhance safety, preferably concurrent with other proposed roadway improvements.	New/Enhanced
85	Establishment of truck route and weight restrictions with appropriate load/weight maximums to improve goods mobility. May be combined with freight truck geofencing and/or FSP on preferred truck routes (see Goods Movement section) to provide additional incentives for compliance.	New/Enhanced
90	Freight Signal Priority (FSP): Facilities to provide priority to freight vehicles at signalized intersections. Can be specific to certain times or conditions. Demonstration project with 10 trucks in progress by Port Tenants.	New/Enhanced
91	Freight Truck Geofencing: Tracking mechanism to keep trucks within preferred routes and parking areas. Could be paired with incentives including freight signal priority (FSP) or access to proposed HD 2.0.	New/Enhanced
92	Port Freight & Navy Mobility Community Web Portal: Freight community web portal for Port tenants, Navy commands and other users to enhance efficiency and improve logistics. Could include scheduling system to reduce impacts from queuing and parking.	New/Enhanced
93	Inland Port Facility: Feasibility evaluation for an inland port facility outside the study area to facilitate train/truck movements currently occurring at the Port's marine terminals. Property in Otay Mesa is potential opportunity.	New/Enhanced
94	Regional Truck Parking Strategy: Identification of needs and potential facility locations to support truck movements, including into and out of the Working Waterfront.	New/Enhanced
95	Truck Parking & Rest Facilities: One or more facilities providing parking, rest and other services for truck drivers heading to/from the Working Waterfront, and other nearby industrial uses. May include innovative strategies such as on-street, overnight paid parking technology. Potential P3 opportunity. One potential location exists on Tidelands Avenue in National City. Details on the Tidelands Avenue Truck Parking project can be found in Appendix I.	New/Enhanced
96	Truck Parking Information Management System: Resource for tenants and truck operators to obtain information and potentially reserve parking resources. Could be tied to Port Freight Community Web Portal.	New/Enhanced
97	Marine Highway: Marine-based services between Port and other locations (to reduce pressure on truck and rail corridors). Could also include passenger ferry service between key regional destinations.	New/Enhanced
104	Truck Marshalling Yard: Marshalling yard to facilitate goods movement between San Diego Convention Center and the future Convention Center in Chula Vista. Would replace the existing marshalling yard in Chula Vista.	New/Enhanced

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◑
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	○
	3	Qualitative decrease in pedestrian and cyclist injuries	○
	4	Quantitative vehicle miles traveled	◔
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◑
	2	Qualitative roadway condition assessment	◕
	3	Quantitative vehicle miles traveled	◔
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	◔
	2	Qualitative assessment of multimodal access	◑
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	◕

4.11 NAVAL BASE PROJECTS

The projects in this section are projects that directly impact Naval Base San Diego access and circulation. While many roadway, pedestrian, rail, and bicycle projects affect navy access, this selection of projects are adjacent to naval gates and/or directly affect the way in which navy personnel access the base. A map of the area and related projects is found in Figure 4-9. The comprehensive list of projects and the corresponding evaluation matrix are found in Table 4-8.

One specific subset of projects within this group pertain to the Vesta Street Bridge (Table 4-8 project #39), connecting the “Dry Side” of Naval Base San Diego to the “Wet Side.” The project was originally included as Phase 1 of the proposed TCIF Port Access Improvements and has a direct benefit to goods movement in the area as a result of the redistribution of traffic relating to Naval Base San Diego access. With the introduction of the Vesta Street Bridge, several other projects become necessary to handle the new distribution of traffic (Table 4-8 projects #74, #75, & #76). Some of the other projects relate to vehicular gate improvements (Table 4-8 projects #35, #77, & #81), while other projects improve multimodal access to the base (Table 4-8 projects #20 & #84). These proposed projects improve pedestrian, bicycle, and transit access. They improve first/last mile connectivity with the trolley station and should encourage an increase in transit use.

For this group of projects, the team concluded that the projects would significantly benefit community safety, mobility and health; moderately improve goods movement; and significantly benefit multimodal access to the community and navy, at a cost-effective rate.

Figure 4-9 Naval Base Improvements

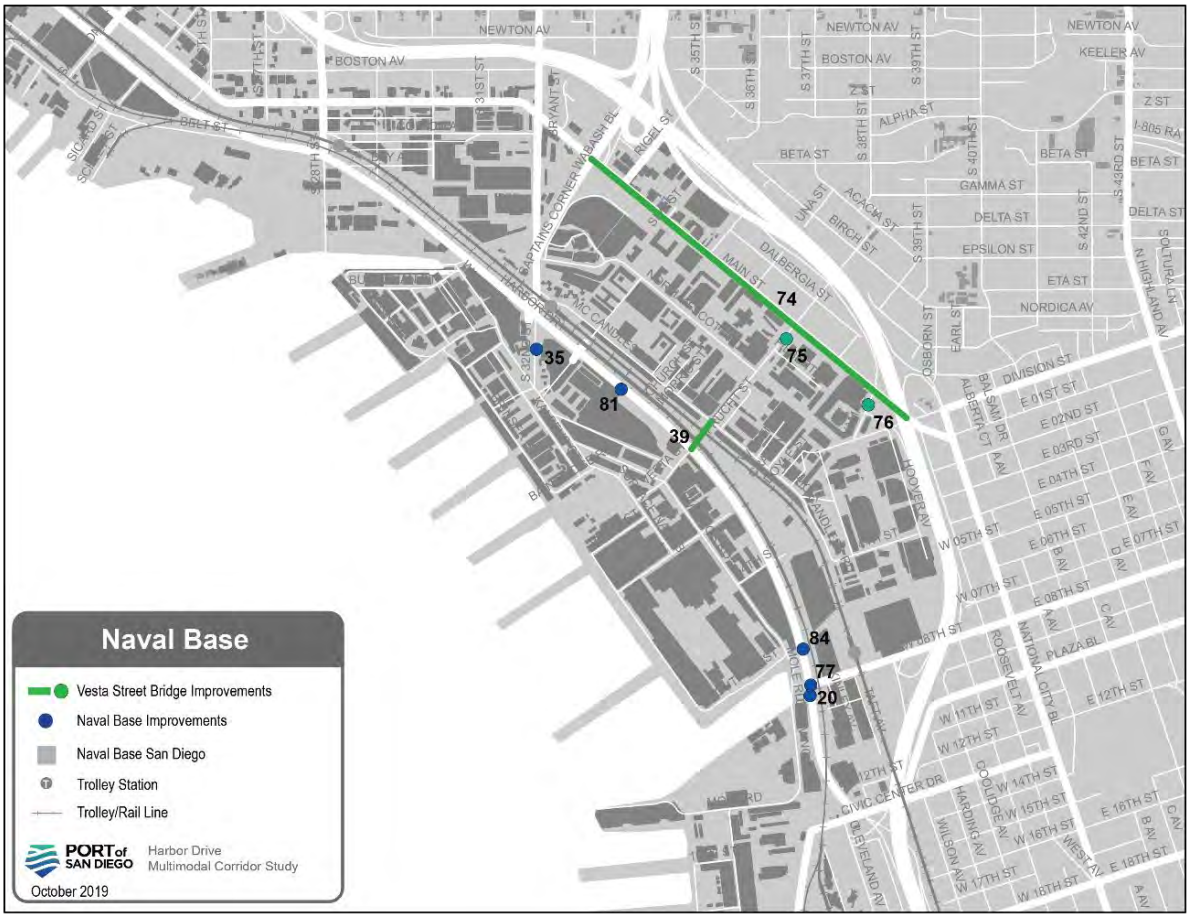


Table 4-8 Project List & Evaluation Matrix

Map ID	Description	Status
20	Naval Base Gate 9 (8th St): Enhanced bike/ped gate facilities to allow multimodal access, including from nearby 8th St Trolley/bus station.	New/Enhanced
35	Naval Base Gate 6 (32nd St): Operational improvements including capacity expansions where feasible and real-time wait signs. Coordinate with future military construction project for gate infrastructure.	New/Enhanced
39	Naval Base Vesta Street Bridge: Grade-separated structure for autos, bikes and pedestrians over Harbor Drive connecting Naval Base San Diego Wet and Dry Sides. (Included as Phase I of proposed *TCIF Port Access Improvements* project.)	New/Enhanced
74	Main St: In conjunction with Vesta St bridge, operational and capacity improvements to accommodate additional traffic entering Naval Base Gates 29 (Vesta St) and 32 (Yama St).	New/Enhanced
75	Naval Base Gate 29 (Vesta St): In conjunction with Vesta Street bridge, operational improvements including capacity expansions where feasible and real-time wait signs.	New/Enhanced
76	Naval Base Gate 32 (Yama St): In conjunction with Vesta Street bridge, operational improvements including capacity expansions where feasible and real-time wait signs.	New/Enhanced
77	Naval Base Gate 9 (8th St): Operational improvements including capacity expansions where feasible and real-time wait signs. Coordinate with future military construction project for gate infrastructure.	New/Enhanced
81	Harbor Dr: Left-turn pocket from WB Harbor Drive to Naval Base Gate 6A (truck-only gate south of 32nd St).	New/Enhanced
84	Allow transit bus access on the Naval Base, with potential navy contribution toward operating cost. Currently done in Norfolk VA.	New/Enhanced

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◕
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	◕
	3	Qualitative decrease in pedestrian and cyclist injuries	◕
	4	Quantitative vehicle miles traveled	◑
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	◕
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	◑
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	◕
	2	Qualitative assessment of multimodal access	◕
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	◔

4.12 PARKING PROJECTS

The projects in this section are specific to parking within the study area. The working waterfront serves as a major employment center for the region, and while multimodal improvements are featured heavily within the study area, the project team also took care to evaluate parking improvements to both improve access to the working waterfront and provide community benefits. A map of the area and related projects is found in Figure 4-10. The comprehensive list of projects for the parking projects and the corresponding evaluation matrix are found in Table 4-9.

The assumed project is a potential parking structure for shipyard personnel. Potential sites include two locations proposed in the 2012 Shipyard District Parking Structure Feasibility Study. The proposed projects the team developed to improve community health and mobility include permit parking (Table 4-9 project #86) and electric vehicle infrastructure (Table 4-9 project #88). These projects have the potential to help alleviate the impacts of shipyard parking in the neighborhood, reduce greenhouse gas emissions by reducing miles traveled by vehicles looking for on-street parking spots, and encourage the use of electric vehicles.

Transportation along the corridor requires a multimodal approach as discussed previously. As discussed in Section X, by improving First-Last mile connections in the transit rich community, residents and employees will have additional opportunities for community taking some stress off parking resources. In addition, as examined in the 2015 Barrio Logan Shipyard Parking Study, the District and partner agencies can continue to look for additional opportunities for supplemental parking as circumstances permit. This can include code enforcement, shuttles to off-site parking, and various mechanisms tied to discretionary actions.

The project team concluded that the proposed projects would provide a slight benefit to community safety, mobility and health and a moderate improvement to shipyard access and parking, at a cost-effective rate.

Figure 4-10 Parking Improvements

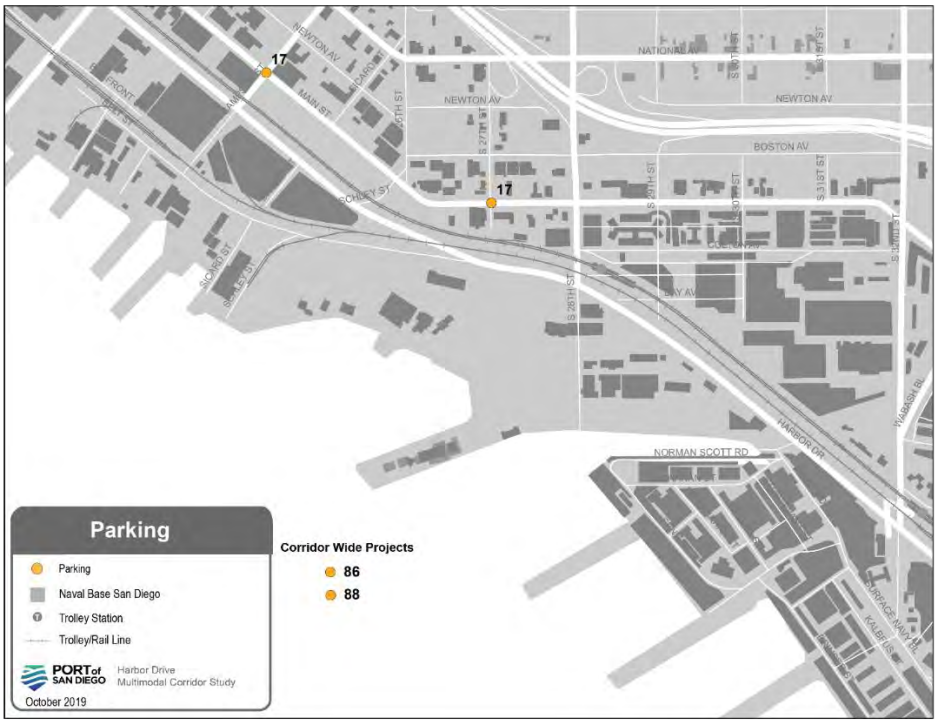


Table 4-9 Project List & Evaluation Matrix

Map ID	Description	Status
86	Permit parking system in parts of Barrio Logan and National City to reduce community impacts of Working Waterfront-related parking.	New/Enhanced
88	Electric vehicle charging infrastructure in on-street parking stalls and other key locations.	New/Enhanced
17	Parking structure(s) for shipyard personnel. Potential sites include two locations proposed in the 2012 *Shipyard District Parking Structure Feasibility Study* (Sampson St & Main St; 27th St & Main St) in addition to exploring the feasibility of multiple smaller structures rather than one large structure. Could include paid parking to fund mobility improvements and programs.	Assumed

Evaluation Matrix

I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◔
	2	Quantitative increase in bicycle, pedestrian and first/last mile connections, facilities, and amenities	○
	3	Qualitative decrease in pedestrian and cyclist injuries	○
	4	Quantitative vehicle miles traveled	○
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	○
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	○
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	○
	2	Qualitative assessment of multimodal access	○
IV. Improve Shipyard Access & Parking	1	Optimize parking	◕
	2	Qualitative assessment of multimodal access	○
V. Cost Effectiveness	1	Quantitative capital cost	●

4.13 URBAN GREENING PROJECTS

An urban greening project (Table 4-10) is proposed for the length of Harbor Drive in the study area. This can include the addition of street trees and other landscape, medians, widened sidewalks, bioswales, and street furniture. This can improve pedestrian and bicycle safety, mobility, and comfort. It can also reduce storm water runoff, cool down the corridor, provide cleaner air, calm traffic, improve the aesthetics of the corridor, and provide a better environment for fist/last mile access.

Table 4-10 Project List & Evaluation Matrix

Map ID	Description	Status
72	Harbor Dr: Urban greening and walkability improvements including sidewalk, trees and landscaping to increase canopy and improve environmental health.	New/Enhanced

Evaluation Matrix

Goal	Performance Metric		Evaluation
I. Improve Community Safety, Mobility & Health	1	Quantitative reduction in pollution levels	◔
	3	Qualitative decrease in pedestrian and cyclist injuries	◕
	4	Quantitative vehicle miles traveled	◑
II. Improve Goods Movement	1	Quantitative travel times, roadway level of service	○
	2	Qualitative roadway condition assessment	○
	3	Quantitative vehicle miles traveled	○
III. Improve Naval Base Access & Circulation	1	Quantitative travel times, roadway levels of service	○
	2	Qualitative assessment of multimodal access	◕
IV. Improve Shipyard Access & Parking	1	Optimize parking	○
	2	Qualitative assessment of multimodal access	◕
V. Cost Effectiveness	1	Quantitative capital cost	◑

4.14 KEY FINDINGS

In addition to evaluating the benefits of projects by project area based on the established evaluation metrics, the project team also analyzed the benefits of the all of the proposed projects in the 2050 Horizon Year versus the 2050 No Build condition. The specific factors the project team looked at are the following:

1. Travel Time in the 2050 Horizon Year – No Build
2. Travel Time in the 2050 Horizon Year – All Projects
3. Total Quantification of First/Last Mile projects
4. Overall Emissions Reductions

TRAVEL TIME IN THE 2050 HORIZON YEAR – NO BUILD

To determine the net quantitative travel time benefit of the implementation of the project list, the project team simulated the travel time in the Horizon Year scenario using the same methodology as was conducted in the Existing Conditions analysis. From this simulation, the team calculated travel times in two different ways as follows.

Arterial Focused Travel Time
- This was calculated in the same manner as was calculated in the Existing Conditions analysis.
- Travel time is calculated exclusively along the arterial corridor.

Destination Focused Travel Time

- Travel time utilizes the times along the arterial corridor but also includes:
  - Travel times specific to routing, i.e. A driver heading to Harbor Drive via 28th St. from I-5 NB would need to exit at National Avenue and then turn from National Avenue onto 28th St.
  - Delay at on/off-ramps.

ARTERIAL FOCUSED TRAVEL TIME

HARBOR DRIVE: CESAR E. CHAVEZ PARKWAY TO CIVIC CENTER DRIVE

Based on the travel time analysis conducted, the AM peak hour travel times stay relatively consistent to conditions today along Harbor Drive. However, in the PM peak hour, the travel time increases significantly in the Southbound direction because of capacity constraints, especially at the 5-legged intersection at Civic Center Drive.

Travel times (min):

Arterial / Roadway Segment	Existing Conditions	Horizon Year (2050) - No Build
Harbor Drive (Northbound)		
AM Peak Hour	21	21
PM Peak Hour	10	9
Harbor Drive (Southbound)		
AM Peak Hour	22	17
PM Peak Hour	12	27

28TH STREET: NATIONAL AVENUE TO HARBOR DRIVE

28th Street from National Avenue to Harbor Drive has minor increases in travel times in the westbound direction, AM peak hour, and in the eastbound direction, PM peak hour, reflecting the general flow of employee traffic.

Travel times (min):

Arterial / Roadway Segment	Existing Conditions	Horizon Year (2050) - No Build
28th Street (Westbound)		
AM Peak Hour	12	14
PM Peak Hour	4	2
28th Street (Eastbound)		
AM Peak Hour	3	3
PM Peak Hour	5	8

32ND STREET: NAVAL BASE SAN DIEGO GATE 23 (CALLAGAN HWY, DRY SIDE NORTH) TO HARBOR DRIVE

With the anticipated growth of the Navy Base San Diego in 2050, 32nd Street sees slight growth in travel times in both the AM and PM peak hours in both directions.

Travel times (min):

Arterial / Roadway Segment	Existing Conditions	Horizon Year (2050) - No Build
32nd Street (Westbound)		
AM Peak Hour	29	31
PM Peak Hour	4	11
32nd Street (Eastbound)		
AM Peak Hour	1	2
PM Peak Hour	2	2

8TH STREET: NATIONAL CITY BOULEVARD TO HARBOR DRIVE

Similar to 32nd Street, Naval Base San Diego growth into 2050 results in moderate growth in travel times in the westbound direction in the AM peak hour and in the eastbound direction in the PM peak hour.

Travel times (min):

Arterial / Roadway Segment	Existing Conditions	Horizon Year (2050) - No Build
8th Street (Westbound)		
AM Peak Hour	25	30
PM Peak Hour	4	4
8th Street (Eastbound)		
AM Peak Hour	3	3
PM Peak Hour	6	15

BAY MARINA DRIVE: I-5 RAMPS TO TIDELANDS AVENUE

The travel time in the Horizon Year degrades for traffic heading towards the National City Marine Terminal and Naval Base San Diego in the AM peak hour but stays unchanged in the PM peak hour.

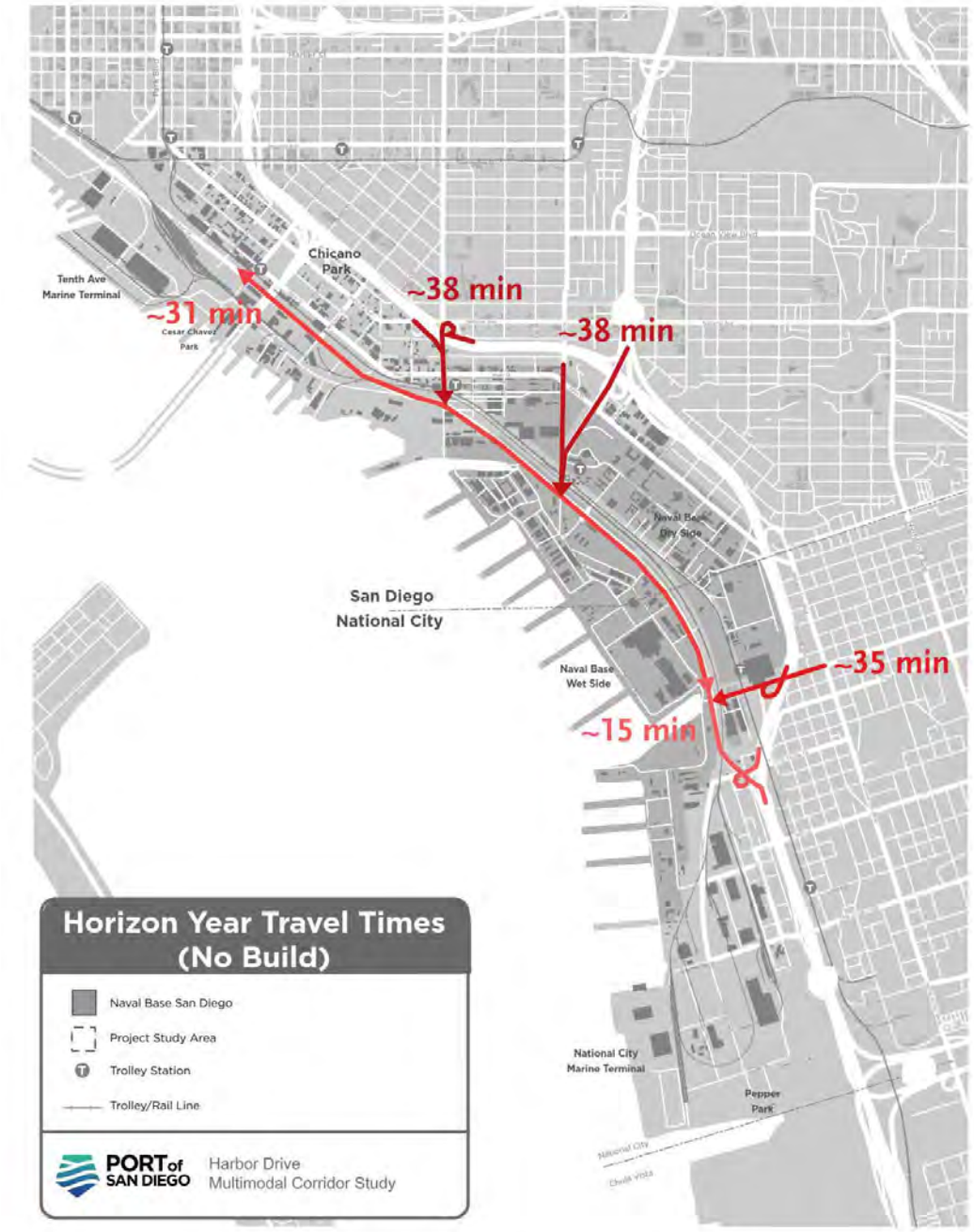
Travel times (min):

Arterial / Roadway Segment	Existing Conditions	Horizon Year (2050) - No Build
Bay Marina Drive (Westbound)		
AM Peak Hour	3	9
PM Peak Hour	3	2
Bay Marina Drive (Eastbound)		
AM Peak Hour	3	2
PM Peak Hour	3	3

DESTINATION FOCUSED TRAVEL TIME

As discussed above, the “destination focused travel time,” calculated as part of the Horizon Year No Build analysis, looked at the travel time both along the primary arterial corridors and the travel time of on/off ramp-queueing and routing from the ramps to the Harbor Drive corridor. This wider look at travel time is represented visually in Figure 4-11 . Once the queueing from the freeway off-ramps is considered, the travel delay extends beyond the arterials themselves, and to adjacent freeway connections.

Figure 4-11 Horizon Year Travel Times



TRAVEL TIME IN THE 2050 HORIZON YEAR – ALL PROJECTS

To determine the full breadth of improvements as a result of all the projects, both assumed and new, the team analyzed the effect on travel times in the same two ways that were analyzed in the No Build, "Arterial Focused" and "Destination Focused." The resulting travel time results are shown below.

ARTERIAL FOCUSED TRAVEL TIME

HARBOR DRIVE: CESAR E. CHAVEZ PARKWAY TO CIVIC CENTER DRIVE

Along just the arterial of Harbor Drive, northbound traffic in the AM peak improves in travel time by 7 minutes. Conversely, the southbound traffic in the PM peak improves in travel time by 7 minutes, while other peak/directional combinations stay relatively the same.

Travel times (min):

Arterial / Roadway Segment	Horizon Year (2050) - No Build	Horizon Year (2050) – All Projects (New + Assumed)
Harbor Drive (Northbound)		
AM Peak Hour	21	14
PM Peak Hour	9	11
Harbor Drive (Southbound)		
AM Peak Hour	17	17
PM Peak Hour	27	20

28TH STREET: NATIONAL AVENUE TO HARBOR DRIVE

28th Street from National Avenue to Harbor Drive improves by about 7 minutes in travel time in the AM peak in the westbound direction, and about 3 minutes in the PM peak in the eastbound direction.

Travel times (min):

Arterial / Roadway Segment	Horizon Year (2050) - No Build	Horizon Year (2050) – All Projects (New + Assumed)
28th Street (Westbound)		
AM Peak Hour	14	7
PM Peak Hour	2	3
28th Street (Eastbound)		
AM Peak Hour	3	3
PM Peak Hour	8	5

32ND STREET: NAVAL BASE SAN DIEGO GATE 23 (CALLAGAN HWY, DRY SIDE NORTH) TO HARBOR DRIVE

Between the Navy gate processing rate projects as well as the full set of infrastructure-based projects, the travel times in the westbound direction at 32nd Street see significant improvements in travel times; with 11 minutes of improvement in the AM peak and 8 minutes of improvement in the PM peak. The eastbound direction travel times remain relatively constant.

Travel times (min):

Arterial / Roadway Segment	Horizon Year (2050) - No Build	Horizon Year (2050) – All Projects (New + Assumed)
32nd Street (Westbound)		
AM Peak Hour	31	20
PM Peak Hour	11	3
32nd Street (Eastbound)		
AM Peak Hour	2	1
PM Peak Hour	2	2

8TH STREET: NATIONAL CITY BOULEVARD TO HARBOR DRIVE

Similar to 32nd Street, there is significant travel time improvement. In the AM peak, the travel time improves by 17 minutes in the westbound direction and in the PM peak, by 7 minutes in the eastbound direction.

Travel times (min):

Arterial / Roadway Segment	Horizon Year (2050) - No Build	Horizon Year (2050) – All Projects (New + Assumed)
8th Street (Westbound)		
AM Peak Hour	30	13
PM Peak Hour	4	5
8th Street (Eastbound)		
AM Peak Hour	3	3
PM Peak Hour	15	8

BAY MARINA DRIVE: I-5 RAMPS TO TIDELANDS AVENUE

While multimodal access improves along the Bay Marina Drive corridor, travel times stay relatively constant with the implementation of the full new and assumed project list.

Travel times (min):

Arterial / Roadway Segment	Horizon Year (2050) - No Build	Horizon Year (2050) – All Projects (New + Assumed)
Bay Marina Drive (Westbound)		
AM Peak Hour	9	9
PM Peak Hour	2	2
Bay Marina Drive (Eastbound)		
AM Peak Hour	2	2
PM Peak Hour	3	3

DESTINATION FOCUSED TRAVEL TIME

While the travel time savings are dramatic along each arterial in the peak hours, the “destination focused travel time,” calculated as part of the Horizon Year All Project analysis, sees significant improvements in travel time for the entire destination-based trip. This wider look at travel time savings is represented in Figure 4-12. Comparing Figure 4-11 with Figure 4-12 demonstrates that when factoring in the delays associated with the freeway operations, travel delays are even more substantially reduced.

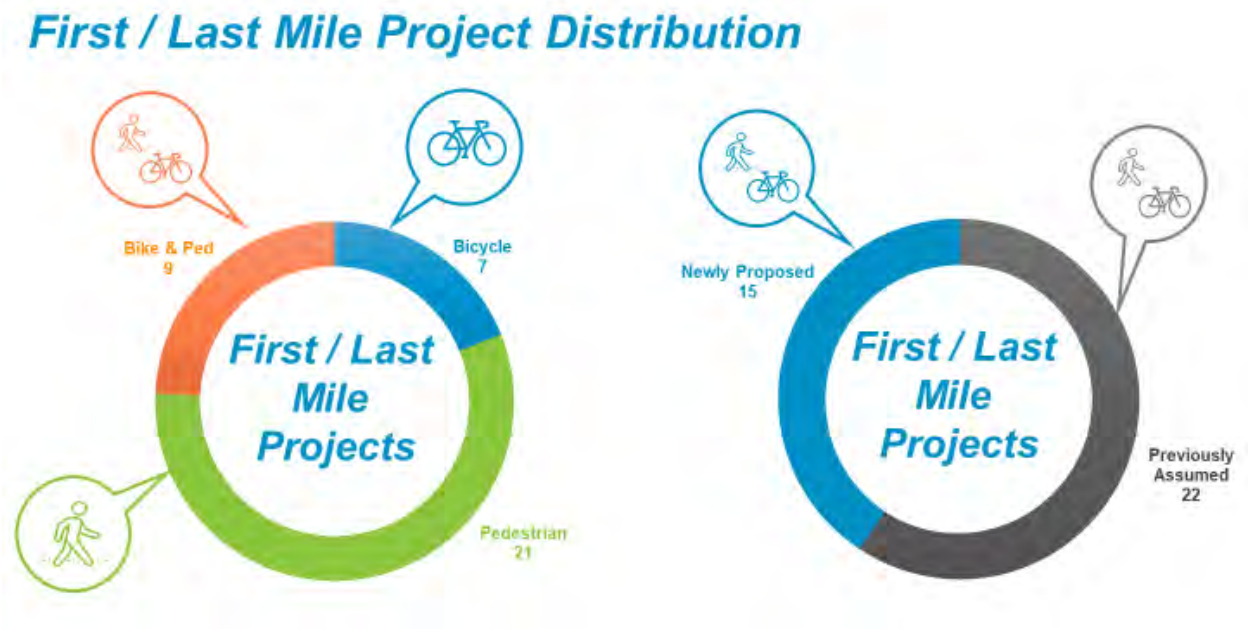
Figure 4-12 Travel Time Savings

TRANSIT FIRST/LAST MILE PROJECTS

An individual trip is defined as the journey from an individual's origin to their destination. Public transit, including bus and trolley service, has the potential to form the core of an individual's trip, but the connection to transit, or the "first/last mile" to a transit stop or station, is often a limiting factor in the utilization of public transit.

As discussed in previous sections, there are clear gaps in first/last mile connections to transit, that reduce the ultimate ridership that could be attained by public transit for origins and destinations within the study area. As part of the development of this study, the project team identified existing and assumed first/last mile projects and introduced additional first/last mile projects to improve the multimodal access within the study area. Figure 4-13 below quantifies the number of bicycle (7), pedestrian (21), and combined bicycle pedestrian (9) projects were identified in the study area, as well as the number of previously assumed projects (22) versus newly proposed projects (15). Additionally, Figure 4-14 below highlights the location of all of the assumed and new/enhanced first/last mile projects within the study area.

Figure 4-13 Increase in First/Last Mile Project Mileage



The location and efficacy of the identified first/last mile projects from trolley transit stations, provide a greater interconnected bicycle and pedestrian network, as shown in Figure 4-15. By connecting the location of these projects to the trolley transit stations themselves, approximately 12 miles of first/last mile connections are created, connecting the corridor's transit stops. Figure 4-16 shows the relative increase in mileage between bicycle, pedestrian, and combined bicycle and pedestrian projects. Of the three categories of projects, projects intending to serve both pedestrians and bicyclists create the most first/last miles connections. Filling the existing gaps in the network will allow transit to increase its utility in individual trips in the corridor.

Figure 4-14 First/Last Mile Projects

Figure 4-15 First/Last Mile Project Connections

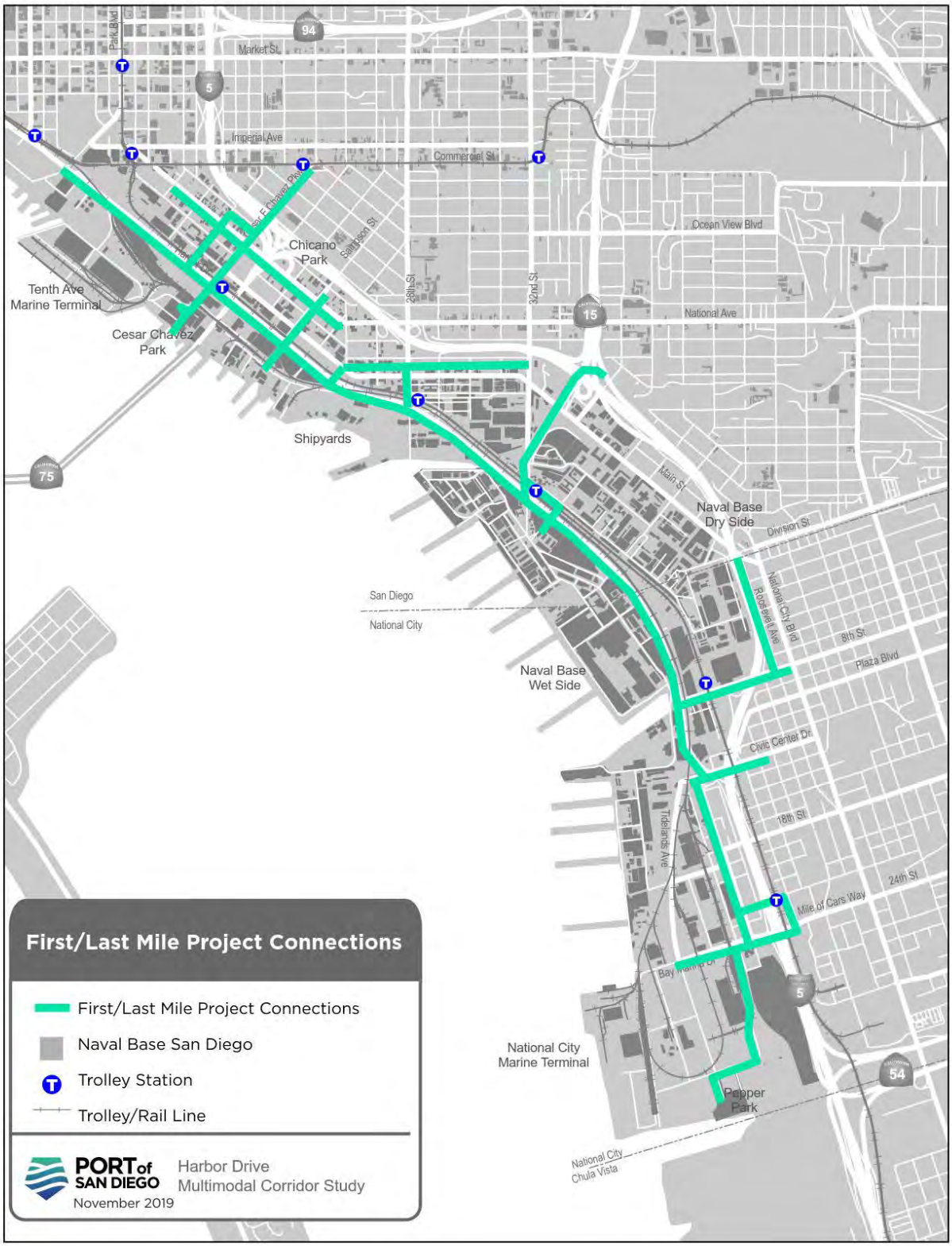
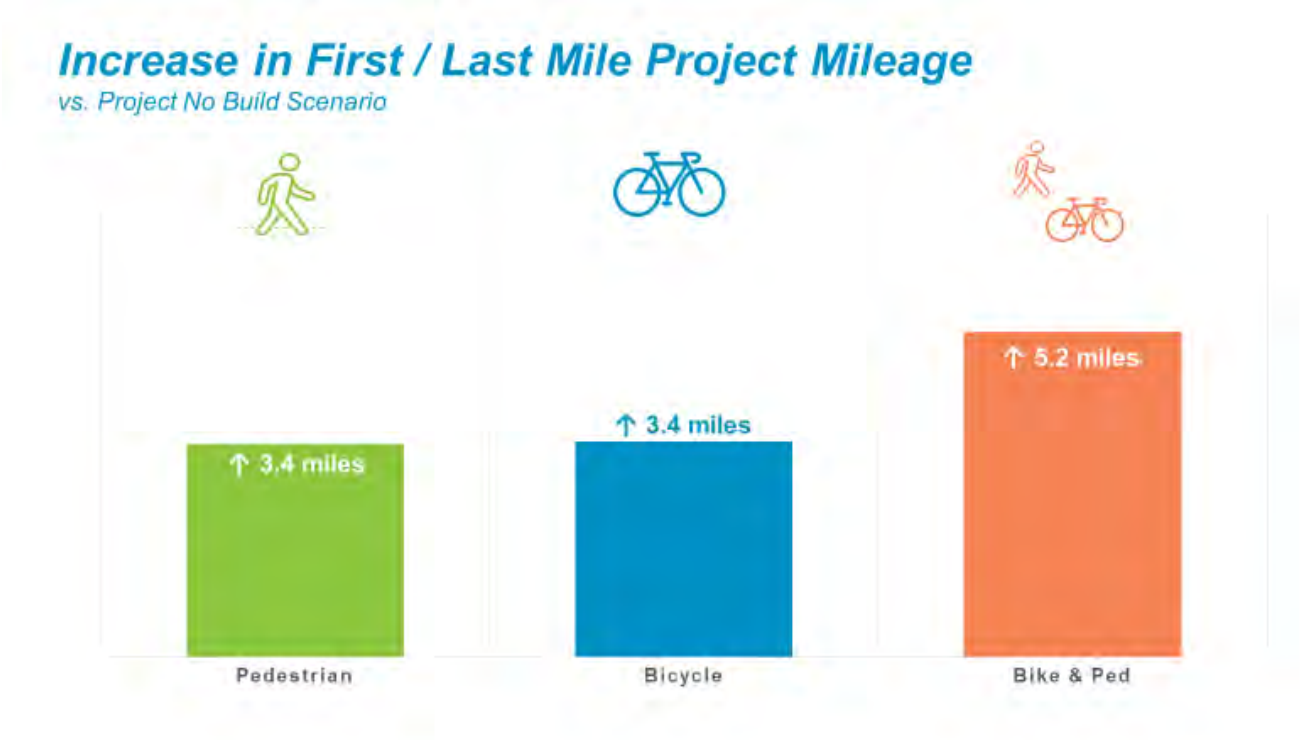


Figure 4-16 Increase in First/Last Mile Project Mileage



EMISSIONS

One of the key goals of the Study is to develop projects that ultimately reduce pollution. As part of the travel time analysis conducted, the project team was also able to calculate changes in key emission metrics during those peak hours, specifically the amount fuel saved because of the implementation of the full project list. In the Horizon Year, with implementation of the assumed and newly proposed projects within the corridor, the annualized approximation for fuel saved is approximately 607,000 gallons. This would be equivalent to approximately 5,395 metric tons of emissions, in the form of carbon dioxide (CO_2) or approximately 1,146 passenger cars taken off the road[5]. Figure 4-17 illustrates the EPA's greenhouse gas equivalencies calculator results.

In the two peak hours of the day analyzed as part of the travel time analysis, Carbon Monoxide (CO), Nitrogen Oxides (NOx), and Volatile Organic Compounds (VOC) emissions were also calculated. These emissions were then converted using peak hour factors to a daily rate and then annualized to produce an approximate annual reduction in CO, NOx, and VOC emissions. **Error! Reference source not found.**Figure 4-18 below shows the estimated reduction in CO, NOx, and VOC emissions annually when comparing the Horizon Year All Project Condition to the Horizon Year No Build Condition. Given these calculations conducted for 2 hours out of a typical weekday, it can be calculated that significant emissions reductions can be achieved throughout a calendar year with the full project list implementation.

[5] This estimate was created using the Environmental Protection Agency's (EPA) Greenhouse Gas Equivalencies Calculator. Accessed November 2019. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator Gallons of gasoline, calculated through the Synchro program, was inputted to achieve these results.

Figure 4-17 Change in Annual Fuel Consumption

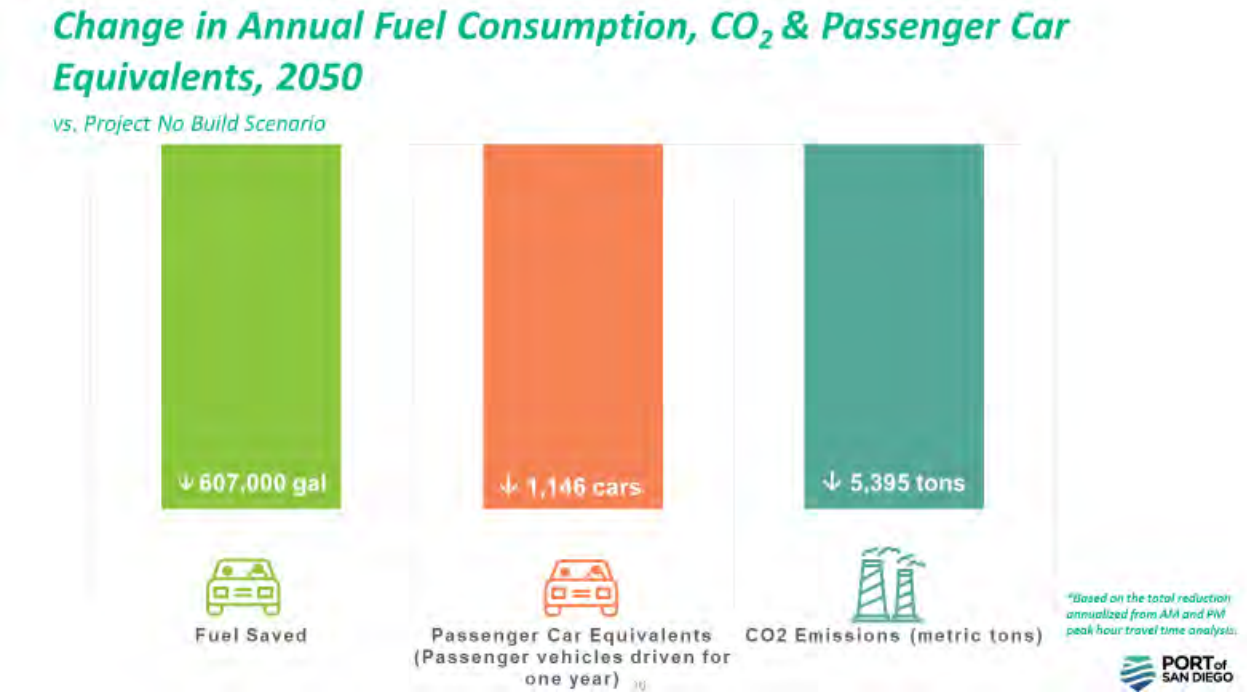
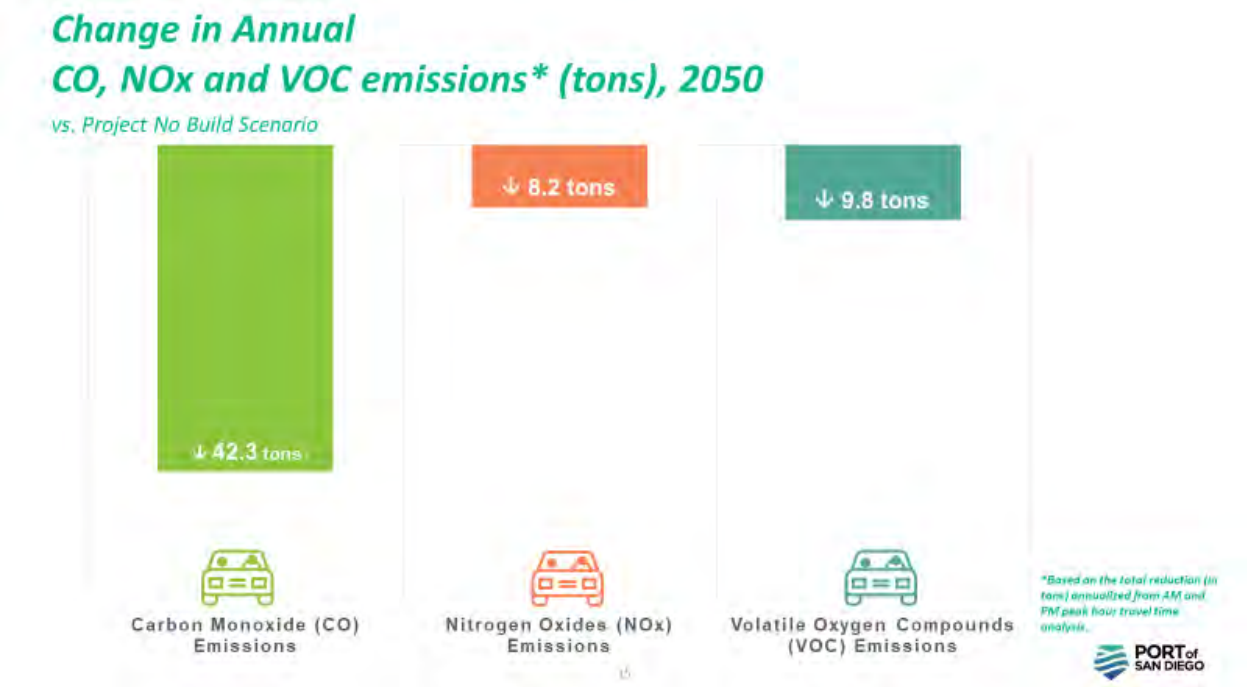


Figure 4-18 Change in Annual Emissions



5 FUNDING & NEXT STEPS

The potential funding opportunities for the Study's projects include federal, state, and local competitive grant funding programs that may be appropriate to support the project's planning and construction phases over the short-term (2019-2021). This section will broadly examine funding opportunities and identify next steps for the District. The following projects were considered for funding opportunities over the next two years:

- ***Harbor Drive 2.0*** featuring a connected, flexible corridor with dedicated and separated truck-only lanes, dedicated truck queue jumps, freight signal priority, and other physical improvements to allow operational efficiencies along the corridor and potentially provide for other connected capabilities (i.e. Transit Signal Priority, etc.).
- ***Harbor Drive Resurfacing*** to improve safety, mobility, and freight movements.
- ***Freight Truck Geofencing*** to keep trucks within preferred routes and parking areas.
- ***Port Freight and Navy Mobility Community Web Portal*** for Port tenants, Navy commands, and other users to enhance efficiency and improve logistics.
- **Inland Port Facility Feasibility Study** to determine the viability of an inland facility with the potential to provide more efficient inland-based supply chain activity away from current coastal congestion points.
- ***Regional Truck Parking Strategy*** that identify needs and potential facility locations to support truck movements.
- ***Truck Parking and Rest Facilities*** providing parking, rest, and other services for truck drivers heading to or from the Working Waterfront.
- ***Truck Parking Information Management System*** for tenants and truck operators to obtain information and potentially reserve parking.
- ***Marine Highway*** for marine-based services between the Port and other locations to reduce pressure on truck and rail corridors, potentially including passenger ferry services.
- ***Truck Marshalling Yard*** to facilitate goods movement between the San Diego Convention Center and future Convention Center in Chula Vista and replace the existing marshalling yard in Chula Vista.

This section examines funding programs relative to the projects' planning and construction phases however, a more in-depth funding and financial strategy for implementing further phases may be developed as the project scope, budget, and schedule is refined through planning and design.

5.1 DISCRETIONARY GRANT FUNDING FOR PROJECT PLANNING

The next stage in project development is to refine concepts through planning activities. Thus, funding is needed in the near-term for project planning. These planning activities will likely require a year to complete, resulting in further-defined scopes, budgets, and schedules for delivery of the Project and its components. Grant funding that is available from March 2020 to March 2024 would be preferred.

FEDERAL PROGRAMS

USDOT Better Utilizing Investments to Leverage Development (BUILD)

For the FY 2019 BUILD program, USDOT made $900 million in federal funds available to support surface transportation projects that are difficult to fund through traditional federal programs and have a significant local or regional impact. While grants for planning projects are allowed, USDOT has advised that planning grants will be less competitive than capital grants.

The minimum grant award is $5 million for projects in urban areas and $1 million for projects in rural areas. There is no minimum grant award for planning grants. The maximum grant award is $25 million with no more than $90 million going to any individual state. Applicants must match BUILD funds with a minimum of 20 percent non-federal funds. Applications require a benefit-cost analysis with projects scoring better if their benefit-cost ratio is above 1.0.

To reflect the current Administration's policy priorities, USDOT has awarded a greater share of BUILD funding to projects in rural areas that align well with the merit criteria than to those in urban areas. USDOT is also prioritizing local government action to raise new sources of revenue and otherwise leverage federal sources with dedicated revenue for transportation infrastructure. For the FY 2019 BUILD program, applications were evaluated based on eight equally-weighted merit criteria: safety, economic competitiveness, quality of life, state of good repair, environmental protection, innovation, and partnerships with a broad range of stakeholders. These criteria may change moving forward but are expected to stay mostly consistent.

The FY 2020 BUILD program will likely distribute $1 billion in appropriated funds. FY 2018 and FY 2019 BUILD applications were due in July, so FY 2020 BUILD applications will likely be due in July 2020.

Demand for the grants has historically far exceeded available funds. During the first eight TIGER and BUILD rounds, USDOT received nearly 8,000 applications requesting nearly $146 billion for transportation projects across the country. Thus, the Project components included within a BUILD application would have to be highly competitive under the program's criteria to be awarded BUILD funds. To compete well, a project must demonstrate strength in merit criteria, enter construction within the period of obligation, have a specific timeline for completion, and present a clear story and detail project impact.

FHWA Advanced Transportation and Congestion Management Technology Deployment (ATCMTD) Initiative

FHWA's ATCMTD initiative is authorized annually at $60 million for FY 2016-2019. ATCMTD grants fund 50 percent of the cost of eligible projects, which develop model deployment sites for large scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment. The Harbor Drive 2.0 component of the Project would be an appropriate project to submit for ATCMTD grant funding.

Approximately 5 to 10 projects are awarded each year not exceeding $12 million. For the FY 2018 round, FHWA selected ten projects for award out of 51 applicants. Awards ranged between $2.4 million and $12 million.

ATCMTD grant funds are available for both pre-construction and construction activities, though grant recipients are only allowed to use up to 5% of their awarded funds to carry out planning and reporting requirements. Grant recipients may use funds under this program to deploy advanced transportation and congestion management technologies, including:

- Advanced traveler information systems;
- Advanced transportation management technologies;
- Infrastructure maintenance, monitoring, and condition assessment;
- Advanced public transportation systems;
- Transportation system performance data collection, analysis, and dissemination systems;
- Advanced safety systems, including vehicle-to-vehicle and vehicle-to-infrastructure communications;

- Technologies associated with autonomous vehicles, and other collision avoidance technologies, including systems using cellular technology;
- Integration of intelligent transportation systems with the Smart Grid and other energy distribution and charging systems;
- Electronic pricing and payment systems; or
- Advanced mobility and access technologies, such as dynamic ridesharing and information systems to support human services for elderly and disabled individuals.

NOFOs for the ATCMTD program are typically issued in June with an application submission in August.

FHWA Federal Lands Planning Program (FLPP)

FHWA's FLPP funds transportation planning for federal lands and tribal transportation facilities that are consistent with statewide and metropolitan transportation plans. FHWA will make $32.3 million available for FLPP in FY 2020. The federal share for FLPP-funded projects is 100% and funds are available for obligation for three fiscal years. Eligible activities under FLPP include long range transportation planning and performance management activities, including the development and implementation of safety, bridge, pavement, and congestion management systems, road, and bridge inventory.

The Project would be eligible to the extent that it improves federally-owned roads open to public travel or other transportation infrastructure owned and maintained by federal lands management agencies (National Park Service, US Fish and Wildlife Service, USDA Forest Service, Bureau of Land Management, US Army Corps of Engineers, Bureau of Reclamation) and independent federal agencies with land and natural resource management responsibilities.

To access FLPP funding, the District would need to partner with a federal agency and FHWA to develop a work plan and proposed budget of planning activities. The work plan and budget will include planning projects/activities of both the federal partner and FHWA to be implemented in the next fiscal year and/or over the course of multiple years within the FAST Act authorization period.

FHWA Recreational Trails Program (RTP)

RTP provides funds to states to develop and maintain recreational trails and trail-related facilities for motorized and nonmotorized recreational trail uses. The California Department of Recreation and Parks administers the state's RTP formula funds through its own procedures to solicit and select projects for funding.

California's RTP provides funds annually for recreational trails and trails-related projects. Applications for the current cycle are due on February 3, 2020. Eligible applicants are cities and counties, districts, state and federal agencies, and nonprofit organizations with management responsibilities of public lands. The maximum amount of RTP funds allowed for each project is 88 percent of the total project cost with a 12 percent local match.

MARAD America's Marine Highway Program (AMHP)

MARAD's America's Marine Highway Program (AMHP) funds the expansion of the use of America's navigable waters through the development and expansion of marine highway service options and facilitation of their further integration into the current U.S. surface transportation system, especially where water-based transport is the most efficient, effective, and sustainable option.

The FY 2019 AMHP program made $7 million available for grants to previously-designated Marine Highway Projects that support the development and expansion of documented vessels, or port and landside infrastructure. Applications were due in June 2019. USDOT awards AMHP grants to projects previously designated by USDOT as "Marine Highway Projects". A Marine Highway Project is a planned service, or expansion of an existing service, on a designated Marine Highway Route. Designation makes projects and highway routes eligible to apply for the $7 million for AMHP in FY 2019.

To establish a Marine Highway between the District and other locations as part of the Project, the District will need to apply for designation as a Marine Highway corridor, connector, or crossing. The FY 2020

AMHP NOFO is anticipated in June 2020 with applications due in September 2020. Contents of the application include a narrative that should not exceed 20 pages in length. Grant funds may be requested for eligible project planning activities; however, market-related studies are ineligible to receive Marine Highway grants.

US Department of Housing and Urban Development (HUD) Choice Neighborhoods Initiative Planning Grant Program

This Choice Neighborhoods Planning Grant program provides funding for planning and implementation of comprehensive neighborhood revitalization plans which focus on "transforming neighborhoods of poverty into functioning, sustainable mixed income neighborhoods with appropriate services, schools, public assets, transportation, and access to jobs." To achieve these core goals, communities must develop and implement a comprehensive neighborhood revitalization strategy, or Transformation Plan.

The program's FY 2019 Planning Grants NOFA was posted in April 2019 for $5 million in available funding with applications due in June 2019. The FY 2020 NOFA is anticipated to be issued by HUD by April 15, 2020 with applications due in June 2020.

Planning activities for the Project could be funded through the Choice Neighborhoods Initiative if it is made part of a larger, more comprehensive neighborhood revitalization planning effort.

National Park Service (NPS) Challenge Cost Share Program & Outdoor Recreation Legacy Partnership (ORLP) Program

The Challenge Cost Share Program is currently open with applications due on April 2019. The program is intended to support specific NPS mission-related projects that align with goals of local project partners and promote improved access and opportunities for outdoor recreation, environmental stewardship, and education in national parks, national trails, and wild and scenic rivers. The Project may be a fit for this program if an application could be approved and submitted by NPS staff in collaboration with project partners (educational institutions, private for-profit entities, or non-profit organizations). Partner organizations are required to equally match the Challenge Cost Share funding, which has a maximum grant award size of $25,000.

NPS's ORLP program funds development and planning to help create and improve state and locally-owned park and other outdoor recreation areas in ways that will help the public access or re-connect with the outdoors, particularly in urban neighborhoods that lack parks and recreational opportunities. In FY 2018, $13.3 million was made available for awards between $250,000 to $750,000. Applications were due in September 2018 from state and local government agencies in cooperation with the lead agency for the Land and Water Conservation Fund (LWCF) in each state, which, in California, is the California Department of Parks and Recreation. While ORLP is a national competitive grant program under the LWCF program, California's LWCF grants provide funding for the acquisition or development of land to create new outdoor recreation opportunities. Applications for the next cycle are due on February 3, 2020. The availability and timing of FY 2020 ORLP funds is not known, but once they become available, they could similarly fund acquisition and/or development of land to create new, or reinvigorate existing, public parks, and other outdoor recreation spaces in neighborhoods that are economically disadvantaged and are underserved or lacking in such opportunities. While planning is an eligible expense for ORLP funds, priority is given to projects that are well into or nearly completed with planning.

STATE PROGRAMS

Caltrans Transportation Planning Grants

Caltrans has issued Calls for Projects for these Senate Bill (SB) 1 planning grant funding programs:

- ***Sustainable Transportation Planning Grants:*** Sustainable Communities grants are intended to encourage local and regional planning that further state and regional goals with a grant minimum of $50,000 for Disadvantaged Communities and $100,000 for all others and grant maximum of $1 million. The FY 2020-21 cycle made $29.5 million available for local and regional multimodal transportation and land use planning projects that further the region's Regional Transportation Plan /

Sustainable Communities Strategy, contribute to the State's greenhouse gas (GHG) reduction targets, and assist in achieving the Caltrans Mission and Grant Program Overarching Objectives (sustainability, preservation, mobility, safety, innovation, economy, health, social equity). An 11.47% minimum match is required and may be in the form of an eligible in-kind contribution (e.g., staff time from the primary applicant counts as cash match). The FY 2020-21 cycle of the Strategic Partnership grants program made $4.5 million available to identify and address statewide, interregional, or regional transportation deficiencies on the State highway system in partnership with Caltrans. FY 2020-21 Sustainable Communities and Strategic Partnership grant applications were due October 17, 2019. The FY 2021-22 cycle for Sustainable Communities and Strategic Partnership grants will likely follow the same schedule with a call for applications in August 2020 and applications due October 2020.

- ***Adaptation Planning Grants:*** The overarching goal of this grant program is to support planning actions at local and regional levels that advance climate change adaptation efforts on the transportation system, especially efforts that serve the communities most vulnerable to climate change impacts. The program awarded $6 million in FY 2019-20 funds in May 2019. There is a grant minimum of $100,000 and maximum of $1 million. An 11.47% minimum match is required and may be in the form of an eligible in-kind contribution (e.g., staff time from the primary applicant counts as cash match). The next Adaptation Planning grant call for applications is anticipated in October 2019 with applications due in November/December 2019.

A future planning phase of the Project could be competitive under the Sustainable Transportation Planning Grant programs. Applications could target funding for studies examining the Freight Truck Geofencing, Port Freight and Navy Mobility Community Web Portal, Inland Port Facility Feasibility Study, Regional Truck Parking Strategy, Truck Parking Information Management System, and Truck Marshalling Yard components of the Project.

Caltrans Active Transportation Program (ATP)

Caltrans' Active Transportation Program (ATP) consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SRTS), into a single program with a focus to make California a national leader in active transportation. The ATP is administered by Caltrans' Division of Local Assistance, Office of State Programs. The purpose of ATP is to encourage increased use of active modes of transportation by achieving the following goals:

- Increase the proportion of trips accomplished by biking and walking.
- Increase safety and mobility for non-motorized users.
- Advance the active transportation efforts of regional agencies to achieve Greenhouse Gas (GHG) reduction goals, pursuant to SB 375 (of 2008) and SB 341 (of 2009).
- Enhance public health.
- Ensure that disadvantaged communities fully share in the benefits of the program.
- Provide a broad spectrum of projects to benefit many types of active transportation users.

Each ATP programming cycle includes four years of funding. Half of the available ATP funds for a given Cycle are distributed first through a statewide program. Following statewide program selection, MPOs are provided 40 percent of the Cycle funds to distribute under their own competitive program.

ATP funds can be used for construction and pre-construction phases of projects, as well as community engagement and active transportation planning. Competitive grant funding under ATP is a viable option to cover planning costs for Project components, including the Project's walkability improvements.

There is no local matching requirement for ATP. However, the program encourages the leveraging of additional funds for a project by considering leveraging in the evaluation criteria for larger capital projects. Selected ATP projects are often smaller, but awards can be relatively large. For example, in Cycle 4, the

largest award was for $23.2 million for a project in Los Angeles involving safety improvements, bicycle infrastructure, and speed reduction measures.

Projects that are located within and benefit Disadvantaged Communities score higher and much of the Harbor Drive corridor is within a SB 535 Disadvantaged Community, according to CalEnviroScreen 3.0. Nevertheless, Project components proposed for ATP funding should be assessed based on further Disadvantaged Communities analysis.

The previous application deadline in July 2018 was for Cycle 4 projects funded or programmed for FY 2019-20 to FY 2022-23. The next funding cycle – Cycle 5 – including FY 2021-22 to FY 2024-25 funding is anticipated to be announced in spring of 2020.

California Natural Resources Agency Urban Greening Program

Signed into law on September 14, 2016, SB 859 (Chapter 368, Statutes of 2016) created the Urban Greening Program, funded by the Greenhouse Gas Reduction Fund (GGRF, or state's "cap and trade" program) to support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. In 2019, the Agency allocated $19 million from the GGRF for the Urban Greening Program, specifically for green infrastructure projects that reduce GHG emissions and provide multiple benefits. The solicitation for Round 4 of the Urban Greening Grant Program is anticipated in March 2020.

All funded projects are required to show a net GHG benefit and provide multiple other benefits. In order to quantify GHG emission reductions, projects must include at least one of the following project activities: (1) Sequester and store carbon by planting trees; (2) Reduce building energy use by strategically planting trees to shade buildings; or (3) Reduce commute vehicle miles traveled by constructing bicycle paths, bicycle lanes or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools. Eligible projects include green streets and alleyways, non-motorized urban trails that provide safe routes for travel between residences, workplaces, commercial centers, and schools, and urban heat island mitigation and energy conservation efforts.

Up to 25 percent of a grantee's Urban Greenway Program funds may be spent on project management/non-construction (pre-implementation) costs, including CEQA compliance, environmental assessments, planning and design, outreach, architecture and engineering, construction plans, permitting, direct project administration and management. The Urban Greening Program could fund planning and/or construction of capital projects identified in the South Harbor Drive Multi-modal Corridor Study. This includes the Project's urban greening and walkability improvements, including sidewalk, trees and landscaping to increase canopy and improve environmental health. The District would need to partner with the public agencies with jurisdiction over Harbor Drive in order to apply.

California ReLeaf Social Equity Tree Planting Grant Program

The Social Equity Grant Program is funded by a grant from the California Department of Forestry and Fire Protection (CAL FIRE). The program supports projects that combat climate change. All funded projects must reduce GHGs.

The applicant must be an incorporated nonprofit organization or unincorporated community-based group, so a private partner is needed to apply. Money awarded can be spent on vegetation, the maintenance of project plantings during the grant period, community education and engagement costs, personnel, contractors and consultants, direct and indirect administrative costs. Emphasis will be placed on shovel-ready construction projects.

The matching fund amount is 25 percent to total project costs. The amount rewarded is between $10,000 to $75,000. Cycle 3 (2019) Social Equity Forest Improvement Grant Proposals were due on October 13, 2019. Cycle 4 (2020) grants could follow the same timeline in 2020.

California Strategic Growth Council Transformative Climate Communities (TCC) Program

The TCC Program is administered by Strategic Growth Council (SGC) in partnership with the California Department of Conservation (DOC). Round III of the TCC Program is funded by a FY 2019-2020 budget

appropriation from the Greenhouse Gas Reduction Fund and includes two types of grants: (1) Implementation Grants ($56.4 million) that will fund two neighborhood-level proposals that include multiple, coordinated projects that reduce greenhouse gas emissions and achieve other community benefits; and (2) Planning Grants ($600,000) that will fund three planning projects in communities that may be eligible for future TCC Implementation Grants and/or other California Climate Investment programs. The Round III application and Notice of Funding Availability is anticipated in November 2019 with applications due in February 2020.

For planning grant proposals, there must be at least two joint partners on the project with priority given to applicants that demonstrate strong and diverse partnerships, including with community-based organizations. The Planning Grants are intended to help communities increase their potential to successfully apply for and to implement future TCC Implementation Grant awards, or other California Climate Investment programs.

Coastal Conservancy Climate Ready Program

The Coastal Conservancy's Climate Ready Program is helping natural resources and human communities along California's coast and San Francisco Bay adapt to the impacts of climate change. The Conservancy is also working to capture GHGs from the atmosphere through the conservation of natural and working lands.

Through its Climate Ready Grants, the Conservancy has awarded $10.7 million for 57 projects. The Conservancy most recently awarded projects from Round 5 of the program in December 2018. Round 6 applications were due in July 2019. Round 7 (2020) applications will likely be due in summer 2020.

This grant provides funding for projects that can serve as pilots or models for climate adaptation. Examples of eligible projects include sea level rise adaptation planning, natural infrastructure, carbon sequestration, and urban greening. Urban greening projects include planning and implementation of inner-city projects that are creating shady retreats for residents, conserving rainwater, capturing stormwater pollution, and reducing air temperatures.

5.2 DISCRETIONARY GRANT FUNDING FOR PROJECT CONSTRUCTION

There are numerous federal discretionary grant funding sources that could be sought to cover construction costs for the Project components. Below are summaries of these funding opportunities.

FEDERAL SOURCES

USDOT Infrastructure for Rebuilding America (INFRA)

USDOT's freight-focused INFRA program, administered by the Build America Bureau, is authorized at $4.5 billion from Fiscal Year (FY) 2016 through FY 2020. USDOT awarded $759 million to 18 projects in the initial FY 2016 FASTLANE round, $1.5 billion for the FY 2017-2018 INFRA round, and $900 million for the FY 2019 round.

Unlike BUILD, INFRA is authorized under the FAST Act and tied to federal highway appropriations, which is not at risk of cuts or elimination. Thus, it can be viewed as a reliable potential source of project funding. In FY 2020, the program's authorized funding level is $1 billion. The FY 20 INFRA NOFO is anticipated to be issued in December 2019 with applications due in March 2020.

Under the FAST Act, a total of $500 million was set aside for non-highway freight projects for the five-year authorization period. After accounting for FY 19 awards, approximately $182 million of the multimodal cap remains available.

Like BUILD, INFRA is highly competitive. In the FY 17-18 round, USDOT received 234 applications and awarded 26. This high demand may be because of the fact that INFRA awards are bigger than BUILD awards. The last BUILD round capped awards at $25 million, while INFRA has no such cap. In fact, several awards each round exceed $100 million, including $184.1 million for Georgia's SR 400 Express Lanes project, the largest grant during the FY 2017-2018 INFRA round.

INFRA funds are available for projects and programs that leverage federal funds with Port operator revenues, improve safety, and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements. INFRA merit criteria include creating opportunities for all levels of government and the private sector to fund infrastructure, using innovative approaches to improve the necessary processes for building significant projects, and increasing accountability for the projects that are built. Applications require a benefit-cost analysis with projects scoring better if their benefit-cost ratio is above 1.0.

Nearly all components of the Project would be suitable for the INFRA program to the extent that they support national or regional economic vitality by providing freight safety, mobility, and economic benefits, leverages federal funds with non-federal and private funds, demonstrates innovation in environmental review and permitting, project delivery, or safety and technology. INFRA funds could support planning and other development phase preconstruction activities and public-private partnership assessments for the Project. However, priority for these competitive funds are given to construction activities.

MARAD Port Infrastructure Development Program

In FY 2019, Congress appropriated $293 million for MARAD's Port Infrastructure Development Program to make grants to improve the safety, efficiency, or reliability of the movement of goods into, out of, around, or within a coastal seaport, as well as the unloading and loading of cargo at a coastal seaport. Congress required the funding to be broken down into two categories: (1) $200 million to be made available for infrastructure improvements at all coastal seaports; and (2) $93 million to go to the 15 coastal seaports that handled the greatest number of loaded foreign and domestic twenty-foot equivalent units of containerized cargo in 2016, as identified by the U.S. Army Corps of Engineers.

Eligible projects are those within the boundaries of a coastal seaport or outside the boundaries of a coastal seaport and directly related to port operations or to an intermodal connection to a port. Examples of eligible seaport-related projects include road improvements both within and connecting to the port, as well as port related intelligent transportation system hardware and software that promote efficient port movements. While planning projects are not strictly prohibited, the program is intended to fund construction activities.

A minimum of 20 percent non-federal funding is required as local match. However, applications that offer greater non-federal match will be considered more competitive.

The program is likely to be continued in FY 2020 with House and Senate appropriations bills including $225 million and $91.6 million, respectively, for it. If the FY 2020 program follows the FY 2019 program's timeline, a NOFO could be issued in June 2020 with applications due in September 2020.

FTA Passenger Ferry Grant Program

The Passenger Ferry Grant Program provides competitive funding for projects that support passenger ferry systems in urbanized areas. These funds constitute a core investment in the enhancement and revitalization of public ferry systems in the nation's urbanized areas.

Funds are awarded based on factors such as:

- The age and condition of existing ferry boats, terminals, and related infrastructure;
- Benefits to riders, such as increased reliability;
- Project readiness; and
- Connectivity to other modes of transportation.

Funding is made available to designated recipients, eligible direct recipients of Section 5307 funds, States and federally recognized Tribes that operate a public ferry system in an urbanized area. Eligible activities include: supporting existing ferry service, establishing new ferry service, and repairing and modernizing ferry boasts, terminals, and related facilities and equipment. Funds may not be used for operating expenses, planning, or preventive maintenance.

The FTA Passenger Ferry Grant Program is different from FHWA's Construction of Ferry Boats and Ferry Terminal Facilities Formula Program (FBP), which makes federal-aid highway funds available to state transportation agencies to design and construct ferry boats and design, acquire right-of-way, and construct ferry terminal facilities.

In FY 2019, FTA awarded $32.8 million to nine projects. Awards ranged between $1.2 million to $5.9 million. The previous application deadline was April 15, 2019. The FY 2020 program is likely to include a similar level of funding and timeline.

If an appropriate project partner could be identified, the District could pursue FTA Passenger Ferry Grant Program funds to help establish a Marine Highway and passenger ferry service between the District and other locations as part of the Project.

STATE PROGRAMS

Senate Bill 1

Description

Senate Bill (SB) 1 (Beall, Chapter 5, Statutes of 2017), the Transportation Infrastructure and Economic Investment Act, enacted in April 2017, is a $6 billion funding package to improve the State's roads and transportation infrastructure. The revenues come from the elimination of the Board of Equalization's annual adjustment of the gas excise tax, restoration of the price-based gas excise tax rate to 17.3 cents, increasing and indexing the base gas excise tax by an additional 12 cents over three years, increasing the diesel excise tax by 20 cents and sales tax by 4 percent, an annual $100 fee for zero-emission vehicles, a vehicle registration adjustment of $38 per vehicle, restoration of existing weight fees, increasing the Cap and Trade allocation for transit, CalTrans efficiency improvements, and acceleration of General Fund loan repayment obligations.

SB 1 created the following programs administered by the CTC that may benefit the projects identified and prioritized by the District:

1. Local Partnership Program (LPP) Competitive Program

The Local Partnership Program rewards counties, cities, districts, and regional transportation agencies in which voters have approved fees or taxes solely dedicated to transportation improvements or that have enacted fees solely dedicated to transportation. For the three-year cycle covering Fiscal Years 2017-18, 2018-19 and 2019-20, $300 million in LPP Competitive Program funds were made available for Cycle 1 awards adopted by the California Transportation Commission (CTC) in May 2018. CTC received 90 applications seeking over $900 million, reflecting the high demand for LPP funds. Awarded projects included a variety of projects that provide multimodal transportation improvements in localities across the state. Collectively, the projects recommended will construct new transit stations, tracks for passenger rail, high occupancy vehicle and express lanes, active transportation improvements, traffic light synchronization, bus purchases, and local road improvements and rehabilitation. Cycle 2 will distribute $180 million in FY 2020/21 and 2021/22 funding in 2020. The Cycle 2 Call for Projects is anticipated in October 2019 with applications due in January 2020.

2. Trade Corridor Enhancement Program (TCEP)

TCEP funds infrastructure improvements on federally-designated Trade Corridors of National and Regional Significance, the Primary Freight Network, as identified in the California Freight Mobility Plan, and along other corridors that have a high volume of freight movement. The Program builds on the 2007 Proposition 1B Trade Corridors Improvement Fund program, as well as the 2014 California Freight

Mobility Plan and the 2015 California Sustainable Freight Action Plan. In January 2018, the CTC received 42 project nominations consisting of 55 individual projects seeking over $1.96 billion in Cycle 1 funding. In May 2018, it awarded $1.39 billion in federal and state freight funds for the initial 2018 TCEP Cycle 1 round to 28 projects valued at more than $4 billion. Cycle 2 applications will need to describe how projects meet performance metrics such as congestion, throughput, reliability, velocity, air quality and GHG, safety, economic development, and cost-effectiveness. The Cycle 2 Call for Projects is anticipated in March 2020 with applications due in June 2020.

3. Solutions for Congested Corridors Program (SCCP)

The primary objective of the SCCP is to fund projects designed to reduce congestion in highly traveled and highly congested corridors through performance improvements that balance transportation improvements, community impacts, and that provide environmental benefits. CTC established an initial funding cycle for SCCP as a 4-year (FY 2017-18 to FY 2020-21), $1 billion program from the $250 million available annually. 32 project applications were received by CTC in February 2018 for over $2.5 billion in requested funding, reflecting the demand for SCCP funds. CTC will make $250 million in SCCP Cycle 2 funds available annually. Any unused balance or savings generated will be added to the available funding in the following cycle. The Commission intends to program two years of funding in the Cycle 2 program for a $500 million pot covering FY 2021-22 and 2022-23. The Cycle 2 Call for Projects is anticipated in December 2019 with applications due in March 2020. Funding is available to projects that make specific performance improvements and are a part of a comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, and visitors to the area of the corridor while preserving the character of the local community and creating opportunities for neighborhood enhancement projects. All projects nominated for SCCP must be in a multimodal corridor plan. For Cycle 2, such plans can take the form of an existing plan, a plan update, a hybrid plan, or a new plan. In subsequent Cycles, all projects nominated for SCCP must be included in a comprehensive multimodal corridor plan consistent with the approved Comprehensive Multimodal Corridor Plan Guidelines. Cycle 2 SCCP funds will only fund the construction component of a project that will be ready to start construction by December 31, 2023. Projects will be considered for funding only if at time of adoption, the projects have completed CEQA/NEPA environmental review. No single award will exceed $100 million. Eligible projects include:

- Transit hubs to increase linked trips or multimodal transportation modes.
- Transit hubs or stations and nearby roadways providing accessibility for first mile and last mile connectivity to public transit systems.
- Acquisition of buses, rail cars, locomotives, or other rolling stock, including zero-emission buses.
- Safety improvements such as: wet pavement corrections, curve corrections, shoulder widening, high friction treatment, left turn channelization, safety barriers, new guardrail, end treatments and crash cushions, rumble strips, lighting, glare screen, rock fall mitigation, over crossing pedestrian fencing, or bikeways and crosswalk safety enhancements.
- Operational improvements such as: interchange and ramp modifications, auxiliary lanes for merging or weaving between adjacent interchanges, passing lanes, curve corrections and alignment improvements, truck climbing lanes, signals and/or intersection improvements, two-way left-turn lanes, channelization, turnouts, railroad at-grade crossings improvements or separations, shoulder widening.
- Projects that employ advanced and innovative technology, like Intelligent Transportation Systems.
- Projects that include supporting infrastructure for deployment of current and future technologies.
- California Natural Resources Agency Recreational Trails and Greenways Grant Program.

The Recreational Trails and Greenways Grant Program accepted applications for its most recent round until October 11, 2019. Approximately $27.7 million is available under this round of the program, which is

funded by Proposition 68. Applicants with the most competitive proposals will be invited to participate in the next level of the competitive process anticipated in mid-late December 2019.

Awards for individual projects are capped at $4 million. There are no minimum grant amounts. Eligible projects must provide non-motorized recreational infrastructure development and enhancements that promote new or alternate access to parks, waterways, outdoor recreational pursuits, and forested or other natural environments to encourage health-related active transportation and opportunities for Californians to reconnect with nature. This includes new non-motorized trails, new non-motorized trail segments, non-motorized bridges, trailhead facilities, and acquisition of land. Planning projects are ineligible.

Projects given priority consideration in funding decisions include those that leverage private, federal, or local funding or produce the greatest public benefit, propose to use, where feasible, the services of the California Conservation Corps or certified community conservation corps, and/or include water efficiencies, stormwater capture for infiltration or reuse, or carbon sequestration and greenhouse gas emission reduction features in the project design, where feasible.

California Wildlife Conservation Board Public Access Program

The Public Access Program provides grant funding for enduring projects that enhance public access to outdoor recreational activities such as boating, fishing, and hunting. Public access projects focus on creating meaningful outdoor experiences for all Californians. The 2019 Public Access Program will fund projects that enhance the public's boating experience, provide additional boating opportunities, improve boater amenities, and provide for wildlife-oriented recreation. Projects should provide public benefits, leverage funding to produce the greatest benefit, and provide access to natural and wild areas. Public Access projects which provide mobility-impaired and/or Americans with Disabilities Act (ADA) access are prioritized.

Program funds can be used for minor capital outlay and local assistance grants. The Program typically allocates approximately one million dollars annually, but could rise or fall each year, depending on annual appropriation.

Entities eligible to submit grant proposals include federal, state, and local government entities, nonprofit organizations, or public districts that manage and operate wildlife-oriented public access facilities or programs. Applications for the 2019 program were due in September 2019.

5.3 NEXT STEPS

Project and program implementation is a multi-faceted process and depending on the project's complexity, can be addressed in phases. Following the Corridor Study, the next steps include project planning and design, initiate grant writing to fund projects, and construction. A critical step is to continue building partnerships with agencies and organizations to help with grant application success. Potential next steps in project implementation includes the following:

- Preliminary design.
- Technical studies if required.
- Cost estimates.
- Funding sources.
- Environmental clearance documents
- Construction

Because the Harbor Drive Corridor has a multitude of proposed projects varying in complexity, phasing will be required as funding becomes available. Short-term projects typically have low construction costs, do not require the acquisition of right-of-way, and/or would only require a low leveled environmental clearance document (equivalent to a Categorical Exemption under the California Environmental Quality Act guidelines). Long-term projects are more complex and require more funding resources.

APPENDIX

A LITERATURE REVIEW DOCUMENT SUMMARY

Document	Year of Pub.	Summary
Interstate 805/5 South Corridor Study	2005	This study developed a transportation improvement strategy to enhance the mobility of inter-regional and regional trips for the entire Interstate 805 (I-805) corridor and the Interstate 5 (I-5) corridor south of State Route (SR) 54. This report presents the study's Need and Purpose, the development and evaluation of multimodal transportation alternatives, and the study recommendations. It also serves as Caltrans' project initiation document to advance the environmental clearance process.
Barrio Logan Truck Prohibition Resolution	2005	The Council of the City of San Diego passed a resolution, that pursuant to authority conferred by and in accordance with the provisions of San Diego Municipal Code section 85.04, the prohibition of commercial vehicles with a rated capacity of five (5) tons or more from using the streets listed in the resolution in the community of Barrio Logan.
SANDAG TCIF Grant Application for Freeway Access Improvements from the TAMT/NCMT	2008	SANDAG and the Port of San Diego nominated the access improvements and capacity expansion projects at the National City Marine Terminal (NCMT) as candidates for the California Transportation Commission (CTC) Trade Corridors Improvement Fund (TFIC) program of the Highway SAfety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006.
SDUPD TCIF Port Access Improvements	2008	The SDUPD with support of SANDAG and Caltrans produced a Supplemental Project Study Report that analyzed the 32nd at Harbor Drive Flyover Ramp project and the Vesta Street Bridge Project. These projects were determined to be of benefit to port access and eventually led to a SANDAG TIGER Grant Application in 2009.
SANDAG TIGER Grant Application for the Vesta Street Bridge and I-15 Direct Connector Ramps	2009	SANDAG nominated 32nd Street at Harbor Drive and Vesta Street Bridge-Port Access Improvements to the USDOT for the TIGER Discretionary Grant program. The nomination represents a vital intermodal linkage in a larger set of freight network improvements that seeks to be funded by the TIGER program.
NASSCO Shipbuilders Assessment to the American MHS	2009	This report provides a shipbuilder's assessment of America's Marine Highways (AMH), based on the body of knowledge as represented in current literature related to AMH, dialogue and debate at AMH conferences, insights from potential operators, and insights as a key stakeholderwith relevant experience.
SDUPD TAMT Final Historical Geotechnical Summary	2010	This report is an update of the November 1999 Historical Summary Report, a document prepared by Ninyo & Moore (1999b), for the 10th Avenue Marine Terminal, San Diego (site). The primary purpose of this study was to provide available historical information and geotechnical and environmental investigations performed at the site.
National City Bicycle Master Plan	2011	The National City Bicycle Master Plan presents a new vision for bicycle transportation, recreation, sustainability, and quality of life in National City, California. By guiding the City toward the creation of a comprehensive, regionally connected bicycle network, the Bicycle Master Plan addresses many of these issues and provides a strong framework for improving bicycling through 2030 and beyond. The Plan accommodates National City residents with various skill levels and incentives for bicycling.
Harbor Dr Bayshore Bikeway Parking Study (KTU+A)	2011	This study was commissioned by the Unified Port of San Diego to examine the feasibility and impacts of develop-ing resulting from the as yet unbuilt section of the Bayshore Bikeway along Harbor Drive between 32nd Street and Park Boulevard. The scope called for evaluating the impacts of bikeway development on adjacent on-street parking and adjacent off-street parking lots, bikeway layout and design issues, traffic flow and safety, and associated urban design features intended to improve the overall visual and functional environment.
Shipyard District Parking Structure Feasibility Study (KHA)	2011	The purpose of this study was to analyze the feasibility of a parking structure off tidelands in the Port District that would provide additional parking capacity to facilitate the shipyard industries' planned growth, accommodation of Navy and subcontractor parking and displaced parking from the Bayshore Bikeway. The study analyzed parking demand, parking impacts from the shipyards on the Barrio Logan streets surrounding the shipyards, possible short and long term parking structure alternatives and provided an opinion of probable parking structure construction costs.
National City General Plan	2011	The General Plan identifies a preferred future for National City and steers land use and development policies in that desired direction. It serves as the foundation for all planning decisions in National City. This is the first comprehensive revision of the city's General Plan in thirteen years.
TAMT Freight Action Plan	2013	This project proposal is for Phase II of the proposed TAMT Redevelopment Plan, which consists of the development and implementation of a Consolidated Bulk Facility (CBF) for the import and export of clean dry bulk products at the Port of San Diego's Tenth Avenue Marine Terminal.

City of San Diego Bicycle Master Plan	2013	The San Diego Bicycle Master Plan (Plan) serves as a policy document to guide the development and maintenance of San Diego's bicycle network, including all roadways that bicyclists have the legal right to use, support facilities, and non-infrastructure programs over the next 20 years.
Port of San Diego Climate Action Plan	2013	The Climate Action Plan (CAP) developed by the San Diego Unified Port District (the Port) provides the framework for achieving its goals for the reduction of greenhouse gas (GHG) emissions. As a trustee of public lands surrounding San Diego Bay, the Port is responsible for planning and preparing for future impacts of climate change on its environment. The CAP identifies policies and measures to reduce GHG emissions.
Barrio Logan Community Plan and Draft Update	2013	The Barrio Logan Community Plan and Local Coastal Program (Plan) is designed to guide growth and redevelopment within Barrio Logan. The Plan is a revision of the Barrio Logan/Harbor 101 Community Plan adopted by the City Council in November 1978 and incorporates a revision to the Barrio Logan Local Coastal Program Land Use Plan adopted by the San Diego City Council in November 1979. Any amendments, additions or deletions to this plan will require that the Planning Commission and City Council follow the City of San Diego General Plan (General Plan) procedures regarding plan amendments.
Barrio Logan Public Facilities Financing Plan	2013	This plan supersedes the previously approved Financing Plan. The facilities listed in this Financing Plan will be needed over the next approximately twenty one years when full community development is anticipated. The Barrio Logan Community Plan is a guide for future development within the community and together with this Financing Plan, serves to determine the public facility needs of the community.
West Coast Marine Highway Market Analysis	2014	The West Coast Corridor Coalition sponsored the M-5 Marine Highway Corridor study to determine the market and operational viability of Marine Highway services on the West Coast. Such services should be economically and operationally attractive to shippers and able to obtain sufficient cargo volumes in the marketplace. Operational, utilization, and cost parameters for six potential Marine Highway services were developed for the study, using a market analysis of cargo routing data from the Federal Highways Administration's (FHWA) Freight Analysis Framework (FAF3).
San Diego Port Master Plan Update Assessment Report: Vision Statement and Guiding Principles	2015	At the request of the Board of Commissioners and the leadership of Chair Ann Moore, this high level overview of strengths and weakness, opportunities and constraints (as of 2013), and a variety of ideas posited by the public and private sectors, will be the basis for a series of Master Planning principles that will define the efforts needed for an update of the current Port Master Plan. This assessment combines the views of the community, the experience of the design team and input from the Port.
National City Marine Terminal Optimization Study	2015	The overall objective of the National City Marine Terminal Optimization Study was to provide market driven port terminal optimization concepts for National City Marine Terminal (NCMT). The NCMT Optimization Study evaluates and discusses such topics as identification of key strategies and options, market forecasts, and other topics.
SANDAG San Diego Forward: Regional Plan	2015	The plan is built upon a forecast that lays out how our region will grow over time – how many people will be added, where they will live, and where they will work. Based on the general plans of the region's 18 cities and the county, the Regional Growth Forecast tells us more than just how many people our region will need to support – it tells us about those people, and how their needs and desires may change over time.
Barrio Logan Shipyard Parking Study (KTU+A)	2015	The Port of San Diego Barrio Logan Shipyard Parking Study seeks to validate and quantify Barrio Logan parking impacts associated with the area's shipbuilders (CMSD, BAE, and NASSCO). The Barrio Logan Shipyard Parking Study, was conducted to supplement prior studies and identify short and mid-term, non-capital intensive parking recommendations.
American Association of Port Authorities (AAPA) State of Freight Infrastructure Survey	2016	The purpose of AAPA's 2015 Port Surface Freight Infrastructure Survey is to quantify the baseline need for investment in port infrastructure connecting the United States' deep-draft seaports to the rest of the nation's freight transportation system. The survey results reflect responses to questions asked of AAPA's 83 U.S. member public ports in the six months leading up to the publication of this report.
National City Balanced Use Study	2016	This report summarizes the different steps that were undertaken to develop a balanced land use configuration. Development principles and design parameters were formulated to guide the development of a balanced land use configuration. UDP International worked closely with the Port staff to develop the preliminary land use configuration alternatives.
TAMT Environmental Impact Report and Appendices	2016	The District is the Lead Agency, as defined under California Environmental Quality Act (CEQA) Guidelines Section 15050, because it has principal responsibility for carrying out and approving the proposed project. As Lead Agency, the District also has primary responsibility for complying with CEQA. Therefore, the Board of Port Commissioners (Board), as the decision-making body of the District, is required to consider the information contained in the Final Environmental Impact Report (EIR) prior to approving the proposed project and issuing the CDP.

Building Healthy Corridors: Transforming Urban and Suburban Arterials into Thriving Places	2016	Building Healthy Corridors: Transforming Urban and Suburban Arterials into Thriving Places explores strategies for transforming commercial corridors—found in nearly every community across the United States—into places that support the health of the people who live, work, and travel along them. This report is the result of a two-year project that involved partnerships with four communities in the United States that are working to improve a specific corridor in ways that positively affect health. This report serves as a resource and reference for those who are undertaking corridor redevelopment efforts; it highlights the importance of health in decision-making processes; and it provides guidance, strategies, and insights for reworking corridors in health-promoting ways.
CTC Freight Investment Program	2017	The objective of the California Freight Investment Program is to fund projects which improve the efficient movement of freight on designated corridors throughout the state and to support the goals outlined in the National Highway Freight Program, the California Freight Mobility Plan, and the guiding principles in the California Sustainable Freight Action Plan.
Department of Transportation Intermodal Study	2017	This report comprises a review of the existing and emerging literature and data sources for assessing intermodal connectors in the United States. The goal is to help the United States Department of Transportation (USDOT) understand how freight intermodal connectors currently are being used by industry; how that use is changing due to emerging logistics trends, and what the implications are for existing designated intermodal connectors; the available data and resources to assess the performance of freight connector routes; and any "lessons learned" from recent experiences in successfully improving freight intermodal connectors. The results of this work will inform future tasks in this project, including case study selection and the assessment of intermodal connector condition and performance.
SDUPD Information Packet to the Board for the TAMT	2017	Information delivered to the board as of April 2017 includes: Investment Portfolio and Cash Rfeports as of March 31, 2017; Summary of April 14, 2017 Arts and Culture Advisory Committee Meeting; Creek to Bay Clean up April 2017 Memo; Status Update to the Bariro Logan Community Planning Group on the FEIR and Mitigation Measures for the Tenth Avenue Marine Terminal Redevelopment Plan and Demolition and Initial Rail Component Project; Primo Wind Earth Day Demonstration memo; Chula Vista Wildlife Advisory Group September 2016 Memo; Chula Vista Bayfront Settlement Agreement Update Memo
TAMT Updated Access Memorandum	2017	The Department of Transportation (Department) recommends that the California Transportation Commission (Commission) amend the Trade Corridor Improvement Fund (TCIF) baseline agreement for Project 70 – 10th Avenue/Harbor Drive Grade-Separated Improvements (PPNO TC70) in San Diego County.
Port of San Diego Master Plan	2017	This document is intended to provide the official planning policies, consistent with a general statewide purpose, for the physical development of the tide and submerged lands conveyed and granted in trust to the San Diego Unified Port District. The planning policies are expressed graphically on the official Master Plan and Precise Plan Maps and in written form in this document.
Green Port Month Proclamation	2017	Resolution proclaiming the San Diego Unified Port District's Green Port Month is celebrating annually in September.
City of National City Downtown Specific Plan	2017	The Specific Plan's purpose is to provide a guiding policy document to support smart growth and the re-vitalization of downtown. This is accomplished through encouraging and facilitating appropriate development, enhancing the public realm, improving mobility, effectively managing parking, providing a more streamlined development process, and continuing to preserve historic and character defining buildings.

APPENDIX

B TRAFFIC COUNTS, ADJUSTMENTS & SIGNAL TIMING SHEETS

HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

ADT Count Observations & Existing Condition Volume Development

GENERAL NOTES

Based on ADT observations along Harbor Drive and 28th, 32nd, and 8th streets, peak hours appear to occur differently at intersections at 28th Street and North of 28th Street vs 32nd Street and South of 32nd Street. These sections have been described from here forward as Harbor North (containing intersections North of 32nd Street) and Harbor South (containing 32nd Street and all intersections south of 32nd Street)

HARBOR NORTH

Based on ADT counts at 28th and Cesar Chavez the peak Inbound ADT occurs at 5:15 AM. 1020 vehicles enter from 28th and Cesar Chavez combined at 5:15 AM. Conversely, the outbound is significantly less at 5:15 AM (~835 vehicles less). While the net difference is only approximately ~185 vehicles more in the study area than previously studied, the peak directional nature of these volumes needs to be accounted for when analyzing delay and travel times within the study area. As such, volume balancing was conducted at 5:15 from the original CRA counts to create the new TMCs for Harbor Drive North.

In the PM, the peak hour appears to be around 4:30 pm. The outbound peak in the PM actually trends closer to 3:30 pm but the total number of outbound vehicles from the Port and from Harbor Drive is still significantly less than the number of vehicles inbound. This is primarily due to traffic heading South-Eastbound on Harbor Drive (likely to bypass traffic on I-5). This evidenced by ADT directional peaks. The outbound peak on 28th Street is at 3:30 pm and about 100 greater than previously reported. Similarly, the outbound peak on Harbor North is at 2:30 pm and about 40 greater than previously reported. However, the inbound from Harbor Drive is at 4:30 pm and about 460 greater than previously reported. To account for the greatest amount of traffic within the study area and to account for the dominant movement in the peak hour, a peak hour of 4:30 pm was adjusted for and incorporated for the Harbor North Section.

HARBOR SOUTH

Based on ADT counts on 32nd Street, 8th Street, and Harbor Drive near I-5, the AM inbound/outbound peaks differ, occurring around 6-6:30. As a result inbound/outbound TMC volumes are taken directly from the TMC counts and the resulting peak hour results.

In the PM Peak, the peak hour appears to start between 2:30 and 3:30 PM. As a result, the inbound/outbound TMC volumes are also taken directly from the TMC counts.

FINAL NOTES

The peak hour discussion listed above set the peak hours for HCM Peak Hour Analysis that is to be conducted. However, for travel time analysis, some routes involve travel between Harbor North and Harbor South. Because the peak issue occurs differently depending on where along Harbor Drive a user is, volume balancing was conducted after HCM analysis to provide a more balanced network. Additional trips were flushed in each direction on Harbor drive to account for excess or needed trips. This was done as Harbor Drive is the only street shared by both Harbor North and Harbor South and is the primary arterial for movement within the study area. By balancing by adding trips onto Harbor Drive, this provides a conservative estimate for the current condition of Harbor Drive. Final turning movement volumes can be found in the individual Synchro sheets in Appendix D.

CLASSIFICATION

Harbor Dr from Beardsley St to Cesar Chavez Parkway

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_001

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	187	21	1	6	0	0	0	3	0	0	0	0	218
01:00	0	105	13	1	4	0	0	0	1	0	0	0	0	124
02:00	0	72	10	2	3	1	0	0	2	0	0	0	0	90
03:00	0	110	15	0	4	0	0	0	2	0	0	0	0	131
04:00	1	266	35	0	9	1	0	1	3	0	0	0	0	316
05:00	2	524	84	2	18	2	0	1	7	0	0	0	0	640
06:00	3	844	119	1	40	3	0	3	11	0	0	0	0	1024
07:00	3	1093	139	4	45	1	0	5	16	0	0	0	0	1306
08:00	4	1003	141	4	48	1	0	5	28	0	0	0	0	1234
09:00	3	830	117	2	40	2	0	4	25	0	0	0	0	1023
10:00	5	718	109	4	33	8	0	3	40	0	0	0	0	920
11:00	3	765	118	5	38	2	0	6	26	0	0	0	0	963
12:00 PM	5	688	111	4	31	3	0	6	33	0	0	0	0	881
13:00	6	802	104	7	40	2	0	3	29	0	0	0	0	993
14:00	3	822	123	3	42	8	0	2	31	0	0	0	0	1034
15:00	5	1015	131	5	42	1	1	4	35	0	0	0	0	1239
16:00	5	1142	141	4	39	1	1	6	24	0	0	0	0	1363
17:00	4	1099	131	7	41	3	1	3	26	0	0	0	0	1315
18:00	6	984	122	5	37	4	1	5	32	0	0	0	0	1196
19:00	4	987	147	4	41	4	2	4	30	0	0	0	0	1223
20:00	2	663	83	2	31	1	0	1	12	0	0	0	0	795
21:00	2	639	75	3	19	0	1	1	7	0	0	0	0	747
22:00	2	669	74	2	19	2	0	2	9	0	0	0	0	779
23:00	1	541	64	0	21	1	0	2	10	0	0	0	0	640
Totals	69	16568	2227	72	691	51	7	67	442					20194
% of Totals	0%	82%	11%	0%	3%	0%	0%	0%	2%					100%

AM Volumes	24	6517	921	26	288	21	0	28	164	0	0	0	0	7989
% AM	0%	32%	5%	0%	1%	0%		0%	1%					40%
AM Peak Hour	10:00	07:00	08:00	11:00	08:00	10:00		11:00	10:00					07:00
Volume	5	1093	141	5	48	8		6	40					1306
PM Volumes	45	10051	1306	46	403	30	7	39	278	0	0	0	0	12205
% PM	0%	50%	6%	0%	2%	0%	0%	0%	1%					60%
PM Peak Hour	13:00	16:00	19:00	13:00	14:00	14:00	19:00	12:00	15:00					16:00
Volume	6	1142	147	7	42	8	2	6	35					1363

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%
	2540		13%	1874		9%	2678		13%	13102		65%

Classification Definitions

1 Motorcycles
2 Passenger Cars
3 2-Axle, 4-Tire Single Units
4 Buses
5 2-Axle, 6-Tire Single Units
6 3-Axle Single Units
7 > =4-Axle Single Units
8 <=4-Axle Single Trailers
9 5-Axle Single Trailers
10 >=6-Axle Single Trailers
11 <=5-Axle Multi-Trailers
12 6-Axle Multi-Trailers
13 >=7-Axle Multi-Trailers

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

PREPARED BY: PACIFIC TECHNICAL DATA, LLC

DATE: 04/19/18 THURSDAY AREA: HARBOR DRIVE SD

JOB #: PTD18-0420-03 LOCATION: HARBOR DRIVE - CESAR CHAVEZ PKWY TO SAMPSON STREET

AM	EASTBOUND							WESTBOUND							PM	EASTBOUND							WESTBOUND						
TIME	1	2	3	4	5	6	TOTAL	1	2	3	4	5	6	TOTAL	Time	1	2	3	4	5	6	TOTAL	1	2	3	4	5	6	TOTAL
0:00	14	0	0	1	0	0	15	4	0	0	0	0	0	4	12:00	57	6	2	1	0	0	66	42	3	1	2	0	0	48
0:15	12	0	0	1	0	0	13	3	0	0	0	0	0	3	12:15	55	4	0	2	0	0	61	56	1	4	8	0	0	69
0:30	9	0	0	0	0	0	9	3	0	0	0	0	0	3	12:30	72	4	1	3	0	0	80	45	1	2	6	0	0	54
0:45	7	2	0	0	0	0	9	7	1	0	1	0	0	9	12:45	48	4	1	8	0	0	61	41	8	1	7	0	0	57
1:00	3	0	0	0	0	0	3	2	0	0	0	0	0	2	13:00	69	3	3	8	0	0	83	46	3	1	1	0	0	51
1:15	4	0	0	4	0	0	8	5	0	0	0	0	0	5	13:15	55	1	0	7	0	0	63	40	5	2	5	0	0	52
1:30	5	0	0	0	0	0	5	1	0	1	0	0	0	2	13:30	69	2	0	5	0	0	76	41	1	0	5	0	0	47
1:45	5	0	0	0	0	0	5	4	0	0	8	0	0	12	13:45	59	7	2	8	0	0	76	41	1	2	3	0	0	47
2:00	6	0	0	0	0	0	6	2	0	0	0	0	0	2	14:00	63	3	1	7	0	0	74	53	2	2	5	0	0	62
2:15	7	0	0	1	0	0	8	1	0	0	1	0	0	2	14:15	85	2	0	3	0	1	91	40	13	0	6	0	0	59
2:30	12	1	0	0	0	0	13	7	0	0	0	0	0	7	14:30	113	7	1	8	0	0	129	76	5	0	4	0	2	87
2:45	12	0	0	0	0	0	12	5	1	0	0	0	0	6	14:45	105	8	0	7	0	1	121	47	3	2	4	0	0	56
3:00	3	0	0	0	0	0	3	1	0	0	0	0	0	1	15:00	116	4	1	1	0	1	123	63	2	3	4	0	1	73
3:15	3	0	0	0	0	0	3	1	1	0	0	0	0	2	15:15	124	1	1	5	0	1	132	90	2	3	4	0	0	99
3:30	4	1	0	0	0	0	5	4	0	0	0	0	0	4	15:30	138	5	0	3	0	0	146	67	0	3	2	0	0	72
3:45	7	0	0	0	0	0	7	5	1	0	0	0	0	6	15:45	220	11	1	8	0	3	243	56	1	1	6	1	0	65
4:00	3	0	0	1	0	0	4	8	1	0	1	0	0	10	16:00	185	2	2	9	0	0	198	59	2	1	4	0	0	66
4:15	11	0	0	0	0	0	11	17	2	0	1	0	1	21	16:15	211	1	0	6	0	0	218	62	3	2	1	0	0	68
4:30	16	0	0	4	0	1	21	9	1	0	2	0	1	13	16:30	270	5	1	9	0	0	285	56	1	1	0	0	0	58
4:45	44	0	0	1	0	1	46	11	0	1	4	0	1	17	16:45	286	1	2	2	0	1	292	43	4	1	3	0	0	51
5:00	72	1	0	1	0	1	75	15	4	1	3	0	1	24	17:00	204	2	0	5	0	0	211	57	3	1	2	0	0	63
5:15	108	0	0	3	0	1	112	19	2	0	1	0	1	23	17:15	255	2	1	4	0	1	263	38	0	0	4	0	0	42
5:30	155	1	0	3	0	1	160	19	2	0	2	0	1	24	17:30	192	1	0	5	0	0	198	41	0	2	3	0	1	47
5:45	200	3	0	2	0	2	207	24	2	0	1	0	0	27	17:45	116	3	1	1	0	1	122	48	1	0	1	0	1	51
6:00	152	1	0	3	0	0	156	14	2	1	2	0	0	19	18:00	99	0	1	2	0	1	103	46	2	0	0	0	0	48
6:15	111	2	0	0	0	0	113	36	6	1	4	0	0	47	18:15	75	3	0	1	0	0	79	26	3	0	0	0	1	30
6:30	98	2	0	2	0	0	102	58	5	1	4	0	0	68	18:30	64	0	0	0	0	0	64	32	1	0	1	0	0	34
6:45	66	3	0	1	0	0	70	98	4	1	3	0	0	106	18:45	43	1	0	0	0	0	44	27	2	0	3	0	0	32
7:00	69	0	0	2	0	0	71	144	30	5	2	0	1	182	19:00	44	1	0	5	0	0	50	33	0	0	1	0	0	34
7:15	50	0	0	2	0	0	52	192	11	3	5	0	0	211	19:15	43	0	0	0	0	0	43	23	1	0	1	0	0	25
7:30	49	2	1	2	0	0	54	206	11	1	8	0	0	226	19:30	44	1	0	0	0	0	45	24	0	0	0	0	0	24
7:45	44	5	0	1	0	0	50	211	11	1	3	0	0	226	19:45	51	0	0	3	0	0	54	20	1	0	0	0	0	21
8:00	31	1	0	2	0	0	34	147	7	1	5	0	0	160	20:00	37	1	1	2	0	0	41	35	0	0	0	0	0	35
8:15	21	3	0	3	0	0	27	115	21	2	9	0	0	147	20:15	38	0	0	0	0	0	38	26	3	0	1	0	0	30
8:30	30	11	0	5	0	0	46	99	12	1	4	0	1	117	20:30	44	0	0	2	0	0	46	23	1	0	1	0	0	25
8:45	35	5	0	4	0	0	44	69	4	5	6	0	0	84	20:45	24	0	0	3	0	0	27	23	0	0	2	0	0	25
9:00	28	2	0	12	0	0	42	43	3	3	5	0	0	54	21:00	36	1	0	1	0	0	38	19	0	0	0	0	0	19
9:15	36	5	2	4	0	0	47	49	4	5	6	0	0	64	21:15	42	1	0	2	0	0	45	22	0	0	1	0	0	23
9:30	46	1	0	8	0	0	55	27	10	1	4	0	0	42	21:30	41	1	0	1	0	0	43	18	0	1	1	0	0	20
9:45	40	8	2	4	0	0	54	42	8	2	6	0	3	61	21:45	22	0	0	2	0	0	24	20	1	0	0	0	0	21
10:00	54	10	3	7	0	0	74	44	5	2	4	0	0	55	22:00	21	0	0	0	0	0	21	31	1	0	0	0	0	32
10:15	45	6	0	8	0	0	59	50	4	3	7	0	0	64	22:15	21	0	0	0	0	0	21	9	0	0	0	0	0	9
10:30	51	1	0	3	0	0	55	44	7	5	3	0	0	59	22:30	27	0	0	0	0	0	27	23	0	0	0	0	0	23
10:45	40	6	2	3	0	0	51	48	3	2	3	0	1	57	22:45	23	0	0	0	0	0	23	11	1	0	0	0	0	12
11:00	59	5	2	11	0	0	77	59	3	1	6	0	0	69	23:00	30	1	0	0	0	0	31	15	1	0	0	0	0	16
11:15	62	11	0	11	0	0	84	57	1	2	6	0	0	66	23:15	17	0	0	0	0	0	17	9	0	0	0	0	0	9
11:30	52	4	1	7	0	0	64	45	3	0	5	0	0	53	23:30	22	0	0	0	0	0	22	10	0	0	1	0	0	11
11:45	53	1	0	8	0	0	62	49	5	3	10	0	0	67	23:45	16	0	0	0	0	0	16	10	1	0	0	0	0	11
TOTAL	2,044	104	13	135	0	7	2,303	2,123	198	55	145	0	12	2,533	TOTAL	4,091	100	23	149	0	11	4,374	1,783	84	36	103	1	6	2,013
				AM PEAK HOUR			5:30 AM				AM PEAK HOUR			7:00 AM					PM PEAK HOUR			4:30 PM					PM PEAK HOUR		2:30 PM
				AM PEAK VOLUME			636				AM PEAK VOLUME			845					PM PEAK VOLUME			1,051					PM PEAK VOLUME		315

DAILY TOTAL	6,135	204	36	284	0	18	6,677	3,906	282	91	248	1	18	4,546															
% OF TOTAL	91.9%	3.1%	0.5%	4.3%	0.0%	0.3%	100.0%	85.9%	6.2%	2.0%	5.5%	0.0%	0.4%	100.0%															

CLASS 1	CLASS 4
CLASS 2	CLASS 5
CLASS 3	CLASS 6

CLASSIFICATION

Harbor Dr from Sampson St to Schley St

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_003

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	49	9	0	5	1	0	1	2	0	0	0	0	67
01:00	0	42	4	0	3	0	0	0	1	0	0	0	0	50
02:00	0	22	4	0	2	0	0	0	1	0	0	0	0	29
03:00	0	47	12	0	5	0	1	0	2	0	0	0	0	67
04:00	0	106	23	0	9	1	1	0	4	0	0	0	0	144
05:00	2	366	71	5	38	3	1	1	15	0	0	0	0	502
06:00	3	544	117	6	70	4	0	6	24	0	0	0	0	774
07:00	5	689	135	7	83	7	0	2	25	0	0	0	0	953
08:00	3	562	136	7	86	5	0	2	30	0	0	0	0	831
09:00	3	441	103	4	61	3	0	2	43	0	0	0	0	660
10:00	4	432	96	5	60	5	1	3	44	0	0	0	0	650
11:00	4	465	101	2	55	3	0	2	28	0	0	0	0	660
12:00 PM	2	410	92	4	48	5	0	3	20	0	0	0	0	584
13:00	5	471	105	4	56	4	0	5	24	0	0	0	0	674
14:00	5	566	135	3	64	5	0	2	32	0	0	0	0	812
15:00	6	580	116	7	46	4	0	5	27	0	0	0	0	791
16:00	5	667	103	4	42	5	0	3	21	0	0	0	0	850
17:00	5	624	93	5	39	5	0	2	19	0	0	0	0	792
18:00	3	447	83	3	36	2	0	4	24	0	0	0	0	602
19:00	2	313	65	2	26	2	0	3	13	0	0	0	0	426
20:00	2	271	52	2	22	2	0	4	9	0	0	0	0	364
21:00	1	212	34	0	15	1	0	0	7	0	0	0	0	270
22:00	0	239	44	1	18	1	0	1	11	0	0	0	0	315
23:00	1	136	26	1	10	2	0	0	7	0	0	0	0	183
Totals	61	8701	1759	72	899	70	4	51	433					12050
% of Totals	1%	72%	15%	1%	7%	1%	0%	0%	4%					100%

AM Volumes	24	3765	811	36	477	32	4	19	219	0	0	0	0	5387
% AM	0%	31%	7%	0%	4%	0%	0%	0%	2%					45%
AM Peak Hour	07:00	07:00	08:00	07:00	08:00	07:00	03:00	06:00	10:00					07:00
Volume	5	689	136	7	86	7	1	6	44					953
PM Volumes	37	4936	948	36	422	38	0	32	214	0	0	0	0	6663
% PM	0%	41%	8%	0%	4%	0%		0%	2%					55%
PM Peak Hour	15:00	16:00	14:00	15:00	14:00	12:00		13:00	14:00					16:00
Volume	6	667	135	7	64	5		5	32					850

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%
	1784		15%	1258		10%	1642		14%	7366		61%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

CLASSIFICATION

Harbor Dr from Schley St to 28th St

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_004

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	42	12	0	1	1	0	1	0	0	0	0	0	57
01:00	0	53	8	0	2	0	0	0	2	0	0	0	0	65
02:00	0	24	5	0	2	0	0	0	2	0	0	0	0	33
03:00	0	45	9	0	1	0	0	0	2	0	0	0	0	57
04:00	1	121	14	0	11	0	0	0	1	0	0	0	0	148
05:00	3	389	87	4	35	1	2	0	7	0	0	0	0	528
06:00	6	505	114	8	61	5	1	1	19	0	0	0	0	720
07:00	4	649	131	5	75	4	1	4	21	0	0	0	0	894
08:00	4	500	128	5	70	2	1	2	29	0	0	0	0	741
09:00	3	413	123	3	64	3	2	5	40	0	0	0	0	656
10:00	3	369	106	6	63	5	2	5	49	0	0	0	0	608
11:00	4	452	100	4	69	4	0	3	25	0	0	0	0	661
12:00 PM	4	442	107	5	57	3	0	6	26	0	0	0	0	650
13:00	4	411	125	3	73	4	0	3	25	0	0	0	0	648
14:00	7	583	131	9	64	3	2	2	18	0	0	0	0	819
15:00	6	573	117	6	46	3	0	3	14	0	0	0	0	768
16:00	5	651	78	3	42	7	3	1	10	0	0	0	0	800
17:00	4	588	73	2	29	7	1	5	18	0	0	0	0	727
18:00	4	447	62	2	26	3	0	0	8	0	0	0	0	552
19:00	2	337	43	2	17	1	0	1	11	0	0	0	0	414
20:00	1	274	32	2	14	0	0	1	5	0	0	0	0	329
21:00	0	201	23	0	12	0	0	0	1	0	0	0	0	237
22:00	1	239	33	1	9	1	0	0	2	0	0	0	0	286
23:00	1	181	34	0	9	1	0	0	2	0	0	0	0	228
Totals	**67**	**8489**	**1695**	**70**	**852**	**58**	**15**	**43**	**337**					**11626**
% of Totals	1%	73%	15%	1%	7%	0%	0%	0%	3%					100%

AM Volumes	28	3562	837	35	454	25	9	21	197	0	0	0	0	5168
% AM	0%	31%	7%	0%	4%	0%	0%	0%	2%					44%
AM Peak Hour	06:00	07:00	07:00	06:00	07:00	06:00	05:00	09:00	10:00					07:00
Volume	6	649	131	8	75	5	2	5	49					894
PM Volumes	39	4927	858	35	398	33	6	22	140	0	0	0	0	6458
% PM	0%	42%	7%	0%	3%	0%	0%	0%	1%					56%
PM Peak Hour	14:00	16:00	14:00	14:00	13:00	16:00	16:00	12:00	12:00					14:00
Volume	7	651	131	9	73	7	3	6	26					819

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	1635	14%	1298	11%	1527	13%	7166	62%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

CLASSIFICATION

Harbor Dr from 28th St to Belt St

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_005

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	109	15	0	2	0	0	0	1	0	0	0	0	127
01:00	1	59	7	0	3	0	0	0	0	0	0	0	0	70
02:00	0	37	3	0	1	0	0	0	0	0	0	0	0	41
03:00	0	87	14	0	8	1	0	0	0	0	0	0	0	110
04:00	1	227	50	2	13	2	1	0	0	0	0	0	0	296
05:00	7	810	166	7	40	5	2	2	11	0	0	0	0	1050
06:00	5	1006	185	11	78	3	2	4	16	0	0	0	0	1310
07:00	5	1028	175	2	85	6	0	3	15	0	0	0	0	1319
08:00	5	785	164	5	99	5	0	3	22	0	0	0	0	1088
09:00	2	617	136	4	67	4	0	3	45	0	0	0	0	878
10:00	5	641	174	5	70	5	3	2	30	0	0	0	0	935
11:00	6	868	185	5	81	3	0	2	21	0	0	0	0	1171
12:00 PM	4	821	123	5	72	2	0	5	21	0	0	0	0	1053
13:00	4	713	170	3	73	4	1	4	22	0	0	0	0	994
14:00	5	982	201	9	70	4	0	5	30	0	0	0	0	1306
15:00	6	1032	177	4	50	3	0	3	17	0	0	0	0	1292
16:00	6	999	151	6	51	6	1	2	16	0	0	0	0	1238
17:00	3	901	117	3	41	4	0	2	16	0	0	0	0	1087
18:00	4	589	82	3	35	2	0	2	16	0	0	0	0	733
19:00	1	449	71	0	23	2	0	1	7	0	0	0	0	554
20:00	2	404	67	2	26	2	0	0	7	0	0	0	0	510
21:00	0	276	47	2	21	1	0	0	4	0	0	0	0	351
22:00	1	257	40	1	9	0	0	0	3	0	0	0	0	311
23:00	0	186	26	1	11	0	0	0	2	0	0	0	0	226
Totals	73	13883	2546	80	1029	64	10	43	322					18050
% of Totals	0%	77%	14%	0%	6%	0%	0%	0%	2%					100%

AM Volumes	37	6274	1274	41	547	34	8	19	161	0	0	0	0	8395
% AM	0%	35%	7%	0%	3%	0%	0%	0%	1%					47%
AM Peak Hour	05:00	07:00	06:00	06:00	08:00	07:00	10:00	06:00	09:00					07:00
Volume	7	1028	185	11	99	6	3	4	45					1319
PM Volumes	36	7609	1272	39	482	30	2	24	161	0	0	0	0	9655
% PM	0%	42%	7%	0%	3%	0%	0%	0%	1%					53%
PM Peak Hour	15:00	15:00	14:00	14:00	13:00	16:00	13:00	12:00	14:00					14:00
Volume	6	1032	201	9	73	6	1	5	30					1306

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%
	2407		13%	2047		11%	2325		13%	11271		62%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

CLASSIFICATION

Harbor Dr from Belt St to 32nd St

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_006

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	114	25	1	6	0	0	0	2	0	0	0	0	148
01:00	0	63	13	0	5	0	0	0	1	0	0	0	0	82
02:00	0	34	9	0	2	0	0	0	0	0	0	0	0	45
03:00	0	91	17	1	5	0	0	0	0	0	0	0	0	114
04:00	1	244	65	2	16	1	0	0	1	0	0	0	0	330
05:00	1	728	138	6	47	3	0	4	12	0	0	0	0	939
06:00	4	781	142	8	68	3	2	3	22	0	0	0	0	1033
07:00	6	924	175	7	86	8	2	3	24	0	0	0	0	1235
08:00	3	815	159	5	78	4	1	3	31	0	0	0	0	1099
09:00	2	598	134	6	50	8	2	3	41	0	0	0	0	844
10:00	4	643	141	6	61	3	2	3	30	0	0	0	0	893
11:00	4	781	164	3	58	3	1	3	24	0	0	0	0	1041
12:00 PM	5	682	147	3	50	4	0	4	24	0	0	0	0	919
13:00	4	645	125	4	57	4	1	1	21	0	0	0	0	862
14:00	3	945	197	6	76	6	1	4	32	0	0	0	0	1270
15:00	4	989	182	7	66	6	1	6	28	0	0	0	0	1289
16:00	8	961	158	5	59	7	1	5	24	0	0	0	0	1228
17:00	7	896	141	4	48	6	2	2	16	0	0	0	0	1122
18:00	2	499	82	3	30	3	0	2	16	0	0	0	0	637
19:00	4	310	53	3	16	2	0	0	6	0	0	0	0	394
20:00	2	266	50	2	16	2	0	0	4	0	0	0	0	342
21:00	1	227	44	2	16	2	0	0	5	0	0	0	0	297
22:00	0	210	34	0	9	0	0	0	2	0	0	0	0	255
23:00	1	144	25	1	13	0	0	0	1	0	0	0	0	185
Totals	66	12590	2420	85	938	75	16	46	367					16603
% of Totals	0%	76%	15%	1%	6%	0%	0%	0%	2%					100%

AM Volumes	25	5816	1182	45	482	33	10	22	188	0	0	0	0	7803
% AM	0%	35%	7%	0%	3%	0%	0%	0%	1%					47%
AM Peak Hour	07:00	07:00	07:00	06:00	07:00	07:00	06:00	05:00	09:00					07:00
Volume	6	924	175	8	86	8	2	4	41					1235
PM Volumes	41	6774	1238	40	456	42	6	24	179	0	0	0	0	8800
% PM	0%	41%	7%	0%	3%	0%	0%	0%	1%					53%
PM Peak Hour	16:00	15:00	14:00	15:00	14:00	16:00	17:00	15:00	14:00					15:00
Volume	8	989	197	7	76	7	2	6	32					1289

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	2334	14%	1781	11%	2350	14%	10138	61%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

CLASSIFICATION

28th St from Harbor Dr to Main St

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_007

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	68	19	0	7	0	0	0	0	0	0	0	0	94
01:00	0	45	8	0	4	0	0	0	0	0	0	0	0	57
02:00	0	29	10	0	8	0	0	0	2	0	0	0	0	49
03:00	0	69	12	0	4	0	0	0	1	0	0	0	0	86
04:00	2	211	42	2	28	0	0	0	4	0	0	0	0	289
05:00	1	681	126	3	68	3	1	3	14	0	0	0	0	900
06:00	3	791	132	8	74	4	0	1	15	0	0	0	0	1028
07:00	4	562	105	5	64	1	0	2	11	0	0	0	0	754
08:00	3	479	83	2	70	4	0	0	17	0	0	0	0	658
09:00	3	573	116	3	68	2	1	3	14	0	0	0	0	783
10:00	3	718	147	4	73	4	0	5	9	0	0	0	0	963
11:00	5	988	179	4	107	7	1	3	16	0	0	0	0	1310
12:00 PM	6	915	168	7	86	5	1	5	19	0	0	0	0	1212
13:00	3	782	121	7	91	5	1	2	15	0	0	0	0	1027
14:00	8	958	174	5	77	6	1	5	13	0	0	0	0	1247
15:00	5	1002	179	9	88	5	1	3	11	0	0	0	0	1303
16:00	6	811	135	3	79	4	0	4	13	0	0	0	0	1055
17:00	1	680	108	5	53	4	0	1	6	0	0	0	0	858
18:00	1	523	77	3	40	2	0	0	9	0	0	0	0	655
19:00	2	450	69	1	36	2	0	2	5	0	0	0	0	567
20:00	2	397	60	2	30	2	0	0	8	0	0	0	0	501
21:00	1	263	40	1	21	0	0	0	2	0	0	0	0	328
22:00	0	186	32	0	14	0	0	0	5	0	0	0	0	237
23:00	1	140	21	0	8	0	0	0	3	0	0	0	0	173
Totals	60	12321	2163	74	1198	60	7	39	212					16134
% of Totals	0%	76%	13%	0%	7%	0%	0%	0%	1%					100%

AM Volumes	24	5214	979	31	575	25	3	17	103	0	0	0	0	6971
% AM	0%	32%	6%	0%	4%	0%	0%	0%	1%					43%
AM Peak Hour	11:00	11:00	11:00	06:00	11:00	11:00	05:00	10:00	08:00					11:00
Volume	5	988	179	8	107	7	1	5	17					1310
PM Volumes	36	7107	1184	43	623	35	4	22	109	0	0	0	0	9163
% PM	0%	44%	7%	0%	4%	0%	0%	0%	1%					57%
PM Peak Hour	14:00	15:00	15:00	15:00	13:00	14:00	12:00	12:00	12:00					15:00
Volume	8	1002	179	9	91	6	1	5	19					1303

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%
	1412		9%	2239		14%	1913		12%	10570		66%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

PREPARED BY: PACIFIC TECHNICAL DATA, LLC

DATE: 04/19/18 THURSDAY AREA: HARBOR DRIVE SD
JOB #: PTD18-0420-03 LOCATION: 28TH STREET - BOSTON AVENUE TO MAIN STREET

AM	NORTHBOUND							SOUTHBOUND							PM	NORTHBOUND							SOUTHBOUND						
TIME	1	2	3	4	5	6	TOTAL	1	2	3	4	5	6	TOTAL	Time	1	2	3	4	5	6	TOTAL	1	2	3	4	5	6	TOTAL
0:00	91	0	0	1	0	0	92	12	0	0	1	0	0	13	12:00	144	4	1	4	0	0	153	154	4	1	6	0	0	165
0:15	25	0	0	3	0	0	28	24	0	0	4	0	0	28	12:15	131	8	3	3	0	0	145	162	3	1	7	0	0	173
0:30	14	0	1	2	0	0	17	13	1	0	3	0	0	17	12:30	149	9	3	4	0	0	165	146	7	0	5	0	1	159
0:45	13	0	0	3	0	0	16	10	1	0	2	0	0	13	12:45	147	3	1	4	0	0	155	148	5	2	5	0	0	160
1:00	13	2	0	3	0	0	18	11	1	0	2	0	0	14	13:00	128	4	0	5	0	0	137	130	5	0	3	0	0	138
1:15	14	0	0	2	0	0	16	12	1	0	4	0	0	17	13:15	136	7	2	2	0	0	147	134	5	3	2	0	1	145
1:30	5	0	0	0	0	0	5	14	0	0	1	0	0	15	13:30	135	7	3	5	0	0	150	155	8	2	7	0	0	172
1:45	21	0	0	1	0	0	22	14	0	0	3	0	0	17	13:45	121	7	4	2	0	1	135	134	7	1	7	0	0	149
2:00	11	0	0	1	0	0	12	13	0	0	2	0	0	15	14:00	156	7	1	3	0	0	167	120	2	0	5	0	0	127
2:15	13	1	0	2	0	0	16	7	0	0	0	0	0	7	14:15	147	3	1	3	0	0	154	111	11	2	7	0	0	131
2:30	9	0	0	0	0	0	9	22	0	1	3	0	0	26	14:30	180	8	3	4	0	0	195	120	8	2	4	0	1	135
2:45	7	0	1	1	0	0	9	15	1	0	0	0	0	16	14:45	180	3	6	3	1	0	193	149	3	2	5	0	1	160
3:00	7	1	0	0	0	0	8	15	0	0	5	0	0	20	15:00	184	12	3	2	0	0	201	167	4	0	4	0	1	176
3:15	6	0	0	5	0	0	11	19	0	0	2	0	0	21	15:15	175	11	0	1	0	0	187	191	5	2	7	0	0	205
3:30	4	0	0	3	0	0	7	29	1	0	1	0	0	31	15:30	228	3	0	3	0	0	234	167	1	0	3	1	0	172
3:45	8	1	0	3	0	0	12	44	1	0	6	0	0	51	15:45	172	3	0	3	0	0	178	175	2	1	2	1	0	181
4:00	15	3	0	4	0	0	22	51	0	0	3	0	0	54	16:00	199	8	1	5	0	0	213	143	1	0	2	0	0	146
4:15	27	0	0	5	0	0	32	89	1	0	1	0	0	91	16:15	196	3	1	5	0	0	205	153	1	4	5	0	0	163
4:30	16	2	0	8	0	0	26	85	3	0	5	0	0	93	16:30	183	1	0	1	0	0	185	135	1	1	3	0	1	141
4:45	27	0	0	5	0	0	32	161	2	0	9	0	0	172	16:45	163	1	1	3	0	0	168	155	1	0	0	0	0	156
5:00	43	1	0	5	0	0	49	216	6	1	3	0	0	226	17:00	156	0	1	2	0	0	159	133	1	0	1	0	0	135
5:15	23	1	1	4	0	0	29	448	3	2	4	0	0	457	17:15	149	2	1	4	0	0	156	136	1	1	2	0	1	141
5:30	33	1	0	1	0	0	35	206	1	1	3	0	0	211	17:30	117	6	0	2	0	0	125	99	0	0	3	0	0	102
5:45	36	6	0	6	0	0	48	242	2	1	1	0	0	246	17:45	120	0	0	3	0	0	123	85	2	0	3	0	0	90
6:00	50	6	0	1	0	0	57	220	3	1	5	0	0	229	18:00	116	5	1	2	0	0	124	91	2	0	2	0	0	95
6:15	72	4	2	6	0	0	84	205	6	1	1	0	0	213	18:15	105	2	1	0	0	0	108	85	0	0	2	0	0	87
6:30	59	9	1	3	0	0	72	192	1	2	3	0	0	198	18:30	82	2	1	5	0	0	90	80	0	1	0	0	0	81
6:45	136	5	1	2	0	0	144	161	5	1	5	0	0	172	18:45	80	2	0	4	0	0	86	92	0	1	3	0	0	96
7:00	126	6	1	5	0	0	138	202	0	2	6	0	0	210	19:00	83	1	0	1	0	0	85	68	1	0	4	0	0	73
7:15	150	9	5	2	0	0	166	184	5	1	3	0	1	194	19:15	92	1	0	4	0	0	97	72	0	0	2	0	0	74
7:30	187	10	2	4	0	0	203	171	5	1	2	0	0	179	19:30	87	3	0	1	0	0	91	71	0	0	1	0	0	72
7:45	185	14	3	2	0	0	204	144	4	3	8	0	0	159	19:45	67	0	0	1	0	0	68	73	0	0	2	0	0	75
8:00	111	9	3	3	0	0	126	115	7	1	2	0	0	125	20:00	89	1	0	0	0	0	90	61	0	0	1	0	0	62
8:15	141	7	1	6	0	0	155	91	5	0	4	0	0	100	20:15	55	5	1	1	0	0	62	91	0	0	2	0	0	93
8:30	82	5	1	4	0	0	92	96	1	1	3	0	0	101	20:30	48	1	0	2	0	0	51	52	0	1	4	0	0	57
8:45	85	3	3	0	0	0	91	114	6	0	4	0	0	124	20:45	55	0	0	4	0	0	59	42	0	0	3	0	0	45
9:00	80	12	2	4	0	0	98	122	5	3	5	0	0	135	21:00	73	2	0	3	0	0	78	52	0	0	3	0	0	55
9:15	110	8	0	7	0	0	125	121	8	2	5	0	0	136	21:15	50	0	0	3	0	0	53	63	0	1	4	0	0	68
9:30	98	5	2	3	0	0	108	122	6	2	5	0	0	135	21:30	45	4	0	1	0	0	50	58	0	0	0	0	0	58
9:45	107	6	1	9	0	1	124	103	7	1	7	0	0	118	21:45	50	1	0	2	0	0	53	45	0	0	0	0	0	45
10:00	118	7	4	7	0	0	136	117	8	2	11	0	0	138	22:00	41	2	0	1	0	0	44	44	1	0	5	0	0	50
10:15	109	7	4	5	0	0	125	97	5	0	6	0	0	108	22:15	39	1	0	2	0	0	42	46	0	0	2	0	0	48
10:30	107	11	7	5	0	0	130	112	10	1	5	0	0	128	22:30	37	0	0	3	0	0	40	42	1	0	2	0	0	45
10:45	130	7	5	4	0	0	146	129	7	0	4	0	0	140	22:45	27	1	0	3	1	0	32	25	1	0	0	3	1	30
11:00	144	3	2	9	0	0	158	138	5	2	4	0	0	149	23:00	30	1	0	3	0	0	34	34	1	0	1	0	0	36
11:15	153	5	3	6	0	0	167	142	3	0	1	0	0	146	23:15	33	0	0	3	0	0	36	20	0	0	3	0	0	23
11:30	139	10	3	4	0	0	156	158	9	0	7	0	0	174	23:30	25	1	0	3	0	0	29	27	0	0	1	0	0	28
11:45	139	4	2	3	0	0	148	161	5	3	1	0	0	170	23:45	13	1	0	1	0	0	15	16	0	1	1	0	0	18
TOTAL	3,299	191	61	172	0	1	3,724	5,189	151	36	175	0	1	5,552	TOTAL	5,218	157	40	129	2	1	5,547	4,752	95	30	146	5	8	5,036
				AM PEAK HOUR			7:00 AM				AM PEAK HOUR			5:15 AM					PM PEAK HOUR			3:30 PM					PM PEAK HOUR		3:00 PM
				AM PEAK VOLUME			711				AM PEAK VOLUME			1,143					PM PEAK VOLUME			830					PM PEAK VOLUME		734

CLASS 1	CLASS 4
CLASS 2	CLASS 5
CLASS 3	CLASS 6

DAILY TOTAL	8,517	348	101	301	2	2	9,271	9,941	246	66	321	5	9	10,588
% OF TOTAL	91.9%	3.8%	1.1%	3.2%	0.0%	0.0%	100.0%	93.9%	2.3%	0.6%	3.0%	0.0%	0.1%	100.0%

CLASSIFICATION

28th St from Boston Ave to National Ave

Day: Thursday
Date: 7/24/2014

City: San Diego
Project #: CA14_4193_009

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	192	21	0	6	1	0	0	4	0	1	0	0	225
01:00	0	97	11	0	3	0	0	0	1	0	1	0	0	113
02:00	0	68	12	0	3	0	0	0	2	0	0	0	0	85
03:00	0	105	15	0	4	0	1	0	1	0	0	0	0	126
04:00	2	303	43	0	10	0	0	0	5	1	0	0	0	364
05:00	1	759	108	0	45	3	0	4	8	0	2	0	0	930
06:00	4	1040	116	1	49	6	0	4	15	0	1	0	0	1236
07:00	5	911	120	4	46	6	1	2	10	0	2	0	0	1107
08:00	2	827	114	4	44	7	0	1	14	0	2	0	0	1015
09:00	3	861	129	1	40	4	1	2	16	0	2	0	0	1059
10:00	3	1018	154	1	59	8	0	5	15	0	3	0	0	1266
11:00	6	1235	170	1	58	7	0	1	16	0	3	0	0	1497
12:00 PM	2	1221	164	2	58	6	0	3	18	0	2	0	0	1476
13:00	5	1165	162	4	56	5	0	5	15	0	2	0	0	1419
14:00	5	1318	162	2	53	6	1	1	14	0	4	0	0	1566
15:00	6	1363	185	3	48	3	0	2	8	0	1	0	0	1619
16:00	6	1266	151	0	45	4	0	6	10	1	2	0	0	1491
17:00	2	1108	105	1	32	3	0	4	8	0	0	0	0	1263
18:00	2	916	111	1	27	1	0	3	13	0	2	0	0	1076
19:00	2	793	84	2	27	3	0	2	11	0	3	0	0	927
20:00	3	730	85	1	24	4	0	2	9	0	0	0	0	858
21:00	0	553	73	1	19	5	0	1	6	0	2	0	0	660
22:00	0	361	42	0	15	3	0	1	5	1	1	0	0	429
23:00	0	257	29	0	11	1	0	0	7	0	0	0	0	305
Totals	59	18467	2366	29	782	86	4	49	231	3	36			22112
% of Totals	0%	84%	11%	0%	4%	0%	0%	0%	1%	0%	0%			100%

AM Volumes	26	7416	1013	12	367	42	3	19	107	1	17	0	0	9023
% AM	0%	34%	5%	0%	2%	0%	0%	0%	0%	0%	0%			41%
AM Peak Hour	11:00	11:00	11:00	07:00	10:00	10:00	03:00	10:00	09:00	04:00	10:00			11:00
Volume	6	1235	170	4	59	8	1	5	16	1	3			1497
PM Volumes	33	11051	1353	17	415	44	1	30	124	2	19	0	0	13089
% PM	0%	50%	6%	0%	2%	0%	0%	0%	1%	0%	0%			59%
PM Peak Hour	15:00	15:00	15:00	13:00	12:00	12:00	14:00	16:00	12:00	16:00	14:00			15:00
Volume	6	1363	185	4	58	6	1	6	18	1	4			1619

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	↔	%	Volume	↔	%	Volume	↔	%	Volume	↔	%
	2122		10%	2895		13%	2754		12%	14341		65%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

CLASSIFICATION

32nd St from Harbor Dr to Norman Scott Rd

Day: Thursday
Date: 7/31/2014

City: San Diego
Project #: CA14_4193_010

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	61	8	0	2	0	0	0	0	0	0	0	0	71
01:00	0	44	7	0	2	0	0	0	0	0	0	0	0	53
02:00	0	33	4	0	1	0	0	1	0	0	0	0	0	39
03:00	0	93	16	0	4	0	0	0	0	0	0	0	0	113
04:00	1	326	52	1	17	0	0	2	2	0	0	0	0	401
05:00	1	923	146	6	48	1	0	0	4	0	0	0	0	1129
06:00	2	1177	179	7	62	2	0	0	7	0	0	0	0	1436
07:00	5	1056	155	5	56	1	0	0	6	0	0	0	0	1284
08:00	4	860	122	6	41	3	0	1	4	0	0	0	0	1041
09:00	3	765	120	4	38	1	0	1	5	0	0	0	0	937
10:00	5	960	138	4	42	1	0	3	3	0	0	0	0	1156
11:00	2	1155	162	5	46	2	0	2	6	0	0	0	0	1380
12:00 PM	4	1276	185	5	53	3	0	2	6	0	0	0	0	1534
13:00	6	1098	156	3	44	1	0	3	6	0	0	0	0	1317
14:00	7	1280	175	6	51	2	0	2	5	0	0	0	0	1528
15:00	5	1182	160	5	43	1	0	3	6	0	0	0	0	1405
16:00	7	1195	150	6	41	2	0	2	8	0	0	0	0	1411
17:00	6	1088	136	5	34	1	0	3	5	0	0	0	0	1278
18:00	4	572	83	4	23	1	0	0	3	0	0	0	0	690
19:00	3	477	66	3	17	1	0	0	3	0	0	0	0	570
20:00	2	367	53	2	14	0	0	1	3	0	0	0	0	442
21:00	1	252	38	1	12	0	0	0	2	0	0	0	0	306
22:00	1	223	29	0	8	0	0	0	0	0	0	0	0	261
23:00	0	117	15	0	6	0	0	0	0	0	0	0	0	138
Totals	69	16580	2355	78	705	23		26	84					19920
% of Totals	0%	83%	12%	0%	4%	0%		0%	0%					100%

AM Volumes	23	7453	1109	38	359	11	0	10	37	0	0	0	0	9040
% AM	0%	37%	6%	0%	2%	0%		0%	0%					45%
AM Peak Hour	07:00	06:00	06:00	06:00	06:00	08:00		10:00	06:00					06:00
Volume	5	1177	179	7	62	3		3	7					1436
PM Volumes	46	9127	1246	40	346	12	0	16	47	0	0	0	0	10880
% PM	0%	46%	6%	0%	2%	0%		0%	0%					55%
PM Peak Hour	14:00	14:00	12:00	14:00	12:00	12:00		13:00	16:00					12:00
Volume	7	1280	185	6	53	3		3	8					1534

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%
	2325		12%	2851		14%	2689		13%	12055		61%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

PREPARED BY: PACIFIC TECHNICAL DATA, LLC

DATE: 04/19/18 THURSDAY AREA: HARBOR DRIVE SD
JOB #: PTD18-0420-03 LOCATION: 8TH STREET - HARBOR DRIVE TO I-5 SB RAMP

AM	EASTBOUND							WESTBOUND							PM	EASTBOUND							WESTBOUND						
TIME	1	2	3	4	5	6	TOTAL	1	2	3	4	5	6	TOTAL	Time	1	2	3	4	5	6	TOTAL	1	2	3	4	5	6	TOTAL
0:00	20	0	0	0	0	0	20	1	0	0	0	0	0	1	12:00	72	4	0	0	0	4	80	58	3	0	0	0	4	65
0:15	8	0	0	0	1	0	9	1	0	0	0	0	1	2	12:15	61	3	1	3	0	6	74	74	2	0	1	0	4	81
0:30	9	0	0	0	0	0	9	3	0	0	0	0	0	3	12:30	45	3	1	0	0	2	51	70	5	0	0	0	5	80
0:45	10	0	0	0	0	0	10	3	0	0	0	0	0	3	12:45	61	4	0	0	0	5	70	56	1	1	0	0	3	61
1:00	5	0	0	0	0	0	5	2	0	0	0	0	0	2	13:00	51	1	1	0	0	4	57	44	1	1	2	0	3	51
1:15	1	0	0	0	0	0	1	4	1	0	0	0	0	5	13:15	55	3	2	1	0	6	67	37	7	0	1	0	4	49
1:30	8	0	0	0	0	0	8	0	0	0	0	0	0	0	13:30	63	6	1	3	0	4	77	38	3	1	0	0	5	47
1:45	1	0	0	0	0	0	1	1	0	0	0	0	0	1	13:45	70	3	3	1	0	3	80	39	6	2	3	0	4	54
2:00	5	0	0	0	0	0	5	0	0	0	0	0	0	0	14:00	91	2	0	3	0	3	99	44	0	0	0	0	4	48
2:15	1	0	0	0	0	0	1	0	0	0	0	0	0	0	14:15	78	7	1	1	0	6	93	33	0	0	0	0	2	35
2:30	3	0	0	0	0	0	3	3	0	0	0	0	0	3	14:30	204	10	1	0	0	4	219	36	1	0	0	0	4	41
2:45	5	0	0	0	0	0	5	6	0	0	0	0	0	6	14:45	147	7	2	0	0	3	159	43	1	0	0	0	5	49
3:00	3	0	0	0	0	0	3	6	0	0	0	0	0	6	15:00	238	6	0	0	0	4	248	31	3	1	0	0	4	39
3:15	2	0	0	0	1	0	3	10	0	0	0	0	0	10	15:15	216	2	0	0	0	4	222	26	2	0	0	0	1	29
3:30	3	0	0	0	0	0	3	10	0	0	0	0	0	10	15:30	247	4	0	1	0	2	254	38	1	0	0	0	4	43
3:45	6	0	0	0	0	0	6	17	0	0	0	0	0	17	15:45	225	6	1	1	0	5	238	28	1	0	0	0	6	35
4:00	1	0	0	0	0	0	1	18	0	0	0	0	0	18	16:00	209	2	0	0	1	3	215	28	0	0	0	0	2	30
4:15	2	0	0	0	2	0	4	24	1	0	0	0	0	25	16:15	160	5	0	0	0	3	168	30	1	0	0	0	4	35
4:30	2	0	0	0	0	4	6	35	0	0	0	0	0	35	16:30	166	1	0	0	0	4	171	50	1	0	0	0	1	52
4:45	5	0	0	0	0	1	6	60	0	0	0	0	1	61	16:45	173	4	0	1	0	4	182	45	0	0	0	0	7	52
5:00	7	1	0	0	0	1	9	95	2	0	0	0	2	99	17:00	146	2	1	0	0	6	155	32	3	0	0	0	1	36
5:15	6	0	2	0	0	9	17	115	1	0	0	0	0	116	17:15	99	3	0	0	0	4	106	26	0	0	0	0	5	31
5:30	14	0	1	0	0	6	21	94	1	0	0	0	2	97	17:30	104	1	0	0	0	4	109	26	0	0	0	0	4	30
5:45	12	0	0	0	0	2	14	93	0	0	0	0	2	95	17:45	79	0	0	0	0	4	83	31	0	0	0	0	2	33
6:00	13	3	0	1	0	3	20	71	0	0	0	0	1	72	18:00	69	3	0	0	0	4	76	29	1	0	0	0	3	33
6:15	16	7	0	0	0	5	28	94	1	0	0	0	0	95	18:15	57	1	0	0	0	3	61	22	0	0	0	0	5	27
6:30	24	5	1	1	0	4	35	102	2	0	1	0	0	105	18:30	68	0	0	0	0	3	71	17	0	0	0	0	6	23
6:45	24	4	2	0	0	5	35	120	3	0	0	0	3	126	18:45	36	0	0	0	0	3	39	21	0	0	0	0	7	28
7:00	31	6	2	1	0	4	44	123	3	1	0	0	5	132	19:00	49	1	0	0	0	4	54	23	0	0	1	0	5	29
7:15	25	5	2	1	0	3	36	150	4	0	2	0	2	158	19:15	31	2	0	0	0	4	37	21	0	0	0	0	3	24
7:30	37	5	0	0	0	5	47	108	1	1	0	0	6	116	19:30	35	0	0	0	0	3	38	20	0	0	0	0	2	22
7:45	32	7	5	1	0	4	49	111	7	0	0	0	4	122	19:45	33	0	0	0	0	1	34	20	0	0	0	0	3	23
8:00	35	1	2	1	0	6	45	67	3	0	0	0	5	75	20:00	29	1	0	0	0	3	33	19	0	0	0	0	3	22
8:15	39	1	3	3	0	6	52	50	2	0	0	0	3	55	20:15	27	1	1	0	0	1	30	15	0	0	0	0	3	18
8:30	24	3	1	0	0	3	31	58	5	2	0	0	4	69	20:30	25	0	0	0	0	2	27	14	0	0	0	0	2	16
8:45	34	1	2	0	0	5	42	43	2	1	0	0	3	49	20:45	24	0	0	0	0	2	26	17	0	0	0	0	8	25
9:00	23	1	1	1	0	3	29	23	1	1	0	0	3	28	21:00	23	0	0	0	0	1	24	23	0	0	0	0	1	24
9:15	31	2	1	2	0	5	41	33	2	0	0	0	3	38	21:15	26	0	0	0	0	1	27	13	0	0	0	0	2	15
9:30	36	3	3	0	0	4	46	32	2	0	1	0	3	38	21:30	20	0	0	0	0	3	23	10	0	0	0	0	3	13
9:45	43	4	2	1	0	5	55	35	2	0	2	0	4	43	21:45	16	0	0	0	0	2	18	12	0	0	0	0	1	13
10:00	54	2	2	0	0	3	61	35	5	0	1	0	2	43	22:00	8	0	0	0	0	0	8	5	0	0	0	0	3	8
10:15	43	3	3	2	0	4	55	32	1	1	1	0	5	40	22:15	15	0	0	0	0	2	17	12	0	0	0	0	4	16
10:30	62	2	4	0	0	3	71	42	5	0	0	0	4	51	22:30	9	0	0	0	0	3	12	7	0	0	0	0	2	9
10:45	88	4	2	0	0	3	97	42	2	1	0	0	3	48	22:45	4	0	0	0	0	1	5	7	1	0	0	0	4	12
11:00	105	6	2	1	0	3	117	35	6	0	0	0	2	43	23:00	14	0	0	0	0	1	15	4	0	0	0	0	1	5
11:15	77	3	0	0	0	3	83	63	3	0	2	0	6	74	23:15	13	1	0	0	0	0	14	7	0	0	0	0	1	8
11:30	87	2	2	2	0	3	96	63	4	0	0	0	3	70	23:30	13	0	0	0	0	2	15	10	1	0	0	0	1	12
11:45	57	2	0	0	0	4	63	69	1	0	1	0	3	74	23:45	9	0	0	0	0	0	9	3	0	0	0	0	0	3
TOTAL	1,179	83	45	18	4	119	1,448	2,202	73	8	11	0	85	2,379	TOTAL	3,713	99	16	15	1	146	3,990	1,314	45	6	8	0	161	1,534
				AM PEAK HOUR			10:45 AM				AM PEAK HOUR			6:45 AM					PM PEAK HOUR			3:00 PM					PM PEAK HOUR		12:00 PM
				AM PEAK VOLUME			393				AM PEAK VOLUME			532					PM PEAK VOLUME			962					PM PEAK VOLUME		287

CLASS 1	CLASS 4
CLASS 2	CLASS 5
CLASS 3	CLASS 6

DAILY TOTAL	4,892	182	61	33	5	265	5,438	3,516	118	14	19	0	246	3,913
% OF TOTAL	90.0%	3.3%	1.1%	0.6%	0.1%	4.9%	100.0%	89.9%	3.0%	0.4%	0.5%	0.0%	6.3%	100.0%

Prepared by NDS/ATD

VOLUME

Harbor Dr Bet. 8th St & Civic Center Dr

Day: Thursday
Date: 12/1/2016

City: National City
Project #: CA16_4316_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,001	8,086	18,087

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			42		2		44		12:00			122		146		268	
00:15			11		4		15		12:15			110		112		222	
00:30			22		7		29		12:30			114		119		233	
00:45			9	84	2	15	11	99	12:45			119	465	103	480	222	945
01:00			11		5		16		13:00			113		78		191	
01:15			8		3		11		13:15			158		102		260	
01:30			9		5		14		13:30			162		89		251	
01:45			8	36	11	24	19	60	13:45			200	633	105	374	305	1007
02:00			2		13		15		14:00			201		129		330	
02:15			0		17		17		14:15			234		124		358	
02:30			3		15		18		14:30			321		113		434	
02:45			2	7	16	61	18	68	14:45			411	1167	81	447	492	1614
03:00			6		14		20		15:00			400		80		480	
03:15			1		32		33		15:15			452		59		511	
03:30			2		51		53		15:30			427		74		501	
03:45			5	14	71	168	76	182	15:45			394	1673	59	272	453	1945
04:00			9		84		93		16:00			386		58		444	
04:15			8		106		114		16:15			355		64		419	
04:30			9		152		161		16:30			372		49		421	
04:45			14	40	185	527	199	567	16:45			333	1446	57	228	390	1674
05:00			13		134		147		17:00			330		44		374	
05:15			11		154		165		17:15			339		40		379	
05:30			18		194		212		17:30			330		42		372	
05:45			25	67	219	701	244	768	17:45			326	1325	38	164	364	1489
06:00			15		224		239		18:00			274		29		303	
06:15			16		177		193		18:15			216		36		252	
06:30			19		135		154		18:30			158		33		191	
06:45			24	74	238	774	262	848	18:45			118	766	21	119	139	885
07:00			14		309		323		19:00			78		19		97	
07:15			31		365		396		19:15			51		30		81	
07:30			33		386		419		19:30			47		32		79	
07:45			48	126	270	1330	318	1456	19:45			38	214	26	107	64	321
08:00			32		275		307		20:00			42		10		52	
08:15			44		270		314		20:15			31		12		43	
08:30			54		268		322		20:30			36		12		48	
08:45			62	192	174	987	236	1179	20:45			26	135	15	49	41	184
09:00			77		93		170		21:00			23		16		39	
09:15			67		78		145		21:15			30		12		42	
09:30			75		104		179		21:30			21		15		36	
09:45			72	291	88	363	160	654	21:45			22	96	13	56	35	152
10:00			95		101		196		22:00			36		13		49	
10:15			76		96		172		22:15			27		8		35	
10:30			117		87		204		22:30			19		12		31	
10:45			117	405	91	375	208	780	22:45			16	98	10	43	26	141
11:00			145		96		241		23:00			43		8		51	
11:15			135		115		250		23:15			27		12		39	
11:30			136		101		237		23:30			10		6		16	
11:45			117	533	82	394	199	927	23:45			34	114	2	28	36	142
TOTALS				1869		5719		7588	TOTALS				8132		2367		10499
SPLIT %				24.6%		75.4%		42.0%	SPLIT %				77.5%		22.5%		58.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,001	8,086	18,087

AM Peak Hour			10:45	07:00	07:00	PM Peak Hour		14:45	12:00	14:45
AM Pk Volume			533	1330	1456	PM Pk Volume		1690	480	1984
Pk Hr Factor			0.919	0.861	0.869	Pk Hr Factor		0.935	0.822	0.971
7 - 9 Volume	0	0	318	2317	2635	4 - 6 Volume	0	2771	392	3163
7 - 9 Peak Hour			08:00	07:00	07:00	4 - 6 Peak Hour		16:00	16:00	16:00
7 - 9 Pk Volume	0	0	192	1330	1456	4 - 6 Pk Volume	0	1446	228	1674
Pk Hr Factor	0.000	0.000	0.774	0.861	0.869	Pk Hr Factor	0.000	0.937	0.891	0.943

Prepared by NDS/ATD

VOLUME

Tidelands Ave Bet. Civic Center Dr & 19th St

Day: Thursday
Date: 12/1/2016

City: National City
Project #: CA16_4316_003

DAILY TOTALS	NB	SB	EB	WB	Total
	1,754	1,246	0	0	3,000

AM Period	NB		SB		EB		WB		TOTAL	
00:00	0		0						0	
00:15	0		0						0	
00:30	7		1						8	
00:45	0	7	0	1					0	8
01:00	2		0						2	
01:15	0		0						0	
01:30	0		0						0	
01:45	0	2	2	2					2	4
02:00	1		1						2	
02:15	2		0						2	
02:30	0		1						1	
02:45	0	3	0	2					0	5
03:00	2		0						2	
03:15	1		0						1	
03:30	1		1						2	
03:45	0	4	1	2					1	6
04:00	1		0						1	
04:15	2		3						5	
04:30	1		7						8	
04:45	4	8	53	63					57	71
05:00	10		70						80	
05:15	12		40						52	
05:30	24		46						70	
05:45	33	79	62	218					95	297
06:00	31		51						82	
06:15	44		38						82	
06:30	50		46						96	
06:45	45	170	36	171					81	341
07:00	23		30						53	
07:15	15		16						31	
07:30	32		23						55	
07:45	20	90	11	80					31	170
08:00	17		11						28	
08:15	38		13						51	
08:30	50		15						65	
08:45	19	124	12	51					31	175
09:00	16		14						30	
09:15	14		16						30	
09:30	14		26						40	
09:45	22	66	22	78					44	144
10:00	42		14						56	
10:15	30		20						50	
10:30	32		22						54	
10:45	33	137	26	82					59	219
11:00	36		14						50	
11:15	45		16						61	
11:30	31		23						54	
11:45	26	138	29	82					55	220
TOTALS		828		832						1660
SPLIT %		49.9%		50.1%						55.3%

PM Period	NB		SB		EB		WB		TOTAL	
12:00	31		24						55	
12:15	36		18						54	
12:30	36		28						64	
12:45	32	135	14	84					46	219
13:00	21		16						37	
13:15	55		24						79	
13:30	39		20						59	
13:45	34	149	27	87					61	236
14:00	40		11						51	
14:15	53		10						63	
14:30	48		19						67	
14:45	46	187	18	58					64	245
15:00	66		22						88	
15:15	51		20						71	
15:30	51		12						63	
15:45	41	209	13	67					54	276
16:00	37		18						55	
16:15	29		8						37	
16:30	30		21						51	
16:45	28	124	9	56					37	180
17:00	19		7						26	
17:15	17		4						21	
17:30	5		2						7	
17:45	2	43	5	18					7	61
18:00	9		2						11	
18:15	4		1						5	
18:30	8		4						12	
18:45	5	26	4	11					9	37
19:00	3		4						7	
19:15	13		1						14	
19:30	8		9						17	
19:45	1	25	3	17					4	42
20:00	8		2						10	
20:15	0		1						1	
20:30	0		1						1	
20:45	2	10	0	4					2	14
21:00	1		1						2	
21:15	1		2						3	
21:30	1		1						2	
21:45	3	6	1	5					4	11
22:00	2		2						4	
22:15	3		3						6	
22:30	2		0						2	
22:45	1	8	0	5					1	13
23:00	2		1						3	
23:15	2		1						3	
23:30	0		0						0	
23:45	0	4	0	2					0	6
TOTALS		926		414						1340
SPLIT %		69.1%		30.9%						44.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,754	1,246	0	0	3,000

AM Peak Hour	06:00	05:00			05:45	PM Peak Hour	14:45	13:00			14:30
AM Pk Volume	170	218			355	PM Pk Volume	214	87			290
Pk Hr Factor	0.850	0.779			0.924	Pk Hr Factor	0.811	0.806			0.824
7 - 9 Volume	214	131	0	0	345	4 - 6 Volume	167	74	0	0	241
7 - 9 Peak Hour	07:45	07:00			07:45	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	125	80	0	0	175	4 - 6 Pk Volume	124	56	0	0	180
Pk Hr Factor	0.625	0.667	0.000	0.000	0.673	Pk Hr Factor	0.838	0.667	0.000	0.000	0.818

Prepared by NDS/ATD

VOLUME

Tidelands Ave Bet. 19th St & Bay Marina Dr

Day: Thursday
Date: 11/10/2016

City: National City
Project #: CA16_4316_004

DAILY TOTALS	NB	SB	EB	WB	Total
	1,065	838	0	0	1,903

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
0:00	0		2						2		12:00	19		7						26	
0:15	3		1						4		12:15	13		17						30	
0:30	1		1						2		12:30	7		16						23	
0:45	0	4	2	6					2	10	12:45	12	51	7	47					19	98
1:00	0		0						0		13:00	11		3						14	
1:15	0		0						0		13:15	13		16						29	
1:30	1		3						4		13:30	16		14						30	
1:45	0	1	0	3					0	4	13:45	18	58	17	50					35	108
2:00	0		2						2		14:00	23		37						60	
2:15	0		0						0		14:15	21		43						64	
2:30	0		1						1		14:30	19		28						47	
2:45	0		0	3					0	3	14:45	21	84	20	128					41	212
3:00	0		0						0		15:00	21		38						59	
3:15	1		0						1		15:15	32		37						69	
3:30	0		1						1		15:30	25		24						49	
3:45	2	3	4	5					6	8	15:45	16	94	32	131					48	225
4:00	0		1						1		16:00	19		21						40	
4:15	3		3						6		16:15	0		11						11	
4:30	3		3						6		16:30	5		16						21	
4:45	5	11	1	8					6	19	16:45	7	31	15	63					22	94
5:00	21		4						25		17:00	4		5						9	
5:15	46		3						49		17:15	2		5						7	
5:30	36		1						37		17:30	8		9						17	
5:45	41	144	5	13					46	157	17:45	4	18	8	27					12	45
6:00	42		1						43		18:00	5		4						9	
6:15	34		1						35		18:15	4		2						6	
6:30	43		3						46		18:30	1		4						5	
6:45	41	160	9	14					50	174	18:45	1	11	1	11					2	22
7:00	29		10						39		19:00	5		0						5	
7:15	27		13						40		19:15	0		4						4	
7:30	23		10						33		19:30	1		3						4	
7:45	15	94	8	41					23	135	19:45	1	7	1	8					2	15
8:00	22		5						27		20:00	3		3						6	
8:15	33		8						41		20:15	3		3						6	
8:30	9		9						18		20:30	0		0						0	
8:45	14	78	14	36					28	114	20:45	2	8	1	7					3	15
9:00	10		9						19		21:00	2		1						3	
9:15	14		21						35		21:15	6		11						17	
9:30	21		16						37		21:30	4		9						13	
9:45	19	64	21	67					40	131	21:45	9	21	2	23					11	44
10:00	22		17						39		22:00	0		2						2	
10:15	13		12						25		22:15	1		1						2	
10:30	12		9						21		22:30	3		0						3	
10:45	13	60	15	53					28	113	22:45	2	6	2	5					4	11
11:00	15		26						41		23:00	0		2						2	
11:15	12		18						30		23:15	1		1						2	
11:30	17		18						35		23:30	0		1						1	
11:45	11	55	23	85					34	140	23:45	1	2	0	4					1	6
TOTALS		674		334						1008	TOTALS		391		504						895
SPLIT %		66.9%		33.1%						53.0%	SPLIT %		43.7%		56.3%						47.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,065	838	0	0	1,903

AM Peak Hour	5:15	11:00			5:15	PM Peak Hour	14:45	15:00			15:00
AM Pk Volume	165	85			175	PM Pk Volume	99	131			225
Pk Hr Factor	0.897	0.817			0.893	Pk Hr Factor	0.773	0.862			0.815
7 - 9 Volume	172	77	0	0	249	4 - 6 Volume	49	90	0	0	139
7 - 9 Peak Hour	7:00	7:00			7:00	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	94	41	0	0	135	4 - 6 Pk Volume	31	63	0	0	94
Pk Hr Factor	0.810	0.788	0.000	0.000	0.844	Pk Hr Factor	0.408	0.750	0.000	0.000	0.588

Prepared by NDS/ATD

VOLUME

Tidelands Ave Bet. Bay Marina Dr & 32nd St

Day: Thursday
Date: 11/10/2016

City: National City
Project #: CA16_4316_005

DAILY TOTALS	NB	SB	EB	WB	Total
	522	766	0	0	1,288

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
0:00	1		0						1		12:00	7		17						24	
0:15	1		0						1		12:15	17		15						32	
0:30	0		0						0		12:30	16		8						24	
0:45	0	2	0						0	2	12:45	7	47	12	52					19	99
1:00	0		1						1		13:00	10		21						31	
1:15	1		2						3		13:15	6		16						22	
1:30	0		0						0		13:30	8		8						16	
1:45	3	4	2	5					5	9	13:45	8	32	15	60					23	92
2:00	0		0						0		14:00	16		17						33	
2:15	0		0						0		14:15	11		13						24	
2:30	0		0						0		14:30	24		35						59	
2:45	0		1	1					1	1	14:45	16	67	33	98					49	165
3:00	0		0						0		15:00	18		27						45	
3:15	0		1						1		15:15	9		23						32	
3:30	0		0						0		15:30	9		17						26	
3:45	0		1	2					1	2	15:45	10	46	23	90					33	136
4:00	0		2						2		16:00	11		16						27	
4:15	1		0						1		16:15	8		8						16	
4:30	0		0						0		16:30	4		8						12	
4:45	0	1	0	2					0	3	16:45	1	24	9	41					10	65
5:00	0		4						4		17:00	5		7						12	
5:15	2		17						19		17:15	6		3						9	
5:30	2		12						14		17:30	6		8						14	
5:45	2	6	15	48					17	54	17:45	5	22	2	20					7	42
6:00	3		8						11		18:00	4		0						4	
6:15	2		3						5		18:15	6		4						10	
6:30	6		14						20		18:30	5		18						23	
6:45	12	23	10	35					22	58	18:45	5	20	1	23					6	43
7:00	7		8						15		19:00	3		3						6	
7:15	4		11						15		19:15	2		4						6	
7:30	7		15						22		19:30	4		5						9	
7:45	9	27	16	50					25	77	19:45	2	11	5	17					7	28
8:00	7		14						21		20:00	4		6						10	
8:15	4		10						14		20:15	3		1						4	
8:30	4		6						10		20:30	1		3						4	
8:45	9	24	13	43					22	67	20:45	2	10	14	24					16	34
9:00	10		12						22		21:00	4		5						9	
9:15	9		10						19		21:15	5		5						10	
9:30	9		12						21		21:30	2		0						2	
9:45	7	35	10	44					17	79	21:45	7	18	1	11					8	29
10:00	16		5						21		22:00	1		2						3	
10:15	8		12						20		22:15	1		2						3	
10:30	14		13						27		22:30	1		2						3	
10:45	14	52	10	40					24	92	22:45	2	5	1	7					3	12
11:00	5		15						20		23:00	3		0						3	
11:15	14		19						33		23:15	2		1						3	
11:30	16		8						24		23:30	0		1						1	
11:45	5	40	6	48					11	88	23:45	1	6	3	5					4	11
TOTALS		214		318						532	TOTALS		308		448						756
SPLIT %		40.2%		59.8%						41.3%	SPLIT %		40.7%		59.3%						58.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	522	766	0	0	1,288

AM Peak Hour	10:00	10:30			10:30	PM Peak Hour	14:15	14:30			14:30
AM Pk Volume	52	57			104	PM Pk Volume	69	118			185
Pk Hr Factor	0.813	0.750			0.788	Pk Hr Factor	0.719	0.843			0.784
7 - 9 Volume	51	93	0	0	144	4 - 6 Volume	46	61	0	0	107
7 - 9 Peak Hour	7:00	7:15			7:15	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	27	56	0	0	83	4 - 6 Pk Volume	24	41	0	0	65
Pk Hr Factor	0.750	0.875	0.000	0.000	0.830	Pk Hr Factor	0.545	0.641	0.000	0.000	0.602

Prepared by NDS/ATD

VOLUME

Marina Way Bet. Bay Marina Dr & 32nd St

Day: Thursday
Date: 10/27/2016

City: National City
Project #: CA16_4316_006

DAILY TOTALS	NB	SB	EB	WB	Total
	701	574	0	0	1,275

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
0:00	3		0						3		12:00	17		15						32	
0:15	0		0						0		12:15	19		4						23	
0:30	0		2						2		12:30	11		10						21	
0:45	1	4	0	2					1	6	12:45	13	60	12	41					25	101
1:00	1		0						1		13:00	15		9						24	
1:15	2		1						3		13:15	7		8						15	
1:30	0		3						3		13:30	9		10						19	
1:45	5	8	1	5					6	13	13:45	17	48	11	38					28	86
2:00	0		0						0		14:00	14		13						27	
2:15	0		0						0		14:15	10		9						19	
2:30	0		0						0		14:30	16		12						28	
2:45	1	1	1	1					2	2	14:45	14	54	10	44					24	98
3:00	0		0						0		15:00	8		8						16	
3:15	0		0						0		15:15	22		13						35	
3:30	1		1						2		15:30	13		11						24	
3:45	0	1	0	1					0	2	15:45	9	52	6	38					15	90
4:00	2		0						2		16:00	12		14						26	
4:15	2		0						2		16:15	12		19						31	
4:30	0		1						1		16:30	26		21						47	
4:45	2	6	1	2					3	8	16:45	41	91	20	74					61	165
5:00	1		1						2		17:00	26		11						37	
5:15	1		6						7		17:15	16		7						23	
5:30	4		2						6		17:30	10		9						19	
5:45	3	9	4	13					7	22	17:45	9	61	3	30					12	91
6:00	9		2						11		18:00	7		11						18	
6:15	5		4						9		18:15	8		7						15	
6:30	8		0						8		18:30	6		7						13	
6:45	4	26	4	10					8	36	18:45	10	31	8	33					18	64
7:00	9		2						11		19:00	7		5						12	
7:15	4		4						8		19:15	5		8						13	
7:30	1		7						8		19:30	4		8						12	
7:45	7	21	9	22					16	43	19:45	6	22	6	27					12	49
8:00	12		10						22		20:00	3		3						6	
8:15	8		6						14		20:15	7		4						11	
8:30	5		8						13		20:30	3		5						8	
8:45	10	35	5	29					15	64	20:45	5	18	2	14					7	32
9:00	12		7						19		21:00	2		4						6	
9:15	10		8						18		21:15	1		5						6	
9:30	7		6						13		21:30	4		2						6	
9:45	7	36	9	30					16	66	21:45	1	8	7	18					8	26
10:00	8		8						16		22:00	2		1						3	
10:15	12		8						20		22:15	6		3						9	
10:30	9		10						19		22:30	12		2						14	
10:45	10	39	7	33					17	72	22:45	4	24	2	8					6	32
11:00	9		14						23		23:00	1		2						3	
11:15	10		9						19		23:15	3		3						6	
11:30	6		14						20		23:30	3		1						4	
11:45	13	38	15	52					28	90	23:45	1	8	3	9					4	17
TOTALS		224		200						424	TOTALS		477		374						851
SPLIT %		52.8%		47.2%						33.3%	SPLIT %		56.1%		43.9%						66.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	701	574	0	0	1,275

AM Peak Hour	11:45	11:15			11:45	PM Peak Hour	16:30	16:00			16:15
AM Pk Volume	60	53			104	PM Pk Volume	109	74			176
Pk Hr Factor	0.789	0.883			0.813	Pk Hr Factor	0.665	0.881			0.721
7 - 9 Volume	56	51	0	0	107	4 - 6 Volume	152	104	0	0	256
7 - 9 Peak Hour	8:00	7:45			7:45	4 - 6 Peak Hour	16:30	16:00			16:15
7 - 9 Pk Volume	35	33	0	0	65	4 - 6 Pk Volume	109	74	0	0	176
Pk Hr Factor	0.729	0.825	0.000	0.000	0.739	Pk Hr Factor	0.665	0.881	0.000	0.000	0.721

Prepared by NDS/ATD

VOLUME

Cleveland Ave Bet. W 14th St & W 18th St

Day: Tuesday
Date: 5/2/2017

City: National City
Project #: CA17_4129_003

DAILY TOTALS	NB	SB	EB	WB	Total
	1,551	3,173	0	0	4,724

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
0:00	2		7						9		12:00	24		40						64	
0:15	0		3						3		12:15	28		44						72	
0:30	0		4						4		12:30	13		31						44	
0:45	2	4	8	22					10	26	12:45	25	90	56	171					81	261
1:00	0		3						3		13:00	23		40						63	
1:15	1		1						2		13:15	23		38						61	
1:30	0		5						5		13:30	17		44						61	
1:45	1	2	3	12					4	14	13:45	25	88	46	168					71	256
2:00	0		0						0		14:00	16		46						62	
2:15	1		1						2		14:15	20		54						74	
2:30	0		0						0		14:30	30		71						101	
2:45	0	1	2	3					2	4	14:45	17	83	76	247					93	330
3:00	2		1						3		15:00	20		89						109	
3:15	3		1						4		15:15	25		89						114	
3:30	0		6						6		15:30	23		106						129	
3:45	1	6	8	16					9	22	15:45	13	81	76	360					89	441
4:00	0		6						6		16:00	16		103						119	
4:15	3		8						11		16:15	12		97						109	
4:30	2		17						19		16:30	11		83						94	
4:45	3	8	17	48					20	56	16:45	14	53	77	360					91	413
5:00	7		19						26		17:00	17		74						91	
5:15	14		25						39		17:15	6		53						59	
5:30	28		33						61		17:30	9		54						63	
5:45	41	90	53	130					94	220	17:45	5	37	58	239					63	276
6:00	42		41						83		18:00	4		40						44	
6:15	36		39						75		18:15	9		36						45	
6:30	60		34						94		18:30	2		25						27	
6:45	60	198	75	189					135	387	18:45	3	18	20	121					23	139
7:00	49		58						107		19:00	3		26						29	
7:15	68		49						117		19:15	8		17						25	
7:30	81		41						122		19:30	5		17						22	
7:45	76	274	48	196					124	470	19:45	2	18	18	78					20	96
8:00	60		49						109		20:00	2		23						25	
8:15	50		53						103		20:15	2		15						17	
8:30	42		32						74		20:30	4		16						20	
8:45	54	206	32	166					86	372	20:45	5	13	13	67					18	80
9:00	40		37						77		21:00	4		9						13	
9:15	23		48						71		21:15	1		6						7	
9:30	16		37						53		21:30	1		13						14	
9:45	18	97	39	161					57	258	21:45	4	10	8	36					12	46
10:00	20		31						51		22:00	2		11						13	
10:15	24		40						64		22:15	1		10						11	
10:30	13		42						55		22:30	4		7						11	
10:45	19	76	45	158					64	234	22:45	2	9	10	38					12	47
11:00	23		29						52		23:00	1		9						10	
11:15	13		46						59		23:15	2		8						10	
11:30	24		38						62		23:30	3		6						9	
11:45	22	82	48	161					70	243	23:45	1	7	3	26					4	33
TOTALS		1044		1262						2306	TOTALS		507		1911						2418
SPLIT %		45.3%		54.7%						48.8%	SPLIT %		21.0%		79.0%						51.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,551	3,173	0	0	4,724

AM Peak Hour	7:15	6:45				6:45	PM Peak Hour	14:30	15:30				15:15
AM Pk Volume	285	223				481	PM Pk Volume	92	382				451
Pk Hr Factor	0.880	0.743				0.891	Pk Hr Factor	0.767	0.901				0.874
7 - 9 Volume	480	362	0	0		842	4 - 6 Volume	90	599	0	0		689
7 - 9 Peak Hour	7:15	7:00				7:15	4 - 6 Peak Hour	16:15	16:00				16:00
7 - 9 Pk Volume	285	196	0	0		472	4 - 6 Pk Volume	54	360	0	0		413
Pk Hr Factor	0.880	0.845	0.000	0.000		0.952	Pk Hr Factor	0.794	0.874	0.000	0.000		0.868

Prepared by NDS/ATD

VOLUME

Cleveland Ave Bet. W 23rd St & W Bay Marina Dr

Day: Tuesday
Date: 5/2/2017

City: National City
Project #: CA17_4129_004

DAILY TOTALS	NB	SB	EB	WB	Total
	2,759	2,949	0	0	5,708

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
0:00	2		6				8		12:00	45		52				97	
0:15	1		2				3		12:15	39		45				84	
0:30	1		2				3		12:30	33		72				105	
0:45	1	5	3	13			4	18	12:45	56	173	42	211			98	384
1:00	1		3				4		13:00	43		33				76	
1:15	1		1				2		13:15	61		69				130	
1:30	3		2				5		13:30	48		106				154	
1:45	3	8	2	8			5	16	13:45	22	174	37	245			59	419
2:00	1		1				2		14:00	32		35				67	
2:15	1		0				1		14:15	31		77				108	
2:30	11		1				12		14:30	23		62				85	
2:45	11	24	2	4			13	28	14:45	25	111	83	257			108	368
3:00	4		4				8		15:00	26		87				113	
3:15	5		1				6		15:15	27		103				130	
3:30	14		1				15		15:30	18		121				139	
3:45	32	55	5	11			37	66	15:45	14	85	83	394			97	479
4:00	9		9				18		16:00	17		125				142	
4:15	21		4				25		16:15	15		98				113	
4:30	49		18				67		16:30	9		109				118	
4:45	66	145	11	42			77	187	16:45	12	53	85	417			97	470
5:00	24		38				62		17:00	10		96				106	
5:15	41		13				54		17:15	11		89				100	
5:30	74		9				83		17:30	11		69				80	
5:45	104	243	15	75			119	318	17:45	7	39	45	299			52	338
6:00	75		15				90		18:00	8		41				49	
6:15	72		14				86		18:15	10		31				41	
6:30	96		15				111		18:30	7		19				26	
6:45	119	362	10	54			129	416	18:45	10	35	12	103			22	138
7:00	82		11				93		19:00	11		22				33	
7:15	94		18				112		19:15	9		13				22	
7:30	110		14				124		19:30	21		12				33	
7:45	89	375	18	61			107	436	19:45	19	60	10	57			29	117
8:00	94		29				123		20:00	14		18				32	
8:15	71		35				106		20:15	21		13				34	
8:30	61		27				88		20:30	22		23				45	
8:45	69	295	24	115			93	410	20:45	25	82	13	67			38	149
9:00	52		20				72		21:00	9		18				27	
9:15	29		27				56		21:15	7		8				15	
9:30	28		44				72		21:30	5		6				11	
9:45	35	144	38	129			73	273	21:45	6	27	9	41			15	68
10:00	22		21				43		22:00	7		30				37	
10:15	31		28				59		22:15	3		17				20	
10:30	28		38				66		22:30	5		6				11	
10:45	24	105	38	125			62	230	22:45	2	17	6	59			8	76
11:00	27		33				60		23:00	3		5				8	
11:15	26		45				71		23:15	5		7				12	
11:30	34		24				58		23:30	2		2				4	
11:45	44	131	45	147			89	278	23:45	1	11	1	15			2	26
TOTALS		1892		784				2676	TOTALS		867		2165				3032
SPLIT %		70.7%		29.3%				46.9%	SPLIT %		28.6%		71.4%				53.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	2,759	2,949	0	0	5,708

AM Peak Hour	6:45	11:45			7:15	PM Peak Hour	12:45	15:15			15:15
AM Pk Volume	405	214			466	PM Pk Volume	208	432			508
Pk Hr Factor	0.851	0.743			0.940	Pk Hr Factor	0.852	0.864			0.894
7 - 9 Volume	670	176	0	0	846	4 - 6 Volume	92	716	0	0	808
7 - 9 Peak Hour	7:15	8:00			7:15	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	387	115	0	0	466	4 - 6 Pk Volume	53	417	0	0	470
Pk Hr Factor	0.880	0.821	0.000	0.000	0.940	Pk Hr Factor	0.779	0.834	0.000	0.000	0.827

Prepared by NDS/ATD

VOLUME

W 19th St Bet. Tidelands Ave & Cleveland Ave

Day: Tuesday
Date: 5/2/2017

City: National City
Project #: CA17_4129_010

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,846	2,091	3,937

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			10		1		11		12:00			24		24		48	
0:15			5		2		7		12:15			24		30		54	
0:30			1		1		2		12:30			66		24		90	
0:45			0	16	1	5	1	21	12:45			13	127	35	113	48	240
1:00			1		2		3		13:00			22		39		61	
1:15			0		2		2		13:15			47		61		108	
1:30			1		2		3		13:30			111		40		151	
1:45			0	2	2	8	2	10	13:45			43	223	22	162	65	385
2:00			1		0		1		14:00			34		22		56	
2:15			0		1		1		14:15			51		19		70	
2:30			1		8		9		14:30			65		14		79	
2:45			0	2	13	22	13	24	14:45			36	186	11	66	47	252
3:00			0		2		2		15:00			60		17		77	
3:15			1		9		10		15:15			47		15		62	
3:30			0		20		20		15:30			48		14		62	
3:45			0	1	37	68	37	69	15:45			27	182	10	56	37	238
4:00			10		14		24		16:00			89		16		105	
4:15			4		19		23		16:15			40		7		47	
4:30			23		51		74		16:30			48		6		54	
4:45			7	44	70	154	77	198	16:45			21	198	7	36	28	234
5:00			43		32		75		17:00			32		7		39	
5:15			11		33		44		17:15			43		5		48	
5:30			9		75		84		17:30			22		2		24	
5:45			15	78	78	218	93	296	17:45			7	104	6	20	13	124
6:00			16		63		79		18:00			19		2		21	
6:15			8		61		69		18:15			4		8		12	
6:30			7		74		81		18:30			4		4		8	
6:45			7	38	101	299	108	337	18:45			5	32	10	24	15	56
7:00			9		83		92		19:00			8		4		12	
7:15			21		56		77		19:15			4		5		9	
7:30			24		53		77		19:30			4		13		17	
7:45			10	64	55	247	65	311	19:45			3	19	23	45	26	64
8:00			12		36		48		20:00			12		12		24	
8:15			25		35		60		20:15			9		21		30	
8:30			22		27		49		20:30			28		21		49	
8:45			19	78	24	122	43	200	20:45			10	59	28	82	38	141
9:00			27		25		52		21:00			14		3		17	
9:15			21		40		61		21:15			7		4		11	
9:30			21		15		36		21:30			6		1		7	
9:45			18	87	29	109	47	196	21:45			11	38	1	9	12	47
10:00			19		21		40		22:00			35		5		40	
10:15			16		16		32		22:15			21		1		22	
10:30			23		13		36		22:30			7		2		9	
10:45			25	83	20	70	45	153	22:45			3	66	2	10	5	76
11:00			30		21		51		23:00			6		1		7	
11:15			22		31		53		23:15			9		2		11	
11:30			23		39		62		23:30			3		1		4	
11:45			24	99	49	140	73	239	23:45			2	20	2	6	4	26
TOTALS				592		1462		2054	TOTALS				1254		629		1883
SPLIT %				28.8%		71.2%		52.2%	SPLIT %				66.6%		33.4%		47.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,846	2,091	3,937

AM Peak Hour			11:45	6:15	6:30	PM Peak Hour			13:30	12:45	13:00
AM Pk Volume			138	319	358	PM Pk Volume			239	175	385
Pk Hr Factor			0.523	0.790	0.829	Pk Hr Factor			0.538	0.717	0.637
7 - 9 Volume	0	0	142	369	511	4 - 6 Volume	0	0	302	56	358
7 - 9 Peak Hour			8:00	7:00	7:00	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	78	247	311	4 - 6 Pk Volume	0	0	198	36	234
Pk Hr Factor	0.000	0.000	0.780	0.744	0.845	Pk Hr Factor	0.000	0.000	0.556	0.563	0.557

Prepared by NDS/ATD

VOLUME

Mckinley Ave Bet. W 14th St & W 18th St

Day: Tuesday
Date: 5/2/2017

City: National City
Project #: CA17_4129_007

DAILY TOTALS	NB	SB	EB	WB	Total
	227	366	0	0	593

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
0:00	1		1						2		12:00	4		11						15	
0:15	1		0						1		12:15	8		9						17	
0:30	0		0						0		12:30	2		4						6	
0:45	1	3	1	2					2	5	12:45	4	18	10	34					14	52
1:00	0		0						0		13:00	3		7						10	
1:15	0		0						0		13:15	7		11						18	
1:30	0		0						0		13:30	7		1						8	
1:45	0		0						0		13:45	5	22	11	30					16	52
2:00	0		0						0		14:00	6		7						13	
2:15	0		0						0		14:15	6		6						12	
2:30	0		1						1		14:30	6		10						16	
2:45	0		1	2					1	2	14:45	3	21	11	34					14	55
3:00	0		0						0		15:00	1		9						10	
3:15	0		0						0		15:15	8		19						27	
3:30	0		1						1		15:30	8		5						13	
3:45	1	1	1	2					2	3	15:45	2	19	6	39					8	58
4:00	0		0						0		16:00	7		5						12	
4:15	1		0						1		16:15	6		3						9	
4:30	0		0						0		16:30	2		5						7	
4:45	0	1	0						0	1	16:45	1	16	8	21					9	37
5:00	1		0						1		17:00	4		7						11	
5:15	0		2						2		17:15	4		2						6	
5:30	2		5						7		17:30	1		3						4	
5:45	1	4	3	10					4	14	17:45	1	10	6	18					7	28
6:00	3		4						7		18:00	2		3						5	
6:15	1		0						1		18:15	0		5						5	
6:30	4		2						6		18:30	4		4						8	
6:45	4	12	3	9					7	21	18:45	1	7	0	12					1	19
7:00	5		5						10		19:00	0		1						1	
7:15	1		10						11		19:15	2		2						4	
7:30	0		1						1		19:30	0		3						3	
7:45	9	15	8	24					17	39	19:45	1	3	2	8					3	11
8:00	6		7						13		20:00	1		2						3	
8:15	3		6						9		20:15	1		1						2	
8:30	4		4						8		20:30	0		2						2	
8:45	3	16	8	25					11	41	20:45	0	2	0	5					0	7
9:00	3		3						6		21:00	0		0						0	
9:15	5		8						13		21:15	2		1						3	
9:30	2		8						10		21:30	0		3						3	
9:45	5	15	7	26					12	41	21:45	0	2	1	5					1	7
10:00	4		8						12		22:00	1		0						1	
10:15	3		2						5		22:15	2		3						5	
10:30	4		6						10		22:30	0		3						3	
10:45	2	13	5	21					7	34	22:45	1	4	2	8					3	12
11:00	5		8						13		23:00	2		2						4	
11:15	4		8						12		23:15	0		2						2	
11:30	6		4						10		23:30	0		1						1	
11:45	5	20	6	26					11	46	23:45	1	3	0	5					1	8
TOTALS		100		147						247	TOTALS		127		219						346
SPLIT %		40.5%		59.5%						41.7%	SPLIT %		36.7%		63.3%						58.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	227	366	0	0	593

AM Peak Hour	11:30	9:15			11:30	PM Peak Hour	13:15	14:30			14:30
AM Pk Volume	23	31			53	PM Pk Volume	25	49			67
Pk Hr Factor	0.719	0.969			0.779	Pk Hr Factor	0.893	0.645			0.620
7 - 9 Volume	31	49	0	0	80	4 - 6 Volume	26	39	0	0	65
7 - 9 Peak Hour	7:45	7:15			7:45	4 - 6 Peak Hour	16:00	16:15			16:00
7 - 9 Pk Volume	22	26	0	0	47	4 - 6 Pk Volume	16	23	0	0	37
Pk Hr Factor	0.611	0.650	0.000	0.000	0.691	Pk Hr Factor	0.571	0.719	0.000	0.000	0.771

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

I-5 NB Off Ramp and National Ave , San Diego

Date: 7/24/2014
Day: Thursday

Project #: 14-4192-010
City: San Diego

AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	415 PM

Peak Hour Summary

Southbound Approach

Lanes	0	1	0		
AM	44	0	0	40	AM
NOON	0	0	0	0	NOON
PM	52	0	0	37	PM

I-5 NB Off Ramp

Eastbound Approach (National Ave)

	AM	NOON	PM
	640	0	599
0	0	0	1
1	168	0	511
1	36	0	41
Lanes	AM	NOON	PM

Westbound Approach

	AM	NOON	PM	Lanes
	15	0	18	0
	321	0	282	1
	0	0	0	0
	241	0	631	
	AM	NOON	PM	

CONTROL: Signalized

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Northbound Approach

AM	36	275	25	73
NOON	0	0	0	0
PM	41	265	18	120
Lanes		1	0	1

Total Ins & Outs

	North Leg		
	44	40	AM
	0	0	NOON
	52	37	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
640	0	599		336	0	300
204	0	553		241	0	631

	South Leg	
AM	36	373
NOON	0	0
PM	41	403

Total Volume Per Leg

	North Leg	
AM	84	
NOON	0	
PM	89	

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
844	0	1152	577	0	931

	South Leg
AM	409
NOON	0
PM	444

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-010 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

PM

NS/EW Streets:	I-5 NB Off Ramp			I-5 NB Off Ramp			National Ave			National Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 0	NR 1	SL 0	ST 1	SR 0	EL 0	ET 1	ER 1	WL 0	WT 1	WR 0	TOTAL
4:00 PM	79	4	32			9	0	130	16	0	53	0	323
4:15 PM	61	4	31			12	1	123	14	0	82	6	334
4:30 PM	73	3	32			11	0	129	11	0	68	3	330
4:45 PM	60	5	24			9	0	136	9	0	62	3	308
5:00 PM	71	6	33			20	0	123	7	0	70	6	336
5:15 PM	63	8	28			18	0	124	9	1	68	8	327
5:30 PM	52	12	40			18	0	64	5	0	76	7	274
5:45 PM	55	10	38			13	0	90	7	0	74	6	293
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	514	52	258	0	0	110	1	919	78	1	553	39	2525
APPROACH %'s :	62.38%	6.31%	31.31%	0.00%	0.00%	100.00%	0.10%	92.08%	7.82%	0.17%	93.25%	6.58%	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	265	18	120	0	0	52	1	511	41	0	282	18	1308
PEAK HR FACTOR :		0.916			0.650			0.953			0.852		0.973

UTURNS	NB	SB	EB	WB
	NB	SB	EB	WB
	0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-010 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

AM

NS/EW Streets:	I-5 NB Off Ramp			I-5 NB Off Ramp			National Ave			National Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 0	NR 1	SL 0	ST 1	SR 0	EL 0	ET 1	ER 1	WL 0	WT 1	WR 0	TOTAL
7:00 AM	34	2	8			10		40	4		128	4	230
7:15 AM	40	2	9			11		34	4		115	5	220
7:30 AM	55	11	5			15		29	6		135	1	257
7:45 AM	48	4	6			11		27	8		101	2	207
8:00 AM	67	3	19			10		39	7		99	7	251
8:15 AM	53	6	15			12		47	12		76	4	225
8:30 AM	81	12	16			11		34	8		79	2	243
8:45 AM	74	4	23			11		48	9		67	2	238
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	452	44	101	0	0	91	0	298	58	0	800	27	1871
APPROACH %'s :	75.71%	7.37%	16.92%	0.00%	0.00%	100.00%	0.00%	83.71%	16.29%	0.00%	96.74%	3.26%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	275	25	73	0	0	44	0	168	36	0	321	15	957
PEAK HR FACTOR :		0.856			0.917			0.864			0.792		0.953

UTURNS	NB	SB	EB	WB
TOTAL VOLUMES :	0	0	0	0

CONTROL : Signalized

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/19/18 THURSDAY

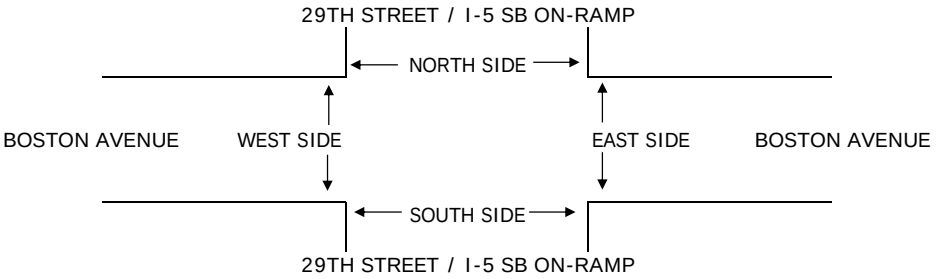
LOCATION: HARBOR DRIVE SD
NORTH & SOUTH: 29TH STREET / I-5 SB ON-RAMP
EAST & WEST: BOSTON AVENUE

PROJECT #: PTD18-0420-03
LOCATION #: 1
CONTROL: STOP

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

	LANES:	NORTHBOUND 29TH STREET / I-5 SB ON-RAMP NL	NT	NR	SOUTHBOUND 29TH STREET / I-5 SB ON-RAMP SL	ST	SR	EASTBOUND BOSTON AVENUE EL	ET	ER	WESTBOUND BOSTON AVENUE WL	WT	WR	TOTAL	U-TURNS NB X	SB X	EB X	WB X	TTL
AM	5:30 AM	1	4	2				29	7	0	1	12	5	61					0
	5:45 AM	2	4	1				32	8	0	1	22	4	74					0
	6:00 AM	1	4	1				36	14	0	1	16	11	84					0
	6:15 AM	3	8	1				45	3	3	0	9	7	79					0
	6:30 AM	2	5	0				31	4	0	0	23	14	79					0
	6:45 AM	3	6	0				29	2	2	0	34	12	88					0
	7:00 AM	4	7	0				40	5	1	0	22	19	98					0
	7:15 AM	0	5	0				39	2	0	0	25	7	78					0
	VOLUMES	16	43	5	0	0	0	281	45	6	3	163	79	641	0	0	0	0	0
	APPROACH %	25%	67%	8%	0%	0%	0%	85%	14%	2%	1%	67%	32%						
	APP/DEPART	64	/	403	0	/	9	332	/	50	245	/	179	0					
	BEGIN PEAK HR		6:15 AM																
	VOLUMES	12	26	1	0	0	0	145	14	6	0	88	52	344					
	APPROACH %	31%	67%	3%	0%	0%	0%	88%	8%	4%	0%	63%	37%						
	PEAK HR FACTOR		0.813			0.000			0.809			0.761		0.878					
	APP/DEPART	39	/	223	0	/	6	165	/	15	140	/	100	0					
PM	2:30 PM	0	76	4				174	5	2	1	6	43	311					0
	2:45 PM	0	51	4				165	19	7	0	9	28	283					0
	3:00 PM	5	61	3				149	21	1	1	13	36	290					0
	3:15 PM	0	62	5				95	3	1	2	8	55	231					0
	3:30 PM	0	20	5				93	8	4	0	8	26	164					0
	3:45 PM	1	16	0				101	13	1	0	9	20	161					0
	4:00 PM	1	19	1				114	13	1	0	10	14	173					0
	4:15 PM	0	15	0				96	8	4	0	11	19	153					0
	VOLUMES	7	320	22	0	0	0	987	90	21	4	74	241	1,766	0	0	0	0	0
	APPROACH %	2%	92%	6%	0%	0%	0%	90%	8%	2%	1%	23%	76%						
	APP/DEPART	349	/	1,548	0	/	25	1,098	/	112	319	/	81	0					
	BEGIN PEAK HR		2:30 PM																
	VOLUMES	5	250	16	0	0	0	583	48	11	4	36	162	1,115					
	APPROACH %	2%	92%	6%	0%	0%	0%	91%	7%	2%	2%	18%	80%						
	PEAK HR FACTOR		0.847			0.000			0.840			0.777		0.896					
	APP/DEPART	271	/	995	0	/	15	642	/	64	202	/	41	0					



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

INTERSECTION TURNING MOVEMENT COUNTS

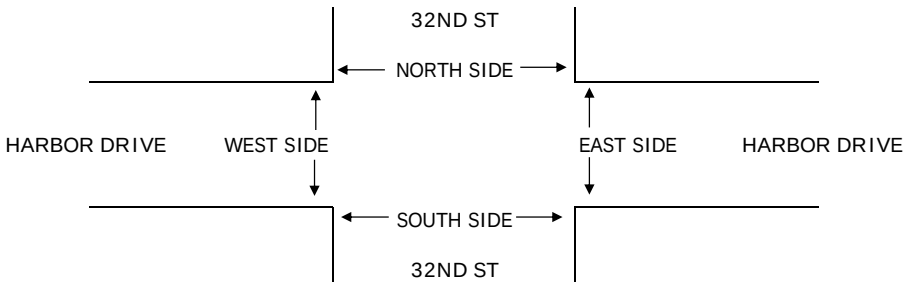
PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	HARBOR DRIVE SD	PROJECT #:	PTD18-0420-03
4/19/18	NORTH & SOUTH:	32ND ST	LOCATION #:	2
THURSDAY	EAST & WEST:	HARBOR DRIVE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND 32ND ST			SOUTHBOUND 32ND ST			EASTBOUND HARBOR DRIVE			WESTBOUND HARBOR DRIVE				U-TURNS				
	LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	5:30 AM	2	18	7	25	164	54	7	73	57	66	65	4	542					0
	5:45 AM	3	8	5	18	148	24	11	83	94	64	59	17	534				1	1
	6:00 AM	5	16	2	26	130	41	23	96	86	81	72	15	593		1		1	2
	6:15 AM	11	21	4	18	108	27	13	68	66	76	66	21	499			1		1
	6:30 AM	12	23	7	23	134	41	26	114	98	70	87	30	665		1			1
	6:45 AM	10	17	6	36	182	36	16	40	45	70	155	37	650				1	1
	7:00 AM	13	28	3	22	148	27	27	59	54	55	189	47	672		1			1
	7:15 AM	14	30	5	19	124	30	12	53	44	33	230	59	653		2			2
	VOLUMES	70	161	39	187	1,138	280	135	586	544	515	923	230	4,808	0	5	1	3	9
	APPROACH %	26%	60%	14%	12%	71%	17%	11%	46%	43%	31%	55%	14%						
	APP/DEPART	270	/	526	1,605	/	2,197	1,265	/	812	1,668	/	1,273	0					
	BEGIN PEAK HR		6:30 AM																
	VOLUMES	49	98	21	100	588	134	81	266	241	228	661	173	2,640					
	APPROACH %	29%	58%	13%	12%	72%	16%	14%	45%	41%	21%	62%	16%						
	PEAK HR FACTOR		0.857			0.809			0.618			0.825		0.982					
	APP/DEPART	168	/	352	822	/	1,057	588	/	387	1,062	/	844	0					
PM	2:30 PM	34	188	46	27	27	20	39	171	21	2	92	70	737					0
	2:45 PM	19	204	46	41	34	32	35	131	13	10	92	103	760					0
	3:00 PM	17	168	44	53	44	35	40	243	25	6	104	78	857		1	1		2
	3:15 PM	39	209	38	38	37	41	29	212	18	1	69	96	827		1	1		2
	3:30 PM	28	114	39	41	28	17	26	187	17	6	67	68	638		1			1
	3:45 PM	23	105	63	42	26	19	36	205	28	7	125	87	766					0
	4:00 PM	38	185	48	41	31	24	40	162	16	6	78	94	763		1			1
	4:15 PM	48	151	36	48	23	17	23	217	22	5	68	108	766			1		1
	VOLUMES	246	1,324	360	331	250	205	268	1,528	160	43	695	704	6,114	0	4	3	0	7
	APPROACH %	13%	69%	19%	42%	32%	26%	14%	78%	8%	3%	48%	49%						
	APP/DEPART	1,930	/	2,296	786	/	453	1,956	/	2,219	1,442	/	1,146	0					
	BEGIN PEAK HR		2:30 PM																
	VOLUMES	109	769	174	159	142	128	143	757	77	19	357	347	3,181					
	APPROACH %	10%	73%	17%	37%	33%	30%	15%	77%	8%	3%	49%	48%						
	PEAK HR FACTOR		0.920			0.813			0.793			0.882		0.928					
	APP/DEPART	1,052	/	1,259	429	/	238	977	/	1,090	723	/	594	0					



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

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

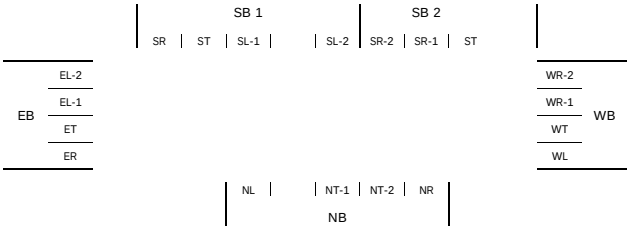
DATE:	LOCATION:		PROJECT #:	
4/19/18	NORTH & SOUTH:	HARBOR DRIVE SD	LOCATION #:	PTD18-0420-03
THURSDAY	EAST & WEST:	32ND ST & I-5 RAMPS	CONTROL:	3
		NORMAN SCOTT		SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

	NORTHBOUND 32 ND ST					SOUTHBOUND 1 32 ND ST					SOUTHBOUND 2 I-5				EASTBOUND NORMAN SCOTT					WESTBOUND NORMAN SCOTT						
	NL	NT-1 32ND	NT-2 I-5	NR	SUM	SL-2 I-5	SL-1 NORMAN	ST	SR	SUM	ST	SR-1 NORMAN	SR-2 32ND	SUM	EL-2 I-5	EL-1 32ND	ET	ER	SUM	WL	WT	WR-1 32ND	WR-2 I-5	SUM	TOTAL	
AM 5:30 AM	0	2	16	13	31	0	4	152	10	166	83	1	0	250	6	2	1	1	10	0	0	0	0	0	291	1,036
5:45 AM	1	7	15	10	33	0	1	101	1	103	84	1	0	188	0	9	1	0	10	0	0	0	0	0	231	1,019
6:00 AM	6	11	16	21	54	0	4	91	9	104	77	2	0	183	3	9	4	2	18	0	0	0	0	0	255	1,109
6:15 AM	0	9	18	19	46	0	0	92	21	113	78	5	0	196	3	9	4	1	17	0	0	0	0	0	259	1,174
6:30 AM	6	12	23	24	65	1	1	86	21	109	75	5	0	189	1	13	3	3	20	0	0	0	0	0	274	1,233
6:45 AM	6	12	20	32	70	0	0	91	18	109	114	6	1	230	2	13	2	4	21	0	0	0	0	0	321	
7:00 AM	12	20	25	37	94	0	4	72	19	95	107	3	0	205	3	10	7	1	21	0	0	0	0	0	320	
7:15 AM	12	21	24	37	94	0	2	51	15	68	120	7	0	195	3	15	10	1	29	0	0	0	0	0	318	
VOLUMES	43	94	157	193	487	1	16	736	114	867	738	30	1	1,636	21	80	32	13	146	0	0	0	0	0	2,269	
PEAK HOUR 6:30 AM	36	65	92	130	323	1	7	300	73	381	416	21	1	819	9	51	22	9	91	0	0	0	0	0	1,233	0.960
APPROACH %	9%	19%	32%	40%	0.859	0%	2%	85%	13%	0.874	96%	4%	0%	0.890	14%	55%	22%	9%	0.784	0%	0%	0%	0%	#DIV/0!		
APP / DEP	491		1,491			867		116			769	I	238		146		158			0		226				
PM 2:30 PM	24	61	192	26	303	17	5	36	30	88	20	8	1	117	15	21	7	11	54	22	12	17	24	75	549	2,364
2:45 PM	31	48	204	46	329	6	1	35	17	59	11	7	0	77	15	17	5	19	56	26	4	17	45	92	554	2,367
3:00 PM	26	48	199	36	309	9	6	58	42	115	21	9	1	146	26	17	9	17	69	27	9	25	44	105	629	2,240
3:15 PM	32	63	232	39	366	13	6	39	29	87	12	3	0	102	21	13	2	25	61	25	11	28	39	103	632	2,224
3:30 PM	20	28	178	44	270	18	8	43	39	108	7	4	0	119	26	16	12	22	76	22	6	23	36	87	552	2,194
3:45 PM	14	34	106	28	182	12	7	31	31	81	18	3	1	103	16	14	8	15	53	24	11	18	36	89	427	
4:00 PM	33	44	204	46	327	20	11	34	41	106	14	5	1	126	24	24	11	12	71	35	9	12	33	89	613	
4:15 PM	15	67	202	41	325	14	12	32	37	95	13	9	0	117	14	23	7	14	58	35	8	17	42	102	602	
VOLUMES	195	393	1,517	306	2,411	109	56	308	266	739	116	48	4	907	157	145	61	135	498	216	70	157	299	742	4,558	
PEAK HOUR 2:45 PM	109	187	813	165	1,274	46	21	175	127	369	51	23	1	444	88	63	28	83	262	100	30	93	164	387	2,367	0.936
APPROACH %	8%	16%	63%	13%	0.870	15%	8%	42%	36%	0.802	69%	29%	2%	0.760	32%	29%	12%	27%	0.862	29%	9%	21%	40%	0.921		
APP / DEP	2416		780			739		711			168	I	2,070		498		535			742		476				

U-TURNS						
NB	SB-1	SB-2	EB	WB	TTL
					0
					0
					0
					0
					0
1					1
1					1
2					2
4	0	0	0	0	4
2					2
1					1
					0
					0
					0
					0
					0
1					1
1					1
5	0	0	0	0	5



INTERSECTION TURNING MOVEMENT COUNTS

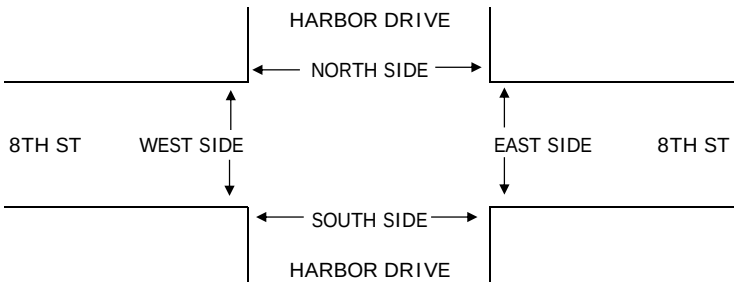
PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	HARBOR DRIVE SD	PROJECT #:	PTD18-0420-03
4/19/18	NORTH & SOUTH:	HARBOR DRIVE	LOCATION #:	4
THURSDAY	EAST & WEST:	8TH ST	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND HARBOR DRIVE			SOUTHBOUND HARBOR DRIVE			EASTBOUND 8TH ST			WESTBOUND 8TH ST				U-TURNS				
	LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	5:30 AM	41	280	3	7	15	61	1	6	2	0	72	5	493		1			1
	5:45 AM	39	300	3	6	13	84	1	3	4	1	87	10	551					0
	6:00 AM	45	322	4	7	24	115	3	1	7	1	73	6	608					0
	6:15 AM	41	262	13	6	20	65	3	11	4	2	84	7	518		1			1
	6:30 AM	62	303	6	10	20	93	10	6	10	1	78	6	605					0
	6:45 AM	49	345	17	7	28	84	12	10	8	1	82	38	681					0
	7:00 AM	54	291	8	14	26	42	21	16	1	4	84	47	608					0
	7:15 AM	30	310	13	9	24	4	9	14	8	3	81	71	576					0
	VOLUMES	361	2,413	67	66	170	548	60	67	44	13	641	190	4,640	0	2	0	0	2
	APPROACH %	13%	85%	2%	8%	22%	70%	35%	39%	26%	2%	76%	23%						
	APP/DEPART	2,841	/	2,663	784	/	227	171	/	200	844	/	1,550	0					
	BEGIN PEAK HR		6:30 AM																
	VOLUMES	195	1,249	44	40	98	223	52	46	27	9	325	162	2,470					
	APPROACH %	13%	84%	3%	11%	27%	62%	42%	37%	22%	2%	66%	33%						
	PEAK HR FACTOR		0.905			0.734			0.822			0.800		0.907					
	APP/DEPART	1,488	/	1,463	361	/	134	125	/	130	496	/	743	0					
PM	2:30 PM	0	94	7	115	239	0	11	85	48	4	0	25	628					0
	2:45 PM	0	88	11	83	256	0	15	54	32	3	0	31	573			1		1
	3:00 PM	1	74	9	131	335	0	20	101	81	4	0	18	774					0
	3:15 PM	1	58	6	136	304	0	14	102	53	6	0	11	691					0
	3:30 PM	0	38	12	141	309	1	8	82	41	5	0	7	644					0
	3:45 PM	0	46	10	172	242	0	18	55	26	3	0	21	593		1			1
	4:00 PM	0	41	4	110	263	0	17	86	54	7	0	19	601					0
	4:15 PM	0	36	7	97	265	0	13	45	23	4	0	13	503					0
	VOLUMES	2	475	66	985	2,213	1	116	610	358	36	0	145	5,007	0	1	1	0	2
	APPROACH %	0%	87%	12%	31%	69%	0%	11%	56%	33%	20%	0%	80%						
	APP/DEPART	543	/	736	3,199	/	2,607	1,084	/	1,661	181	/	3	0					
	BEGIN PEAK HR		3:00 PM																
	VOLUMES	2	216	37	580	1,190	1	60	340	201	18	0	57	2,702					
	APPROACH %	1%	85%	15%	33%	67%	0%	10%	57%	33%	24%	0%	76%						
	PEAK HR FACTOR		0.759			0.950			0.744			0.781		0.873					
	APP/DEPART	255	/	333	1,771	/	1,409	601	/	957	75	/	3	0					



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

INTERSECTION TURNING MOVEMENT COUNTS

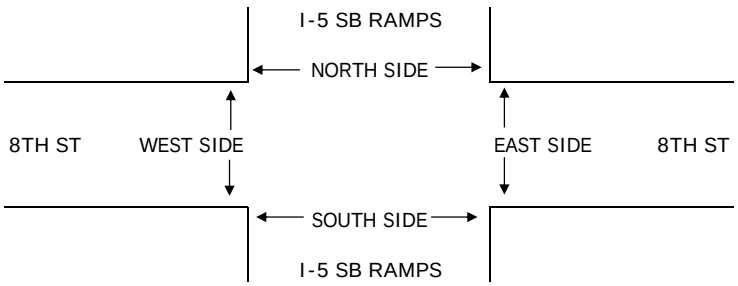
PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	HARBOR DRIVE SD	PROJECT #:	PTD18-0420-03
4/19/18	NORTH & SOUTH:	I-5 SB RAMPS	LOCATION #:	5
THURSDAY	EAST & WEST:	8TH ST	CONTROL:	STOP

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND (I-5 SB RAMPS)			SOUTHBOUND (I-5 SB RAMPS)			EASTBOUND (8TH ST)			WESTBOUND (8TH ST)				U-TURNS				
	LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	5:30 AM	55		88					37	4	13	53		250					0
	5:45 AM	23		53					18	1	15	77		187					0
	6:00 AM	21		36					12	3	7	54		133					0
	6:15 AM	25		45					22	6	14	73		185					0
	6:30 AM	23		57					31	1	28	77		217					0
	6:45 AM	48		67					23	10	36	79		263					0
	7:00 AM	52		50					38	7	32	90		269					0
	7:15 AM	60		61					31	6	21	96		275					0
	VOLUMES	307	0	457	0	0	0	0	212	38	166	599	0	1,779	0	0	0	0	0
	APPROACH %	40%	0%	60%	0%	0%	0%	0%	85%	15%	22%	78%	0%						
	APP/DEPART	764	/	0	0	/	204	250	/	669	765	/	906	0					
	BEGIN PEAK HR		6:30 AM																
	VOLUMES	183	0	235	0	0	0	0	123	24	117	342	0	1,024					
	APPROACH %	44%	0%	56%	0%	0%	0%	0%	84%	16%	25%	75%	0%						
	PEAK HR FACTOR		0.864			0.000			0.817			0.941		0.931					
	APP/DEPART	418	/	0	0	/	141	147	/	358	459	/	525	0					
PM	2:30 PM	12		136					189	32	62	30		461					0
	2:45 PM	7		155					147	27	78	47		461					0
	3:00 PM	7		148					217	36	78	33		519					0
	3:15 PM	11		119					188	59	41	26		444					0
	3:30 PM	9		144					221	58	83	33		548					0
	3:45 PM	2		142					197	32	58	36		467				1	1
	4:00 PM	5		132					204	21	56	25		443					0
	4:15 PM	4		125					189	28	45	28		419					0
	VOLUMES	57	0	1,101	0	0	0	0	1,552	293	501	258	0	3,762	0	0	0	1	1
	APPROACH %	5%	0%	95%	0%	0%	0%	0%	84%	16%	66%	34%	0%						
	APP/DEPART	1,158	/	0	0	/	794	1,845	/	2,653	759	/	315	0					
	BEGIN PEAK HR		3:00 PM																
	VOLUMES	29	0	553	0	0	0	0	823	185	260	128	0	1,978					
	APPROACH %	5%	0%	95%	0%	0%	0%	0%	82%	18%	67%	33%	0%						
	PEAK HR FACTOR		0.939			0.000			0.903			0.836		0.902					
	APP/DEPART	582	/	0	0	/	445	1,008	/	1,376	388	/	157	0					



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

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/19/18 THURSDAY

LOCATION: HARBOR DRIVE SD
NORTH & SOUTH: NATIONAL CITY BL
EAST & WEST: 8TH ST

PROJECT #: PTD18-0420-03
LOCATION #: 6
CONTROL: SIGNAL

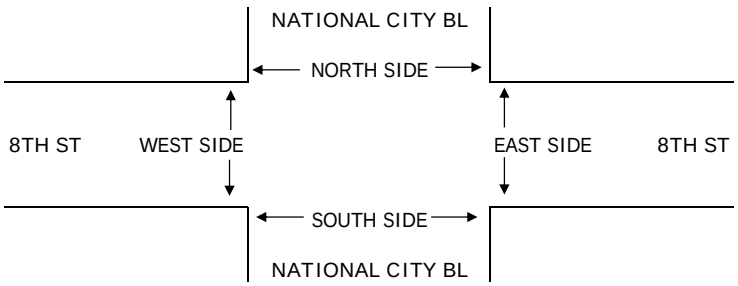
NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

	LANES:	NORTHBOUND NATIONAL CITY BL NL	NT	NR	SOUTHBOUND NATIONAL CITY BL SL	ST	SR	EASTBOUND 8TH ST EL	ET	ER	WESTBOUND 8TH ST WL	WT	WR	TOTAL
AM	5:30 AM	27	115	3	2	14	18	2	13	4	5	97	37	337
AM	5:45 AM	36	145	2	1	14	15	1	15	8	7	75	29	348
AM	6:00 AM	28	263	1	5	12	7	4	17	6	3	88	44	478
AM	6:15 AM	45	273	5	5	12	13	6	10	9	6	93	26	503
AM	6:30 AM	47	267	1	5	9	12	5	22	13	3	114	9	507
AM	6:45 AM	26	221	2	5	21	14	7	23	13	3	104	24	463
AM	7:00 AM	37	205	17	6	23	12	10	31	18	5	117	15	496
AM	7:15 AM	51	265	1	6	14	12	5	28	17	3	92	30	524
AM	VOLUMES	297	1,754	32	35	119	103	40	159	88	35	780	214	3,656
AM	APPROACH %	14%	84%	2%	14%	46%	40%	14%	55%	31%	3%	76%	21%	
AM	APP/DEPART	2,083	/	2,008	257	/	242	287	/	226	1,029	/	1,180	0
AM	BEGIN PEAK HR		6:30 AM											
AM	VOLUMES	161	958	21	22	67	50	27	104	61	14	427	78	1,990
AM	APPROACH %	14%	84%	2%	16%	48%	36%	14%	54%	32%	3%	82%	15%	
AM	PEAK HR FACTOR		0.899			0.848			0.814			0.947		0.949
AM	APP/DEPART	1,140	/	1,063	139	/	142	192	/	147	519	/	638	0
PM	2:30 PM	29	79	22	29	77	11	17	102	67	14	74	14	535
PM	2:45 PM	33	101	23	27	95	15	18	99	65	12	82	21	591
PM	3:00 PM	29	73	21	31	96	9	14	109	77	14	61	14	548
PM	3:15 PM	26	68	60	39	102	12	14	101	58	17	68	18	583
PM	3:30 PM	25	87	16	23	103	13	7	104	68	13	65	14	538
PM	3:45 PM	28	74	10	29	101	7	19	113	78	13	27	17	516
PM	4:00 PM	28	73	14	32	98	8	19	121	61	10	67	23	554
PM	4:15 PM	31	81	21	33	107	11	10	103	43	12	60	20	532
PM	VOLUMES	229	636	187	243	779	86	118	852	517	105	504	141	4,397
PM	APPROACH %	22%	60%	18%	22%	70%	8%	8%	57%	35%	14%	67%	19%	
PM	APP/DEPART	1,052	/	895	1,108	/	1,401	1,487	/	1,282	750	/	819	0
PM	BEGIN PEAK HR		2:45 PM											
PM	VOLUMES	113	329	120	120	396	49	53	413	268	56	276	67	2,260
PM	APPROACH %	20%	59%	21%	21%	70%	9%	7%	56%	37%	14%	69%	17%	
PM	PEAK HR FACTOR		0.895			0.923			0.918			0.867		0.956
PM	APP/DEPART	562	/	449	565	/	720	734	/	653	399	/	438	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
5:30 AM					0
5:45 AM					0
6:00 AM					0
6:15 AM					0
6:30 AM					0
6:45 AM					0
7:00 AM					0
7:15 AM					0
VOLUMES	0	0	0	0	0
2:30 PM					0
2:45 PM					0
3:00 PM					0
3:15 PM					0
3:30 PM					0
3:45 PM					0
4:00 PM					0
4:15 PM					0
VOLUMES	0	0	0	0	0



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

INTERSECTION TURNING MOVEMENT COUNTS

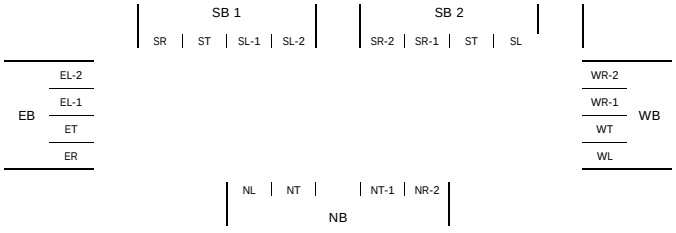
PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:		PROJECT #:	
4/19/18	NORTH & SOUTH:	HARBOR DRIVE SD	LOCATION #:	PTD18-0420-03
THURSDAY	EAST & WEST:	HARBOR DRIVE/I-5 SB RAMPS & MCKINLEY CIVIC CENTER DR	CONTROL:	7 SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND I-5					SOUTHBOUND 1 HARBOR DRIVE					SOUTHBOUND 2 MCKINLEY					EASTBOUND CIVIC CENTER DR					WESTBOUND CIVIC CENTER DR						U-TURNS					
		NL	NT	NR-1 MCKINLEY	NR-2 CIVIC	SUM	SL-2 MCKINLEY	SL-1 CIVIC	ST	SR	SUM	SL	ST I-5	SR-1 CIVIC	SR-2 HARBOR	SUM	EL-2 HARBOR	EL-1 MCKINLEY	ET	ER	SUM	WL	WT	WR-1 HARBOR	WR-2 MCKINLEY	SUM	TOTAL		NB	SB-1	SB-2	EB	WB	TTL
AM	5:30 AM	9	151	2	3	165	1	1	10	0	12	0	0	0	0	0	85	3	13	1	102	1	2	73	1	77	523	2,394						0
	5:45 AM	16	196	4	1	217	0	2	15	0	17	1	0	0	1	2	107	9	20	1	137	2	10	53	2	67	657	2,489						0
	6:00 AM	10	151	1	2	164	1	0	23	1	25	2	2	0	0	4	125	12	7	2	146	2	4	83	5	94	609	2,546						0
	6:15 AM	9	153	6	2	170	0	3	17	2	22	0	0	0	1	1	134	8	13	3	158	1	3	63	4	71	605	2,661						0
	6:30 AM	3	169	4	1	177	0	2	18	4	24	1	4	1	2	8	114	15	18	3	150	6	3	49	4	62	618	2,762						0
	6:45 AM	3	216	6	5	230	0	0	19	5	24	4	3	0	1	8	103	24	15	4	146	2	8	45	4	59	714							0
	7:00 AM	4	224	1	11	240	1	4	20	9	34	2	8	0	1	11	72	14	8	5	99	7	4	57	5	73	724							0
	7:15 AM	1	228	4	4	237	5	3	20	10	38	3	7	0	3	13	75	11	12	1	99	6	2	40	5	53	706							0
	VOLUMES	55	1,488	28	29	1,600	8	15	142	31	196	13	24	1	9	47	815	96	106	20	1,037	27	36	463	30	556	5,156		0	0	0	0	0	0
	PEAK HOUR 6:30 A	11	837	15	21	884	6	9	77	28	120	10	22	1	7	40	364	64	53	13	494	21	17	191	18	247	2,762							
	APPROACH %	3%	93%	2%	2%	0.921	4%	8%	72%	16%	0.789	34%	71%	3%	26%	0.769	79%	9%	10%	2%	0.823	5%	6%	83%	5%	0.846								
	APP / DEP	1,600		213			196		2,775			47		162			1,037		131			556		156										
PM	2:30 PM	9	89	8	22	128	3	17	237	37	294	9	9	2	1	21	18	2	70	22	112	25	5	3	1	34	990	3,593						0
	2:45 PM	6	71	3	22	102	4	18	206	26	254	4	5	0	1	10	14	1	45	18	78	20	2	8	0	30	816	3,600						0
	3:00 PM	2	60	3	15	80	1	15	273	29	318	13	10	1	2	26	15	0	52	28	95	17	6	2	1	26	927	3,690						0
	3:15 PM	4	38	0	12	54	0	12	247	46	305	13	14	1	0	28	23	5	65	17	110	18	1	2	0	21	860	3,558						0
	3:30 PM	9	63	4	23	99	1	20	227	68	316	19	23	0	2	44	20	1	50	24	95	45	6	3	3	57	997	3,588						0
	3:45 PM	6	45	0	12	63	0	21	246	75	342	4	2	0	1	7	15	0	55	19	89	7	2	1	0	10	906							0
	4:00 PM	6	28	0	14	48	1	15	223	59	298	8	4	1	0	13	15	2	58	16	91	12	1	1	0	14	795							0
	4:15 PM	3	32	0	17	52	1	16	262	72	351	4	4	0	0	8	14	1	35	9	59	20	3	2	0	25	890							0
	VOLUMES	45	426	18	137	626	11	134	1,921	412	2,478	74	71	5	7	157	134	12	430	153	729	164	26	22	5	217	7,181		0	0	0	0	0	0
	PEAK HOUR 3:00 P	21	206	7	62	296	2	68	993	218	1,281	49	49	2	5	105	73	6	222	88	389	87	15	8	4	114	3,690							
	APPROACH %	7%	68%	3%	22%	0.747	0%	5%	78%	17%	0.936	49%	86%	6%	8%	0.597	18%	2%	59%	21%	0.884	76%	12%	10%	2%	0.500								
	APP / DEP	626		2,309			2478		589			157		46			729		490			217		652										



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/19/18 THURSDAY

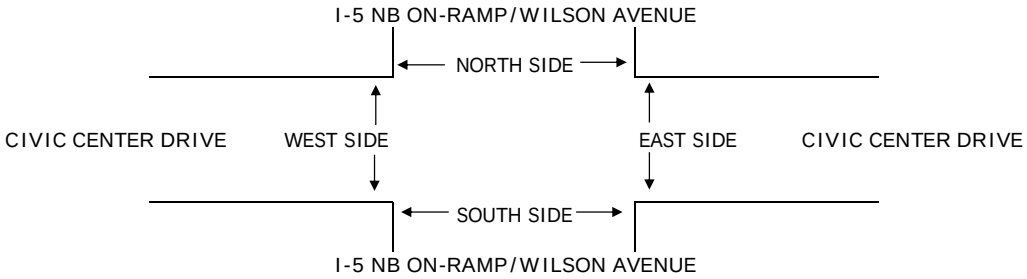
LOCATION: HARBOR DRIVE SD
NORTH & SOUTH: I-5 NB ON-RAMP/WILSON AVENUE
EAST & WEST: CIVIC CENTER DRIVE

PROJECT #: PTD18-0420-03
LOCATION #: 8
CONTROL: SIGNAL

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND I-5 NB ON-RAMP/WILSON AVENUE			SOUTHBOUND I-5 NB ON-RAMP/WILSON AVENUE			EASTBOUND CIVIC CENTER DRIVE			WESTBOUND CIVIC CENTER DRIVE				U-TURNS				
	LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	5:30 AM	19	27	3				6	4	1	2	78	19	159					0
	5:45 AM	27	27	3				8	7	7	1	49	14	143					0
	6:00 AM	35	55	6				6	6	1	2	58	31	200					0
	6:15 AM	26	94	3				5	3	2	0	48	72	253					0
	6:30 AM	17	87	16				14	8	3	1	43	116	305					0
	6:45 AM	20	101	4				11	13	3	1	33	116	302					0
	7:00 AM	27	52	5				6	6	6	0	46	105	253					0
	7:15 AM	29	75	6				5	12	6	2	28	84	247					0
	VOLUMES	200	518	46	0	0	0	61	59	29	9	383	557	1,862	0	0	0	0	0
	APPROACH %	26%	68%	6%	0%	0%	0%	41%	40%	19%	1%	40%	59%						
	APP/DEPART	764	/	1,136	0	/	38	149	/	105	949	/	583	0					
	BEGIN PEAK HR		6:15 AM																
	VOLUMES	90	334	28	0	0	0	36	30	14	2	170	409	1,113					
	APPROACH %	20%	74%	6%	0%	0%	0%	45%	38%	18%	0%	29%	70%						
	PEAK HR FACTOR		0.904			0.000			0.741			0.908		0.912					
	APP/DEPART	452	/	779	0	/	16	80	/	58	581	/	260	0					
PM	2:30 PM	9	67	5				50	47	18	2	22	39	259					0
	2:45 PM	3	37	7				25	50	10	4	27	39	202					0
	3:00 PM	5	53	13				47	45	14	4	23	32	236					0
	3:15 PM	6	37	7				50	51	54	2	22	30	259					0
	3:30 PM	9	46	7				29	51	9	1	29	29	210					0
	3:45 PM	1	39	5				40	33	21	2	9	27	177					0
	4:00 PM	5	74	9				44	40	7	2	17	41	239					0
	4:15 PM	4	28	7				28	48	9	2	22	26	174					0
	VOLUMES	42	381	60	0	0	0	313	365	142	19	171	263	1,756	0	0	0	0	0
	APPROACH %	9%	79%	12%	0%	0%	0%	38%	45%	17%	4%	38%	58%						
	APP/DEPART	483	/	957	0	/	161	820	/	425	453	/	213	0					
	BEGIN PEAK HR		2:30 PM																
	VOLUMES	23	194	32	0	0	0	172	193	96	12	94	140	956					
	APPROACH %	9%	78%	13%	0%	0%	0%	37%	42%	21%	5%	38%	57%						
	PEAK HR FACTOR		0.769			0.000			0.744			0.879		0.923					
	APP/DEPART	249	/	506	0	/	108	461	/	225	246	/	117	0					



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

TMC15 - Cleveland & I5 SB Off Ramp - Composite

TMC 15 was created in Synchro using the ADT counts from all of the adjacent segments and peak hour counts on either side of TMC 15.

ITM Peak Hour Summary

Prepared by:

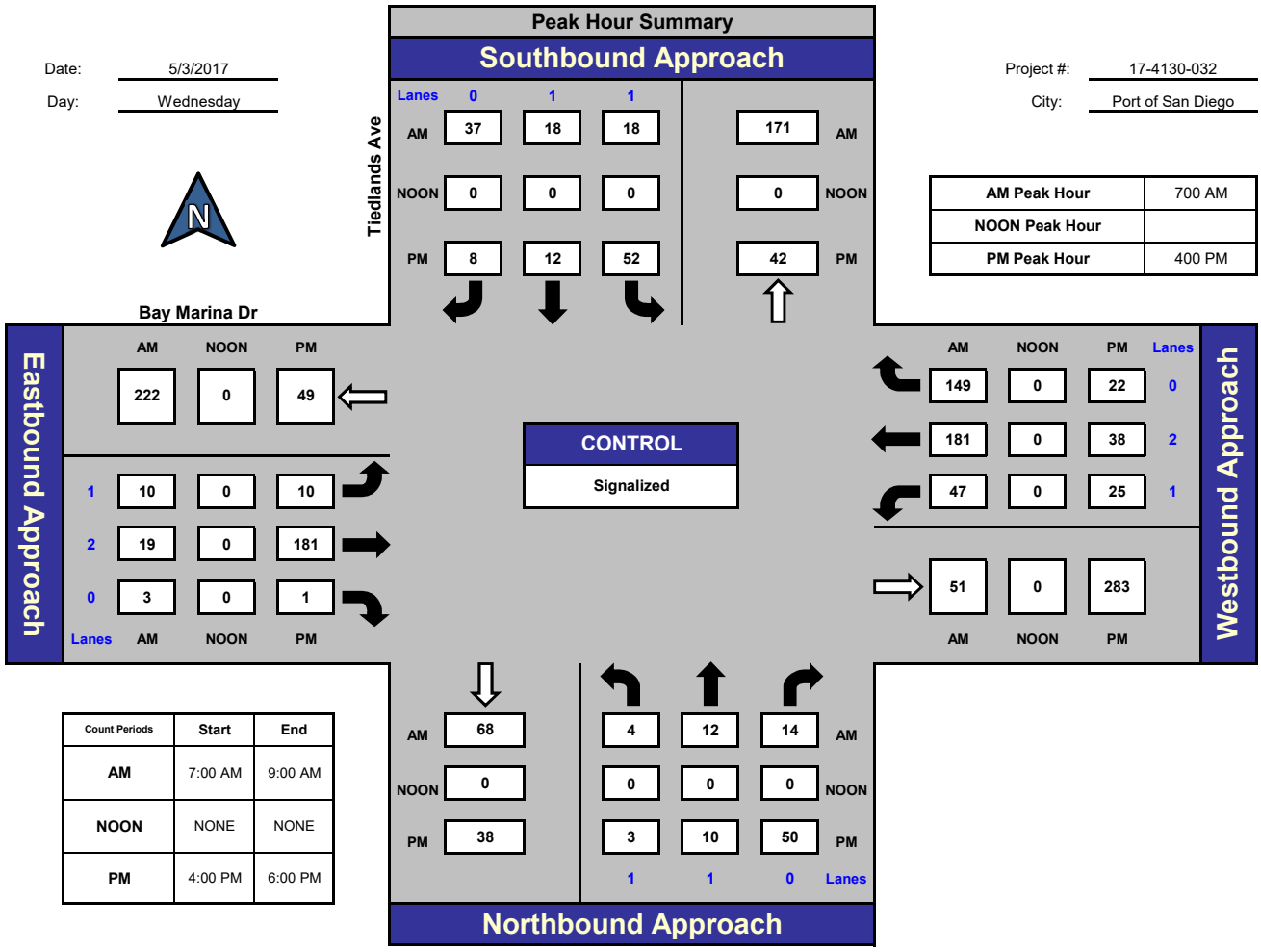
National Data & Surveying Services

Tiedlands Ave and Bay Marina Dr , Port of San Diego

Date: 5/3/2017
Day: Wednesday

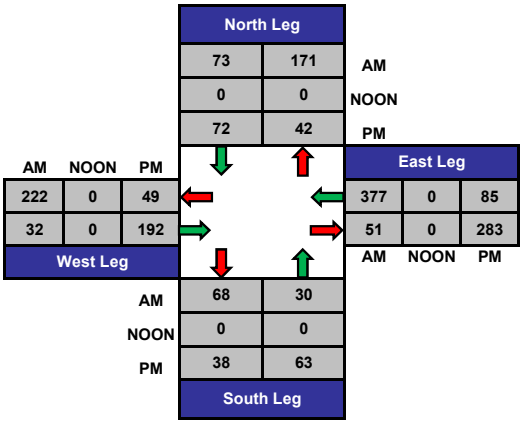
Project #: 17-4130-032
City: Port of San Diego

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	400 PM

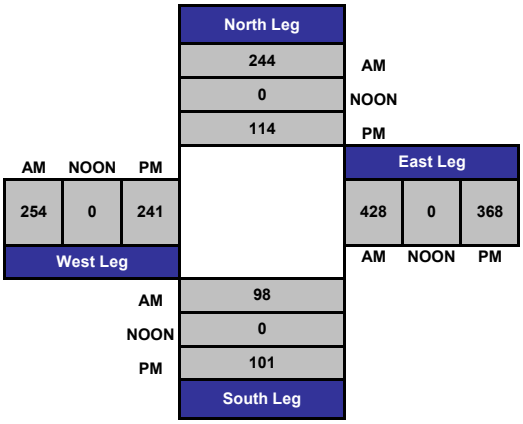


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4130-032 | Day: Wednesday

City: Port of San Diego | Date: 5/3/2017

AM

NS/EW Streets:	Tiedlands Ave			Tiedlands Ave			Bay Marina Dr			Bay Marina Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	2	5	5	5	4	0	5	1	8	31	45	111
7:15 AM	1	2	2	7	2	14	1	1	0	8	52	42	132
7:30 AM	1	2	2	4	4	13	5	7	2	14	63	36	153
7:45 AM	2	6	5	2	7	6	4	6	0	17	35	26	116
8:00 AM	1	5	4	9	3	8	5	7	3	8	15	18	86
8:15 AM	1	1	1	7	1	1	3	7	0	10	14	19	65
8:30 AM	1	3	9	6	4	2	3	8	3	10	14	12	75
8:45 AM	1	2	11	5	3	0	1	13	1	13	14	8	72
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	8	23	39	45	29	48	22	54	10	88	238	206	810
APPROACH %'s :	11.43%	32.86%	55.71%	36.89%	23.77%	39.34%	25.58%	62.79%	11.63%	16.54%	44.74%	38.72%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	4	12	14	18	18	37	10	19	3	47	181	149	512
PEAK HR FACTOR :		0.577			0.793			0.571			0.834		0.837

UTURNS

NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4130-032 | Day: Wednesday

City: Port of San Diego | Date: 5/3/2017

PM

NS/EW Streets:	Tiedlands Ave			Tiedlands Ave			Bay Marina Dr			Bay Marina Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	1	3	9	16	1	2	2	30	0	5	8	3	80
4:15 PM	1	1	14	12	3	4	1	53	1	9	13	9	121
4:30 PM	1	2	14	16	4	2	5	71	0	4	6	2	127
4:45 PM	0	4	13	8	4	0	2	27	0	7	11	8	84
5:00 PM	0	0	14	6	0	3	1	12	0	2	11	4	53
5:15 PM	0	2	6	6	1	3	1	15	0	6	20	6	66
5:30 PM	0	1	4	6	3	3	0	8	1	1	18	5	50
5:45 PM	1	2	3	7	2	2	0	9	0	2	16	4	48
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	15	77	77	18	19	12	225	2	36	103	41	629
APPROACH %'s :	4.17%	15.63%	80.21%	67.54%	15.79%	16.67%	5.02%	94.14%	0.84%	20.00%	57.22%	22.78%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	3	10	50	52	12	8	10	181	1	25	38	22	412
PEAK HR FACTOR :		0.926			0.818			0.632			0.685		0.811

UTURNS

NB	SB	EB	WB
0	0	0	0
0	0	0	0
1	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
1	0	1	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4128-001 | Day: Thursday

City: National City | Date: 5/4/2017

AM

NS/EW Streets:	I-5 SB Ramp			I-5 SB Ramp			Bay Marina Dr			Bay Marina Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0.5	1	0	2	1	2	2	0	
7:00 AM	0	0	0	67	0	39	0	26	24	45	171	0	370
7:15 AM	0	0	0	88	0	37	0	29	26	51	156	0	387
7:30 AM	0	0	0	89	0	35	0	30	34	66	151	0	406
7:45 AM	0	0	0	101	0	44	0	25	26	82	160	0	438
8:00 AM	0	0	0	105	0	33	0	25	30	65	123	0	382
8:15 AM	0	0	0	88	1	33	0	32	35	61	112	0	362
8:30 AM	0	0	0	90	0	40	0	25	33	65	88	0	340
8:45 AM	0	0	0	98	0	38	0	36	41	64	69	0	346
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	726.6667	0.666667	299	0	228	248.6667	499	1030	0	3032
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	70.80%	0.06%	29.13%	0.00%	47.83%	52.17%	32.64%	67.36%	0.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	0	384	0	149	0	110	117	263	590	0	1613
PEAK HR FACTOR :	0.000			0.887			0.837			0.869			0.921

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4128-001 | Day: Thursday

City: National City | Date: 5/4/2017

PM

NS/EW Streets:	I-5 SB Ramp			I-5 SB Ramp			Bay Marina Dr			Bay Marina Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0.5	1	0	2	1	2	2	0	
4:00 PM	0	0	0	114	1	13	0	64	127	137	41	0	497
4:15 PM	0	0	0	130	1	12	0	57	93	126	41	0	460
4:30 PM	0	0	0	123	0	10	0	75	141	126	32	0	509
4:45 PM	0	0	0	119	2	7	0	67	87	113	38	0	434
5:00 PM	0	0	0	124	1	11	0	64	108	147	37	0	491
5:15 PM	0	0	0	119	1	12	0	51	72	147	41	0	443
5:30 PM	0	0	0	126	1	17	0	41	58	103	56	0	400
5:45 PM	0	0	0	112	1	19	0	39	58	97	55	0	382
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	968.3333	7.333333	101.3333	0	457.6667	744.3333	995.6667	340.6667	0	3615.33
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	89.91%	0.68%	9.41%	0.00%	38.08%	61.92%	74.51%	25.49%	0.00%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	0	0	0	502	4	42	0	263	425	523	154	0	1912
PEAK HR FACTOR :	0.000			0.927			0.787			0.894			0.933

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4128-001 | Day: Thursday

City: National City | Date: 5/4/2017

AM

NS/EW Streets:	I-5 NB Ramp			I-5 NB Ramp			Bay Marina Dr			Bay Marina Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0.5	1	0	2	1	2	2	0	
7:00 AM	120	63	91	0	0	0	15	77	0	0	92	116	574
7:15 AM	108	64	113	0	0	0	21	101	0	0	102	115	624
7:30 AM	113	72	125	0	0	0	13	107	0	0	121	97	648
7:45 AM	114	57	174	0	0	0	15	113	0	0	115	78	666
8:00 AM	81	45	154	0	0	0	11	111	0	0	96	78	576
8:15 AM	78	24	130	0	0	0	16	101	0	0	94	81	524
8:30 AM	57	17	105	0	0	0	11	103	0	0	102	99	493
8:45 AM	52	2	91	0	0	0	20	113	0	0	75	106	459
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	723	344	982	0	0	0	121	826	0	0	797	770	4562.67
APPROACH %'s :	35.26%	16.80%	47.93%	#DIV/0!	#DIV/0!	#DIV/0!	12.78%	87.22%	0.00%	0.00%	50.86%	49.14%	
PEAK HR START TIME :	#REF!	#REF!											TOTAL
PEAK HR VOL :	423	254	564	0	0	0	62	422	0	0	434	378	2537
PEAK HR FACTOR :		0.890			0.000			0.875			0.875		0.890

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4128-001 | Day: Thursday

City: National City | Date: 5/4/2017

PM

NS/EW Streets:	I-5 NB Ramp			I-5 NB Ramp			Bay Marina Dr			Bay Marina Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0.5	1	0	2	1	2	2	0	
4:00 PM	25	1	114	0	0	0	35	150	0	0	152	104	581
4:15 PM	23	2	99	0	0	0	34	140	0	0	133	95	525
4:30 PM	22	1	102	0	0	0	38	160	0	0	139	138	600
4:45 PM	25	2	125	0	0	0	30	155	0	0	126	118	581
5:00 PM	26	0	119	0	0	0	36	150	0	0	164	136	631
5:15 PM	28	0	104	0	0	0	23	146	0	0	164	112	577
5:30 PM	39	0	101	0	0	0	20	136	0	0	122	98	517
5:45 PM	35	1	86	0	0	0	19	144	0	0	116	83	483
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	224.3333	7	849.3333	0	0	0	234.3333	1182	0	0	1114.667	883.6667	4495.33
APPROACH %'s :	20.76%	0.65%	78.59%	#DIV/0!	#DIV/0!	#DIV/0!	16.55%	83.45%	0.00%	0.00%	55.78%	44.22%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	97	3	454	0	0	0	131	621	0	0	588	503	2398
PEAK HR FACTOR :	0.888			0.000			0.946			0.899			0.946

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Cesar Chavez Parkway and Harbor Dr , San Diego

Date: 7/24/2014
Day: Thursday
Project #: 14-4192-001
City: San Diego

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Peak Hour Summary

Southbound Approach (Cesar Chavez Parkway)

Lanes	1	0.5	0.5		
AM	386	95	22	319	AM
NOON	0	0	0	0	NOON
PM	249	54	43	536	PM

Eastbound Approach (Harbor Dr)

Lanes	AM	NOON	PM
	951	0	481
1	195	0	385
2	158	0	493
0	39	0	19
Lanes	AM	NOON	PM

Westbound Approach

AM	NOON	PM	Lanes
50	0	43	0
550	0	218	2
50	0	20	1
195	0	562	
AM	NOON	PM	

CONTROL: Signalized

Northbound Approach

AM	184	15	74	15	AM
NOON	0	0	0	0	NOON
PM	93	14	108	26	PM
		1	0.5	0.5	Lanes

Total Ins & Outs

	AM	NOON	PM
North Leg	503	0	346
	319	0	536
East Leg	650	0	281
	195	0	562
West Leg	951	0	481
	392	0	897
South Leg	184	0	93
	104	0	148

Total Volume Per Leg

	AM	NOON	PM
North Leg	822	0	882
East Leg	845	0	843
West Leg	1343	0	1378
South Leg	288	0	241

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-001

Day: Thursday

City: San Diego

Date: 7/24/2014

PM

NS/EW Streets:	Cesar Chavez Parkway			Cesar Chavez Parkway			Harbor Dr			Harbor Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 0.5	NR 0.5	SL 0.5	ST 0.5	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
4:00 PM	4	28	6	6	24	73	97	97	7	4	46	5	397
4:15 PM	4	27	4	5	13	64	82	124	8	2	62	17	412
4:30 PM	4	32	10	7	8	63	88	86	4	4	59	16	381
4:45 PM	3	24	6	8	9	71	101	145	7	5	42	13	434
5:00 PM	4	25	6	17	16	64	119	122	3	3	59	4	442
5:15 PM	3	27	4	11	21	51	77	140	5	8	58	10	415
5:30 PM	2	18	5	13	17	59	85	104	6	7	51	3	370
5:45 PM	1	13	5	9	14	64	118	88	2	4	31	4	353
TOTAL VOLUMES :	NL 25	NT 194	NR 46	SL 76	ST 122	SR 509	EL 767	ET 906	ER 42	WL 37	WT 408	WR 72	TOTAL 3204
APPROACH %'s :	9.43%	73.21%	17.36%	10.75%	17.26%	71.99%	44.72%	52.83%	2.45%	7.16%	78.92%	13.93%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	14	108	26	43	54	249	385	493	19	20	218	43	1672
PEAK HR FACTOR :		0.804			0.892			0.886			0.889		0.946

UTURNS

	NB	SB	EB	WB
		0	1	0
		0	1	0
		0	0	0
		0	1	1
		1	1	1
		0	0	3
		0	0	2
		0	0	0
TOTAL	NB 0	SB 1	EB 4	WB 7

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-001 Day: Thursday

City: San Diego Date: 7/24/2014

AM

NS/EW Streets:	Cesar Chavez Parkway			Cesar Chavez Parkway			Harbor Dr			Harbor Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 0.5	NR 0.5	SL 0.5	ST 0.5	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
7:00 AM	2	14	3	12	13	82	41	37	16	15	120	9	364
7:15 AM	1	7	6	5	23	101	38	35	11	16	135	11	389
7:30 AM	3	23	5	8	22	74	59	45	11	15	148	13	426
7:45 AM	5	16	4	6	27	97	46	39	12	18	159	15	444
8:00 AM	3	16	4	5	19	107	44	42	8	11	112	15	386
8:15 AM	4	19	2	3	27	108	46	32	8	6	131	7	393
8:30 AM	5	20	7	4	33	94	45	33	3	15	96	15	370
8:45 AM	4	38	3	4	27	100	71	47	13	7	91	12	417
TOTAL VOLUMES :	NL 27	NT 153	NR 34	SL 47	ST 191	SR 763	EL 390	ET 310	ER 82	WL 103	WT 992	WR 97	TOTAL 3189
APPROACH %'s :	12.62%	71.50%	15.89%	4.70%	19.08%	76.22%	49.87%	39.64%	10.49%	8.64%	83.22%	8.14%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	15	74	15	22	95	386	195	158	39	50	550	50	1649
PEAK HR FACTOR :		0.839			0.911			0.852			0.846		0.928

CONTROL : Signalized

UTURNS	NB	SB	EB	WB
			0	0
			0	3
			0	3
			0	2
			2	1
			0	1
			0	2
			2	1
TOTAL	NB 0	SB 0	EB 4	WB 13

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

28th St and Harbor Dr , San Diego

Date: 7/24/2014
Day: Thursday
Project #: 14-4192-004
City: San Diego

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Peak Hour Summary

Southbound Approach

Lanes	0	1	2		
AM	48	7	334	209	AM
NOON	0	0	0	0	NOON
PM	34	0	190	480	PM

28th St

Harbor Dr

Eastbound Approach

Lanes	AM	NOON	PM
	666	0	232
1	39	0	102
2	180	0	470
0	2	0	0

Westbound Approach

Lanes	AM	NOON	PM
1	165	0	370
2	616	0	197
1	11	0	6
	516	0	663

CONTROL
Signalized

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Northbound Approach

Lanes	0	1	0	
AM	20	2	5	2	AM
NOON	0	0	0	0	NOON
PM	6	1	8	3	PM

Total Ins & Outs

	AM	NOON	PM
North Leg	389	0	224
	209	0	480
West Leg	666	0	232
	221	0	572
East Leg	792	0	573
	516	0	663
South Leg	20	0	6
	9	0	12

Total Volume Per Leg

	AM	NOON	PM
North Leg	598	0	704
West Leg	887	0	804
East Leg	1308	0	1236
South Leg	29	0	18

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-004 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

PM

NS/EW Streets:	28th St			28th St			Harbor Dr			Harbor Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 1	NR 0	SL 2	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL
4:00 PM	0	2	2	64	0	11	30	114	0	2	44	102	371
4:15 PM	0	3	0	33	0	5	23	104	0	1	61	81	311
4:30 PM	1	1	0	49	0	10	25	116	0	1	57	113	373
4:45 PM	0	2	1	44	0	8	24	136	0	2	35	74	326
5:00 PM	0	2	0	50	0	10	19	126	1	0	53	91	352
5:15 PM	0	1	0	43	0	10	16	114	0	0	52	81	317
5:30 PM	0	2	0	32	2	11	12	119	0	2	49	59	288
5:45 PM	0	1	0	34	0	9	13	101	0	0	36	52	246
TOTAL VOLUMES :	1	14	3	349	2	74	162	930	1	8	387	653	2584
APPROACH %'s :	5.56%	77.78%	16.67%	82.12%	0.47%	17.41%	14.82%	85.09%	0.09%	0.76%	36.93%	62.31%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	1	8	3	190	0	34	102	470	0	6	197	370	1381
PEAK HR FACTOR :	0.750			0.747			0.894			0.838			0.926

UTURNS

	NB	SB	EB	WB
	0	0	0	2
	0	1	1	1
	1	2	1	373
	0	1	2	326
	0	0	0	352
	1	0	0	317
	0	1	1	288
	0	0	0	246
TOTAL VOLUMES :	NB 0	SB 2	EB 5	WB 7

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-004 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

AM

NS/EW Streets:	28th St			28th St			Harbor Dr			Harbor Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 1	NR 0	SL 2	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL
7:00 AM	0	2	0	117	4	13	15	55	0	6	124	40	376
7:15 AM	0	1	0	78	0	12	12	37	0	2	163	39	344
7:30 AM	1	0	1	73	1	10	6	48	1	2	166	43	352
7:45 AM	1	2	1	66	2	13	6	40	1	1	163	43	339
8:00 AM	0	0	0	36	1	9	10	39	1	2	137	53	288
8:15 AM	1	1	1	42	0	8	6	49	1	1	130	68	308
8:30 AM	0	0	1	47	1	8	7	36	0	3	103	61	267
8:45 AM	1	1	0	38	0	11	15	51	0	3	114	64	298
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	7	4	497	9	84	77	355	4	20	1100	411	2572
APPROACH %'s :	26.67%	46.67%	26.67%	84.24%	1.53%	14.24%	17.66%	81.42%	0.92%	1.31%	71.85%	26.85%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	2	5	2	334	7	48	39	180	2	11	616	165	1411
PEAK HR FACTOR :		0.563			0.726			0.789			0.938		0.938

UTURNS	NB	SB	EB	WB
			1	2
			1	1
			1	1
			0	0
			3	2
			1	1
			0	2
			1	2
	NB	SB	EB	WB
	0	0	8	11

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

28th St and Main St. , San Diego

Date: 7/24/2014
Day: Thursday
Project #: 14-4192-007
City: San Diego

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Peak Hour Summary

Southbound Approach

Lanes	0	2	1		
AM	26	404	142	452	AM
NOON	0	0	0	0	NOON
PM	40	335	349	785	PM

28th St

Main St.

Eastbound Approach

	AM	NOON	PM
	323	0	185
1	47	0	101
2	82	0	231
0	36	0	29
Lanes	AM	NOON	PM

Westbound Approach

	AM	NOON	PM	Lanes
	229	0	199	0
	262	0	93	2
	71	0	31	1
	257	0	697	
	AM	NOON	PM	

CONTROL

Signalized

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Northbound Approach

AM	511	35	176	33	AM
NOON	0	0	0	0	NOON
PM	395	52	485	117	PM
		1	2	0	Lanes

Total Ins & Outs

	North Leg		
	572	452	AM
	0	0	NOON
	724	785	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
323	0	185		562	0	323
165	0	361		257	0	697

	South Leg	
AM	511	244
NOON	0	0
PM	395	654

Total Volume Per Leg

	North Leg	
AM	1024	
NOON	0	
PM	1509	

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
488	0	546	819	0	1020

	South Leg
AM	755
NOON	0
PM	1049

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-007 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

PM

NS/EW Streets:	28th St			28th St			Main St.			Main St.			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
4:00 PM	11	132	33	102	106	13	21	64	7	11	23	58	581
4:15 PM	12	108	28	98	76	7	37	62	8	7	25	39	507
4:30 PM	16	135	28	73	66	12	18	51	5	4	20	48	476
4:45 PM	13	110	28	76	87	8	25	54	9	9	25	54	498
5:00 PM	11	131	20	63	86	12	26	49	12	5	17	40	472
5:15 PM	3	112	29	59	78	9	29	38	10	5	20	41	433
5:30 PM	3	94	21	55	71	10	16	43	4	6	16	49	388
5:45 PM	8	73	11	46	63	7	15	29	8	12	19	42	333
TOTAL VOLUMES :	NL 77	NT 895	NR 198	SL 572	ST 633	SR 78	EL 187	ET 390	ER 63	WL 59	WT 165	WR 371	TOTAL 3688
APPROACH %'s :	6.58%	76.50%	16.92%	44.58%	49.34%	6.08%	29.22%	60.94%	9.84%	9.92%	27.73%	62.35%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	52	485	117	349	335	40	101	231	29	31	93	199	2062
PEAK HR FACTOR :		0.913			0.819			0.843			0.878		0.887

UTURNS	NB	SB	EB	WB
	3	2		
	6	0		
	5	1		
	4	1		
	5	2		
	0	0		
	0	1		
	0	2		
TOTAL VOLUMES :	NB 23	SB 9	EB 0	WB 0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-007 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

AM

NS/EW Streets:	28th St			28th St			Main St.			Main St.			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
7:00 AM	13	43	10	46	104	4	16	18	15	20	50	69	408
7:15 AM	5	40	7	25	137	4	14	15	7	17	59	53	383
7:30 AM	11	55	6	42	89	7	4	23	7	22	74	51	391
7:45 AM	6	38	10	29	74	11	13	26	7	12	79	56	361
8:00 AM	15	60	11	38	82	7	18	16	6	4	45	53	355
8:15 AM	15	54	14	27	54	6	23	15	3	11	56	36	314
8:30 AM	6	54	4	23	67	8	19	21	10	9	45	47	313
8:45 AM	11	71	14	22	77	19	14	31	4	8	25	32	328
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	82	415	76	252	684	66	121	165	59	103	433	397	2853
APPROACH %'s :	14.31%	72.43%	13.26%	25.15%	68.26%	6.59%	35.07%	47.83%	17.10%	11.04%	46.41%	42.55%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	35	176	33	142	404	26	47	82	36	71	262	229	1543
PEAK HR FACTOR :		0.847			0.861			0.842			0.956		0.945

UTURNS

	NB	SB	EB	WB
	2			
	0			
	2			
	1			
	4			
	3			
	1			
	4			
	NB	SB	EB	WB
	17	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

28th St and Boston Ave , San Diego

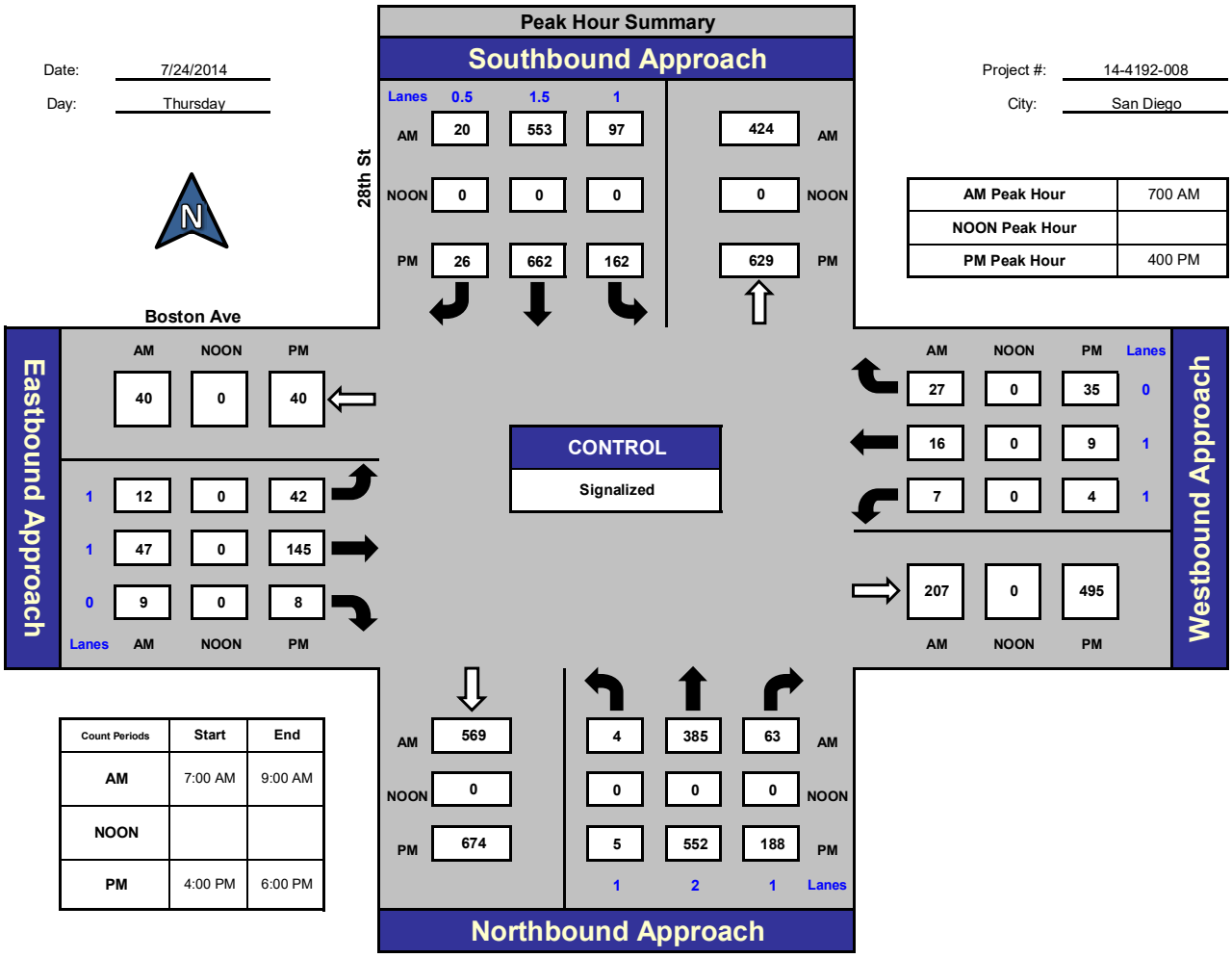
Date: 7/24/2014

Day: Thursday

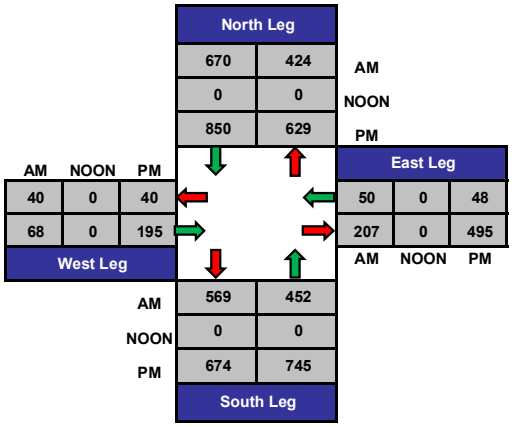
Project #: 14-4192-008

City: San Diego

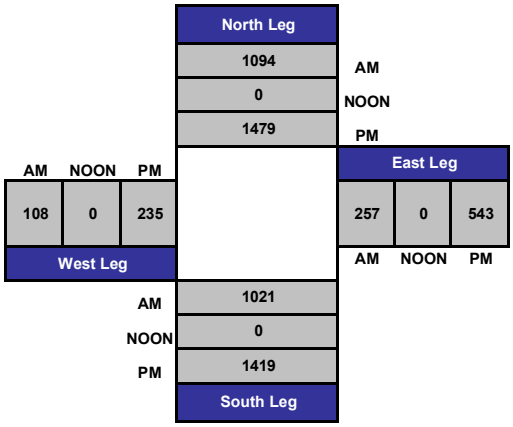
AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	400 PM



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-008 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

PM

NS/EW Streets:	28th St			28th St			Boston Ave			Boston Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 1.5	SR 0.5	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
4:00 PM	0	140	53	46	190	9	16	36	2	1	2	11	506
4:15 PM	1	146	51	39	165	4	8	36	1	1	2	10	464
4:30 PM	1	149	44	35	159	8	4	39	1	1	4	9	454
4:45 PM	3	117	40	42	148	5	14	34	4	1	1	5	414
5:00 PM	3	147	40	40	142	10	14	27	5	4	1	11	444
5:15 PM	2	122	30	44	126	7	6	23	2	0	1	5	368
5:30 PM	0	119	24	34	135	8	6	16	1	1	3	9	356
5:45 PM	1	108	34	51	108	6	5	20	3	0	1	8	345
TOTAL VOLUMES :	NL 11	NT 1048	NR 316	SL 331	ST 1173	SR 57	EL 73	ET 231	ER 19	WL 9	WT 15	WR 68	TOTAL 3351
APPROACH %'s :	0.80%	76.22%	22.98%	21.20%	75.14%	3.65%	22.60%	71.52%	5.88%	9.78%	16.30%	73.91%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	5	552	188	162	662	26	42	145	8	4	9	35	1838
PEAK HR FACTOR :		0.941			0.867			0.903			0.857		0.908

UTURNS

NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-008 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

AM

NS/EW Streets:	28th St			28th St			Boston Ave			Boston Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 1.5	SR 0.5	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
7:00 AM	1	108	17	26	162	2	5	6	1	3	2	11	344
7:15 AM	0	102	9	28	145	3	2	9	2	1	6	7	314
7:30 AM	2	80	13	19	121	7	2	16	4	2	4	5	275
7:45 AM	1	95	24	24	125	8	3	16	2	1	4	4	307
8:00 AM	0	93	18	19	104	5	5	12	2	1	1	9	269
8:15 AM	3	96	22	18	114	4	6	12	5	4	1	4	289
8:30 AM	2	101	17	22	120	8	9	9	1	3	1	4	297
8:45 AM	2	92	26	21	133	9	9	8	1	1	0	2	304
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	11	767	146	177	1024	46	41	88	18	16	19	46	2399
APPROACH %'s :	1.19%	83.01%	15.80%	14.19%	82.12%	3.69%	27.89%	59.86%	12.24%	19.75%	23.46%	56.79%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	4	385	63	97	553	20	12	47	9	7	16	27	1240
PEAK HR FACTOR :		0.897			0.882			0.773			0.781		0.901

UTURNS	NB	SB	EB	WB
	NB	SB	EB	WB
	0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

28th St and National Ave , San Diego

Peak Hour Summary

Date: 7/24/2014

Day: Thursday

Project #: 14-4192-009

City: San Diego

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Southbound Approach

Lanes	0	1	0		
AM	227	106	13	138	AM
NOON	0	0	0	0	NOON
PM	92	168	54	319	PM

28th St

National Ave

Eastbound Approach

Lanes	AM	NOON	PM
	852	0	453
1	51	0	107
2	123	0	471
1	38	0	81

Westbound Approach

Lanes	AM	NOON	PM
0	44	0	121
1	584	0	342
1	100	0	121
	154	0	569

CONTROL

Signalized

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Northbound Approach

AM	244	41	43	18	AM
NOON	0	0	0	0	NOON
PM	370	19	91	44	PM
Lanes		0	2	0	Lanes

Total Ins & Outs

North Leg		
346	138	AM
0	0	NOON
314	319	PM

West Leg			East Leg		
AM	NOON	PM			
852	0	453	728	0	584
212	0	659	154	0	569
			AM	NOON	PM

South Leg		
244	102	AM
0	0	NOON
370	154	PM

Total Volume Per Leg

North Leg	
484	AM
0	NOON
633	PM

West Leg			East Leg		
AM	NOON	PM			
1064	0	1112	882	0	1153
			AM	NOON	PM

South Leg	
AM	346
NOON	0
PM	524

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-009 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

PM

NS/EW Streets:	28th St			28th St			National Ave			National Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 2	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 1	WL 1	WT 1	WR 0	TOTAL
4:00 PM	6	20	12	17	43	20	33	112	16	29	89	26	423
4:15 PM	2	26	12	12	34	25	24	116	26	30	102	23	432
4:30 PM	3	22	10	12	47	27	21	112	18	28	77	38	415
4:45 PM	8	23	10	13	44	20	29	131	21	34	74	34	441
5:00 PM	3	16	16	10	32	14	22	96	28	47	74	33	391
5:15 PM	1	26	9	21	47	30	20	111	18	36	80	42	441
5:30 PM	8	13	5	6	22	18	21	56	15	40	77	23	304
5:45 PM	9	19	13	17	26	12	17	75	15	46	87	13	349
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	40	165	87	108	295	166	187	809	157	290	660	232	3196
APPROACH %'s :	13.70%	56.51%	29.79%	18.98%	51.85%	29.17%	16.22%	70.16%	13.62%	24.53%	55.84%	19.63%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	19	91	44	54	168	92	107	471	81	121	342	121	1711
PEAK HR FACTOR :		0.939			0.913			0.910			0.942		0.970

UTURNS	NB	SB	EB	WB
	NB	SB	EB	WB
	0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 14-4192-009 **Day:** Thursday

City: San Diego **Date:** 7/24/2014

AM

NS/EW Streets:	28th St			28th St			National Ave			National Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 2	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 1	WL 1	WT 1	WR 0	TOTAL
7:00 AM	11	15	8	7	27	58	12	27	10	24	151	14	364
7:15 AM	12	9	6	4	29	69	12	32	10	26	128	13	350
7:30 AM	10	7	3	2	27	55	14	28	7	29	160	8	350
7:45 AM	8	12	1	0	23	45	13	36	11	21	145	9	324
8:00 AM	14	24	2	6	23	39	9	36	16	28	126	13	336
8:15 AM	8	13	10	8	17	32	11	47	7	22	101	20	296
8:30 AM	11	9	2	6	28	30	7	32	10	21	124	20	300
8:45 AM	10	9	6	5	20	16	6	46	11	23	103	21	276
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	84	98	38	38	194	344	84	284	82	194	1038	118	2596
APPROACH %'s :	38.18%	44.55%	17.27%	6.60%	33.68%	59.72%	18.67%	63.11%	18.22%	14.37%	76.89%	8.74%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	41	43	18	13	106	227	51	123	38	100	584	44	1388
PEAK HR FACTOR :		0.750			0.848			0.883			0.924		0.953

UTURNS	NB	SB	EB	WB
TOTAL VOLUMES :	0	0	0	0

CONTROL : Signalized

TERSECTION: CESAR CHAVEZ @ HARBOR

Group Assignment: NONE
Field Master Assignment: NONE
N/S Street Name: CESAR CHAVEZ
E/W Street Name: HARBOR
Last Database Change: 5/8/03 11:09
System Ref. Number: 710

Row	Column # --->	1	2	3	4	5	6	7	8
	Phase # --->	1	2	3	4	5	6	7	8
		HARBOR Dr	CESAR CHAVEZ Py		HARBOR Dr		CESAR CHAVEZ Py		
0	Ped Walk		7		7		7		7
1	Ped FDW		11		26		18		25
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	2.6		2.0	2.0	3.4		2.0
6	Max Gap	2.0	2.6		2.0	2.0	3.4		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	40	60		40	40	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		1.2				1.0		
E	Yellow	3.4	4.7		3.9	3.4	4.5		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0
	Grade		0%		-2%		-1%		0%

<F Page>

Phase Timing - Bank 1
F + Phase + Row

Row		E
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	0
5	EV-B Clear	0
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	0
9	EV-D Clear	0
A	RR-2 Delay	0
B	RR-2 Clear	12
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Preempt Timing
F + E + Row

Row		F
0	Permit	12_456_8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	
4	Ped Recall	
5	Peds (View)	_2_4_6_8
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	___4___8
9	Max Recall	
A	Soft Recall	_2___6__
B	Max 2	
C	Cond Serv	____5___
D	Ped Lock	12345678
E	Yellow Start	_2___6__
F	1st Phases	___4___8

Phase Functions <F Page>
F + F + Row

Max Initial	20
Red Revert	5.0
All Red Start	5.0

F + 0 + E
F + 0 + F
F + C + O

Start / Revert Times

Drop Number	9
Zone Number	9
Area Number	1
Area Address	61
QuicNet Channel	DIGI105:

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuicNet)

Communication Addresses

C + F + O		Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Overlap Timing

	Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page>
F + COLOR +

<D Page>
D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 + 8

Disable Ports	_234____

Disable Communication Ports
D + D + 9

Timing Sheet By: AM/JD
Approved By: WXW
Drawing Number: 6952-14-D
Timing Implemented On: 06/19/03

Printed on 6/9/03 11:58 AM

INTERSECTION: CESAR CHAVEZ @ HARBOR

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers 1 2 3 4 5 6 7 8	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Row	0 Detector #
0	
1	System Det. # 1
2	System Det. # 2
3	System Det. # 3
4	System Det. # 4
5	System Det. # 5
6	System Det. # 6
7	System Det. # 7
8	System Det. # 8

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: HARBOR DR & SAMPSON ST

Group Assignment:
Field Master Assignment:
System Reference Number:

Street: HARBOR
E/W Street: SAMPSON

Timing sheets by: EFF
Approved by: EFF
Timing implemented on: 6/5/2008

Row	Phase Numbers---->	1 HARBOR	2	3 SAMPSON	4	5 HARBOR	6	7	8
		↓	→	↑	→	↑	←		
0	Ped Walk		7	10	10		7		
1	Ped FDW		8	21	20		8		
2	Min Green	4	10	4	4	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	3.9	2.0	2.0	2.0	3.9		
6	Max Gap	2.0	3.9	2.0	2.0	2.0	3.9		
7	Min Gap	2.0	0.2	2.0	2.0	2.0	0.2		
8	Max Limit	30	50	30	30	30	50		
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every		0.8				0.8		
E	Yellow Change	3.4	4.2	3.9	3.9	3.4	4.2		
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0		

Phase Timing - Bank 1 <F/1+Phase+Row>

Row		E
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	0
5	EV-B Clear	0
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	0
9	EV-D Clear	0
A	RR-2 Delay	0
B	RR-2 Clear	14
C	*View EV Delay*	- - -
D	*View EV Clear*	- - -
E	*View RR Delay*	- - -
F	*View RR Clear*	- - -

Preempt Timing <F/1+E+Row>

Row		F
0	Permit	123456
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	*View Set Peds*	234 6
6	Rest In Walk	
7	Red Rest	
8	Double Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	5
D	Man Cntrl Calls	
E	Yellow Start	2 6
F	First Phases	3

Phase Functions <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Drop Number	<C/0+0+0>
Zone Number	<C/0+0+1>
Area Number	<C/0+0+2>
Area Address	<C/0+0+3>
QuicNet Channel	(QuicNet)

Communication Addresses

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0
Exclusive FDW	0	<F/1+0+1
All Red Clear	0.0	<F/1+0+2

Exclusive Ped Phase

Manual Plan	14	<C/0+A+1
Manual Offset	0	<C/0+B+1

Manual Selection

Free Lag	2 4 6 <C/1+F+0>

How to Set Page Access Code:
F/1 – C + 0 + F = 1

Notes:

Version: 233 RV

INTERSECTION: HARBOR DR & SAMPSON ST

233 Program

Row	Detector Name	0 C1 Pin Number	1 Attributes	2 Phase(s)	3 Assign	1 Delay	3 Carry-Over
0							1.8
1							1.8
2							
3							
4							1.8
5							1.8
6							
7							
8							
9							
A							
B							
C							
D							
E							
F							

Row	Detector Name	4 C1 Pin Number	5 Attributes	6 Phase(s)	7 Assign	2 Delay	4 Carry-Over
0							
1							
2							
3							
4							
5							
6							
7							
8							
9							
A							
B	Phase 3 Ped	70	_2_____	__3____	123___8		
C							
D							
E							
F							

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Program Type:

	Ped / Phase / Overlap 1	2	3	4	5	6	7	3	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green									5
Overlap Yellow									6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	0

<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	5	<D/0+0+1>
Max ON (minutes)	60	<D/0+0+2>

Detector Failure Monitor

	D	Row
		0
Output Port 1		1
Output Port 2		2
Output Port 3		3
Output Port 4		4
Output Port 5		5
Output Port 6		6
Output Port 7		7

Dimming <E/125+D+Row>

	D
Number of Digits	
1 st Digit	
2 ed Digit	
3 ed Digit	
4 th Digit	
5 th Digit	
6 th Digit	
7 th Digit	
8 th Digit	
9 th Digit	
10 th Digit	
11 th Digit	
12 th Digit	
13 th Digit	
14 th Digit	
15 th Digit	

<C/5+D+Row>

Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

<D/0+B+Row> (seconds)

Delay Logic Times

Omit Alarm	

<C/5+F+0>

Disable Alarm Reporting

Time	0	<C/5+C+0>

Redial Time (minutes)
(View Redial Timer at E/2+D+6

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Spec. Funct. 1		NOT-3		Max 2		Pretimed		Set Monday		Dial 2 (7-Wire)		Sim Term		0
1	Spec. Funct. 2		NOT-4		System Det 1		Plan 1		Ext. Perm 1		Dial 3 (7-Wire)		EV-A	71	1
2	Spec. Funct. 3		OR-4 (a)		System Det 2		Plan 2		Ext. Perm 2		Offset 1 (7-Wire)		EV-B	72	2
3	Spec. Funct. 4		OR-4 (b)		System Det 3		Plan 3		Dimming		Offset 2 (7-Wire)		EV-C	73	3
4	NAND-3 (a)		OR-5 (a)		System Det 4		Plan 4		Set Clock		Offset 3 (7-Wire)		EV-D	74	4
5	NAND-3 (b)		OR-5 (b)		System Det 5		Plan 5		Stop Time		Free (7-Wire)		RR-1	51	5
6	NAND-4 (a)		OR-6 (a)		System Det 6		Plan 6		Flash Sense	81	Flash (7-Wire)		RR-2	52	6
7	NAND-4 (b)		OR-6 (b)		System Det 7		Plan 7		Manual Enable		Excl. Ped Omit		Spec. Event 1		7
8	OR-7 (a)		Fig 3 Diamond		System Det 8		Plan 8		Man. Advance		NOT-1		Spec. Event 2		8
9	OR-7 (b)		Fig 4 Diamond		Max Inhibit (nema)		Plan 9		External Alarm		NOT-2		External Lag		9
A	OR-7 (c)		AND-4 (a)		Force A (nema)		DELAY-A		Phase Bank 2		OR-1 (a)		AND-1 (a)		A
B	OR-7 (d)		AND-4 (b)		Force B (nema)		DELAY-B		Phase Bank 3		OR-1 (b)		AND-1 (b)		B
C	OR-8 (a)		NAND-1 (a)		C.N.A. (nema)		DELAY-C		Overlap Set 2		OR-2 (a)		AND-2 (a)		C
D	OR-8 (b)		NAND-1 (b)		Hold (nema)		DELAY-D		Overlap Set 3		OR-2 (b)		AND-2 (b)		D
E	OR-8 (c)		NAND-2 (a)		Max Recall		DELAY-E		Detector Set 2		OR-3 (a)		AND-3 (a)		E
F	OR-8 (d)		NAND-2 (b)		Min Recall		DELAY-F		Detector Set 3		OR-3 (b)		AND-3 (b)		F

Assignable Inputs **<E/126+Column+Row>**

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Phase ON - 1		Preempt Fail		Flasher 0		Free		NOT-1		TOD Out 1		Dial 2 (7-Wire)		0
1	Phase ON - 2		Sp Evnt Out 1		Flasher 1		Plan 1		OR-1		TOD Out 2		Dial 3 (7-Wire)		1
2	Phase ON - 3		Sp Evnt Out 2		Fast Flasher		Plan 2		OR-2		TOD Out 3		Offset 1 (7-Wire)		2
3	Phase ON - 4		Sp Evnt Out 3		Fig 3 Diamond		Plan 3		OR-3		TOD Out 4		Offset 2 (7-Wire)		3
4	Phase ON - 5		Sp Evnt Out 4		Fig 4 Diamond		Plan 4		AND-1		TOD Out 5		Offset 3 (7-Wire)		4
5	Phase ON - 6		Sp Evnt Out 5				Plan 5		AND-2		TOD Out 6		Free (7-Wire)		5
6	Phase ON - 7		Sp Evnt Out 6				Plan 6		AND-3		TOD Out 7		Flash (7-Wire)		6
7	Phase ON - 8		Sp Evnt Out 7				Plan 7		NOT-2		TOD Out 8		Preempt		7
8	Ph. Check - 1		Sp Evnt Out 8		NOT-3		Plan 8		EV-A		Adv. Warn - 1		Low Priority A		8
9	Ph. Check - 2				NOT-4		Plan 9		EV-B		Adv. Warn - 2		Low Priority B		9
A	Ph. Check - 3		Detector Fail		OR-4		Spec. Funct. 3		EV-C		DELAY-A		Low Priority C		A
B	Ph. Check - 4		Spec. Funct. 1		OR-5		Spec. Funct. 4		EV-D		DELAY-B		Low Priority D		B
C	Ph. Check - 5		Spec. Funct. 2		OR-6		NAND-3		RR-1		DELAY-C				C
D	Ph. Check - 6		Central Control		AND-4		NAND-4		RR-2		DELAY-D				D
E	Ph. Check - 7		Excl. Ped DW		NAND-1		OR-7		Spec. Event 1		DELAY-E				E
F	Ph. Check - 8		Excl. Ped WK		NAND-2		OR-8		Spec. Event 2		DELAY-F				F

Assignable Outputs **<E/127+Column+Row>**

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Str: SCHLEY
E/W St: HARBOR

Last Database Change:

Timing sheets by: MD
Approved by:
Timing implemented on: 10/26/2005

Row	Phase Numbers--->	1	2 (HARBOR)	3	4 (SCHLEY)	5	6 (HARBOR)	7	8
0	Ped Walk		7		7		7		
1	Ped FDW		26		19		22		
2	Min Green		10		4	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension		4.7		3.0	2.0	4.7		
6	Max Gap		4.7		3.0	2.0	4.7		
7	Min Gap		0.2		3.0	2.0	0.2		
8	Max Limit		60		40	30	60		
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every		0.7				0.7		
E	Yellow Change		4.2		3.9	3.4	4.2		
F	Red Clear		1.0		1.0	1.0	1.0		

Phase Timing - Bank 1 <F/1+Phase+Row>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	
EV-D Clear	
RR-2 Delay	0
RR-2 Clear	15
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing <F/1+E+Row>

Row	F
Permit	2 456
Red Lock	
Yellow Lock	
Min Recall	2 6
Ped Recall	
View Set Peds	2 4 6
Rest In Walk	
Red Rest	
Double Entry	
Max Recall	
Soft Recall	
Max 2	
Cond. Service	
Man Cntrl Calls	
Yellow Start	2 6
First Phases	4

Phase Functions <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Drop Number		<C/0+0+0>
Zone Number		<C/0+0+1>
Area Number		<C/0+0+2>
Area Address		<C/0+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Notes:

Free Lag	2 4 6	<C/1+F+0>

How to Set Page Access Code:
F/1 – C + 0 + F = 1

Row	Detector Name	0 C1 Pin Number	1 Attributes	2 Phase(s)	3 Assign	1 Delay	3 Carry-Over
0	1I1U						
1	1I1L						
2	2I2U						1.8
3	2I2L						1.8
4	2I3U						
5	2I3L						
6	2I4						
7	3I5						
8	4I6U						
9	4I6L						
A	4I7U						
B	4I7L						
C							
D							
E							
F							

Program Type:

	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green									5
Overlap Yellow									6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	0

<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	5	<D/0+0+1>
Max ON (minutes)	60	<D/0+0+2>

Detector Failure Monitor

	D	Row
Output Port 1		0
Output Port 2		1
Output Port 3		2
Output Port 4		3
Output Port 5		4
Output Port 6		5
Output Port 7		6
		7

Dimming <E/125+D+Row>

Row	Detector Name	4 C1 Pin Number	5 Attributes	6 Phase(s)	7 Assign	2 Delay	4 Carry-Over
0							
1	6J2U						1.8
2	6J2L						1.8
3	6J3U						
4	6J3L						
5	6J4						
6	7J5						
7	8J6U						
8	8J6L						
9	8J7U						
A	8J7L						
B							
C							
D							
E							
F							

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	D
Number of Digits	
1 st Digit	
2 ed Digit	
3 ed Digit	
4 th Digit	
5 th Digit	
6 th Digit	
7 th Digit	
8 th Digit	
9 th Digit	
10 th Digit	
11 th Digit	
12 th Digit	
13 th Digit	
14 th Digit	
15 th Digit	

<C/5+D+Row>

Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	1	A
DELAY-B	1	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

<D/0+B+Row> (seconds)

Delay Logic Times

Omit Alarm	#NAME?

<C/5+F+0>

Disable Alarm Reporting

Time	0	<C/5+C+0>

Redial Time (minutes)
(View Redial Timer at E/2+D+6)

Row	Plan Name ---->	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
0	Cycle Length									
1	Phase 1 - ForceOff									
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff									
5	Phase 5 - ForceOff									
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff									
9	Ring Offset									
A	Offset 1									
B	Offset 2									
C	Offset 3									
D	Perm 1 - End									
E	Hold Release									
F	Zone Offset									

Row: 0 1 2 3 4 5 6 7 8 9 A B C D E F

Coordination - Timing Plans **<C/1+Plan+Row>**

Row	Ped Adjustment	Perm 2 - Start	Perm 2 - End	Perm 3 - Start	Perm 3 - End	Reservice Time	Reservice Phases		Pretimed Phases	Max Recall	Perm 1 Veh Phase	Perm 1 Ped Phase	Perm 2 Veh Phase	Perm 2 Ped Phase	Perm 3 Veh Phase	Perm 3 Ped Phase
0																
1																
2																
3																
4																
5																
6																
7																
8																
9																
A																
B																
C																
D																
E																
F																

Row: 0 1 2 3 4 5 6 7 8 9 A B C D E F

Coordination - Parameters **<C/2+Plan+Row>**

Coord Extra

1 = Programmed WALK Time for Sync [illegible]ases

2 = Always Terminate Sync Phase Peds

Row	E
Plan 1 - Sync	
Plan 2 - Sync	
Plan 3 - Sync	
Plan 4 - Sync	
Plan 5 - Sync	
Plan 6 - Sync	
Plan 7 - Sync	
Plan 8 - Sync	
Plan 9 - Sync	
NEMA Sync	
NEMA Hold	
Coord Extra	

Row: 0 1 2 3 4 5 6 7 8 9 A B C D E F

Sync Phases **<C/1+E+Row>**

Row	F
Free Lag	
Plan 1 - Lag	
Plan 2 - Lag	
Plan 3 - Lag	
Plan 4 - Lag	
Plan 5 - Lag	
Plan 6 - Lag	
Plan 7 - Lag	
Plan 8 - Lag	
Plan 9 - Lag	
External Lag	

Row: 0 1 2 3 4 5 6 7 8 9 A B C D E F

Lag Phases **<C/1+F+Row>**

Coordination Timing By:

Row		Phase 1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 2 <C/0+F=2>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type | 0.0 | <C/5+1+9>
TBC Transition

Lag Hold Phases | | <C/5+1+A>
Coordinated Lag Hold Phases

Sync Output Time | 0.0 | <C/5+1+C>
7-Wire Master

Time B4 Yellow | 0.0 | <F/1+C+E>
Phase Number | 0 | <F/1+C+F>
Advance Warning Beacon - Sign 1

Time B4 Yellow | 0.0 | <F/1+D+E>
Phase Number | 0 | <F/1+D+F>
Advance Warning Beacon - Sign 2

Row		Phase 1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 3 <C/0+F=3>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Long Failure | 0.5 | <F/1+0+6>
Short Failure | 0.5 | <F/1+0+7>
Power Cycle Correction (Default = 0.7)

Min Time (seconds) | 0 | <F/1+0+8>
Min Green Before PE Force Off

Max Time (minutes) | 0 | <F/1+0+9>
Max Preempt Time Before Failure

Min Time (seconds) | 0 | <F/1+0+A>
Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Low Pri. Channel | #NAME? | <E/125+C+8>
Disable Low Priority Channel

INTERSECTION: 28TH ST & HARBOR DR

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street: 28TH
E/W Street: HARBOR

Last Database Change:

Timing sheets by: EFF
Approved by: EFF
Timing implemented on: 12/1/2011

		HARBOR			DRWY		HARBOR	28TH	DRWY
	Phase Numbers--->	Phase 1	2	3	4	5	6	7 (6+7)	8
Row									
0	Ped Walk				7		7		
1	Ped FDW				32		29		
2	Min Green	4	20		4	4	10	10	4
3	Type 3 Disconnect								
4	Added per Vehicle		1.6				1.6		
5	Veh Extension	2.0	6.8		1.0	3.0	6.6	3.0	3.0
6	Max Gap	2.0	6.8		1.0	3.0	6.6	3.0	3.0
7	Min Gap	2.0	2.0		1.0	3.0	2.0	3.0	3.0
8	Max Limit	30	60		40	45	60	40	40
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW				1		1		
C	Cond Serv Check								
D	Reduce Every		0.6				0.6		
E	Yellow Change	3.4	4.3		3.0	3.4	4.2	3.9	3.9
F	Red Clear	1.0	1.0			1.0	1.0	1.0	1.0

Phase Timing - Bank 1 <F/1+Phase+Row>

Row		E
	RR-1 Delay	
	RR-1 Clear	
	EV-A Delay	
	EV-A Clear	
	EV-B Delay	
	EV-B Clear	
	EV-C Delay	
	EV-C Clear	
	EV-D Delay	
	EV-D Clear	
	RR-2 Delay	0
	RR-2 Clear	20
	View EV Delay	- - -
	View EV Clear	- - -
	View RR Delay	- - -
	View RR Clear	- - -

Preempt Timing <F/1+E+Row>

Row		F
0	Permit	12_45678
1	Red Lock	_____8
2	Yellow Lock	
3	Min Recall	_2___6__
4	Ped Recall	
5	*View Set Peds*	
6	Rest In Walk	
7	Red Rest	
8	Double Entry	___4___8
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	
D	Man Cntrl Calls	
E	Yellow Start	_2___6__
F	First Phases	___4___8

Phase Functions <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1					
Phase 2	28				
Phase 3					
Phase 4					
Phase 5					
Phase 6	28				
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Drop Number		<C/0+0+0>
Zone Number		<C/0+0+1>
Area Number		<C/0+0+2>
Area Address		<C/0+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Free Lag	_2_4_6_8	<C/1+F+0>

How to Set Page Access Code:
F/1 -- C + 0 + F = 1

Notes:
Set Min Green for PE Forceoff (F/1+0+8) equal to 4 sec.
Set Max Pre-empt Time Before Failure (F/1+0+9) equal to 10 min.
Phases 4 & 7 are Restricted.
Change Made to Overlap Set 2-LEM 11/30/2011

Row	Detector Name	0 C1 Pin Number	1 Attributes	2 Phase(s)	3 Assign	1 Delay	3 Carry-Over
0		39	45_7_	2	123		
1		40	45_7_	6	123		
2		41	45_7_	4	123		
3		42	45_7_	8	123		
4		43	45_7_	2	123		
5		44	45_7_	6	123		
6		45	45_7_	4	123		
7		46	45_7_	8	123		
8		47	67_	2	123		
9		48	67_	6	123		
A		49	67_	4	123		
B		50	67_	8	123		
C		55	45_7_	5	123		
D		56	45_7_	1	123		
E		57	45_7_	7	123		
F		58	45_7_	3	123		

Program Type:

	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green	35								5
Overlap Yellow	37								6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	30

<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	5	<D/0+0+1>
Max ON (minutes)	60	<D/0+0+2>

Detector Failure Monitor

	D	Row
		0
Output Port 1		1
Output Port 2		2
Output Port 3		3
Output Port 4		4
Output Port 5		5
Output Port 6		6
Output Port 7		7

Dimming <E/125+D+Row>

Row	Detector Name	4 C1 Pin Number	5 Attributes	6 Phase(s)	7 Assign	2 Delay	4 Carry-Over
0		59	45_7_	5	123		
1		60	45_7_	1	123		
2		61	45_7_	7	123		
3		62	45_7_	3	123		
4		63	45_7_	2	123		
5		64	45_7_	6	123		
6		65	45_7_	4	123		
7		66	45_7_	8	123		
8		67	2	2	123		
9		68	2	6	123		
A	Ped 4	69	2 7	4 8	123		
B	Ped 4	70	2 7	4 8	123		
C		76	45_7_	2	123		
D		77	45_7_	6	123		
E		78	45_7_	4	123		
F		79	45_7_	8	123		

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	D
Number of Digits	
1 st Digit	
2 ed Digit	
3 ed Digit	
4 th Digit	
5 th Digit	
6 th Digit	
7 th Digit	
8 th Digit	
9 th Digit	
10 th Digit	
11 th Digit	
12 th Digit	
13 th Digit	
14 th Digit	
15 th Digit	

<C/5+D+Row>

Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

<D/0+B+Row> (seconds)

Delay Logic Times

Omit Alarm	#NAME?

<C/5+F+0>

Disable Alarm Reporting

Time	0	<C/5+C+0>

Redial Time (minutes)
(View Redial Timer at E/2+D+6)

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Spec. Funct. 1	NOT-3	Max 2	Pretimed	Set Monday	Dial 2 (7-Wire)	Sim Term	0
1	Spec. Funct. 2	NOT-4	System Det 1	Plan 1	Ext. Perm 1	Dial 3 (7-Wire)	EV-A 71	1
2	Spec. Funct. 3	OR-4 (a)	System Det 2	Plan 2	Ext. Perm 2	Offset 1 (7-Wire)	EV-B 72	2
3	Spec. Funct. 4	OR-4 (b)	System Det 3	Plan 3	Dimming	Offset 2 (7-Wire)	EV-C 73	3
4	NAND-3 (a)	OR-5 (a)	System Det 4	Plan 4	Set Clock	Offset 3 (7-Wire)	EV-D 74	4
5	NAND-3 (b)	OR-5 (b)	System Det 5	Plan 5	Stop Time	Free (7-Wire)	RR-1 51	5
6	NAND-4 (a)	OR-6 (a)	System Det 6	Plan 6	Flash Sense 81	Flash (7-Wire)	RR-2 52	6
7	NAND-4 (b)	OR-6 (b)	System Det 7	Plan 7	Manual Enable	Excl. Ped Omit	Spec. Event 1	7
8	OR-7 (a)	Fig 3 Diamond	System Det 8	Plan 8	Man. Advance	NOT-1	Spec. Event 2	8
9	OR-7 (b)	Fig 4 Diamond	Max Inhibit (nema)	Plan 9	External Alarm	NOT-2	External Lag	9
A	OR-7 (c)	AND-4 (a)	Force A (nema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a)	A
B	OR-7 (d)	AND-4 (b)	Force B (nema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b)	B
C	OR-8 (a)	NAND-1 (a)	C.N.A. (nema)	DELAY-C	Overlap Set 2 52	OR-2 (a)	AND-2 (a)	C
D	OR-8 (b)	NAND-1 (b)	Hold (nema)	DELAY-D	Overlap Set 3	OR-2 (b)	AND-2 (b)	D
E	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)	E
F	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)	F

Assignable Inputs <E/126+Column+Row>

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1	TOD Out 1	Dial 2 (7-Wire)	0
1	Phase ON - 2	Sp Evnt Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dial 3 (7-Wire)	1
2	Phase ON - 3	Sp Evnt Out 2	Fast Flasher	Plan 2	OR-2	TOD Out 3	Offset 1 (7-Wire)	2
3	Phase ON - 4	Sp Evnt Out 3	Fig 3 Diamond	Plan 3	OR-3	TOD Out 4	Offset 2 (7-Wire)	3
4	Phase ON - 5	Sp Evnt Out 4	Fig 4 Diamond	Plan 4	AND-1	TOD Out 5	Offset 3 (7-Wire)	4
5	Phase ON - 6	Sp Evnt Out 5		Plan 5	AND-2	TOD Out 6	Free (7-Wire)	5
6	Phase ON - 7	Sp Evnt Out 6		Plan 6	AND-3	TOD Out 7	Flash (7-Wire)	6
7	Phase ON - 8	Sp Evnt Out 7		Plan 7	NOT-2	TOD Out 8	Preempt	7
8	Ph. Check - 1	Sp Evnt Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A	8
9	Ph. Check - 2		NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B	9
A	Ph. Check - 3	Detector Fail	OR-4	Spec. Funct. 3	EV-C	DELAY-A	Low Priority C	A
B	Ph. Check - 4	Spec. Funct. 1	OR-5	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D	B
C	Ph. Check - 5	Spec. Funct. 2	OR-6	NAND-3	RR-1	DELAY-C		C
D	Ph. Check - 6	Central Control	AND-4	NAND-4	RR-2	DELAY-D		D
E	Ph. Check - 7	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E		E
F	Ph. Check - 8	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F		F

Assignable Outputs <E/127+Column+Row>

RSECTION: 28TH ST. @ MAIN ST.

223 Prc

Group Assignment: None
Field Master Assignment: None

N/S Street Name: 28TH ST.
E/W Street Name: MAIN ST.

Last Change:
Timing Sheet By: MM
Approved By: MM

Drawing Number:
System Ref. Num.:
Timing implemented on:

N

EFF 3/14/01

EFF 9/11/00

Row	Phase # →	1	2 (28th St.)	3	4	5	6 (28th St.)	7	8 (Main St.)
		↱	↑			←	↓		←→
0	Ped Walk		7				7		7
1	Ped FDW		19 ~~16~~				16 ~~15~~		24 ~~21~~
2	Min Green	4	10			4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	5.7			2.0	3.8		2.0
6	Max Gap	2.0	5.7			2.0	3.8		2.0
7	Min Gap	2.0	0.2			2.0	0.2		2.0
8	Max Limit	40 ~~30~~	60			30	60		55 ~~50~~
9	Max Limit 2		85 ~~80~~				85 ~~80~~		
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.5				0.8		
E	Yellow	3.0	3.4			3.0	3.8		4.1
F	Red Clear	1.0	1.0			1.0	1.0		1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	
EV-A Clear	3
EV-B Delay	
EV-B Clear	
EV-C Delay	
EV-C Clear	3
EV-D Delay	
EV-D Clear	3
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row	F
Permit	12__56_8
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	
Rest In Walk	
Red Rest	
Dbl Entry	
Max Recall	
Soft Recall	_2___6__
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	_2___6__
1st Phases	___4___8

Phase Functions
<F Page>
F + F + Row

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + 0 + E
F + 0 + F
F + C + O

Start / Revert Times

Drop Number	
Zone Number	
Area Number	
Area Address	
QuicNet Channel	

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuicNet)

Communication Addresses

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A				
B	Overlap B				
C	Overlap C				
D	Overlap D				

Overlap Timing
<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset 0
= Automatic
1 = Offset A
2 = Offset B
3 = Offset C

C + F + O
Free Lag

F	Row
_2___6_8	0

Lag Phases
<C Page>

Downtime Flash	60	(minutes)

Downtime Before Auto Manual Flash
F + 0 + 8

Disable Ports	234

Disable Communications Ports
D + D + 9

ERSECTION: 28TH ST. @ MAIN ST.

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E		---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

(These parameters are NOT downloaded.)

INTERSECTION: 28th St & Boston Av

Group Assignment:
Field Master Assignment:

N/S Street Name: 28th
E/W Street Name: Boston

Last Database Change:
System Ref. Number:

Row	Phase # --->	1	2	3	4	5	6	7	8
	Column # --->	28th			Boston		28th		Boston
0	Ped Walk		7		7		7		7
1	Ped FDW		13		18		14		18
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	3.7		2.0	2.0	3.7		2.0
6	Max Gap	2.0	3.7		2.0	2.0	3.7		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2		80				80		
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.9				0.9		
E	Yellow	3.4	3.9		3.9	3.4	3.9		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

Row	F
Permit	12_456_8
Red Lock	
Yellow Lock	
Min Recall	
Ped Recall	
Peds (View)	_2_4_6_8
Rest In Walk	
Red Rest	
Dbl Entry	___4___8
Max Recall	
Soft Recall	_2___6__
Max 2	
Cond Serv	
Ped Lock	12345678
Yellow Start	_2___6__
1st Phases	___4___8

Phase Functions <F Page>
F + F + Row

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + 0 + E
F + 0 + F
F + C + O

Start / Revert Times

Drop Number	
Zone Number	
Area Number	
Area Address	
QuicNet Channel	

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Overlap Timing

Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A			
Overlap B	B			
Overlap C	C			
Overlap D	D			

<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255 (minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	

Disable Communication Ports
D + D + 9

Timing Sheet By: EFF
Approved By:
Drawing Number: 27584-D-1
Timing Implemented On:

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	
B	9 10 11 12 -- -- -- --	
C	13 14 15 16 17 18 19 20	
D	-- -- -- -- 21 22 23 24	
E	-- -- -- -- -- -- -- --	
F	-- 25 26 27 28 -- -- --	

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	
2	System Det. # 2	
3	System Det. # 3	
4	System Det. # 4	
5	System Det. # 5	
6	System Det. # 6	
7	System Det. # 7	
8	System Det. # 8	

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: 28th St & National Ave

Group Assignment:
Field Master Assignment:

N/S Street Name: 28th ST
E/W Street Name: National Ave

223 I gram

Last Database Change:
System Ref. Number:

N

Row	Column # ---> / Phase # --->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk		7		7		7		7
1	Ped FDW		10		11		8		12
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	2.8		2.0	2.0	3.8		2.0
6	Max Gap	2.0	2.8		2.0	2.0	3.8		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		1.2				0.8		
E	Yellow	3.4	3.9		3.9	3.4	3.9		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1
F + Phase + Row

<F Page>

Row		F
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	0
3	EV-A Clear	0
4	EV-B Delay	
5	EV-B Clear	
6	EV-C Delay	0
7	EV-C Clear	0
8	EV-D Delay	
9	EV-D Clear	
A	RR-2 Delay	
B	RR-2 Clear	
C	View EV Delay	---
D	View EV Clear	---
E	View RR Delay	---
F	View RR Clear	---

Preempt Timing
F + E + Row

Row		F
0	Permit	12_456_8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	
4	Ped Recall	
5	Peds (View)	_2_4_6_8
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	___4___8
9	Max Recall	
A	Soft Recall	_2___6__
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	_2___6__
F	1st Phases	___4___8

Phase Functions <F Page>
F + F + Row

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + 0 + E
F + 0 + F
F + C + O

Start / Revert Times

Drop Number	
Zone Number	
Area Number	
Area Address	
QuicNet Channel	

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuicNet)

Communication Addresses

Overlap Timing

	Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page>
F + COLOR +

<D Page>
D + 0 + OVERLAP

Manual Plan	0
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

C + F + O

	1	Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	234

Disable Communication Ports
D + D + 9

Timing Sheet By: FA1
Approved By: EFF
Drawing Number: 22961-5
Timing Implemented On: 3/5/13

Printed on 2/13/2013 7:23 AM

City of San Diego

INTERSECTION 28th St & National Ave

223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Delay & Carryover <D Page>

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 – – – –	1234
C	13 14 15 16 17 18 19 20	12345678
D	– – – – 21 22 23 24	5678
E	– – – – – – – –	1234
F	– 25 26 27 28 – – –	2345

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

LOCATION: **RTE 5 @ NB National Ave. / 28th St.**

CALTRANS C8 Version 3 DATE: 7/23/13 PAGE 1

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	7	1	1	1	1	1	1	CLK RST
1	DONT WALK	1	21	1	1	1	1	1	1	
2	MIN GREEN	1	5	1	1	1	5	1	5	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	0.9	7.7	0.9	0.9	0.9	7.7	0.9	2.0	
6	MAX GAP	0.9	9.7	0.9	0.9	0.9	9.7	0.9	2.0	
7	MIN GAP	0.9	3.0	0.9	0.9	0.9	3.0	0.9	2.0	
8	MAX EXT	9	30	9	9	9	30	9	25	
9	MAX 2									
A	MAX 3									MO
B										DAY
C	REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW
D	EVERY	1.0	0.4	1.0	1.0	1.0	0.4	1.0	1.0	HR
E	YELLOW	3.0	3.6	3.0	3.0	3.0	3.6	3.0	3.6	MIN
F	RED	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	SEC
3.5'	PED XING FT		72'							
	BIKE XING FT		115'				90'			

NOTES: MPH = 35

PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
EV SEL	0	PERMIT		2				6		8	0
RR1 CLR	5	RED LOCK									1
EVA DLY	0	YEL LOCK									2
EVA CLR	5	V RECALL		2				6			3
EVB DLY	0	P RECALL									4
EVB CLR	5	PED PHASES		2							5
EVC DLY	0	RT OLA									6
EVC CLR	5	RT OLB									7
EVD DLY	0	DBL ENTRY									8
EVD CLR	5	MAX 2 PHASES									9
MAX EV	255	LAG PHASES	READ ONLY								A
RR2 CLR	5	RED REST									B
		REST-IN-WALK									C
		MAX 3 PHASES									D
		YEL START UP		2				6			E
		FIRST PHASE								8	F
			1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH														LAG FZ FREE		**2**		**4**		**6**		**8**	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		**2**				**6**			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP ***SYSTEM MASTER:***
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = **1**

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED		2							5
6										6 PED						6			6
7										4 PED				4					7
8										8 PED								8	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER

HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

7 PAGE

TIME OF DAY ACTIVITY TABLE											
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS											
	HR	MIN	ACT	ON/ OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

9 PAGE C09 = 0 or 1

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

9 PAGE C09 = 2

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: **RTE 5 @ NB National Ave. / 28th St.**

CALTRANS C8 Version 3 DATE: 11/14/11 PAGE 5

E PAGE D PAGE

F+C+F+1+2+3+E+B+ E+PHASES or TYPE+EVENT NO.										
		PHASES		TYPE			PHASES		TYPE	
		C		D			E		F	
0	I1	1		5,6		J1	5		5,6	
1	I2U	2		5,6		J2U	6		5,6	
2	I2L	2		5,6		J2L	6		5,6	
3	I3U	2		5,6		J3U	6		5,6	
4	I3L	2		5		J3L	6		5	
5	I4	2		7,8	5,6	J4	6		7,8	5,6
6	I5	3		5,6		J5	7		5,6	
7	I6U	4		5,6		J6U	8		5,6	
8	I6L	4		5,6		J6L	8		5,6	
9	I7U	4		5,6		J7U	8		5,6	
A	I7L	4		5		J7L	8		5	
B	I8	4		7,8		J8	8		7,8	5,6
C	I9U	1		5,6		J9U	5		5,6	
D	I9L	3		5,6		J9L	7		5,6	

DETECTOR TYPE

1 RED LOCK
2 YELLOW LOCK
5 EXTENSION
6 COUNT
7 CALLING
8 TYPE 3 DISCONNECT

DETECTOR SETTINGS									
I FILE					J FILE				
	DELAY		CARRYOVER			DELAY		CARRYOVER	
I1	D10		D30		J1	D2O		D4O	
I2U	D11		D31		J2U	D21		D41	
I2L	D12		D32		J2L	D22		D42	
I3U	D13		D33		J3U	D23		D43	
I3L	D14		D34		J3L	D24		D44	
I4	D15		D35		J4	D25		D45	
I5	D16		D36		J5	D26		D46	
I6U	D17		D37		J6U	D27		D47	
I6L	D18		D38		J6L	D28		D48	
I7U	D19		D39		J7U	D29		D49	
I7L	D1A		D3A		J7L	D2A		D4A	
I8	D1B		D3B		J8	D2B		D4B	
I9U	D1C		D3C		J9U	D2C		D4C	
I9L	D1D		D3D		J9L	D2D		D4D	

REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

TRAFFIC SIGNAL TIMING - PROGRAM 2005I

4 N — HARBOR — PHASE TIMING

INTERVAL		1	2	3	4	5	6	7	8
WALK	0		~~7~~		7		~~7~~		
FLASH D/W	1		~~4~~		19		~~20~~		
MIN GREEN	2	10	~~40~~	14	4	4	10		
TYPE 3 DET	3								
ADD/VEH	4								
VEH EXTEN *	5	4.3	~~2.0~~		2.0	2.0	4.3		
MAX GAP *	6	4.3	~~2.0~~		2.0	2.0	4.3		
MIN GAP *	7	0.2	~~2.0~~		2.0	2.0	0.2		
MAX EXTEN	8		60		50	30	60		
MAX 2	9		60		50	30	60		
	A								
CALL TO PHASE	B								
REDUCE BY	C						0.1		
REDUCE EVERY	D						0.7		
YELLOW	E		4.0		3.0	3.0	4.0		
RED CLEAR	F		1.0		1.0	1.0	1.0		

PREEMPT		
	E	
RR1 DELAY		0
RR1 CLEAR		1
EVA DELAY		2
EVA CLEAR		3
EVB DELAY		4
EVB CLEAR		5
EVC DELAY		6
EVC CLEAR		7
EVD DELAY		8
EVD CLEAR		9
RR2 DELAY		A
RR2 CLEAR		B
EV CLR TMR		C
EV DLY TMR		D
RR CLR TMR		E
RR DLY TMR		F

KEYSTROKES: F + PHASE + LOCATION

MAX INITIAL (F-0-E) = 0

RED REVERT (F-0-F) = 5

ALL RED START (F-C-0) = 0

* MUST BE SAME FOR NON-DENSITY OPERATION

PHASE FUNCTION FLAGS

KEYSTROKES: F+F+FUNCTION#

FUNCTION

		PHASE 1	2	3	4	5	6	7	8
PERMIT	0		X		X	X	X		
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3		X				X		
PED RECALL	4		X				X		
PEDS	5								
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9								
SOFT RECALL	A								
MAX 2	B								
COND SERVE	C								
RESERVED	D								
STARTUP	E		X				X		
FIRST PHASES	F				X				X

OVERLAP TIMING

KEYSTROKE: F+ COLOR CODE+OVERLAP

	9 GREEN	C YELLO	D RED
OVERLAP A			
OVERLAP B			
OVERLAP C			
OVERLAP D			

PHASE SEQUENCES (CFO)

	PHASE 1	2	3	4	5	6	7	8
LAG 0 (FREE)		X		X		X		

LOC: Belt ST & HARBOR DR DATE: 3-18-92 T.O: 14:25 KP PAGE 1 OF 2

INTERSECTION: 32ND ST & HARBOR DR

233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street: 32ND
E/W Street: HARBOR

Last Database Change:

Timing sheets by: EFF
Approved by: EFF
Timing implemented on: 11/30/2011

Row	Phase Numbers---->	1	2	3	4	5	6	7	8
						4+5		6+7	
		32ND		HARBOR		32ND		HARBOR	
		Phase							
0	Ped Walk								
1	Ped FDW								
2	Min Green	4	10	4	10	4	10	4	10
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	4.0	3.0	2.0	4.3	2.0	4.0	2.0	4.3
6	Max Gap	4.0	3.0	2.0	4.3	2.0	4.0	2.0	4.3
7	Min Gap	4.0	3.0	2.0	0.7	2.0	4.0	2.0	0.7
8	Max Limit	40	~~50~~	30	50	30	50	40	50
9	Max Limit 2		65	enl					
A	Adv. / Delay Walk			10-11-13					
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every				0.8				0.8
E	Yellow Change	3.4	3.9	3.4	4.2	3.4	3.9	3.4	4.6
F	Red Clear	1.0	1.0	1.0	2.0	1.0	1.0	1.0	2.0

Phase Timing - Bank 1 <F/1+Phase+Row>

Row		E
	RR-1 Delay	
	RR-1 Clear	
	EV-A Delay	0
	EV-A Clear	0
	EV-B Delay	
	EV-B Clear	
	EV-C Delay	
	EV-C Clear	
	EV-D Delay	
	EV-D Clear	
	RR-2 Delay	0
	RR-2 Clear	20
	View EV Delay	- - -
	View EV Clear	- - -
	View RR Delay	- - -
	View RR Clear	- - -

Preempt Timing <F/1+E+Row>

Row		F
0	Permit	12345678
1	Red Lock	
2	Yellow Lock	
3	Min Recall	4 8
4	Ped Recall	
5	*View Set Pods*	
6	Rest In Walk	
7	Red Rest	
8	Double Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	
D	Man Cntrl Calls	
E	Yellow Start	4 8
F	First Phases	2 6

Phase Functions <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Drop Number		<C/0+0+0>
Zone Number		<C/0+0+1>
Area Number		<C/0+0+2>
Area Address		<C/0+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Free Lag	2 4 6 8	<C/1+F+0>

How to Set Page Access Code:
F/1 -- C + 0 + F = 1

Notes: Set Min Green for PE Forceoff (F/1+0+8) equal to 4 sec.
Set Max Pre-empt Time Before Failure (F/1+0+9) equal to 10 min.
Special Event Table 2 used for post RR2 pre-emption.

INTERSECTION: 32ND ST & HARBOR DR

233 Program

Row	Detector Name	0 C1 Pin Number	1 Attributes	2 Phase(s)	3 Assign	1 Delay	3 Carry-Over
0		39	45_7_	2	123		
1		40	45_7_	6	123		
2		41	45_7_	4	123		
3	8J6U	42	45_7_	8	123		1.8
4		43	45_7_	2	123		
5		44	45_7_	6	123		
6	4I6L	45	45_7_	4	123		1.8
7		46	45_7_	8	123		
8		47	67_	2	123		
9		48	67_	6	123		
A		49	67_	4	123		
B		50	67_	8	123		
C		55	45_7_	5	123		
D		56	45_7_	1	123		
E		57	45_7_	7	123		
F		58	45_7_	3	123		

Row	Detector Name	4 C1 Pin Number	5 Attributes	6 Phase(s)	7 Assign	2 Delay	4 Carry-Over
0		59	45_7_	5	123		
1		60	45_7_	1	123		
2		61	45_7_	7	123		
3		62	45_7_	3	123		
4		63	45_7_	2	123		
5		64	45_7_	6	123		
6		65	45_7_	4	123		
7		66	45_7_	8	123		
8		67	2	2	123		
9		68	2	6	123		
A		69	2	4	123		
B		70	2	8	123		
C		76	45_7_	2	123		
D		77	45_7_	6	123		
E		78	45_7_	4	123		
F		79	45_7_	8	123		

Detector Assignments <E/126+Column+Row> <D/0+Column+Row>

Program Type:

	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green	35	36							5
Overlap Yellow	37	38							6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	30

<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	5	<D/0+0+1>
Max ON (minutes)	60	<D/0+0+2>

Detector Failure Monitor

	D	Row
		0
Output Port 1		1
Output Port 2		2
Output Port 3		3
Output Port 4		4
Output Port 5		5
Output Port 6		6
Output Port 7		7

Dimming <E/125+D+Row>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	D
Number of Digits	
1 st Digit	
2 ed Digit	
3 ed Digit	
4 th Digit	
5 th Digit	
6 th Digit	
7 th Digit	
8 th Digit	
9 th Digit	
10 th Digit	
11 th Digit	
12 th Digit	
13 th Digit	
14 th Digit	
15 th Digit	<C/5+D+Row>

Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

<D/0+B+Row> (seconds)

Delay Logic Times

Omit Alarm	#NAME?

<C/5+F+0>

Disable Alarm Reporting

Time	0	<C/5+C+0>

Redial Time (minutes)
(View Redial Timer at E/2+D+6)

INTERSECTION: 32ND ST & HARBOR DR

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

0 <E/27+5+F>
Limited Service Interval

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0										
1										
2										
3	2 5	10		2 5		34 8	2 5	2 5		
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 2 <C+0+E=28>

Notes:
To avoid skipping phases 2 & 5 during the AM and PM peak hours (when trolley service is very frequent) a special event sequence is programmed in Special Event Schedule 2 to serve phases 2 & 5 following each RR2 pre-emption.

1 <E/28+5+F>
Limited Service Interval

INTERSECTION: 32ND ST & NORMAN SCOTT RD/WABASH P

233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street:
E/W Street:

Last Database Change:

Timing sheets by: EFF
Approved by: EFF
Timing implemented on: 10/17/2011

32ND/WABASH | NORMAN SCOTT | 32ND

Row	Phase Numbers—>	1	2	3	4	5	6	7	8
				2+3					
0	Ped Walk		7		7		7		
1	Ped FDW		15		22		14		
2	Min Green	4	10	10	10	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	3.2	4.3	3.0	2.0	2.2		
6	Max Gap	2.0	3.2	4.3	3.0	2.0	2.2		
7	Min Gap	2.0	0.2	0.2	3.0	2.0	0.2		
8	Max Limit	30	60	60	50	30	60		
9	Max Limit 2								
A	Adv. / Delay Walk				7				
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every		1.0	0.8			1.5		
E	Yellow Change	3.4	3.9	4.7	3.9	3.4	3.9		
F	Red Clear	2.0	2.0	2.0	2.0	2.0	2.0		

Phase Timing - Bank 1 <F/1+Phase+Row>

Row		E
0	RR-1 Delay	
1	RR-1 Clear	
2	EV-A Delay	
3	EV-A Clear	
4	EV-B Delay	
5	EV-B Clear	
6	EV-C Delay	
7	EV-C Clear	
8	EV-D Delay	
9	EV-D Clear	
A	RR-2 Delay	
B	RR-2 Clear	
C	*View EV Delay*	- - -
D	*View EV Clear*	- - -
E	*View RR Delay*	- - -
F	*View RR Clear*	- - -

Preempt Timing <F/1+E+Row>

Row		F
0	Permit	123456__
1	Red Lock	
2	Yellow Lock	
3	Min Recall	_2___6__
4	Ped Recall	
5	*View Set Peds*	
6	Rest In Walk	
7	Red Rest	
8	Double Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	
D	Man Cntrl Calls	
E	Yellow Start	_2___6__
F	First Phases	___4____

Phase Functions <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Drop Number	9	<C/0+0+0>
Zone Number	9	<C/0+0+1>
Area Number	9	<C/0+0+2>
Area Address	1	<C/0+0+3>
QuicNet Channel	COM110:	(QuicNet)

Communication Addresses

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Free Lag	2 4 6	<C/1+F+0>

How to Set Page Access Code:
F/1 – C + 0 + F = 1

Notes: LPI ON PHASE 4

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <9/0.1+Row>
(Bank 1)

Time	Funct.	Day of Week

TOD Function <7/0.1+Row>

Column 4
Phases/Bits

<E/27+4+Row>

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

Day	Year	Month	Holiday Type

Holiday Dates <8/1.1+Row>
(Bank 1)

Time	Plan	Offset	Holiday Type

Holiday Events <9/1.1+Row>
(Bank 1)

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

T.O.D. Functions:
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select:
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <9/0.2+Row>
(Bank 2)

Time	Funct.	Holiday Type

Holiday TOD Function <7/0.2+Row>

Column 4
Phases/Bits

<E/28+Row>

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

Day	Year	Month	Holiday Type

Holiday Dates <8/1.2+Row>
(Bank 2)

Time	Plan	Offset	Holiday Type

Holiday Events <9/1.2+Row>
(Bank 2)

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

Month Select:
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Cycle Timer:
Master: C/0 + A + 0
Ring A: C/0 + B + 0
Ring B: C/0 + D + 0

Interval Timer:
Ring A: F/0 + A + Interval Row
Ring B: F/0 + B + Interval Row

Master Plan: C/0 + A + 2
Current Plan: C/0 + A + 3
TOD Plan: C/0 + A + 5

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Spec. Funct. 1	NOT-3	Max 2	Pretimed	Set Monday	Dial 2 (7-Wire)	Sim Term	0
1	Spec. Funct. 2	NOT-4	System Det 1	Plan 1	Ext. Perm 1	Dial 3 (7-Wire)	EV-A 71	1
2	Spec. Funct. 3	OR-4 (a)	System Det 2	Plan 2	Ext. Perm 2	Offset 1 (7-Wire)	EV-B 72	2
3	Spec. Funct. 4	OR-4 (b)	System Det 3	Plan 3	Dimming	Offset 2 (7-Wire)	EV-C 73	3
4	NAND-3 (a)	OR-5 (a)	System Det 4	Plan 4	Set Clock	Offset 3 (7-Wire)	EV-D 74	4
5	NAND-3 (b)	OR-5 (b)	System Det 5	Plan 5	Stop Time	Free (7-Wire)	RR-1 51	5
6	NAND-4 (a)	OR-6 (a)	System Det 6	Plan 6	Flash Sense 81	Flash (7-Wire)	RR-2 52	6
7	NAND-4 (b)	OR-6 (b)	System Det 7	Plan 7	Manual Enable	Excl. Ped Omit	Spec. Event 1	7
8	OR-7 (a)	Fig 3 Diamond	System Det 8	Plan 8	Man. Advance	NOT-1	Spec. Event 2	8
9	OR-7 (b)	Fig 4 Diamond	Max Inhibit (nema)	Plan 9	External Alarm	NOT-2	External Lag	9
A	OR-7 (c)	AND-4 (a)	Force A (nema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a)	A
B	OR-7 (d)	AND-4 (b)	Force B (nema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b)	B
C	OR-8 (a)	NAND-1 (a)	C.N.A. (nema)	DELAY-C	Overlap Set 2	OR-2 (a)	AND-2 (a)	C
D	OR-8 (b)	NAND-1 (b)	Hold (nema)	DELAY-D	Overlap Set 3	OR-2 (b)	AND-2 (b)	D
E	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)	E
F	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)	F

Assignable Inputs <E/126+Column+Row>

Row	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1	TOD Out 1	Dial 2 (7-Wire)	0
1	Phase ON - 2	Sp Evnt Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dial 3 (7-Wire)	1
2	Phase ON - 3	Sp Evnt Out 2	Fast Flasher	Plan 2	OR-2	TOD Out 3	Offset 1 (7-Wire)	2
3	Phase ON - 4	Sp Evnt Out 3	Fig 3 Diamond	Plan 3	OR-3	TOD Out 4	Offset 2 (7-Wire)	3
4	Phase ON - 5	Sp Evnt Out 4	Fig 4 Diamond	Plan 4	AND-1	TOD Out 5	Offset 3 (7-Wire)	4
5	Phase ON - 6	Sp Evnt Out 5		Plan 5	AND-2	TOD Out 6	Free (7-Wire)	5
6	Phase ON - 7	Sp Evnt Out 6		Plan 6	AND-3	TOD Out 7	Flash (7-Wire)	6
7	Phase ON - 8	Sp Evnt Out 7		Plan 7	NOT-2	TOD Out 8	Preempt	7
8	Ph. Check - 1	Sp Evnt Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A	8
9	Ph. Check - 2		NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B	9
A	Ph. Check - 3	Detector Fail	OR-4	Spec. Funct. 3	EV-C	DELAY-A	Low Priority C	A
B	Ph. Check - 4	Spec. Funct. 1	OR-5	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D	B
C	Ph. Check - 5	Spec. Funct. 2	OR-6	NAND-3	RR-1	DELAY-C		C
D	Ph. Check - 6	Central Control	AND-4	NAND-4	RR-2	DELAY-D		D
E	Ph. Check - 7	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E		E
F	Ph. Check - 8	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F		F

Assignable Outputs <E/127+Column+Row>

INTERSECTION: NC-8th @ Harbor

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **2069**

N/S Street Name: **Not Assigned**
E/W Street Name: **Not Assigned**

Last Database Change: **5/30/2018 10:23**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number	**28**	<C+0+0>
Zone Number		<C+0+1>
Area Number	**3**	<C+0+2>
Area Address	**193**	<C+0+3>
QuicNet Channel	**Serial:COM1:**	(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	**20**	<F+0+E>
Red Revert	**5.0**	<F+0+F>
All Red Start	**5.0**	<F+C+0>

Start / Revert Times

	Phase							
Column Numbers ----->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Row *Phase Names ----->*								
0 Ped Walk	**0**	**7**	**0**	**0**	**0**	**0**	**7**	**0**
1 Ped FDW	**0**	**28**	**0**	**0**	**0**	**0**	**30**	**0**
2 Min Green	**4**	**6**	**0**	**0**	**4**	**6**	**6**	**6**
3 Type 3 Limit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4 Added Initial	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**
5 Veh Extension	**3.0**	**3.0**	**0.0**	**0.0**	**3.0**	**3.0**	**3.0**	**3.0**
6 Max Gap	**3.0**	**3.0**	**0.0**	**0.0**	**3.0**	**3.0**	**3.0**	**3.0**
7 Min Gap	**3.0**	**3.0**	**0.0**	**0.0**	**3.0**	**3.0**	**3.0**	**3.0**
8 Max Limit	**40**	**60**	**0**	**0**	**25**	**60**	**60**	**40**
9 Max Limit 2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
A - - - - - -	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
B Call To Phase	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C Reduce By	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
D Reduce Every	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
E Yellow Change	**3.6**	**4.4**	**0.0**	**0.0**	**3.6**	**4.4**	**4.1**	**4.1**
F Red Clear	**1.0**	**1.0**	**0.0**	**0.0**	**1.0**	**1.0**	**1.0**	**1.0**

Phase Timing - Bank 1 <F Page>

	E
RR-1 Delay	**0**
RR-1 Clear	**10**
EV-A Delay	**0**
EV-A Clear	**1**
EV-B Delay	**0**
EV-B Clear	**1**
EV-C Delay	**0**
EV-C Clear	**1**
EV-D Delay	**0**
EV-D Clear	**9**
RR-2 Delay	**0**
RR-2 Clear	**19**
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		**F**	Row
	Permit	**12__5678**	**0**
	Red Lock	**_____**	**1**
	Yellow Lock	**_____7_**	**2**
	Min Recall	**_2___6__**	**3**
	Ped Recall	**_____**	**4**
	View Set Peds	**- - - - -**	**5**
	Rest In Walk	**_____**	**6**
	Red Rest	**_____**	**7**
	Dual Entry	**_____**	**8**
	Max Recall	**_____**	**9**
	Soft Recall	**_____**	**A**
	Max 2	**_____**	**B**
	Cond. Service	**_____**	**C**
	Man Cntrl Calls	**_____**	**D**
	Yellow Start	**_2___6__**	**E**
	First Phases	**_____7_**	**F**

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION: NC-8th @ Harbor

(* = Coordination Recall)

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	100	100	100	100	100	100	100	100	100	0
1	Phase 1 - ForceOff	65	65	65	65	65	65	65	65	65	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	25	25	25	25	25	25	25	25	25	3
4	Phase 4 - ForceOff	40	40	40	40	40	40	40	40	40	4
5	Phase 5 - ForceOff	65	65	65	65	65	65	65	65	65	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	25	25	25	25	25	25	25	25	25	7
8	Phase 8 - ForceOff	40	40	40	40	40	40	40	40	40	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Permissive	12	12	12	12	12	12	12	12	0	D
E	Hold Release	255	255	255	255	255	255	255	255	0	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination <C Page>

Row		E	Row
1	Plan 1 - Sync	_2___6__	1
2	Plan 2 - Sync	_2___6__	2
3	Plan 3 - Sync	_2___6__	3
4	Plan 4 - Sync	_2___6__	4
5	Plan 5 - Sync	_2___6__	5
6	Plan 6 - Sync	_2___6__	6
7	Plan 7 - Sync	_2___6__	7
8	Plan 8 - Sync	_2___6__	8
9	Plan 9 - Sync	_2___6__	9
A	Coord Ped *	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E			E
F			F

Sync Phases <C Page>

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____7_
3	RR-2 Limited Service	12___6__
4	Prot / Perm Phases	_____
5	Overlap A - Green Omit	_____
6	Overlap B - Green Omit	_____
7	Overlap C - Green Omit	_____
8	Overlap D - Green Omit	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_2__5___
B	EV-B Phases	_____7_
C	EV-C Phases	1____6__
D	EV-D Phases	_____8
E	Extra 1 Config. Bits	1_____
F	IC Select (Interconnect)	_2_____

Configuration <E Page>

	F
RR Overlap A - Phases	_____
RR Overlap B - Phases	_____
RR Overlap C - Phases	_____
RR Overlap D - Phases	_____
Ped 2P	_2_____
Ped 6P	_____
Ped 4P	_____7_
Ped 8P	_____
Yellow Flash Phases	_____
Overlap A - Phases	_____
Overlap B - Phases	_____
Overlap C - Phases	_____
Overlap D - Phases	_____
Restricted Phases	_____
Assign 5 Outputs	_____

Configuration <E Page>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 =
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

Assign 5 Outputs
(Ped Loadswitch Yellows)
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Force-Off Adjust	0

Coord Force-Off Adjust for Ped Service <C+D+F>

Transition Type	0

TBC Transition <C+D+D>

Transition Type
0 = Shortway
Non-zero = Lengthen

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F	Row
0	Free Lag	_2_4_6_8	0
1	Plan 1 - Lag	_2_4_6_8	1
2	Plan 2 - Lag	_2_4_6_8	2
3	Plan 3 - Lag	_2_4_6_8	3
4	Plan 4 - Lag	_2_4_6_8	4
5	Plan 5 - Lag	_2_4_6_8	5
6	Plan 6 - Lag	_2_4___8	6
7	Plan 7 - Lag	_2_4_6_8	7
8	Plan 8 - Lag	_2_4_6_8	8
9	Plan 9 - Lag	_2_4_6_8	9
A	Coord Max *	_____	A
B	Coord Lag *	_____	B
C			C
D			D
E			E
F			F

Lag Phases <C Page>

INTERSECTION: NC-8th @ Harbor

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination
<9 Key with C+D+9=0>

Time	Funct.	Day of Week	Column F Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

TOD Function
<7 Key>

<D Page>

Time	Plan	Offset	Day of Week
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday # 1
TOD Coordination
<9 Key with C+D+9=1>

Time	Plan	Offset	Day of Week
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday # 2
TOD Coordination
<9 Key with C+D+9=2>

Time	Plan	Offset	Day of Week	Row
00 : 00	0	0		0
00 : 00	0	0		1
00 : 00	0	0		2
00 : 00	0	0		3
00 : 00	0	0		4
00 : 00	0	0		5
00 : 00	0	0		6
00 : 00	0	0		7
00 : 00	0	0		8
00 : 00	0	0		9
00 : 00	0	0		A
00 : 00	0	0		B
00 : 00	0	0		C
00 : 00	0	0		D
00 : 00	0	0		E
00 : 00	0	0		F

Holiday # 3
TOD Coordination
<9 Key with C+D+9=3>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row		Day	Year	Month	Day of Week
A	Holiday # 1 Date	0	0	0	
B	Holiday # 2 Date	0	0	0	
C	Holiday # 3 Date	0	0	0	

Holiday Dates
<8 Key>

INTERSECTION: NC-8th @ Harbor

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		I-1	14
1	0.0	0.0		I-2U	1
2	0.0	0.0		I-2L	5
3	0.0	0.0		I-3U	21
4	0.0	0.0		I-3L	25
5	0.0	0.0		I-4	9
6	0.0	0.0		I-5	16
7	0.0	0.0		I-6U	3
8	0.0	0.0		I-6L	7
9	0.0	0.0		I-7U	23
A	0.0	0.0		I-7L	27
B	0.0	0.0		I-8	11
C	0.0	0.0		I-9U	18
D	0.0	0.0		I-9L	20
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		J-1	13
1	0.0	0.0		J-2U	2
2	0.0	0.0		J-2L	6
3	0.0	0.0		J-3U	22
4	0.0	0.0		J-3L	26
5	0.0	0.0		J-4	10
6	0.0	0.0		J-5	15
7	0.0	0.0		J-6U	4
8	0.0	0.0		J-6L	8
9	0.0	0.0		J-7U	24
A	0.0	0.0		J-7L	28
B	0.0	0.0		J-8	12
C	0.0	0.0		J-9U	17
D	0.0	0.0		J-9L	19
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Detector Delay & Carryover <D Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A	0.0	0.0	0.0	0
B	Overlap B	0.0	0.0	0.0	0
C	Overlap C	0.0	0.0	0.0	0
D	Overlap D	0.0	0.0	0.0	0

Overlap Timing <F Page> <D Page>

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

Row		0 Detector Number
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (minutes)	5	<D+A+E>
Max OFF (minutes)	60	<D+A+F>

Detector Failure Monitor

Phase Number	0	<F+C+1>
Time Before Yellow	0.0	<F+C+3>

Advance Warning Beacon - Sign 1

Phase Number	0	<F+D+1>
Time Before Yellow	0.0	<F+D+3>

Advance Warning Beacon - Sign 2

Long Failure	0.0	<F+0+6>
Short Failure	0.0	<F+0+7>

Power Cycle Correction (Default = 0.5)

Disable Parity	0	<D+B+0>

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

INTERSECTION: NC-8th @ Harbor

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	10	0	10	0	10	0	10
2	Min Green	3	7	3	7	3	7	3	7
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	1.2	0.0	1.2	0.0	1.2	0.0	1.2
5	Veh Extension	0.5	3.5	0.5	3.5	0.5	3.5	0.5	3.5
6	Max Gap	0.5	5.0	0.5	5.0	0.5	5.0	0.5	5.0
7	Min Gap	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0
8	Max Limit	17	40	17	40	17	40	17	40
9	Max Limit 2	30	70	30	70	30	70	30	70
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
F	Red Clear	0.0	0.5	0.0	1.0	0.0	0.5	0.0	1.0

Phase Timing - Bank 2 <F Page>

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8	Row
	Phase Names ----->									
0	Ped Walk	0	7	0	7	0	7	0	7	0
1	Ped FDW	0	10	0	10	0	10	0	10	1
2	Min Green	3	7	3	7	3	7	3	7	2
3	Type 3 Limit	0	0	0	0	0	0	0	0	3
4	Added Initial	0.0	1.2	0.0	1.2	0.0	1.2	0.0	1.2	4
5	Veh Extension	0.5	3.5	0.5	3.5	0.5	3.5	0.5	3.5	5
6	Max Gap	0.5	5.0	0.5	5.0	0.5	5.0	0.5	5.0	6
7	Min Gap	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0	7
8	Max Limit	17	40	17	40	17	40	17	40	8
9	Max Limit 2	30	70	30	70	30	70	30	70	9
A	- - - - - -	0	0	0	0	0	0	0	0	A
B	Call To Phase	0	0	0	0	0	0	0	0	B
C	Reduce By	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	C
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	D
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	E
F	Red Clear	0.0	0.5	0.0	1.0	0.0	0.5	0.0	1.0	F

Phase Timing - Bank 3 <F Page>

Row	Delay Only --->	7 Time	8 Dwell	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output	Row	
0		0	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0	
1		0	0								1	
2		0	0								2	
3		0	0								3	
4		0	0								4	
5		0	0								5	
6		0	0								6	
7		0	0								7	
8		0	0								8	
9	Limited Service Int. --->	0	0								9	
A		- - -	0								A	**<--- Limited Service Interval** (Set Dwell = 255)
B		0	0								B	
C		0	0								C	
D		0	0								D	
E		0	0								E	
F		0	0								F	

Special Event Schedule <C Page with F+9+F=22>

INTERSECTION: 8th @ Transit Center

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **2081**

N/S Street Name: **Not Assigned**
E/W Street Name: **Not Assigned**

Last Database Change: **5/30/2018 10:32**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	**31**	<C/0+0+0>
Zone Number	**1**	<C/0+0+1>
Area Number	**1**	<C/0+0+2>
Area Address	**140**	<C/0+0+3>
QuicNet Channel	**Serial:COM1:**	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	**0**	<F/1+0+E>
Red Revert	**5.0**	<F/1+0+F>
All Red Start	**5.0**	<F/1+C+0>
FYA Red Revert	**2.0**	<F/1+0+5>
OVLP CHG Red	**6.0**	<F/1+0+3>

Start / Revert Times

Exclusive Walk	**0**	<F/1+0+0>
Exclusive FDW	**0**	<F/1+0+1>
All Red Clear	**0.0**	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8	Row
0	Ped Walk	0	0	0	7	0	7	0	0	0
1	Ped FDW	0	0	0	19	0	17	0	0	1
2	Min Green	0	7	0	7	4	7	0	0	2
3	Type 3 Disconnect	0	0	0	20	0	20	0	0	3
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
5	Veh Extension	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0	5
6	Max Gap	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0	6
7	Min Gap	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0	7
8	Max Limit	0	40	0	30	20	40	0	0	8
9	Max Limit 2	0	0	0	0	0	0	0	0	9
A	Adv. / Delay Walk	0	0	0	5	0	5	0	0	A
B	PE Min Ped FDW	0	0	0	17	0	16	0	0	B
C	Cond Serv Check	0	0	0	0	0	0	0	0	C
D	Reduce Every	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	D
E	Yellow Change	0.0	4.1	0.0	3.6	3.2	4.1	0.0	0.0	E
F	Red Clear	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	F

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

E	
RR-1 Delay	0
RR-1 Clear	20
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

F		Row
Permit	_2_456__	0
Red Lock	_____	1
Yellow Lock	____5___	2
Min Recall	_2___6__	3
Ped Recall	_____	4
View Set Peds	- - - - -	5
Rest In Walk	_____	6
Red Rest	_____	7
Dual Entry	_2___6__	8
Max Recall	_____	9
Soft Recall	_____	A
Max 2	_____	B
Cond. Service	_____	C
Man Cntrl Calls	_____	D
Yellow Start	___4____	E
First Phases	_2___6__	F

Phase Functions <C+0+F=1>

INTERSECTION: 8th @ Transit Center

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ---->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase								
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	0	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

Row		C
0	EV-A	0
1	EV-B	0
2	EV-C	0
3	EV-D	0
4	RR-1 *	- - -
5	RR-2 *	- - -
6	SE-1	0
7	SE-2	0

Preempt Priority <C+0+E=125>

(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	6
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	2 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 3 5
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	
Ped for 6P Output	6
Ped for 4P Output	4
Ped for 8P Output	
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	4

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	4 6
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	2 6
Start-up Ped Calls	

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2
Phase 1	10
Phase 2	10
Phase 3	10
Phase 4	10
Phase 5	10
Phase 6	10
Phase 7	10
Phase 8	10

Coordination Transition Minimums <C+0+C=5>

INTERSECTION: 8th @ Transit Center

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	100	100	100	100	100	100	100	100	100	0
1	Phase 1 - ForceOff	55	55	55	55	55	55	55	55	55	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	20	20	20	20	20	20	20	20	20	3
4	Phase 4 - ForceOff	40	40	40	40	40	40	40	40	40	4
5	Phase 5 - ForceOff	55	55	55	55	55	55	55	55	55	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	20	20	20	20	20	20	20	20	20	7
8	Phase 8 - ForceOff	40	40	40	40	40	40	40	40	40	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	15	15	15	15	15	15	15	15	15	D
E	Hold Release	255	255	255	255	255	255	255	255	255	E
F	Reserved	0	0	0	0	0	0	0	0	0	F

Coordination - Bank 1 <C+0+C=1>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row		E	Row
0			0
1	Plan 1 - Sync	_2___6__	1
2	Plan 2 - Sync	_2___6__	2
3	Plan 3 - Sync	_2___6__	3
4	Plan 4 - Sync	_2___6__	4
5	Plan 5 - Sync	_2___6__	5
6	Plan 6 - Sync	_2___6__	6
7	Plan 7 - Sync	_2___6__	7
8	Plan 8 - Sync	_2___6__	8
9	Plan 9 - Sync	_2___6__	9
A	NEMA Sync	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E			E
F			F

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9	Row
0	Ped Adjustment	0	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0	1
2	Perm 2 - End	0	0	0	0	0	0	0	0	0	2
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0	3
4	Perm 3 - End	0	0	0	0	0	0	0	0	0	4
5	Reservice Time	0	0	0	0	0	0	0	0	0	5
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____	6
7											7
8	Pretimed Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____	8
9	Max Recall	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	A
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	B
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	C
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	D
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	E
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	F

Coordination - Bank 2 <C+0+C=2>

Row		F	Row
0	Free Lag	_2_4_6_8	0
1	Plan 1 - Lag	_2_4_6_8	1
2	Plan 2 - Lag	_2_4_6_8	2
3	Plan 3 - Lag	_2_4_6_8	3
4	Plan 4 - Lag	_2_4_6_8	4
5	Plan 5 - Lag	_2_4_6_8	5
6	Plan 6 - Lag	_2_4_6_8	6
7	Plan 7 - Lag	_2_4_6_8	7
8	Plan 8 - Lag	_2_4_6_8	8
9	Plan 9 - Lag	_2_4_6_8	9
A	External Lag	_____	A
B	Lag Hold	_____	B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set DOW	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	0	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	71	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	51	Reserved	0	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	72	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	51	Reserved	0	Plan 3	0	Gate Down	75	Offset 2 (7-Wire)	0	EV-C	73	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	52	Reserved	0	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	74	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	52	Reserved	0	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	211	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	75	Reserved	0	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	75	Reserved	0	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	0	Plan 8	0	Man. Advance	0	NOT-1	52	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	External Alarm 1	0	Max Inhibit (nema)	0	Plan 9	0	External Alarm 2	0	NOT-2	51	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	51	AND-1 (a)	51	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	205	AND-1 (b)	52	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	201	AND-2 (a)	203	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	202	AND-2 (b)	204	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	203	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	204	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	211	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	201	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	202	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	205	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	84	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	85	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	87	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

INTERSECTION: 8th @ Transit Center

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	7	0	7	0	0
1	Ped FDW	0	0	0	17	0	16	0	0
2	Min Green	0	7	0	7	4	7	0	0
3	Type 3 Disconnect	0	0	0	20	0	20	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0
6	Max Gap	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0
7	Min Gap	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0
8	Max Limit	0	40	0	30	20	40	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	5	0	5	0	0
B	PE Min Ped FDW	0	0	0	17	0	16	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0
E	Yellow Change	0.0	4.1	0.0	3.6	3.2	4.1	0.0	0.0
F	Red Clear	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	3	<C/5+2+A>
Begin Week	2	<C/5+2+B>
End Month	11	<C/5+2+C>
End Week	1	<C/5+2+D>

Daylight Savings Time

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	7	0	7	0	0
1	Ped FDW	0	0	0	17	0	16	0	0
2	Min Green	0	7	0	7	4	7	0	0
3	Type 3 Disconnect	0	0	0	20	0	20	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0
6	Max Gap	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0
7	Min Gap	0.0	5.0	0.0	4.0	3.0	5.0	0.0	0.0
8	Max Limit	0	40	0	30	20	40	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	5	0	5	0	0
B	PE Min Ped FDW	0	0	0	17	0	16	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0
E	Yellow Change	0.0	4.1	0.0	3.6	3.2	4.1	0.0	0.0
F	Red Clear	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	20	<C/5+2+F>

Yellow Yield Coordination

	12345678	
Omit Alarm	12345678	<C/5+F+0>

Local Alarm Disable

INTERSECTION: 8th @ Transit Center

Column Numbers ---->		0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	___45_7_	_2_____	123____8	0.0	0.0
1		40	___45_7_	_____6__	123____8	0.0	0.0
2		41	___45_7_	___4____	123____8	0.0	0.0
3		42	___45_7_	_______8	123____8	0.0	0.0
4		43	___45_7_	_2_____	123____8	0.0	0.0
5		44	___45_7_	_____6__	123____8	0.0	0.0
6		45	___45_7_	___4____	123____8	0.0	0.0
7		46	___45_7_	_______8	123____8	0.0	0.0
8		47	_____67_	_2_____	123____8	0.0	0.0
9		48	_____67_	_____6__	123____8	0.0	0.0
A		49	_____67_	___4____	123____8	0.0	0.0
B		50	_____67_	_______8	123____8	0.0	0.0
C		55	___45_7_	____5___	123____8	0.0	0.0
D		56	___45_7_	1_______	123____8	0.0	0.0
E		57	___45_7_	_____7_	123____8	0.0	0.0
F		58	___45_7_	__3_____	123____8	0.0	0.0

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	___45_7_	____5___	123____8	0.0	0.0
1		60	___45_7_	1_______	123____8	0.0	0.0
2		61	___45_7_	_____7_	123____8	0.0	0.0
3		62	___45_7_	__3_____	123____8	0.0	0.0
4		63	___45_7_	_2_____	123____8	0.0	0.0
5		64	___45_7_	_____6__	123____8	0.0	0.0
6		65	___45_7_	___4____	123____8	0.0	0.0
7		66	___45_7_	_______8	123____8	0.0	0.0
8		67	_2_____	_2_____	123____8	0.0	0.0
9		68	_2_____	_____6__	123____8	0.0	0.0
A		69	_2_____	___4____	123____8	0.0	0.0
B		70	_2_____	_______8	123____8	0.0	0.0
C		76	___45_7_	_2_____	123____8	0.0	0.0
D		77	___45_7_	_____6__	123____8	0.0	0.0
E		78	___45_7_	___4____	123____8	0.0	0.0
F		79	___45_7_	_______8	123____8	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	20	<D/0+0+1>
Max ON (minutes)	7	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0.0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

INTERSECTION: 8th @ Transit Center

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	

TOD Function <C+0+7=0.1>

Column 4 Phases/Bits

<C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	

Holiday TOD Function <C+0+7=0.2>

Column 4 Phases/Bits

<C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.2>
(Bank 2)

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>
Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>
Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	0	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	255	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	0	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	0
D	Bus Delay	0
E	Max Early Grn	0
F	Max Grn Ext.	0

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

INTERSECTION: 8TH & ROOSEVELT

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **51**

N/S Street Name: **ROOSEVELT**
E/W Street Name: **8TH**

Last Database Change: **6/22/2011 8:09**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number	1	<C+0+0>
Zone Number		<C+0+1>
Area Number	5	<C+0+2>
Area Address	51	<C+0+3>
QuicNet Channel	COM10:	(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	20	<F+0+E>
Red Revert	5.0	<F+0+F>
All Red Start	5.0	<F+C+0>

Start / Revert Times

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	16	0	18	0	15	0	18
2	Min Green	4	10	0	5	4	10	0	5
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	2.0	3.0	0.0	3.0	2.0	3.0	0.0	3.0
6	Max Gap	2.0	3.0	0.0	3.0	2.0	3.0	0.0	3.0
7	Min Gap	2.0	3.0	0.0	3.0	2.0	3.0	0.0	3.0
8	Max Limit	20	40	0	30	20	40	0	30
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	3.0	4.0	0.0	4.0	3.0	4.0	0.0	4.0
F	Red Clear	1.0	2.0	0.0	2.0	1.0	2.0	0.0	2.0

Phase Timing - Bank 1 <F Page>

	E
RR-1 Delay	0
RR-1 Clear	10
EV-A Delay	0
EV-A Clear	1
EV-B Delay	0
EV-B Clear	1
EV-C Delay	0
EV-C Clear	1
EV-D Delay	0
EV-D Clear	1
RR-2 Delay	0
RR-2 Clear	10
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	12_456_8
1	Red Lock	___4____
2	Yellow Lock	_____
3	Min Recall	12___6__
4	Ped Recall	_____
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_2_4_6_8
9	Max Recall	_____
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_2___6__
F	First Phases	___4___8

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION: 8TH & ROOSEVELT

(* = Coordination Recall)

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	100	95	105	0	0	0	0	0	0	0
1	Phase 1 - ForceOff	45	48	55	0	0	0	0	0	0	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0	3
4	Phase 4 - ForceOff	33	36	42	0	0	0	0	0	0	4
5	Phase 5 - ForceOff	51	54	60	0	0	0	0	0	0	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	33	36	42	0	0	0	0	0	0	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	84	26	43	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Permissive	12	12	12	0	0	0	0	0	0	D
E	Hold Release	255	255	255	0	0	0	0	0	0	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination <C Page>

Row		E	Row
			0
1	Plan 1 - Sync	_2___6__	1
2	Plan 2 - Sync	_2___6__	2
3	Plan 3 - Sync	_2___6__	3
4	Plan 4 - Sync	_2___6__	4
5	Plan 5 - Sync	_2___6__	5
6	Plan 6 - Sync	_2___6__	6
7	Plan 7 - Sync	_2___6__	7
8	Plan 8 - Sync	_2___6__	8
9	Plan 9 - Sync	_2___6__	9
A	Coord Ped *	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E			E
F			F

Sync Phases <C Page>

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____
3	RR-2 Limited Service	_____
4	Prot / Perm Phases	_____
5	Overlap A - Green Omit	_____
6	Overlap B - Green Omit	_____
7	Overlap C - Green Omit	_____
8	Overlap D - Green Omit	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_2__5___
B	EV-B Phases	___4____
C	EV-C Phases	1____6__
D	EV-D Phases	_____8
E	Extra 1 Config. Bits	1_3_____
F	IC Select (Interconnect)	_2_____

Configuration <E Page>

	F
RR Overlap A - Phases	_____
RR Overlap B - Phases	_____
RR Overlap C - Phases	_____
RR Overlap D - Phases	_____
Ped 2P	_2_____
Ped 6P	_____6__
Ped 4P	___4____
Ped 8P	_____8
Yellow Flash Phases	_____
Overlap A - Phases	_____
Overlap B - Phases	_____
Overlap C - Phases	_____
Overlap D - Phases	_____
Restricted Phases	_____
Assign 5 Outputs	_____

Configuration <E Page>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 =
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

Assign 5 Outputs
(Ped Loadswitch Yellows)
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Force-Off Adjust	0

Coord Force-Off Adjust for Ped Service <C+D+F>

Transition Type	0

TBC Transition <C+D+D>

Transition Type
0 = Shortway
Non-zero = Lengthen

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F	Row
			0
1	Free Lag	_2_4_6_8	1
2	Plan 1 - Lag	_2_4_6_8	2
3	Plan 2 - Lag	_2_4_6_8	3
4	Plan 3 - Lag	_2_4_6_8	4
5	Plan 4 - Lag	_2_4_6_8	5
6	Plan 5 - Lag	_2_4_6_8	6
7	Plan 6 - Lag	_2_4_6_8	7
8	Plan 7 - Lag	_2_4_6_8	8
9	Plan 8 - Lag	_2_4_6_8	9
A	Plan 9 - Lag	_2_4_6_8	A
B	Coord Max *	_____	B
C	Coord Lag *	_____	C
D			D
E			E
F			F

Lag Phases <C Page>

INTERSECTION: 8TH & ROOSEVELT

TOD Coordination
<9 Key with C+D+9=0>

Row	Time	Plan	Offset	Day of Week
0	05:30	1	A	_23456_
1	08:30	E	A	_23456_
2	12:00	3	A	_23456_
3	19:00	E	A	_23456_
4	00:00	0	0	_____
5	00:00	0	0	_____
6	00:00	0	0	_____
7	00:00	0	0	_____
8	00:00	0	0	_____
9	00:00	0	0	_____
A	00:00	0	0	_____
B	00:00	0	0	_____
C	00:00	0	0	_____
D	00:00	0	0	_____
E	00:00	0	0	_____
F	00:00	0	0	_____

TOD Function
<7 Key>

Time	Funct.	Day of Week	Column F Phases/Bits
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____

<D Page>

Holiday # 1 TOD Coordination
<9 Key with C+D+9=1>

Time	Plan	Offset	Day of Week
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____

Holiday # 2 TOD Coordination
<9 Key with C+D+9=2>

Time	Plan	Offset	Day of Week
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____

Holiday # 3 TOD Coordination
<9 Key with C+D+9=3>

Time	Plan	Offset	Day of Week	Row
00:00	0	0	_____	0
00:00	0	0	_____	1
00:00	0	0	_____	2
00:00	0	0	_____	3
00:00	0	0	_____	4
00:00	0	0	_____	5
00:00	0	0	_____	6
00:00	0	0	_____	7
00:00	0	0	_____	8
00:00	0	0	_____	9
00:00	0	0	_____	A
00:00	0	0	_____	B
00:00	0	0	_____	C
00:00	0	0	_____	D
00:00	0	0	_____	E
00:00	0	0	_____	F

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Holiday Dates
<8 Key>

Row		Day	Year	Month	Day of Week
A	Holiday # 1 Date	0	0	0	_____
B	Holiday # 2 Date	0	0	0	_____
C	Holiday # 3 Date	0	0	0	_____

INTERSECTION: 8TH & ROOSEVELT

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		I-1	14
1	0.0	0.0		I-2U	1
2	0.0	0.0		I-2L	5
3	0.0	0.0		I-3U	21
4	0.0	0.0		I-3L	25
5	0.0	0.0		I-4	9
6	0.0	0.0		I-5	16
7	0.0	0.0		I-6U	3
8	0.0	0.0		I-6L	7
9	0.0	0.0		I-7U	23
A	0.0	0.0		I-7L	27
B	0.0	0.0		I-8	11
C	0.0	0.0		I-9U	18
D	0.0	0.0		I-9L	20
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	2.5		J-1	13
1	0.0	0.0		J-2U	2
2	0.0	0.0		J-2L	6
3	0.0	0.0		J-3U	22
4	0.0	0.0		J-3L	26
5	0.0	0.0		J-4	10
6	0.0	0.0		J-5	15
7	0.0	0.0		J-6U	4
8	0.0	0.0		J-6L	8
9	0.0	0.0		J-7U	24
A	0.0	0.0		J-7L	28
B	0.0	0.0		J-8	12
C	0.0	0.0		J-9U	17
D	0.0	0.0		J-9L	19
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Detector Delay & Carryover <D Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A	0.0	0.0	0.0	0
B	Overlap B	0.0	0.0	0.0	0
C	Overlap C	0.0	0.0	0.0	0
D	Overlap D	0.0	0.0	0.0	0

Overlap Timing <F Page> <D Page>

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

Row		0 Detector Number
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (minutes)	5	<D+A+E>
Max OFF (minutes)	60	<D+A+F>

Detector Failure Monitor

Phase Number	0	<F+C+1>
Time Before Yellow	0.0	<F+C+3>

Advance Warning Beacon - Sign 1

Phase Number	0	<F+D+1>
Time Before Yellow	0.0	<F+D+3>

Advance Warning Beacon - Sign 2

Long Failure	0.0	<F+0+6>
Short Failure	0.0	<F+0+7>

Power Cycle Correction (Default = 0.5)

Disable Parity	0	<D+B+0>

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

INTERSECTION: 8TH & ROOSEVELT

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
F	Red Clear	0.0	0.5	0.0	1.0	0.0	0.5	0.0	1.0

Phase Timing - Bank 2 <F Page>

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
F	Red Clear	0.0	0.5	0.0	1.0	0.0	0.5	0.0	1.0

Phase Timing - Bank 3 <F Page>

Row		7 Time	8 Dwell	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output	Row
0	Delay Only --->	0	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0
1		0	0								1
2		0	0								2
3		0	0								3
4		0	0								4
5		0	0								5
6		0	0								6
7		0	0								7
8		0	0								8
9	Limited Service	0	0								9
A	Int. --->	- - -	0								A
B		0	0								B
C		0	0								C
D		0	0								D
E		0	0								E
F		0	0								F

<--- Limited Service Interval (Set Dwell = 255)

Special Event Schedule <C Page with F+9+F=22>

INTERSECTION: National City Blvd@8th

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **8**

N/S Street Name: **National City Blvd**
E/W Street Name: **8th**

Last Database Change: **6/28/2011 7:54**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number	8	<C+0+0>
Zone Number		<C+0+1>
Area Number	1	<C+0+2>
Area Address	8	<C+0+3>
QuicNet Channel	COM9:	(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	20	<F+0+E>
Red Revert	5.0	<F+0+F>
All Red Start	5.0	<F+C+0>

Start / Revert Times

	Phase											
	Column Numbers ---->	1	2	3	4	5	6	7	8	E	F	
Row	*Phase Names ---->*											Row
0	Ped Walk	0	7	0	7	0	7	0	7	RR-1 Delay: 0	Permit: 12345678	0
1	Ped FDW	0	19	0	19	0	19	0	19	RR-1 Clear: 10	Red Lock: _____	1
2	Min Green	5	10	5	10	5	10	5	10	EV-A Delay: 0	Yellow Lock: _____	2
3	Type 3 Limit	0	0	0	0	0	0	0	0	EV-A Clear: 1	Min Recall: _2___6__	3
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	EV-B Delay: 0	Ped Recall: _____	4
5	Veh Extension	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	EV-B Clear: 1	*View Set Peds*: - - - - -	5
6	Max Gap	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	EV-C Delay: 0	Rest In Walk: _____	6
7	Min Gap	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	EV-C Clear: 1	Red Rest: _____	7
8	Max Limit	20	40	20	40	20	40	20	40	EV-D Delay: 0	Dual Entry: ___4___8	8
9	Max Limit 2	0	0	0	0	0	0	0	0	EV-D Clear: 1	Max Recall: _____	9
A	- - - - - -	0	0	0	0	0	0	0	0	RR-2 Delay: 0	Soft Recall: _____	A
B	Call To Phase	0	0	0	0	0	0	0	0	RR-2 Clear: 10	Max 2: _____	B
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*View EV Delay*: - - -	Cond. Service: _____	C
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*View EV Clear*: - - -	Man Cntrl Calls: _____	D
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	*View RR Delay*: - - -	Yellow Start: _2___6__	E
F	Red Clear	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	*View RR Clear*: - - -	First Phases: 1___5___	F

Phase Timing - Bank 1 <F Page>

Preempt Timing

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION: National City Blvd@8th

(* = Coordination Recall)

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	100	95	105	0	0	0	0	0	0	0
1	Phase 1 - ForceOff	70	65	75	0	0	0	0	0	0	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	26	23	27	0	0	0	0	0	0	3
4	Phase 4 - ForceOff	56	53	59	0	0	0	0	0	0	4
5	Phase 5 - ForceOff	70	65	75	0	0	0	0	0	0	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	12	23	29	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	56	53	59	0	0	0	0	0	0	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	54	12	17	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Permissive	12	12	12	0	0	0	0	0	0	D
E	Hold Release	255	255	255	0	0	0	0	0	0	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination <C Page>

Row		E	Row
0			0
1	Plan 1 - Sync	_2___6__	1
2	Plan 2 - Sync	_2___6__	2
3	Plan 3 - Sync	_2___6__	3
4	Plan 4 - Sync	___4___8	4
5	Plan 5 - Sync	___4___8	5
6	Plan 6 - Sync	___4___8	6
7	Plan 7 - Sync	___4___8	7
8	Plan 8 - Sync	___4___8	8
9	Plan 9 - Sync	___4___8	9
A	Coord Ped *	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E			E
F			F

Sync Phases <C Page>

Row	Column Numbers ---->	E	Row
0	Exclusive Phases	_____	0
1	RR-1 Clear Phases	_____	1
2	RR-2 Clear Phases	_____	2
3	RR-2 Limited Service	_____	3
4	Prot / Perm Phases	_____	4
5	Overlap A - Green Omit	_____	5
6	Overlap B - Green Omit	_____	6
7	Overlap C - Green Omit	_____	7
8	Overlap D - Green Omit	_____	8
9	Overlap Yellow Flash	_____	9
A	EV-A Phases	_2__5___	A
B	EV-B Phases	___4__7_	B
C	EV-C Phases	1____6__	C
D	EV-D Phases	__3____8	D
E	Extra 1 Config. Bits	1_3_____	E
F	IC Select (Interconnect)	_2_____	F

Configuration <E Page>

	F
RR Overlap A - Phases	_____
RR Overlap B - Phases	_____
RR Overlap C - Phases	_____
RR Overlap D - Phases	_____
Ped 2P	_2_____
Ped 6P	_____6__
Ped 4P	___4____
Ped 8P	_____8
Yellow Flash Phases	_____
Overlap A - Phases	_____
Overlap B - Phases	_____
Overlap C - Phases	_____
Overlap D - Phases	_____
Restricted Phases	_____
Assign 5 Outputs	_____

Configuration <E Page>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 =
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

Assign 5 Outputs
(Ped Loadswitch Yellows)
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Force-Off Adjust	0

Coord Force-Off Adjust for Ped Service <C+D+F>

Transition Type	0

TBC Transition <C+D+D>

Transition Type
0 = Shortway
Non-zero = Lengthen

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F	Row
0	Free Lag	_2_4_6_8	0
1	Plan 1 - Lag	_2_4_6_8	1
2	Plan 2 - Lag	_2_4_6_8	2
3	Plan 3 - Lag	_2_4_6_8	3
4	Plan 4 - Lag	_2_4_6_8	4
5	Plan 5 - Lag	_2_4_6_8	5
6	Plan 6 - Lag	_2_4_6_8	6
7	Plan 7 - Lag	_2_4_6_8	7
8	Plan 8 - Lag	_2_4_6_8	8
9	Plan 9 - Lag	_2_4_6_8	9
A	Coord Max *	_____	A
B	Coord Lag *	_____	B
C			C
D			D
E			E
F			F

Lag Phases <C Page>

INTERSECTION: National City Blvd@8th

Row	Time	Plan	Offset	Day of Week
0	05:30	1	A	_23456_
1	08:30	E	A	_23456_
2	12:00	3	A	_23456_
3	19:00	E	A	_23456_
4	00:00	0	0	_____
5	00:00	0	0	_____
6	00:00	0	0	_____
7	00:00	0	0	_____
8	00:00	0	0	_____
9	00:00	0	0	_____
A	00:00	0	0	_____
B	00:00	0	0	_____
C	00:00	0	0	_____
D	00:00	0	0	_____
E	00:00	0	0	_____
F	00:00	0	0	_____

TOD Coordination
<9 Key with C+D+9=0>

Time	Funct.	Day of Week	Column F Phases/Bits
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____
00:00	0	_____	_____

TOD Function
<7 Key>

<D Page>

Time	Plan	Offset	Day of Week
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____

Holiday # 1
TOD Coordination
<9 Key with C+D+9=1>

Time	Plan	Offset	Day of Week
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____
00:00	0	0	_____

Holiday # 2
TOD Coordination
<9 Key with C+D+9=2>

Time	Plan	Offset	Day of Week	Row
00:00	0	0	_____	0
00:00	0	0	_____	1
00:00	0	0	_____	2
00:00	0	0	_____	3
00:00	0	0	_____	4
00:00	0	0	_____	5
00:00	0	0	_____	6
00:00	0	0	_____	7
00:00	0	0	_____	8
00:00	0	0	_____	9
00:00	0	0	_____	A
00:00	0	0	_____	B
00:00	0	0	_____	C
00:00	0	0	_____	D
00:00	0	0	_____	E
00:00	0	0	_____	F

Holiday # 3
TOD Coordination
<9 Key with C+D+9=3>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row		Day	Year	Month	Day of Week
A	Holiday # 1 Date	0	0	0	_____
B	Holiday # 2 Date	0	0	0	_____
C	Holiday # 3 Date	0	0	0	_____

Holiday Dates
<8 Key>

INTERSECTION: National City Blvd@8th

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		I-1	14
1	0.0	0.0		I-2U	1
2	0.0	0.0		I-2L	5
3	0.0	0.0		I-3U	21
4	0.0	0.0		I-3L	25
5	0.0	0.0		I-4	9
6	0.0	0.0		I-5	16
7	0.0	0.0		I-6U	3
8	0.0	0.0		I-6L	7
9	0.0	0.0		I-7U	23
A	0.0	0.0		I-7L	27
B	0.0	0.0		I-8	11
C	0.0	0.0		I-9U	18
D	0.0	0.0		I-9L	20
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		J-1	13
1	0.0	0.0		J-2U	2
2	0.0	0.0		J-2L	6
3	0.0	0.0		J-3U	22
4	0.0	0.0		J-3L	26
5	0.0	0.0		J-4	10
6	0.0	0.0		J-5	15
7	0.0	0.0		J-6U	4
8	0.0	0.0		J-6L	8
9	0.0	0.0		J-7U	24
A	0.0	0.0		J-7L	28
B	0.0	0.0		J-8	12
C	0.0	0.0		J-9U	17
D	0.0	0.0		J-9L	19
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Detector Delay & Carryover <D Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A	0.0	0.0	0.0	0
B	Overlap B	0.0	0.0	0.0	0
C	Overlap C	0.0	0.0	0.0	0
D	Overlap D	0.0	0.0	0.0	0

Overlap Timing <F Page> <D Page>

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

Row		0 Detector Number
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (minutes)	5	<D+A+E>
Max OFF (minutes)	60	<D+A+F>

Detector Failure Monitor

Phase Number	0	<F+C+1>
Time Before Yellow	0.0	<F+C+3>

Advance Warning Beacon - Sign 1

Phase Number	0	<F+D+1>
Time Before Yellow	0.0	<F+D+3>

Advance Warning Beacon - Sign 2

Long Failure	0.0	<F+0+6>
Short Failure	0.0	<F+0+7>

Power Cycle Correction (Default = 0.5)

Disable Parity	0	<D+B+0>

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

INTERSECTION: National City Blvd@8th

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <F Page>

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <F Page>

Row		7 Time	8 Dwell	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0	Delay Only --->	0	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1		0	0							
2		0	0							
3		0	0							
4		0	0							
5		0	0							
6		0	0							
7		0	0							
8		0	0							
9	Limited Service	0	0							
A	Int. --->	- - -	0							
B		0	0							
C		0	0							
D		0	0							
E		0	0							
F		0	0							

<--- Limited Service Interval (Set Dwell = 255)

Special Event Schedule <C Page with F+9+F=22>

LOCATION: **RTE 5 @ Civic Ctr. / Harbor Dr.**

CALTRANS C8.3E EXCLUSIVE 7 PROM ONLY DATE: 3/16/15 PAGE 1

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	7	1	7	1	1	7	1	CLK RST	EV SEL	0	PERMIT	1	2	3	4	5	6	7		0
1	DONT WALK	1	23	1	19	1	1	33	1		RR1 CLR	5	RED LOCK			3						1
2	MIN GREEN	5	5	5	5	5	5	5	1		EVA DLY	0	YEL LOCK									2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	2.0	5.0	2.0	2.0	2.0	5.0	2.0	0.9		EVB CLR	5	PED PHASES		2		4			7		5
6	MAX GAP	2.0	7.0	2.0	2.0	2.0	7.0	2.0	0.9		EVC DLY	0	RT OLA									6
7	MIN GAP	2.0	3.0	2.0	2.0	2.0	3.0	2.0	0.9		EVC CLR	5	RT OLB									7
8	MAX EXT	20	35	25	30	20	35	35	9		EVD DLY	0	DBL ENTRY									8
9	MAX 2									YR	EVD CLR	5	MAX 2 PHASES									9
A	MAX 3									MO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	0.6	1.0	1.0	1.0	0.6	1.0	1.0	HR			MAX 3 PHASES									D
E	YELLOW	3.7	4.5	4.1	4.1	3.7	4.5	4.1	3.0	MIN			YEL START UP		2				6			E
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	SEC			FIRST PHASE							7		F
3.5'	PED XING FT		80'		65'			116'						1	2	3	4	5	6	7	8	
								54'														

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	3.0
FCB	3.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	1
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

MPH = 30

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

LOCATION: RTE 5 @ Civic Ctr. / Harbor Dr.

CALTRANS C8.3E EXCLUSIVE 7 PROM ONLY DATE: 11/14/11 PAGE 2

C PAGE

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH														LAG FZ FREE		2	3			6		8	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		2				6			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = 1

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: RTE 5 @ Civic Ctr. / Harbor Dr.

CALTRANS C8.3E EXCLUSIVE 7 PROM ONLY

DATE: 11/14/11

PAGE 3

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS								
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE							7		4
5										2 PED		2							5
6										6 PED				4					6
7										4 PED							7		7
8										8 PED								8	8
9																			9
A	OLA NOT	1	2		4	5	6	7		OLA ON			3						A
B	OLB NOT	1	2	3		5	6			OLB ON				4			7		B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER

HOUR = D-A-E

MINUTE = D-B-E

DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES

(CALL ACTIVE LIGHTS)

RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES

(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F

MINUTE = D-B-F

DAY = D-C-F

D-E-E = C8 VERSION NUMBER

D-E-F = LITHIUM BATTERY CONDITION

84 = BAD

85 = GOOD

LOCATION: **RTE 5 @ Civic Ctr. / Harbor Dr.**

CALTRANS C8.3E EXCLUSIVE 7 PROM ONLY

11/14/11

7 PAGE

TIME OF DAY ACTIVITY TABLE											
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS											
	HR	MIN	ACT	ON/ OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2

4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED

7 ENERGIZE AUX OUTPUT-GREEN

9 PAGE C09 = 0 or 1

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

8 ENERGIZE AUX OUTPUT-YELLOW

9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

9 PAGE C09 = 2

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: **RTE 5 @ Civic Ctr. / Harbor Dr.**

CALTRANS C8.3E EXCLUSIVE 7 PROM ONLY DATE: 6/25/13 PAGE 5

E PAGE

D PAGE

F+C+F+1+2+3+E+B+ E+PHASES or TYPE+EVENT NO.										
		PHASES		TYPE			PHASES		TYPE	
		C		D			E		F	
0	I1	1		5,6		J1	5		5,6	
1	I2U	2		5,6		J2U	6		5,6	
2	I2L	2		5,6		J2L	6		5,6	
3	I3U	2		5,6		J3U	6		5,6	
4	I3L	2		5		J3L	6		5	
5	I4	2	3	7,8	5,6	J4	6		7,8	5,6
6	I5	3		5,6		J5	7		5,6	
7	I6U	4		5,6		J6U	8	7	5,6	
8	I6L	4		5,6		J6L	8	7	5,6	
9	I7U	4		5,6		J7U	8	4	5,6	
A	I7L	4		5		J7L	8	4	5	5,6
B	I8	4	7	7,8	5,6	J8	8	4	7,8	5,6
C	I9U	1		5,6		J9U	5		5,6	
D	I9L	3		5,6		J9L	7		5,6	

DETECTOR TYPE

1 RED LOCK
2 YELLOW LOCK
5 EXTENSION
6 COUNT
7 CALLING
8 TYPE 3 DISCONNECT

DETECTOR SETTINGS									
I FILE					J FILE				
	DELAY		CARRYOVER			DELAY		CARRYOVER	
I1	D10		D30		J1	D2O		D4O	
I2U	D11		D31		J2U	D21		D41	
I2L	D12		D32		J2L	D22		D42	
I3U	D13		D33		J3U	D23		D43	
I3L	D14		D34		J3L	D24		D44	
I4	D15	2.0	D35		J4	D25		D45	
I5	D16	2.0	D36		J5	D26		D46	
I6U	D17		D37		J6U	D27		D47	
I6L	D18		D38		J6L	D28		D48	
I7U	D19		D39		J7U	D29		D49	
I7L	D1A		D3A		J7L	D2A		D4A	
I8	D1B		D3B		J8	D2B		D4B	
I9U	D1C		D3C		J9U	D2C		D4C	
I9L	D1D		D3D		J9L	D2D		D4D	

REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

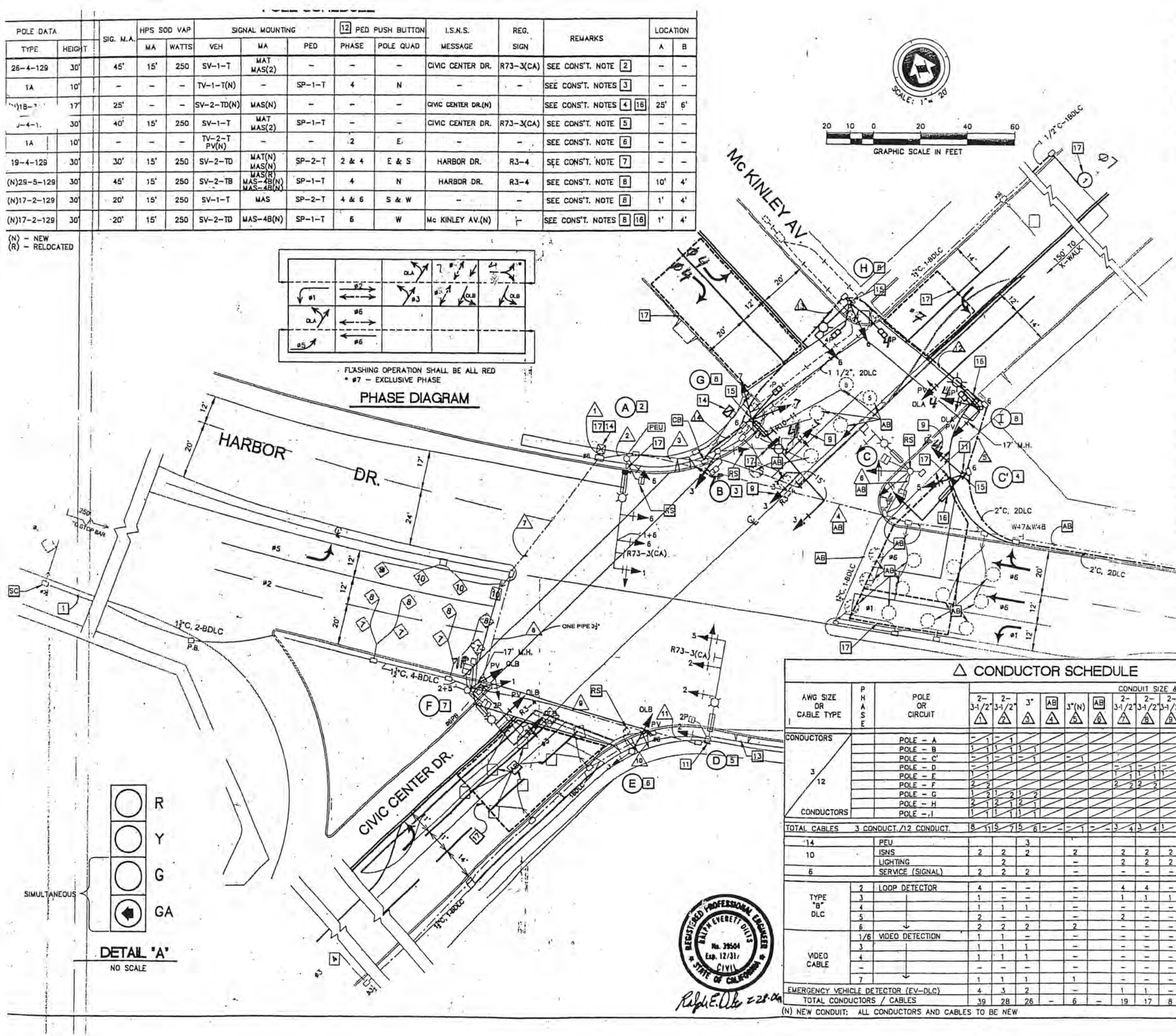
POLE SCHEDULE

POLE DATA		SIG. M.A.	HPS SOD VAP		SIGNAL MOUNTING			12 PED PUSH BUTTON		I.S.N.S.	REG.	REMARKS	LOCATION	
TYPE	HEIGHT		MA	WATTS	VEH	MA	PED	PHASE	POLE QUAD	MESSAGE	SIGN		A	B
26-4-129	30'	45'	15'	250	SV-1-T	MAT MAS(2)	-	-	-	CIVIC CENTER DR.	R73-3(CA)	SEE CONS'T. NOTE 2	-	-
1A	10'	-	-	-	TV-1-T(N)	-	SP-1-T	4	N	-	-	SEE CONS'T. NOTES 3	-	-
[illegible]18-[illegible]	17'	25'	-	-	SV-2-TD(N)	MAS(N)	-	-	-	CIVIC CENTER DR.(N)		SEE CONS'T. NOTES 4 16	25'	6'
[illegible]-4-1.	30'	40'	15'	250	SV-1-T	MAT MAS(2)	SP-1-T	-	-	CIVIC CENTER DR.	R73-3(CA)	SEE CONS'T. NOTE 5	-	-
1A	10'	-	-	-	TV-2-T PV(N)	-	-	2	E	-	-	SEE CONS'T. NOTE 6	-	-
19-4-129	30'	30'	15'	250	SV-2-TD	MAT(N) MAS(N)	SP-2-T	2 & 4	E & S	HARBOR DR.	R3-4	SEE CONS'T. NOTE 7	-	-
(N)29-5-129	30'	45'	15'	250	SV-2-TB	MAS(R) MAS-4B(N) MAS-4B(N)	SP-1-T	4	N	HARBOR DR.	R3-4	SEE CONS'T. NOTE 8	10'	4'
(N)17-2-129	30'	20'	15'	250	SV-1-T	MAS	SP-2-T	4 & 6	S & W	-	-	SEE CONS'T. NOTE 8	1'	4'
(N)17-2-129	30'	20'	15'	250	SV-2-TD	MAS-4B(N)	SP-1-T	6	W	Mc KINLEY AV.(N)		SEE CONS'T. NOTES 8 16	1'	4'

(N) – NEW
(R) – RELOCATED

FLASHING OPERATION SHALL BE ALL RED
* ø7 – EXCLUSIVE PHASE

PHASE DIAGRAM



DETAIL "A"
NO SCALE

WORK TO BE DONE

MODIFY TRAFFIC SIGNAL AND STREET LIGHTING SYSTEMS AS SHOWN AND NOTED IN ACCORDANCE WITH THE LATEST OF:

CALTRANS STANDARD SPECIFICATIONS DATED JULY 2004.

CALTRANS STANDARD PLANS DATED JULY 1999.

CALTRANS "TRAFFIC SIGNAL CONTROL EQUIPMENT SPECIFICATIONS" MUTCD PART 6 DATED 2003 AND CALTRANS SUPPLEMENT.

STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK), INCLUDING SUPPLEMENTS THERETO (FOR NON-TRAFFIC SIGNAL RELATED WORK).

SAN DIEGO AREA REGIONAL STANDARD DRAWINGS.

CONSTRUCTION NOTES

1 – INSTALL 6 ft. dia. TYPE "E" DETECTOR AS FOLLOWS:
1 – PHASE 4 LOOP DETECTOR ON EAST LEG OF CIVIC CENTER DR.
CONNECT NEW LOOP DETECTOR TO ADJACENT DETECTOR LEAD-IN CABLE. PULL ONE ADDITIONAL DETECTOR LEAD-IN CABLE TO CONTROLLER BOX FOR #2 ADVANCE LOOPS. FURNISH AND INSTALL 2" CONDUIT AND PULLBOXES BETWEEN #6 ADVANCE LOOPS AND PULLBOXES AT LOCATION (C) AS SHOWN ON PLANS. PULL TWO DETECTOR LEAD-IN CABLES TO CONTROLLER CABINET FOR #6 ADVANCE LOOPS.

2 – AT POLE LOCATION (A), REMOVE EXISTING PHASE 6 PEDESTRIAN HEAD.

3 – AT LOCATION (B), REMOVE EXISTING PHASE 4 VEHICLE HEAD. CHANGE PHASE 3 VEHICLE HEAD INDICATIONS TO ALL ARROWS. REMOVE EXISTING PHASE 6 PEDESTRIAN PUSHBUTTON.

4 – AT POLE LOCATION (C), REMOVE EXISTING TYPE 19-4-80 STANDARD COMPLETE. AT LOCATION (C'), FURNISH AND INSTALL A TYPE 18-3-129 STANDARD. POLE MOUNTED SIGNAL HEADS ARE RELOCATED FROM LOCATION (C).

5 – AT POLE LOCATION (D), REMOVE EXISTING PHASE 8 PEDESTRIAN PUSHBUTTON.

6 – AT POLE LOCATION (E), REMOVE EXISTING PHASE 8 PEDESTRIAN HEAD. REMOVE EXISTING PHASE 4 VEHICLE HEAD AND REPLACE WITH PHASE OLB PROGRAMMED VISIBILITY HEAD WITH ALL ARROWS.

7 – AT POLE LOCATION (F), REMOVE EXISTING PHASE 4 VEHICLE HEADS (3) AND REPLACE WITH PHASE OLB PROGRAMMED VISIBILITY HEADS (INDICATIONS ON MAT MOUNTED HEAD SHALL BE ALL ARROWS). FURNISH AND INSTALL R3-4 SIGN.

8 – AT POLE LOCATION (G), (H) AND (I), FURNISH AND INSTALL STANDARDS WITH ALL ASSOCIATED SIGNAL AND LIGHTING EQUIPMENT AS INDICATED ON THESE PLANS AND POLE SCHEDULE. PHASE OLB SIGNAL HEADS ARE PROGRAMMED VISIBILITY.
SPECIAL 45 FT. MAST ARM AT LOCATION (G) AS SHOWN WITH PHASE 3 SIGNAL HEADS, EVP DETECTOR, REGULATORY AND STREET NAME SIGNS RELOCATED FROM LOCATION (C).

9 – 4-SECTION SIGNAL HEADS. SEE DETAIL "A".

10 – FURNISH AND INSTALL ALL NEW CONDUCTORS/ CABLES, CONDUITS AND PULLBOXES AS INDICATED ON THESE PLANS AND CONDUCTOR SCHEDULE. MAKE CONNECTIONS IN CONTROLLER CABINET TO PROVIDE OPERATION AS INDICATED ON THESE PLANS.

APPROVED ENCROACHMENT PERMIT
Permit # 06EMC0508
Date MAR 07 2006

11 – FURNISH AND INSTALL R9-3A AND R9-3B SIGN.

12 – REPLACE ALL PEDESTRIAN PUSHBUTTONS WITH TYPE "B". SEE STD. PLAN E-S-5C.

13 – PEDESTRIAN RAMP TO BE REMOVED. SEE STREET IMPROVEMENT SHEET.

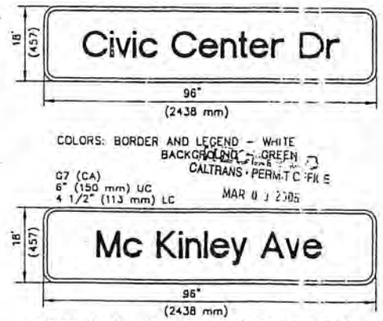
14 – EXISTING CONTROLLER, CONTROLLER CABINET AND SERVICE CABINET TO REMAIN.

15 – FURNISH AND INSTALL R13A(CA).

16 – FURNISH AND INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN PER ES-33 AND POLE SCHEDULE. SEE DETAIL

17 – FURNISH AND INSTALL VDU IN CONTROLLER CABINET, VIDEO CAMERAS AT LOCATION (A), (C'), (I) AND PULL VIDEO CABLE TO CONTROLLER CABINET AS INDICATED IN CONDUCTOR SCHEDULE. [----] INDICATES VEHICLE DETECTION AREA.

G7 (CA)
6" (150 mm) UC
4 1/2" (113 mm) LC



INTERNALLY ILLUMINATED STREET NAME SIGNS

△ CONDUCTOR SCHEDULE

AWG SIZE OR CABLE TYPE	PHASE	POLE OR CIRCUIT	CONDUIT SIZE & RUN														
			2-3-1/2" 1	2-3-1/2" 2	3" 3	AB 4	3"(N) 5	AB 6	2-3-1/2" A	2-3-1/2" B	2-3-1/2" C	2" 1	3" 1	3"(N) 2	3"(N) 3	3"(N) 4
CONDUCTORS 3/12 CONDUCTORS		POLE – A	–	1	–	1										
		POLE – B	1	1	1	1										
		POLE – C'	–	1	–	1	–	1								
		POLE – D	–	1			–	1	–	–	1	–	1			
		POLE – E	1	1					1	1	1	1	1			
		POLE – F	2	2					2	2	2					
		POLE – G	1	2	1	2								1	2	
		POLE – H	2	1	2	1								2	1	
		POLE – I	1	1	1	1								1	1	1
TOTAL CABLES		3 CONDUCT./12 CONDUCT.	8 11	5 7	5 6	– –	1 –		3 4	3 4	1 2	1 1	– –	1 2	3 3	4 5
14		PEU			3											
10		ISNS	2	2	2		2		2	2	2	–	2	2	2	2
		LIGHTING		2			–		2	2	2	–	2	2	2	2
6		SERVICE (SIGNAL)	2	2	2		–		–	–	–	–	–	–	–	–
TYPE "B" DLC	2	LOOP DETECTOR	4	–	–		–		4	4	–	–	–	–	–	–
	3		1	–	–		–		1	1	1	1	–	–	–	–
	4		1	1	1		–		–	–	–	–	–	–	–	–
	5		2	–	–		–		2	–	–	–	–	–	–	–
	6	↓	2	2	2		2		–	–	–	–	2	2	2	
VIDEO CABLE	1/6	VIDEO DETECTION	1	1	–		–		–	–	–	–	–	–	–	–
	3		1	1	1		–		–	–	–	–	–	–	–	1
	4		1	1	1		–		–	–	–	–	–	–	–	1
	–		–	–	–		–		–	–	–	–	–	–	–	–
	7	↓	1	1	1		1		–	–	–	–	1	1	1	
EMERGENCY VEHICLE DETECTOR (EV-DLC)			4	3	2		–		1	1	–	–	–	–	–	2
TOTAL CONDUCTORS / CABLES			39	28	26	–	6	–	19	17	8	3	5	10	13	20

(N) NEW CONDUIT: ALL CONDUCTORS AND CABLES TO BE NEW

REGISTERED PROFESSIONAL ENGINEER
RALPH EVERETT OLIS
No. 39504
Exp. 12/31/
CIVIL
STATE OF CALIFORNIA

Ralph E. Olis 2-28-06

PLANS FOR THE MODIFICATION OF TRAFFIC SIGNAL AND STREET LIGHTING SYSTEMS AT:

CIVIC CENTER DR. & HARBOR DR. & McKINLEY AV.

CITY OF NATIONAL CITY

CITY ENGINEER RCE			DATE
	INITIAL	DATE	PROJECT NO.
DESIGN BY:			SPEC. NO.
CHECK BY:			SHT. 4 OF 6 SHT.(S) -D

INTERSECTION: Tidelands @ Bay Marina

Group Assignment: **None**
Field Master Assignment: **None**
System Reference Number:

N/S Street Name: **Tidelands**
E/W Street Name: **Bay Marina**

Last Database Change: **3/2/2011 0:00**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number		<C+0+0>
Zone Number		<C+0+1>
Area Number		<C+0+2>
Area Address		<C+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	**20**	<F+0+E>
Red Revert	**5.0**	<F+0+F>
All Red Start	**5.0**	<F+C+0>

Start / Revert Times

	Phase							
Column Numbers ---->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Row *Phase Names ----->*								
0 Ped Walk	**0**	**7**	**0**	**7**	**0**	**7**	**0**	**7**
1 Ped FDW	**0**	**17**	**0**	**20**	**0**	**20**	**0**	**19**
2 Min Green	**0**	**10**	**0**	**5**	**0**	**10**	**0**	**5**
3 Type 3 Limit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4 Added Initial	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
5 Veh Extension	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**
6 Max Gap	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**
7 Min Gap	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**
8 Max Limit	**0**	**30**	**0**	**25**	**0**	**30**	**0**	**25**
9 Max Limit 2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
A - - - - - -	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
B Call To Phase	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C Reduce By	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
D Reduce Every	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
E Yellow Change	**0.0**	**4.0**	**0.0**	**4.0**	**0.0**	**4.0**	**0.0**	**4.0**
F Red Clear	**0.0**	**2.0**	**0.0**	**2.0**	**0.0**	**2.0**	**0.0**	**2.0**

Phase Timing - Bank 1 <F Page>

Row	E
RR-1 Delay	**0**
RR-1 Clear	**0**
EV-A Delay	**0**
EV-A Clear	**20**
EV-B Delay	**0**
EV-B Clear	**20**
EV-C Delay	**0**
EV-C Clear	**20**
EV-D Delay	**0**
EV-D Clear	**20**
RR-2 Delay	**0**
RR-2 Clear	**0**
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row	F
Permit	**_2_4_6_8**
Red Lock	**_____**
Yellow Lock	**_____**
Min Recall	**_____**
Ped Recall	**_____**
View Set Peds	**- - - - -**
Rest In Walk	**_____**
Red Rest	**_____**
Dual Entry	**_2_4_6_8**
Max Recall	**_____**
Soft Recall	**_2___6__**
Max 2	**_____**
Cond. Service	**_____**
Man Cntrl Calls	**_____**
Yellow Start	**_2___6__**
First Phases	**___4___8**

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION: Tidelands @ Bay Marina

(* = Coordination Recall)

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ----->										
0	Cycle Length	0	0	0	0	0	0	0	0	0	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0	3
4	Phase 4 - ForceOff	0	0	0	0	0	0	0	0	0	4
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	0	0	0	0	0	0	0	0	0	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Permissive	0	0	0	0	0	0	0	0	0	D
E	Hold Release	0	0	0	0	0	0	0	0	0	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination <C Page>

Row		E	Row
			0
1	Plan 1 - Sync	_____	1
2	Plan 2 - Sync	_____	2
3	Plan 3 - Sync	_____	3
4	Plan 4 - Sync	_____	4
5	Plan 5 - Sync	_____	5
6	Plan 6 - Sync	_____	6
7	Plan 7 - Sync	_____	7
8	Plan 8 - Sync	_____	8
9	Plan 9 - Sync	_____	9
A	Coord Ped *	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E			E
F			F

Sync Phases <C Page>

Row	Column Numbers ---->	E	Row
0	Exclusive Phases	_____	0
1	RR-1 Clear Phases	_____	1
2	RR-2 Clear Phases	_____	2
3	RR-2 Limited Service	_____	3
4	Prot / Perm Phases	_____	4
5	Overlap A - Green Omit	_____	5
6	Overlap B - Green Omit	_____	6
7	Overlap C - Green Omit	_____	7
8	Overlap D - Green Omit	_____	8
9	Overlap Yellow Flash	_____	9
A	EV-A Phases	_2_____	A
B	EV-B Phases	___4____	B
C	EV-C Phases	_____6__	C
D	EV-D Phases	_____8	D
E	Extra 1 Config. Bits	_____	E
F	IC Select (Interconnect)	_____	F

Configuration <E Page>

	F
RR Overlap A - Phases	_____
RR Overlap B - Phases	_____
RR Overlap C - Phases	_____
RR Overlap D - Phases	_____
Ped 2P	_2_____
Ped 6P	_____6__
Ped 4P	___4____
Ped 8P	_____8
Yellow Flash Phases	_____
Overlap A - Phases	_____
Overlap B - Phases	_____
Overlap C - Phases	_____
Overlap D - Phases	_____
Restricted Phases	_____
Assign 5 Outputs	_____

Configuration <E Page>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 =
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

Assign 5 Outputs
(Ped Loadswitch Yellows)
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Force-Off Adjust	0

Coord Force-Off Adjust for Ped Service <C+D+F>

Transition Type	0

TBC Transition <C+D+D>

Transition Type
0 = Shortway
Non-zero = Lengthen

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F	Row
0	Free Lag	_2_4_6_8	0
1	Plan 1 - Lag	_2_4_6_8	1
2	Plan 2 - Lag	_2_4_6_8	2
3	Plan 3 - Lag	_2_4_6_8	3
4	Plan 4 - Lag	_2_4_6_8	4
5	Plan 5 - Lag	_2_4_6_8	5
6	Plan 6 - Lag	_2_4_6_8	6
7	Plan 7 - Lag	_2_4_6_8	7
8	Plan 8 - Lag	_2_4_6_8	8
9	Plan 9 - Lag	_2_4_6_8	9
A	Coord Max *	_2_4_6_8	A
B	Coord Lag *	_2_4_6_8	B
C			C
D			D
E			E
F			F

Lag Phases <C Page>

INTERSECTION: Tidelands @ Bay Marina

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination
<9 Key with C+D+9=0>

Time	Funct.	Day of Week	Column F Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

TOD Function
<7 Key>

<D Page>

Time	Plan	Offset	Day of Week
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday # 1
TOD Coordination
<9 Key with C+D+9=1>

Time	Plan	Offset	Day of Week
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday # 2
TOD Coordination
<9 Key with C+D+9=2>

Time	Plan	Offset	Day of Week	Row
00 : 00	0	0		0
00 : 00	0	0		1
00 : 00	0	0		2
00 : 00	0	0		3
00 : 00	0	0		4
00 : 00	0	0		5
00 : 00	0	0		6
00 : 00	0	0		7
00 : 00	0	0		8
00 : 00	0	0		9
00 : 00	0	0		A
00 : 00	0	0		B
00 : 00	0	0		C
00 : 00	0	0		D
00 : 00	0	0		E
00 : 00	0	0		F

Holiday # 3
TOD Coordination
<9 Key with C+D+9=3>

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row		Day	Year	Month	Day of Week
A	Holiday # 1 Date	0	0	0	
B	Holiday # 2 Date	0	0	0	
C	Holiday # 3 Date	0	0	0	

Holiday Dates
<8 Key>

INTERSECTION: Tidelands @ Bay Marina

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		I-1	14
1	0.0	0.0		I-2U	1
2	0.0	0.0		I-2L	5
3	0.0	0.0		I-3U	21
4	0.0	0.0		I-3L	25
5	0.0	0.0		I-4	9
6	0.0	0.0		I-5	16
7	0.0	0.0		I-6U	3
8	0.0	0.0		I-6L	7
9	0.0	0.0		I-7U	23
A	0.0	0.0		I-7L	27
B	0.0	0.0		I-8	11
C	0.0	0.0		I-9U	18
D	0.0	0.0		I-9L	20
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		J-1	13
1	0.0	0.0		J-2U	2
2	0.0	0.0		J-2L	6
3	0.0	0.0		J-3U	22
4	0.0	0.0		J-3L	26
5	0.0	0.0		J-4	10
6	0.0	0.0		J-5	15
7	0.0	0.0		J-6U	4
8	0.0	0.0		J-6L	8
9	0.0	0.0		J-7U	24
A	0.0	0.0		J-7L	28
B	0.0	0.0		J-8	12
C	0.0	0.0		J-9U	17
D	0.0	0.0		J-9L	19
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Detector Delay & Carryover <D Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A	0.0	0.0	0.0	0
B	Overlap B	0.0	0.0	0.0	0
C	Overlap C	0.0	0.0	0.0	0
D	Overlap D	0.0	0.0	0.0	0

Overlap Timing <F Page> <D Page>

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

Row		0 Detector Number
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (minutes)	5	<D+A+E>
Max OFF (minutes)	60	<D+A+F>

Detector Failure Monitor

Phase Number	0	<F+C+1>
Time Before Yellow	0.0	<F+C+3>

Advance Warning Beacon - Sign 1

Phase Number	0	<F+D+1>
Time Before Yellow	0.0	<F+D+3>

Advance Warning Beacon - Sign 2

Long Failure	0.0	<F+0+6>
Short Failure	0.0	<F+0+7>

Power Cycle Correction (Default = 0.5)

Disable Parity	0	<D+B+0>

Dial-Up Telephone Communications

(If set to a non-zero value, parity will be disabled)

INTERSECTION: Tidelands @ Bay Marina

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8	Row
	Phase Names ----->									
0	Ped Walk	0	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0	1
2	Min Green	0	0	0	0	0	0	0	0	2
3	Type 3 Limit	0	0	0	0	0	0	0	0	3
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
8	Max Limit	0	0	0	0	0	0	0	0	8
9	Max Limit 2	0	0	0	0	0	0	0	0	9
A	- - - - - -	0	0	0	0	0	0	0	0	A
B	Call To Phase	0	0	0	0	0	0	0	0	B
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	D
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	E
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	F

Phase Timing - Bank 2 <F Page>

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8	Row
	Phase Names ----->									
0	Ped Walk	0	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0	1
2	Min Green	0	0	0	0	0	0	0	0	2
3	Type 3 Limit	0	0	0	0	0	0	0	0	3
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
8	Max Limit	0	0	0	0	0	0	0	0	8
9	Max Limit 2	0	0	0	0	0	0	0	0	9
A	- - - - - -	0	0	0	0	0	0	0	0	A
B	Call To Phase	0	0	0	0	0	0	0	0	B
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	D
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	E
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	F

Phase Timing - Bank 3 <F Page>

Row	Delay Only --->	7 Time	8 Dwell	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output	Row	
0		0	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0	
1		0	0								1	
2		0	0								2	
3		0	0								3	
4		0	0								4	
5		0	0								5	
6		0	0								6	
7		0	0								7	
8		0	0								8	
9	Limited Service	0	0								9	
A	Int. --->	- - -	0								A	<--- Limited Service Interval
B		0	0								B	
C		0	0								C	
D		0	0								D	(Set Dwell = 255)
E		0	0								E	
F		0	0								F	

Special Event Schedule <C Page with F+9+F=22>

LOCATION: **RTE 5 NB @ 24th Street**

CALTRANS C8 Version 3 DATE: 4/11/13 PAGE 1

.F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	1	1	1	1	7	1	1	CLK RST
1	DONT WALK	1	1	1	1	1	18	1	1	
2	MIN GREEN	1	5	1	1	5	5	1	5	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	0.9	5.0	0.9	0.9	2.0	5.0	0.9	2.0	
6	MAX GAP	0.9	7.0	0.9	0.9	2.0	7.0	0.9	2.0	
7	MIN GAP	0.9	3.0	0.9	0.9	2.0	3.0	0.9	2.0	
8	MAX EXT	9	35	9	9	25	35	9	20	
9	MAX 2									YR
A	MAX 3					35				MO
B										DAY
C	REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW
D	EVERY	1.0	0.6	1.0	1.0	1.0	0.6	1.0	1.0	HR
E	YELLOW	3.0	3.6	3.0	3.0	3.2	3.6	3.0	3.6	MIN
F	RED	0.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	SEC
3.5'	PED XING FT						75'			

PRE-EMPTION E		FLAGS	1	2	3	4	5	6	7	8	F
EV SEL	0	PERMIT		2			5	6		8	0
RR1 CLR	5	RED LOCK									1
EVA DLY	0	YEL LOCK									2
EVA CLR	5	V RECALL		2				6			3
EVB DLY	0	P RECALL									4
EVB CLR	5	PED PHASES						6			5
EVC DLY	0	RT OLA									6
EVC CLR	5	RT OLB									7
EVD DLY	0	DBL ENTRY									8
EVD CLR	5	MAX 2 PHASES									9
MAX EV	255	LAG PHASES	READ ONLY								A
RR2 CLR	5	RED REST									B
		REST-IN-WALK									C
		MAX 3 PHASES					5				D
		YEL START UP		2				6			E
		FIRST PHASE								8	F
			1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ▒

LOCATION: **RTE 5 NB @ 24th Street**

CALTRANS C8 Version 3 DATE: 8/18/11

C PAGE

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH	80	90	100											LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1		2		4		6		8	1
2														GAPOUT CP2	LAG FZ CP 2		2		4		6		8	2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3		2		4		6		8	3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR	20	25	30							LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR	20	22	25							NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A	40	45	50							OFFSET				LAG C COORD									A
B	OFFSET B	40	45	50											LAG D COORD									B
C	OFFSET C	40	45	50											COORD FAZES		2				6			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
NB OFF

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = 1

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1					5				CP 1								8	CP 1								
2	CP 2					5				CP 2								8	CP 2								
3	CP 3					5				CP 3								8	CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED		2							5
6										6 PED						6			6
7										4 PED				4					7
8										8 PED								8	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER

HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

LOCATION: **RTE 5 NB @ 24th Street**

CALTRANS C8 Version 3 DATE: 11/26/12

7 PAGE

9 PAGE C09 = 0 or 1

9 PAGE C09 = 2

TIME OF DAY ACTIVITY TABLE											
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS											
				ON/	S	M	T	W	T	F	S
	HR	MIN	ACT	OFF	1	2	3	4	5	6	7
0	**06**	**00**	**3**	**ON**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1	**18**	**00**	**3**		**1**	**2**	**3**	**4**	**5**	**6**	**7**
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
					S	M	T	W	T	F	S
	HR	MIN	CP	OS	1	2	3	4	5	6	7
0	**06**	**00**	**1**	**A**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1	**18**	**00**	**E**	**A**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
					S	M	T	W	T	F	S
	HR	MIN	CP	OS	1	2	3	4	5	6	7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

LOCATION: **RTE 5 NB @ 24th Street**

CALTRANS C8 Version 3 DATE: 4/11/13 PAGE 5

E PAGE D PAGE

F+C+F+1+2+3+E+B+ E+PHASES or TYPE+EVENT NO.									
		PHASES C		TYPE D			PHASES E		TYPE F
0	I1	1		5,6		J1	5		5,6	
1	I2U	2		5,6		J2U	6	5	5,6	
2	I2L	2		5,6		J2L	6	5	5,6	
3	I3U	2		5,6		J3U	6		5,6	
4	I3L	2		5		J3L	6		5	5,6
5	I4	2		7,8		J4	6		7,8	
6	I5	3		5,6		J5	7		5,6	
7	I6U	4		5,6		J6U	8		5,6	
8	I6L	4		5,6		J6L	8		5,6	
9	I7U	4		5,6		J7U	8		5,6	
A	I7L	4		5		J7L	8		5	
B	I8	4		7,8		J8	8		7,8	5,6
C	I9U	1		5,6		J9U	5		5,6	
D	I9L	3		5,6		J9L	7		5,6	

DETECTOR TYPE

1 RED LOCK
2 YELLOW LOCK
5 EXTENSION
6 COUNT
7 CALLING
8 TYPE 3 DISCONNECT

DETECTOR SETTINGS									
I FILE					J FILE				
	DELAY		CARRYOVER			DELAY		CARRYOVER	
I1	D10		D30		J1	D2O	2.0	D4O	
I2U	D11		D31		J2U	D21		D41	
I2L	D12		D32		J2L	D22		D42	
I3U	D13		D33		J3U	D23		D43	
I3L	D14		D34		J3L	D24		D44	
I4	D15		D35		J4	D25		D45	
I5	D16		D36		J5	D26		D46	
I6U	D17		D37		J6U	D27		D47	
I6L	D18		D38		J6L	D28		D48	
I7U	D19		D39		J7U	D29		D49	
I7L	D1A		D3A		J7L	D2A	7.0	D4A	
I8	D1B		D3B		J8	D2B		D4B	
I9U	D1C		D3C		J9U	D2C		D4C	
I9L	D1D		D3D		J9L	D2D		D4D	

REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

LOCATION: **RTE 5 SB @ 24th Street - Mile of Cars**
CALTRANS C8 Version 3 DATE: 1/14/13
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	1	1	1	1	7	1	1	CLK RST
1	DONT WALK	1	1	1	1	1	16	1	1	
2	MIN GREEN	5	10	1	5	1	10	1	1	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	5.0	0.9	2.0	0.9	5.0	0.9	0.9	
6	MAX GAP	2.0	7.0	0.9	2.0	0.9	7.0	0.9	0.9	
7	MIN GAP	2.0	3.0	0.9	2.0	0.9	3.0	0.9	0.9	
8	MAX EXT	30	30	9	30	9	30	9	9	
9	MAX 2									YR
A	MAX 3	45								MO
B										DAY
C	REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW
D	EVERY	1.0	0.6	1.0	1.0	1.0	0.6	1.0	1.0	HR
E	YELLOW	3.2	3.6	3.0	3.6	3.0	3.6	3.0	3.0	MIN
F	RED	1.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0	SEC
3.5'	PED XING FT						70'			
	BIKE XING FT		45'				65'			

PRE-EMPTION E		FLAGS	1	2	3	4	5	6	7	8	F
EV SEL	0	PERMIT	1	2		4		6			0
RR1 CLR	5	RED LOCK	1			4					1
EVA DLY	0	YEL LOCK									2
EVA CLR	5	V RECALL		2				6			3
EVB DLY	0	P RECALL									4
EVB CLR	5	PED PHASES						6			5
EVC DLY	0	RT OLA									6
EVC CLR	5	RT OLB									7
EVD DLY	0	DBL ENTRY									8
EVD CLR	5	MAX 2 PHASES									9
MAX EV	255	LAG PHASES	READ ONLY								A
RR2 CLR	5	RED REST									B
		REST-IN-WALK									C
		MAX 3 PHASES	1								D
		YEL START UP		2				6			E
		FIRST PHASE				4					F
			1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ▒

LOCATION: **RTE 5 SB @ 24th Street - Mile of Cars**

CALTRANS C8 Version 3 DATE: 8/18/11 PAGE 2

C PAGE

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH	80	90	100											LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR	20	25	30										GAPOUT CP1	LAG FZ CP 1		2		4		6		8	1
2														GAPOUT CP2	LAG FZ CP 2		2		4		6		8	2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3		2		4		6		8	3
4	FZ4 GRN FCTR	20	22	25							PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		2				6			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
NB OFF

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		
2		2
3		
4		
5		
6		
7		
8		

COO = 2

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1	1								CP 1				4					CP 1								
2	CP 2	1								CP 2				4					CP 2								
3	CP 3	1								CP 3				4					CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED		2							5
6										6 PED						6			6
7										4 PED				4					7
8										8 PED								8	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER

HOUR = D-A-E
MINUTE = D-B-E
DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)
RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
MINUTE = D-B-F
DAY = D-C-F

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CONDITION
84 = BAD
85 = GOOD

7 PAGE

TIME OF DAY ACTIVITY TABLE											
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS											
	HR	MIN	ACT	ON/ OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	06	00	3	ON	1	2	3	4	5	6	7
1	18	00	3		1	2	3	4	5	6	7
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN

9 PAGE C09 = 0 or 1

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	06	00	1	A	1	2	3	4	5	6	7
1	18	00	E	A	1	2	3	4	5	6	7
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

9 PAGE CO9 = 2

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

LOCATION: **RTE 5 SB @ 24th Street - Mile of Cars**
CALTRANS C8 Version 3 DATE: 11/20/12
E PAGE

D PAGE

F+C+F+1+2+3+E+B+ E+PHASES or TYPE+EVENT NO.										
		PHASES C		TYPE D			PHASES E		TYPE F	
0	I1	1		5,6		J1	5		5,6	
1	I2U	2		5,6		J2U	6		5,6	
2	I2L	2		5,6		J2L	6		5,6	
3	I3U	2		5,6		J3U	6		5,6	
4	I3L	2		5		J3L	6		5	5,6
5	I4	2		7,8	5,6	J4	6		7,8	5,6
6	I5	3		5,6		J5	7		5,6	
7	I6U	4		5,6		J6U	8		5,6	
8	I6L	4		5,6		J6L	8		5,6	
9	I7U	4		5,6		J7U	8		5,6	
A	I7L	4		5		J7L	8		5	
B	I8	4		7,8	5,6	J8	8		7,8	
C	I9U	1		5,6		J9U	5		5,6	
D	I9L	3		5,6		J9L	7		5,6	

DETECTOR TYPE

1 RED LOCK
2 YELLOW LOCK
5 EXTENSION
6 COUNT
7 CALLING
8 TYPE 3 DISCONNECT

DETECTOR SETTINGS									
I FILE					J FILE				
	DELAY		CARRYOVER			DELAY		CARRYOVER	
I1	D10		D30		J1	D2O		D4O	
I2U	D11		D31		J2U	D21		D41	
I2L	D12		D32		J2L	D22		D42	
I3U	D13		D33		J3U	D23		D43	
I3L	D14		D34		J3L	D24		D44	
I4	D15		D35		J4	D25		D45	
I5	D16		D36		J5	D26		D46	
I6U	D17		D37		J6U	D27		D47	
I6L	D18		D38		J6L	D28		D48	
I7U	D19		D39		J7U	D29		D49	
I7L	D1A		D3A		J7L	D2A		D4A	
I8	D1B		D3B		J8	D2B		D4B	
I9U	D1C		D3C		J9U	D2C		D4C	
I9L	D1D		D3D		J9L	D2D		D4D	

REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

FUTURE 11-2976U4

LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **237**

N/S Street Name: **Cleveland Ave**
E/W Street Name: **Bay Maria Dr**

Last Database Change: **11/5/2015 11:56**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	**32**	<C/0+0+0>
Zone Number	**1**	<C/0+0+1>
Area Number	**2**	<C/0+0+2>
Area Address	**237**	<C/0+0+3>
QuicNet Channel	**COM1:**	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	**0**	<F/1+0+E>
Red Revert	**5.0**	<F/1+0+F>
All Red Start	**5.0**	<F/1+C+0>

Start / Revert Times

Exclusive Walk	**0**	<F/1+0+0>
Exclusive FDW	**0**	<F/1+0+1>
All Red Clear	**0.0**	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	**0**	**0**	**0**	**7**	**0**	**7**	**0**	**0**
1	Ped FDW	**0**	**0**	**0**	**26**	**0**	**22**	**0**	**0**
2	Min Green	**4**	**6**	**4**	**4**	**4**	**6**	**0**	**0**
3	Type 3 Disconnect	**0**	**20**	**0**	**0**	**0**	**20**	**0**	**0**
4	Added per Vehicle	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
5	Veh Extension	**2.0**	**3.5**	**3.0**	**3.0**	**2.0**	**3.5**	**0.0**	**0.0**
6	Max Gap	**2.0**	**3.5**	**3.0**	**3.0**	**2.0**	**3.5**	**0.0**	**0.0**
7	Min Gap	**2.0**	**3.5**	**3.0**	**3.0**	**2.0**	**3.5**	**0.0**	**0.0**
8	Max Limit	**20**	**50**	**25**	**35**	**20**	**50**	**0**	**0**
9	Max Limit 2	**30**	**50**	**30**	**40**	**30**	**50**	**0**	**0**
A	Adv. / Delay Walk	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
B	PE Min Ped FDW	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C	Cond Serv Check	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
D	Reduce Every	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
E	Yellow Change	**3.2**	**3.6**	**3.2**	**3.2**	**3.2**	**3.6**	**0.0**	**0.0**
F	Red Clear	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**0.0**	**0.0**

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	**0**	**0**	**0**	**0**	**0.0**
Phase 2	**20**	**0**	**0**	**0**	**0.0**
Phase 3	**0**	**0**	**0**	**0**	**0.0**
Phase 4	**20**	**0**	**0**	**0**	**0.0**
Phase 5	**0**	**0**	**0**	**0**	**0.0**
Phase 6	**20**	**0**	**0**	**0**	**0.0**
Phase 7	**0**	**0**	**0**	**0**	**0.0**
Phase 8	**20**	**0**	**0**	**0**	**0.0**
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	**0**
RR-1 Clear	**0**
EV-A Delay	**0**
EV-A Clear	**0**
EV-B Delay	**0**
EV-B Clear	**0**
EV-C Delay	**0**
EV-C Clear	**0**
EV-D Delay	**0**
EV-D Clear	**0**
RR-2 Delay	**0**
RR-2 Clear	**0**
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	**123456__**
1	Red Lock	**1___5___**
2	Yellow Lock	**_____**
3	Min Recall	**_2___6__**
4	Ped Recall	**_____**
5	*View Set Peds*	- - - - -
6	Rest In Walk	**_____**
7	Red Rest	**_____**
8	Dual Entry	**_____**
9	Max Recall	**_____**
A	Soft Recall	**_____**
B	Max 2	**_____**
C	Cond. Service	**_____**
D	Man Cntrl Calls	**_____**
E	Yellow Start	**_____**
F	First Phases	**_2___6__**

Phase Functions <C+0+F=1>

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ---->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8									
9									
A									
B									
C									
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore P/P on EV
6 =
7 = Reserved
8 =

Row		C
0	EV-A	0
1	EV-B	0
2	EV-C	0
3	EV-D	0
4	RR-1 *	- - -
5	RR-2 *	- - -
6	SE-1	0
7	SE-2	0

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 3
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	4
Ped for 8P Output	8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	123456
Start-up Ped Calls	4 6

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		2
1	Phase 1	10
2	Phase 2	10
3	Phase 3	10
4	Phase 4	10
5	Phase 5	10
6	Phase 6	10
7	Phase 7	10
8	Phase 8	10

Coordination Transition Minimums
<C+0+C=5>

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ----->										
0	Cycle Length	100	100	100	100	100	100	100	100	100	0
1	Phase 1 - ForceOff	55	55	55	55	55	55	55	55	55	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	20	20	20	20	20	20	20	20	20	3
4	Phase 4 - ForceOff	40	40	40	40	40	40	40	40	40	4
5	Phase 5 - ForceOff	55	55	55	55	55	55	55	55	55	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	20	20	20	20	20	20	20	20	20	7
8	Phase 8 - ForceOff	40	40	40	40	40	40	40	40	40	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	15	15	15	15	15	15	15	15	15	D
E	Hold Release	255	255	255	255	255	255	255	255	255	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination - Bank 1 <C+0+C=1>

Row	E	Row
		0
Plan 1 - Sync	_2___6__	1
Plan 2 - Sync	_2___6__	2
Plan 3 - Sync	_2___6__	3
Plan 4 - Sync	_2___6__	4
Plan 5 - Sync	_2___6__	5
Plan 6 - Sync	_2___6__	6
Plan 7 - Sync	_2___6__	7
Plan 8 - Sync	_2___6__	8
Plan 9 - Sync	_2___6__	9
NEMA Sync	_____	A
NEMA Hold	_____	B
		C
		D
Coord Extra	_____	E
		F

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9	Row
0	Ped Adjustment	0	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0	1
2	Perm 2 - End	0	0	0	0	0	0	0	0	0	2
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0	3
4	Perm 3 - End	0	0	0	0	0	0	0	0	0	4
5	Reservice Time	0	0	0	0	0	0	0	0	0	5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	A
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C+0+C=2>

Row	F	Row
0	Free Lag	_2_4_6_8	0
1	Plan 1 - Lag	_2_4_6_8	1
2	Plan 2 - Lag	_2_4_6_8	2
3	Plan 3 - Lag	_2_4_6_8	3
4	Plan 4 - Lag	_2_4_6_8	4
5	Plan 5 - Lag	_2_4_6_8	5
6	Plan 6 - Lag	_2_4_6_8	6
7	Plan 7 - Lag	_2_4_6_8	7
8	Plan 8 - Lag	_2_4_6_8	8
9	Plan 9 - Lag	_2_4_6_8	9
A	External Lag	_____	A
B			B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Spec. Funct. 1	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	Spec. Funct. 2	0	NOT-4	0	System Det 1	0	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	71	1
2	Spec. Funct. 3	0	OR-4 (a)	0	System Det 2	0	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	72	2
3	Spec. Funct. 4	0	OR-4 (b)	0	System Det 3	0	Plan 3	0	Reserved	0	Offset 2 (7-Wire)	0	EV-C	73	3
4	NAND-3 (a)	0	OR-5 (a)	0	System Det 4	0	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	74	4
5	NAND-3 (b)	0	OR-5 (b)	0	System Det 5	0	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	51	5
6	NAND-4 (a)	0	OR-6 (a)	0	System Det 6	0	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	52	6
7	NAND-4 (b)	0	OR-6 (b)	0	System Det 7	0	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	OR-7 (a)	0	Fig 3 Diamond	0	System Det 8	0	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	OR-7 (b)	0	Fig 4 Diamond	0	Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Phase ON - 4	0	Sp Evnt Out 3	0	Fig 3 Diamond	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Phase ON - 5	0	Sp Evnt Out 4	0	Fig 4 Diamond	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Phase ON - 6	0	Sp Evnt Out 5	0			Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Phase ON - 7	0	Sp Evnt Out 6	0			Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Phase ON - 8	0	Sp Evnt Out 7	0			Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Ph. Check - 2	0			NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0			C
D	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0			D
E	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0			E
F	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0			F

Assignable Outputs <C+0+E=127>

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	7	0	7	0	0
1	Ped FDW	0	0	0	26	0	22	0	0
2	Min Green	4	6	4	4	4	6	0	0
3	Type 3 Disconnect	0	20	0	0	0	20	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	2.0	3.5	3.0	3.0	2.0	3.5	0.0	0.0
6	Max Gap	2.0	3.5	3.0	3.0	2.0	3.5	0.0	0.0
7	Min Gap	2.0	3.5	3.0	3.0	2.0	3.5	0.0	0.0
8	Max Limit	20	50	25	35	20	50	0	0
9	Max Limit 2	30	50	30	40	30	50	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	3.2	3.6	3.2	3.2	3.2	3.6	0.0	0.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Lag Hold Phases	_____	<C/5+1+A>

Coordinated Lag Hold Phases

Sync Output Time	0.0	<C/5+1+C>

7-Wire Master

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	4	<C/5+2+A>
Begin Week	1	<C/5+2+B>
End Month	10	<C/5+2+C>
End Week	5	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	<F/1+D+E>
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Long Failure	0.7	<F/1+0+6>
Short Failure	0.7	<F/1+0+7>

Power Cycle Correction (Default = 0.7)

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	7	0	7	0	0
1	Ped FDW	0	0	0	26	0	22	0	0
2	Min Green	4	6	4	4	4	6	0	0
3	Type 3 Disconnect	0	20	0	0	0	20	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	2.0	3.5	3.0	3.0	2.0	3.5	0.0	0.0
6	Max Gap	2.0	3.5	3.0	3.0	2.0	3.5	0.0	0.0
7	Min Gap	2.0	3.5	3.0	3.0	2.0	3.5	0.0	0.0
8	Max Limit	20	50	25	35	20	50	0	0
9	Max Limit 2	30	50	30	40	30	50	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	3.2	3.6	3.2	3.2	3.2	3.6	0.0	0.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Column Numbers ---->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	___45_7_	_2_____	123___8	0.0	0.0
1		40	___45_7_	_____6__	123___8	0.0	0.0
2		41	___45_7_	___4____	123___8	0.0	0.0
3		42	___45_7_	__3_____	123___8	0.0	0.0
4		43	___45_7_	_2_____	123___8	0.0	0.0
5		44	___45_7_	_____6__	123___8	0.0	0.0
6		45	___45_7_	___4____	123___8	0.0	0.0
7		46	___45_7_	__3_____	123___8	0.0	0.0
8		47	_____67_	_2_____	123___8	0.0	0.0
9		48	_____67_	_____6__	123___8	0.0	0.0
A		49	_____67_	___4____	123___8	0.0	0.0
B		50	_____67_	_______8	123___8	0.0	0.0
C		55	___45_7_	____5___	123___8	0.0	0.0
D		56	___45_7_	1_______	123___8	0.0	0.0
E		57	___45_7_	_____7_	123___8	0.0	0.0
F		58	___45_7_	__3_____	123___8	0.0	0.0

	4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	___45_7_	____5___	123___8	0.0	0.0
1		60	___45_7_	1_______	123___8	0.0	0.0
2		61	___45_7_	_____7_	123___8	0.0	0.0
3		62	___45_7_	__3_____	123___8	0.0	0.0
4		63	___45_7_	_2_____	123___8	0.0	0.0
5		64	___45_7_	_____6__	123___8	0.0	0.0
6		65	___45_7_	___4____	123___8	0.0	0.0
7		66	___45_7_	__3_____	123___8	0.0	0.0
8		67	_2_____	_2_____	123___8	0.0	0.0
9		68	_2_____	_____6__	123___8	0.0	0.0
A		69	_2_____	___4____	123___8	0.0	0.0
B		70	_2_____	_______8	123___8	0.0	0.0
C		76	___45_7_	_2_____	123___8	0.0	0.0
D		77	___45_7_	_____6__	123___8	0.0	0.0
E		78	___45_7_	___4____	123___8	0.0	0.0
F		79	___45_7_	__3_____	123___8	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers ---->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	20	<D/0+0+1>
Max ON (minutes)	7	<D/0+0+2>

Detector Failure Monitor

	D	Row
		0
Output Port 1	_____	1
Output Port 2	_____	2
Output Port 3	_____	3
Output Port 4	_____	4
Output Port 5	_____	5
Output Port 6	_____	6
Output Port 7	_____	7

Dimming <C+0+E=125>

	D
Number of Digits	0
1 st Digit	0
2 ed Digit	0
3 ed Digit	0
4 th Digit	0
5 th Digit	0
6 th Digit	0
7 th Digit	0
8 th Digit	0
9 th Digit	0
10 th Digit	0
11 th Digit	0
12 th Digit	0
13 th Digit	0
14 th Digit	0
15 th Digit	0

<C+0+C=5>

Dial-Back Telephone Number

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Omit Alarm	_____	<C/5+F+0>

Disable Alarm Reporting

Time	10	<C/5+C+0>

Redial Time (minutes)
(View Redial Timer at E/2+D+6)

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.2>
(Bank 2)

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

INTERSECTION: NC_Bay Marina Dr & Cleveland Ave

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

0 <E/27+5+F>
Limited Service Interval

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Special Event Schedule -- Table 2 <C+0+E=28>

Notes:

0 <E/28+5+F>
Limited Service Interval

Min Time (seconds) **0** <F/1+0+8>
Min Green Before PE Force Off

Max Time (minutes) **255** <F/1+0+9>
Max Preempt Time Before Failure

Min Time (seconds) **0** <F/1+0+A>
Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel _____ <E/125+C+8>
Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Delay Time (seconds) **0** <F/1+A+D>
Bus Delay

Max Time (seconds) **0** <F/1+A+E>
Max Early Green

Max Time (seconds) **0** <F/1+A+F>
Max Green Extension

Row	Time	Headway	Direction	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_2____
F	00 : 00	0	0	_2345__

Headway <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Only available with *Program 233RV2.B* (and above)
Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

INTERSECTION: NC Bay Marina Dr & Marina Way

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **236**

N/S Street Name: **Marina Way**
E/W Street Name: **Bay Marina Dr**

Last Database Change: **11/5/2015 11:56**

Change Record					
Change	By	Date	Change	By	Date

Notes: ***Signal Timing Plan for Temporary Construction***
1) Pull detector cards for all phases

Drop Number	**32**	<C+0+0>
Zone Number		<C+0+1>
Area Number	**2**	<C+0+2>
Area Address	**236**	<C+0+3>
QuicNet Channel	**COM1:**	(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	**20**	<F+0+E>
Red Revert	**5.0**	<F+0+F>
All Red Start	**5.0**	<F+C+0>

Start / Revert Times

	Phase							
Column Numbers ---->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Row *Phase Names ---->*								
0 Ped Walk	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**5**
1 Ped FDW	**0**	**12**	**0**	**0**	**0**	**0**	**0**	**22**
2 Min Green	**8**	**8**	**0**	**0**	**0**	**8**	**0**	**8**
3 Type 3 Limit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4 Added Initial	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
5 Veh Extension	**2.0**	**3.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**1.5**
6 Max Gap	**2.0**	**3.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**1.5**
7 Min Gap	**2.0**	**3.0**	**0.0**	**0.0**	**0.0**	**3.0**	**0.0**	**1.5**
8 Max Limit	**23**	**23**	**0**	**0**	**0**	**23**	**0**	**31**
9 Max Limit 2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
A - - - - - -	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
B Call To Phase	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C Reduce By	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
D Reduce Every	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
E Yellow Change	**3.0**	**3.6**	**0.0**	**0.0**	**0.0**	**3.6**	**0.0**	**3.6**
F Red Clear	**1.0**	**1.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**1.0**

Phase Timing - Bank 1 <F Page>

	E
RR-1 Delay	**0**
RR-1 Clear	**0**
EV-A Delay	**0**
EV-A Clear	**1**
EV-B Delay	**0**
EV-B Clear	**1**
EV-C Delay	**0**
EV-C Clear	**1**
EV-D Delay	**0**
EV-D Clear	**1**
RR-2 Delay	**0**
RR-2 Clear	**23**
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

	F	Row
Permit	**12___6_8**	**0**
Red Lock	**_____**	**1**
Yellow Lock	**_____8**	**2**
Min Recall	**_2___6__**	**3**
Ped Recall	**_____**	**4**
View Set Peds	**- - - - -**	**5**
Rest In Walk	**_____**	**6**
Red Rest	**_____**	**7**
Dual Entry	**_____**	**8**
Max Recall	**_____**	**9**
Soft Recall	**_2___6__**	**A**
Max 2	**_____**	**B**
Cond. Service	**_____**	**C**
Man Cntrl Calls	**_____**	**D**
Yellow Start	**_____8**	**E**
First Phases	**_2___6__**	**F**

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION: NC Bay Marina Dr & Marina Way

(* = Coordination Recall)

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	100	100	100	100	100	100	100	100	100	0
1	Phase 1 - ForceOff	65	65	65	65	65	65	65	65	65	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	25	25	25	25	25	25	25	25	25	3
4	Phase 4 - ForceOff	40	40	40	40	40	40	40	40	40	4
5	Phase 5 - ForceOff	65	65	65	65	65	65	65	65	65	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	25	25	25	25	25	25	25	25	25	7
8	Phase 8 - ForceOff	40	40	40	40	40	40	40	40	40	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Permissive	12	12	12	12	12	12	12	12	0	D
E	Hold Release	255	255	255	255	255	255	255	255	0	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination <C Page>

Row		E	Row
			0
1	Plan 1 - Sync	_2___6__	1
2	Plan 2 - Sync	_2___6__	2
3	Plan 3 - Sync	_2___6__	3
4	Plan 4 - Sync	_2___6__	4
5	Plan 5 - Sync	_2___6__	5
6	Plan 6 - Sync	_2___6__	6
7	Plan 7 - Sync	_2___6__	7
8	Plan 8 - Sync	_2___6__	8
9	Plan 9 - Sync	_2___6__	9
A	Coord Ped *	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E			E
F			F

Sync Phases <C Page>

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_2_____
3	RR-2 Limited Service	1_____
4	Prot / Perm Phases	_____
5	Overlap A - Green Omit	_____
6	Overlap B - Green Omit	_____
7	Overlap C - Green Omit	_____
8	Overlap D - Green Omit	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_2_____
B	EV-B Phases	_____
C	EV-C Phases	1___6__
D	EV-D Phases	_____8
E	Extra 1 Config. Bits	1_____
F	IC Select (Interconnect)	_2_____

Configuration <E Page>

	F
RR Overlap A - Phases	_____
RR Overlap B - Phases	_____
RR Overlap C - Phases	_____
RR Overlap D - Phases	_____
Ped 2P	_2_____
Ped 6P	_____
Ped 4P	_____
Ped 8P	_____8
Yellow Flash Phases	_____
Overlap A - Phases	_____
Overlap B - Phases	_____
Overlap C - Phases	_____
Overlap D - Phases	_____
Restricted Phases	_____
Assign 5 Outputs	_____

Configuration <E Page>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 =
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

Assign 5 Outputs
(Ped Loadswitch Yellows)
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Force-Off Adjust	0

Coord Force-Off Adjust for Ped Service <C+D+F>

Transition Type	0

TBC Transition <C+D+D>

Transition Type
0 = Shortway
Non-zero = Lengthen

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F	Row
			0
1	Free Lag	_2_4_6_8	1
2	Plan 1 - Lag	_2_4_6_8	2
3	Plan 2 - Lag	_2_4_6_8	3
4	Plan 3 - Lag	_2_4_6_8	4
5	Plan 4 - Lag	_2_4_6_8	5
6	Plan 5 - Lag	_2_4_6_8	6
7	Plan 6 - Lag	_2_4_6_8	7
8	Plan 7 - Lag	_2_4_6_8	8
9	Plan 8 - Lag	_2_4_6_8	9
A	Plan 9 - Lag	_2_4_6_8	A
B	Coord Max *	_____	B
C	Coord Lag *	_____	C
D			D
E			E
F			F

Lag Phases <C Page>

INTERSECTION: NC Bay Marina Dr & Marina Way

TOD Coordination
<9 Key with C+D+9=0>

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

TOD Function
<7 Key>

Time	Funct.	Day of Week
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____
00 : 00	0	_____

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Column F
Phases/Bits
_____
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<D Page>

Holiday # 1 TOD Coordination
<9 Key with C+D+9=1>

Time	Plan	Offset	Day of Week
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday # 2 TOD Coordination
<9 Key with C+D+9=2>

Time	Plan	Offset	Day of Week
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday # 3 TOD Coordination
<9 Key with C+D+9=3>

Time	Plan	Offset	Day of Week	Row
00 : 00	0	0	_____	0
00 : 00	0	0	_____	1
00 : 00	0	0	_____	2
00 : 00	0	0	_____	3
00 : 00	0	0	_____	4
00 : 00	0	0	_____	5
00 : 00	0	0	_____	6
00 : 00	0	0	_____	7
00 : 00	0	0	_____	8
00 : 00	0	0	_____	9
00 : 00	0	0	_____	A
00 : 00	0	0	_____	B
00 : 00	0	0	_____	C
00 : 00	0	0	_____	D
00 : 00	0	0	_____	E
00 : 00	0	0	_____	F

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row		Day	Year	Month	Day of Week
A	Holiday # 1 Date	0	0	0	_____
B	Holiday # 2 Date	0	0	0	_____
C	Holiday # 3 Date	0	0	0	_____

Holiday Dates
<8 Key>

INTERSECTION: NC Bay Marina Dr & Marina Way

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		I-1	14
1	0.0	0.0		I-2U	1
2	0.0	0.0		I-2L	5
3	0.0	0.0		I-3U	21
4	0.0	0.0		I-3L	25
5	0.0	0.0		I-4	9
6	0.0	0.0		I-5	16
7	0.0	0.0		I-6U	3
8	0.0	0.0		I-6L	7
9	0.0	0.0		I-7U	23
A	0.0	0.0		I-7L	27
B	0.0	0.0		I-8	11
C	0.0	0.0		I-9U	18
D	0.0	0.0		I-9L	20
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		J-1	13
1	0.0	0.0		J-2U	2
2	0.0	0.0		J-2L	6
3	0.0	0.0		J-3U	22
4	0.0	0.0		J-3L	26
5	0.0	0.0		J-4	10
6	0.0	0.0		J-5	15
7	0.0	0.0		J-6U	4
8	0.0	0.0		J-6L	8
9	0.0	0.0		J-7U	24
A	0.0	0.0		J-7L	28
B	0.0	0.0		J-8	12
C	0.0	0.0		J-9U	17
D	0.0	0.0		J-9L	19
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Detector Delay & Carryover <D Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A	0.0	0.0	0.0	0
B	Overlap B	0.0	0.0	0.0	0
C	Overlap C	0.0	0.0	0.0	0
D	Overlap D	0.0	0.0	0.0	0

Overlap Timing <F Page> <D Page>

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

Row		0 Detector Number
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (minutes)	5	<D+A+E>
Max OFF (minutes)	60	<D+A+F>

Detector Failure Monitor

Phase Number	0	<F+C+1>
Time Before Yellow	0.0	<F+C+3>

Advance Warning Beacon - Sign 1

Phase Number	0	<F+D+1>
Time Before Yellow	0.0	<F+D+3>

Advance Warning Beacon - Sign 2

Long Failure	0.0	<F+0+6>
Short Failure	0.0	<F+0+7>

Power Cycle Correction (Default = 0.5)

Disable Parity	0	<D+B+0>

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

INTERSECTION: NC Bay Marina Dr & Marina Way

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	10	0	10	0	10	0	10
2	Min Green	3	7	3	7	3	7	3	7
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	1.2	0.0	1.2	0.0	1.2	0.0	1.2
5	Veh Extension	0.5	3.5	0.5	3.5	0.5	3.5	0.5	3.5
6	Max Gap	0.5	5.0	0.5	5.0	0.5	5.0	0.5	5.0
7	Min Gap	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0
8	Max Limit	17	40	17	40	17	40	17	40
9	Max Limit 2	30	70	30	70	30	70	30	70
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
F	Red Clear	0.0	0.5	0.0	1.0	0.0	0.5	0.0	1.0

Phase Timing - Bank 2 <F Page>

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8	Row
	Phase Names ---->									
0	Ped Walk	0	7	0	7	0	7	0	7	0
1	Ped FDW	0	10	0	10	0	10	0	10	1
2	Min Green	3	7	3	7	3	7	3	7	2
3	Type 3 Limit	0	0	0	0	0	0	0	0	3
4	Added Initial	0.0	1.2	0.0	1.2	0.0	1.2	0.0	1.2	4
5	Veh Extension	0.5	3.5	0.5	3.5	0.5	3.5	0.5	3.5	5
6	Max Gap	0.5	5.0	0.5	5.0	0.5	5.0	0.5	5.0	6
7	Min Gap	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0	7
8	Max Limit	17	40	17	40	17	40	17	40	8
9	Max Limit 2	30	70	30	70	30	70	30	70	9
A	- - - - - -	0	0	0	0	0	0	0	0	A
B	Call To Phase	0	0	0	0	0	0	0	0	B
C	Reduce By	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	C
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	D
E	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	E
F	Red Clear	0.0	0.5	0.0	1.0	0.0	0.5	0.0	1.0	F

Phase Timing - Bank 3 <F Page>

Row	Delay Only --->	7 Time	8 Dwell	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output	Row
0		0	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0
1		0	0								1
2		0	0								2
3		0	0								3
4		0	0								4
5		0	0								5
6		0	0								6
7		0	0								7
8		0	0								8
9	Limited Service	0	0								9
A	Int. --->	- - -	0								A
B		0	0								B
C		0	0								C
D		0	0								D
E		0	0								E
F		0	0								F

<--- Limited Service Interval (Set Dwell = 255)

Special Event Schedule <C Page with F+9+F=22>

INTERSECTION: Tidelands @ 19th

Group Assignment: **None**
Field Master Assignment: **None**
System Reference Number:

N/S Street Name: **Tidelands**
E/W Street Name: **19th**

Last Database Change: **3/3/2011 0:00**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number		<C+0+0>
Zone Number		<C+0+1>
Area Number		<C+0+2>
Area Address		<C+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	**20**	<F+0+E>
Red Revert	**5.0**	<F+0+F>
All Red Start	**5.0**	<F+C+0>

Start / Revert Times

	Phase							
Column Numbers ---->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Row *Phase Names ---->*								
0 Ped Walk	**0**	**7**	**0**	**7**	**0**	**7**	**0**	**0**
1 Ped FDW	**0**	**21**	**0**	**19**	**0**	**22**	**0**	**0**
2 Min Green	**0**	**10**	**0**	**5**	**0**	**10**	**0**	**5**
3 Type 3 Limit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4 Added Initial	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
5 Veh Extension	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**
6 Max Gap	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**
7 Min Gap	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**	**0.0**	**3.0**
8 Max Limit	**0**	**30**	**0**	**25**	**0**	**30**	**0**	**25**
9 Max Limit 2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
A - - - - - -	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
B Call To Phase	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C Reduce By	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
D Reduce Every	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
E Yellow Change	**0.0**	**4.0**	**0.0**	**4.0**	**0.0**	**4.0**	**0.0**	**4.0**
F Red Clear	**0.0**	**2.0**	**0.0**	**2.0**	**0.0**	**2.0**	**0.0**	**2.0**

Phase Timing - Bank 1 <F Page>

Row	**E**	
RR-1 Delay	**0**	
RR-1 Clear	**0**	
EV-A Delay	**0**	
EV-A Clear	**0**	
EV-B Delay	**0**	
EV-B Clear	**0**	
EV-C Delay	**0**	
EV-C Clear	**0**	
EV-D Delay	**0**	
EV-D Clear	**0**	
RR-2 Delay	**0**	
RR-2 Clear	**0**	
View EV Delay	- - -	
View EV Clear	- - -	
View RR Delay	- - -	
View RR Clear	- - -	

Preempt Timing

	F	Row
Permit	**_2_4_6_8**	**0**
Red Lock	**_____**	**1**
Yellow Lock	**_____**	**2**
Min Recall	**_____**	**3**
Ped Recall	**_____**	**4**
View Set Peds	**- - - - -**	**5**
Rest In Walk	**_____**	**6**
Red Rest	**_____**	**7**
Dual Entry	**_2_4_6_8**	**8**
Max Recall	**_____**	**9**
Soft Recall	**___4___8**	**A**
Max 2	**_____**	**B**
Cond. Service	**_____**	**C**
Man Cntrl Calls	**_____**	**D**
Yellow Start	**_2___6__**	**E**
First Phases	**___4___8**	**F**

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION: Tidelands @ 19th

(* = Coordination Recall)

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	0	0	0	0	0	0	0	0	0	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0	3
4	Phase 4 - ForceOff	0	0	0	0	0	0	0	0	0	4
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	0	0	0	0	0	0	0	0	0	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	0	0	0	0	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Permissive	0	0	0	0	0	0	0	0	0	D
E	Hold Release	0	0	0	0	0	0	0	0	0	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination <C Page>

Row		E	Row
			0
1	Plan 1 - Sync		1
2	Plan 2 - Sync		2
3	Plan 3 - Sync		3
4	Plan 4 - Sync		4
5	Plan 5 - Sync		5
6	Plan 6 - Sync		6
7	Plan 7 - Sync		7
8	Plan 8 - Sync		8
9	Plan 9 - Sync		9
A	Coord Ped *		A
B	NEMA Hold		B
C			C
D			D
E			E
F			F

Sync Phases <C Page>

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	6
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2
B	EV-B Phases	4
C	EV-C Phases	6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1_3
F	IC Select (Interconnect)	2

Configuration <E Page>

	F
RR Overlap A - Phases	
RR Overlap B - Phases	
RR Overlap C - Phases	
RR Overlap D - Phases	
Ped 2P	2
Ped 6P	6
Ped 4P	4
Ped 8P	
Yellow Flash Phases	
Overlap A - Phases	
Overlap B - Phases	
Overlap C - Phases	
Overlap D - Phases	
Restricted Phases	
Assign 5 Outputs	

Configuration <E Page>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 =
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

Assign 5 Outputs
(Ped Loadswitch Yellows)
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Force-Off Adjust	0

Coord Force-Off Adjust for Ped Service <C+D+F>

Transition Type	0

TBC Transition <C+D+D>

Transition Type
0 = Shortway
Non-zero = Lengthen

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		F	Row
0	Free Lag	2_4_6_8	0
1	Plan 1 - Lag	2_4_6_8	1
2	Plan 2 - Lag	2_4_6_8	2
3	Plan 3 - Lag	2_4_6_8	3
4	Plan 4 - Lag	2_4_6_8	4
5	Plan 5 - Lag	2_4_6_8	5
6	Plan 6 - Lag	2_4_6_8	6
7	Plan 7 - Lag	2_4_6_8	7
8	Plan 8 - Lag	2_4_6_8	8
9	Plan 9 - Lag	2_4_6_8	9
A	Coord Max *		A
B	Coord Lag *		B
C			C
D			D
E			E
F			F

Lag Phases <C Page>

INTERSECTION: Tidelands @ 19th

TOD Coordination
<9 Key with C+D+9=0>

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

TOD Function
<7 Key>

Time	Funct.	Day of Week
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	
00 : 00	0	

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Column F
Phases/Bits

<D Page>

Holiday # 1 TOD Coordination
<9 Key with C+D+9=1>

Time	Plan	Offset	Day of Week
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday # 2 TOD Coordination
<9 Key with C+D+9=2>

Time	Plan	Offset	Day of Week
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday # 3 TOD Coordination
<9 Key with C+D+9=3>

Time	Plan	Offset	Day of Week	Row
00 : 00	0	0		0
00 : 00	0	0		1
00 : 00	0	0		2
00 : 00	0	0		3
00 : 00	0	0		4
00 : 00	0	0		5
00 : 00	0	0		6
00 : 00	0	0		7
00 : 00	0	0		8
00 : 00	0	0		9
00 : 00	0	0		A
00 : 00	0	0		B
00 : 00	0	0		C
00 : 00	0	0		D
00 : 00	0	0		E
00 : 00	0	0		F

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row		Day	Year	Month	Day of Week
A	Holiday # 1 Date	0	0	0	
B	Holiday # 2 Date	0	0	0	
C	Holiday # 3 Date	0	0	0	

Holiday Dates
<8 Key>

INTERSECTION: Tidelands @ 19th

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		I-1	14
1	0.0	0.0		I-2U	1
2	0.0	0.0		I-2L	5
3	0.0	0.0		I-3U	21
4	0.0	0.0		I-3L	25
5	0.0	0.0		I-4	9
6	0.0	0.0		I-5	16
7	0.0	0.0		I-6U	3
8	0.0	0.0		I-6L	7
9	0.0	0.0		I-7U	23
A	0.0	0.0		I-7L	27
B	0.0	0.0		I-8	11
C	0.0	0.0		I-9U	18
D	0.0	0.0		I-9L	20
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0	0.0	0.0		J-1	13
1	0.0	0.0		J-2U	2
2	0.0	0.0		J-2L	6
3	0.0	0.0		J-3U	22
4	0.0	0.0		J-3L	26
5	0.0	0.0		J-4	10
6	0.0	0.0		J-5	15
7	0.0	0.0		J-6U	4
8	0.0	0.0		J-6L	8
9	0.0	0.0		J-7U	24
A	0.0	0.0		J-7L	28
B	0.0	0.0		J-8	12
C	0.0	0.0		J-9U	17
D	0.0	0.0		J-9L	19
E	- - -	- - -	- - -	- - -	- - -
F	- - -	- - -	- - -	- - -	- - -

Detector Delay & Carryover <D Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A	0.0	0.0	0.0	0
B	Overlap B	0.0	0.0	0.0	0
C	Overlap C	0.0	0.0	0.0	0
D	Overlap D	0.0	0.0	0.0	0

Overlap Timing <F Page> <D Page>

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

Row		0 Detector Number
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (minutes)	5	<D+A+E>
Max OFF (minutes)	60	<D+A+F>

Detector Failure Monitor

Phase Number	0	<F+C+1>
Time Before Yellow	0.0	<F+C+3>

Advance Warning Beacon - Sign 1

Phase Number	0	<F+D+1>
Time Before Yellow	0.0	<F+D+3>

Advance Warning Beacon - Sign 2

Long Failure	0.0	<F+0+6>
Short Failure	0.0	<F+0+7>

Power Cycle Correction (Default = 0.5)

Disable Parity	0	<D+B+0>

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

INTERSECTION: Tidelands @ 19th

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <F Page>

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Limit	0	0	0	0	0	0	0	0
4	Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	- - - - - -	0	0	0	0	0	0	0	0
B	Call To Phase	0	0	0	0	0	0	0	0
C	Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <F Page>

Row		7 Time	8 Dwell	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0	Delay Only --->	0	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1		0	0							
2		0	0							
3		0	0							
4		0	0							
5		0	0							
6		0	0							
7		0	0							
8		0	0							
9	Limited Service	0	0							
A	Int. --->	- - -	0							
B		0	0							
C		0	0							
D		0	0							
E		0	0							
F		0	0							

<--- Limited Service Interval
(Set Dwell = 255)

Special Event Schedule <C Page with F+9+F=22>

APPENDIX

C NAVAL BASE GATES & PROCESSING RATES

Table C.1 Naval Base San Diego Gates & Processing Capacity

Gate	Cross Street	Lanes	Sentries	Gate Capacity (Vehicles/Hour)
Wet Side				
2	Belt Street	2	2	733[1]
6	32nd Street	4	2	1,057[1]
6A	Commercial Delivery Gate	1	1	NA[2]
7	Vesta Street	2	1	NA[2]
9	8th Street	3	1	743[1]
13	19th Street	2	2	NA[2]
Dry Side North				
15	28th Street	1	1	NA[2]
23	32nd Street	2	1	NA[2]
Dry Side South				
29	Vesta Street	1	1	NA[2]
32	Yama Street	3	1	NA[2]
43	32nd Street	2	1	NA[2]

Notes: (1) Observed by WSP project team in May 2018; (2) Not analyzed.

APPENDIX

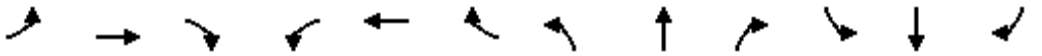
D HCM DELAY & TRAVEL TIME ANALYSIS WORKSHEETS

APPENDIX

D-1: HCM DELAY - EXISTING CONDITIONS

HCM 2000 Delay Analysis
1: Cesar E. Chavez Parkway & Harbor Drive

Existing Conditions
AM Peak Hour



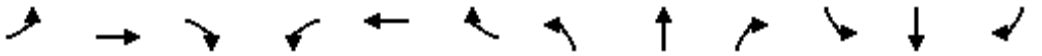
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	558	39	10	80	10	15	74	15	72	95	386
Future Volume (vph)	195	558	39	10	80	10	15	74	15	72	95	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	5.5		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	3504		1770	3479		1770	1815			1823	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.64	1.00			0.84	1.00
Satd. Flow (perm)	1770	3504		1770	3479		1196	1815			1568	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.91	0.91	0.91
Adj. Flow (vph)	229	656	46	12	94	12	18	88	18	79	104	424
RTOR Reduction (vph)	0	6	0	0	11	0	0	7	0	0	0	235
Lane Group Flow (vph)	229	696	0	12	95	0	18	99	0	0	183	189
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	19.2	25.2		1.2	7.4		33.4	33.4			33.4	33.4
Effective Green, g (s)	19.2	25.2		1.2	7.4		33.4	33.4			33.4	33.4
Actuated g/C Ratio	0.26	0.34		0.02	0.10		0.45	0.45			0.45	0.45
Clearance Time (s)	4.4	5.7		4.4	5.5		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	454	1180		28	344		534	810			700	706
v/s Ratio Prot	c0.13	c0.20		0.01	0.03			0.05				
v/s Ratio Perm							0.02				0.12	c0.12
v/c Ratio	0.50	0.59		0.43	0.28		0.03	0.12			0.26	0.27
Uniform Delay, d1	23.7	20.5		36.5	31.2		11.6	12.1			13.0	13.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.9	0.8		10.2	0.4		0.1	0.3			0.2	0.2
Delay (s)	24.6	21.3		46.7	31.7		11.7	12.4			13.2	13.2
Level of Service	C	C		D	C		B	B			B	B
Approach Delay (s)		22.1			33.2			12.3			13.2	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
2: S 28th Street & Harbor Drive

Existing Conditions
AM Peak Hour



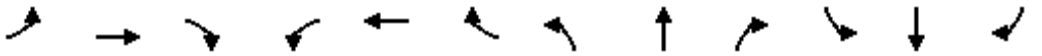
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	430	2	11	186	95	2	5	2	734	17	48
Future Volume (vph)	44	430	2	11	186	95	2	5	2	734	17	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	5.2	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	3536		1770	3539	1583		1783		3433	1656	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	3536		1770	3539	1583		1783		3433	1656	
Peak-hour factor, PHF	0.79	0.79	0.79	0.94	0.94	0.94	0.56	0.56	0.56	0.73	0.73	0.73
Adj. Flow (vph)	56	544	3	12	198	101	4	9	4	1005	23	66
RTOR Reduction (vph)	0	1	0	0	0	37	0	4	0	0	40	0
Lane Group Flow (vph)	56	546	0	12	198	64	0	13	0	1005	49	0
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	8	4	4		8	8	
Permitted Phases						6						
Actuated Green, G (s)	5.8	20.8		0.7	15.8	42.3		1.1		26.5	26.5	
Effective Green, g (s)	5.8	20.8		0.7	15.8	42.3		1.1		26.5	26.5	
Actuated g/C Ratio	0.09	0.31		0.01	0.24	0.63		0.02		0.40	0.40	
Clearance Time (s)	4.4	5.3		4.4	5.2	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	153	1101		18	837	1097		29		1361	656	
v/s Ratio Prot	c0.03	c0.15		0.01	0.06	0.02		c0.01		c0.29	0.03	
v/s Ratio Perm						0.02						
v/c Ratio	0.37	0.50		0.67	0.24	0.06		0.45		0.74	0.07	
Uniform Delay, d1	28.8	18.7		32.9	20.6	4.7		32.6		17.2	12.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.4		66.1	0.1	0.0		10.7		2.1	0.0	
Delay (s)	30.3	19.1		99.0	20.8	4.7		43.3		19.3	12.6	
Level of Service	C	B		F	C	A		D		B	B	
Approach Delay (s)		20.1			18.6			43.3			18.8	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	17.7
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
3: S 28th Street & Main Street

Existing Conditions
AM Peak Hour



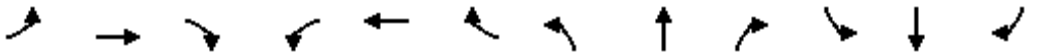
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	82	26	51	262	89	45	66	53	267	854	26
Future Volume (vph)	12	82	26	51	262	89	45	66	53	267	854	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1		4.0	4.0		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3412		1770	3404		1770	3304		1770	3524	
Flt Permitted	0.52	1.00		0.67	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	976	3412		1248	3404		1770	3304		1770	3524	
Peak-hour factor, PHF	0.84	0.84	0.84	0.96	0.96	0.96	0.85	0.85	0.85	0.86	0.86	0.86
Adj. Flow (vph)	14	98	31	53	273	93	53	78	62	310	993	30
RTOR Reduction (vph)	0	25	0	0	45	0	0	50	0	0	2	0
Lane Group Flow (vph)	14	104	0	53	321	0	53	90	0	310	1021	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	11.5	11.5		11.5	11.5		2.7	10.4		20.8	27.7	
Effective Green, g (s)	11.5	11.5		11.5	11.5		2.7	10.4		20.8	27.7	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.05	0.19		0.37	0.50	
Clearance Time (s)	5.1	5.1		5.1	5.1		4.0	4.0		4.0	4.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	703		257	701		85	615		659	1749	
v/s Ratio Prot		0.03			c0.09		0.03	0.03		c0.18	c0.29	
v/s Ratio Perm	0.01			0.04								
v/c Ratio	0.07	0.15		0.21	0.46		0.62	0.15		0.47	0.58	
Uniform Delay, d1	17.8	18.1		18.4	19.4		26.1	19.0		13.3	10.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.4	0.5		13.4	0.1		0.5	0.5	
Delay (s)	18.0	18.2		18.8	19.9		39.4	19.1		13.8	10.5	
Level of Service	B	B		B	B		D	B		B	B	
Approach Delay (s)		18.2			19.7			24.7			11.2	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	13.9
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
4: S 28th Street & Boston Avenue

Existing Conditions
AM Peak Hour



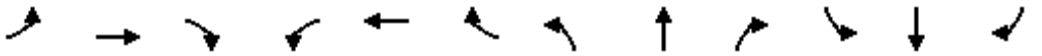
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	47	9	7	16	27	4	135	28	97	1128	20
Future Volume (vph)	12	47	9	7	16	27	4	135	28	97	1128	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9	4.9	4.4	4.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1817		1770	1688		1770	3539	1583	1770	3530	
Flt Permitted	0.89	1.00		0.89	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1656	1817		1656	1688		1770	3539	1583	1770	3530	
Peak-hour factor, PHF	0.77	0.77	0.77	0.78	0.78	0.78	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	16	61	12	9	21	35	4	150	31	110	1282	23
RTOR Reduction (vph)	0	8	0	0	32	0	0	0	19	0	1	0
Lane Group Flow (vph)	16	65	0	9	24	0	4	150	12	110	1304	0
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	4.5	4.5		4.5	4.5		0.6	20.7	20.7	12.0	32.1	
Effective Green, g (s)	4.5	4.5		4.5	4.5		0.6	20.7	20.7	12.0	32.1	
Actuated g/C Ratio	0.09	0.09		0.09	0.09		0.01	0.40	0.40	0.23	0.62	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9	4.9	4.4	4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	144	159		144	147		20	1425	637	413	2204	
v/s Ratio Prot		c0.04			0.01		0.00	0.04		c0.06	c0.37	
v/s Ratio Perm	0.01			0.01					0.01			
v/c Ratio	0.11	0.41		0.06	0.16		0.20	0.11	0.02	0.27	0.59	
Uniform Delay, d1	21.6	22.2		21.5	21.7		25.2	9.6	9.2	16.1	5.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	1.7		0.2	0.5		4.9	0.0	0.0	0.3	0.4	
Delay (s)	22.0	23.9		21.7	22.2		30.0	9.6	9.3	16.4	6.2	
Level of Service	C	C		C	C		C	A	A	B	A	
Approach Delay (s)		23.5			22.2			10.0			7.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
5: S 28th Street & National Avenue

Existing Conditions
AM Peak Hour



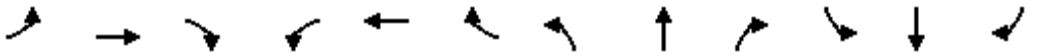
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	123	68	190	584	44	16	18	18	13	196	227
Future Volume (vph)	51	123	68	190	584	44	16	18	18	13	196	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	1.00			0.95			1.00	
Frt	1.00	0.95		1.00	0.99			0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3351		1770	1843			3304			1729	
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.99	
Satd. Flow (perm)	1770	3351		1770	1843			2719			1719	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.75	0.75	0.75	0.85	0.85	0.85
Adj. Flow (vph)	58	140	77	207	635	48	21	24	24	15	231	267
RTOR Reduction (vph)	0	67	0	0	2	0	0	16	0	0	36	0
Lane Group Flow (vph)	58	150	0	207	681	0	0	53	0	0	477	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	5.2	11.9		33.0	39.7			30.0			30.0	
Effective Green, g (s)	5.2	11.9		33.0	39.7			30.0			30.0	
Actuated g/C Ratio	0.06	0.13		0.37	0.45			0.34			0.34	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	103	447		655	821			915			578	
v/s Ratio Prot	c0.03	0.04		0.12	c0.37							
v/s Ratio Perm								0.02			c0.28	
v/c Ratio	0.56	0.34		0.32	0.83			0.06			0.82	
Uniform Delay, d1	40.8	35.0		20.0	21.7			20.0			27.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.9	0.4		0.3	7.0			0.0			9.3	
Delay (s)	47.7	35.5		20.3	28.7			20.0			36.4	
Level of Service	D	D		C	C			C			D	
Approach Delay (s)		38.0			26.7			20.0			36.4	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	14.2
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
6: I-5 Northbound Off-Ramp & National Avenue

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	168	0	0	321	15	365	25	73	0	0	0
Future Volume (vph)	0	168	0	0	321	15	365	25	73	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			4.6	4.6			
Lane Util. Factor		1.00			1.00			1.00	1.00			
Frt		1.00			0.99			1.00	0.85			
Flt Protected		1.00			1.00			0.96	1.00			
Satd. Flow (prot)		1863			1852			1779	1583			
Flt Permitted		1.00			1.00			0.96	1.00			
Satd. Flow (perm)		1863			1852			1779	1583			
Peak-hour factor, PHF	0.86	0.86	0.86	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	195	0	0	406	19	424	29	85	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	52	0	0	0
Lane Group Flow (vph)	0	195	0	0	421	0	0	453	33	0	0	0
Turn Type		NA			NA		Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)		14.1			14.1			14.9	14.9			
Effective Green, g (s)		14.1			14.1			14.9	14.9			
Actuated g/C Ratio		0.37			0.37			0.39	0.39			
Clearance Time (s)		4.6			4.6			4.6	4.6			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		687			683			693	617			
v/s Ratio Prot		0.10			c0.23			c0.25				
v/s Ratio Perm									0.02			
v/c Ratio		0.28			0.62			0.65	0.05			
Uniform Delay, d1		8.5			9.8			9.5	7.3			
Progression Factor		1.00			1.00			1.00	1.00			
Incremental Delay, d2		0.2			1.7			2.2	0.0			
Delay (s)		8.7			11.5			11.8	7.3			
Level of Service		A			B			B	A			
Approach Delay (s)		8.7			11.5			11.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	38.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions
7: S 29th Street/I-5 Southbound On-Ramp & Boston Avenue — AM Peak Hour

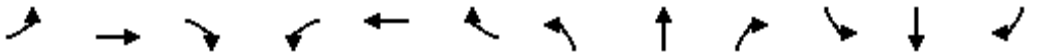
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	14	6	0	88	52	12	46	1	0	0	0
Future Volume (Veh/h)	110	14	6	0	88	52	12	46	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.76	0.76	0.76	0.81	0.81	0.81	0.92	0.92	0.92
Hourly flow rate (vph)	136	17	7	0	116	68	15	57	1	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		644										
pX, platoon unblocked												
vC, conflicting volume	184			24			442	476	20	472	446	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184			24			442	476	20	472	446	150
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			97	87	100	100	100	100
cM capacity (veh/h)	1391			1591			486	440	1057	419	458	896

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	160	184	73
Volume Left	136	0	15
Volume Right	7	68	1
cSH	1391	1591	452
Volume to Capacity	0.10	0.00	0.16
Queue Length 95th (ft)	8	0	14
Control Delay (s)	6.8	0.0	14.5
Lane LOS	A		B
Approach Delay (s)	6.8	0.0	14.5
Approach LOS			B

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	28.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM 2000 Delay Analysis
8: 32nd Street Naval Gate/32nd Street & Harbor Drive

Existing Conditions
AM Peak Hour

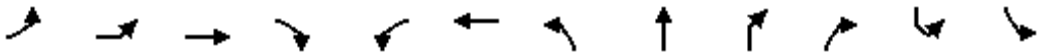


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	266	241	228	661	173	49	98	21	100	588	134
Future Volume (vph)	81	266	241	228	661	173	49	98	21	100	588	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.62	0.62	0.62	0.82	0.82	0.82	0.86	0.86	0.86	0.81	0.81	0.81
Adj. Flow (vph)	131	429	389	278	806	211	57	114	24	123	726	165
RTOR Reduction (vph)	0	0	190	0	0	150	0	0	18	0	0	103
Lane Group Flow (vph)	131	429	199	278	806	61	57	114	6	123	726	62
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.6	10.1	12.7	14.1	19.2	19.2	2.6	15.8	15.8	7.1	20.3	24.9
Effective Green, g (s)	4.6	10.1	12.7	14.1	19.2	19.2	2.6	15.8	15.8	7.1	20.3	24.9
Actuated g/C Ratio	0.07	0.15	0.19	0.21	0.29	0.29	0.04	0.24	0.24	0.11	0.31	0.38
Clearance Time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	123	541	304	378	1029	460	69	847	378	190	1088	597
v/s Ratio Prot	c0.07	0.12	0.03	c0.16	c0.23		0.03	0.03		c0.07	c0.21	0.01
v/s Ratio Perm			0.10			0.04			0.00			0.03
v/c Ratio	1.07	0.79	0.66	0.74	0.78	0.13	0.83	0.13	0.02	0.65	0.67	0.10
Uniform Delay, d1	30.7	26.9	24.6	24.2	21.5	17.3	31.5	19.7	19.2	28.2	19.9	13.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	99.7	7.8	5.0	7.3	4.0	0.1	52.7	0.1	0.0	7.4	1.6	0.1
Delay (s)	130.4	34.8	29.6	31.5	25.5	17.4	84.2	19.8	19.2	35.6	21.5	13.4
Level of Service	F	C	C	C	C	B	F	B	B	D	C	B
Approach Delay (s)		45.9			25.4			38.5			21.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	19.3
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp — AM Peak Hour



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Traffic Volume (vph)	9	51	22	9	0	0	36	65	92	130	1	7
Future Volume (vph)	9	51	22	9	0	0	36	65	92	130	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9				4.4	4.9	5.7			4.4
Lane Util. Factor		1.00	1.00				1.00	1.00	0.88			1.00
Frt		1.00	0.95				1.00	1.00	0.85			1.00
Flt Protected		0.95	1.00				0.95	1.00	1.00			0.95
Satd. Flow (prot)		1770	1779				1770	1863	2787			1770
Flt Permitted		0.76	1.00				0.95	1.00	1.00			0.95
Satd. Flow (perm)		1410	1779				1770	1863	2787			1770
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.92	0.92	0.86	0.86	0.86	0.86	0.87	0.87
Adj. Flow (vph)	12	65	28	12	0	0	42	76	107	151	1	8
RTOR Reduction (vph)	0	0	10	0	0	0	0	0	68	0	0	0
Lane Group Flow (vph)	0	77	30	0	0	0	42	76	190	0	0	9
Turn Type	Perm	Perm	NA		Perm		Prot	NA	pm+ov		Prot	Prot
Protected Phases			8			8	5	2	4		1	1
Permitted Phases	8	8			8				2			
Actuated Green, G (s)		8.2	8.2				4.1	20.2	35.1			0.9
Effective Green, g (s)		8.2	8.2				4.1	20.2	35.1			0.9
Actuated g/C Ratio		0.13	0.13				0.06	0.32	0.55			0.01
Clearance Time (s)		4.9	4.9				4.4	4.9	5.7			4.4
Vehicle Extension (s)		3.0	3.0				3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		180	227				113	587	1526			24
v/s Ratio Prot			0.02				c0.02	c0.04	0.03			0.01
v/s Ratio Perm		c0.05							0.04			
v/c Ratio		0.43	0.13				0.37	0.13	0.12			0.38
Uniform Delay, d1		25.8	24.8				28.8	15.7	7.0			31.3
Progression Factor		1.00	1.00				1.00	1.00	1.00			1.00
Incremental Delay, d2		1.6	0.3				2.1	0.1	0.0			9.6
Delay (s)		27.4	25.0				30.8	15.8	7.1			40.9
Level of Service		C	C				C	B	A			D
Approach Delay (s)			26.6			0.0		11.5				
Approach LOS			C			A		B				

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	19.9
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp

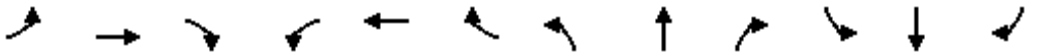
Existing Conditions
AM Peak Hour

Movement	SBT	SBR	SWL	SWR	SWR2
Lane Configurations					
Traffic Volume (vph)	300	73	416	21	1
Future Volume (vph)	300	73	416	21	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		5.7		
Lane Util. Factor	0.95		0.97		
Frt	0.97		0.99		
Flt Protected	1.00		0.95		
Satd. Flow (prot)	3435		3423		
Flt Permitted	1.00		0.95		
Satd. Flow (perm)	3435		3423		
Peak-hour factor, PHF	0.87	0.87	0.92	0.89	0.89
Adj. Flow (vph)	345	84	452	24	1
RTOR Reduction (vph)	14	0	87	0	0
Lane Group Flow (vph)	415	0	390	0	0
Turn Type	NA		Prot		
Protected Phases	6		4		
Permitted Phases					
Actuated Green, G (s)	17.0		14.9		
Effective Green, g (s)	17.0		14.9		
Actuated g/C Ratio	0.27		0.23		
Clearance Time (s)	4.9		5.7		
Vehicle Extension (s)	3.0		3.0		
Lane Grp Cap (vph)	910		795		
v/s Ratio Prot	c0.12		c0.11		
v/s Ratio Perm					
v/c Ratio	0.46		0.49		
Uniform Delay, d1	19.7		21.3		
Progression Factor	1.00		1.00		
Incremental Delay, d2	0.4		0.5		
Delay (s)	20.0		21.8		
Level of Service	C		C		
Approach Delay (s)	20.5		21.8		
Approach LOS	C		C		

Intersection Summary

HCM 2000 Delay Analysis — Existing Conditions

10: Harbor Drive & 8th Street Naval Base Entrance/8th Street — AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	46	27	9	325	162	195	1249	44	40	98	223
Future Volume (vph)	52	46	27	9	325	162	195	1249	44	40	98	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	5.1	5.1	5.1	4.6	5.4	5.4	4.6	5.4	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3448	1583	1770	3539	1583	1770	3539	1583	3433	3170	
Flt Permitted		0.66	1.00	0.68	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		2336	1583	1260	3539	1583	1770	3539	1583	3433	3170	
Peak-hour factor, PHF	0.82	0.82	0.82	0.80	0.80	0.80	0.91	0.91	0.91	0.73	0.73	0.73
Adj. Flow (vph)	63	56	33	11	406	202	214	1373	48	55	134	305
RTOR Reduction (vph)	0	0	25	0	0	58	0	0	23	0	154	0
Lane Group Flow (vph)	0	119	8	11	406	145	214	1373	25	55	285	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)		17.1	17.1	17.1	17.1	17.1	4.2	37.7	37.7	1.8	35.3	
Effective Green, g (s)		17.1	17.1	17.1	17.1	17.1	4.2	37.7	37.7	1.8	35.3	
Actuated g/C Ratio		0.24	0.24	0.24	0.24	0.24	0.06	0.53	0.53	0.03	0.49	
Clearance Time (s)		5.1	5.1	5.1	5.1	5.1	4.6	5.4	5.4	4.6	5.4	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		557	377	300	844	377	103	1860	832	86	1560	
v/s Ratio Prot					c0.11		c0.12	c0.39		0.02	0.09	
v/s Ratio Perm		0.05	0.00	0.01		0.09			0.02			
v/c Ratio		0.21	0.02	0.04	0.48	0.38	2.08	0.74	0.03	0.64	0.18	
Uniform Delay, d1		21.9	20.9	21.0	23.5	22.9	33.8	13.2	8.2	34.6	10.2	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.1	0.4	0.7	516.6	1.6	0.0	14.6	0.1	
Delay (s)		22.1	20.9	21.0	23.9	23.5	550.3	14.7	8.2	49.2	10.2	
Level of Service		C	C	C	C	C	F	B	A	D	B	
Approach Delay (s)		21.8			23.7			84.7			14.6	
Approach LOS		C			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	56.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	15.1
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
11: 8th Street

Existing Conditions
AM Peak Hour

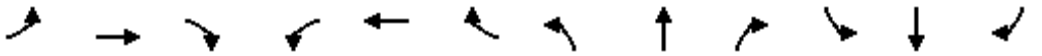
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	212	38	166	599	183	235
Future Volume (Veh/h)	212	38	166	599	183	235
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.94	0.94	0.86	0.86
Hourly flow rate (vph)	259	46	177	637	213	273
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	594			1153		
pX, platoon unblocked						
vC, conflicting volume			305		954	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		954	152
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		3	68
cM capacity (veh/h)			1253		220	866

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	173	132	177	318	318	213	273
Volume Left	0	0	177	0	0	213	0
Volume Right	0	46	0	0	0	0	273
cSH	1700	1700	1253	1700	1700	220	866
Volume to Capacity	0.10	0.08	0.14	0.19	0.19	0.97	0.32
Queue Length 95th (ft)	0	0	12	0	0	212	34
Control Delay (s)	0.0	0.0	8.3	0.0	0.0	98.5	11.1
Lane LOS			A			F	B
Approach Delay (s)	0.0		1.8			49.4	
Approach LOS						E	

Intersection Summary			
Average Delay	15.9		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM 2000 Delay Analysis
12: National City Boulevard & 8th Street

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	104	61	14	427	78	161	958	21	22	67	50
Future Volume (vph)	27	104	61	14	427	78	161	958	21	22	67	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	3457		1770	3528		1770	3312	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	3457		1770	3528		1770	3312	
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	33	128	75	15	449	82	179	1064	23	26	79	59
RTOR Reduction (vph)	0	0	42	0	15	0	0	2	0	0	42	0
Lane Group Flow (vph)	33	128	33	15	516	0	179	1085	0	26	96	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	1.7	19.1	32.5	0.8	18.2		13.4	32.5		1.6	20.7	
Effective Green, g (s)	1.7	19.1	32.5	0.8	18.2		13.4	32.5		1.6	20.7	
Actuated g/C Ratio	0.02	0.26	0.44	0.01	0.25		0.18	0.44		0.02	0.28	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	480	695	19	850		320	1549		38	926	
v/s Ratio Prot	c0.02	0.07	0.01	0.01	c0.15		c0.10	c0.31		0.01	0.03	
v/s Ratio Perm			0.01									
v/c Ratio	0.82	0.27	0.05	0.79	0.61		0.56	0.70		0.68	0.10	
Uniform Delay, d1	36.0	21.9	11.9	36.5	24.7		27.6	16.8		35.9	19.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	76.6	0.3	0.0	108.2	1.2		2.1	1.5		40.6	0.0	
Delay (s)	112.6	22.2	11.9	144.7	26.0		29.7	18.3		76.5	19.8	
Level of Service	F	C	B	F	C		C	B		E	B	
Approach Delay (s)		31.6			29.2			19.9			28.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions

13: I-5 On/Off Ramps/Harbor Drive & Civic Center Drive & McKinley Avenue — AM Peak Hour

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	364	64	53	13	21	17	191	18	11	837	15	21
Future Volume (vph)	364	64	53	13	21	17	191	18	11	837	15	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1		5.1	5.1			4.7	5.5		
Lane Util. Factor		1.00	0.95		1.00	1.00			1.00	0.95		
Frt		1.00	0.97		1.00	0.86			1.00	0.99		
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)		1770	3434		1770	1604			1770	3517		
Flt Permitted		0.21	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (perm)		394	3434		1770	1604			1770	3517		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Adj. Flow (vph)	444	78	65	16	25	20	225	21	12	910	16	23
RTOR Reduction (vph)	0	0	13	0	0	2	0	0	0	1	0	0
Lane Group Flow (vph)	0	522	68	0	25	264	0	0	12	948	0	0
Turn Type	Split	Perm	NA		Split	NA			Prot	NA		
Protected Phases	3		3		7	7			1	6		
Permitted Phases		3										
Actuated Green, G (s)		18.9	18.9		22.0	22.0			1.6	35.2		
Effective Green, g (s)		18.9	18.9		22.0	22.0			1.6	35.2		
Actuated g/C Ratio		0.17	0.17		0.20	0.20			0.01	0.32		
Clearance Time (s)		5.1	5.1		5.1	5.1			4.7	5.5		
Vehicle Extension (s)		2.0	2.0		2.0	2.0			2.0	3.0		
Lane Grp Cap (vph)		67	589		353	320			25	1124		
v/s Ratio Prot			0.02		0.01	c0.16			0.01	c0.27		
v/s Ratio Perm		c1.32										
v/c Ratio		7.79	0.12		0.07	0.82			0.48	0.84		
Uniform Delay, d1		45.6	38.5		35.8	42.2			53.8	34.9		
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00		
Incremental Delay, d2		3086.5	0.0		0.0	15.0			5.2	5.9		
Delay (s)		3132.1	38.6		35.8	57.1			59.0	40.8		
Level of Service		F	D		D	E			E	D		
Approach Delay (s)			2716.5			55.3				41.0		
Approach LOS			F			E				D		

Intersection Summary			
HCM 2000 Control Delay	827.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.33		
Actuated Cycle Length (s)	110.1	Sum of lost time (s)	25.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

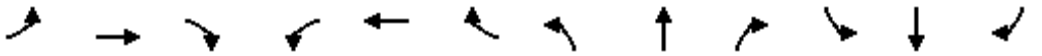
c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	6	9	77	28	10	22	1	7
Future Volume (vph)	6	9	77	28	10	22	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	5.5			5.1	5.1	
Lane Util. Factor		1.00	0.95			1.00	1.00	
Frt		1.00	0.96			1.00	0.85	
Flt Protected		0.95	1.00			0.95	1.00	
Satd. Flow (prot)		1770	3398			1770	1583	
Flt Permitted		0.95	1.00			0.95	1.00	
Satd. Flow (perm)		1770	3398			1770	1583	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.77	0.77	0.77	0.77
Adj. Flow (vph)	8	11	97	35	13	29	1	9
RTOR Reduction (vph)	0	0	24	0	0	0	9	0
Lane Group Flow (vph)	0	19	108	0	0	42	1	0
Turn Type	Prot	Prot	NA		Prot	Prot	Prot	
Protected Phases	5	5	2		4	4	4	
Permitted Phases								
Actuated Green, G (s)		1.6	35.2			6.9	6.9	
Effective Green, g (s)		1.6	35.2			6.9	6.9	
Actuated g/C Ratio		0.01	0.32			0.06	0.06	
Clearance Time (s)		4.7	5.5			5.1	5.1	
Vehicle Extension (s)		2.0	3.0			2.0	2.0	
Lane Grp Cap (vph)		25	1086			110	99	
v/s Ratio Prot		c0.01	0.03			c0.02	0.00	
v/s Ratio Perm								
v/c Ratio		0.76	0.10			0.38	0.01	
Uniform Delay, d1		54.1	26.3			49.6	48.4	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		75.2	0.0			0.8	0.0	
Delay (s)		129.3	26.4			50.4	48.4	
Level of Service		F	C			D	D	
Approach Delay (s)			39.3			50.0		
Approach LOS			D			D		

Intersection Summary

HCM 2000 Delay Analysis
14: Civic Center Drive

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	30	14	2	170	409	90	334	28	0	0	0
Future Volume (vph)	36	30	14	2	170	409	90	334	28	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.95		1.00	0.89			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00			
Satd. Flow (prot)	1770	1774		1770	1665			1843	1583			
Flt Permitted	0.95	1.00		0.72	1.00			0.99	1.00			
Satd. Flow (perm)	1770	1774		1337	1665			1843	1583			
Peak-hour factor, PHF	0.74	0.74	0.74	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	49	41	19	2	187	449	100	371	31	0	0	0
RTOR Reduction (vph)	0	10	0	0	108	0	0	0	18	0	0	0
Lane Group Flow (vph)	49	50	0	2	528	0	0	471	13	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases				8			2		2			
Actuated Green, G (s)	2.9	35.8		28.4	28.4			32.8	32.8			
Effective Green, g (s)	2.9	35.8		28.4	28.4			32.8	32.8			
Actuated g/C Ratio	0.04	0.46		0.37	0.37			0.42	0.42			
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Lane Grp Cap (vph)	66	818		489	609			779	669			
v/s Ratio Prot	c0.03	0.03			c0.32							
v/s Ratio Perm				0.00				0.26	0.01			
v/c Ratio	0.74	0.06		0.00	0.87			0.60	0.02			
Uniform Delay, d1	37.0	11.6		15.6	22.8			17.4	13.0			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	35.8	0.0		0.0	12.3			3.5	0.1			
Delay (s)	72.8	11.6		15.6	35.2			20.8	13.1			
Level of Service	E	B		B	D			C	B			
Approach Delay (s)		39.1			35.1			20.4			0.0	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
15: I-5 Southbound Off-Ramp & Cleveland Avenue

Existing Conditions
AM Peak Hour

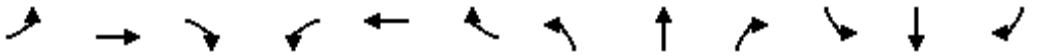
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	156	125	330	0	0	34
Future Volume (Veh/h)	156	125	330	0	0	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	170	136	359	0	0	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	396	359			359	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	396	359			359	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	80			100	
cM capacity (veh/h)	609	685			1200	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	170	136	359	37
Volume Left	170	0	0	0
Volume Right	0	136	0	0
cSH	609	685	1700	1700
Volume to Capacity	0.28	0.20	0.21	0.02
Queue Length 95th (ft)	28	18	0	0
Control Delay (s)	13.2	11.5	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	12.5		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM 2000 Delay Analysis
16: Tidelands Avenue & Bay Marina Drive

Existing Conditions
AM Peak Hour



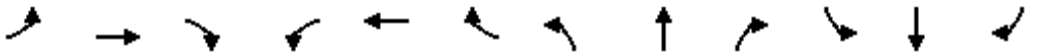
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	19	3	47	181	149	4	12	14	18	18	37
Future Volume (vph)	10	19	3	47	181	149	4	12	14	18	18	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.93		1.00	0.92		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3469		1770	3299		1770	1714		1770	1675	
Flt Permitted	0.45	1.00		0.73	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	838	3469		1362	3299		1325	1714		1356	1675	
Peak-hour factor, PHF	0.57	0.57	0.57	0.83	0.83	0.83	0.58	0.58	0.58	0.79	0.79	0.79
Adj. Flow (vph)	18	33	5	57	218	180	7	21	24	23	23	47
RTOR Reduction (vph)	0	4	0	0	148	0	0	8	0	0	16	0
Lane Group Flow (vph)	18	34	0	57	250	0	7	37	0	23	54	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.5	9.5		9.5	9.5		34.6	34.6		34.6	34.6	
Effective Green, g (s)	9.5	9.5		9.5	9.5		34.6	34.6		34.6	34.6	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.65	0.65		0.65	0.65	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	620		243	590		863	1116		883	1091	
v/s Ratio Prot		0.01			c0.08			0.02			c0.03	
v/s Ratio Perm	0.02			0.04			0.01			0.02		
v/c Ratio	0.12	0.05		0.23	0.42		0.01	0.03		0.03	0.05	
Uniform Delay, d1	18.3	18.1		18.7	19.4		3.2	3.3		3.3	3.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.0		0.5	0.5		0.0	0.1		0.1	0.1	
Delay (s)	18.7	18.1		19.2	19.9		3.3	3.3		3.3	3.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		18.3			19.8			3.3			3.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	53.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions

17: I-5 Southbound On-Ramp/I-5 Southbound Off-Ramp & Bay Marina Drive/Mile of Cars Way — PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	110	117	263	590	0	0	0	0	384	0	149
Future Volume (vph)	0	110	117	263	590	0	0	0	0	384	0	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1681	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1681	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.87	0.87	0.87	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	131	139	302	678	0	0	0	0	431	0	167
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	0	0	0	78
Lane Group Flow (vph)	0	131	16	302	678	0	0	0	0	215	216	89
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		8.1	8.1	11.4	24.0					37.6	37.6	37.6
Effective Green, g (s)		8.1	8.1	11.4	24.0					37.6	37.6	37.6
Actuated g/C Ratio		0.11	0.11	0.16	0.34					0.53	0.53	0.53
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		406	181	554	1203					895	895	843
v/s Ratio Prot		0.04		0.09	c0.19							
v/s Ratio Perm			0.01							0.13	0.13	0.06
v/c Ratio		0.32	0.09	0.55	0.56					0.24	0.24	0.11
Uniform Delay, d1		28.7	27.9	27.2	19.0					8.8	8.8	8.2
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		0.5	0.2	1.1	0.6					0.6	0.6	0.3
Delay (s)		29.2	28.2	28.3	19.6					9.5	9.5	8.4
Level of Service		C	C	C	B					A	A	A
Approach Delay (s)		28.7			22.3			0.0			9.2	
Approach LOS		C			C			A			A	

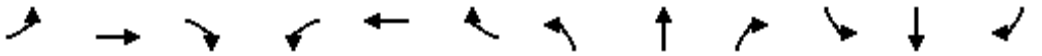
Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions

18: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Mile of Cars Way

AM Peak Hour



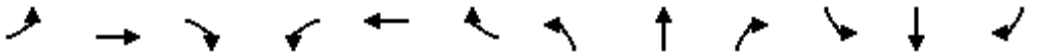
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	422	0	0	434	378	423	254	564	0	0	0
Future Volume (vph)	62	422	0	0	434	378	423	254	564	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	0.97	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.93		1.00	0.95	0.85			
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			3292		1681	1599	1504			
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			3292		1681	1599	1504			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	70	480	0	0	493	430	475	285	634	0	0	0
RTOR Reduction (vph)	0	0	0	0	168	0	0	18	125	0	0	0
Lane Group Flow (vph)	70	480	0	0	755	0	427	493	331	0	0	0
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases							2		2			
Actuated Green, G (s)	4.2	36.2			27.5		48.1	48.1	48.1			
Effective Green, g (s)	4.2	36.2			27.5		48.1	48.1	48.1			
Actuated g/C Ratio	0.05	0.39			0.29		0.52	0.52	0.52			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	154	1373			970		866	824	775			
v/s Ratio Prot	0.02	c0.14			c0.23							
v/s Ratio Perm							0.25	0.31	0.22			
v/c Ratio	0.45	0.35			0.78		0.49	0.60	0.43			
Uniform Delay, d1	43.4	20.2			30.1		14.7	15.8	14.0			
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2	2.1	0.2			4.0		2.0	3.2	1.7			
Delay (s)	45.6	20.4			34.1		16.7	19.0	15.8			
Level of Service	D	C			C		B	B	B			
Approach Delay (s)		23.6			34.1			17.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
1: Cesar E. Chavez Parkway & Harbor Drive

Existing Conditions
PM Peak Hour



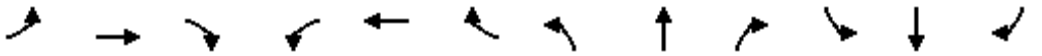
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	903	19	15	163	38	14	108	31	83	54	249
Future Volume (vph)	385	903	19	15	163	38	14	108	31	83	54	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.5	5.5		5.7	5.7			5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1770	3528		1770	3438		1770	1800			1808	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.66	1.00			0.72	1.00
Satd. Flow (perm)	1770	3528		1770	3438		1228	1800			1336	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.89	0.89	0.89
Adj. Flow (vph)	433	1015	21	17	183	43	18	135	39	93	61	280
RTOR Reduction (vph)	0	1	0	0	27	0	0	14	0	0	0	221
Lane Group Flow (vph)	433	1035	0	17	199	0	18	160	0	0	154	59
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	23.2	31.1		0.8	9.0		12.5	12.5			12.7	12.7
Effective Green, g (s)	23.2	31.1		0.8	9.0		12.5	12.5			12.7	12.7
Actuated g/C Ratio	0.38	0.52		0.01	0.15		0.21	0.21			0.21	0.21
Clearance Time (s)	4.4	5.7		4.5	5.5		5.7	5.7			5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	680	1819		23	513		254	373			281	333
v/s Ratio Prot	c0.24	c0.29		0.01	0.06			0.09				
v/s Ratio Perm							0.01				c0.12	0.04
v/c Ratio	0.64	0.57		0.74	0.39		0.07	0.43			0.55	0.18
Uniform Delay, d1	15.1	10.0		29.6	23.2		19.2	20.8			21.2	19.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	2.0	0.4		77.7	0.5		0.1	0.8			2.2	0.3
Delay (s)	17.1	10.4		107.3	23.6		19.3	21.6			23.4	19.8
Level of Service	B	B		F	C		B	C			C	B
Approach Delay (s)		12.4			29.5			21.4			21.1	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	15.9
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
2: S 28th Street & Harbor Drive

Existing Conditions
PM Peak Hour



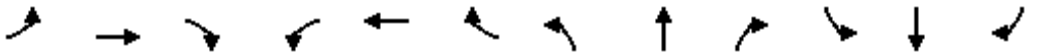
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	820	0	6	157	330	1	8	3	155	0	9
Future Volume (vph)	162	820	0	6	157	330	1	8	3	155	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.2	4.5		4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3539	1583		1794		3433	1583	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539		1770	3539	1583		1794		3433	1583	
Peak-hour factor, PHF	0.89	0.89	0.89	0.84	0.84	0.84	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	182	921	0	7	187	393	1	11	4	207	0	12
RTOR Reduction (vph)	0	0	0	0	0	245	0	4	0	0	10	0
Lane Group Flow (vph)	182	921	0	7	187	148	0	12	0	207	2	0
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	8	4	4		8	8	
Permitted Phases						6						
Actuated Green, G (s)	17.3	28.3		0.6	11.7	22.3		0.9		10.6	10.6	
Effective Green, g (s)	17.3	28.3		0.6	11.7	22.3		0.9		10.6	10.6	
Actuated g/C Ratio	0.29	0.48		0.01	0.20	0.38		0.02		0.18	0.18	
Clearance Time (s)	4.5	5.3		4.5	5.2	4.5		4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	517	1691		17	699	716		27		614	283	
v/s Ratio Prot	c0.10	c0.26		0.00	0.05	0.04		c0.01		c0.06	0.00	
v/s Ratio Perm						0.06						
v/c Ratio	0.35	0.54		0.41	0.27	0.21		0.45		0.34	0.01	
Uniform Delay, d1	16.5	10.9		29.1	20.1	12.5		28.9		21.2	20.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.4		15.4	0.2	0.1		11.3		0.3	0.0	
Delay (s)	16.9	11.3		44.5	20.3	12.6		40.2		21.6	20.0	
Level of Service	B	B		D	C	B		D		C	B	
Approach Delay (s)		12.2			15.5			40.2			21.5	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	18.8
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
3: S 28th Street & Main Street

Existing Conditions
PM Peak Hour



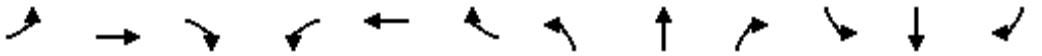
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	231	24	26	93	184	57	475	127	274	260	40
Future Volume (vph)	96	231	24	26	93	184	57	475	127	274	260	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1		4.5	4.0		4.5	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.90		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3489		1770	3187		1770	3427		1770	3468	
Flt Permitted	0.55	1.00		0.57	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1034	3489		1055	3187		1770	3427		1770	3468	
Peak-hour factor, PHF	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	114	275	29	30	106	209	63	522	140	334	317	49
RTOR Reduction (vph)	0	11	0	0	166	0	0	27	0	0	15	0
Lane Group Flow (vph)	114	293	0	30	149	0	63	635	0	334	351	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	13.4	13.4		13.4	13.4		13.5	18.2		19.8	23.7	
Effective Green, g (s)	13.4	13.4		13.4	13.4		13.5	18.2		19.8	23.7	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.21	0.28		0.30	0.36	
Clearance Time (s)	5.1	5.1		5.1	5.1		4.5	4.0		4.5	4.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	213	719		217	657		367	959		539	1264	
v/s Ratio Prot		0.08			0.05		0.04	c0.19		c0.19	0.10	
v/s Ratio Perm	c0.11			0.03								
v/c Ratio	0.54	0.41		0.14	0.23		0.17	0.66		0.62	0.28	
Uniform Delay, d1	23.0	22.4		21.1	21.5		21.2	20.7		19.4	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.4		0.3	0.2		0.2	1.7		2.1	0.1	
Delay (s)	25.6	22.7		21.4	21.7		21.4	22.4		21.5	14.7	
Level of Service	C	C		C	C		C	C		C	B	
Approach Delay (s)		23.5			21.6			22.3			18.0	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
4: S 28th Street & Boston Avenue

Existing Conditions
PM Peak Hour



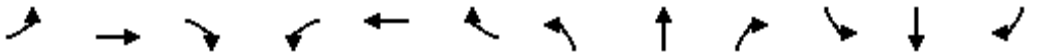
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	145	3	4	9	35	5	522	188	162	517	26
Future Volume (vph)	42	145	3	4	9	35	5	522	188	162	517	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.5	4.9	4.9	4.5	4.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	0.88		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1858		1770	1638		1770	3539	1583	1770	3514	
Flt Permitted	0.72	1.00		0.65	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1348	1858		1217	1638		1770	3539	1583	1770	3514	
Peak-hour factor, PHF	0.90	0.90	0.90	0.86	0.86	0.86	0.94	0.94	0.94	0.87	0.87	0.87
Adj. Flow (vph)	47	161	3	5	10	41	5	555	200	186	594	30
RTOR Reduction (vph)	0	1	0	0	33	0	0	0	143	0	4	0
Lane Group Flow (vph)	47	163	0	5	18	0	5	555	57	186	620	0
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	10.8	10.8		10.8	10.8		2.4	16.4	16.4	15.8	29.8	
Effective Green, g (s)	10.8	10.8		10.8	10.8		2.4	16.4	16.4	15.8	29.8	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.04	0.29	0.29	0.28	0.52	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.5	4.9	4.9	4.5	4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	254	350		229	308		74	1012	453	488	1827	
v/s Ratio Prot		c0.09			0.01		0.00	c0.16		c0.11	0.18	
v/s Ratio Perm	0.03			0.00					0.04			
v/c Ratio	0.19	0.47		0.02	0.06		0.07	0.55	0.13	0.38	0.34	
Uniform Delay, d1	19.5	20.7		18.9	19.1		26.4	17.3	15.1	16.8	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	1.0		0.0	0.1		0.4	0.6	0.1	0.5	0.1	
Delay (s)	19.9	21.7		19.0	19.2		26.8	17.9	15.3	17.3	8.1	
Level of Service	B	C		B	B		C	B	B	B	A	
Approach Delay (s)		21.3			19.1			17.3			10.2	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
5: S 28th Street & National Avenue

Existing Conditions
PM Peak Hour



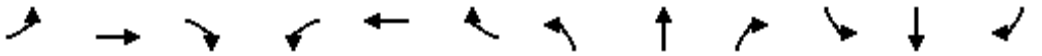
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	471	71	96	342	121	19	89	41	54	143	92
Future Volume (vph)	107	471	71	96	342	121	19	89	41	54	143	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9		4.5	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	1.00			0.95			1.00	
Frt	1.00	0.98		1.00	0.96			0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3470		1770	1790			3371			1766	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.91	
Satd. Flow (perm)	1770	3470		1770	1790			3063			1621	
Peak-hour factor, PHF	0.91	0.91	0.91	0.94	0.94	0.94	0.94	0.94	0.94	0.91	0.91	0.91
Adj. Flow (vph)	118	518	78	102	364	129	20	95	44	59	157	101
RTOR Reduction (vph)	0	13	0	0	12	0	0	31	0	0	16	0
Lane Group Flow (vph)	118	583	0	102	481	0	0	128	0	0	301	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	8.4	21.6		13.5	26.7			20.3			20.3	
Effective Green, g (s)	8.4	21.6		13.5	26.7			20.3			20.3	
Actuated g/C Ratio	0.12	0.31		0.19	0.38			0.29			0.29	
Clearance Time (s)	4.5	4.9		4.5	4.9			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	213	1075		342	685			892			472	
v/s Ratio Prot	c0.07	0.17		0.06	c0.27							
v/s Ratio Perm								0.04			c0.19	
v/c Ratio	0.55	0.54		0.30	0.70			0.14			0.64	
Uniform Delay, d1	28.9	19.9		24.0	18.1			18.3			21.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.1	0.6		0.5	3.3			0.1			2.8	
Delay (s)	32.0	20.5		24.5	21.4			18.3			24.3	
Level of Service	C	C		C	C			B			C	
Approach Delay (s)		22.4			21.9			18.3			24.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	14.3
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
6: I-5 Northbound Off-Ramp & National Avenue

Existing Conditions
PM Peak Hour

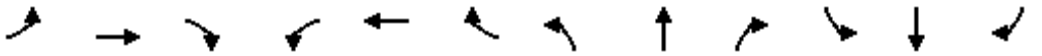


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	508	41	0	272	18	250	18	120	0	0	0
Future Volume (vph)	1	508	41	0	272	18	250	18	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			4.6	4.6			
Lane Util. Factor		1.00			1.00			1.00	1.00			
Frt		0.99			0.99			1.00	0.85			
Flt Protected		1.00			1.00			0.96	1.00			
Satd. Flow (prot)		1844			1847			1780	1583			
Flt Permitted		1.00			1.00			0.96	1.00			
Satd. Flow (perm)		1843			1847			1780	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.85	0.85	0.85	0.92	0.92	0.92	0.65	0.65	0.65
Adj. Flow (vph)	1	535	43	0	320	21	272	20	130	0	0	0
RTOR Reduction (vph)	0	6	0	0	5	0	0	0	89	0	0	0
Lane Group Flow (vph)	0	573	0	0	336	0	0	292	41	0	0	0
Turn Type	Perm	NA			NA		Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2								8			
Actuated Green, G (s)		16.9			16.9			12.0	12.0			
Effective Green, g (s)		16.9			16.9			12.0	12.0			
Actuated g/C Ratio		0.44			0.44			0.31	0.31			
Clearance Time (s)		4.6			4.6			4.6	4.6			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		817			819			560	498			
v/s Ratio Prot					0.18			c0.16				
v/s Ratio Perm		c0.31							0.03			
v/c Ratio		0.70			0.41			0.52	0.08			
Uniform Delay, d1		8.6			7.2			10.7	9.2			
Progression Factor		1.00			1.00			1.00	1.00			
Incremental Delay, d2		2.7			0.3			0.9	0.1			
Delay (s)		11.3			7.5			11.6	9.2			
Level of Service		B			A			B	A			
Approach Delay (s)		11.3			7.5			10.9			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	38.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions
7: S 29th Street/I-5 Southbound On-Ramp & Boston Avenue — PM Peak Hour



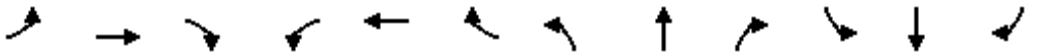
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	583	48	11	4	36	162	5	250	16	0	0	0
Future Volume (Veh/h)	583	48	11	4	36	162	5	250	16	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.78	0.78	0.78	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	694	57	13	5	46	208	6	294	19	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		644										
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	254			70			1612	1716	64	1778	1618	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	254			32			1614	1721	26	1785	1621	150
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	47			100			87	0	98	0	100	100
cM capacity (veh/h)	1311			1539			47	41	1023	0	47	896

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	764	259	319
Volume Left	694	5	6
Volume Right	13	208	19
cSH	1311	1539	43
Volume to Capacity	0.53	0.00	7.35
Queue Length 95th (ft)	81	0	Err
Control Delay (s)	10.3	0.2	Err
Lane LOS	B	A	F
Approach Delay (s)	10.3	0.2	Err
Approach LOS			F

Intersection Summary			
Average Delay	2382.7		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

HCM 2000 Delay Analysis
8: 32nd Street Naval Gate/32nd Street & Harbor Drive

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	757	77	19	357	347	109	769	174	159	142	128
Future Volume (vph)	143	757	77	19	357	347	109	769	174	159	142	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.5	4.5	5.6	5.6	4.5	4.9	4.9	4.5	4.9	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.88	0.88	0.88	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	181	958	97	22	406	394	118	836	189	196	175	158
RTOR Reduction (vph)	0	0	50	0	0	172	0	0	137	0	0	95
Lane Group Flow (vph)	181	958	47	22	406	222	118	836	52	196	175	63
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.5	23.0	33.9	1.9	17.7	17.7	10.9	19.5	19.5	7.5	16.1	22.6
Effective Green, g (s)	6.5	23.0	33.9	1.9	17.7	17.7	10.9	19.5	19.5	7.5	16.1	22.6
Actuated g/C Ratio	0.09	0.33	0.48	0.03	0.25	0.25	0.15	0.28	0.28	0.11	0.23	0.32
Clearance Time (s)	4.5	4.9	4.5	4.5	5.6	5.6	4.5	4.9	4.9	4.5	4.9	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	162	1151	759	47	886	396	272	976	436	187	805	506
v/s Ratio Prot	c0.10	c0.27	0.01	0.01	0.11		0.07	c0.24		c0.11	0.05	0.01
v/s Ratio Perm			0.02			0.14			0.03			0.03
v/c Ratio	1.12	0.83	0.06	0.47	0.46	0.56	0.43	0.86	0.12	1.05	0.22	0.12
Uniform Delay, d1	32.1	22.1	9.9	33.9	22.4	23.1	27.1	24.3	19.2	31.6	22.2	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	105.7	5.3	0.0	7.2	0.4	1.7	1.1	7.5	0.1	79.1	0.1	0.1
Delay (s)	137.8	27.3	9.9	41.1	22.8	24.8	28.2	31.8	19.3	110.7	22.3	17.1
Level of Service	F	C	A	D	C	C	C	C	B	F	C	B
Approach Delay (s)		42.1			24.3			29.3			53.5	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.7	Sum of lost time (s)	19.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp — PM Peak Hour

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	88	63	28	83	100	30	93	164	109	187	813	165
Future Volume (vph)	88	63	28	83	100	30	93	164	109	187	813	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9			4.5	4.9	4.5	
Lane Util. Factor		1.00	1.00		1.00	1.00			1.00	1.00	0.88	
Frt		1.00	0.89		1.00	0.87			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1770	1654		1770	1613			1770	1863	2787	
Flt Permitted		0.33	1.00		0.62	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		617	1654		1154	1613			1770	1863	2787	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.87	0.87	0.87	0.87
Adj. Flow (vph)	102	73	33	97	109	33	101	178	125	215	934	190
RTOR Reduction (vph)	0	0	70	0	0	32	0	0	0	0	53	0
Lane Group Flow (vph)	0	175	60	0	109	280	0	0	125	215	1071	0
Turn Type	Perm	Perm	NA		Perm	NA			Prot	NA	pm+ov	
Protected Phases			8			8			5	2	4	
Permitted Phases	8	8			8						2	
Actuated Green, G (s)		41.1	41.1		41.1	41.1			15.0	20.8	51.3	
Effective Green, g (s)		41.1	41.1		41.1	41.1			15.0	20.8	51.3	
Actuated g/C Ratio		0.28	0.28		0.28	0.28			0.10	0.14	0.35	
Clearance Time (s)		4.9	4.9		4.9	4.9			4.5	4.9	4.5	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		172	463		323	451			180	264	974	
v/s Ratio Prot			0.04			0.17			0.07	0.12	c0.23	
v/s Ratio Perm		c0.28			0.09						0.16	
v/c Ratio		1.02	0.13		0.34	0.62			0.69	0.81	1.10	
Uniform Delay, d1		52.8	39.4		42.0	46.0			63.6	61.1	47.7	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		73.3	0.1		0.6	2.7			11.0	17.3	59.9	
Delay (s)		126.1	39.6		42.6	48.7			74.7	78.3	107.6	
Level of Service		F	D		D	D			E	E	F	
Approach Delay (s)			89.2			47.1				100.5		
Approach LOS			F			D				F		

Intersection Summary			
HCM 2000 Control Delay	91.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	146.7	Sum of lost time (s)	19.2
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp

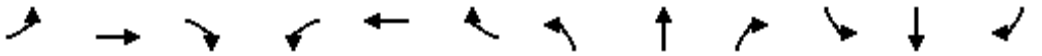
Existing Conditions
PM Peak Hour

Movement	SBL2	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	46	21	175	127	51	23	1
Future Volume (vph)	46	21	175	127	51	23	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.5		
Lane Util. Factor		1.00	0.95		0.97		
Frt		1.00	0.94		0.95		
Flt Protected		0.95	1.00		0.97		
Satd. Flow (prot)		1770	3316		3312		
Flt Permitted		0.11	1.00		0.97		
Satd. Flow (perm)		212	3316		3312		
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.92	0.76	0.76
Adj. Flow (vph)	58	26	219	159	55	30	1
RTOR Reduction (vph)	0	0	88	0	68	0	0
Lane Group Flow (vph)	0	84	290	0	18	0	0
Turn Type	custom	Prot	NA		Prot		
Protected Phases		1	6		4		
Permitted Phases	1						
Actuated Green, G (s)		35.1	41.3		30.5		
Effective Green, g (s)		35.1	41.3		30.5		
Actuated g/C Ratio		0.24	0.28		0.21		
Clearance Time (s)		4.9	4.9		4.5		
Vehicle Extension (s)		3.0	3.0		3.0		
Lane Grp Cap (vph)		50	933		688		
v/s Ratio Prot			0.09		0.01		
v/s Ratio Perm		c0.40					
v/c Ratio		1.68	0.31		0.03		
Uniform Delay, d1		55.8	41.5		46.3		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		378.0	0.2		0.0		
Delay (s)		433.8	41.7		46.3		
Level of Service		F	D		D		
Approach Delay (s)			113.0		46.3		
Approach LOS			F		D		

Intersection Summary

HCM 2000 Delay Analysis
10: Harbor Drive & 8th Street Naval Base Entrance/8th Street

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	340	201	18	0	57	2	216	37	580	1190	1
Future Volume (vph)	60	340	201	18	0	57	2	216	37	580	1190	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	5.1		5.1	4.5	5.4	5.4	4.5	5.4	
Lane Util. Factor		0.95	1.00	1.00		1.00	1.00	0.95	1.00	0.97	0.95	
Frt		1.00	0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3513	1583	1770		1583	1770	3539	1583	3433	3539	
Flt Permitted		0.91	1.00	0.36		1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3205	1583	676		1583	1770	3539	1583	3433	3539	
Peak-hour factor, PHF	0.74	0.74	0.74	0.78	0.78	0.78	0.76	0.76	0.76	0.95	0.95	0.95
Adj. Flow (vph)	81	459	272	23	0	73	3	284	49	611	1253	1
RTOR Reduction (vph)	0	0	87	0	0	51	0	0	35	0	0	0
Lane Group Flow (vph)	0	540	185	23	0	22	3	284	14	611	1254	0
Turn Type	Perm	NA	Perm	Perm		Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)		21.1	21.1	21.1		21.1	0.5	20.7	20.7	13.4	33.6	
Effective Green, g (s)		21.1	21.1	21.1		21.1	0.5	20.7	20.7	13.4	33.6	
Actuated g/C Ratio		0.30	0.30	0.30		0.30	0.01	0.29	0.29	0.19	0.48	
Clearance Time (s)		5.1	5.1	5.1		5.1	4.5	5.4	5.4	4.5	5.4	
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		963	475	203		475	12	1043	466	655	1693	
v/s Ratio Prot							0.00	0.08		c0.18	c0.35	
v/s Ratio Perm		c0.17	0.12	0.03		0.01			0.01			
v/c Ratio		0.56	0.39	0.11		0.05	0.25	0.27	0.03	0.93	0.74	
Uniform Delay, d1		20.7	19.5	17.8		17.4	34.7	19.0	17.6	28.0	14.8	
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.8	0.5	0.2		0.0	10.7	0.1	0.0	20.3	1.8	
Delay (s)		21.4	20.0	18.0		17.5	45.3	19.1	17.6	48.2	16.6	
Level of Service		C	B	B		B	D	B	B	D	B	
Approach Delay (s)		20.9			17.6			19.1			26.9	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
11: 8th Street

Existing Conditions
PM Peak Hour

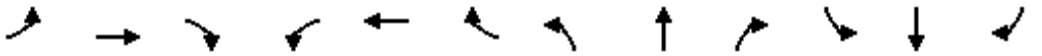
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	775	175	260	128	29	553
Future Volume (Veh/h)	775	175	260	128	29	553
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.84	0.84	0.94	0.94
Hourly flow rate (vph)	861	194	310	152	31	588
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	594			1153		
pX, platoon unblocked			0.82		0.82	0.82
vC, conflicting volume			1055		1654	528
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			630		1360	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			60		55	34
cM capacity (veh/h)			778		69	890

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	574	481	310	76	76	31	588
Volume Left	0	0	310	0	0	31	0
Volume Right	0	194	0	0	0	0	588
cSH	1700	1700	778	1700	1700	69	890
Volume to Capacity	0.34	0.28	0.40	0.04	0.04	0.45	0.66
Queue Length 95th (ft)	0	0	48	0	0	45	129
Control Delay (s)	0.0	0.0	12.7	0.0	0.0	94.3	16.6
Lane LOS			B			F	C
Approach Delay (s)	0.0		8.5			20.5	
Approach LOS						C	

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

HCM 2000 Delay Analysis
12: National City Boulevard & 8th Street

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	413	268	56	276	67	113	329	120	120	396	49
Future Volume (vph)	53	413	268	56	276	67	113	329	120	120	396	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.0	4.5	4.5	6.0		4.5	6.0		4.5	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	3435		1770	3397		1770	3481	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	3435		1770	3397		1770	3481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	58	449	291	64	317	77	127	370	135	130	430	53
RTOR Reduction (vph)	0	0	94	0	21	0	0	38	0	0	10	0
Lane Group Flow (vph)	58	449	197	64	373	0	127	467	0	130	473	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	4.4	24.2	34.4	4.1	23.9		10.2	20.6		8.0	18.4	
Effective Green, g (s)	4.4	24.2	34.4	4.1	23.9		10.2	20.6		8.0	18.4	
Actuated g/C Ratio	0.06	0.31	0.44	0.05	0.31		0.13	0.26		0.10	0.24	
Clearance Time (s)	4.5	6.0	4.5	4.5	6.0		4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	578	699	93	1053		231	898		181	822	
v/s Ratio Prot	0.03	c0.24	0.04	c0.04	0.11		0.07	c0.14		c0.07	0.14	
v/s Ratio Perm			0.09									
v/c Ratio	0.59	0.78	0.28	0.69	0.35		0.55	0.52		0.72	0.58	
Uniform Delay, d1	35.9	24.4	13.9	36.3	21.0		31.7	24.4		33.9	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	6.5	0.2	19.1	0.2		2.7	0.5		12.8	1.0	
Delay (s)	44.4	30.9	14.1	55.4	21.2		34.4	24.9		46.6	27.3	
Level of Service	D	C	B	E	C		C	C		D	C	
Approach Delay (s)		25.8			26.0			26.8			31.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	21.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions

13: I-5 On/Off Ramps/Harbor Drive & Civic Center Drive & McKinley Avenue — PM Peak Hour

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	73	6	222	88	87	15	8	4	21	206	7	62
Future Volume (vph)	73	6	222	88	87	15	8	4	21	206	7	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.5			4.5	5.5		
Lane Util. Factor		1.00	0.95		1.00	1.00			1.00	0.95		
Frt		1.00	0.96		1.00	0.93			1.00	0.96		
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)		1770	3388		1770	1739			1770	3406		
Flt Permitted		0.20	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (perm)		378	3388		1770	1739			1770	3406		
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.50	0.50	0.50	0.50	0.75	0.75	0.75	0.75
Adj. Flow (vph)	83	7	252	100	174	30	16	8	28	275	9	83
RTOR Reduction (vph)	0	0	31	0	0	5	0	0	0	18	0	0
Lane Group Flow (vph)	0	90	321	0	174	49	0	0	28	349	0	0
Turn Type	Split	Perm	NA		Split	NA			Prot	NA		
Protected Phases	3		3		7	7			1	6		
Permitted Phases		3										
Actuated Green, G (s)		19.7	19.7		16.8	16.8			2.9	35.0		
Effective Green, g (s)		19.7	19.7		16.8	16.8			2.9	35.0		
Actuated g/C Ratio		0.17	0.17		0.14	0.14			0.02	0.30		
Clearance Time (s)		4.5	4.5		4.5	4.5			4.5	5.5		
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0		
Lane Grp Cap (vph)		62	562		250	246			43	1005		
v/s Ratio Prot			0.09		c0.10	0.03			0.02	0.10		
v/s Ratio Perm		c0.24										
v/c Ratio		1.45	0.57		0.70	0.20			0.65	0.35		
Uniform Delay, d1		49.4	45.6		48.5	45.0			57.3	32.8		
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00		
Incremental Delay, d2		272.8	1.4		8.2	0.4			30.2	0.2		
Delay (s)		322.2	47.0		56.6	45.4			87.5	33.0		
Level of Service		F	D		E	D			F	C		
Approach Delay (s)			103.0			54.0				36.9		
Approach LOS			F			D				D		

Intersection Summary			
HCM 2000 Control Delay	77.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	118.6	Sum of lost time (s)	23.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

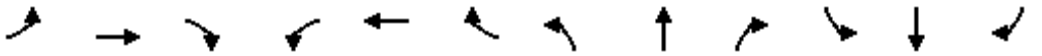
c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	2	68	993	218	49	49	2	5
Future Volume (vph)	2	68	993	218	49	49	2	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	5.5			4.5	4.5	
Lane Util. Factor		1.00	0.95			1.00	1.00	
Frt		1.00	0.97			1.00	0.85	
Flt Protected		0.95	1.00			0.95	1.00	
Satd. Flow (prot)		1770	3444			1770	1583	
Flt Permitted		0.95	1.00			0.95	1.00	
Satd. Flow (perm)		1770	3444			1770	1583	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.60	0.60	0.60	0.60
Adj. Flow (vph)	2	72	1056	232	82	82	3	8
RTOR Reduction (vph)	0	0	13	0	0	0	10	0
Lane Group Flow (vph)	0	74	1275	0	0	164	1	0
Turn Type	Prot	Prot	NA		Prot	Prot	Prot	
Protected Phases	5	5	2		4	4	4	
Permitted Phases								
Actuated Green, G (s)		8.6	40.7			15.0	15.0	
Effective Green, g (s)		8.6	40.7			15.0	15.0	
Actuated g/C Ratio		0.07	0.34			0.13	0.13	
Clearance Time (s)		4.5	5.5			4.5	4.5	
Vehicle Extension (s)		3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)		128	1181			223	200	
v/s Ratio Prot		c0.04	c0.37			c0.09	0.00	
v/s Ratio Perm								
v/c Ratio		0.58	1.08			0.74	0.01	
Uniform Delay, d1		53.2	38.9			49.9	45.3	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		6.2	50.4			11.9	0.0	
Delay (s)		59.4	89.4			61.8	45.3	
Level of Service		E	F			E	D	
Approach Delay (s)			87.8			60.7		
Approach LOS			F			E		

Intersection Summary

HCM 2000 Delay Analysis
14: Civic Center Drive

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	193	96	12	94	140	23	194	32	0	0	0
Future Volume (vph)	172	193	96	12	94	140	23	194	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.95		1.00	0.91			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00			
Satd. Flow (prot)	1770	1770		1770	1696			1853	1583			
Flt Permitted	0.95	1.00		0.53	1.00			0.99	1.00			
Satd. Flow (perm)	1770	1770		989	1696			1853	1583			
Peak-hour factor, PHF	0.74	0.74	0.74	0.88	0.88	0.88	0.77	0.77	0.77	0.92	0.92	0.92
Adj. Flow (vph)	232	261	130	14	107	159	30	252	42	0	0	0
RTOR Reduction (vph)	0	26	0	0	66	0	0	0	25	0	0	0
Lane Group Flow (vph)	232	365	0	14	200	0	0	282	17	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases				8			2		2			
Actuated Green, G (s)	14.4	32.2		13.3	13.3			28.0	28.0			
Effective Green, g (s)	14.4	32.2		13.3	13.3			28.0	28.0			
Actuated g/C Ratio	0.21	0.47		0.19	0.19			0.40	0.40			
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Lane Grp Cap (vph)	368	823		190	325			749	640			
v/s Ratio Prot	c0.13	0.21			c0.12							
v/s Ratio Perm				0.01				0.15	0.01			
v/c Ratio	0.63	0.44		0.07	0.61			0.38	0.03			
Uniform Delay, d1	25.0	12.5		22.9	25.6			14.5	12.4			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	3.5	0.4		0.2	3.4			1.4	0.1			
Delay (s)	28.5	12.8		23.1	29.0			15.9	12.5			
Level of Service	C	B		C	C			B	B			
Approach Delay (s)		18.7			28.7			15.5			0.0	
Approach LOS		B			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis
15: I-5 Southbound Off-Ramp & Cleveland Avenue

Existing Conditions
PM Peak Hour

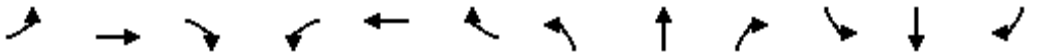
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	100	130	60	0	0	300
Future Volume (Veh/h)	100	130	60	0	0	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	141	65	0	0	326
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	391	65			65	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391	65			65	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	86			100	
cM capacity (veh/h)	613	999			1537	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	109	141	65	326
Volume Left	109	0	0	0
Volume Right	0	141	0	0
cSH	613	999	1700	1700
Volume to Capacity	0.18	0.14	0.04	0.19
Queue Length 95th (ft)	16	12	0	0
Control Delay (s)	12.1	9.2	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.5		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM 2000 Delay Analysis
16: Tidelands Avenue & Bay Marina Drive

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	181	1	25	38	22	3	10	50	52	12	8
Future Volume (vph)	10	181	1	25	38	22	3	10	50	52	12	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.94		1.00	0.88		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3536		1770	3344		1770	1631		1770	1751	
Flt Permitted	0.70	1.00		0.57	1.00		0.74	1.00		0.71	1.00	
Satd. Flow (perm)	1300	3536		1071	3344		1380	1631		1331	1751	
Peak-hour factor, PHF	0.63	0.63	0.63	0.69	0.69	0.69	0.93	0.93	0.93	0.82	0.82	0.82
Adj. Flow (vph)	16	287	2	36	55	32	3	11	54	63	15	10
RTOR Reduction (vph)	0	1	0	0	26	0	0	19	0	0	4	0
Lane Group Flow (vph)	16	288	0	36	61	0	3	46	0	63	21	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.8	9.8		9.8	9.8		34.8	34.8		34.8	34.8	
Effective Green, g (s)	9.8	9.8		9.8	9.8		34.8	34.8		34.8	34.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.65	0.65		0.65	0.65	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	646		195	611		895	1058		864	1136	
v/s Ratio Prot		c0.08			0.02			0.03			0.01	
v/s Ratio Perm	0.01			0.03			0.00			c0.05		
v/c Ratio	0.07	0.45		0.18	0.10		0.00	0.04		0.07	0.02	
Uniform Delay, d1	18.1	19.5		18.5	18.2		3.3	3.4		3.5	3.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.5		0.5	0.1		0.0	0.1		0.2	0.0	
Delay (s)	18.2	20.0		19.0	18.3		3.3	3.5		3.6	3.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		19.9			18.5			3.5			3.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions

17: I-5 Southbound On-Ramp/I-5 Southbound Off-Ramp & Bay Marina Drive/Mile of Cars Way — PM Peak Hour

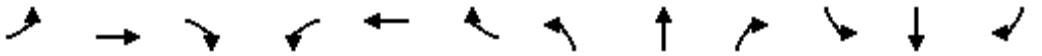
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	263	425	523	154	0	0	0	0	502	4	42
Future Volume (vph)	0	263	425	523	154	0	0	0	0	502	4	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1687	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1687	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	333	538	588	173	0	0	0	0	540	4	45
RTOR Reduction (vph)	0	0	434	0	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	333	104	588	173	0	0	0	0	270	274	19
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		16.9	16.9	19.4	40.8					37.9	37.9	37.9
Effective Green, g (s)		16.9	16.9	19.4	40.8					37.9	37.9	37.9
Actuated g/C Ratio		0.19	0.19	0.22	0.47					0.43	0.43	0.43
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		681	305	759	1646					726	729	684
v/s Ratio Prot		c0.09		c0.17	0.05							
v/s Ratio Perm			0.07							0.16	0.16	0.01
v/c Ratio		0.49	0.34	0.77	0.11					0.37	0.38	0.03
Uniform Delay, d1		31.6	30.6	32.1	13.2					16.8	16.9	14.3
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		0.6	0.7	5.0	0.0					1.5	1.5	0.1
Delay (s)		32.1	31.2	37.1	13.2					18.3	18.4	14.4
Level of Service		C	C	D	B					B	B	B
Approach Delay (s)		31.6			31.6			0.0			18.0	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	87.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 2000 Delay Analysis — Existing Conditions

18: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Mile of Cars Way — PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	621	0	0	588	503	97	3	454	0	0	0
Future Volume (vph)	131	621	0	0	588	503	97	3	454	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	0.97	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.93		1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			3294		1681	1451	1504			
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			3294		1681	1451	1504			
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	138	654	0	0	653	559	109	3	510	0	0	0
RTOR Reduction (vph)	0	0	0	0	155	0	0	79	79	0	0	0
Lane Group Flow (vph)	138	654	0	0	1057	0	98	185	181	0	0	0
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases							2		2			
Actuated Green, G (s)	5.5	43.5			33.5		47.5	47.5	47.5			
Effective Green, g (s)	5.5	43.5			33.5		47.5	47.5	47.5			
Actuated g/C Ratio	0.06	0.44			0.34		0.48	0.48	0.48			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	188	1539			1103		798	689	714			
v/s Ratio Prot	c0.04	0.18			c0.32							
v/s Ratio Perm							0.06	0.13	0.12			
v/c Ratio	0.73	0.42			0.96		0.12	0.27	0.25			
Uniform Delay, d1	46.5	19.6			32.6		14.6	15.8	15.7			
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2	13.8	0.2			17.7		0.3	1.0	0.9			
Delay (s)	60.3	19.8			50.3		15.0	16.7	16.5			
Level of Service	E	B			D		B	B	B			
Approach Delay (s)		26.8			50.3			16.4			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

D-2: HCM DELAY - HORIZON YEAR NO BUILD CONDITIONS

HCM Signalized Intersection Capacity Analysis
1: Cesar E. Chavez Parkway & Harbor Drive

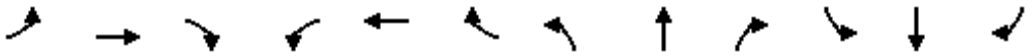
Horizon Yr NB - AM Pk Hr
07/08/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	608	39	44	80	10	15	74	89	87	95	386
Future Volume (vph)	195	608	39	44	80	10	15	74	89	87	95	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	5.5		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1805	3479		1805	3108		1787	1727			1837	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00			0.78	1.00
Satd. Flow (perm)	1805	3479		1805	3108		1181	1727			1470	1599
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.91	0.91	0.91
Adj. Flow (vph)	229	715	46	52	94	12	18	88	106	96	104	424
RTOR Reduction (vph)	0	6	0	0	9	0	0	51	0	0	0	234
Lane Group Flow (vph)	229	755	0	52	97	0	18	143	0	0	200	190
Heavy Vehicles (%)	0%	3%	0%	0%	16%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.7	23.0		3.1	19.6		33.3	33.3			33.3	33.3
Effective Green, g (s)	6.7	23.0		3.1	19.6		33.3	33.3			33.3	33.3
Actuated g/C Ratio	0.09	0.31		0.04	0.26		0.45	0.45			0.45	0.45
Clearance Time (s)	4.4	5.7		4.4	5.5		4.9	4.9			4.9	4.9
Vehicle Extension (s)	2.0	2.6		2.0	3.4		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	162	1075		75	818		528	772			657	715
v/s Ratio Prot	c0.13	c0.22		0.03	0.03			0.08				
v/s Ratio Perm							0.02				c0.14	0.12
v/c Ratio	1.41	0.70		0.69	0.12		0.03	0.19			0.30	0.27
Uniform Delay, d1	33.9	22.7		35.2	20.8		11.5	12.4			13.1	12.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	218.5	2.0		20.0	0.1		0.1	0.5			0.1	0.1
Delay (s)	252.3	24.7		55.2	20.9		11.6	12.9			13.2	13.0
Level of Service	F	C		E	C		B	B			B	B
Approach Delay (s)		77.3			32.2			12.8			13.0	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	46.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: S 28th Street & Harbor Drive

Horizon Yr NB - AM Pk Hr
07/08/2019

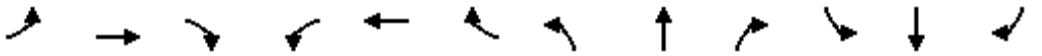


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	511	2	11	186	116	2	5	2	1084	17	71
Future Volume (vph)	85	511	2	11	186	116	2	5	2	1084	17	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1752	3503		1805	3112	1429		1818		4700	1511	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1752	3503		1805	3112	1429		1818		4700	1511	
Peak-hour factor, PHF	0.79	0.79	0.79	0.94	0.94	0.94	0.56	0.56	0.56	0.73	0.73	0.73
Adj. Flow (vph)	108	647	3	12	198	123	4	9	4	1485	23	97
RTOR Reduction (vph)	0	0	0	0	0	29	0	4	0	0	48	0
Lane Group Flow (vph)	108	650	0	12	198	94	0	13	0	1485	72	0
Heavy Vehicles (%)	3%	3%	0%	0%	16%	13%	0%	0%	0%	3%	0%	13%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	8	7	7		8	8	
Permitted Phases						6						
Actuated Green, G (s)	3.6	29.5		0.6	26.6	79.1		1.1		52.5	52.5	
Effective Green, g (s)	3.6	29.5		0.6	26.6	79.1		1.1		52.5	52.5	
Actuated g/C Ratio	0.03	0.29		0.01	0.26	0.77		0.01		0.51	0.51	
Clearance Time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Vehicle Extension (s)	3.0	6.8		2.0	6.6	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	61	1001		10	802	1095		19		2390	768	
v/s Ratio Prot	c0.06	c0.19		0.01	0.06	0.04		c0.01		c0.32	0.05	
v/s Ratio Perm						0.02						
v/c Ratio	1.77	0.65		1.20	0.25	0.09		0.69		0.62	0.09	
Uniform Delay, d1	49.8	32.3		51.3	30.4	3.0		50.9		18.2	13.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	404.8	2.7		360.0	0.5	0.0		70.3		0.5	0.1	
Delay (s)	454.6	35.0		411.3	30.9	3.0		121.2		18.7	13.1	
Level of Service	F	D		F	C	A		F		B	B	
Approach Delay (s)		94.8			34.3			121.2			18.3	
Approach LOS		F			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	19.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: S 28th Street & Main Street

Horizon Yr NB - AM Pk Hr
07/08/2019

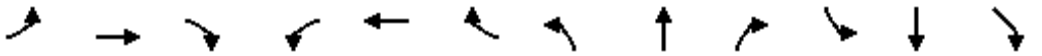


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	135	51	82	264	89	62	91	73	267	1171	28
Future Volume (vph)	20	135	51	82	264	89	62	91	73	267	1171	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3427		1787	3574	1599	1805	3142		1805	2000	
Flt Permitted	0.50	1.00		0.59	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	939	3427		1118	3574	1599	1805	3142		1399	2000	
Peak-hour factor, PHF	0.84	0.84	0.84	0.96	0.96	0.96	0.85	0.85	0.85	0.86	0.86	0.86
Adj. Flow (vph)	24	161	61	85	275	93	73	107	86	310	1362	33
RTOR Reduction (vph)	0	43	0	0	0	60	0	43	0	0	1	0
Lane Group Flow (vph)	24	179	0	85	275	33	73	150	0	310	1394	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	13%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			8	1	5	2		1	6	
Permitted Phases	8			8		8						
Actuated Green, G (s)	12.6	12.6		12.6	12.6	32.1	4.0	46.0		19.5	61.1	
Effective Green, g (s)	12.6	12.6		12.6	12.6	32.1	4.0	46.0		19.5	61.1	
Actuated g/C Ratio	0.14	0.14		0.14	0.14	0.35	0.04	0.50		0.21	0.67	
Clearance Time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	5.7		2.0	3.8	
Lane Grp Cap (vph)	129	471		153	491	560	78	1577		384	1334	
v/s Ratio Prot		0.05			c0.08	0.01	0.04	0.05		c0.17	c0.70	
v/s Ratio Perm	0.03			0.08		0.01						
v/c Ratio	0.19	0.38		0.56	0.56	0.06	0.94	0.10		0.81	1.04	
Uniform Delay, d1	35.0	35.9		36.9	36.9	19.7	43.7	11.9		34.3	15.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		2.5	0.9	0.0	78.9	0.1		11.1	37.3	
Delay (s)	35.2	36.1		39.4	37.8	19.7	122.5	12.0		45.4	52.5	
Level of Service	D	D		D	D	B	F	B		D	D	
Approach Delay (s)		36.0			34.4			42.3			51.2	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	13.9
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: S 28th Street & Boston Avenue

Horizon Yr NB - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SER
Lane Configurations												
Traffic Volume (vph)	20	77	15	8	16	27	5	162	33	97	595	845
Future Volume (vph)	20	77	15	8	16	27	5	162	33	97	595	845
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9	4.9	4.4	4.9	4.9
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1836		1752	1672		1805	3195	1429	1125	1100	2350
Flt Permitted	0.72	1.00		0.61	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1355	1836		1119	1672		1805	3195	1429	1125	1100	2350
Peak-hour factor, PHF	0.77	0.77	0.77	0.78	0.78	0.78	0.90	0.90	0.90	0.88	0.88	0.92
Adj. Flow (vph)	26	100	19	10	21	35	6	180	37	110	676	918
RTOR Reduction (vph)	0	7	0	0	50	0	0	0	14	0	0	0
Lane Group Flow (vph)	26	112	0	10	6	0	6	180	23	110	676	918
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	0%	13%	13%	3%	3%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)	9.8	9.8		9.8	9.8		0.7	57.7	57.7	12.4	69.4	69.4
Effective Green, g (s)	9.8	9.8		9.8	9.8		0.7	57.7	57.7	12.4	69.4	69.4
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.01	0.61	0.61	0.13	0.74	0.74
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9	4.9	4.4	4.9	4.9
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.7	3.7	2.0	3.7	3.7
Lane Grp Cap (vph)	141	191		116	174		13	1959	876	148	811	1733
v/s Ratio Prot		c0.06			0.00		0.00	0.06		c0.10	c0.61	
v/s Ratio Perm	0.02			0.01					0.02			0.39
v/c Ratio	0.18	0.59		0.09	0.03		0.46	0.09	0.03	0.74	0.83	0.53
Uniform Delay, d1	38.5	40.2		38.1	37.9		46.5	7.5	7.2	39.3	8.4	5.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	2.9		0.1	0.0		9.1	0.0	0.0	16.1	7.6	0.4
Delay (s)	38.7	43.1		38.2	37.9		55.7	7.5	7.2	55.4	16.0	5.7
Level of Service	D	D		D	D		E	A	A	E	B	A
Approach Delay (s)		42.4			38.0			8.7			21.5	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	94.1	Sum of lost time (s)	14.2
Intersection Capacity Utilization	110.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: S 28th Street & Boston Avenue

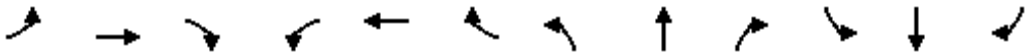
Horizon Yr NB - AM Pk Hr
07/08/2019

Movement	SER2
Lane Configurations	
Traffic Volume (vph)	21
Future Volume (vph)	21
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.9
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	23
RTOR Reduction (vph)	6
Lane Group Flow (vph)	17
Heavy Vehicles (%)	2%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	69.4
Effective Green, g (s)	69.4
Actuated g/C Ratio	0.74
Clearance Time (s)	4.9
Vehicle Extension (s)	3.7
Lane Grp Cap (vph)	1167
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	3.3
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	3.3
Level of Service	A
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: S 28th Street & National Avenue

Horizon Yr NB - AM Pk Hr
07/08/2019

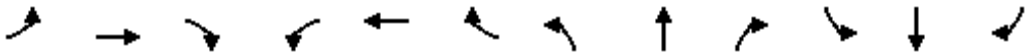


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	203	117	300	615	44	22	33	32	13	275	241
Future Volume (vph)	93	203	117	300	615	44	22	33	32	13	275	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	1.00			0.95			1.00	
Frt	1.00	0.95		1.00	0.99			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1752	3313		1752	1826			2980			1000	
Flt Permitted	0.95	1.00		0.95	1.00			0.78			0.99	
Satd. Flow (perm)	1752	3313		2350	2350			2368			1000	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.75	0.75	0.75	0.85	0.85	0.85
Adj. Flow (vph)	106	231	133	326	668	48	29	44	43	15	324	284
RTOR Reduction (vph)	0	69	0	0	2	0	0	25	0	0	27	0
Lane Group Flow (vph)	106	295	0	326	714	0	0	91	0	0	596	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.6	25.3		24.1	44.8			45.1			45.1	
Effective Green, g (s)	4.6	25.3		24.1	44.8			45.1			45.1	
Actuated g/C Ratio	0.04	0.23		0.22	0.41			0.41			0.41	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	2.8		2.0	3.8			2.0			2.0	
Lane Grp Cap (vph)	74	771		388	752			982			414	
v/s Ratio Prot	c0.06	0.09		0.19	c0.39							
v/s Ratio Perm								0.04			0.60	
v/c Ratio	1.43	0.38		0.84	0.95			0.09			1.44	
Uniform Delay, d1	52.1	35.1		40.5	30.8			19.3			31.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	255.9	0.3		14.5	21.2			0.0			211.3	
Delay (s)	307.9	35.4		54.9	52.1			19.4			243.1	
Level of Service	F	D		D	D			B			F	
Approach Delay (s)		96.9			52.9			19.4			243.1	
Approach LOS		F			D			B			F	

Intersection Summary			
HCM 2000 Control Delay	113.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	108.7	Sum of lost time (s)	14.2
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: I-5 NB 28th St Off-Ramp & National Avenue

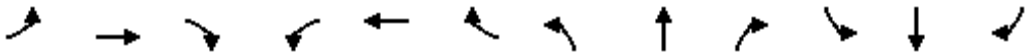
Horizon Yr NB - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	224	0	0	384	15	443	25	73	0	0	0
Future Volume (vph)	0	224	0	0	384	15	443	25	73	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			4.6	4.6			
Lane Util. Factor		1.00			1.00			1.00	1.00			
Frt		1.00			0.99			1.00	0.85			
Flt Protected		1.00			1.00			0.95	1.00			
Satd. Flow (prot)		1845			1835			2350	2350			
Flt Permitted		1.00			1.00			0.95	1.00			
Satd. Flow (perm)		1845			1835			2350	2350			
Peak-hour factor, PHF	0.86	0.86	0.86	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	260	0	0	486	19	515	29	85	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	54	0	0	0
Lane Group Flow (vph)	0	260	0	0	503	0	0	544	31	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type		NA			NA		Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)		21.3			21.3			17.8	17.8			
Effective Green, g (s)		21.3			21.3			17.8	17.8			
Actuated g/C Ratio		0.44			0.44			0.37	0.37			
Clearance Time (s)		4.6			4.6			4.6	4.6			
Vehicle Extension (s)		3.0			3.0			2.0	2.0			
Lane Grp Cap (vph)		813			809			866	866			
v/s Ratio Prot		0.14			c0.27			c0.23				
v/s Ratio Perm									0.01			
v/c Ratio		0.32			0.62			0.63	0.04			
Uniform Delay, d1		8.8			10.4			12.5	9.8			
Progression Factor		1.00			1.00			1.00	1.00			
Incremental Delay, d2		0.2			1.5			1.0	0.0			
Delay (s)		9.0			11.9			13.6	9.8			
Level of Service		A			B			B	A			
Approach Delay (s)		9.0			11.9			13.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	48.3	Sum of lost time (s)	9.2
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis — Horizon Yr NB - AM Pk Hr
7: S 29th Street/I-5 Southbound On-Ramp & Boston Avenue — 07/08/2019



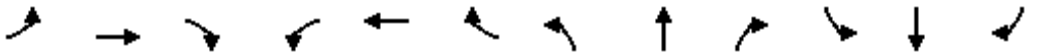
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	14	6	0	89	52	12	46	1	0	0	0
Future Volume (Veh/h)	145	14	6	0	89	52	12	46	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.76	0.76	0.76	0.81	0.81	0.81	0.92	0.92	0.92
Hourly flow rate (vph)	179	17	7	0	117	68	15	57	1	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		644										
pX, platoon unblocked												
vC, conflicting volume	185			24			530	564	20	559	533	151
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	185			24			530	564	20	559	533	151
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			100			96	85	100	100	100	100
cM capacity (veh/h)	1384			1584			417	381	1063	351	394	895

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	203	185	73
Volume Left	179	0	15
Volume Right	7	68	1
cSH	1384	1584	392
Volume to Capacity	0.13	0.00	0.19
Queue Length 95th (ft)	11	0	17
Control Delay (s)	7.2	0.0	16.3
Lane LOS	A		C
Approach Delay (s)	7.2	0.0	16.3
Approach LOS			C

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
8: 32nd Street Naval Gate/32nd Street & Harbor Drive

Horizon Yr NB - AM Pk Hr
07/08/2019

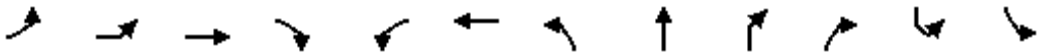


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	336	404	389	661	184	65	130	34	154	998	185
Future Volume (vph)	84	336	404	389	661	184	65	130	34	154	998	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1615	1805	3112	1392	1805	3610	1615	1752	4700	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	3505	1615	1805	3112	1392	1805	3610	1615	1752	4700	1568
Peak-hour factor, PHF	0.62	0.62	0.62	0.82	0.82	0.82	0.86	0.86	0.86	0.81	0.81	0.81
Adj. Flow (vph)	135	542	652	474	806	224	76	151	40	190	1232	228
RTOR Reduction (vph)	0	0	86	0	0	130	0	0	30	0	0	88
Lane Group Flow (vph)	135	542	566	474	806	94	76	151	10	190	1232	140
Heavy Vehicles (%)	3%	3%	0%	0%	16%	16%	0%	0%	0%	3%	0%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.0	23.8	28.4	20.6	40.0	40.0	4.6	23.1	23.1	8.6	27.1	31.1
Effective Green, g (s)	4.0	23.8	28.4	20.6	40.0	40.0	4.6	23.1	23.1	8.6	27.1	31.1
Actuated g/C Ratio	0.04	0.25	0.30	0.22	0.42	0.42	0.05	0.24	0.24	0.09	0.29	0.33
Clearance Time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Vehicle Extension (s)	2.0	4.3	2.0	2.0	4.3	4.3	2.0	3.0	3.0	4.0	4.0	2.0
Lane Grp Cap (vph)	73	878	482	391	1310	586	87	877	392	158	1340	513
v/s Ratio Prot	c0.08	0.15	c0.06	c0.26	0.26		0.04	0.04		c0.11	c0.26	0.01
v/s Ratio Perm			0.29			0.07			0.01			0.08
v/c Ratio	1.85	0.62	1.17	1.21	0.62	0.16	0.87	0.17	0.02	1.20	0.92	0.27
Uniform Delay, d1	45.5	31.6	33.3	37.2	21.5	17.1	44.9	28.4	27.4	43.2	32.9	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	429.9	1.6	98.3	117.0	1.1	0.2	55.5	0.1	0.0	136.4	10.4	0.1
Delay (s)	475.4	33.2	131.6	154.2	22.6	17.3	100.4	28.5	27.4	179.6	43.3	23.7
Level of Service	F	C	F	F	C	B	F	C	C	F	D	C
Approach Delay (s)		126.4			63.3			48.8			56.3	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	77.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	19.3
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp

Horizon Yr NB - AM Pk Hr
07/08/2019



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Traffic Volume (vph)	9	51	22	11	0	0	41	73	106	149	1	7
Future Volume (vph)	9	51	22	11	0	0	41	73	106	149	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9				4.4	4.9	5.7			4.4
Lane Util. Factor		1.00	1.00				1.00	1.00	0.88			1.00
Frt		1.00	0.95				1.00	1.00	0.85			1.00
Flt Protected		0.95	1.00				0.95	1.00	1.00			0.95
Satd. Flow (prot)		1805	1805				1805	1681	2697			1805
Flt Permitted		0.76	1.00				0.95	1.00	1.00			1.00
Satd. Flow (perm)		1439	1805				1805	1681	2697			1900
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.92	0.92	0.86	0.86	0.86	0.86	0.87	0.87
Adj. Flow (vph)	12	65	28	14	0	0	48	85	123	173	1	8
RTOR Reduction (vph)	0	0	10	0	0	0	0	0	84	0	0	0
Lane Group Flow (vph)	0	77	32	0	0	0	48	85	212	0	0	9
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	0%	13%	13%	0%	0%	0%
Turn Type	Perm	Perm	NA		Perm		Prot	NA	pm+ov		custom	Prot
Protected Phases			4			4	5	2	3			1
Permitted Phases	4	4			4				2		1	
Actuated Green, G (s)		29.3	29.3				4.9	28.4	53.2			0.7
Effective Green, g (s)		29.3	29.3				4.9	28.4	53.2			0.7
Actuated g/C Ratio		0.28	0.28				0.05	0.28	0.52			0.01
Clearance Time (s)		4.9	4.9				4.4	4.9	5.7			4.4
Vehicle Extension (s)		3.0	3.0				2.0	3.2	4.3			2.0
Lane Grp Cap (vph)		408	512				85	463	1391			12
v/s Ratio Prot			0.02				c0.03	c0.05	0.04			
v/s Ratio Perm		c0.05							0.04			0.00
v/c Ratio		0.19	0.06				0.56	0.18	0.15			0.75
Uniform Delay, d1		27.9	26.9				48.1	28.5	13.1			51.1
Progression Factor		1.00	1.00				1.00	1.00	1.00			1.00
Incremental Delay, d2		0.2	0.1				5.0	0.2	0.1			118.4
Delay (s)		28.1	26.9				53.1	28.7	13.2			169.5
Level of Service		C	C				D	C	B			F
Approach Delay (s)			27.7			0.0		20.7				
Approach LOS			C			A		C				

Intersection Summary			
HCM 2000 Control Delay	59.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	103.1	Sum of lost time (s)	19.9
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

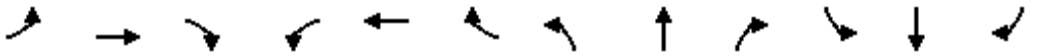
HCM Signalized Intersection Capacity Analysis
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp

Horizon Yr NB - AM Pk Hr
07/08/2019

Movement	SBT	SBR	SWL	SWR	SWR2
Lane Configurations					
Traffic Volume (vph)	528	73	711	21	5
Future Volume (vph)	528	73	711	21	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		5.7		
Lane Util. Factor	0.95		0.97		
Frt	0.98		0.99		
Flt Protected	1.00		0.95		
Satd. Flow (prot)	2600		4700		
Flt Permitted	1.00		0.95		
Satd. Flow (perm)	2600		4700		
Peak-hour factor, PHF	0.87	0.87	0.92	0.89	0.89
Adj. Flow (vph)	607	84	773	24	6
RTOR Reduction (vph)	9	0	84	0	0
Lane Group Flow (vph)	682	0	719	0	0
Heavy Vehicles (%)	3%	0%	3%	3%	3%
Turn Type	NA		Prot		
Protected Phases	6		3		
Permitted Phases					
Actuated Green, G (s)	24.2		24.8		
Effective Green, g (s)	24.2		24.8		
Actuated g/C Ratio	0.23		0.24		
Clearance Time (s)	4.9		5.7		
Vehicle Extension (s)	2.2		4.3		
Lane Grp Cap (vph)	610		1130		
v/s Ratio Prot	c0.26		c0.15		
v/s Ratio Perm					
v/c Ratio	1.12		0.64		
Uniform Delay, d1	39.4		35.1		
Progression Factor	1.00		1.00		
Incremental Delay, d2	73.2		1.4		
Delay (s)	112.7		36.5		
Level of Service	F		D		
Approach Delay (s)	113.4		36.5		
Approach LOS	F		D		

Intersection Summary

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - AM Pk Hr
10: Harbor Drive & 8th Street Naval Base Entrance/8th Street — 07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	53	31	22	595	214	380	1482	64	45	109	0
Future Volume (vph)	59	53	31	22	595	214	380	1482	64	45	109	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3518	1615	1752	2550		1250	3100	1392	3502	3505	
Flt Permitted		0.97	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3518	1615	1752	2550		1250	3100	1392	3502	3505	
Peak-hour factor, PHF	0.82	0.82	0.82	0.80	0.80	0.80	0.91	0.91	0.91	0.73	0.73	0.73
Adj. Flow (vph)	72	65	38	28	744	268	418	1629	70	62	149	0
RTOR Reduction (vph)	0	0	35	0	36	0	0	0	42	0	0	0
Lane Group Flow (vph)	0	137	3	28	976	0	418	1629	28	62	149	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	0%	16%	16%	0%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		7	7		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)		8.8	8.8	24.9	24.9		16.5	40.0	40.0	6.1	29.6	
Effective Green, g (s)		8.8	8.8	24.9	24.9		16.5	40.0	40.0	6.1	29.6	
Actuated g/C Ratio		0.09	0.09	0.25	0.25		0.16	0.40	0.40	0.06	0.30	
Clearance Time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		309	142	436	634		206	1240	556	213	1037	
v/s Ratio Prot		c0.04		0.02	c0.38		c0.33	c0.53		0.02	0.04	
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.44	0.02	0.06	1.54		2.03	1.31	0.05	0.29	0.14	
Uniform Delay, d1		43.3	41.7	28.7	37.5		41.8	30.0	18.4	44.9	25.9	
Progression Factor		1.00	1.00	1.04	0.97		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.0	0.1	0.1	250.0		479.7	147.0	0.2	0.8	0.3	
Delay (s)		44.3	41.7	29.8	286.5		521.5	177.0	18.5	45.6	26.2	
Level of Service		D	D	C	F		F	F	B	D	C	
Approach Delay (s)		43.7			279.6			239.8			31.9	
Approach LOS		D			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	229.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
11: I-5 SB Ramps & 8th Street

Horizon Yr NB - AM Pk Hr
07/08/2019

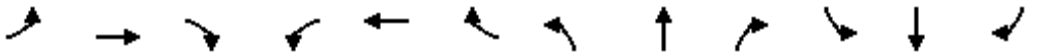
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	239	43	166	842	275	235
Future Volume (Veh/h)	239	43	166	842	275	235
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.94	0.94	0.86	0.86
Hourly flow rate (vph)	291	52	177	896	320	273
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	419			1153		
pX, platoon unblocked			0.99		0.95	0.99
vC, conflicting volume			343		1119	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			308		957	134
tC, single (s)			4.2		6.9	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			86		0	68
cM capacity (veh/h)			1226		206	845

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	194	149	177	448	448	320	273
Volume Left	0	0	177	0	0	320	0
Volume Right	0	52	0	0	0	0	273
cSH	1700	1700	1226	1700	1700	206	845
Volume to Capacity	0.11	0.09	0.14	0.26	0.26	1.55	0.32
Queue Length 95th (ft)	0	0	13	0	0	505	35
Control Delay (s)	0.0	0.0	8.4	0.0	0.0	313.2	11.3
Lane LOS			A			F	B
Approach Delay (s)	0.0		1.4			174.2	
Approach LOS						F	

Intersection Summary			
Average Delay	52.2		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
12: National City Boulevard & 8th Street

Horizon Yr NB - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	109	65	14	560	78	209	958	21	22	67	65
Future Volume (vph)	28	109	65	14	560	78	209	958	21	22	67	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1681	1615	1805	3453		1770	3528		1770	3279	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1681	1615	1805	3453		1770	3528		1770	3279	
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	35	135	80	15	589	82	232	1064	23	26	79	76
RTOR Reduction (vph)	0	0	36	0	9	0	0	2	0	0	58	0
Lane Group Flow (vph)	35	135	44	15	662	0	232	1085	0	26	97	0
Heavy Vehicles (%)	0%	13%	0%	0%	3%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	3.7	38.2	54.6	2.2	36.7		16.4	37.2		2.4	23.2	
Effective Green, g (s)	3.7	38.2	54.6	2.2	36.7		16.4	37.2		2.4	23.2	
Actuated g/C Ratio	0.04	0.38	0.55	0.02	0.37		0.16	0.37		0.02	0.23	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	66	642	881	39	1267		290	1312		42	760	
v/s Ratio Prot	c0.02	0.08	0.01	0.01	c0.19		c0.13	c0.31		0.01	0.03	
v/s Ratio Perm			0.02									
v/c Ratio	0.53	0.21	0.05	0.38	0.52		0.80	0.83		0.62	0.13	
Uniform Delay, d1	47.3	20.8	10.6	48.2	24.8		40.2	28.5		48.3	30.4	
Progression Factor	1.07	1.21	0.53	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.7	0.0	2.3	1.5		13.8	4.4		17.6	0.1	
Delay (s)	54.6	25.8	5.6	50.5	26.3		54.0	32.9		65.9	30.5	
Level of Service	D	C	A	D	C		D	C		E	C	
Approach Delay (s)		23.4			26.9			36.6			35.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - AM Pk Hr

13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	451	64	55	14	21	31	221	18	70	1158	15	21
Future Volume (vph)	451	64	55	14	21	31	221	18	70	1158	15	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		5.1		5.1	5.1			4.7	5.5		
Lane Util. Factor	0.91		0.91		1.00	1.00			1.00	0.95		
Frt	1.00		0.99		1.00	0.87			1.00	1.00		
Flt Protected	0.95		0.96		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1800		3600		1770	1615			1752	3900		
Flt Permitted	0.95		0.72		0.95	1.00			0.95	1.00		
Satd. Flow (perm)	1800		3600		1770	1615			1752	3900		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Adj. Flow (vph)	550	78	67	17	25	36	260	21	76	1259	16	23
RTOR Reduction (vph)	0	0	2	0	0	2	0	0	0	1	0	0
Lane Group Flow (vph)	275	0	435	0	25	315	0	0	76	1297	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%
Turn Type	Split	Perm	NA		Split	NA			Prot	NA		
Protected Phases	3		3		7	7			1	6		
Permitted Phases		3										
Actuated Green, G (s)	23.0		23.0		27.6	27.6			7.4	43.0		
Effective Green, g (s)	23.0		23.0		27.6	27.6			7.4	43.0		
Actuated g/C Ratio	0.18		0.18		0.22	0.22			0.06	0.34		
Clearance Time (s)	5.1		5.1		5.1	5.1			4.7	5.5		
Vehicle Extension (s)	2.0		2.0		2.0	2.0			2.0	5.0		
Lane Grp Cap (vph)	323		647		381	348			101	1311		
v/s Ratio Prot	c0.15				0.01	c0.20			c0.04	c0.33		
v/s Ratio Perm			0.12									
v/c Ratio	0.85		0.67		0.07	0.91			0.75	0.99		
Uniform Delay, d1	50.8		48.9		39.9	48.9			59.3	42.2		
Progression Factor	1.00		1.00		1.00	1.00			1.00	1.00		
Incremental Delay, d2	18.3		2.2		0.0	25.6			24.1	22.2		
Delay (s)	69.1		51.1		39.9	74.5			83.4	64.5		
Level of Service	E		D		D	E			F	E		
Approach Delay (s)			58.1			71.9				65.5		
Approach LOS			E			E				E		

Intersection Summary			
HCM 2000 Control Delay	63.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	127.9	Sum of lost time (s)	26.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - AM Pk Hr

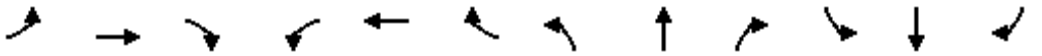
13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	6	9	87	46	10	22	1	7
Future Volume (vph)	6	9	87	46	10	22	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	6.0			5.1	5.1	
Lane Util. Factor		1.00	0.95			1.00	1.00	
Frt		1.00	0.95			1.00	0.85	
Flt Protected		0.95	1.00			0.95	1.00	
Satd. Flow (prot)		1556	2951			1770	1583	
Flt Permitted		0.95	1.00			0.95	1.00	
Satd. Flow (perm)		1556	2951			1770	1583	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.77	0.77	0.77	0.77
Adj. Flow (vph)	8	11	110	58	13	29	1	9
RTOR Reduction (vph)	0	0	41	0	0	0	9	0
Lane Group Flow (vph)	0	19	127	0	0	42	1	0
Heavy Vehicles (%)	16%	16%	16%	16%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA		Prot	Prot	Prot	
Protected Phases	5	5	2		4	4	4	
Permitted Phases								
Actuated Green, G (s)		1.5	36.6			7.3	7.3	
Effective Green, g (s)		1.5	36.6			7.3	7.3	
Actuated g/C Ratio		0.01	0.29			0.06	0.06	
Clearance Time (s)		4.7	6.0			5.1	5.1	
Vehicle Extension (s)		2.0	5.0			2.0	2.0	
Lane Grp Cap (vph)		18	844			101	90	
v/s Ratio Prot		0.01	0.04			c0.02	0.00	
v/s Ratio Perm								
v/c Ratio		1.06	0.15			0.42	0.01	
Uniform Delay, d1		63.2	34.0			58.2	56.9	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		230.8	0.2			1.0	0.0	
Delay (s)		294.0	34.2			59.3	56.9	
Level of Service		F	C			E	E	
Approach Delay (s)			60.6			58.8		
Approach LOS			E			E		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
14: Roosevelt Avenue & Civic Center Drive

Horizon Yr NB - AM Pk Hr
07/08/2019



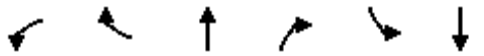
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	31	14	2	211	409	93	334	28	0	0	0
Future Volume (vph)	37	31	14	2	211	409	93	334	28	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.95		1.00	0.90			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00			
Satd. Flow (prot)	1770	1776		1770	1679			1843	1583			
Flt Permitted	0.95	1.00		0.72	1.00			0.99	1.00			
Satd. Flow (perm)	1770	1776		1336	1679			1843	1583			
Peak-hour factor, PHF	0.74	0.74	0.74	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	50	42	19	2	232	449	103	371	31	0	0	0
RTOR Reduction (vph)	0	10	0	0	102	0	0	0	19	0	0	0
Lane Group Flow (vph)	50	51	0	2	579	0	0	474	12	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases				8			2		2			
Actuated Green, G (s)	2.8	31.8		24.5	24.5			24.4	24.4			
Effective Green, g (s)	2.8	31.8		24.5	24.5			24.4	24.4			
Actuated g/C Ratio	0.04	0.49		0.38	0.38			0.37	0.37			
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Lane Grp Cap (vph)	76	866		502	630			689	592			
v/s Ratio Prot	c0.03	0.03			c0.34							
v/s Ratio Perm				0.00				0.26	0.01			
v/c Ratio	0.66	0.06		0.00	0.92			0.69	0.02			
Uniform Delay, d1	30.7	8.8		12.7	19.4			17.2	12.9			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	18.7	0.0		0.0	18.4			5.5	0.1			
Delay (s)	49.4	8.8		12.7	37.8			22.7	12.9			
Level of Service	D	A		B	D			C	B			
Approach Delay (s)		27.1			37.7			22.1			0.0	
Approach LOS		C			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
15: Cleveland Avenue & I-5 SB Civic Ctr Off-Ramp

Horizon Yr NB - AM Pk Hr
07/08/2019



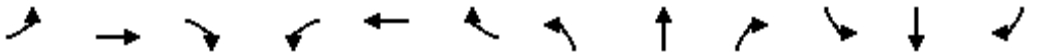
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	201	189	364	0	0	34
Future Volume (Veh/h)	201	189	364	0	0	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	218	205	396	0	0	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	433	396			396	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	433	396			396	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	62	69			100	
cM capacity (veh/h)	580	653			1163	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	218	205	396	37
Volume Left	218	0	0	0
Volume Right	0	205	0	0
cSH	580	653	1700	1700
Volume to Capacity	0.38	0.31	0.23	0.02
Queue Length 95th (ft)	44	33	0	0
Control Delay (s)	14.9	13.0	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	14.0		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
16: Tidelands Avenue & Bay Marina Drive

Horizon Yr NB - AM Pk Hr
07/08/2019



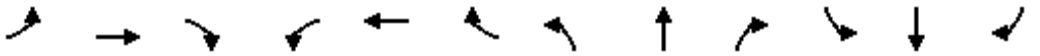
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	34	3	74	283	300	4	32	25	19	28	58
Future Volume (vph)	18	34	3	74	283	300	4	32	25	19	28	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.93		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	3266		1770	1740		1770	1674	
Flt Permitted	0.38	1.00		0.71	1.00		0.98	1.00		0.98	1.00	
Satd. Flow (perm)	717	3498		1327	3266		1817	1740		1817	1674	
Peak-hour factor, PHF	0.57	0.57	0.57	0.83	0.83	0.83	0.58	0.58	0.58	0.79	0.79	0.79
Adj. Flow (vph)	32	60	5	89	341	361	7	55	43	24	35	73
RTOR Reduction (vph)	0	2	0	0	175	0	0	38	0	0	64	0
Lane Group Flow (vph)	32	63	0	89	527	0	7	60	0	24	44	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	17.2	17.2		17.2	17.2		4.1	4.1		4.1	4.1	
Effective Green, g (s)	17.2	17.2		17.2	17.2		4.1	4.1		4.1	4.1	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	370	1806		685	1686		223	214		223	206	
v/s Ratio Prot		0.02			c0.16			c0.03			0.03	
v/s Ratio Perm	0.04			0.07			0.00			0.01		
v/c Ratio	0.09	0.03		0.13	0.31		0.03	0.28		0.11	0.21	
Uniform Delay, d1	4.1	4.0		4.2	4.6		12.9	13.3		13.0	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.1		0.1	0.7		0.2	0.5	
Delay (s)	4.2	4.0		4.3	4.7		12.9	14.0		13.2	13.7	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		4.0			4.7			13.9			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - AM Pk Hr

17: I-5 Southbound On-Ramp/I-5 Southbound Off-Ramp & Bay Marina Drive/Mile of Cars Way — 07/09/2019



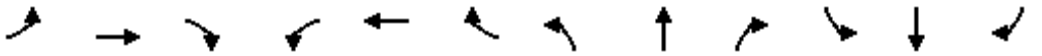
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	148	158	263	858	0	0	0	0	384	0	228
Future Volume (vph)	0	148	158	263	858	0	0	0	0	384	0	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1681	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1681	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.87	0.87	0.87	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	176	188	302	986	0	0	0	0	431	0	256
RTOR Reduction (vph)	0	0	84	0	0	0	0	0	0	0	0	143
Lane Group Flow (vph)	0	176	104	302	986	0	0	0	0	215	216	113
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		55.4	55.4	13.2	72.8					18.0	18.0	18.0
Effective Green, g (s)		55.4	55.4	13.2	72.8					18.0	18.0	18.0
Actuated g/C Ratio		0.55	0.55	0.13	0.73					0.18	0.18	0.18
Clearance Time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Vehicle Extension (s)		3.0	3.0	2.0	3.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1960	876	453	2576					302	302	284
v/s Ratio Prot		0.05		c0.09	c0.28					0.13	c0.13	
v/s Ratio Perm			0.07									0.07
v/c Ratio		0.09	0.12	0.67	0.38					0.71	0.72	0.40
Uniform Delay, d1		10.5	10.6	41.3	5.1					38.6	38.6	36.2
Progression Factor		1.66	4.33	1.16	0.46					1.00	1.00	1.00
Incremental Delay, d2		0.1	0.3	0.3	0.0					6.5	6.6	0.3
Delay (s)		17.4	46.3	48.1	2.4					45.0	45.1	36.6
Level of Service		B	D	D	A					D	D	D
Approach Delay (s)		32.4			13.1			0.0			41.9	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - AM Pk Hr

18: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Mile of Cars Way — 07/08/2019



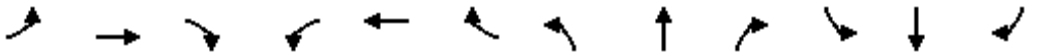
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	455	0	0	567	378	558	254	564	0	0	0
Future Volume (vph)	67	455	0	0	567	378	558	254	564	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.94		1.00	0.96	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			3327		1681	1608	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			3327		1681	1608	1504			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	76	517	0	0	644	430	627	285	634	0	0	0
RTOR Reduction (vph)	0	0	0	0	76	0	0	14	337	0	0	0
Lane Group Flow (vph)	76	517	0	0	998	0	533	517	145	0	0	0
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)	5.7	70.4			60.5		20.4	20.4	20.4			
Effective Green, g (s)	5.7	70.4			60.5		20.4	20.4	20.4			
Actuated g/C Ratio	0.06	0.70			0.60		0.20	0.20	0.20			
Clearance Time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Lane Grp Cap (vph)	195	2491			2012		342	328	306			
v/s Ratio Prot	c0.02	0.15			c0.30							
v/s Ratio Perm							0.32	0.32	0.10			
v/c Ratio	0.39	0.21			0.50		1.56	1.58	0.47			
Uniform Delay, d1	45.5	5.1			11.1		39.8	39.8	35.1			
Progression Factor	0.93	0.52			1.00		1.00	1.00	1.00			
Incremental Delay, d2	0.4	0.2			0.9		265.2	273.1	5.2			
Delay (s)	42.5	2.8			12.0		305.0	312.9	40.3			
Level of Service	D	A			B		F	F	D			
Approach Delay (s)		7.9			12.0			225.2			0.0	
Approach LOS		A			B			F			A	

Intersection Summary			
HCM 2000 Control Delay	113.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: Cesar E. Chavez Parkway & Harbor Drive

Horizon Yr NB - PM Pk Hr
07/08/2019

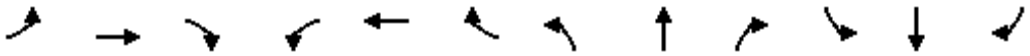


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	907	19	86	163	38	14	108	116	83	54	249
Future Volume (vph)	385	907	19	86	163	38	14	108	116	83	54	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	5.5		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1805	3496		1805	3269		1787	1735			1826	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.66	1.00			0.71	1.00
Satd. Flow (perm)	1805	3496		1805	3269		1245	1735			1328	1599
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.91	0.91	0.91
Adj. Flow (vph)	453	1067	22	101	192	45	17	129	138	91	59	274
RTOR Reduction (vph)	0	2	0	0	25	0	0	48	0	0	0	161
Lane Group Flow (vph)	453	1087	0	101	212	0	17	219	0	0	150	113
Heavy Vehicles (%)	0%	3%	0%	0%	9%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.6	26.5		5.5	25.6		33.0	33.0			33.0	33.0
Effective Green, g (s)	6.6	26.5		5.5	25.6		33.0	33.0			33.0	33.0
Actuated g/C Ratio	0.08	0.33		0.07	0.32		0.41	0.41			0.41	0.41
Clearance Time (s)	4.4	5.7		4.4	5.5		4.9	4.9			4.9	4.9
Vehicle Extension (s)	2.0	2.6		2.0	3.4		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	148	1158		124	1046		513	715			547	659
v/s Ratio Prot	c0.25	c0.31		0.06	0.06			c0.13				
v/s Ratio Perm							0.01				0.11	0.07
v/c Ratio	3.06	0.94		0.81	0.20		0.03	0.31			0.27	0.17
Uniform Delay, d1	36.7	26.0		36.7	19.8		14.0	15.8			15.6	14.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	945.1	14.0		30.7	0.1		0.1	1.1			0.1	0.0
Delay (s)	981.8	40.0		67.4	19.9		14.1	16.9			15.7	14.9
Level of Service	F	D		E	B		B	B			B	B
Approach Delay (s)		316.7			34.1			16.7			15.2	
Approach LOS		F			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	197.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: S 28th Street & Harbor Drive

Horizon Yr NB - PM Pk Hr
07/08/2019

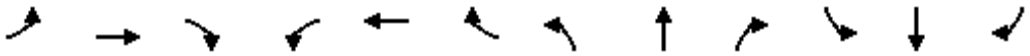


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	820	0	6	157	400	1	8	3	158	0	49
Future Volume (vph)	218	820	0	6	157	400	1	8	3	158	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1752	3505		1805	3312	1568		1830		4700	1429	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1752	3505		1805	3312	1568		1830		4700	1429	
Peak-hour factor, PHF	0.79	0.79	0.79	0.94	0.94	0.94	0.56	0.56	0.56	0.73	0.73	0.73
Adj. Flow (vph)	276	1038	0	6	167	426	2	14	5	216	0	67
RTOR Reduction (vph)	0	0	0	0	0	58	0	5	0	0	35	0
Lane Group Flow (vph)	276	1038	0	6	167	368	0	16	0	216	32	0
Heavy Vehicles (%)	3%	3%	0%	0%	9%	3%	0%	0%	0%	3%	0%	13%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	8	7	7		8	8	
Permitted Phases						6						
Actuated Green, G (s)	3.6	36.7		0.7	33.9	85.9		1.2		52.0	52.0	
Effective Green, g (s)	3.6	36.7		0.7	33.9	85.9		1.2		52.0	52.0	
Actuated g/C Ratio	0.03	0.33		0.01	0.31	0.78		0.01		0.47	0.47	
Clearance Time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Vehicle Extension (s)	3.0	6.8		2.0	6.6	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	57	1168		11	1019	1223		19		2219	674	
v/s Ratio Prot	c0.16	c0.30		0.00	0.05	c0.14		c0.01		0.05	0.02	
v/s Ratio Perm						0.09						
v/c Ratio	4.84	0.89		0.55	0.16	0.30		0.84		0.10	0.05	
Uniform Delay, d1	53.2	34.8		54.5	27.8	3.5		54.4		16.1	15.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1767.9	9.8		26.4	0.2	0.1		132.5		0.0	0.0	
Delay (s)	1821.1	44.5		81.0	28.0	3.6		186.9		16.1	15.7	
Level of Service	F	D		F	C	A		F		B	B	
Approach Delay (s)		417.7			11.2			186.9			16.0	
Approach LOS		F			B			F			B	

Intersection Summary			
HCM 2000 Control Delay	254.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	110.1	Sum of lost time (s)	19.5
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: S 28th Street & Main Street

Horizon Yr NB - PM Pk Hr
07/08/2019

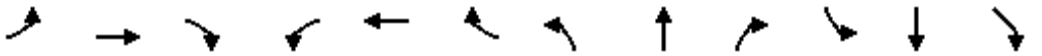


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	231	27	30	169	184	104	530	151	274	296	73
Future Volume (vph)	96	231	27	30	169	184	104	530	151	274	296	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3518		1787	3574	1599	1805	3436		1805	2000	
Flt Permitted	0.64	1.00		0.52	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1205	3518		983	3574	1599	1805	3436		1399	2000	
Peak-hour factor, PHF	0.84	0.84	0.84	0.96	0.96	0.96	0.85	0.85	0.85	0.86	0.86	0.86
Adj. Flow (vph)	114	275	32	31	176	192	122	624	178	319	344	85
RTOR Reduction (vph)	0	9	0	0	0	48	0	21	0	0	18	0
Lane Group Flow (vph)	114	298	0	31	176	144	122	781	0	319	411	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			8	1	5	2		1	6	
Permitted Phases	8			8		8						
Actuated Green, G (s)	13.3	13.3		13.3	13.3	31.9	4.2	29.7		18.6	43.7	
Effective Green, g (s)	13.3	13.3		13.3	13.3	31.9	4.2	29.7		18.6	43.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.42	0.06	0.40		0.25	0.58	
Clearance Time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	5.7		2.0	3.8	
Lane Grp Cap (vph)	213	623		174	632	679	100	1358		447	1163	
v/s Ratio Prot		0.08			0.05	0.05	c0.07	c0.23		c0.18	0.21	
v/s Ratio Perm	c0.09			0.03		0.04						
v/c Ratio	0.54	0.48		0.18	0.28	0.21	1.22	0.57		0.71	0.35	
Uniform Delay, d1	28.1	27.8		26.3	26.7	13.7	35.4	17.8		25.8	8.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		0.2	0.1	0.1	160.6	1.1		4.5	0.2	
Delay (s)	29.4	28.0		26.4	26.8	13.7	196.0	18.9		30.3	8.5	
Level of Service	C	C		C	C	B	F	B		C	A	
Approach Delay (s)		28.4			20.5			42.3			17.8	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	13.9
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: S 28th Street & Boston Avenue

Horizon Yr NB - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SER
Lane Configurations												
Traffic Volume (vph)	42	145	3	4	11	35	10	559	201	162	238	348
Future Volume (vph)	42	145	3	4	11	35	10	559	201	162	238	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9	4.9	4.4	4.9	4.9
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1875		1752	1634		1805	3539	1583	1125	1100	2350
Flt Permitted	0.72	1.00		0.56	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1352	1875		1027	1634		1805	3539	1583	1125	1100	2350
Peak-hour factor, PHF	0.77	0.77	0.77	0.78	0.78	0.78	0.90	0.90	0.90	0.88	0.88	0.92
Adj. Flow (vph)	55	188	4	5	14	45	11	621	223	184	270	378
RTOR Reduction (vph)	0	1	0	0	49	0	0	0	138	0	0	0
Lane Group Flow (vph)	55	191	0	5	10	0	11	621	85	184	270	378
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	0%	2%	2%	3%	3%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)	10.6	10.6		10.6	10.6		0.6	23.9	23.9	14.1	37.4	37.4
Effective Green, g (s)	10.6	10.6		10.6	10.6		0.6	23.9	23.9	14.1	37.4	37.4
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.01	0.38	0.38	0.22	0.60	0.60
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9	4.9	4.4	4.9	4.9
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.7	3.7	2.0	3.7	3.7
Lane Grp Cap (vph)	228	316		173	275		17	1346	602	252	655	1399
v/s Ratio Prot		c0.10			0.01		0.01	c0.18		c0.16	0.25	
v/s Ratio Perm	0.04			0.00					0.05			0.16
v/c Ratio	0.24	0.60		0.03	0.04		0.65	0.46	0.14	0.73	0.41	0.27
Uniform Delay, d1	22.6	24.2		21.8	21.8		31.0	14.6	12.7	22.6	6.8	6.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	2.2		0.0	0.0		49.2	0.3	0.1	9.0	0.5	0.1
Delay (s)	22.8	26.4		21.8	21.8		80.2	14.9	12.9	31.6	7.3	6.3
Level of Service	C	C		C	C		F	B	B	C	A	A
Approach Delay (s)		25.6			21.8			15.2			17.2	
Approach LOS		C			C			B			B	

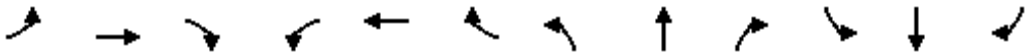
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	14.2
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SER2
Lane Configurations	
Traffic Volume (vph)	47
Future Volume (vph)	47
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.9
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	51
RTOR Reduction (vph)	21
Lane Group Flow (vph)	30
Heavy Vehicles (%)	2%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	37.4
Effective Green, g (s)	37.4
Actuated g/C Ratio	0.60
Clearance Time (s)	4.9
Vehicle Extension (s)	3.7
Lane Grp Cap (vph)	942
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.03
Uniform Delay, d1	5.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	5.3
Level of Service	A
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: S 28th Street & National Avenue

Horizon Yr NB - PM Pk Hr
07/08/2019

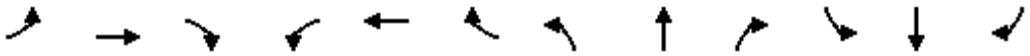


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	471	97	107	621	121	35	103	48	54	196	167
Future Volume (vph)	107	471	97	107	621	121	35	103	48	54	196	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	1.00			0.95			1.00	
Frt	1.00	0.97		1.00	0.98			0.96			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1752	3415		1752	1799			3370			1000	
Flt Permitted	0.95	1.00		0.95	1.00			0.79			0.92	
Satd. Flow (perm)	1752	3415		2350	2350			2672			1000	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.75	0.75	0.75	0.85	0.85	0.85
Adj. Flow (vph)	122	535	110	116	675	132	47	137	64	64	231	196
RTOR Reduction (vph)	0	12	0	0	6	0	0	31	0	0	22	0
Lane Group Flow (vph)	122	633	0	116	801	0	0	217	0	0	469	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.6	39.0		11.7	46.1			45.1			45.1	
Effective Green, g (s)	4.6	39.0		11.7	46.1			45.1			45.1	
Actuated g/C Ratio	0.04	0.35		0.11	0.42			0.41			0.41	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	2.8		2.0	3.8			2.0			2.0	
Lane Grp Cap (vph)	73	1210		186	753			1095			410	
v/s Ratio Prot	c0.07	0.19		0.07	c0.44							
v/s Ratio Perm								0.08			0.47	
v/c Ratio	1.67	0.52		0.62	1.06			0.20			1.14	
Uniform Delay, d1	52.7	28.1		47.0	31.9			20.8			32.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	354.4	0.4		4.6	50.9			0.0			90.0	
Delay (s)	407.1	28.5		51.7	82.9			20.9			122.5	
Level of Service	F	C		D	F			C			F	
Approach Delay (s)		88.7			78.9			20.9			122.5	
Approach LOS		F			E			C			F	

Intersection Summary			
HCM 2000 Control Delay	84.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: I-5 NB 28th St Off-Ramp & National Avenue

Horizon Yr NB - PM Pk Hr
07/08/2019

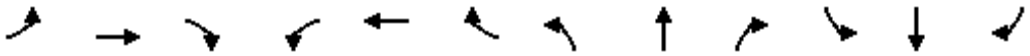


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	512	0	0	423	18	389	18	120	0	0	0
Future Volume (vph)	1	512	0	0	423	18	389	18	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			4.6	4.6			
Lane Util. Factor		1.00			1.00			1.00	1.00			
Frt		1.00			0.99			1.00	0.85			
Flt Protected		1.00			1.00			0.95	1.00			
Satd. Flow (prot)		1845			1834			2350	2350			
Flt Permitted		1.00			1.00			0.95	1.00			
Satd. Flow (perm)		1844			1834			2350	2350			
Peak-hour factor, PHF	0.86	0.86	0.86	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	1	595	0	0	535	23	452	21	140	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	92	0	0	0
Lane Group Flow (vph)	0	596	0	0	556	0	0	473	48	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type	Perm	NA			NA		Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2								8			
Actuated Green, G (s)		24.2			24.2			17.5	17.5			
Effective Green, g (s)		24.2			24.2			17.5	17.5			
Actuated g/C Ratio		0.48			0.48			0.34	0.34			
Clearance Time (s)		4.6			4.6			4.6	4.6			
Vehicle Extension (s)		3.0			3.0			2.0	2.0			
Lane Grp Cap (vph)		876			871			807	807			
v/s Ratio Prot					0.30			c0.20				
v/s Ratio Perm		c0.32							0.02			
v/c Ratio		0.68			0.64			0.59	0.06			
Uniform Delay, d1		10.4			10.1			13.7	11.2			
Progression Factor		1.00			1.00			1.00	1.00			
Incremental Delay, d2		2.2			1.5			0.7	0.0			
Delay (s)		12.5			11.6			14.4	11.2			
Level of Service		B			B			B	B			
Approach Delay (s)		12.5			11.6			13.7			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
7: S 29th Street/I-5 Southbound On-Ramp & Boston Avenue

Horizon Yr NB - PM Pk Hr
07/08/2019



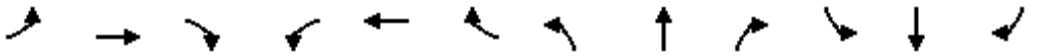
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	594	50	11	4	38	162	5	250	16	0	0	0
Future Volume (Veh/h)	594	50	11	4	38	162	5	250	16	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.76	0.76	0.76	0.81	0.81	0.81	0.92	0.92	0.92
Hourly flow rate (vph)	733	62	14	5	50	213	6	309	20	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		644										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	263			76			1702	1808	69	1876	1708	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	263			7			1711	1823	0	1894	1719	156
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	43			100			84	0	98	0	100	100
cM capacity (veh/h)	1295			1533			38	32	1041	0	37	889

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	809	268	335
Volume Left	733	5	6
Volume Right	14	213	20
cSH	1295	1533	34
Volume to Capacity	0.57	0.00	9.76
Queue Length 95th (ft)	93	0	Err
Control Delay (s)	10.9	0.2	Err
Lane LOS	B	A	F
Approach Delay (s)	10.9	0.2	Err
Approach LOS			F

Intersection Summary			
Average Delay	2378.6		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
8: 32nd Street Naval Gate & Harbor Drive

Horizon Yr NB - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	757	79	19	357	391	147	1039	236	164	146	129
Future Volume (vph)	158	757	79	19	357	391	147	1039	236	164	146	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1615	1805	3312	1482	1805	3610	1615	1752	4700	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	3505	1615	1805	3312	1482	1805	3610	1615	1752	4700	1568
Peak-hour factor, PHF	0.62	0.62	0.62	0.82	0.82	0.82	0.86	0.86	0.86	0.81	0.81	0.81
Adj. Flow (vph)	255	1221	127	23	435	477	171	1208	274	202	180	159
RTOR Reduction (vph)	0	0	58	0	0	89	0	0	191	0	0	114
Lane Group Flow (vph)	255	1221	69	23	435	388	171	1208	83	202	180	45
Heavy Vehicles (%)	3%	3%	0%	0%	9%	9%	0%	0%	0%	3%	0%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	5.6	45.9	50.5	2.8	42.7	42.7	4.6	20.5	20.5	4.6	20.5	26.1
Effective Green, g (s)	5.6	45.9	50.5	2.8	42.7	42.7	4.6	20.5	20.5	4.6	20.5	26.1
Actuated g/C Ratio	0.06	0.50	0.54	0.03	0.46	0.46	0.05	0.22	0.22	0.05	0.22	0.28
Clearance Time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Vehicle Extension (s)	2.0	4.3	2.0	2.0	4.3	4.3	2.0	3.0	3.0	4.0	4.0	2.0
Lane Grp Cap (vph)	105	1735	879	54	1525	682	89	798	357	86	1039	441
v/s Ratio Prot	c0.15	c0.35	0.00	0.01	0.13		0.09	c0.33		c0.12	0.04	0.01
v/s Ratio Perm			0.04			0.26			0.05			0.02
v/c Ratio	2.43	0.70	0.08	0.43	0.29	0.57	1.92	1.51	0.23	2.35	0.17	0.10
Uniform Delay, d1	43.6	18.1	10.0	44.2	15.5	18.3	44.1	36.1	29.6	44.1	29.2	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	670.8	1.5	0.0	2.0	0.2	1.5	453.2	237.7	0.3	641.5	0.1	0.0
Delay (s)	714.3	19.6	10.0	46.1	15.7	19.7	497.2	273.8	30.0	685.5	29.3	24.7
Level of Service	F	B	B	D	B	B	F	F	C	F	C	C
Approach Delay (s)		129.4			18.5			256.5			273.0	
Approach LOS		F			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	168.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	19.3
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp

Horizon Yr NB - PM Pk Hr
07/08/2019

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	88	63	28	85	102	30	93	164	137	254	1004	208
Future Volume (vph)	88	63	28	85	102	30	93	164	137	254	1004	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9			4.4	4.9	5.7	
Lane Util. Factor		1.00	1.00		1.00	1.00			1.00	1.00	0.88	
Frt		1.00	0.89		1.00	0.87			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1805	1686		1770	1613			1805	1845	2773	
Flt Permitted		0.34	1.00		0.62	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		646	1686		1150	1613			1805	1845	2773	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.86
Adj. Flow (vph)	113	81	36	109	111	33	101	178	159	295	1167	242
RTOR Reduction (vph)	0	0	80	0	0	43	0	0	0	0	30	0
Lane Group Flow (vph)	0	194	65	0	111	269	0	0	159	295	1379	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	2%	2%	0%	3%	3%	0%
Turn Type	Perm	Perm	NA		Perm	NA			Prot	NA	pm+ov	
Protected Phases			4			4			5	2	3	
Permitted Phases	4	4			4						2	
Actuated Green, G (s)		29.1	29.1		29.1	29.1			6.6	24.1	56.0	
Effective Green, g (s)		29.1	29.1		29.1	29.1			6.6	24.1	56.0	
Actuated g/C Ratio		0.27	0.27		0.27	0.27			0.06	0.22	0.52	
Clearance Time (s)		4.9	4.9		4.9	4.9			4.4	4.9	5.7	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			2.0	3.2	4.3	
Lane Grp Cap (vph)		173	451		308	432			109	409	1429	
v/s Ratio Prot			0.04			0.17			c0.09	0.16	c0.28	
v/s Ratio Perm		c0.30			0.10						0.21	
v/c Ratio		1.12	0.14		0.36	0.62			1.46	0.72	0.96	
Uniform Delay, d1		39.8	30.3		32.2	34.9			51.0	39.1	25.4	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		104.7	0.1		0.7	2.8			249.8	6.2	16.2	
Delay (s)		144.5	30.4		32.9	37.7			300.8	45.4	41.6	
Level of Service		F	C		C	D			F	D	D	
Approach Delay (s)			95.7			36.5				64.3		
Approach LOS			F			D				E		

Intersection Summary			
HCM 2000 Control Delay	64.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	19.9
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

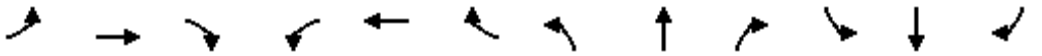
HCM Signalized Intersection Capacity Analysis
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp

Horizon Yr NB - PM Pk Hr
07/08/2019

Movement	SBL2	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	46	21	180	127	52	23	1
Future Volume (vph)	46	21	180	127	52	23	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9		5.7		
Lane Util. Factor		1.00	0.95		0.97		
Frt		1.00	0.94		0.95		
Flt Protected		0.95	1.00		0.97		
Satd. Flow (prot)		1805	2600		4700		
Flt Permitted		1.00	1.00		0.97		
Satd. Flow (perm)		1900	2600		4700		
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.92	0.89	0.89
Adj. Flow (vph)	53	24	207	146	57	26	1
RTOR Reduction (vph)	0	0	116	0	59	0	0
Lane Group Flow (vph)	0	77	237	0	25	0	0
Heavy Vehicles (%)	0%	0%	3%	0%	3%	3%	3%
Turn Type	custom	Prot	NA		Prot		
Protected Phases		1	6		3		
Permitted Phases	1						
Actuated Green, G (s)		3.6	21.1		31.9		
Effective Green, g (s)		3.6	21.1		31.9		
Actuated g/C Ratio		0.03	0.19		0.29		
Clearance Time (s)		4.4	4.9		5.7		
Vehicle Extension (s)		2.0	2.2		4.3		
Lane Grp Cap (vph)		62	505		1380		
v/s Ratio Prot			0.09		0.01		
v/s Ratio Perm		0.04					
v/c Ratio		1.24	0.47		0.02		
Uniform Delay, d1		52.5	38.8		27.2		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		193.0	0.4		0.0		
Delay (s)		245.5	39.1		27.2		
Level of Service		F	D		C		
Approach Delay (s)			76.1		27.2		
Approach LOS			E		C		

Intersection Summary

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - PM Pk Hr
10: Harbor Drive & 8th Street Naval Base Entrance/8th Street — 07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	562	332	45	0	58	7	217	50	612	1223	0
Future Volume (vph)	100	562	332	45	0	58	7	217	50	612	1223	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3583	1615	1641	2550		1250	3100	1482	3502	3505	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3583	1615	1641	2550		1250	3100	1482	3502	3505	
Peak-hour factor, PHF	0.82	0.82	0.82	0.80	0.80	0.80	0.91	0.91	0.91	0.73	0.73	0.73
Adj. Flow (vph)	122	685	405	56	0	72	8	238	55	838	1675	0
RTOR Reduction (vph)	0	0	291	0	67	0	0	0	39	0	0	0
Lane Group Flow (vph)	0	807	114	56	6	0	8	238	16	838	1675	0
Heavy Vehicles (%)	0%	0%	0%	10%	10%	10%	0%	9%	9%	0%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		7	7		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)		28.1	28.1	7.7	7.7		1.6	28.6	28.6	15.4	42.4	
Effective Green, g (s)		28.1	28.1	7.7	7.7		1.6	28.6	28.6	15.4	42.4	
Actuated g/C Ratio		0.28	0.28	0.08	0.08		0.02	0.29	0.29	0.15	0.42	
Clearance Time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1006	453	126	196		20	886	423	539	1486	
v/s Ratio Prot		c0.23		c0.03	0.00		0.01	0.08		c0.24	c0.48	
v/s Ratio Perm			0.07						0.01			
v/c Ratio		0.80	0.25	0.44	0.03		0.40	0.27	0.04	1.55	1.13	
Uniform Delay, d1		33.4	27.8	44.1	42.7		48.7	27.6	25.8	42.3	28.8	
Progression Factor		0.99	0.97	0.95	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.6	0.3	2.5	0.1		12.6	0.7	0.2	258.7	66.5	
Delay (s)		37.8	27.1	44.6	42.8		61.3	28.4	25.9	301.0	95.3	
Level of Service		D	C	D	D		E	C	C	F	F	
Approach Delay (s)		34.2			43.5			28.8			163.9	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	112.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
11: I-5 SB Ramps & 8th Street

Horizon Yr NB - PM Pk Hr
07/08/2019

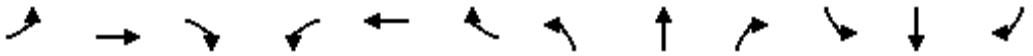
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	993	224	260	151	34	553
Future Volume (Veh/h)	993	224	260	151	34	553
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.94	0.94	0.86	0.86
Hourly flow rate (vph)	1211	273	277	161	40	643
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	419			1153		
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			1484		1982	742
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1190		1785	304
tC, single (s)			4.3		6.9	7.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.4
p0 queue free %			39		0	0
cM capacity (veh/h)			452		23	553

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	807	677	277	80	80	40	643
Volume Left	0	0	277	0	0	40	0
Volume Right	0	273	0	0	0	0	643
cSH	1700	1700	452	1700	1700	23	553
Volume to Capacity	0.47	0.40	0.61	0.05	0.05	1.71	1.16
Queue Length 95th (ft)	0	0	100	0	0	126	553
Control Delay (s)	0.0	0.0	24.8	0.0	0.0	699.8	116.9
Lane LOS			C			F	F
Approach Delay (s)	0.0		15.7			151.0	
Approach LOS						F	

Intersection Summary			
Average Delay	42.2		
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
12: National City Boulevard & 8th Street

Horizon Yr NB - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	510	332	56	287	67	117	329	120	120	396	51
Future Volume (vph)	65	510	332	56	287	67	117	329	120	120	396	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1810	1615	1805	3424		1770	3398		1770	3479	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1810	1615	1805	3424		1770	3398		1770	3479	
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	80	630	410	59	302	71	130	366	133	141	466	60
RTOR Reduction (vph)	0	0	63	0	17	0	0	45	0	0	11	0
Lane Group Flow (vph)	80	630	347	59	356	0	130	454	0	141	515	0
Heavy Vehicles (%)	0%	5%	0%	0%	3%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	7.5	41.3	53.0	6.4	40.2		11.7	26.5		5.8	20.6	
Effective Green, g (s)	7.5	41.3	53.0	6.4	40.2		11.7	26.5		5.8	20.6	
Actuated g/C Ratio	0.08	0.41	0.53	0.06	0.40		0.12	0.26		0.06	0.21	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	135	747	855	115	1376		207	900		102	716	
v/s Ratio Prot	c0.04	c0.35	0.05	0.03	0.10		c0.07	0.13		c0.08	c0.15	
v/s Ratio Perm			0.17									
v/c Ratio	0.59	0.84	0.41	0.51	0.26		0.63	0.50		1.38	0.72	
Uniform Delay, d1	44.8	26.4	14.1	45.3	20.0		42.1	31.2		47.1	37.0	
Progression Factor	1.01	1.06	0.83	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	10.1	0.1	1.6	0.5		4.2	0.4		221.6	3.5	
Delay (s)	49.3	38.1	11.8	46.9	20.4		46.3	31.6		268.7	40.5	
Level of Service	D	D	B	D	C		D	C		F	D	
Approach Delay (s)		29.3			24.0			34.7			88.7	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - PM Pk Hr

13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	86	6	260	103	87	17	8	4	23	212	7	62
Future Volume (vph)	86	6	260	103	87	17	8	4	23	212	7	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		5.1		5.1	5.1			4.7	5.5		
Lane Util. Factor	0.91		0.91		1.00	1.00			1.00	0.95		
Frt	1.00		0.96		1.00	0.94			1.00	0.96		
Flt Protected	0.95		1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1800		3600		1770	1748			1752	3900		
Flt Permitted	0.95		0.59		0.95	1.00			0.95	1.00		
Satd. Flow (perm)	1800		3600		1770	1748			1752	3900		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	7	317	126	102	20	9	5	25	230	8	67
RTOR Reduction (vph)	0	0	27	0	0	4	0	0	0	17	0	0
Lane Group Flow (vph)	94	0	434	0	102	30	0	0	25	288	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%
Turn Type	Split	Perm	NA		Split	NA			Prot	NA		
Protected Phases	3		3		7	7			1	6		
Permitted Phases		3										
Actuated Green, G (s)	18.0		18.0		12.5	12.5			3.7	39.5		
Effective Green, g (s)	18.0		18.0		12.5	12.5			3.7	39.5		
Actuated g/C Ratio	0.16		0.16		0.11	0.11			0.03	0.35		
Clearance Time (s)	5.1		5.1		5.1	5.1			4.7	5.5		
Vehicle Extension (s)	2.0		2.0		2.0	2.0			2.0	5.0		
Lane Grp Cap (vph)	289		579		197	195			57	1376		
v/s Ratio Prot	0.05				c0.06	0.02			0.01	0.07		
v/s Ratio Perm			0.12									
v/c Ratio	0.33		0.75		0.52	0.15			0.44	0.21		
Uniform Delay, d1	41.6		44.8		46.9	44.9			53.1	25.3		
Progression Factor	1.00		1.00		1.00	1.00			1.00	1.00		
Incremental Delay, d2	0.2		4.7		1.0	0.1			2.0	0.2		
Delay (s)	41.8		49.5		47.8	45.0			55.0	25.5		
Level of Service	D		D		D	D			E	C		
Approach Delay (s)			48.2			47.1				27.7		
Approach LOS			D			D				C		

Intersection Summary			
HCM 2000 Control Delay	109.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	25.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - PM Pk Hr

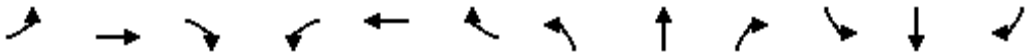
13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	2	68	1157	245	49	49	2	5
Future Volume (vph)	2	68	1157	245	49	49	2	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	5.5	5.5		5.1	5.1	
Lane Util. Factor		1.00	0.95	1.00		1.00	1.00	
Frt		1.00	1.00	0.85		1.00	0.85	
Flt Protected		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		1556	3200	1392		1770	1583	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		1556	3200	1392		1770	1583	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.77	0.77	0.77	0.77
Adj. Flow (vph)	3	86	1465	310	64	64	3	6
RTOR Reduction (vph)	0	0	0	85	0	0	8	0
Lane Group Flow (vph)	0	89	1465	225	0	128	1	0
Heavy Vehicles (%)	16%	16%	16%	16%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	Prot	
Protected Phases	5	5	2		4	4	4	
Permitted Phases				2				
Actuated Green, G (s)		4.4	40.2	40.2		12.0	12.0	
Effective Green, g (s)		4.4	40.2	40.2		12.0	12.0	
Actuated g/C Ratio		0.04	0.36	0.36		0.11	0.11	
Clearance Time (s)		4.7	5.5	5.5		5.1	5.1	
Vehicle Extension (s)		2.0	5.0	5.0		2.0	2.0	
Lane Grp Cap (vph)		61	1149	500		189	169	
v/s Ratio Prot		c0.06	c0.46			c0.07	0.00	
v/s Ratio Perm				0.16				
v/c Ratio		1.46	1.28	0.45		0.68	0.01	
Uniform Delay, d1		53.8	35.9	27.4		48.1	44.6	
Progression Factor		1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		276.6	130.6	1.4		7.3	0.0	
Delay (s)		330.4	166.5	28.8		55.4	44.6	
Level of Service		F	F	C		E	D	
Approach Delay (s)			151.4			54.7		
Approach LOS			F			D		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
14: Roosevelt Avenue & Civic Center Drive

Horizon Yr NB - PM Pk Hr
07/08/2019



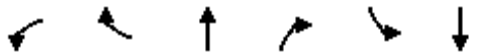
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	209	104	12	96	140	23	194	32	0	0	0
Future Volume (vph)	186	209	104	12	96	140	23	194	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.95		1.00	0.91			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00			
Satd. Flow (prot)	1770	1770		1770	1697			1853	1583			
Flt Permitted	0.95	1.00		0.52	1.00			0.99	1.00			
Satd. Flow (perm)	1770	1770		960	1697			1853	1583			
Peak-hour factor, PHF	0.74	0.74	0.74	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	251	282	141	13	105	154	26	216	36	0	0	0
RTOR Reduction (vph)	0	35	0	0	101	0	0	0	20	0	0	0
Lane Group Flow (vph)	251	388	0	13	158	0	0	242	16	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases				8			2		2			
Actuated Green, G (s)	5.1	19.5		9.9	9.9			24.0	24.0			
Effective Green, g (s)	5.1	19.5		9.9	9.9			24.0	24.0			
Actuated g/C Ratio	0.10	0.37		0.19	0.19			0.46	0.46			
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Lane Grp Cap (vph)	171	657		181	320			847	723			
v/s Ratio Prot	c0.14	c0.22			0.09							
v/s Ratio Perm				0.01				0.13	0.01			
v/c Ratio	1.47	0.59		0.07	0.49			0.29	0.02			
Uniform Delay, d1	23.7	13.3		17.5	19.1			8.9	7.8			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	239.6	1.4		0.2	1.2			0.8	0.1			
Delay (s)	263.3	14.7		17.7	20.3			9.7	7.9			
Level of Service	F	B		B	C			A	A			
Approach Delay (s)		107.3			20.1			9.5			0.0	
Approach LOS		F			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	65.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
15: Cleveland Avenue & I-5 SB Civic Ctr Off-Ramp

Horizon Yr NB - PM Pk Hr
07/08/2019



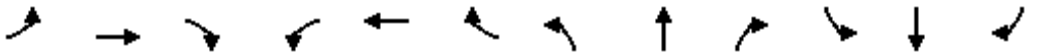
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	132	60	0	0	300
Future Volume (Veh/h)	105	132	60	0	0	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	143	65	0	0	326
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	391	65			65	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391	65			65	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	86			100	
cM capacity (veh/h)	613	999			1537	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	114	143	65	326
Volume Left	114	0	0	0
Volume Right	0	143	0	0
cSH	613	999	1700	1700
Volume to Capacity	0.19	0.14	0.04	0.19
Queue Length 95th (ft)	17	12	0	0
Control Delay (s)	12.2	9.2	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.5		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
16: Tidelands Avenue & Bay Marina Drive

Horizon Yr NB - PM Pk Hr
07/08/2019



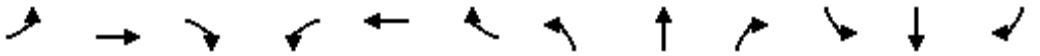
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	315	1	44	66	27	3	17	87	66	21	14
Future Volume (vph)	17	315	1	44	66	27	3	17	87	66	21	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.87		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3537		1770	3384		1770	1629		1770	1751	
Flt Permitted	0.68	1.00		0.44	1.00		0.73	1.00		0.64	1.00	
Satd. Flow (perm)	1268	3537		827	3384		1356	1629		1200	1751	
Peak-hour factor, PHF	0.57	0.57	0.57	0.83	0.83	0.83	0.58	0.58	0.58	0.79	0.79	0.79
Adj. Flow (vph)	30	553	2	53	80	33	5	29	150	84	27	18
RTOR Reduction (vph)	0	1	0	0	18	0	0	121	0	0	15	0
Lane Group Flow (vph)	30	554	0	53	95	0	5	58	0	84	30	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		6.5	6.5		6.5	6.5	
Effective Green, g (s)	15.0	15.0		15.0	15.0		6.5	6.5		6.5	6.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	567	1583		370	1515		263	316		232	339	
v/s Ratio Prot		c0.16			0.03			0.04			0.02	
v/s Ratio Perm	0.02			0.06			0.00			c0.07		
v/c Ratio	0.05	0.35		0.14	0.06		0.02	0.18		0.36	0.09	
Uniform Delay, d1	5.2	6.1		5.5	5.3		10.9	11.3		11.7	11.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.0		0.0	0.3		1.0	0.1	
Delay (s)	5.3	6.2		5.6	5.3		11.0	11.6		12.7	11.2	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		6.1			5.4			11.5			12.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	33.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - PM Pk Hr

17: I-5 Southbound On-Ramp/I-5 Southbound Off-Ramp & Bay Marina Drive/Mile of Cars Way — 07/09/2019



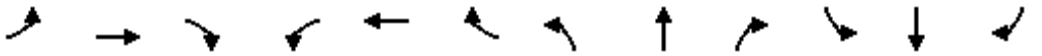
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	361	584	523	254	0	0	0	0	502	4	69
Future Volume (vph)	0	361	584	523	254	0	0	0	0	502	4	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1686	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1686	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.87	0.87	0.87	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	430	695	601	292	0	0	0	0	564	4	78
RTOR Reduction (vph)	0	0	275	0	0	0	0	0	0	0	0	62
Lane Group Flow (vph)	0	430	420	601	292	0	0	0	0	282	286	16
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		44.6	44.6	21.5	70.3					20.5	20.5	20.5
Effective Green, g (s)		44.6	44.6	21.5	70.3					20.5	20.5	20.5
Actuated g/C Ratio		0.45	0.45	0.22	0.70					0.20	0.20	0.20
Clearance Time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Vehicle Extension (s)		3.0	3.0	2.0	3.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1578	706	738	2487					344	345	324
v/s Ratio Prot		0.12		c0.18	0.08					0.17	c0.17	
v/s Ratio Perm			c0.27									0.01
v/c Ratio		0.27	0.60	0.81	0.12					0.82	0.83	0.05
Uniform Delay, d1		17.5	20.9	37.4	4.8					38.0	38.1	31.9
Progression Factor		0.91	1.54	1.22	0.80					1.00	1.00	1.00
Incremental Delay, d2		0.4	3.3	5.2	0.1					13.4	14.4	0.0
Delay (s)		16.3	35.4	50.7	3.9					51.4	52.5	31.9
Level of Service		B	D	D	A					D	D	C
Approach Delay (s)		28.1			35.4			0.0			49.5	
Approach LOS		C			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr NB - PM Pk Hr

18: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Mile of Cars Way — 07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	702	0	0	674	503	111	3	454	0	0	0
Future Volume (vph)	148	702	0	0	674	503	111	3	454	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.94		1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			3312		1681	1453	1504			
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			3312		1681	1453	1504			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	168	798	0	0	766	572	125	3	510	0	0	0
RTOR Reduction (vph)	0	0	0	0	97	0	0	198	198	0	0	0
Lane Group Flow (vph)	168	798	0	0	1241	0	112	68	62	0	0	0
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)	9.3	70.4			56.9		20.4	20.4	20.4			
Effective Green, g (s)	9.3	70.4			56.9		20.4	20.4	20.4			
Actuated g/C Ratio	0.09	0.70			0.57		0.20	0.20	0.20			
Clearance Time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Lane Grp Cap (vph)	319	2491			1884		342	296	306			
v/s Ratio Prot	c0.05	0.23			c0.37							
v/s Ratio Perm							c0.07	0.05	0.04			
v/c Ratio	0.53	0.32			0.66		0.33	0.23	0.20			
Uniform Delay, d1	43.3	5.7			14.9		33.9	33.2	33.0			
Progression Factor	0.81	1.50			1.00		1.00	1.00	1.00			
Incremental Delay, d2	0.6	0.3			1.8		2.5	1.8	1.5			
Delay (s)	35.5	8.8			16.7		36.5	35.0	34.5			
Level of Service	D	A			B		D	D	C			
Approach Delay (s)		13.4			16.7			35.1			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

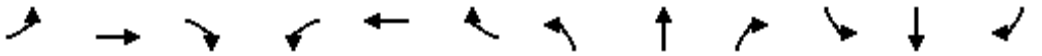
c Critical Lane Group

APPENDIX

D-3: HCM DELAY - HORIZON YEAR BUILD CONDITIONS

HCM Signalized Intersection Capacity Analysis
1: Cesar E. Chavez Parkway & Harbor Drive

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	598	39	44	80	10	15	74	89	87	95	386
Future Volume (vph)	195	598	39	44	80	10	15	74	89	87	95	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	5.5		4.9	4.9	4.9		4.9	4.4
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	3502	3479		1805	3108		1787	1881	1599		1837	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00	1.00		0.83	1.00
Satd. Flow (perm)	3502	3479		1805	3108		1181	1881	1599		1555	1599
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.91	0.91	0.91
Adj. Flow (vph)	229	704	46	52	94	12	18	88	106	96	104	424
RTOR Reduction (vph)	0	6	0	0	9	0	0	0	58	0	0	196
Lane Group Flow (vph)	229	744	0	52	97	0	18	88	48	0	200	228
Heavy Vehicles (%)	0%	3%	0%	0%	16%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8		8	4		4
Actuated Green, G (s)	6.7	22.9		3.1	19.5		33.3	33.3	33.3		33.3	40.0
Effective Green, g (s)	6.7	22.9		3.1	19.5		33.3	33.3	33.3		33.3	40.0
Actuated g/C Ratio	0.09	0.31		0.04	0.26		0.45	0.45	0.45		0.45	0.54
Clearance Time (s)	4.4	5.7		4.4	5.5		4.9	4.9	4.9		4.9	4.4
Vehicle Extension (s)	2.0	2.6		2.0	3.4		2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	315	1072		75	815		529	843	716		696	860
v/s Ratio Prot	c0.07	c0.21		0.03	0.03			0.05				0.02
v/s Ratio Perm							0.02		0.03		c0.13	0.12
v/c Ratio	0.73	0.69		0.69	0.12		0.03	0.10	0.07		0.29	0.27
Uniform Delay, d1	32.9	22.6		35.1	20.9		11.5	11.9	11.7		13.0	9.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.9	1.8		20.0	0.1		0.1	0.2	0.2		0.1	0.1
Delay (s)	39.8	24.5		55.1	20.9		11.6	12.1	11.8		13.1	9.3
Level of Service	D	C		E	C		B	B	B		B	A
Approach Delay (s)		28.1			32.2			11.9			10.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: S 28th Street & Harbor Drive

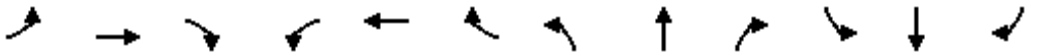
Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	501	2	11	186	116	2	5	2	1064	17	71
Future Volume (vph)	85	501	2	11	186	116	2	5	2	1064	17	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.91	0.91	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.96	
Satd. Flow (prot)	3400	3503		1805	3112	1429		1818		4700	1545	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.96	
Satd. Flow (perm)	3400	3503		1805	3112	1429		1818		4700	1545	
Peak-hour factor, PHF	0.79	0.79	0.79	0.94	0.94	0.94	0.56	0.56	0.56	0.73	0.73	0.73
Adj. Flow (vph)	108	634	3	12	198	123	4	9	4	1458	23	97
RTOR Reduction (vph)	0	0	0	0	0	28	0	4	0	0	7	0
Lane Group Flow (vph)	108	637	0	12	198	95	0	13	0	1064	507	0
Heavy Vehicles (%)	3%	3%	0%	0%	16%	13%	0%	0%	0%	3%	0%	13%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	8	7	7		8	8	
Permitted Phases						6						
Actuated Green, G (s)	3.6	29.2		0.6	26.3	80.7		1.2		54.4	54.4	
Effective Green, g (s)	3.6	29.2		0.6	26.3	80.7		1.2		54.4	54.4	
Actuated g/C Ratio	0.03	0.28		0.01	0.25	0.77		0.01		0.52	0.52	
Clearance Time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Vehicle Extension (s)	3.0	6.8		2.0	6.6	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	116	975		10	780	1099		20		2437	801	
v/s Ratio Prot	c0.03	c0.18		0.01	0.06	0.04		c0.01		0.23	c0.33	
v/s Ratio Perm						0.02						
v/c Ratio	0.93	0.65		1.20	0.25	0.09		0.65		0.44	0.63	
Uniform Delay, d1	50.5	33.4		52.2	31.4	3.0		51.6		15.7	18.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	62.0	2.9		360.0	0.6	0.0		56.9		0.1	1.6	
Delay (s)	112.6	36.2		412.1	32.0	3.0		108.6		15.8	19.7	
Level of Service	F	D		F	C	A		F		B	B	
Approach Delay (s)		47.3			35.0			108.6			17.1	
Approach LOS		D			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	19.5
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: S 28th Street & Main Street

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019

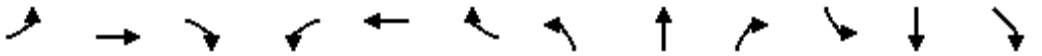


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	135	51	82	264	89	62	91	73	267	1151	28
Future Volume (vph)	20	135	51	82	264	89	62	91	73	267	1151	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3427		1787	3574	1599	1805	3142		1805	2000	
Flt Permitted	0.50	1.00		0.59	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	937	3427		1117	3574	1599	1805	3142		1399	2000	
Peak-hour factor, PHF	0.84	0.84	0.84	0.96	0.96	0.96	0.85	0.85	0.85	0.86	0.86	0.86
Adj. Flow (vph)	24	161	61	85	275	93	73	107	86	310	1338	33
RTOR Reduction (vph)	0	43	0	0	0	60	0	43	0	0	1	0
Lane Group Flow (vph)	24	179	0	85	275	33	73	150	0	310	1370	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	13%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			8	1	5	2		1	6	
Permitted Phases	8			8		8						
Actuated Green, G (s)	12.6	12.6		12.6	12.6	32.2	4.0	46.1		19.6	61.3	
Effective Green, g (s)	12.6	12.6		12.6	12.6	32.2	4.0	46.1		19.6	61.3	
Actuated g/C Ratio	0.14	0.14		0.14	0.14	0.35	0.04	0.50		0.21	0.67	
Clearance Time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	5.7		2.0	3.8	
Lane Grp Cap (vph)	128	470		153	490	560	78	1577		385	1335	
v/s Ratio Prot		0.05			c0.08	0.01	0.04	0.05		c0.17	c0.68	
v/s Ratio Perm	0.03			0.08		0.01						
v/c Ratio	0.19	0.38		0.56	0.56	0.06	0.94	0.10		0.81	1.03	
Uniform Delay, d1	35.1	36.0		37.0	37.0	19.8	43.8	11.9		34.3	15.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		2.5	0.9	0.0	78.9	0.1		11.0	31.5	
Delay (s)	35.3	36.2		39.5	37.9	19.8	122.6	12.0		45.3	46.7	
Level of Service	D	D		D	D	B	F	B		D	D	
Approach Delay (s)		36.1			34.5			42.4			46.5	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	13.9
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: S 28th Street & Boston Avenue

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SER
Lane Configurations												
Traffic Volume (vph)	20	77	15	8	16	27	5	162	33	97	587	833
Future Volume (vph)	20	77	15	8	16	27	5	162	33	97	587	833
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	4.9
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.91		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	1836		1752	1672		1805	3113		1125	1100	2350
Flt Permitted	0.72	1.00		0.62	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1355	1836		1138	1672		1805	3113		1125	1100	2350
Peak-hour factor, PHF	0.77	0.77	0.77	0.78	0.78	0.78	0.90	0.90	0.90	0.88	0.88	0.92
Adj. Flow (vph)	26	100	19	10	21	35	6	180	37	110	667	905
RTOR Reduction (vph)	0	7	0	0	50	0	0	12	0	0	0	0
Lane Group Flow (vph)	26	112	0	10	6	0	6	205	0	110	667	905
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	0%	13%	13%	3%	3%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	9.8	9.8		9.8	9.8		0.6	55.0		12.9	67.3	67.3
Effective Green, g (s)	9.8	9.8		9.8	9.8		0.6	55.0		12.9	67.3	67.3
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.01	0.60		0.14	0.73	0.73
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	4.9
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.7		2.0	3.7	3.7
Lane Grp Cap (vph)	144	195		121	178		11	1863		157	805	1720
v/s Ratio Prot		c0.06			0.00		0.00	0.07		c0.10	c0.61	
v/s Ratio Perm	0.02			0.01								0.39
v/c Ratio	0.18	0.57		0.08	0.03		0.55	0.11		0.70	0.83	0.53
Uniform Delay, d1	37.4	39.1		37.0	36.8		45.5	7.9		37.7	8.4	5.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	2.5		0.1	0.0		26.4	0.0		10.9	7.3	0.4
Delay (s)	37.6	41.6		37.1	36.8		71.9	8.0		48.6	15.7	5.7
Level of Service	D	D		D	D		E	A		D	B	A
Approach Delay (s)		40.9			36.9			9.7			20.3	
Approach LOS		D			D			A			C	

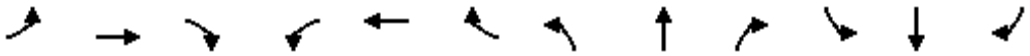
Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	14.2
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SER2
Lane Configurations	
Traffic Volume (vph)	21
Future Volume (vph)	21
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.9
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	23
RTOR Reduction (vph)	6
Lane Group Flow (vph)	17
Heavy Vehicles (%)	2%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	67.3
Effective Green, g (s)	67.3
Actuated g/C Ratio	0.73
Clearance Time (s)	4.9
Vehicle Extension (s)	3.7
Lane Grp Cap (vph)	1159
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	3.3
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	3.3
Level of Service	A
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: S 28th Street & National Avenue

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019

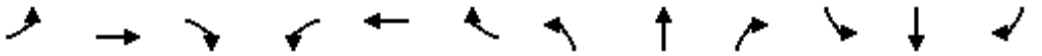


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	203	117	292	615	44	22	33	32	13	275	241
Future Volume (vph)	93	203	117	292	615	44	22	33	32	13	275	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	1.00			0.95			1.00	
Frt	1.00	0.95		1.00	0.99			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1752	3313		1752	1826			2980			1000	
Flt Permitted	0.95	1.00		0.95	1.00			0.77			0.99	
Satd. Flow (perm)	1752	3313		2350	2350			2334			1000	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.75	0.75	0.75	0.85	0.85	0.85
Adj. Flow (vph)	106	231	133	317	668	48	29	44	43	15	324	284
RTOR Reduction (vph)	0	68	0	0	2	0	0	26	0	0	26	0
Lane Group Flow (vph)	106	297	0	317	714	0	0	90	0	0	597	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	25.9		23.2	45.5			40.3			40.3	
Effective Green, g (s)	3.6	25.9		23.2	45.5			40.3			40.3	
Actuated g/C Ratio	0.03	0.25		0.22	0.44			0.39			0.39	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	2.8		2.0	3.8			2.0			2.0	
Lane Grp Cap (vph)	60	828		392	801			907			388	
v/s Ratio Prot	c0.06	0.09		0.18	c0.39							
v/s Ratio Perm								0.04			0.60	
v/c Ratio	1.77	0.36		0.81	0.89			0.10			1.54	
Uniform Delay, d1	50.0	32.0		38.1	26.8			20.1			31.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	404.0	0.2		11.0	12.4			0.0			254.7	
Delay (s)	454.0	32.2		49.1	39.2			20.1			286.3	
Level of Service	F	C		D	D			C			F	
Approach Delay (s)		127.4			42.2			20.1			286.3	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	126.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	14.2
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: I-5 NB 28th St Off-Ramp & National Avenue

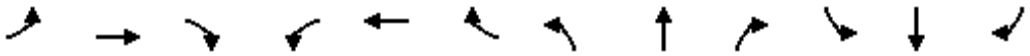
Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	224	0	0	384	15	435	25	73	0	0	0
Future Volume (vph)	0	224	0	0	384	15	435	25	73	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			4.6	4.6			
Lane Util. Factor		1.00			1.00			1.00	1.00			
Frt		1.00			0.99			1.00	0.85			
Flt Protected		1.00			1.00			0.95	1.00			
Satd. Flow (prot)		1845			1835			2350	2350			
Flt Permitted		1.00			1.00			0.95	1.00			
Satd. Flow (perm)		1845			1835			2350	2350			
Peak-hour factor, PHF	0.86	0.86	0.86	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	260	0	0	486	19	506	29	85	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	54	0	0	0
Lane Group Flow (vph)	0	260	0	0	503	0	0	535	31	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type		NA			NA		Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)		16.9			16.9			15.0	15.0			
Effective Green, g (s)		16.9			16.9			15.0	15.0			
Actuated g/C Ratio		0.41			0.41			0.36	0.36			
Clearance Time (s)		4.6			4.6			4.6	4.6			
Vehicle Extension (s)		3.0			3.0			2.0	2.0			
Lane Grp Cap (vph)		758			754			857	857			
v/s Ratio Prot		0.14			c0.27			c0.23				
v/s Ratio Perm									0.01			
v/c Ratio		0.34			0.67			0.62	0.04			
Uniform Delay, d1		8.3			9.8			10.7	8.4			
Progression Factor		1.00			1.00			1.00	1.00			
Incremental Delay, d2		0.3			2.2			1.0	0.0			
Delay (s)		8.6			12.1			11.8	8.4			
Level of Service		A			B			B	A			
Approach Delay (s)		8.6			12.1			11.3			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	41.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr
7: S 29th Street/I-5 Southbound On-Ramp & Boston Avenue — 07/08/2019



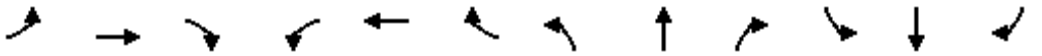
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	14	6	0	89	52	12	46	1	0	0	0
Future Volume (Veh/h)	145	14	6	0	89	52	12	46	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.76	0.76	0.76	0.81	0.81	0.81	0.92	0.92	0.92
Hourly flow rate (vph)	179	17	7	0	117	68	15	57	1	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		644										
pX, platoon unblocked												
vC, conflicting volume	185			24			530	564	20	559	533	151
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	185			24			530	564	20	559	533	151
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			100			96	85	100	100	100	100
cM capacity (veh/h)	1384			1584			417	381	1063	351	394	895

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	203	185	73
Volume Left	179	0	15
Volume Right	7	68	1
cSH	1384	1584	392
Volume to Capacity	0.13	0.00	0.19
Queue Length 95th (ft)	11	0	17
Control Delay (s)	7.2	0.0	16.3
Lane LOS	A		C
Approach Delay (s)	7.2	0.0	16.3
Approach LOS			C

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
8: 32nd Street Naval Gate/32nd Street & Harbor Drive

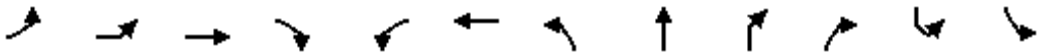
Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	336	404	389	661	184	65	130	34	139	930	178
Future Volume (vph)	84	336	404	389	661	184	65	130	34	139	930	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Lane Util. Factor	0.97	0.95	0.88	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	2842	3502	3112	1392	1805	3610	1615	1752	4700	2760
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	2842	3502	3112	1392	1805	3610	1615	1752	4700	2760
Peak-hour factor, PHF	0.62	0.62	0.62	0.82	0.82	0.82	0.86	0.86	0.86	0.81	0.81	0.81
Adj. Flow (vph)	135	542	652	474	806	224	76	151	40	172	1148	220
RTOR Reduction (vph)	0	0	98	0	0	139	0	0	30	0	0	62
Lane Group Flow (vph)	135	542	554	474	806	85	76	151	10	172	1148	158
Heavy Vehicles (%)	3%	3%	0%	0%	16%	16%	0%	0%	0%	3%	0%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.0	26.7	30.3	17.9	40.2	40.2	3.6	26.2	26.2	16.5	39.1	43.1
Effective Green, g (s)	4.0	26.7	30.3	17.9	40.2	40.2	3.6	26.2	26.2	16.5	39.1	43.1
Actuated g/C Ratio	0.04	0.25	0.29	0.17	0.38	0.38	0.03	0.25	0.25	0.16	0.37	0.41
Clearance Time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Vehicle Extension (s)	2.0	4.3	2.0	2.0	4.3	4.3	2.0	3.0	3.0	4.0	4.0	2.0
Lane Grp Cap (vph)	128	881	810	590	1177	526	61	890	398	272	1730	1120
v/s Ratio Prot	0.04	0.15	0.02	c0.14	c0.26		c0.04	0.04		c0.10	c0.24	0.01
v/s Ratio Perm			0.17			0.06			0.01			0.05
v/c Ratio	1.05	0.62	0.68	0.80	0.68	0.16	1.25	0.17	0.02	0.63	0.66	0.14
Uniform Delay, d1	51.1	35.2	33.7	42.5	27.7	21.8	51.3	31.4	30.3	42.0	28.1	19.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	94.9	1.6	1.9	7.4	1.9	0.2	195.3	0.1	0.0	5.3	1.1	0.0
Delay (s)	146.0	36.8	35.6	49.8	29.6	22.1	246.6	31.5	30.3	47.3	29.1	19.9
Level of Service	F	D	D	D	C	C	F	C	C	D	C	B
Approach Delay (s)		47.3			34.8			92.6			29.8	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	19.3
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp — 07/08/2019



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Traffic Volume (vph)	9	51	22	11	0	0	41	73	106	149	1	7
Future Volume (vph)	9	51	22	11	0	0	41	73	106	149	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9				4.4	4.9	5.7			4.4
Lane Util. Factor		1.00	1.00				1.00	1.00	0.88			1.00
Frt		1.00	0.95				1.00	1.00	0.85			1.00
Flt Protected		0.95	1.00				0.95	1.00	1.00			0.95
Satd. Flow (prot)		1805	1805				1805	1681	2697			1805
Flt Permitted		0.76	1.00				0.95	1.00	1.00			1.00
Satd. Flow (perm)		1439	1805				1805	1681	2697			1900
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.92	0.92	0.86	0.86	0.86	0.86	0.87	0.87
Adj. Flow (vph)	12	65	28	14	0	0	48	85	123	173	1	8
RTOR Reduction (vph)	0	0	10	0	0	0	0	0	78	0	0	0
Lane Group Flow (vph)	0	77	32	0	0	0	48	85	218	0	0	9
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	0%	13%	13%	0%	0%	0%
Turn Type	Perm	Perm	NA		Perm		Prot	NA	pm+ov		custom	Prot
Protected Phases			4			4	5	2	3			1
Permitted Phases	4	4			4				2		1	
Actuated Green, G (s)		29.1	29.1				3.6	36.3	61.1			0.7
Effective Green, g (s)		29.1	29.1				3.6	36.3	61.1			0.7
Actuated g/C Ratio		0.26	0.26				0.03	0.33	0.55			0.01
Clearance Time (s)		4.9	4.9				4.4	4.9	5.7			4.4
Vehicle Extension (s)		3.0	3.0				2.0	3.2	4.3			2.0
Lane Grp Cap (vph)		377	474				58	550	1487			12
v/s Ratio Prot			0.02				c0.03	c0.05	0.03			
v/s Ratio Perm		c0.05							0.05			0.00
v/c Ratio		0.20	0.07				0.83	0.15	0.15			0.75
Uniform Delay, d1		31.8	30.7				53.3	26.4	12.1			55.0
Progression Factor		1.00	1.00				1.00	1.00	1.00			1.00
Incremental Delay, d2		0.3	0.1				57.7	0.1	0.1			118.4
Delay (s)		32.1	30.7				111.0	26.5	12.2			173.4
Level of Service		C	C				F	C	B			F
Approach Delay (s)			31.6			0.0		26.1				
Approach LOS			C			A		C				

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	19.9
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

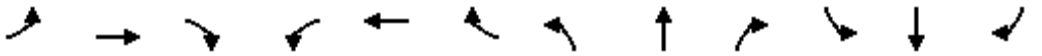
HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp — 07/08/2019

Movement	SBT	SBR	SWL	SWR	SWR2
Lane Configurations					
Traffic Volume (vph)	490	73	659	21	5
Future Volume (vph)	490	73	659	21	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		5.7		
Lane Util. Factor	0.95		0.97		
Frt	0.98		0.99		
Flt Protected	1.00		0.95		
Satd. Flow (prot)	2600		4700		
Flt Permitted	1.00		0.95		
Satd. Flow (perm)	2600		4700		
Peak-hour factor, PHF	0.87	0.87	0.92	0.89	0.89
Adj. Flow (vph)	563	84	716	24	6
RTOR Reduction (vph)	9	0	79	0	0
Lane Group Flow (vph)	638	0	667	0	0
Heavy Vehicles (%)	3%	0%	3%	3%	3%
Turn Type	NA		Prot		
Protected Phases	6		3		
Permitted Phases					
Actuated Green, G (s)	33.4		24.8		
Effective Green, g (s)	33.4		24.8		
Actuated g/C Ratio	0.30		0.22		
Clearance Time (s)	4.9		5.7		
Vehicle Extension (s)	2.2		4.3		
Lane Grp Cap (vph)	783		1051		
v/s Ratio Prot	c0.25		c0.14		
v/s Ratio Perm					
v/c Ratio	0.81		0.63		
Uniform Delay, d1	35.8		38.9		
Progression Factor	1.00		1.00		
Incremental Delay, d2	6.3		1.5		
Delay (s)	42.1		40.4		
Level of Service	D		D		
Approach Delay (s)	43.9		40.4		
Approach LOS	D		D		

Intersection Summary

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr

10: Harbor Drive & 8th Street Naval Base Entrance/8th Street — 07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	53	31	22	572	211	366	1463	64	45	109	302
Future Volume (vph)	59	53	31	22	572	211	366	1463	64	45	109	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Lane Util. Factor		0.95	1.00	1.00	0.91		0.97	0.95	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.89	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3518	1615	1752	2550		1250	3100	1392	3502	3187	
Flt Permitted		0.97	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3518	1615	1752	2550		1250	3100	1392	3502	3187	
Peak-hour factor, PHF	0.82	0.82	0.82	0.80	0.80	0.80	0.91	0.91	0.91	0.73	0.73	0.73
Adj. Flow (vph)	72	65	38	28	715	264	402	1608	70	62	149	414
RTOR Reduction (vph)	0	0	36	0	47	0	0	0	36	0	133	0
Lane Group Flow (vph)	0	137	2	28	932	0	402	1608	34	62	430	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	0%	16%	16%	0%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		7	7		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)		6.0	6.0	42.9	42.9		39.4	67.7	67.7	3.2	31.5	
Effective Green, g (s)		6.0	6.0	42.9	42.9		39.4	67.7	67.7	3.2	31.5	
Actuated g/C Ratio		0.04	0.04	0.31	0.31		0.28	0.48	0.48	0.02	0.22	
Clearance Time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		150	69	536	781		351	1499	673	80	717	
v/s Ratio Prot		c0.04		0.02	c0.37		c0.32	c0.52		0.02	0.13	
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.94dl	0.02	0.05	1.19		1.15	1.07	0.05	0.78	0.60	
Uniform Delay, d1		66.7	64.2	34.2	48.5		50.3	36.1	19.1	68.0	48.6	
Progression Factor		1.00	1.00	0.89	0.92		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		48.3	0.1	0.0	98.7		93.6	45.5	0.1	36.4	3.7	
Delay (s)		115.1	64.3	30.4	143.4		143.9	81.6	19.3	104.4	52.3	
Level of Service		F	E	C	F		F	F	B	F	D	
Approach Delay (s)		104.1			140.3			91.6			57.4	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	99.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
11: I-5 SB Ramps & 8th Street

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019

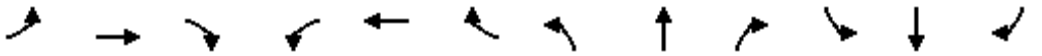
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	239	43	166	825	266	235
Future Volume (Veh/h)	239	43	166	825	266	235
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.94	0.94	0.86	0.86
Hourly flow rate (vph)	291	52	177	878	309	273
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	419			1153		
pX, platoon unblocked			0.99		0.95	0.99
vC, conflicting volume			343		1110	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			308		944	134
tC, single (s)			4.2		6.9	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			86		0	68
cM capacity (veh/h)			1226		210	845

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	194	149	177	439	439	309	273
Volume Left	0	0	177	0	0	309	0
Volume Right	0	52	0	0	0	0	273
cSH	1700	1700	1226	1700	1700	210	845
Volume to Capacity	0.11	0.09	0.14	0.26	0.26	1.47	0.32
Queue Length 95th (ft)	0	0	13	0	0	466	35
Control Delay (s)	0.0	0.0	8.4	0.0	0.0	279.2	11.3
Lane LOS			A			F	B
Approach Delay (s)	0.0		1.4			153.5	
Approach LOS						F	

Intersection Summary			
Average Delay	45.9		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
12: National City Boulevard & 8th Street

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	109	65	14	543	84	209	1025	21	22	67	65
Future Volume (vph)	28	109	65	14	543	84	209	1025	21	22	67	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1681	1615	1805	3448		1770	3529		1770	3279	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1681	1615	1805	3448		1770	3529		1770	3279	
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	35	135	80	15	572	88	232	1139	23	26	79	76
RTOR Reduction (vph)	0	0	19	0	8	0	0	1	0	0	70	0
Lane Group Flow (vph)	35	135	61	15	652	0	232	1161	0	26	85	0
Heavy Vehicles (%)	0%	13%	0%	0%	3%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	7.9	58.3	107.0	2.5	52.9		48.7	54.7		4.5	10.5	
Effective Green, g (s)	7.9	58.3	107.0	2.5	52.9		48.7	54.7		4.5	10.5	
Actuated g/C Ratio	0.06	0.42	0.76	0.02	0.38		0.35	0.39		0.03	0.08	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	101	700	1234	32	1302		615	1378		56	245	
v/s Ratio Prot	c0.02	0.08	0.02	0.01	c0.19		0.13	c0.33		0.01	c0.03	
v/s Ratio Perm			0.02									
v/c Ratio	0.35	0.19	0.05	0.47	0.50		0.38	0.84		0.46	0.35	
Uniform Delay, d1	63.6	25.9	4.0	68.1	33.4		34.3	38.7		66.6	61.5	
Progression Factor	0.97	0.89	1.30	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.6	0.0	3.9	1.4		0.1	4.9		2.2	0.9	
Delay (s)	62.5	23.8	5.3	72.0	34.8		34.4	43.6		68.8	62.3	
Level of Service	E	C	A	E	C		C	D		E	E	
Approach Delay (s)		23.3			35.6			42.1			63.3	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr

13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	443	64	55	14	21	31	217	18	70	1137	15	21
Future Volume (vph)	443	64	55	14	21	31	217	18	70	1137	15	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1	5.1		5.1	5.1			4.7	5.5		
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00			1.00	0.95		
Frt	1.00	1.00	0.97		1.00	0.87			1.00	1.00		
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1800	1681	3600		1770	1616			1752	3900		
Flt Permitted	0.95	0.12	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (perm)	1800	208	3600		1770	1616			1752	3900		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Adj. Flow (vph)	540	78	67	17	25	36	255	21	76	1236	16	23
RTOR Reduction (vph)	0	0	6	0	0	2	0	0	0	1	0	0
Lane Group Flow (vph)	313	305	78	0	25	310	0	0	76	1274	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%
Turn Type	Split	Perm	NA		Split	NA			Prot	NA		
Protected Phases	3		3		7	7			1	6		
Permitted Phases		3										
Actuated Green, G (s)	34.1	34.1	34.1		28.2	28.2			7.3	48.8		
Effective Green, g (s)	34.1	34.1	34.1		28.2	28.2			7.3	48.8		
Actuated g/C Ratio	0.23	0.23	0.23		0.19	0.19			0.05	0.33		
Clearance Time (s)	5.1	5.1	5.1		5.1	5.1			4.7	5.5		
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0			2.0	5.0		
Lane Grp Cap (vph)	419	48	839		341	311			87	1300		
v/s Ratio Prot	0.17		0.02		0.01	c0.19			c0.04	c0.33		
v/s Ratio Perm		c1.47										
v/c Ratio	0.75	6.35	0.09		0.07	1.00			0.87	0.98		
Uniform Delay, d1	52.1	56.1	44.0		48.4	59.0			69.0	48.3		
Progression Factor	1.00	1.00	1.00		1.00	1.00			1.00	1.00		
Incremental Delay, d2	6.3	2453.1	0.0		0.0	50.1			55.5	20.4		
Delay (s)	58.3	2509.2	44.0		48.4	109.1			124.5	68.7		
Level of Service	E	F	D		D	F			F	E		
Approach Delay (s)			1121.5			104.6				71.8		
Approach LOS			F			F				E		

Intersection Summary			
HCM 2000 Control Delay	355.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.46		
Actuated Cycle Length (s)	146.3	Sum of lost time (s)	25.5
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr

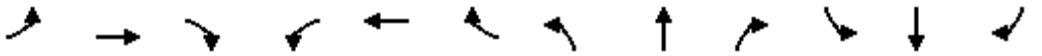
13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	6	9	87	46	10	22	1	7
Future Volume (vph)	6	9	87	46	10	22	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	5.5			5.1	5.1	
Lane Util. Factor		1.00	0.95			1.00	1.00	
Frt		1.00	0.95			1.00	0.85	
Flt Protected		0.95	1.00			0.95	1.00	
Satd. Flow (prot)		1556	2951			1770	1583	
Flt Permitted		0.95	1.00			0.95	1.00	
Satd. Flow (perm)		1556	2951			1770	1583	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.77	0.77	0.77	0.77
Adj. Flow (vph)	8	11	110	58	13	29	1	9
RTOR Reduction (vph)	0	0	41	0	0	0	9	0
Lane Group Flow (vph)	0	19	127	0	0	42	1	0
Heavy Vehicles (%)	16%	16%	16%	16%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA		Prot	Prot	Prot	
Protected Phases	5	5	2		4	4	4	
Permitted Phases								
Actuated Green, G (s)		1.9	43.4			7.8	7.8	
Effective Green, g (s)		1.9	43.4			7.8	7.8	
Actuated g/C Ratio		0.01	0.30			0.05	0.05	
Clearance Time (s)		4.7	5.5			5.1	5.1	
Vehicle Extension (s)		2.0	5.0			2.0	2.0	
Lane Grp Cap (vph)		20	875			94	84	
v/s Ratio Prot		0.01	0.04			c0.02	0.00	
v/s Ratio Perm								
v/c Ratio		0.95	0.15			0.45	0.01	
Uniform Delay, d1		72.2	37.8			67.2	65.6	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		174.3	0.2			1.2	0.0	
Delay (s)		246.5	38.0			68.4	65.6	
Level of Service		F	D			E	E	
Approach Delay (s)			59.2			67.9		
Approach LOS			E			E		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
14: Roosevelt Avenue & Civic Center Drive

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



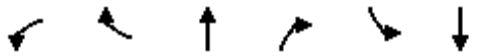
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	31	14	2	207	409	93	334	28	0	0	0
Future Volume (vph)	37	31	14	2	207	409	93	334	28	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.95		1.00	0.90			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00			
Satd. Flow (prot)	1770	1776		1770	1677			1843	1583			
Flt Permitted	0.95	1.00		0.72	1.00			0.99	1.00			
Satd. Flow (perm)	1770	1776		1336	1677			1843	1583			
Peak-hour factor, PHF	0.74	0.74	0.74	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	50	42	19	2	227	449	103	371	31	0	0	0
RTOR Reduction (vph)	0	10	0	0	101	0	0	0	19	0	0	0
Lane Group Flow (vph)	50	51	0	2	575	0	0	474	12	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases				8			2		2			
Actuated Green, G (s)	2.7	33.2		26.0	26.0			25.7	25.7			
Effective Green, g (s)	2.7	33.2		26.0	26.0			25.7	25.7			
Actuated g/C Ratio	0.04	0.49		0.38	0.38			0.38	0.38			
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Lane Grp Cap (vph)	70	868		511	642			697	599			
v/s Ratio Prot	c0.03	0.03			c0.34							
v/s Ratio Perm				0.00				0.26	0.01			
v/c Ratio	0.71	0.06		0.00	0.90			0.68	0.02			
Uniform Delay, d1	32.2	9.1		12.9	19.7			17.7	13.2			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	29.1	0.0		0.0	15.0			5.3	0.1			
Delay (s)	61.3	9.2		13.0	34.7			23.0	13.3			
Level of Service	E	A		B	C			C	B			
Approach Delay (s)		32.6			34.6			22.4			0.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
15: Cleveland Avenue & I-5 SB Civic Ctr Off-Ramp

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



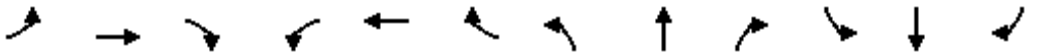
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	201	181	364	0	0	34
Future Volume (Veh/h)	201	181	364	0	0	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	218	197	396	0	0	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	433	396			396	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	433	396			396	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	62	70			100	
cM capacity (veh/h)	580	653			1163	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	218	197	396	37
Volume Left	218	0	0	0
Volume Right	0	197	0	0
cSH	580	653	1700	1700
Volume to Capacity	0.38	0.30	0.23	0.02
Queue Length 95th (ft)	44	32	0	0
Control Delay (s)	14.9	12.9	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	13.9		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
16: Tidelands Avenue & Bay Marina Drive

Horizon Yr B - ALL IN - AM Pk Hr
07/08/2019



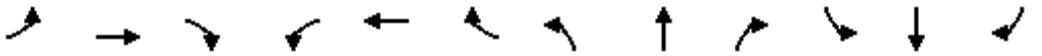
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	34	3	74	283	300	4	32	25	19	28	58
Future Volume (vph)	18	34	3	74	283	300	4	32	25	19	28	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.93		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	3266		1770	1740		1770	1674	
Flt Permitted	0.38	1.00		0.71	1.00		0.98	1.00		0.98	1.00	
Satd. Flow (perm)	717	3498		1327	3266		1817	1740		1817	1674	
Peak-hour factor, PHF	0.57	0.57	0.57	0.83	0.83	0.83	0.58	0.58	0.58	0.79	0.79	0.79
Adj. Flow (vph)	32	60	5	89	341	361	7	55	43	24	35	73
RTOR Reduction (vph)	0	2	0	0	175	0	0	38	0	0	64	0
Lane Group Flow (vph)	32	63	0	89	527	0	7	60	0	24	44	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	17.2	17.2		17.2	17.2		4.1	4.1		4.1	4.1	
Effective Green, g (s)	17.2	17.2		17.2	17.2		4.1	4.1		4.1	4.1	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	370	1806		685	1686		223	214		223	206	
v/s Ratio Prot		0.02			c0.16			c0.03			0.03	
v/s Ratio Perm	0.04			0.07			0.00			0.01		
v/c Ratio	0.09	0.03		0.13	0.31		0.03	0.28		0.11	0.21	
Uniform Delay, d1	4.1	4.0		4.2	4.6		12.9	13.3		13.0	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.1		0.1	0.7		0.2	0.5	
Delay (s)	4.2	4.0		4.3	4.7		12.9	14.0		13.2	13.7	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		4.0			4.7			13.9			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr

17: I-5 Southbound On-Ramp/I-5 Southbound Off-Ramp & Bay Marina Drive/Mile of Cars Way — 07/09/2019



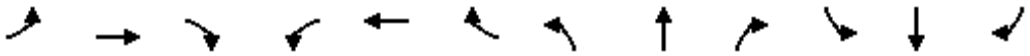
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	148	158	263	858	0	0	0	0	384	0	228
Future Volume (vph)	0	148	158	263	858	0	0	0	0	384	0	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1681	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1681	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.87	0.87	0.87	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	176	188	302	986	0	0	0	0	431	0	256
RTOR Reduction (vph)	0	0	84	0	0	0	0	0	0	0	0	143
Lane Group Flow (vph)	0	176	104	302	986	0	0	0	0	215	216	113
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		55.4	55.4	13.2	72.8					18.0	18.0	18.0
Effective Green, g (s)		55.4	55.4	13.2	72.8					18.0	18.0	18.0
Actuated g/C Ratio		0.55	0.55	0.13	0.73					0.18	0.18	0.18
Clearance Time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Vehicle Extension (s)		3.0	3.0	2.0	3.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1960	876	453	2576					302	302	284
v/s Ratio Prot		0.05		c0.09	c0.28					0.13	c0.13	
v/s Ratio Perm			0.07									0.07
v/c Ratio		0.09	0.12	0.67	0.38					0.71	0.72	0.40
Uniform Delay, d1		10.5	10.6	41.3	5.1					38.6	38.6	36.2
Progression Factor		1.66	4.33	1.16	0.46					1.00	1.00	1.00
Incremental Delay, d2		0.1	0.3	0.3	0.0					6.5	6.6	0.3
Delay (s)		17.4	46.3	48.1	2.4					45.0	45.1	36.6
Level of Service		B	D	D	A					D	D	D
Approach Delay (s)		32.4			13.1			0.0			41.9	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - AM Pk Hr

18: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Mile of Cars Way — 07/08/2019



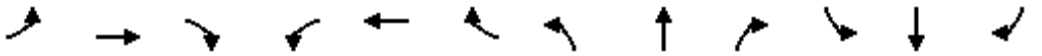
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	455	0	0	567	378	558	254	564	0	0	0
Future Volume (vph)	67	455	0	0	567	378	558	254	564	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.94		1.00	0.96	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			3327		1681	1608	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			3327		1681	1608	1504			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	76	517	0	0	644	430	627	285	634	0	0	0
RTOR Reduction (vph)	0	0	0	0	76	0	0	14	337	0	0	0
Lane Group Flow (vph)	76	517	0	0	998	0	533	517	145	0	0	0
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)	5.7	70.4			60.5		20.4	20.4	20.4			
Effective Green, g (s)	5.7	70.4			60.5		20.4	20.4	20.4			
Actuated g/C Ratio	0.06	0.70			0.60		0.20	0.20	0.20			
Clearance Time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Lane Grp Cap (vph)	195	2491			2012		342	328	306			
v/s Ratio Prot	c0.02	0.15			c0.30							
v/s Ratio Perm							0.32	0.32	0.10			
v/c Ratio	0.39	0.21			0.50		1.56	1.58	0.47			
Uniform Delay, d1	45.5	5.1			11.1		39.8	39.8	35.1			
Progression Factor	0.93	0.52			1.00		1.00	1.00	1.00			
Incremental Delay, d2	0.4	0.2			0.9		265.2	273.1	5.2			
Delay (s)	42.5	2.8			12.0		305.0	312.9	40.3			
Level of Service	D	A			B		F	F	D			
Approach Delay (s)		7.9			12.0			225.2			0.0	
Approach LOS		A			B			F			A	

Intersection Summary			
HCM 2000 Control Delay	113.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: Cesar E. Chavez Parkway & Harbor Drive

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	890	19	86	163	38	14	108	116	83	54	249
Future Volume (vph)	385	890	19	86	163	38	14	108	116	83	54	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.7		4.4	5.5		4.9	4.9	4.9		4.9	4.4
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	3502	3496		1805	3269		1787	1881	1599		1826	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.64	1.00	1.00		0.76	1.00
Satd. Flow (perm)	3502	3496		1805	3269		1198	1881	1599		1428	1599
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.91	0.91	0.91
Adj. Flow (vph)	453	1047	22	101	192	45	17	129	138	91	59	274
RTOR Reduction (vph)	0	1	0	0	17	0	0	0	81	0	0	116
Lane Group Flow (vph)	453	1068	0	101	220	0	17	129	57	0	150	158
Heavy Vehicles (%)	0%	3%	0%	0%	9%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8		8	4		4
Actuated Green, G (s)	21.2	49.4		11.7	40.1		53.9	53.9	53.9		53.9	75.1
Effective Green, g (s)	21.2	49.4		11.7	40.1		53.9	53.9	53.9		53.9	75.1
Actuated g/C Ratio	0.16	0.38		0.09	0.31		0.41	0.41	0.41		0.41	0.58
Clearance Time (s)	4.4	5.7		4.4	5.5		4.9	4.9	4.9		4.9	4.4
Vehicle Extension (s)	2.0	2.6		2.0	3.4		2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	571	1328		162	1008		496	779	662		592	923
v/s Ratio Prot	0.13	c0.31		c0.06	0.07			0.07				0.03
v/s Ratio Perm							0.01		0.04		c0.11	0.07
v/c Ratio	0.79	0.80		0.62	0.22		0.03	0.17	0.09		0.25	0.17
Uniform Delay, d1	52.3	36.0		57.0	33.3		22.6	23.9	23.1		24.9	12.9
Progression Factor	1.00	1.00		0.53	0.23		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	7.0	5.2		5.2	0.5		0.1	0.5	0.3		0.1	0.0
Delay (s)	59.3	41.2		35.6	8.0		22.7	24.4	23.4		25.0	12.9
Level of Service	E	D		D	A		C	C	C		C	B
Approach Delay (s)		46.6			16.2			23.8			17.2	
Approach LOS		D			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: S 28th Street & Harbor Drive

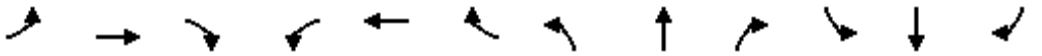
Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	803	0	6	157	400	1	8	3	155	0	49
Future Volume (vph)	218	803	0	6	157	400	1	8	3	155	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.91	0.91	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	0.99	
Satd. Flow (prot)	3400	3505		1805	3312	1568		1830		4700	1368	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	0.99	
Satd. Flow (perm)	3400	3505		1805	3312	1568		1830		4700	1368	
Peak-hour factor, PHF	0.79	0.79	0.79	0.94	0.94	0.94	0.56	0.56	0.56	0.73	0.73	0.73
Adj. Flow (vph)	276	1016	0	6	167	426	2	14	5	212	0	67
RTOR Reduction (vph)	0	0	0	0	0	198	0	5	0	0	56	0
Lane Group Flow (vph)	276	1016	0	6	167	228	0	16	0	191	32	0
Heavy Vehicles (%)	3%	3%	0%	0%	9%	3%	0%	0%	0%	3%	0%	13%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	8	7	7		8	8	
Permitted Phases						6						
Actuated Green, G (s)	43.6	51.3		1.1	8.9	56.9		10.1		48.0	48.0	
Effective Green, g (s)	43.6	51.3		1.1	8.9	56.9		10.1		48.0	48.0	
Actuated g/C Ratio	0.34	0.39		0.01	0.07	0.44		0.08		0.37	0.37	
Clearance Time (s)	4.4	5.3		4.4	5.2	4.9		4.9		4.9	4.9	
Vehicle Extension (s)	3.0	6.8		2.0	6.6	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1140	1383		15	226	686		142		1735	505	
v/s Ratio Prot	c0.08	c0.29		0.00	0.05	c0.12		c0.01		0.04	0.02	
v/s Ratio Perm						0.02						
v/c Ratio	0.24	0.73		0.40	0.74	0.33		0.12		0.11	0.06	
Uniform Delay, d1	31.2	33.5		64.1	59.4	24.0		55.8		27.0	26.5	
Progression Factor	0.57	0.45		1.21	0.89	1.40		1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.4		6.1	19.0	0.3		0.4		0.0	0.1	
Delay (s)	18.0	18.5		84.0	72.2	34.0		56.2		27.0	26.5	
Level of Service	B	B		F	E	C		E		C	C	
Approach Delay (s)		18.4			45.2			56.2			26.8	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: S 28th Street & Main Street

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019

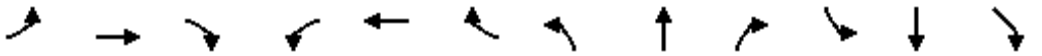


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	231	27	30	169	184	104	530	151	274	293	73
Future Volume (vph)	96	231	27	30	169	184	104	530	151	274	293	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3518		1787	3574	1599	1805	3436		1805	2000	
Flt Permitted	0.64	1.00		0.55	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1205	3518		1029	3574	1599	1805	3436		1399	2000	
Peak-hour factor, PHF	0.84	0.84	0.84	0.96	0.96	0.96	0.85	0.85	0.85	0.86	0.86	0.86
Adj. Flow (vph)	114	275	32	31	176	192	122	624	178	319	341	85
RTOR Reduction (vph)	0	12	0	0	0	37	0	25	0	0	19	0
Lane Group Flow (vph)	114	295	0	31	176	155	122	777	0	319	407	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			8	1	5	2		1	6	
Permitted Phases	8			8		8						
Actuated Green, G (s)	11.9	11.9		11.9	11.9	28.1	7.3	25.8		16.2	34.3	
Effective Green, g (s)	11.9	11.9		11.9	11.9	28.1	7.3	25.8		16.2	34.3	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.42	0.11	0.38		0.24	0.51	
Clearance Time (s)	5.1	5.1		5.1	5.1	4.0	4.0	4.4		4.0	4.8	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	5.7		2.0	3.8	
Lane Grp Cap (vph)	212	621		181	631	666	195	1315		433	1017	
v/s Ratio Prot		0.08			0.05	0.06	0.07	c0.23		c0.18	0.20	
v/s Ratio Perm	c0.09			0.03		0.04						
v/c Ratio	0.54	0.47		0.17	0.28	0.23	0.63	0.59		0.74	0.40	
Uniform Delay, d1	25.2	24.9		23.6	24.0	12.7	28.7	16.6		23.6	10.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		0.2	0.1	0.1	4.4	1.2		5.6	0.3	
Delay (s)	26.6	25.1		23.7	24.1	12.8	33.2	17.8		29.2	10.5	
Level of Service	C	C		C	C	B	C	B		C	B	
Approach Delay (s)		25.5			18.6			19.9			18.5	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	13.9
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: S 28th Street & Boston Avenue

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SER
Lane Configurations												
Traffic Volume (vph)	42	145	3	4	11	35	10	559	201	162	237	346
Future Volume (vph)	42	145	3	4	11	35	10	559	201	162	237	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	4.9
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.89		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	1875		1752	1634		1805	3399		1125	1100	2350
Flt Permitted	0.72	1.00		0.57	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1352	1875		1043	1634		1805	3399		1125	1100	2350
Peak-hour factor, PHF	0.77	0.77	0.77	0.78	0.78	0.78	0.90	0.90	0.90	0.88	0.88	0.92
Adj. Flow (vph)	55	188	4	5	14	45	11	621	223	184	269	376
RTOR Reduction (vph)	0	2	0	0	49	0	0	41	0	0	0	0
Lane Group Flow (vph)	55	190	0	5	10	0	11	803	0	184	269	376
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	0%	2%	2%	3%	3%	2%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	10.3	10.3		10.3	10.3		0.6	23.3		13.2	35.9	35.9
Effective Green, g (s)	10.3	10.3		10.3	10.3		0.6	23.3		13.2	35.9	35.9
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.01	0.38		0.22	0.59	0.59
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	4.9
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.7		2.0	3.7	3.7
Lane Grp Cap (vph)	228	316		176	275		17	1298		243	647	1383
v/s Ratio Prot		c0.10			0.01		0.01	c0.24		c0.16	0.24	
v/s Ratio Perm	0.04			0.00								0.16
v/c Ratio	0.24	0.60		0.03	0.04		0.65	0.62		0.76	0.42	0.27
Uniform Delay, d1	22.0	23.5		21.2	21.2		30.1	15.3		22.4	6.8	6.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	2.2		0.0	0.0		49.2	1.0		11.3	0.5	0.1
Delay (s)	22.2	25.7		21.2	21.2		79.3	16.2		33.7	7.4	6.3
Level of Service	C	C		C	C		E	B		C	A	A
Approach Delay (s)		24.9			21.2			17.0			18.1	
Approach LOS		C			C			B			B	

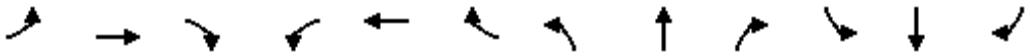
Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SER2
Lane Configurations	
Traffic Volume (vph)	47
Future Volume (vph)	47
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.9
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	51
RTOR Reduction (vph)	21
Lane Group Flow (vph)	30
Heavy Vehicles (%)	2%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	35.9
Effective Green, g (s)	35.9
Actuated g/C Ratio	0.59
Clearance Time (s)	4.9
Vehicle Extension (s)	3.7
Lane Grp Cap (vph)	931
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.03
Uniform Delay, d1	5.3
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	5.3
Level of Service	A
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: S 28th Street & National Avenue

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019

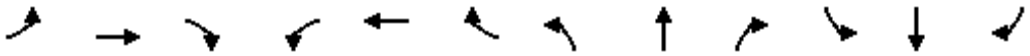


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	471	97	106	621	121	35	103	48	54	196	167
Future Volume (vph)	107	471	97	106	621	121	35	103	48	54	196	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	1.00			0.95			1.00	
Frt	1.00	0.97		1.00	0.98			0.96			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1752	3415		1752	1799			3370			1000	
Flt Permitted	0.95	1.00		0.95	1.00			0.78			0.92	
Satd. Flow (perm)	1752	3415		2350	2350			2637			1000	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.75	0.75	0.75	0.85	0.85	0.85
Adj. Flow (vph)	122	535	110	115	675	132	47	137	64	64	231	196
RTOR Reduction (vph)	0	14	0	0	6	0	0	29	0	0	20	0
Lane Group Flow (vph)	122	631	0	115	801	0	0	219	0	0	471	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.6	44.8		11.9	50.1			49.1			49.1	
Effective Green, g (s)	6.6	44.8		11.9	50.1			49.1			49.1	
Actuated g/C Ratio	0.05	0.37		0.10	0.42			0.41			0.41	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	2.8		2.0	3.8			2.0			2.0	
Lane Grp Cap (vph)	96	1274		173	751			1078			409	
v/s Ratio Prot	c0.07	0.18		0.07	c0.45							
v/s Ratio Perm								0.08			0.47	
v/c Ratio	1.27	0.50		0.66	1.07			0.20			1.15	
Uniform Delay, d1	56.7	28.9		52.1	35.0			22.8			35.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	181.1	0.3		7.2	52.1			0.0			92.7	
Delay (s)	237.8	29.2		59.4	87.1			22.9			128.2	
Level of Service	F	C		E	F			C			F	
Approach Delay (s)		62.4			83.6			22.9			128.2	
Approach LOS		E			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	79.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: I-5 NB 28th St Off-Ramp & National Avenue

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	512	0	0	423	18	388	18	120	0	0	0
Future Volume (vph)	1	512	0	0	423	18	388	18	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			4.6	4.6			
Lane Util. Factor		1.00			1.00			1.00	1.00			
Frt		1.00			0.99			1.00	0.85			
Flt Protected		1.00			1.00			0.95	1.00			
Satd. Flow (prot)		1845			1834			2350	2350			
Flt Permitted		1.00			1.00			0.95	1.00			
Satd. Flow (perm)		1843			1834			2350	2350			
Peak-hour factor, PHF	0.86	0.86	0.86	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	1	595	0	0	535	23	451	21	140	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	96	0	0	0
Lane Group Flow (vph)	0	596	0	0	555	0	0	472	44	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type	Perm	NA			NA		Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2								8			
Actuated Green, G (s)		19.4			19.4			12.9	12.9			
Effective Green, g (s)		19.4			19.4			12.9	12.9			
Actuated g/C Ratio		0.47			0.47			0.31	0.31			
Clearance Time (s)		4.6			4.6			4.6	4.6			
Vehicle Extension (s)		3.0			3.0			2.0	2.0			
Lane Grp Cap (vph)		861			857			730	730			
v/s Ratio Prot					0.30			c0.20				
v/s Ratio Perm		c0.32							0.02			
v/c Ratio		0.69			0.65			0.65	0.06			
Uniform Delay, d1		8.7			8.4			12.3	10.0			
Progression Factor		1.00			1.00			1.00	1.00			
Incremental Delay, d2		2.4			1.7			1.5	0.0			
Delay (s)		11.1			10.1			13.8	10.1			
Level of Service		B			B			B	B			
Approach Delay (s)		11.1			10.1			13.0			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	41.5	Sum of lost time (s)	9.2
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr
7: S 29th Street/I-5 Southbound On-Ramp & Boston Avenue — 07/08/2019

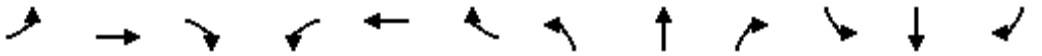
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	594	50	11	4	38	162	5	250	16	0	0	0
Future Volume (Veh/h)	594	50	11	4	38	162	5	250	16	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.76	0.76	0.76	0.81	0.81	0.81	0.92	0.92	0.92
Hourly flow rate (vph)	733	62	14	5	50	213	6	309	20	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		644										
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	263			76			1702	1808	69	1876	1708	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	263			12			1711	1822	5	1893	1718	156
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	43			100			84	0	98	0	100	100
cM capacity (veh/h)	1295			1532			38	32	1038	0	37	889

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	809	268	335
Volume Left	733	5	6
Volume Right	14	213	20
cSH	1295	1532	34
Volume to Capacity	0.57	0.00	9.71
Queue Length 95th (ft)	93	0	Err
Control Delay (s)	10.9	0.2	Err
Lane LOS	B	A	F
Approach Delay (s)	10.9	0.2	Err
Approach LOS			F

Intersection Summary			
Average Delay	2378.6		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
8: 32nd Street Naval Gate & Harbor Drive

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	757	79	19	357	391	147	1039	236	163	22	108
Future Volume (vph)	158	757	79	19	357	391	147	1039	236	163	22	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1615	3502	3312	1482	1805	3610	1615	1752	4700	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1615	3502	3312	1482	1805	3610	1615	1752	4700	1568
Peak-hour factor, PHF	0.62	0.62	0.62	0.82	0.82	0.82	0.86	0.86	0.86	0.81	0.81	0.81
Adj. Flow (vph)	255	1221	127	23	435	477	171	1208	274	201	27	133
RTOR Reduction (vph)	0	0	23	0	0	191	0	0	94	0	0	114
Lane Group Flow (vph)	255	1221	104	23	435	286	171	1208	180	201	27	19
Heavy Vehicles (%)	3%	3%	0%	0%	9%	9%	0%	0%	0%	3%	0%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.1	48.7	102.0	3.1	39.3	39.3	53.3	42.1	42.1	17.2	6.0	18.1
Effective Green, g (s)	12.1	48.7	102.0	3.1	39.3	39.3	53.3	42.1	42.1	17.2	6.0	18.1
Actuated g/C Ratio	0.09	0.37	0.78	0.02	0.30	0.30	0.41	0.32	0.32	0.13	0.05	0.14
Clearance Time (s)	4.4	5.2	4.4	4.4	5.6	5.6	4.4	4.9	4.9	4.4	4.9	4.4
Vehicle Extension (s)	2.0	4.3	2.0	2.0	4.3	4.3	2.0	3.0	3.0	4.0	4.0	2.0
Lane Grp Cap (vph)	316	1313	1267	83	1001	448	740	1169	523	231	216	271
v/s Ratio Prot	0.08	c0.35	0.03	0.01	0.13		0.09	c0.33		c0.11	0.01	0.01
v/s Ratio Perm			0.03			c0.19			0.11			0.01
v/c Ratio	0.81	0.93	0.08	0.28	0.43	0.64	0.23	1.03	0.34	0.87	0.12	0.07
Uniform Delay, d1	57.8	39.0	3.2	62.3	36.4	39.2	25.0	44.0	33.4	55.3	59.5	48.6
Progression Factor	0.68	0.52	1.39	1.15	0.89	0.87	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.7	12.5	0.0	0.6	1.3	6.5	0.1	35.3	0.4	28.7	0.4	0.0
Delay (s)	52.2	32.7	4.5	72.6	33.9	40.8	25.1	79.2	33.8	84.0	59.8	48.7
Level of Service	D	C	A	E	C	D	C	E	C	F	E	D
Approach Delay (s)		33.5			38.4			66.1			69.2	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.3
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp — 07/08/2019

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	88	63	28	85	102	30	93	164	137	254	1004	208
Future Volume (vph)	88	63	28	85	102	30	93	164	137	254	1004	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9			4.4	4.9	5.7	
Lane Util. Factor		1.00	1.00		1.00	1.00			1.00	1.00	0.88	
Frt		1.00	0.89		1.00	0.87			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1805	1686		1770	1613			1805	1845	2773	
Flt Permitted		0.34	1.00		0.62	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		646	1686		1150	1613			1805	1845	2773	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.86
Adj. Flow (vph)	113	81	36	109	111	33	101	178	159	295	1167	242
RTOR Reduction (vph)	0	0	80	0	0	43	0	0	0	0	30	0
Lane Group Flow (vph)	0	194	65	0	111	269	0	0	159	295	1379	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	2%	2%	0%	3%	3%	0%
Turn Type	Perm	Perm	NA		Perm	NA			Prot	NA	pm+ov	
Protected Phases			4			4			5	2	3	
Permitted Phases	4	4			4						2	
Actuated Green, G (s)		29.1	29.1		29.1	29.1			6.6	24.1	56.0	
Effective Green, g (s)		29.1	29.1		29.1	29.1			6.6	24.1	56.0	
Actuated g/C Ratio		0.27	0.27		0.27	0.27			0.06	0.22	0.52	
Clearance Time (s)		4.9	4.9		4.9	4.9			4.4	4.9	5.7	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			2.0	3.2	4.3	
Lane Grp Cap (vph)		173	451		308	432			109	409	1429	
v/s Ratio Prot			0.04			0.17			c0.09	0.16	c0.28	
v/s Ratio Perm		c0.30			0.10						0.21	
v/c Ratio		1.12	0.14		0.36	0.62			1.46	0.72	0.96	
Uniform Delay, d1		39.8	30.3		32.2	34.9			51.0	39.1	25.4	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		104.7	0.1		0.7	2.8			249.8	6.2	16.2	
Delay (s)		144.5	30.4		32.9	37.7			300.8	45.4	41.6	
Level of Service		F	C		C	D			F	D	D	
Approach Delay (s)			95.7			36.5				64.3		
Approach LOS			F			D				E		

Intersection Summary			
HCM 2000 Control Delay	66.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	19.9
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

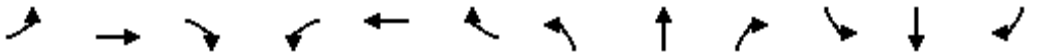
HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr
9: 32nd Street & Norman Scott Road & I-15 On/Off Ramp — 07/08/2019

Movement	SBL2	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	46	21	67	127	19	23	1
Future Volume (vph)	46	21	67	127	19	23	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9		5.7		
Lane Util. Factor		1.00	0.95		0.97		
Frt		1.00	0.90		0.92		
Flt Protected		0.95	1.00		0.98		
Satd. Flow (prot)		1805	2600		4700		
Flt Permitted		1.00	1.00		0.98		
Satd. Flow (perm)		1900	2600		4700		
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.92	0.89	0.89
Adj. Flow (vph)	53	24	77	146	21	26	1
RTOR Reduction (vph)	0	0	118	0	34	0	0
Lane Group Flow (vph)	0	77	105	0	14	0	0
Heavy Vehicles (%)	0%	0%	3%	0%	3%	3%	3%
Turn Type	custom	Prot	NA		Prot		
Protected Phases		1	6		3		
Permitted Phases	1						
Actuated Green, G (s)		3.6	21.1		31.9		
Effective Green, g (s)		3.6	21.1		31.9		
Actuated g/C Ratio		0.03	0.19		0.29		
Clearance Time (s)		4.4	4.9		5.7		
Vehicle Extension (s)		2.0	2.2		4.3		
Lane Grp Cap (vph)		62	505		1380		
v/s Ratio Prot			0.04		0.00		
v/s Ratio Perm		0.04					
v/c Ratio		1.24	0.21		0.01		
Uniform Delay, d1		52.5	36.7		27.2		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		193.0	0.1		0.0		
Delay (s)		245.5	36.8		27.2		
Level of Service		F	D		C		
Approach Delay (s)			90.4		27.2		
Approach LOS			F		C		

Intersection Summary

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr

10: Harbor Drive & 8th Street Naval Base Entrance/8th Street — 07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	562	332	45	0	58	3	217	50	612	1223	2
Future Volume (vph)	100	562	332	45	0	58	3	217	50	612	1223	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Lane Util. Factor		0.95	1.00	1.00	0.91		1.00	0.95	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3583	1615	1641	2550		1250	3100	1482	3502	3504	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3583	1615	1641	2550		1250	3100	1482	3502	3504	
Peak-hour factor, PHF	0.82	0.82	0.82	0.80	0.80	0.80	0.91	0.91	0.91	0.73	0.73	0.73
Adj. Flow (vph)	122	685	405	56	0	72	3	238	55	838	1675	3
RTOR Reduction (vph)	0	0	188	0	67	0	0	0	46	0	0	0
Lane Group Flow (vph)	0	807	217	56	6	0	3	238	9	838	1678	0
Heavy Vehicles (%)	0%	0%	0%	10%	10%	10%	0%	9%	9%	0%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		7	7		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)		27.9	27.9	9.8	9.8		1.4	20.8	20.8	51.3	70.7	
Effective Green, g (s)		27.9	27.9	9.8	9.8		1.4	20.8	20.8	51.3	70.7	
Actuated g/C Ratio		0.21	0.21	0.08	0.08		0.01	0.16	0.16	0.39	0.54	
Clearance Time (s)		5.1	5.1	5.1	5.1		4.6	5.4	5.4	4.6	5.4	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		768	346	123	192		13	496	237	1381	1905	
v/s Ratio Prot		c0.23		c0.03	0.00		0.00	c0.08		0.24	c0.48	
v/s Ratio Perm			0.13						0.01			
v/c Ratio		1.05	0.63	0.46	0.03		0.23	0.48	0.04	0.61	0.88	
Uniform Delay, d1		51.0	46.3	57.5	55.7		63.8	49.7	46.1	31.3	26.0	
Progression Factor		1.00	0.99	1.00	1.00		1.09	0.61	1.00	0.75	0.65	
Incremental Delay, d2		46.5	3.5	2.7	0.1		8.7	3.2	0.3	0.5	4.6	
Delay (s)		97.3	49.4	60.0	55.8		78.3	33.7	46.4	23.9	21.5	
Level of Service		F	D	E	E		E	C	D	C	C	
Approach Delay (s)		81.3			57.6			36.5			22.3	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
11: I-5 SB Ramps & 8th Street

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019

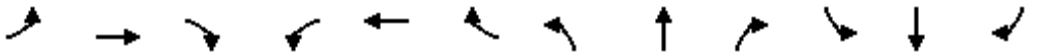
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	993	224	260	151	34	553
Future Volume (Veh/h)	993	224	260	151	34	553
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.94	0.94	0.86	0.86
Hourly flow rate (vph)	1211	273	277	161	40	643
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	419			1153		
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			1484		1982	742
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1190		1785	304
tC, single (s)			4.3		6.9	7.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.4
p0 queue free %			39		0	0
cM capacity (veh/h)			452		23	553

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	807	677	277	80	80	40	643
Volume Left	0	0	277	0	0	40	0
Volume Right	0	273	0	0	0	0	643
cSH	1700	1700	452	1700	1700	23	553
Volume to Capacity	0.47	0.40	0.61	0.05	0.05	1.71	1.16
Queue Length 95th (ft)	0	0	100	0	0	126	553
Control Delay (s)	0.0	0.0	24.8	0.0	0.0	699.8	116.9
Lane LOS			C			F	F
Approach Delay (s)	0.0		15.7			151.0	
Approach LOS						F	

Intersection Summary			
Average Delay	42.2		
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
12: National City Boulevard & 8th Street

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	510	332	56	287	67	117	334	120	120	396	51
Future Volume (vph)	65	510	332	56	287	67	117	334	120	120	396	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1810	1615	1805	3424		1770	3399		1770	3479	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1810	1615	1805	3424		1770	3399		1770	3479	
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	80	630	410	59	302	71	130	371	133	141	466	60
RTOR Reduction (vph)	0	0	45	0	14	0	0	29	0	0	8	0
Lane Group Flow (vph)	80	630	365	59	359	0	130	475	0	141	518	0
Heavy Vehicles (%)	0%	5%	0%	0%	3%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	9.7	65.2	78.6	6.8	62.3		13.4	24.0		14.0	24.6	
Effective Green, g (s)	9.7	65.2	78.6	6.8	62.3		13.4	24.0		14.0	24.6	
Actuated g/C Ratio	0.07	0.50	0.60	0.05	0.48		0.10	0.18		0.11	0.19	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	134	907	1026	94	1640		182	627		190	658	
v/s Ratio Prot	0.04	c0.35	0.04	c0.03	0.10		0.07	c0.14		0.08	c0.15	
v/s Ratio Perm			0.19									
v/c Ratio	0.60	0.69	0.36	0.63	0.22		0.71	0.76		0.74	0.79	
Uniform Delay, d1	58.3	24.8	12.9	60.4	19.7		56.4	50.3		56.2	50.2	
Progression Factor	0.97	0.72	0.31	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	4.0	0.1	9.1	0.3		10.5	5.2		12.8	6.2	
Delay (s)	60.8	21.7	4.1	69.4	20.0		67.0	55.5		69.0	56.4	
Level of Service	E	C	A	E	C		E	E		E	E	
Approach Delay (s)		18.1			26.8			57.8			59.1	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr

13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	85	6	260	103	87	17	8	4	23	209	7	62
Future Volume (vph)	85	6	260	103	87	17	8	4	23	209	7	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		5.1		5.1	5.1			4.7	5.5		
Lane Util. Factor	0.91		0.91		1.00	1.00			1.00	0.95		
Frt	1.00		0.96		1.00	0.94			1.00	0.96		
Flt Protected	0.95		1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1800		3600		1770	1748			1752	3900		
Flt Permitted	0.95		0.58		0.95	1.00			0.95	1.00		
Satd. Flow (perm)	1800		3600		1770	1748			1752	3900		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	7	317	126	102	20	9	5	25	227	8	67
RTOR Reduction (vph)	0	0	28	0	0	4	0	0	0	16	0	0
Lane Group Flow (vph)	94	0	432	0	102	30	0	0	25	286	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%
Turn Type	Split	Perm	NA		Split	NA			Prot	NA		
Protected Phases	3		3		7	7			1	6		
Permitted Phases		3										
Actuated Green, G (s)	17.4		17.4		14.1	14.1			2.6	50.7		
Effective Green, g (s)	17.4		17.4		14.1	14.1			2.6	50.7		
Actuated g/C Ratio	0.13		0.13		0.11	0.11			0.02	0.39		
Clearance Time (s)	5.1		5.1		5.1	5.1			4.7	5.5		
Vehicle Extension (s)	2.0		2.0		2.0	2.0			2.0	5.0		
Lane Grp Cap (vph)	240		481		191	189			35	1521		
v/s Ratio Prot	0.05				c0.06	0.02			c0.01	0.07		
v/s Ratio Perm			0.12									
v/c Ratio	0.39		0.90		0.53	0.16			0.71	0.19		
Uniform Delay, d1	51.5		55.4		54.8	52.6			63.3	26.1		
Progression Factor	1.00		1.00		1.00	1.00			1.00	1.00		
Incremental Delay, d2	0.4		18.8		1.4	0.1			44.1	0.3		
Delay (s)	51.8		74.3		56.3	52.7			107.4	26.4		
Level of Service	D		E		E	D			F	C		
Approach Delay (s)			70.5			55.4				32.6		
Approach LOS			E			E				C		

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr

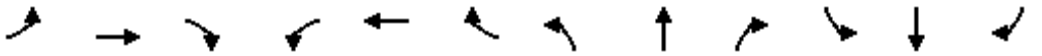
13: I-5 NB Civic Ctr Off-Ramp/Harbor Drive & Civic Center Drive & McKinley Avenue — 07/08/2019

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	2	68	1157	245	49	49	2	5
Future Volume (vph)	2	68	1157	245	49	49	2	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	5.5	5.5		5.1	5.1	
Lane Util. Factor		1.00	0.95	1.00		1.00	1.00	
Frt		1.00	1.00	0.85		1.00	0.85	
Flt Protected		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		1556	3200	1392		1770	1583	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		1556	3200	1392		1770	1583	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.77	0.77	0.77	0.77
Adj. Flow (vph)	3	86	1465	310	64	64	3	6
RTOR Reduction (vph)	0	0	0	81	0	0	8	0
Lane Group Flow (vph)	0	89	1465	229	0	128	1	0
Heavy Vehicles (%)	16%	16%	16%	16%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	Prot	
Protected Phases	5	5	2		4	4	4	
Permitted Phases				2				
Actuated Green, G (s)		11.2	59.3	59.3		11.1	11.1	
Effective Green, g (s)		11.2	59.3	59.3		11.1	11.1	
Actuated g/C Ratio		0.09	0.46	0.46		0.09	0.09	
Clearance Time (s)		4.7	5.5	5.5		5.1	5.1	
Vehicle Extension (s)		2.0	5.0	5.0		2.0	2.0	
Lane Grp Cap (vph)		134	1459	634		151	135	
v/s Ratio Prot		0.06	c0.46			c0.07	0.00	
v/s Ratio Perm				0.16				
v/c Ratio		0.66	1.00	0.36		0.85	0.01	
Uniform Delay, d1		57.6	35.4	23.0		58.6	54.4	
Progression Factor		1.05	0.56	0.19		1.00	1.00	
Incremental Delay, d2		5.3	18.7	0.9		32.2	0.0	
Delay (s)		65.5	38.3	5.3		90.8	54.4	
Level of Service		E	D	A		F	D	
Approach Delay (s)			34.1			88.4		
Approach LOS			C			F		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
14: Roosevelt Avenue & Civic Center Drive

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



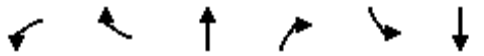
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	209	104	12	96	140	23	194	32	0	0	0
Future Volume (vph)	186	209	104	12	96	140	23	194	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.95		1.00	0.91			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00			
Satd. Flow (prot)	1770	1770		1770	1697			1853	1583			
Flt Permitted	0.95	1.00		0.52	1.00			0.99	1.00			
Satd. Flow (perm)	1770	1770		960	1697			1853	1583			
Peak-hour factor, PHF	0.74	0.74	0.74	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	251	282	141	13	105	154	26	216	36	0	0	0
RTOR Reduction (vph)	0	35	0	0	101	0	0	0	20	0	0	0
Lane Group Flow (vph)	251	388	0	13	158	0	0	242	16	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases				8			2		2			
Actuated Green, G (s)	5.1	19.5		9.9	9.9			24.0	24.0			
Effective Green, g (s)	5.1	19.5		9.9	9.9			24.0	24.0			
Actuated g/C Ratio	0.10	0.37		0.19	0.19			0.46	0.46			
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5			
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			
Lane Grp Cap (vph)	171	657		181	320			847	723			
v/s Ratio Prot	c0.14	c0.22			0.09							
v/s Ratio Perm				0.01				0.13	0.01			
v/c Ratio	1.47	0.59		0.07	0.49			0.29	0.02			
Uniform Delay, d1	23.7	13.3		17.5	19.1			8.9	7.8			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	239.6	1.4		0.2	1.2			0.8	0.1			
Delay (s)	263.3	14.7		17.7	20.3			9.7	7.9			
Level of Service	F	B		B	C			A	A			
Approach Delay (s)		107.3			20.1			9.5			0.0	
Approach LOS		F			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	65.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
15: Cleveland Avenue & I-5 SB Civic Ctr Off-Ramp

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



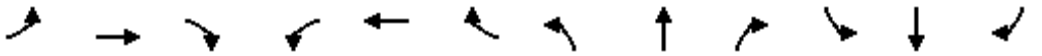
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	131	60	0	0	300
Future Volume (Veh/h)	105	131	60	0	0	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	142	65	0	0	326
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	391	65			65	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391	65			65	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	86			100	
cM capacity (veh/h)	613	999			1537	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	114	142	65	326
Volume Left	114	0	0	0
Volume Right	0	142	0	0
cSH	613	999	1700	1700
Volume to Capacity	0.19	0.14	0.04	0.19
Queue Length 95th (ft)	17	12	0	0
Control Delay (s)	12.2	9.2	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.5		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
16: Tidelands Avenue & Bay Marina Drive

Horizon Yr B - ALL IN - PM Pk Hr
07/08/2019



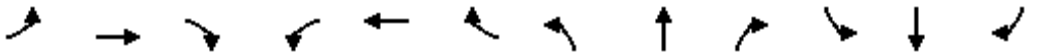
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	315	1	44	66	27	3	17	87	66	21	14
Future Volume (vph)	17	315	1	44	66	27	3	17	87	66	21	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.87		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3537		1770	3384		1770	1629		1770	1751	
Flt Permitted	0.68	1.00		0.44	1.00		0.73	1.00		0.64	1.00	
Satd. Flow (perm)	1268	3537		827	3384		1356	1629		1200	1751	
Peak-hour factor, PHF	0.57	0.57	0.57	0.83	0.83	0.83	0.58	0.58	0.58	0.79	0.79	0.79
Adj. Flow (vph)	30	553	2	53	80	33	5	29	150	84	27	18
RTOR Reduction (vph)	0	1	0	0	18	0	0	121	0	0	15	0
Lane Group Flow (vph)	30	554	0	53	95	0	5	58	0	84	30	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		6.5	6.5		6.5	6.5	
Effective Green, g (s)	15.0	15.0		15.0	15.0		6.5	6.5		6.5	6.5	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	567	1583		370	1515		263	316		232	339	
v/s Ratio Prot		c0.16			0.03			0.04			0.02	
v/s Ratio Perm	0.02			0.06			0.00			c0.07		
v/c Ratio	0.05	0.35		0.14	0.06		0.02	0.18		0.36	0.09	
Uniform Delay, d1	5.2	6.1		5.5	5.3		10.9	11.3		11.7	11.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.0		0.0	0.3		1.0	0.1	
Delay (s)	5.3	6.2		5.6	5.3		11.0	11.6		12.7	11.2	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		6.1			5.4			11.5			12.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	33.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr

17: I-5 Southbound On-Ramp/I-5 Southbound Off-Ramp & Bay Marina Drive/Mile of Cars Way — 07/09/2019



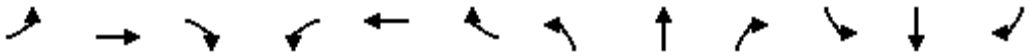
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	361	584	523	254	0	0	0	0	502	4	69
Future Volume (vph)	0	361	584	523	254	0	0	0	0	502	4	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1686	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1686	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.87	0.87	0.87	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	430	695	601	292	0	0	0	0	564	4	78
RTOR Reduction (vph)	0	0	275	0	0	0	0	0	0	0	0	62
Lane Group Flow (vph)	0	430	420	601	292	0	0	0	0	282	286	16
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		44.6	44.6	21.5	70.3					20.5	20.5	20.5
Effective Green, g (s)		44.6	44.6	21.5	70.3					20.5	20.5	20.5
Actuated g/C Ratio		0.45	0.45	0.22	0.70					0.20	0.20	0.20
Clearance Time (s)		4.6	4.6	4.2	4.6					4.6	4.6	4.6
Vehicle Extension (s)		3.0	3.0	2.0	3.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1578	706	738	2487					344	345	324
v/s Ratio Prot		0.12		c0.18	0.08					0.17	c0.17	
v/s Ratio Perm			c0.27									0.01
v/c Ratio		0.27	0.60	0.81	0.12					0.82	0.83	0.05
Uniform Delay, d1		17.5	20.9	37.4	4.8					38.0	38.1	31.9
Progression Factor		0.91	1.54	1.22	0.80					1.00	1.00	1.00
Incremental Delay, d2		0.4	3.3	5.2	0.1					13.4	14.4	0.0
Delay (s)		16.3	35.4	50.7	3.9					51.4	52.5	31.9
Level of Service		B	D	D	A					D	D	C
Approach Delay (s)		28.1			35.4			0.0			49.5	
Approach LOS		C			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Horizon Yr B - ALL IN - PM Pk Hr

18: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Mile of Cars Way — 07/08/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	702	0	0	674	503	111	3	454	0	0	0
Future Volume (vph)	148	702	0	0	674	503	111	3	454	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.94		1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			3312		1681	1453	1504			
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			3312		1681	1453	1504			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	168	798	0	0	766	572	125	3	510	0	0	0
RTOR Reduction (vph)	0	0	0	0	97	0	0	198	198	0	0	0
Lane Group Flow (vph)	168	798	0	0	1241	0	112	68	62	0	0	0
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)	9.3	70.4			56.9		20.4	20.4	20.4			
Effective Green, g (s)	9.3	70.4			56.9		20.4	20.4	20.4			
Actuated g/C Ratio	0.09	0.70			0.57		0.20	0.20	0.20			
Clearance Time (s)	4.2	4.6			4.6		4.6	4.6	4.6			
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Lane Grp Cap (vph)	319	2491			1884		342	296	306			
v/s Ratio Prot	c0.05	0.23			c0.37							
v/s Ratio Perm							c0.07	0.05	0.04			
v/c Ratio	0.53	0.32			0.66		0.33	0.23	0.20			
Uniform Delay, d1	43.3	5.7			14.9		33.9	33.2	33.0			
Progression Factor	0.81	1.50			1.00		1.00	1.00	1.00			
Incremental Delay, d2	0.6	0.3			1.8		2.5	1.8	1.5			
Delay (s)	35.5	8.8			16.7		36.5	35.0	34.5			
Level of Service	D	A			B		D	D	C			
Approach Delay (s)		13.4			16.7			35.1			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

D-4: TRAVEL TIME ANALYSIS - EXISTING CONDITIONS

HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

Travel Time Analysis Calibration

- The planning level travel time analysis was calibrated to approximate queue length across the composite peak hour. Approximate queue lengths observed by the project team are found in the plot below (also found in Chapter 2 of the report).
- Parameters used to calibrate the travel time model included:
    - Driver behavior parameters
    - Vehicle Turning Speeds and Posted Speeds
    - Pedestrian calls/volumes
    - Average trolley headway frequency & processing rates at Naval Gates
    - Volumes at network entrances (due to constrained flow conditions. See App B)
    - Minor adjustments to signal timing splits (± 5 s)

Corridor peak hours are 5:00-6:00 AM and 3:00-5:00 PM.

Corridor Travel Times
Existing Conditions

AM Peak Hour
06/13/2019

Arterial Level of Service: EB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cesar E. Chavez Park	1	28.0	287.3	0.1	6
Sampson Street	19	10.2	41.0	0.4	32
Schley Street	20	2.6	22.8	0.2	38
S 28th Street	2	32.8	61.4	0.3	20
Belt Street	21	60.8	82.6	0.3	12
32nd Street Naval Ga	8	109.4	214.4	0.3	9
	99	5.1	13.7	0.1	26
Vesta Street Naval B	57	8.4	32.5	0.4	39
	78	7.2	47.8	0.5	41
8th Street Naval Bas	10	27.6	32.0	0.1	8
Civic Center Drive	13	24.2	43.3	0.3	26
Total		316.3	878.8	3.0	20

Arterial Level of Service: WB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	10	124.5	428.5	0.3	8
	78	5.7	11.5	0.1	21
Vesta Street Naval B	57	17.1	58.8	0.5	33
	99	15.1	43.8	0.4	29
32nd Street	8	32.1	176.9	0.1	9
Belt Street	21	14.4	35.5	0.3	33
S 28th Street	2	24.5	46.6	0.3	21
Schley Street	20	4.6	34.1	0.3	36
Sampson Street	19	4.3	23.4	0.2	38
Cesar E. Chavez Park	1	19.3	48.0	0.4	28
Total		261.7	907.0	2.9	22

Arterial Level of Service: NB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Harbor Drive	2	42.9	49.5	0.0	3
Blue Line Rail Cross	38	6.4	13.0	0.0	9
28th Street Dry Side	53	1.0	4.6	0.0	21
Main Street	3	16.7	25.5	0.1	10
Boston Avenue	4	5.8	15.1	0.1	17
	65	0.5	12.1	0.1	24
I-5 Northbound On-Ra	54	0.8	5.7	0.0	22
National Avenue	5	23.1	25.6	0.0	4
Total		97.4	151.2	0.4	9

Arterial Level of Service: SB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	5	37.9	50.6	0.1	7
I-5 Northbound On-Ra	54	1.6	5.2	0.0	21
	65	0.1	5.9	0.0	21
	4	15.9	26.1	0.1	11
Main Street	3	40.1	50.7	0.1	5
28th Street Dry Side	53	40.1	50.8	0.1	5
Blue Line Rail Cross	38	22.2	25.5	0.0	4
Harbor Drive	2	15.6	23.9	0.0	6
Total		173.5	238.7	0.4	7

Arterial Level of Service: EB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
S 28th Street	5	29.0	37.5	0.1	6
I-5 Northbound On-Ra	55	1.8	6.0	0.0	21
I-5 NB 28th St Off-R	6	12.8	16.6	0.0	5
Total		43.6	60.2	0.1	7

Arterial Level of Service: WB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	6	37.0	55.5	0.1	9
	55	9.7	13.3	0.0	7
S 28th Street	5	17.1	23.7	0.0	6
Total		63.8	92.6	0.2	8

Arterial Level of Service: NB I-5 NB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	6	303.2	319.3	0.2	2
Total		303.2	319.3	0.2	2

Arterial Level of Service: NB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Blue Line Rail Cross	35	9.8	20.0	0.1	11
Norman Scott Road	9	24.7	31.5	0.1	8
32nd Street Naval Co	107	1.9	27.9	0.2	28
Total		36.3	79.5	0.3	16

Arterial Level of Service: SB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street Naval Co	107	45.4	76.5	0.3	13
Norman Scott Road	9	298.0	345.6	0.2	2
Blue Line Rail Cross	35	74.9	82.5	0.1	3
Harbor Drive	8	73.2	259.3	0.1	3
Total		491.6	763.9	0.6	4

Arterial Level of Service: NB I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Bridge	98	0.3	58.8	0.5	29
Total		0.3	58.8	0.5	29

Arterial Level of Service: SW I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street	9	328.5	380.3	0.5	5
Total		328.5	380.3	0.5	5

Arterial Level of Service: EB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street Trolley S	58	1.2	13.4	0.1	22
Blue Line Rail Cross	32	6.7	10.7	0.0	11
NEX Layaway Driveway	67	0.8	6.7	0.0	26
I-5 SB Ramps	11	0.6	3.7	0.0	30
Hoover	59	0.5	19.0	0.2	30
Roosevelt Ave	60	9.2	15.7	0.1	14
National City Boulev	12	27.9	35.0	0.1	7
Total		46.9	104.1	0.5	17

Arterial Level of Service: WB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National City Boulev	12	26.2	34.8	0.1	8
Roosevelt Avenue	60	13.8	21.5	0.1	11
I-5 NB Ramps	59	8.1	15.0	0.1	14
I-5 SB Ramps	11	91.6	110.1	0.2	5
NEX Layaway Driveway	67	24.0	27.5	0.0	4
Blue Line Rail Cross	32	47.5	53.5	0.0	3
8th Street Trolley S	58	27.6	31.6	0.0	4
Harbor Drive	10	158.6	278.1	0.1	2
Total		397.6	572.0	0.6	4

Arterial Level of Service: NB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	11	14.2	336.9	0.0	9
Total		14.2	336.9	0.0	9

Arterial Level of Service: SB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB 8th St Off-Ra	143	0.1	9.5	0.0	15
Total		0.1	9.5	0.0	15

Arterial Level of Service: NB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Civic Center Drive	13	218.3	259.8	0.3	4
Total		218.3	259.8	0.3	4

Arterial Level of Service: SB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 NB Off-Ramp	105	1.6	32.0	0.3	32
Total		1.6	32.0	0.3	32

Arterial Level of Service: EB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	22	27.7	34.9	0.1	9
I-5 NB Civic Ctr Off	13	18.4	26.6	0.0	6
	82	2.3	13.2	0.1	26
Roosevelt Avenue	14	8.8	13.5	0.0	12
Total		57.2	88.2	0.3	11

Arterial Level of Service: WB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	14	50.7	66.7	0.1	7
	82	13.6	19.1	0.0	9
McKinley Avenue	13	75.0	85.0	0.1	4
	22	4.9	9.6	0.0	14
	109	0.8	9.3	0.1	32
Total		145.0	189.7	0.4	8

Arterial Level of Service: NB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	61	10.1	16.5	0.1	13
W 14th Street	64	47.6	69.2	0.2	13
I-5 SB Civic Ctr Off	15	20.6	23.0	0.0	3
Civic Center Drive	22	61.5	565.7	0.0	3
Total		139.7	674.5	0.4	8

Arterial Level of Service: SB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Civic Ctr Off	15	3.1	7.9	0.0	23
W 14th Street	64	0.1	2.3	0.0	33
	61	8.2	32.7	0.2	27
W. 19th Street	62	10.3	16.4	0.1	13
Total		21.6	59.2	0.4	23

Arterial Level of Service: WB I-5 SB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	15	28.9	49.3	0.2	12
Total		28.9	49.3	0.2	12

Arterial Level of Service: EB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Tidelands Avenue	16	3.9	19.9	0.1	25
	66	0.9	15.8	0.1	32
Marina Way	24	4.3	14.9	0.1	25
	25	4.0	10.2	0.1	23
I-5 Southbound On-Ra	17	14.2	20.5	0.1	12
Total		27.3	81.3	0.5	23

Arterial Level of Service: WB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Ave	25	6.0	13.7	0.1	18
Marina Way	24	4.6	12.4	0.1	19
	66	1.8	13.4	0.1	28
Tidelands Avenue	16	3.8	19.5	0.1	26
Total		16.3	58.9	0.4	23

Arterial Level of Service: EB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound Off-R	18	3.0	10.6	0.1	21
Total		3.0	10.6	0.1	21

Arterial Level of Service: WB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound On-Ra	18	10.5	18.0	0.1	14
I-5 Southbound Off-R	17	7.7	15.4	0.1	14
Total		18.3	33.3	0.1	14

Arterial Level of Service: SE I-5 SB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Off Ramp	120	55.9	86.0	0.3	11
	165	46.1	59.6	0.1	7
	106	52.0	66.3	0.1	7
	102	24.5	29.0	0.0	5
Total		178.5	240.9	0.5	8

Arterial Level of Service: WB I-5 SB 8th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Ramps	143	31.5	62.2	0.1	8
Total		31.5	62.2	0.1	8

Corridor Travel Times
Existing Conditions

PM Peak Hour
06/13/2019

Arterial Level of Service: EB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cesar E. Chavez Park	1	24.1	2687.2	0.1	7
Sampson Street	19	7.4	38.7	0.4	34
Schley Street	20	2.5	22.0	0.2	40
S 28th Street	2	33.6	62.1	0.3	20
Belt Street	21	12.1	35.2	0.3	28
32nd Street Naval Ga	8	40.3	66.1	0.3	18
	99	5.8	14.5	0.1	25
Vesta Street Naval B	57	9.3	33.5	0.4	38
	78	8.1	50.6	0.5	39
8th Street Naval Bas	10	14.0	19.3	0.1	13
Civic Center Drive	13	123.2	190.1	0.3	8
Total		280.4	3219.3	3.0	21

Arterial Level of Service: WB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	10	21.7	44.8	0.3	25
	78	3.5	9.1	0.1	27
Vesta Street Naval B	57	9.3	51.8	0.5	38
	99	4.2	32.8	0.4	39
32nd Street	8	25.0	31.9	0.1	11
Belt Street	21	6.1	30.3	0.3	39
S 28th Street	2	25.4	49.0	0.3	20
Schley Street	20	5.7	32.4	0.3	38
Sampson Street	19	5.8	27.7	0.2	32
Cesar E. Chavez Park	1	20.4	50.2	0.4	26
Total		127.1	359.9	2.9	29

Arterial Level of Service: NB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Harbor Drive	2	47.2	53.5	0.0	3
Blue Line Rail Cross	38	5.3	12.6	0.0	9
28th Street Dry Side	53	0.9	4.0	0.0	24
Main Street	3	18.4	27.4	0.1	10
Boston Avenue	4	8.6	18.8	0.1	14
	65	1.3	12.8	0.1	22
I-5 Northbound On-Ra	54	1.9	6.9	0.0	18
National Avenue	5	19.5	23.4	0.0	5
Total		103.1	159.4	0.4	9

Arterial Level of Service: SB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	5	26.0	38.5	0.1	9
I-5 Northbound On-Ra	54	1.5	5.1	0.0	21
	65	0.1	5.9	0.0	21
	4	4.0	14.3	0.1	20
Main Street	3	10.3	18.5	0.1	14
28th Street Dry Side	53	1.4	11.7	0.1	22
Blue Line Rail Cross	38	9.9	13.3	0.0	7
Harbor Drive	2	13.4	17.4	0.0	7
Total		66.5	124.5	0.4	13

Arterial Level of Service: EB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
S 28th Street	5	35.4	65.3	0.1	5
I-5 Northbound On-Ra	55	3.8	9.0	0.0	14
I-5 NB 28th St Off-R	6	3.9	7.5	0.0	12
Total		43.1	81.8	0.1	7

Arterial Level of Service: WB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	6	7.2	25.9	0.1	19
	55	2.2	5.7	0.0	15
S 28th Street	5	12.9	17.6	0.0	7
Total		22.4	49.2	0.2	14

Arterial Level of Service: NB I-5 NB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	6	13.0	30.8	0.2	18
Total		13.0	30.8	0.2	18

Arterial Level of Service: NB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Blue Line Rail Cross	35	9.3	21.5	0.1	10
Norman Scott Road	9	29.5	37.2	0.1	7
32nd Street Naval Co	107	2.0	27.6	0.2	29
Total		40.8	86.4	0.3	15

Corridor Travel Times
Existing Conditions

PM Peak Hour
06/13/2019

Arterial Level of Service: SB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street Naval Co	107	0.0	32.0	0.3	31
Norman Scott Road	9	28.9	52.8	0.2	15
Blue Line Rail Cross	35	9.3	18.3	0.1	13
Harbor Drive	8	28.7	34.6	0.1	6
Total		66.8	137.7	0.6	16

Arterial Level of Service: NB I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Bridge	98	0.7	61.6	0.5	28
Total		0.7	61.6	0.5	28

Arterial Level of Service: SW I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street	9	26.9	79.9	0.5	22
Total		26.9	79.9	0.5	22

Arterial Level of Service: EB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street Trolley S	58	4.4	16.7	0.1	18
Blue Line Rail Cross	32	12.5	16.6	0.0	7
NEX Layaway Driveway	67	26.1	32.1	0.0	6
I-5 SB Ramps	11	17.6	26.2	0.0	5
Hoover	59	130.6	148.1	0.2	4
Roosevelt Ave	60	40.8	54.1	0.1	5
National City Boulev	12	42.8	52.3	0.1	5
Total		274.8	346.1	0.5	5

Arterial Level of Service: WB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National City Boulev	12	20.5	29.1	0.1	10
Roosevelt Avenue	60	20.9	28.1	0.1	8
I-5 NB Ramps	59	2.1	9.1	0.1	24
I-5 SB Ramps	11	2.4	20.7	0.2	27
NEX Layaway Driveway	67	0.2	3.7	0.0	30
Blue Line Rail Cross	32	10.2	16.1	0.0	11
8th Street Trolley S	58	1.3	4.9	0.0	24
Harbor Drive	10	38.0	47.8	0.1	6
Total		95.7	159.5	0.6	13

Arterial Level of Service: NB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	11	114.1	345.4	0.0	1
Total		114.1	345.4	0.0	1

Arterial Level of Service: SB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB 8th St Off-Ra	143	0.1	9.7	0.0	15
Total		0.1	9.7	0.0	15

Arterial Level of Service: NB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Civic Center Drive	13	23.8	55.4	0.3	18
Total		23.8	55.4	0.3	18

Arterial Level of Service: SB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 NB Off-Ramp	105	2.4	34.0	0.3	29
Total		2.4	34.0	0.3	29

Arterial Level of Service: EB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	22	10.8	18.2	0.1	17
I-5 NB Civic Ctr Off	13	34.7	38.0	0.0	3
	82	12.1	24.2	0.1	14
Roosevelt Avenue	14	13.4	31.1	0.0	9
Total		71.0	111.5	0.3	10

Arterial Level of Service: WB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	14	22.3	37.6	0.1	13
	82	13.8	19.2	0.0	9
McKinley Avenue	13	42.0	51.0	0.1	7
	22	7.4	12.5	0.0	11
	109	1.1	9.5	0.1	31
Total		86.6	129.8	0.4	11

Arterial Level of Service: NB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	61	5.5	8.1	0.1	27
W 14th Street	64	3.2	27.6	0.2	32
I-5 SB Civic Ctr Off	15	0.3	2.7	0.0	28
Civic Center Drive	22	13.1	19.8	0.0	9
Total		22.1	58.2	0.4	23

Arterial Level of Service: SB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Civic Ctr Off	15	3.4	8.5	0.0	21
W 14th Street	64	0.1	2.3	0.0	33
	61	7.6	31.4	0.2	28
W. 19th Street	62	9.5	15.5	0.1	14
Total		20.6	57.8	0.4	23

Arterial Level of Service: WB I-5 SB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	15	5.3	26.1	0.2	23
Total		5.3	26.1	0.2	23

Arterial Level of Service: EB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Tidelands Avenue	16	4.2	20.2	0.1	25
	66	0.9	15.3	0.1	33
Marina Way	24	5.2	15.8	0.1	23
	25	11.6	18.6	0.1	13
I-5 Southbound On-Ra	17	24.4	31.4	0.1	8
Total		46.4	101.2	0.5	18

Arterial Level of Service: WB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Ave	25	14.1	21.2	0.1	12
Marina Way	24	4.0	11.8	0.1	20
	66	1.0	12.6	0.1	29
Tidelands Avenue	16	4.0	19.8	0.1	25
Total		23.2	65.4	0.4	21

Arterial Level of Service: EB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound Off-R	18	2.9	10.4	0.1	21
Total		2.9	10.4	0.1	21

Arterial Level of Service: WB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound On-Ra	18	17.9	26.8	0.1	10
I-5 Southbound Off-R	17	9.7	17.4	0.1	13
Total		27.5	44.2	0.1	11

Arterial Level of Service: SE I-5 SB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Off Ramp	120	0.1	31.6	0.3	31
	165	0.2	14.0	0.1	30
	106	0.1	14.6	0.1	30
	102	1.1	5.6	0.0	26
Total		1.4	65.7	0.5	30

Arterial Level of Service: WB I-5 SB 8th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Ramps	143	279.5	309.5	0.1	2
Total		279.5	309.5	0.1	2

APPENDIX

D-5: TRAVEL TIME ANALYSIS - HORIZON YEAR NO BUILD CONDITIONS

Corridor Travel Times
Horizon Year No Build

AM Peak Hour
06/25/2019

Arterial Level of Service: EB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cesar E. Chavez Park	1	25.0	303.8	0.1	7
Sampson Street	19	14.7	45.6	0.4	29
Schley Street	20	3.1	23.4	0.2	37
S 28th Street	2	138.9	167.9	0.3	7
Belt Street	21	84.5	106.4	0.3	9
32nd Street Naval Ga	8	46.9	90.6	0.3	16
	99	4.2	12.8	0.1	28
Vesta Street Naval B	57	7.0	31.6	0.4	40
	78	6.3	47.6	0.5	41
8th Street Naval Bas	10	32.5	37.1	0.1	6
Civic Center Drive	13	30.7	49.7	0.3	23
Total		393.7	916.4	3.0	17

Arterial Level of Service: WB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	10	129.8	436.4	0.3	7
	78	4.9	10.7	0.1	23
Vesta Street Naval B	57	13.7	55.3	0.5	36
	99	11.6	40.3	0.4	32
32nd Street	8	19.0	291.6	0.1	14
Belt Street	21	6.4	27.1	0.3	43
S 28th Street	2	24.9	47.2	0.3	21
Schley Street	20	3.6	31.8	0.3	39
Sampson Street	19	7.0	25.6	0.2	34
Cesar E. Chavez Park	1	20.0	48.0	0.4	28
Total		240.9	1014.0	2.9	23

Arterial Level of Service: NB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Harbor Drive	2	46.5	51.5	0.0	3
Blue Line Rail Cross	38	12.1	15.0	0.0	8
28th Street Dry Side	53	0.6	4.1	0.0	23
Main Street	3	12.6	21.0	0.1	12
Boston Avenue	4	5.8	15.2	0.1	17
	65	0.7	12.2	0.1	23
I-5 Northbound On-Ra	54	5.5	10.4	0.0	12
National Avenue	5	27.5	31.4	0.0	4
Total		111.4	160.8	0.4	9

Arterial Level of Service: SB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	5	182.6	1476.7	0.1	2
I-5 Northbound On-Ra	54	11.6	15.1	0.0	7
	65	43.6	49.3	0.0	3
	4	94.6	178.9	0.1	3
Main Street	3	82.9	96.7	0.1	3
28th Street Dry Side	53	67.2	77.6	0.1	3
Blue Line Rail Cross	38	33.6	36.9	0.0	3
Harbor Drive	2	9.4	14.2	0.0	9
Total		525.5	1945.5	0.4	3

Arterial Level of Service: EB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
S 28th Street	5	139.8	713.1	0.1	2
I-5 Northbound On-Ra	55	27.9	33.0	0.0	4
I-5 NB 28th St Off-R	6	25.2	30.0	0.0	3
Total		193.0	776.0	0.1	2

Arterial Level of Service: WB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	6	281.1	1230.4	0.1	2
	55	14.8	18.3	0.0	5
S 28th Street	5	22.3	30.6	0.0	5
Total		318.1	1279.4	0.2	2

Arterial Level of Service: NB I-5 NB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	6	468.9	485.3	0.2	1
Total		468.9	485.3	0.2	1

Arterial Level of Service: NB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Blue Line Rail Cross	35	5.4	16.3	0.1	14
Norman Scott Road	9	25.2	32.0	0.1	8
32nd Street Naval Co	107	1.7	26.9	0.2	29
Total		32.3	75.2	0.3	17

Corridor Travel Times
Horizon Year No Build

AM Peak Hour
06/25/2019

Arterial Level of Service: SB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street Naval Co	107	252.0	568.2	0.3	3
Norman Scott Road	9	400.3	530.2	0.2	2
Blue Line Rail Cross	35	90.4	98.1	0.1	2
Harbor Drive	8	91.8	644.1	0.1	2
Total		834.5	1840.5	0.6	2

Arterial Level of Service: NB I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Bridge	98	0.3	59.2	0.5	29
Total		0.3	59.2	0.5	29

Arterial Level of Service: SW I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street	9	838.2	889.1	0.5	2
Total		838.2	889.1	0.5	2

Arterial Level of Service: EB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street Trolley S	58	1.9	14.1	0.1	21
Blue Line Rail Cross	32	9.8	13.9	0.0	9
NEX Layaway Driveway	67	0.9	6.9	0.0	26
I-5 SB Ramps	11	0.7	3.5	0.0	32
Hoover	59	0.7	18.8	0.2	30
Roosevelt Ave	60	13.9	20.5	0.1	11
National City Boulev	12	39.3	46.2	0.1	5
Total		67.3	123.8	0.5	14

Arterial Level of Service: WB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National City Boulev	12	262.1	1419.3	0.1	1
Roosevelt Avenue	60	83.7	106.6	0.1	3
I-5 NB Ramps	59	55.7	64.2	0.1	3
I-5 SB Ramps	11	290.5	308.8	0.2	2
NEX Layaway Driveway	67	44.6	48.0	0.0	2
Blue Line Rail Cross	32	70.8	76.6	0.0	2
8th Street Trolley S	58	33.6	37.6	0.0	3
Harbor Drive	10	148.6	403.0	0.1	2
Total		989.6	2464.2	0.6	2

Arterial Level of Service: NB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	11	25.0	1247.4	0.0	5
Total		25.0	1247.4	0.0	5

Arterial Level of Service: SB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB 8th St Off-Ra	143	0.1	9.5	0.0	15
Total		0.1	9.5	0.0	15

Arterial Level of Service: NB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Civic Center Drive	13	309.3	355.0	0.3	3
Total		309.3	355.0	0.3	3

Arterial Level of Service: SB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 NB Off-Ramp	105	1.9	32.8	0.3	31
Total		1.9	32.8	0.3	31

Arterial Level of Service: EB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	22	34.1	39.8	0.1	8
I-5 NB Civic Ctr Off	13	33.4	44.2	0.0	4
	82	5.4	16.9	0.1	20
Roosevelt Avenue	14	7.2	11.8	0.0	14
Total		80.1	112.7	0.3	9

Arterial Level of Service: WB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	14	84.4	111.7	0.1	5
	82	30.1	35.5	0.0	5
McKinley Avenue	13	121.4	162.5	0.1	3
	22	15.0	24.1	0.0	7
	109	1.3	9.8	0.1	30
Total		252.3	343.6	0.4	5

Arterial Level of Service: NB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	61	80.5	87.0	0.1	2
W 14th Street	64	285.2	417.2	0.2	3
I-5 SB Civic Ctr Off	15	25.8	29.4	0.0	3
Civic Center Drive	22	118.9	123.4	0.0	1
Total		510.4	657.0	0.4	2

Arterial Level of Service: SB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Civic Ctr Off	15	3.2	8.0	0.0	22
W 14th Street	64	0.1	2.3	0.0	34
	61	8.0	32.7	0.2	27
W. 19th Street	62	10.4	16.5	0.1	13
Total		21.7	59.5	0.4	23

Arterial Level of Service: WB I-5 SB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	15	81.2	101.3	0.2	6
Total		81.2	101.3	0.2	6

Arterial Level of Service: EB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Tidelands Avenue	16	25.7	41.4	0.1	12
	66	0.8	14.1	0.1	36
Marina Way	24	5.6	16.4	0.1	23
	25	7.5	14.3	0.1	17
I-5 Southbound On-Ra	17	16.3	23.3	0.1	11
Total		55.9	109.5	0.5	17

Arterial Level of Service: WB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Ave	25	27.6	35.4	0.1	7
Marina Way	24	36.0	52.4	0.1	5
	66	65.7	77.0	0.1	5
Tidelands Avenue	16	32.3	133.0	0.1	10
Total		161.6	297.7	0.4	7

Arterial Level of Service: EB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound Off-R	18	3.1	10.7	0.1	21
Total		3.1	10.7	0.1	21

Arterial Level of Service: WB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound On-Ra	18	24.2	42.1	0.1	8
I-5 Southbound Off-R	17	29.7	37.4	0.1	6
Total		53.9	79.5	0.1	7

Arterial Level of Service: SE I-5 SB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Off Ramp	120	432.0	963.3	0.3	2
	165	180.6	193.9	0.1	2
	106	173.2	187.3	0.1	2
	102	59.2	63.7	0.0	2
Total		845.0	1408.2	0.5	2

Arterial Level of Service: WB I-5 SB 8th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Ramps	143	135.3	166.3	0.1	3
Total		135.3	166.3	0.1	3

Corridor Travel Times
Horizon Year No Build

AM Peak Hour
06/25/2019

Arterial Level of Service: NB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	12	36.0	84.1	0.1	8
	154	2.7	8.6	0.1	23
	172	3.1	47.2	0.4	28
	160	8.9	20.5	0.1	19
Yama Street Path	156	71.5	87.0	0.1	5
Total		122.2	247.4	0.7	13

Arterial Level of Service: SB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	160	0.5	15.9	0.1	25
	172	0.0	12.6	0.1	30
	154	0.1	43.0	0.4	31
8th Street	12	32.7	37.9	0.1	5
Total		33.3	109.3	0.6	21

Arterial Level of Service: SE Yama Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	153	0.2	47.7	0.4	31
National City Boulev	156	199.8	230.9	0.3	4
	173	101.5	126.2	0.1	3
Total		301.5	404.7	0.8	7

Arterial Level of Service: SB Vesta Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	164	0.2	31.0	0.3	30
	179	1.1	34.3	0.3	29
	170	78.0	110.5	0.3	9
	177	70.7	77.6	0.1	3
Total		149.9	253.3	0.9	13

Corridor Travel Times
Horizon Year No Build

PM Peak Hour
06/25/2019

Arterial Level of Service: EB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Sampson Street	19	9.0	40.3	0.4	33
Schley Street	20	32.6	51.1	0.2	17
S 28th Street	2	77.2	280.3	0.3	12
Belt Street	21	11.6	34.4	0.3	29
32nd Street Naval Ga	8	27.2	175.9	0.3	22
	99	4.0	12.8	0.1	28
Vesta Street Naval B	57	7.6	32.4	0.4	39
	78	44.9	85.1	0.5	23
8th Street Naval Bas	10	19.8	364.3	0.1	10
Civic Center Drive	13	118.2	171.2	0.3	8
Total		352.0	1247.7	2.9	18

Arterial Level of Service: WB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	10	27.7	51.1	0.3	22
	78	3.6	9.2	0.1	26
Vesta Street Naval B	57	10.4	52.6	0.5	37
	99	4.6	32.8	0.4	39
	8	15.6	22.6	0.1	16
Belt Street	21	7.1	32.0	0.3	37
S 28th Street	2	27.6	50.0	0.3	20
Schley Street	20	6.2	33.0	0.3	38
Sampson Street	19	11.0	33.5	0.2	26
Cesar E. Chavez Park	1	18.9	48.4	0.4	27
Total		132.6	365.3	2.9	29

Arterial Level of Service: NB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Harbor Drive	2	126.2	132.4	0.0	1
Blue Line Rail Cross	38	1.6	7.8	0.0	15
28th Street Dry Side	53	7.7	16.2	0.0	9
Main Street	3	39.5	76.0	0.1	5
Boston Avenue	4	33.6	42.4	0.1	6
	65	30.3	41.5	0.1	7
I-5 Northbound On-Ra	54	41.6	46.6	0.0	3
National Avenue	5	19.7	39.7	0.0	5
Total		300.3	402.6	0.4	4

Corridor Travel Times
Horizon Year No Build

PM Peak Hour
06/25/2019

Arterial Level of Service: SB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	5	164.9	729.1	0.1	2
I-5 Northbound On-Ra	54	1.5	5.2	0.0	21
	65	0.0	5.8	0.0	21
	4	7.6	17.1	0.1	17
Main Street	3	10.0	18.1	0.1	14
28th Street Dry Side	53	1.3	11.9	0.1	21
Blue Line Rail Cross	38	9.9	13.2	0.0	7
Harbor Drive	2	10.4	15.0	0.0	8
Total		205.7	815.5	0.4	6

Arterial Level of Service: EB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
S 28th Street	5	143.3	1989.9	0.1	1
I-5 Northbound On-Ra	55	23.8	28.7	0.0	4
I-5 NB 28th St Off-R	6	34.1	60.5	0.0	2
Total		201.2	2079.2	0.1	2

Arterial Level of Service: WB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	6	318.3	1130.6	0.1	1
	55	11.2	14.7	0.0	6
S 28th Street	5	44.9	65.1	0.0	3
Total		374.5	1210.4	0.2	2

Arterial Level of Service: NB I-5 NB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	6	131.2	149.0	0.2	4
Total		131.2	149.0	0.2	4

Arterial Level of Service: NB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Blue Line Rail Cross	35	8.4	20.5	0.1	11
Norman Scott Road	9	27.9	35.5	0.1	7
32nd Street Naval Co	107	1.6	27.3	0.2	29
Total		37.9	83.3	0.3	15

Corridor Travel Times
Horizon Year No Build

PM Peak Hour
06/25/2019

Arterial Level of Service: SB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street Naval Co	107	0.0	32.3	0.3	31
Norman Scott Road	9	84.1	108.1	0.2	7
Blue Line Rail Cross	35	86.0	94.4	0.1	3
Harbor Drive	8	35.9	223.9	0.1	5
Total		206.1	458.7	0.6	8

Arterial Level of Service: NB I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Bridge	98	0.6	61.8	0.5	28
Total		0.6	61.8	0.5	28

Arterial Level of Service: SW I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street	9	35.6	89.7	0.5	19
Total		35.6	89.7	0.5	19

Arterial Level of Service: EB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street Trolley S	58	46.8	62.0	0.1	5
Blue Line Rail Cross	32	25.3	29.4	0.0	4
NEX Layaway Driveway	67	39.9	45.9	0.0	4
I-5 SB Ramps	11	21.6	59.4	0.0	4
Hoover	59	163.4	180.7	0.2	3
Roosevelt Ave	60	42.2	84.5	0.1	4
National City Boulev	12	39.1	47.8	0.1	5
Total		378.3	509.7	0.5	4

Arterial Level of Service: WB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National City Boulev	12	23.3	32.0	0.1	9
Roosevelt Avenue	60	25.9	33.3	0.1	7
I-5 NB Ramps	59	2.4	9.4	0.1	23
I-5 SB Ramps	11	7.4	26.4	0.2	22
NEX Layaway Driveway	67	2.4	5.8	0.0	19
Blue Line Rail Cross	32	5.5	11.5	0.0	15
8th Street Trolley S	58	1.0	4.9	0.0	24
Harbor Drive	10	39.6	50.0	0.1	6
Total		107.6	173.2	0.6	12

Arterial Level of Service: NB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	11	25.2	35.1	0.0	4
Total		25.2	35.1	0.0	4

Arterial Level of Service: SB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB 8th St Off-Ra	143	0.1	9.0	0.0	16
Total		0.1	9.0	0.0	16

Arterial Level of Service: NB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Civic Center Drive	13	24.6	56.3	0.3	18
Total		24.6	56.3	0.3	18

Arterial Level of Service: SB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 NB Off-Ramp	105	2.0	32.7	0.3	30
Total		2.0	32.7	0.3	30

Arterial Level of Service: EB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	22	11.8	19.1	0.1	16
I-5 NB Civic Ctr Off	13	32.6	35.9	0.0	4
	82	12.7	24.8	0.1	14
Roosevelt Avenue	14	13.4	31.5	0.0	9
Total		70.6	111.3	0.3	10

Arterial Level of Service: WB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	14	23.2	38.2	0.1	12
	82	9.9	15.3	0.0	11
McKinley Avenue	13	32.1	41.6	0.1	8
	22	7.4	12.4	0.0	11
	109	1.0	9.4	0.1	32
Total		73.5	117.0	0.4	12

Arterial Level of Service: NB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	61	9.0	15.5	0.1	14
W 14th Street	64	3.4	27.9	0.2	32
I-5 SB Civic Ctr Off	15	1.7	4.1	0.0	19
Civic Center Drive	22	25.3	30.5	0.0	6
Total		39.5	78.0	0.4	17

Arterial Level of Service: SB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Civic Ctr Off	15	3.5	8.6	0.0	21
W 14th Street	64	0.1	2.4	0.0	32
	61	8.5	33.3	0.2	26
W. 19th Street	62	11.3	17.4	0.1	12
Total		23.4	61.7	0.4	22

Arterial Level of Service: WB I-5 SB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	15	5.9	26.7	0.2	22
Total		5.9	26.7	0.2	22

Arterial Level of Service: EB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Tidelands Avenue	16	6.5	22.6	0.1	22
	66	1.3	15.4	0.1	33
Marina Way	24	6.9	17.9	0.1	21
	25	16.4	23.3	0.1	10
I-5 Southbound On-Ra	17	32.0	39.7	0.1	6
Total		63.2	118.8	0.5	16

Arterial Level of Service: WB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Ave	25	18.3	25.9	0.1	10
Marina Way	24	3.9	11.8	0.1	20
	66	0.8	12.2	0.1	30
Tidelands Avenue	16	5.0	20.8	0.1	24
Total		27.9	70.8	0.4	19

Arterial Level of Service: EB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound Off-R	18	3.7	11.3	0.1	20
Total		3.7	11.3	0.1	20

Arterial Level of Service: WB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound On-Ra	18	17.2	25.4	0.1	10
I-5 Southbound Off-R	17	7.5	15.2	0.1	15
Total		24.7	40.5	0.1	12

Arterial Level of Service: SE I-5 SB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Off Ramp	120	0.1	31.6	0.3	31
	165	0.3	14.0	0.1	30
	106	0.2	14.7	0.1	29
	102	1.5	6.1	0.0	24
Total		2.1	66.4	0.5	30

Arterial Level of Service: WB I-5 SB 8th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Ramps	143	549.3	577.9	0.1	1
Total		549.3	577.9	0.1	1

Corridor Travel Times
Horizon Year No Build

PM Peak Hour
06/25/2019

Arterial Level of Service: NB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	12	27.2	36.7	0.1	10
	154	2.4	8.4	0.1	24
	175	0.4	44.6	0.4	30
	159	0.5	11.8	0.1	32
Yama Street Path	156	10.4	25.8	0.1	15
Total		41.0	127.3	0.7	21

Arterial Level of Service: SB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	159	0.9	16.2	0.1	25
	175	0.0	12.5	0.1	30
	154	0.3	44.1	0.4	30
8th Street	12	28.4	33.7	0.1	6
Total		29.6	106.5	0.6	22

Arterial Level of Service: SE Yama Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	153	0.1	47.2	0.4	31
National City Boulev	156	13.6	46.0	0.3	21
	172	7.1	19.0	0.1	19
Total		20.8	112.2	0.8	25

Arterial Level of Service: SB Vesta Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	164	0.0	30.2	0.3	30
	179	7.3	40.6	0.3	25
	170	2.3	35.6	0.3	29
	177	6.7	13.7	0.1	16
Total		16.2	120.2	0.9	26

D-6: TRAVEL TIME ANALYSIS – HORIZON YEAR BUILD CONDITIONS

HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

Horizon Year All-Build Assumptions

- The Horizon Year All-Build scenario required a number of network assumptions and signal timing assumptions.
    - All travel time analysis was developed and conducted prior to the 3rd TWG meeting. The following travel time Synchro reports reflect that analysis.
    - Harbor Drive 2.0 features a number of project features that are interchangeable and subject to change. To provide a base for Harbor Drive 2.0 that also maximizes the incorporation of other projects on the list, the project team coordinated the entire Harbor Drive corridor as a minimum base for Harbor Drive 2.0.
    - The project team did not adjust any additional project trips that are reduced or changed due to the improvement of first/last mile connections.
    - The naval gate processing rate improvement was approximated as a 15% increase in efficiency per discussions with the Navy.
    - The Vesta street bridge manual adjustments were made, diverting project trips from the I-15/32nd street off-ramp and the I-5/28th Street off-ramp to Main Street and Dry Side Base Access.
    - Signal timing was optimized at all locations.
    - For volume development see Appendix F

Corridor Travel Times
Horizon Year Build - ALL IN

AM Peak Hour
06/19/2019

Arterial Level of Service: EB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cesar E. Chavez Park	1	22.7	27.3	0.1	7
Sampson Street	19	15.9	46.5	0.4	28
Schley Street	20	2.8	23.2	0.2	38
S 28th Street	2	115.4	143.0	0.3	9
	179	63.5	73.0	0.1	5
Belt Street	21	50.1	64.3	0.2	9
32nd Street Naval Ga	8	51.8	76.2	0.3	15
	99	4.9	13.7	0.1	26
Vesta Street Naval B	57	11.9	36.3	0.4	35
	78	8.0	51.3	0.5	38
8th Street Naval Bas	10	44.7	49.6	0.1	5
Civic Center Drive	13	30.9	50.2	0.3	22
Total		422.8	654.6	3.0	17

Arterial Level of Service: WB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	10	58.0	93.9	0.3	14
	78	6.1	11.8	0.1	20
Vesta Street Naval B	57	18.2	60.2	0.5	33
	99	40.6	68.6	0.4	19
32nd Street	8	32.4	140.6	0.1	9
Belt Street	21	21.8	43.0	0.3	27
	179	1.5	16.4	0.2	36
S 28th Street	2	21.2	30.0	0.1	13
Schley Street	20	5.5	33.8	0.3	37
Sampson Street	19	8.3	27.3	0.2	32
Cesar E. Chavez Park	1	18.9	48.0	0.4	28
Total		232.5	573.6	2.9	23

Arterial Level of Service: NB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Harbor Drive	2	46.4	51.9	0.0	3
	38	0.8	9.9	0.0	12
28th Street Dry Side	53	1.2	4.3	0.0	22
Main Street	3	15.7	24.6	0.1	10
Boston Avenue	4	6.5	16.3	0.1	16
	65	0.7	12.1	0.1	24
I-5 Northbound On-Ra	54	9.7	14.4	0.0	9
National Avenue	5	37.9	44.7	0.0	3
Total		118.9	178.2	0.4	8

Arterial Level of Service: SB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	5	101.2	309.1	0.1	3
I-5 Northbound On-Ra	54	1.6	5.2	0.0	20
	65	0.4	6.2	0.0	20
	4	15.5	26.0	0.1	11
Main Street	3	37.0	48.6	0.1	6
28th Street Dry Side	53	36.8	47.6	0.1	5
	38	26.1	29.6	0.0	3
Harbor Drive	2	29.4	130.6	0.0	3
Total		248.0	602.9	0.4	5

Arterial Level of Service: EB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
S 28th Street	5	133.1	774.9	0.1	2
I-5 Northbound On-Ra	55	6.1	11.3	0.0	11
I-5 NB 28th St Off-R	6	13.1	16.7	0.0	5
Total		152.3	803.0	0.1	3

Arterial Level of Service: WB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	6	37.7	56.8	0.1	9
	55	9.2	12.9	0.0	7
S 28th Street	5	20.2	29.5	0.0	5
Total		67.1	99.2	0.2	7

Arterial Level of Service: NB I-5 NB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	6	56.2	74.0	0.2	7
Total		56.2	74.0	0.2	7

Arterial Level of Service: NB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	35	0.5	13.1	0.1	17
Norman Scott Road	9	18.9	25.1	0.1	10
32nd Street Naval Co	107	1.8	27.0	0.2	29
Total		21.2	65.3	0.3	19

Corridor Travel Times
Horizon Year Build - ALL IN

AM Peak Hour
06/19/2019

Arterial Level of Service: SB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street Naval Co	107	103.0	163.8	0.3	7
Norman Scott Road	9	199.0	245.3	0.2	4
	35	53.2	61.4	0.1	4
Harbor Drive	8	97.8	518.2	0.1	2
Total		453.0	988.7	0.6	4

Arterial Level of Service: NB I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Bridge	98	0.2	57.5	0.5	30
Total		0.2	57.5	0.5	30

Arterial Level of Service: SW I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street	9	143.2	198.5	0.5	9
Total		143.2	198.5	0.5	9

Arterial Level of Service: EB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street Trolley S	58	2.5	14.1	0.1	21
Blue Line Rail Cross	32	9.5	13.4	0.0	9
NEX Layaway Driveway	67	1.1	7.0	0.0	25
I-5 SB Ramps	11	0.8	3.5	0.0	32
Hoover	59	0.7	18.9	0.2	30
Roosevelt Ave	60	15.4	21.9	0.1	10
National City Boulev	12	19.1	26.1	0.1	9
Total		49.0	105.0	0.5	16

Arterial Level of Service: WB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National City Boulev	12	71.1	84.9	0.1	4
Roosevelt Avenue	60	12.8	20.6	0.1	11
I-5 NB Ramps	59	21.0	28.1	0.1	8
I-5 SB Ramps	11	116.8	135.3	0.2	4
NEX Layaway Driveway	67	23.3	26.8	0.0	4
Blue Line Rail Cross	32	41.9	47.8	0.0	4
8th Street Trolley S	58	22.0	25.8	0.0	5
Harbor Drive	10	127.5	149.4	0.1	2
Total		436.4	518.7	0.6	4

Arterial Level of Service: NB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	11	8.4	119.3	0.0	14
Total		8.4	119.3	0.0	14

Arterial Level of Service: SB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB 8th St Off-Ra	143	0.1	9.3	0.0	16
Total		0.1	9.3	0.0	16

Arterial Level of Service: NB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Civic Center Drive	13	193.6	231.5	0.3	4
Total		193.6	231.5	0.3	4

Arterial Level of Service: SB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 NB Off-Ramp	105	1.9	33.7	0.3	30
Total		1.9	33.7	0.3	30

Arterial Level of Service: EB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	22	19.6	25.7	0.1	12
I-5 NB Civic Ctr Off	13	39.6	43.4	0.0	3
	82	12.9	24.9	0.1	14
Roosevelt Avenue	14	8.8	13.5	0.0	12
Total		80.9	107.6	0.3	9

Arterial Level of Service: WB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	14	35.4	50.8	0.1	9
	82	15.9	21.4	0.0	8
McKinley Avenue	13	103.8	121.7	0.1	3
	22	10.4	17.9	0.0	8
	109	1.4	9.8	0.1	30
Total		166.9	221.6	0.4	7

Arterial Level of Service: NB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	61	93.8	100.3	0.1	2
W 14th Street	64	397.7	612.4	0.2	2
I-5 SB Civic Ctr Off	15	27.9	30.3	0.0	3
Civic Center Drive	22	68.7	378.1	0.0	2
Total		588.0	1121.1	0.4	2

Arterial Level of Service: SB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Civic Ctr Off	15	3.1	7.8	0.0	23
W 14th Street	64	0.0	2.3	0.0	33
	61	10.4	34.6	0.2	25
W. 19th Street	62	12.3	18.4	0.1	12
Total		25.9	63.2	0.4	21

Arterial Level of Service: WB I-5 SB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	15	173.6	193.2	0.2	3
Total		173.6	193.2	0.2	3

Arterial Level of Service: EB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Tidelands Avenue	16	7.0	22.7	0.1	22
	66	1.1	14.9	0.1	34
Marina Way	24	5.7	16.1	0.1	23
	25	5.3	12.1	0.1	20
I-5 Southbound On-Ra	17	13.4	20.0	0.1	13
Total		32.4	85.8	0.5	22

Arterial Level of Service: WB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Ave	25	36.9	44.6	0.1	6
Marina Way	24	41.4	69.5	0.1	5
	66	76.8	88.0	0.1	4
Tidelands Avenue	16	21.7	66.9	0.1	14
Total		176.8	269.1	0.4	6

Arterial Level of Service: EB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound Off-R	18	3.2	10.9	0.1	20
Total		3.2	10.9	0.1	20

Arterial Level of Service: WB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound On-Ra	18	27.1	84.6	0.1	7
I-5 Southbound Off-R	17	33.5	43.1	0.1	5
Total		60.6	127.7	0.1	6

Arterial Level of Service: SE I-5 SB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Off Ramp	120	182.2	214.2	0.3	5
	165	93.3	106.8	0.1	4
	106	78.0	92.2	0.1	5
	102	27.2	31.7	0.0	5
Total		380.7	445.0	0.5	4

Corridor Travel Times
Horizon Year Build - ALL IN

AM Peak Hour
06/19/2019

Arterial Level of Service: WB I-5 SB 8th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Ramps	143	59.8	90.5	0.1	5
Total		59.8	90.5	0.1	5

Corridor Travel Times
Horizon Year Build - ALL IN

AM Peak Hour
06/19/2019

Arterial Level of Service: NB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	12	63.8	142.5	0.1	5
	154	20.9	26.8	0.1	8
	172	282.1	322.6	0.4	4
	160	113.5	125.0	0.1	3
Yama Street Path	156	102.0	117.0	0.1	3
Total		582.3	733.9	0.7	4

Arterial Level of Service: SB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	160	0.5	15.9	0.1	25
	172	0.0	12.6	0.1	30
	154	0.0	43.1	0.4	31
8th Street	12	46.1	50.9	0.1	4
Total		46.7	122.6	0.6	19

Arterial Level of Service: SB Vesta Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	164	23.6	54.2	0.3	17
	36	77.3	109.9	0.3	9
	170	126.5	159.0	0.3	6
	177	72.3	79.2	0.1	3
Total		299.7	402.3	0.9	8

Arterial Level of Service: SE Yama Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	153	97.1	145.4	0.4	10
National City Boulev	156	316.4	346.4	0.3	3
	173	104.3	115.5	0.1	3
Total		517.8	607.3	0.8	5

Corridor Travel Times
Horizon Year Build - ALL IN

PM Peak Hour
06/19/2019

Arterial Level of Service: EB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Sampson Street	19	14.7	46.4	0.4	29
Schley Street	20	1.4	22.2	0.2	40
S 28th Street	2	9.7	38.7	0.3	32
	179	2.0	12.1	0.1	33
Belt Street	21	5.9	20.0	0.2	29
32nd Street Naval Ga	8	55.1	81.4	0.3	14
	99	8.5	17.3	0.1	21
Vesta Street Naval B	57	18.4	43.0	0.4	30
	78	72.3	113.7	0.5	17
8th Street Naval Bas	10	33.8	129.8	0.1	6
Civic Center Drive	13	135.8	322.4	0.3	7
Total		357.7	846.9	2.9	18

Arterial Level of Service: WB Harbor Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	10	27.4	50.0	0.3	23
	78	3.7	9.4	0.1	26
Vesta Street Naval B	57	34.3	75.3	0.5	26
	99	6.6	34.8	0.4	37
	8	34.7	42.1	0.1	9
Belt Street	21	4.2	28.3	0.3	41
	179	0.5	15.2	0.2	39
S 28th Street	2	37.6	46.5	0.1	9
Schley Street	20	13.3	40.3	0.3	31
Sampson Street	19	16.5	38.6	0.2	23
Cesar E. Chavez Park	1	24.8	54.4	0.4	24
Total		203.8	435.0	2.9	24

Arterial Level of Service: NB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Harbor Drive	2	64.4	69.9	0.0	2
	38	1.8	7.8	0.0	15
28th Street Dry Side	53	7.8	10.9	0.0	9
Main Street	3	45.5	75.3	0.1	5
Boston Avenue	4	17.1	26.1	0.1	10
	65	1.6	13.2	0.1	22
I-5 Northbound On-Ra	54	5.3	10.3	0.0	12
National Avenue	5	23.9	27.4	0.0	4
Total		167.4	240.9	0.4	6

Arterial Level of Service: SB S 28th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	5	38.8	51.3	0.1	6
I-5 Northbound On-Ra	54	1.5	5.1	0.0	21
	65	0.1	5.9	0.0	21
	4	15.2	25.7	0.1	11
Main Street	3	13.2	25.0	0.1	12
28th Street Dry Side	53	1.4	12.0	0.1	21
	38	1.2	4.7	0.0	20
Harbor Drive	2	30.1	34.5	0.0	3
Total		101.6	164.3	0.4	10

Arterial Level of Service: EB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
S 28th Street	5	60.7	151.3	0.1	3
I-5 Northbound On-Ra	55	8.2	13.5	0.0	9
I-5 NB 28th St Off-R	6	10.1	14.9	0.0	6
Total		79.0	179.7	0.1	5

Arterial Level of Service: WB National Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	6	53.9	72.6	0.1	7
	55	11.1	14.8	0.0	6
S 28th Street	5	21.9	29.3	0.0	5
Total		86.9	116.7	0.2	6

Arterial Level of Service: NB I-5 NB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National Avenue	6	293.9	310.1	0.2	2
Total		293.9	310.1	0.2	2

Arterial Level of Service: NB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	35	7.2	20.0	0.1	11
Norman Scott Road	9	34.8	41.8	0.1	6
32nd Street Naval Co	107	1.3	26.3	0.2	30
Total		43.2	88.0	0.3	14

Corridor Travel Times
Horizon Year Build - ALL IN

PM Peak Hour
06/19/2019

Arterial Level of Service: SB 32nd Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street Naval Co	107	0.0	32.3	0.3	31
Norman Scott Road	9	37.3	62.2	0.2	13
	35	1.3	12.0	0.1	20
Harbor Drive	8	38.4	44.0	0.1	5
Total		77.0	150.5	0.6	15

Arterial Level of Service: NB I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Bridge	98	0.5	60.9	0.5	28
Total		0.5	60.9	0.5	28

Arterial Level of Service: SW I-15 On/Off Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
32nd Street	9	21.1	73.6	0.5	23
Total		21.1	73.6	0.5	23

Arterial Level of Service: EB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street Trolley S	58	13.9	26.4	0.1	12
Blue Line Rail Cross	32	9.2	13.3	0.0	9
NEX Layaway Driveway	67	8.9	14.8	0.0	12
I-5 SB Ramps	11	7.8	12.8	0.0	10
Hoover	59	78.0	95.2	0.2	6
Roosevelt Ave	60	38.6	49.2	0.1	5
National City Boulev	12	37.8	49.5	0.1	5
Total		194.2	261.2	0.5	7

Arterial Level of Service: WB 8th Street

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
National City Boulev	12	24.8	33.4	0.1	9
Roosevelt Avenue	60	27.4	34.8	0.1	7
I-5 NB Ramps	59	3.7	10.6	0.1	20
I-5 SB Ramps	11	7.2	25.9	0.2	22
NEX Layaway Driveway	67	2.5	6.0	0.0	18
Blue Line Rail Cross	32	5.5	11.4	0.0	15
8th Street Trolley S	58	2.0	5.8	0.0	21
Harbor Drive	10	73.4	83.2	0.1	4
Total		146.4	211.1	0.6	10

Arterial Level of Service: NB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	11	28.0	38.1	0.0	4
Total		28.0	38.1	0.0	4

Arterial Level of Service: SB I-5 SB Ramps

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB 8th St Off-Ra	143	0.1	9.3	0.0	15
Total		0.1	9.3	0.0	15

Arterial Level of Service: NB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Civic Center Drive	13	27.0	59.0	0.3	17
Total		27.0	59.0	0.3	17

Arterial Level of Service: SB I-5 NB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 NB Off-Ramp	105	2.3	34.8	0.3	29
Total		2.3	34.8	0.3	29

Arterial Level of Service: EB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	22	126.2	349.3	0.1	2
I-5 NB Civic Ctr Off	13	85.8	89.0	0.0	1
	82	17.9	29.8	0.1	12
Roosevelt Avenue	14	11.4	30.4	0.0	10
Total		241.2	498.6	0.3	4

Arterial Level of Service: WB Civic Center Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	14	22.6	38.0	0.1	13
	82	6.9	12.3	0.0	13
McKinley Avenue	13	39.8	47.8	0.1	7
	22	48.0	101.6	0.0	3
	109	2.0	10.5	0.1	28
Total		119.3	210.2	0.4	9

Arterial Level of Service: NB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	61	8.8	15.4	0.1	14
W 14th Street	64	137.3	156.8	0.2	6
I-5 SB Civic Ctr Off	15	123.0	125.3	0.0	1
Civic Center Drive	22	718.7	728.0	0.0	0
Total		987.8	1025.5	0.4	1

Arterial Level of Service: SB Cleveland Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Civic Ctr Off	15	3.7	8.6	0.0	21
W 14th Street	64	0.3	2.5	0.0	30
	61	8.8	33.5	0.2	26
W. 19th Street	62	12.4	18.5	0.1	11
Total		25.3	63.2	0.4	21

Arterial Level of Service: WB I-5 SB Civic Ctr Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Avenue	15	157.5	177.8	0.2	3
Total		157.5	177.8	0.2	3

Arterial Level of Service: EB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Tidelands Avenue	16	5.9	21.8	0.1	23
	66	1.2	15.5	0.1	32
Marina Way	24	6.7	17.4	0.1	21
	25	15.6	22.7	0.1	10
I-5 Southbound On-Ra	17	28.6	36.2	0.1	7
Total		58.0	113.6	0.5	16

Arterial Level of Service: WB Bay Marina Drive

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cleveland Ave	25	15.3	22.8	0.1	11
Marina Way	24	4.1	12.0	0.1	20
	66	0.8	12.4	0.1	30
Tidelands Avenue	16	3.1	18.9	0.1	27
Total		23.2	66.1	0.4	21

Arterial Level of Service: EB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound Off-R	18	4.0	11.5	0.1	19
Total		4.0	11.5	0.1	19

Arterial Level of Service: WB Mile of Cars Way

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 Northbound On-Ra	18	20.7	29.4	0.1	9
I-5 Southbound Off-R	17	8.5	16.2	0.1	14
Total		29.2	45.6	0.1	11

Arterial Level of Service: SE I-5 SB 28th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Off Ramp	120	0.1	31.9	0.3	30
	165	0.2	14.0	0.1	30
	106	0.1	14.6	0.1	30
	102	1.0	5.5	0.0	26
Total		1.4	65.9	0.5	30

Arterial Level of Service: WB I-5 SB 8th St Off-Ramp

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
I-5 SB Ramps	143	167.0	197.8	0.1	2
Total		167.0	197.8	0.1	2

Corridor Travel Times
Horizon Year Build - ALL IN

PM Peak Hour
06/19/2019

Arterial Level of Service: NB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
8th Street	12	46.4	189.7	0.1	6
	154	2.5	8.4	0.1	24
	175	0.5	44.3	0.4	30
	159	0.6	11.8	0.1	32
Yama Street Path	156	9.8	25.0	0.1	16
Total		59.7	279.2	0.7	18

Arterial Level of Service: SB National City Boulevard

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	159	0.8	16.2	0.1	25
	175	0.0	12.5	0.1	30
	154	12.2	55.8	0.4	24
8th Street	12	56.5	63.5	0.1	3
Total		69.5	148.0	0.6	16

Arterial Level of Service: SB Vesta Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	164	0.0	30.4	0.3	30
	36	0.0	33.3	0.3	30
	170	0.1	33.6	0.3	30
	177	8.2	15.2	0.1	14
Total		8.3	112.4	0.9	28

Arterial Level of Service: SE Yama Street Path

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	153	0.2	47.6	0.4	31
National City Boulev	156	21.1	52.9	0.3	19
	172	8.4	20.4	0.1	18
Total		29.7	120.9	0.8	23

APPENDIX

E BICYCLE & PEDESTRIAN ISSUES LIST & MAPS

Figure E.1 Master Issues Map: Bicycle & Pedestrian

Table E.1 Master Issues List: Bicycle & Pedestrian

Map No.	Description
1	Fuel tank farms at North end of Harbor Dr. are leaking. Should be addressed. Do not want to bike in this area because of smell. The shipyard/industrial area is tough to bike. All the debris go to right side. More maintenance and separation from cars.
2	Harbor Dr, Park Blvd to Sigsbee St - This just anecdotal but my wife and extended our bike ride on Sunday South from the Hilton on Harbor and not a mile in all 4 of our bike tires blew out due to Goats Head thorns from weeds growing along the road. Would love to travel the full Bayside Bikeway but not at that cost.
3	Harbor Drive - Park Blvd to Cesar Chavez - Add a sidewalk from the bridge near the Dole plant (crosses over railroad tracks) to Cesar Chavez on both sides of road.... lots of runners and walkers in street.
4	Sidewalks need to be improved/fixed for people in wheelchairs. On Logan St. crossing from Chavez (curb cuts they have a bump). Cleaning of streets needed.
5	Harbor Dr - Park Blvd to 32nd St - I'd like to see a divided bike path on this stretch of Harbor. Similar to the path that runs from 32nd St. South. This really helps keep bikers safe from car traffic. Additionally, that section of Harbor is so beat up that riding it is dangerous even without the cars. Adding a newly paved and separate bike path here would greatly improve the safety and enjoyment of biking this corridor to connect to Downtown to South County.
6	There are approximately 200 contractors who are required to transit from BAE Systems San Diego Ship Repair, Continental Maritime San Diego Ship Repair and General Dynamics NASSCO via foot traffic on East Belt street between the three facilities. This particular stretch of street does not have sidewalks enticing the contractors to walk in the street, or next to the BNSF rail track. My overall goal is to have a sidewalk installed to prevent contractor injuries byway of slips, trips, or falls and vehicle and pedestrian accidents. The specific request is to have a sidewalk installed on East Belt Street the entire distance between the below listed addresses; Continental Maritime San Diego 1995 Bay Front St, San Diego, CA 92113 And BAE Systems San Diego Ship Repair 2205 East Belt Street, Foot of Sampson Street, CA 92113
7	Connect Schley across Harbor to Belt St.
8	The intersection of Harbor Dr. and 32nd St. needs to accommodate all the Navy traffic as well as the Bayshore Bikeway crossing 32nd St. and the Chollas Creek Trail coming down the east side of 32nd St. and the truck traffic. The rail crossings also present a big problem if the signal preemption needs to be changed.
9	Connect Chollas Bike Pathway to Bayshore Bike Way.
10	Last mile connections from Trolley to Navy base. Ex: No connection from 8th St station to base.
11	Concerned with new bike facilities mixing trucks & bikes. Ex: Tidelands dedicated path. Prefer closer to I-5.
12	Cleveland Ave, Tidelands Ave, Bay Marina Drive all need traffic calming measures & speed control. I am against the closure of Tidelands & Bay Marina Dr.
69	No sidewalk on west side of Harbor Drive. Sidewalk gap on east side of Harbor Drive between Park Boulevard and Sigsbee Street.
70	Sidewalk gap on both sides of Sigsbee Street from Harbor Drive to Main Street.
71	Incomplete crosswalk at intersection of Harbor Drive and Sigsbee Street.
72	No pedestrian rail gate at Harbor Drive and Sigsbee Street rail crossing.

73	Sidewalk gap on south side of Beardsley Street between Harbor Drive and Main Street. Sidewalk gap on both sides of Harbor Drive.
74	Incomplete crosswalks at intersection of Harbor Drive and Beardsley Street.
75	No pedestrian rail gate at Beardsley Street rail crossings.
76	No pedestrian rail gate at Cesar Chavez Parkway rail crossing.
77	Sidewalk gap on east side of Harbor Drive and south of the Barrio Logan Trolley Station to Sampson Street.
78	Sidewalk gap on north side of Sampson Street between Harbor Drive and Main Street. Sidewalk gap on east side of Harbor Drive.
79	Incomplete crosswalk at Harbor Drive and Sampson Street.
80	No pedestrian rail gate at Sampson Street rail crossing.
81	Sidewalk gap on east side of Harbor Drive between Sampson Street and Schley Street.
82	Sidewalk gap on north side of Schley Street between Harbor Drive and Main Street.
83	Incomplete crosswalk at intersection of Harbor Drive and Schley Street.
84	No pedestrian rail gate at Schley Street rail crossing.
85	Sidewalk gap on both sides of Harbor Drive between Schley Street and 28th Street.
86	Sidewalk gap on east side of Harbor Drive from 28th Street to 32nd Street.
87	Incomplete crosswalk at intersection of Harbor Drive and 28th St.
88	No pedestrian rail gate at 28th Street rail crossing.
89	Incomplete crosswalk at intersection of 32nd Street and SR-15 ramps.
90	Sidewalk gap on both sides of Harbor Drive south of 32nd Street to 8th Street.
91	No pedestrian rail gate at 32nd Street rail crossing.
92	Sidewalk gap on both sides of Harbor Drive south of 8th Street to Civic Center Drive.
93	Incomplete crosswalk at intersection of Harbor Drive and 8th Street.
94	No pedestrian rail gate and missing sidewalks 8th Street rail crossing.
95	Sidewalk gap on both sides of Civic Center Drive between Tidelands Avenue and Harbor Drive. Sidewalk gap on both sides of Harbor Drive north and south of 8th Street.
96	No pedestrian rail gate at Civic Center Drive freight rail crossing.
97	Incomplete crosswalk at intersection of Harbor Drive and Civic Center Drive.
98	No pedestrian rail gate at Civic Center Drive light-rail crossing.
99	Sidewalk gap on west side of Tidelands Avenue.
100	No pedestrian rail gate and missing sidewalks at Bay Marina Drive freight rail crossing near Marina Way.
101	No pedestrian rail gate and missing sidewalks at Bay Marina Drive freight rail crossing near Tidelands Avenue.
102	No pedestrian rail gate at Tidelands Avenue freight rail crossing near 32nd Street.
103	Sidewalk gap on west side of Tidelands Ave.
104	Sidewalk gap on north side of 32nd St.
105	Sidewalk gap on west side of Marina Way.
106	No pedestrian rail gate and missing sidewalks at Bay Marina Drive freight rail crossing near Quay Avenue.
200	Pedestrian collision at National Avenue & 16th Street
201	Pedestrian collision at National Avenue & 17th Street
202	Pedestrian collision at Commercial Street & 16th Street
203	Pedestrian collision at Commercial Street & 17th Street
204	Pedestrian collision at Commercial Street & 19th Street

205	Bicycle collision at Logan Avenue & 17th Street
206	Pedestrian collision at RT 5 & Beardsley Street
207	Bicycle collision at Harbor Drive & Sigsbee Street
208	Bicycle collision at Main Street & Cesar E Chavez Parkway
209	Pedestrian collision at Newton Ave & Cesar E Chavez Parkway
210	Pedestrian collision at Cesar E Chavez Parkway & National Avenue
211	Pedestrian collision at Cesar E Chavez Parkway & National Avenue
212	Pedestrian collision at Cesar E Chavez Parkway & Logan Avenue
213	Pedestrian collision at I-5 NB to SR-75 SB & E/RD Edge Prolongnation of Logan Ave
214	Pedestrian collision at Harbor Drive & Cesar E Chavez Parkway
215	Pedestrian collision at Sampson Street & Harbor Drive
216	Bicycle collision at Sampson Street & Main Street
217	Pedestrian collision at Newton Avenue & Sampson Street
218	Pedestrian collision at National Avenue & Sampson Street
219	Pedestrian collision at S Sampson Street & National Avenue
220	Pedestrian collision at Sampson Street & Logan Avenue
221	Bicycle collision at Sicard Street & Newton Avenue
222	Bicycle collision at Harbor Drive & Schley Street
223	Bicycle collision at Harbor Drive & Schley Street
224	Bicycle collision at Harbor Drive & Schley Street
225	Bicycle collision at Harbor Drive & Schley Street
226	Pedestrian collision at Harbor Drive & Belt Street
227	Pedestrian collision at Boston Avenue & 28th Street
228	Pedestrian collision at Main Street & 28th Street
229	Pedestrian collision at 28th Street & Main Street
230	Pedestrian collision at 29th Street & Main Street
231	Pedestrian collision at Main Street & 28th Street
232	Pedestrian collision at 28th Street & Harbor Drive
233	Bicycle collision at 28th Street & Harbor Drive
234	Bicycle collision at Harbor Drive & 28th Street
235	Pedestrian collision at RT 5 & 28th Street
236	Pedestrian collision at RT 5 & 28th Street
237	Pedestrian collision at 29th Street & Boston Avenue
238	Pedestrian collision at Main Street & 30th Street
239	Pedestrian collision at Main Street & 30th Street
240	Bicycle collision at 32nd Street & Boston Avenue
241	Pedestrian collision at 32nd Street & Boston Avenue
242	Pedestrian collision at Main Street & 32nd Street
243	Bicycle collision at Main Street & RT 15

244	Pedestrian collision at Main Street & RT 15
245	Bicycle collision at Main Street & Rigel Street
246	Bicycle collision at Harbor Drive & 32nd Street
247	Bicycle collision at Harbor Drive & 32nd Street
248	Pedestrian collision at I-5 SB & Vesta Street
249	Pedestrian collision at Main Street & Vesta Street
250	Pedestrian collision at RT 5 & Main Street
251	Bicycle collision at Harbor Drive & Vesta Street
252	Pedestrian collision at I-5 NB & Main Street/Division Street
253	Bicycle collision at 8th Street & RT 5
254	Pedestrian collision at 8th Street & Hoover Avenue
255	Bicycle collision at Roosevelt Avenue & 8th Street
256	Pedestrian collision at RT 5 & 8th Street
257	Bicycle collision at 8th Street & RT 5
258	Bicycle collision at Harbor Drive & Civic Center Drive
259	Bicycle collision at Harbor Drive & Civic Center Drive
260	Bicycle collision at Civic Center Drive & Cleveland Avenue
261	Bicycle collision at Civic Center Drive & McKinley Avenue
262	Bicycle collision at Cleveland Avenue & 19th Street
263	Pedestrian collision at Haffley Avenue & Bay Marina Drive
264	Pedestrian collision at I-5 SB & Mile of Cars Way
265	Pedestrian collision at I-5 NB & Mile of Cars Way

Figure E.2 Bicycle Collision Data

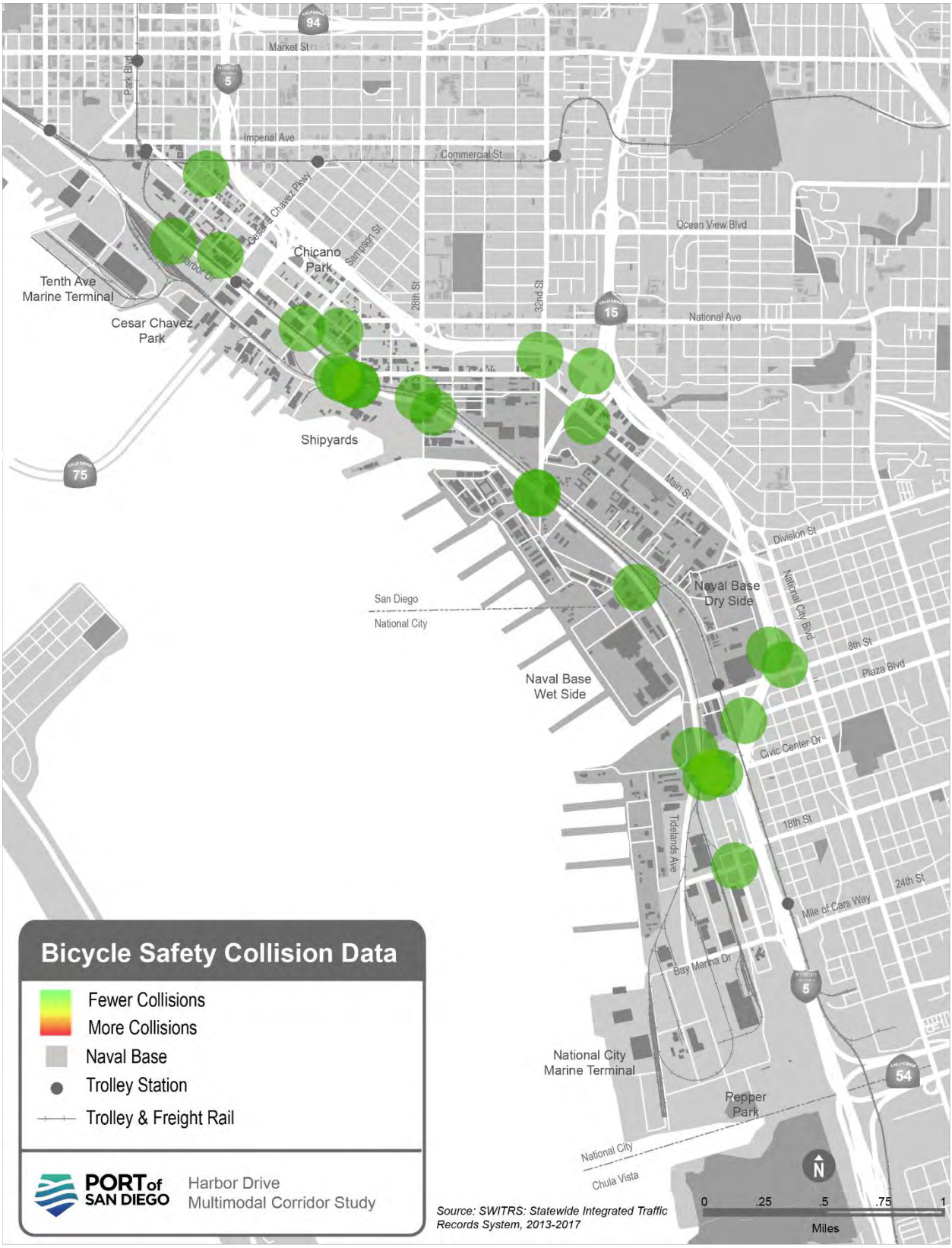
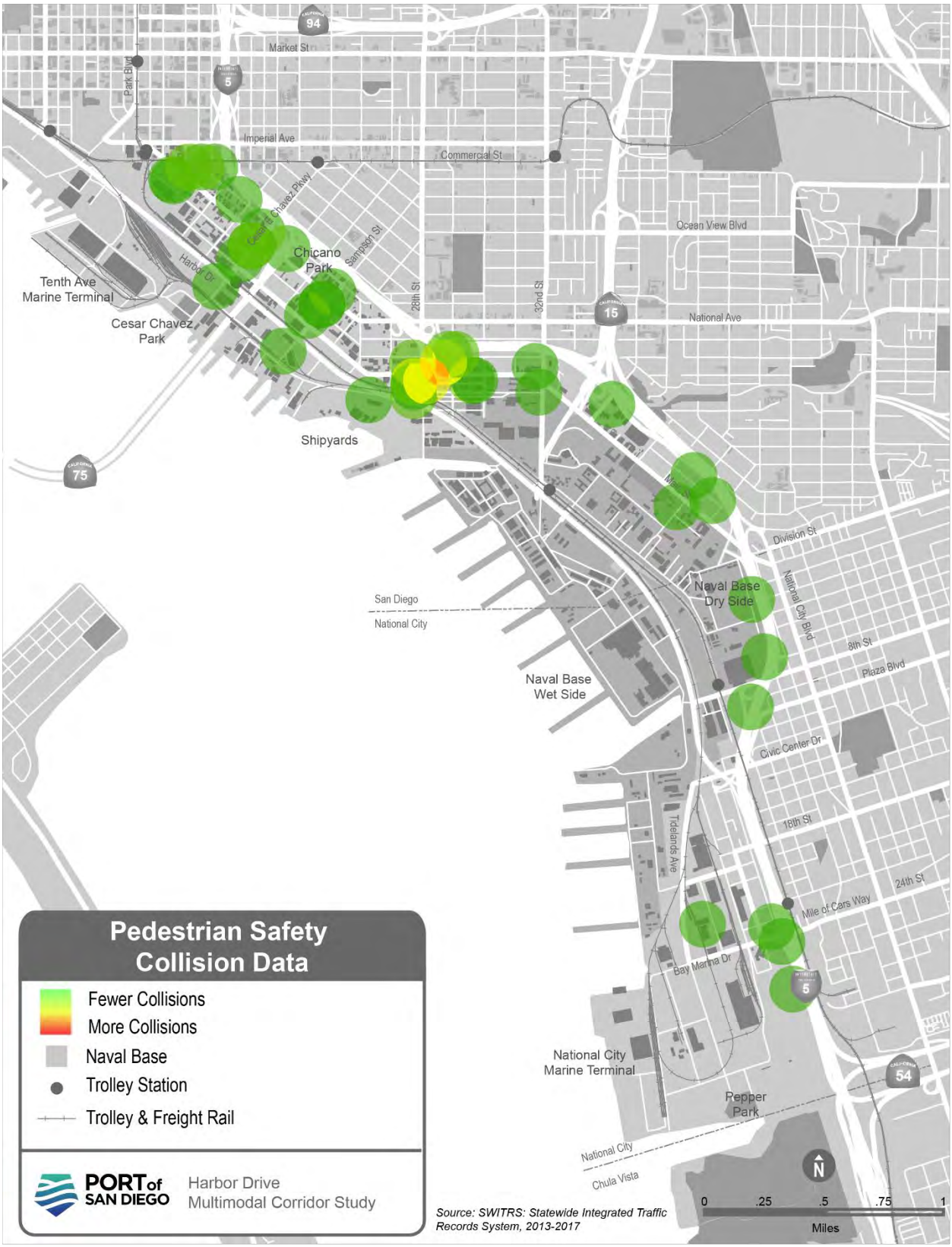


Figure E.3 Pedestrian Collision Data



APPENDIX

F LAND USE GROWTH ASSUMPTIONS & VOLUME FORECASTING

HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

TO: Mike Calandra, SANDAG

FROM: Pete Ruscitti, WSP

SUBJECT: **Revisions to Series 13 Modeling Workspace for 2050 Port Master Plan (Scenario #886)**

DATE: January 15, 2019

To support model runs for the Harbor Drive Multimodal Corridor Study, the Port of San Diego/WSP project team requests to repoen the Series 13 modeling workspace for the Port of San Diego's *2050 Port Master Plan (Scenario #886),* with the following modifications.

As depicted in the maps on the following pages, the project study area is the Harbor Drive corridor west of I-5, from the 10th Avenue Marine Terminal to the National City Marine Terminal.

LAND USE

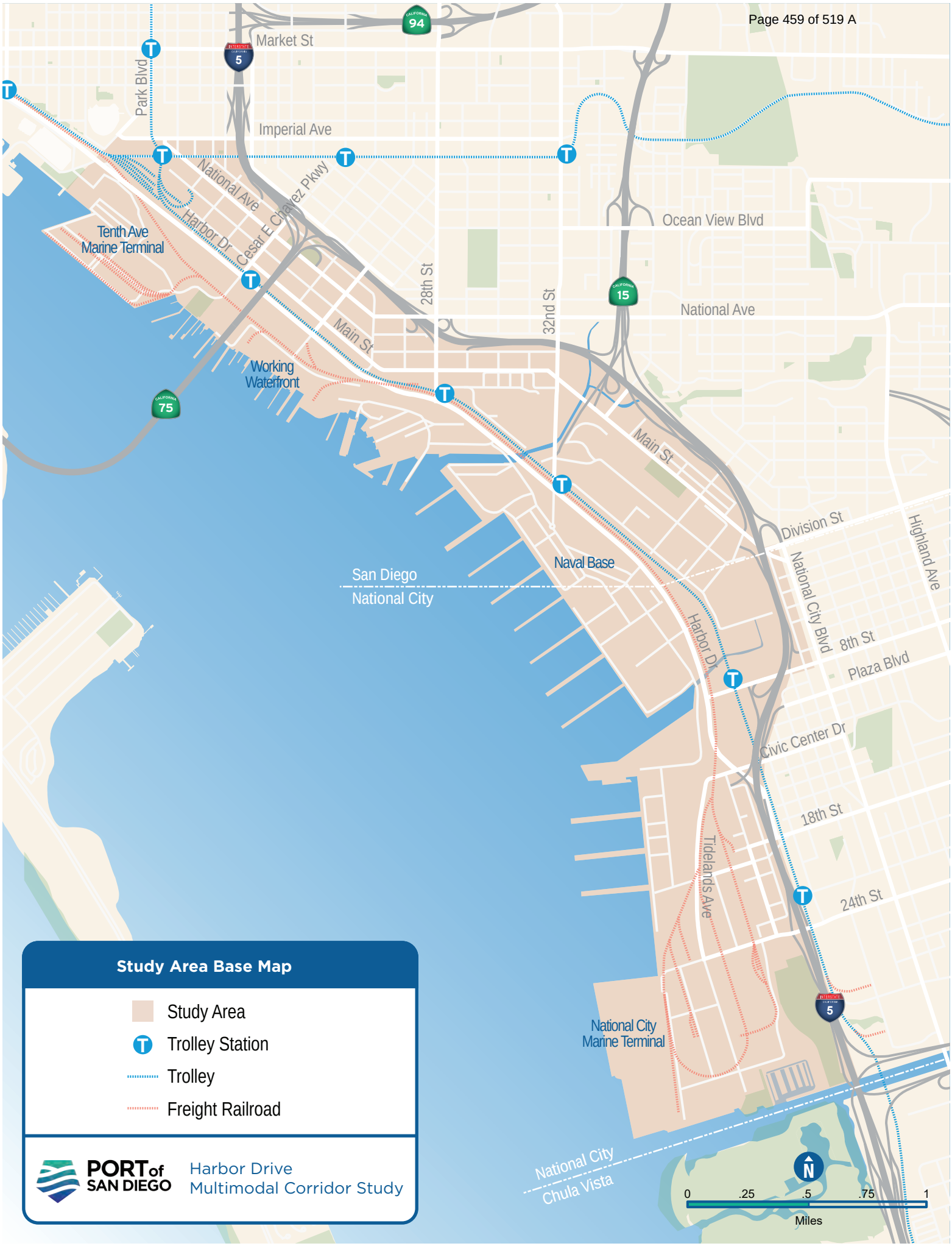
The attached tables detail modifications to the land use assumptions for specific MGRAs, as noted by ~~strikeout~~/underline text. The revisions are focused in the following subareas:

1. Tenth Avenue Marine Terminal Area
2. Shipyards Area
3. Naval Base
4. National City Bayfront Area

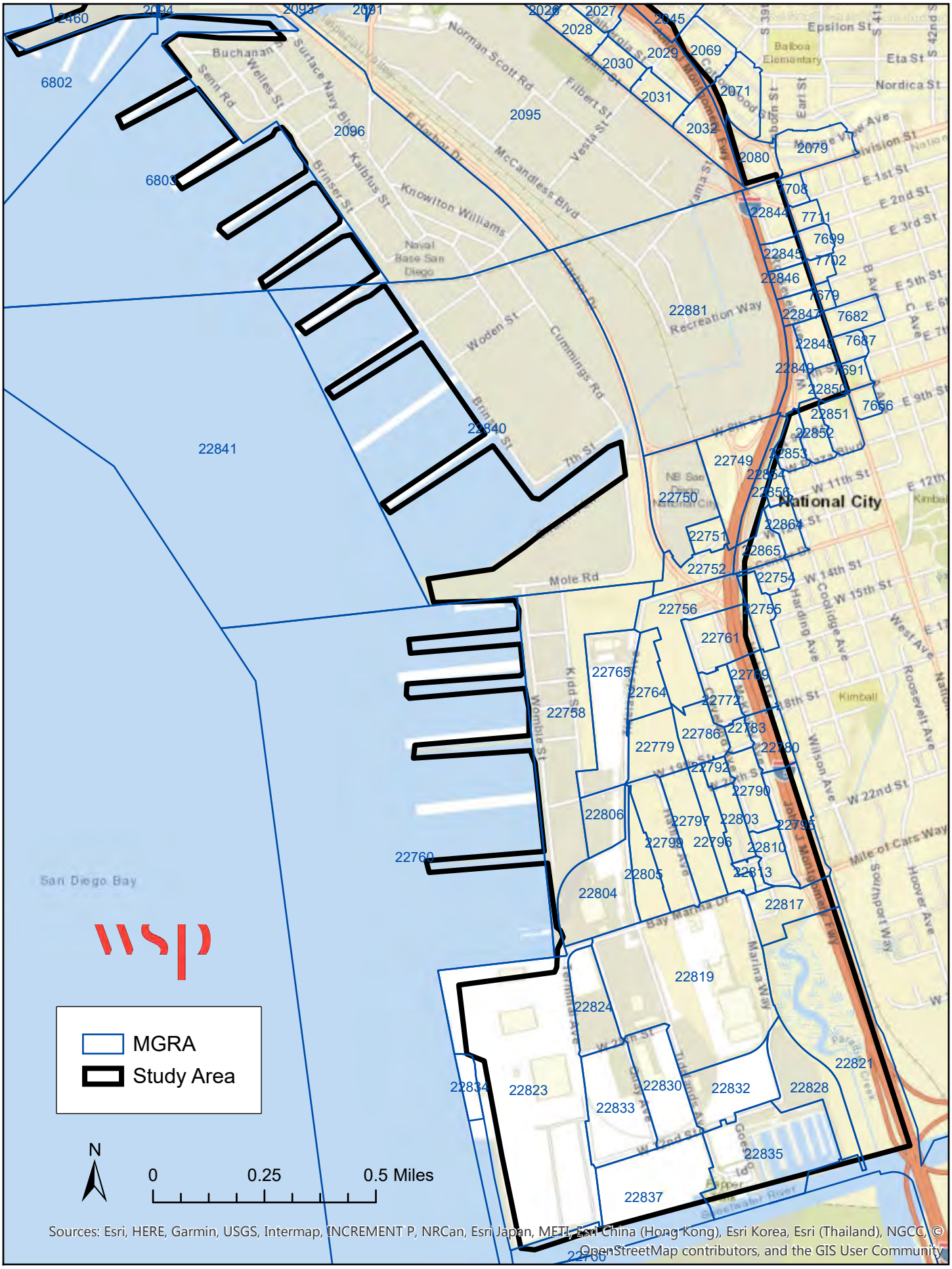
TRANSPORTATION NETWORK

The attached maps contain details on the following modifications to the model's transportation network:

1. Remove Harbor Drive HOV links
2. Connect Harbor Drive links where links are currently missing
3. Remove SR 15 direct connector ramps at Harbor Drive/32nd Street
4. Reconnect SR 15 ramps at 32nd Street and Norman Scott Road
5. Remove Vesta Street bridge oiver Harbor Drive


Market St
Park Blvd
Imperial Ave
National Ave
Cesar E Chavez Pkwy
Harbor Dr
Tenth Ave
Marine Terminal
28th St
32nd St
Ocean View Blvd
National Ave
Main St
Working
Waterfront
Main St
Division St
Highland Ave
National City Blvd
8th St
Plaza Blvd
Civic Center Dr
18th St
24th St
Tidelands Ave
Harbor Dr
Naval Base
San Diego
National City
National City
Marine Terminal
National City
Chula Vista
Study Area Base Map
Study Area
Trolley Station
Trolley
Freight Railroad
PORT of SAN DIEGO
Harbor Drive
Multimodal Corridor Study
N
0
.25
.5
.75
1
Miles

MGRA
Study Area
N
0
0.25
0.5 Miles
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


MGRA
Study Area
N
0
0.25
0.5 Miles
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
National City
San Diego Bay
Naval Base San Diego
Buchanan
Norman Scott Rd
Surface Navy Blvd
Senn Rd
Welles St
E Harbor Dr
McCandless Blvd
Vesta St
Filbert St
Knowlton Williams
Kalbfus St
Strisner St
Woden St
Cummings Rd
Bringle St
7th St
Recreation Way
Mole Rd
Kidd St
Womble St
Bay Marina Dr
Marina Way
Tidelands Ave
Quay Ave
Harding Ave
Coolidge Ave
Roosevelt Ave
Wilson Ave
Hoover Ave
Mile of Cars Way
Southport Way
Kimball
Balboa Elementary
Epsilon St
Eta St
Nordica St
Earl St
Division St
E 1st St
E 2nd St
E 3rd St
E 5th St
E 9th St
E 12th
W 8th St
W 11th St
W 14th St
W 15th St
W 22nd St
6802
6803
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22841
22840

TENTH AVENUE MARINE TERMINAL AREA

	2012			2050		
MGRA	**DU**	**Population**	**Jobs**	**DU**	**Population**	**Jobs**
2505	0	0	0	0	0	0
2508	0	0	0	0	0	405 ~~83~~
2511	0	0	0	0	0	0
2512	0	0	100 ~~28~~	0	0	137 ~~28~~
2513	0	0	4 ~~1~~	0	0	5 ~~1~~
2514	0	0	46 ~~13~~	0	0	63 ~~13~~

SHIPYARDS AREA

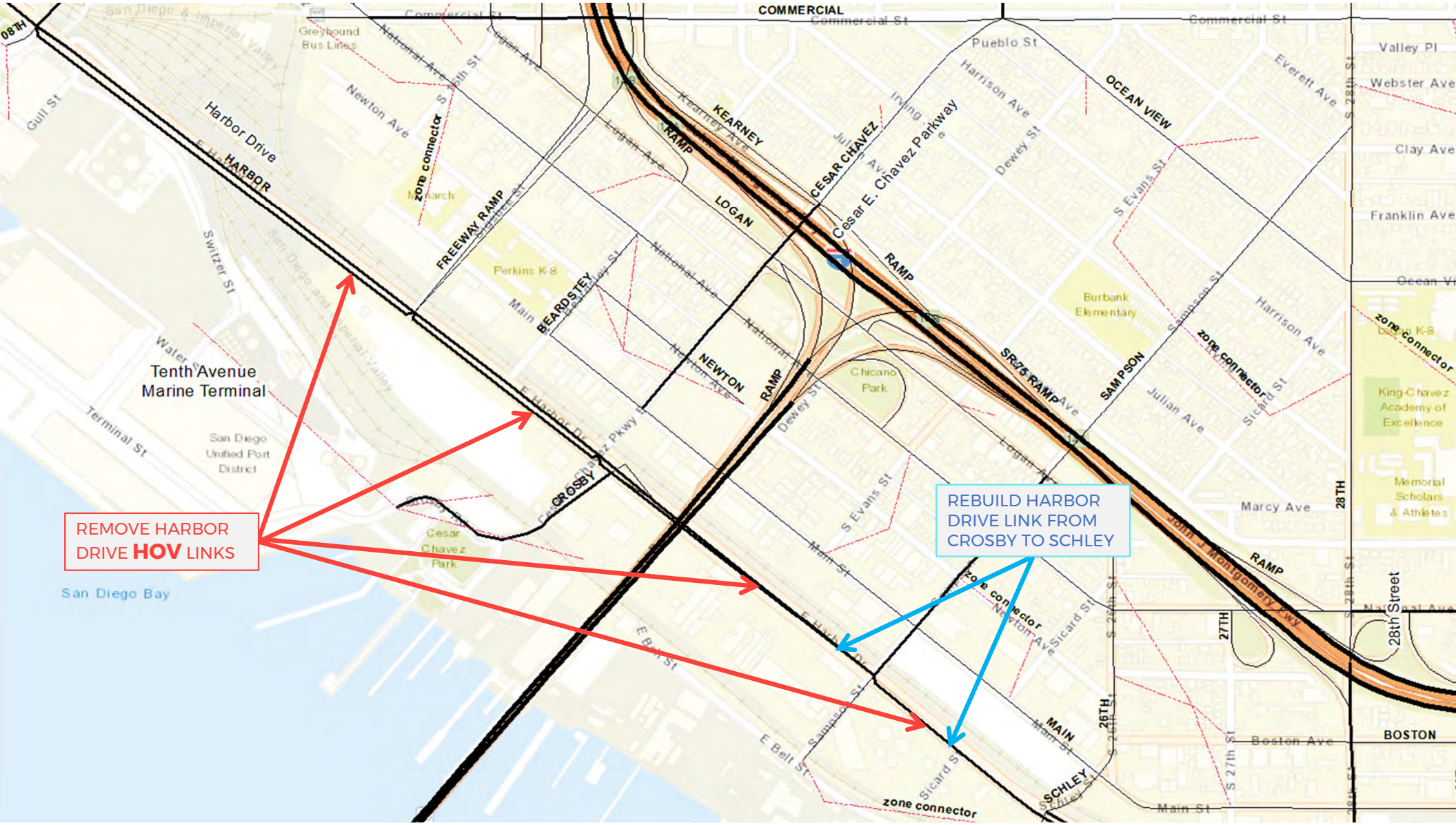
	2012			2050 (Same as 2012)		
MGRA	**DU**	**Population**	**Jobs**	**DU**	**Population**	**Jobs**
2094	0	0	0	0	0	0
2447	0	0	0	0	0	0
2450	0	0	1,713	0	0	1,713 ~~1,706~~
2460	0	0	3,727	0	0	3,727 ~~3,680~~

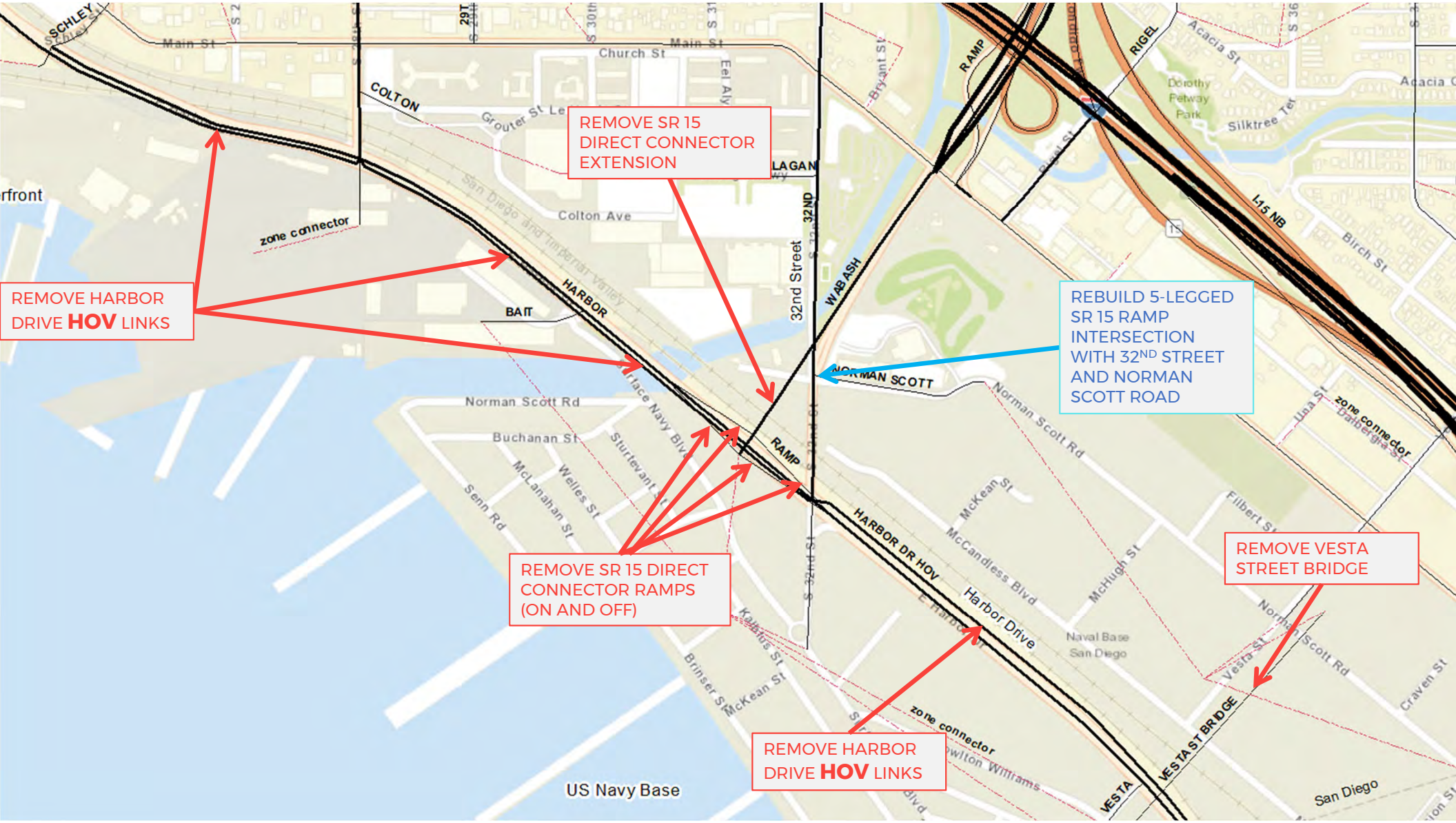
NAVAL BASE

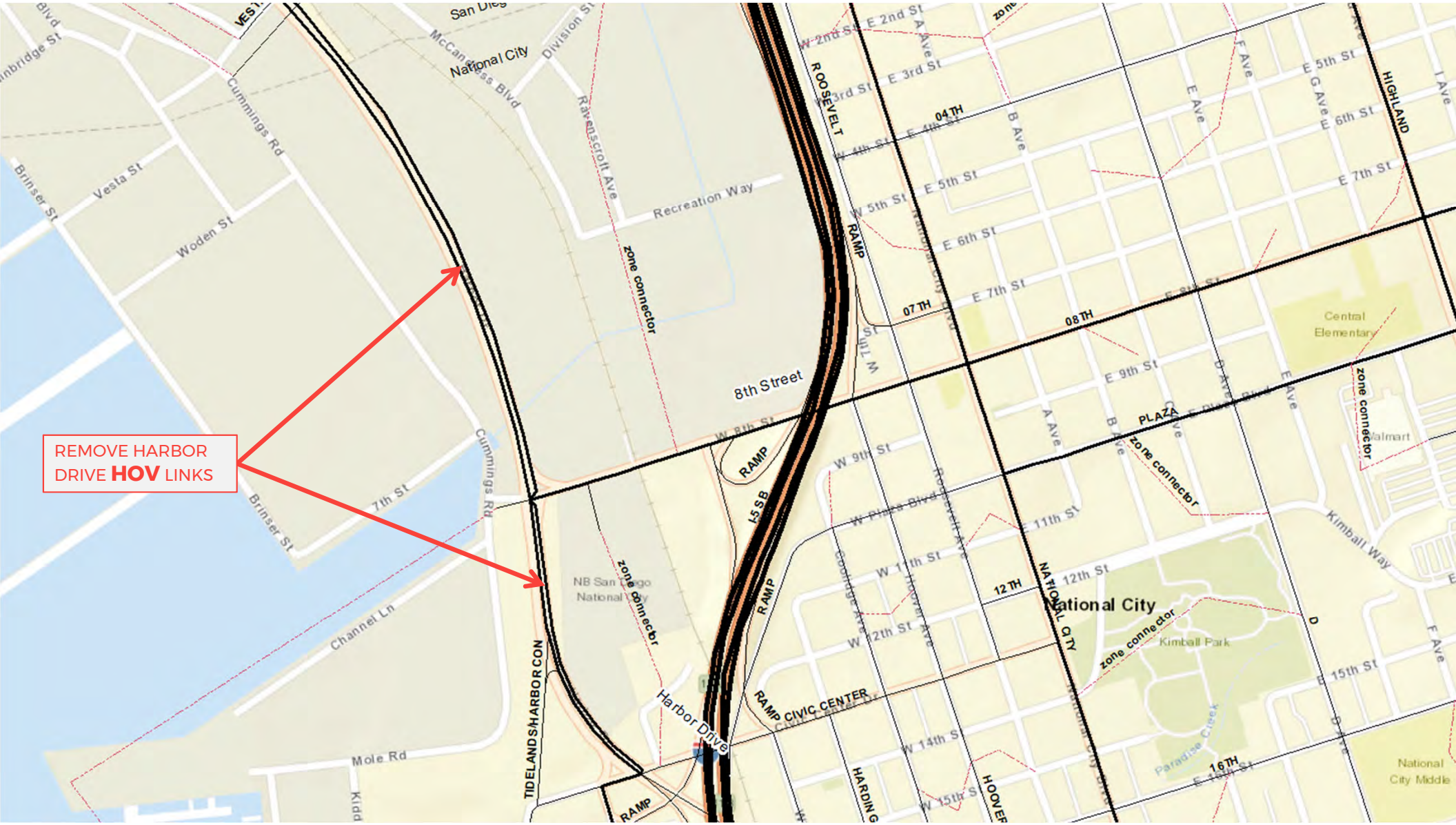
	2012			2050		
MGRA	**Mlitary Jobs**	**Govt Jobs**		**Mlitary Jobs**	**Govt Jobs**	
2095	5,103	506		7,103 ~~5103~~	506 ~~490~~	
2096	6,379	621		11,713 ~~6379~~	955 ~~595~~	
22840	1,913	187		3,512 ~~1913~~	287 ~~170~~	
22758	1,276	123		2,343 ~~1276~~	189 ~~114~~	

NATIONAL CITY BAYFRONT AREA

	2012			2050		
MGRA	**DU**	**Population**	**Jobs**	**DU**	**Population**	**Jobs**
22796	0	0	1	74	217	70 ~~62~~
22810	0	0	18	0	0	72 ~~39~~
22813	0	0	0	10	0	70 ~~18~~
22825	0	0	86	0	0	17 ~~98~~
22828	0	0	0	0	0	83 ~~74~~
22832	0	0	0	0	0	3 ~~97~~
22835	0 ~~253~~	0 ~~324~~	30 ~~0~~	0 ~~253~~	0 ~~299~~	383 ~~158~~
22837	0	0	0	0	0	1 ~~0~~


REMOVE HARBOR DRIVE HOV LINKS
REBUILD HARBOR DRIVE LINK FROM CROSBY TO SCHLEY
Tenth Avenue Marine Terminal
San Diego Bay
Harbor Drive
COMMERCIAL
KEARNEY RAMP
CESAR CHAVEZ
LOGAN
RAMP
NEWTON RAMP
SR-75 RAMP
SAMPSON
OCEAN VIEW
FREEWAY RAMP
BEARDSTEY
CROSBY
SCHLEY
MAIN
zone connector
Cesar E. Chavez Parkway
John F Montgomery Pwy
28th Street
BOSTON
Perkins K-8
Chicano Park
Burbank Elementary
Cesar Chavez Park
Greyhound Bus Lines
San Diego Unified Port District


REMOVE HARBOR DRIVE HOV LINKS
REMOVE SR 15 DIRECT CONNECTOR EXTENSION
REBUILD 5-LEGGED SR 15 RAMP INTERSECTION WITH 32ND STREET AND NORMAN SCOTT ROAD
REMOVE SR 15 DIRECT CONNECTOR RAMPS (ON AND OFF)
REMOVE VESTA STREET BRIDGE
REMOVE HARBOR DRIVE HOV LINKS
zone connector
HARBOR
BAIT
RAMP
32nd Street
WABASH
NORMAN SCOTT
HARBOR DR HOV
Harbor Drive
VESTA ST BRIDGE
VESTA
COLTON
LAGAN
RIGEL
I-15 NB
Main St
Church St
Colton Ave
Norman Scott Rd
Buchanan St
Naval Base San Diego
US Navy Base
San Diego


REMOVE HARBOR DRIVE **HOV** LINKS
National City
Cummings Rd
Vesta St
Brinser St
Woden St
Recreation Way
Ravenscroft Ave
zone connector
8th Street
RAMP
I-5 SB
7th St
Channel Ln
Mole Rd
TIDELANDS/HARBOR CON
Harbor Drive
RAMP CIVIC CENTER
ROOSEVELT
04 TH
07 TH
08 TH
12 TH
PLAZA
HIGHLAND
NATIONAL CITY
Central Elementary
Walmart
Kimball Way
Kimball Park
Paradise Creek
National City Middle
16TH

Technical Memorandum

To: Seth Torma, Project Manager, WSP

From: Billy Park, Supervising Planner, WSP

Subject: Harbor Drive Multi-Modal – Intersection Turning Movement Forecasts

Date: May 28, 2019

The purpose of this technical memorandum is to document the procedure to forecast the intersection turning movement volumes for the Harbor Drive Multi-Modal project.

Traffic Counts

San Diego office staff provided the intersection turning movement counts used in the Existing Conditions Report. These counts were in Synchro volume format in Excel. In addition, several daily counts were received.

SANDAG Model Files

The loaded network files for the SANDAG Model Series 13 were received in shape file format (.SHP). These files include:

- Base Year Model (2012): The shape file (hwy_load_989.shp)
- Horizon Year (2050): Horizon year No Build Model file (hwy_load_1078.shp)

Model Growth

Growth Ratio

The growth ratios from the base year model to the horizon year model were reviewed for each intersection total and intersection approach for daily, AM period, and PM period. The ratios did not show a consistent pattern between daily and peak periods. For example, the daily ratio for one intersection was 0.87 (future model volume is lower than the existing volume) while the peak period ratios were 3.01 and 2.42 (existing volume was doubled or tripled in the future).

Growth in Delta

Changes in the peak period approach and departure volumes for each intersection showed that the future model volumes were lower than the existing model volumes in many locations which does not seem realistic.

Growth in TAZ Loading

Overall, the TAZs representing Harbor area showed an increase from the base year model to the future year model during AM and PM peak periods. Although some TAZs showed a decrease, grouping of some adjacent Harbor TAZs resulted in a net increase for each group.

The traffic loadings of the area between the Harbor area and I-5 were also reviewed. They are mostly decreased except for the area between 26th Street and 28th Street.

Converting Peak Period to Peak Hour Volumes

The model volumes represent flow for 3 hours in each of the AM and PM periods. To convert these peak period trips to peak hour from TAZs representing Harbor and adjacent area, conversion factors were estimated from daily counts in the study corridor.

From these daily counts, AM peak hour was 40.4% of AM 3-hour period, while PM peak hour was 37.9% of PM 3-hour period. When there is peaking, these factors would be higher than 33.3%. As a point of comparison, the San Bernardino County Congestion Management Plan specifies 38% for the AM 3-hour to 1-hour factor. Therefore, these factors seem reasonable to use for this project.

Trip Distribution and Assignment

The increased traffic from each group of Harbor TAZs was distributed and assigned to the study intersections using existing traffic patterns and modeler's judgement.

It is unlikely that traffic in the area between the Harbor TAZs and I-5 will decrease in the future. Therefore, the traffic from the area between 26th Street and 28th Street was assigned to the study intersections.

The future Horizon Year forecasts were developed by adding these trips to the existing counts. The resulting future intersection turning movement volumes were provided in Synchro volume format in Excel.

Final Volumes

Horizon Year No Build and Horizon Year Build volumes can be found in the individual Synchro sheets in Appendix D.

APPENDIX

G EMISSIONS CALCULATIONS & INFORMATION

HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

Fuel and Emissions Calculations

GENERAL NOTES

The project team used Trafficware's Synchro and SimTraffic software to conduct travel time analysis for the project area. As part of the travel time analysis the software calculates Fuel Consumption, Carbon Monoxide Emissions, Nitrogen Oxides Emissions, and Volatile Oxygen Compounds Emissions. This memo documents the formulas that direct these calculations.

FUEL CONSUMPTION

- Fuel consumption is calculated using the following formula:
  - F = Total Travel * k1 + Total Delay * k2 + Stops * k3
    - k1 = 0.075283 – 0.0015892 * Speed + 0.000015066 * Speed^2
    - k2 = 0.7329
    - k3 = 0.00000061411 * Speed^2
    - Speed = cruise speed in mph
    - Total Travel = vehicle miles traveled
    - Total Delay – total signal delay in hours
    - Stops = total stops in vehicles per hour

EMISSIONS CALCULATIONS

- The emissions calculations are based only on fuel consumption.
- The somewhat simplified calculation multiplies fuel consumption by the following factors to determine emission rates.
  - CO = F * 69.9 g/gal = Carbon Monoxide Emissions (g)
  - NOx = F * 13.6 g/gal = Nitrogen Oxides Emissions (g)
  - VOC = F * 16.2 g/gal = Volatile Oxygen Compounds Emissions (g)
  - F = Fuel Consumption (gal)
- These simplified rates are based on an unpublished letter to the Federal Highway Administration from Oak Ridge National Labs.

GREENHOUSE GAS (GHG) EQUIVALENCIES CALCULATORS

- For the other GHG equivalencies found in the report, the project team utilized an online calculator produced by the EPA. (link below)
- https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
- The input for this calculator is Fuel Consumption, which was taken directly from Synchro / Sim Traffic

GREENHOUSE GAS (GHG) EQUIVALENCIES CALCULATORS

- The following Synchro / Sim Traffic Sheets show the reported Fuel Consumption and Emissions Calculations

Detailed Measures of Effectiveness

Network Totals

Number of Intersections	61
Fuel Consumed (gal)	1342
Fuel Economy (mpg)	7.8
CO Emissions (kg)	93.78
NOx Emissions (kg)	18.25
VOC Emissions (kg)	21.74
Performance Index	1089.0

Measures of Effectiveness

Network Totals

Number of Intersections	61
Fuel Consumed (gal)	1560
Fuel Economy (mpg)	6.6
CO Emissions (kg)	109.07
NOx Emissions (kg)	21.22
VOC Emissions (kg)	25.28
Performance Index	1381.3

Network Totals

Number of Intersections	66
Fuel Consumed (gal)	2174
Fuel Economy (mpg)	6.5
CO Emissions (kg)	151.94
NOx Emissions (kg)	29.56
VOC Emissions (kg)	35.21
Performance Index	1980.3

Network Totals

Number of Intersections	66
Fuel Consumed (gal)	2080
Fuel Economy (mpg)	6.4
CO Emissions (kg)	145.37
NOx Emissions (kg)	28.28
VOC Emissions (kg)	33.69
Performance Index	1902.2

Network Totals

Number of Intersections	63
Fuel Consumed (gal)	2065
Fuel Economy (mpg)	6.8
CO Emissions (kg)	144.38
NOx Emissions (kg)	28.09
VOC Emissions (kg)	33.46
Performance Index	1832.6

Network Totals

Number of Intersections	63
Fuel Consumed (gal)	1631
Fuel Economy (mpg)	8.1
CO Emissions (kg)	114.03
NOx Emissions (kg)	22.19
VOC Emissions (kg)	26.43
Performance Index	1325.5

Network Totals

Number of Intersections	63
Fuel Consumed (gal)	1642
Fuel Economy (mpg)	8.1
CO Emissions (kg)	114.76
NOx Emissions (kg)	22.33
VOC Emissions (kg)	26.60
Performance Index	1338.2

APPENDIX

H HARBOR DRIVE 2.0

PORT of SAN DIEGO

SAN DIEGO UNIFIED PORT DISTRICT

HARBOR DRIVE 2.0

A Greener, Smarter, and Healthier Harbor Drive

EXTERNAL REVIEW DRAFT: November 12, 2019

HARBOR DRIVE 2.0

SAN DIEGO UNIFIED PORT DISTRICT

A Greener, Smarter, and Healthier Harbor Drive

EXTERNAL REVIEW DRAFT

DATE: NOVEMBER 2019

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HARBOR DRIVE 2.0: A CONNECTED FLEXIBLE CORRIDOR

The Harbor Drive corridor is a unique multimodal transportation asset for the San Diego Unified Port District (District), the cities of San Diego and National City, and the entire San Diego region. As part of the *Harbor Drive Multimodal Corridor Study*, the project team identified opportunities to improve mobility, safety and quality of life for everyone who lives, works, or plays around the Harbor Drive corridor and in the surrounding communities. More specifically the studies goals were:

- Improve community safety, mobility, and health
- Improve efficient goods movement
- Improve naval base access and circulation
- Improve shipyard access and parking
- Ensure cost effectiveness

Through the literature review and project development process within the study, the project team identified Harbor Drive 2.0 (HD 2.0) as a project opportunity to improve goods movement through the corridor in a cost-effective manner, while maintaining community safety, mobility and health goals in the surrounding communities.

The District currently encourages truckers to use a preferred freight route for trucks to access the Port including National City Marine Terminal (NCMT), Tenth Avenue Marine Terminal (TAMT), Interstate 5, and Interstate 15. The HD 2.0 project considers truck prohibitions and parking prohibitions in neighboring communities, and it demonstrates how improvements to that route can benefit the local communities, commuters, active walkers/bicyclists, drivers, and truckers at the same time.

Some of the important features of the HD 2.0 project are enhancements to make the currently designate freight route a connected, flexible corridor providing enhanced freight connectivity between NCMT and TAMT and regional freeways while also providing the capability for potential use by other transportation modes such as buses and shuttles. Moreover, while providing more efficient movement of freight, HD 2.0 also incentivizes freight trucks to avoid entering neighborhoods like Barrio Logan and National City, enhancing the quality of life for neighborhood residents and improving public safety.

The opportunity exists to leverage emerging technologies, such as connected/automated trucks and cars and provide for more efficient freight movement utilizing technology and data to provide for priority truck movement during specific times of the day. Further, because HD 2.0 is technology agnostic, it will not require truckers to install specialized equipment in their trucks and can thereby ensure that the route can serve both existing and future technologies. This report will look at the features, proposed concepts, potential travel time savings, environmental considerations, and potential costs of HD 2.0.

INFRASTRUCTURE, ITS, AND RELATED FEATURES

There are several features that the proposed HD 2.0 will include and are shown in Figure 1. The features of HD 2.0 will include the following infrastructure and transportation engineering improvements along the corridor, as well as Intelligent Transportation System (ITS) technologies and other considerations.

Figure 1 Harbor Drive 2.0 Overview Map

INFRASTRUCTURE AND TRANSPORTATION ENGINEERING IMPROVEMENTS

Infrastructure and transportation engineering improvements are types of improvements that consider the roadway's physical features as well as access control at intersections. The following improvements are proposed for the corridor:

- Truck queue jumps: Queue jumps are proposed for several signalized intersections along the corridor so trucks can bypass other vehicles at these intersections. This not only allows the trucks to avoid queue formations, it also segregates trucks from other vehicles, increasing safety.
- Off-peak dedicated truck lanes: During off-peak traffic periods along the corridor, regular through traffic lanes will be re-designated as truck only lanes utilizing ITS technology and wayfinding gantries.
- Physical improvements: Where the right-of-way is feasible within the existing roadway cross section, HD 2.0 will have a separated, dedicated truck lane at all times of day. Other physical improvements to the roadway are included as needed to facilitate truck movements.
- New traffic signals: New traffic signals are proposed at new access locations or intersections that require more controlled movement of the traffic.

ITS TECHNOLOGIES

ITS technologies are improvements that involve the use of technological systems to facilitate and enable mobility. These systems include a combination of physical improvements to support communications as well as data collection and dissemination, as well as software applications to support methods and control of movement within in the corridor. Some ITS technologies that are proposed for this corridor include:

- Freight Signal Priority (FSP): Technology that evaluates real-time traffic conditions for a specific vehicle type, in this case trucks, and gives signal priority to these freight vehicles traveling along the designated freight route.
- Gate Operating System (GOS): If the District requires queue management at the gate, the District can install a GOS that connects with its Terminal Operating System (TOS) to manage the flow of trucks through the terminals' gates. The GOS provides truck drivers at the gate with accurate automated work assignments which reduces wait times outside the gate and truck cycle times within the terminal.
- Truck Reservation System (TRS): A TRS can be combined with a GOS to allow freight trucks to make appointments for cargo delivery or receipt within specific time windows. This system automatically disperses truck reservations over a range of time to reduce the peaking of truck traffic at the gate and avoid queuing along the designated freight route.
- Geofencing: Geographic Positioning System (GPS) and Geographic Information System (GIS) data, vehicle telematics and other ITS technologies can be used to track the location and path of freight vehicles prior to entering or after exiting the port. Geofencing can be used to monitor and incentivize trucks to follow designated freight routes and provide disincentives, such as limited access to the TRS, to trucks that use local residential roads.

OTHER CONSIDERATIONS

Within the full implementation of HD 2.0 there are several other items that should be considered to enhance the roadway and fully integrate the project.

- Outreach and Marketing: Seek public understanding and acceptance of the goals and operations of any deployments or testing activities. Additionally, promoting awareness and education for legislators and policymakers.

- Data Management: Enhance data sharing efforts between regional agencies, and with the private sector, including the City of San Diego, City of National City, SANDAG, and the Port of San Diego. Understanding the data, can facilitate coordination to determine additional opportunities for optimization.

The corridor is ideal for freight-focused pilot demonstration projects which are aligned with regional goals, including increasing awareness of residents, gaining agency experience, and furthering regional safety and mobility goals. Attachment A has further considerations that should be noted for Connected and Autonomous Vehicles (CAV) implementation along the corridor, (including policy and regulatory considerations) as well as successfully funded project examples.

Figure 2 and Figure 3 show a conceptual cross section of HD 2.0 in a couple of representative areas along the corridor.

Figure 2 HD 2.0 Northern Section

Figure 3 HD 2.0 Southern Section

CONCEPT PLAN

Considering the range of improvement opportunities to support HD 2.0, a concept plan has been developed for the entire corridor. There are several potential concepts and details that can be applied to specific areas of the corridor, and the purpose of this developed concept is to review the existing conditions and outline a high-level concept that would work within the visible constraints. Additional analysis would be needed to review other improvement opportunities. Therefore, Attachment B depicts is just one potential concept plan for HD 2.0.

The concept has been developed and has organized the corridor in the following way:

- Exclusive SB Truck-Only Lane from the end of the bridge south of Park Boulevard (TAMT Egress) to Sampson Street
- Mixed flow traffic lanes with non-peak hour truck only lanes, through electronic wayfinding (i.e. changeable message signs); as well as truck queue jumps, from Sampson Street to 32nd Street
- Exclusive NB Truck Only Lane, from 32nd Street to Vesta Street Gate
- Exclusive NB and SB Truck Only Lanes, from Vesta Street Gate to 8th Street
- Exclusive NB Truck Only Lane from 8th Street to Civic Center Drive

By showing different potential configurations for HD 2.0 down the corridor, the high-level review shows that multiple concepts are feasible including a dedicated, reversible truck only lane down the center of Harbor Drive.

TRAVEL TIME ANALYSIS

The proposed HD 2.0's key benefit is the future ability to reduce travel times for freight and heavy vehicles through the Harbor Drive corridor and onto the Interstate Highway System. A more reliable freight truck travel time, realized through the implementation of freight signal priority, dedicated lanes and queue jump signal timing, has the potential to not just be more efficient, thereby providing cost benefits for goods movement, but also improve the quality of life of residents along the corridor by reducing idling time and truck emissions.

The Study's analysis provided a "first-look" at the potential travel time savings for a HD 2.0, as the project was incorporated into the "Horizon Year All Project" travel time analysis scenario. Because the HD 2.0 is not a clearly defined project at this time, and only includes conceptual components, the project team represented the project in the travel time analysis by including the implementation of coordinated and optimized traffic signal timing of the traffic signals along Harbor Drive. Table 1 below shows the freight travel times in the AM and PM peak hours for this analysis and the corresponding travel time savings to and from the TAMT in the AM and PM peak hours, which is also consistent with the approved truck route for the corridor.

However, this initial look does not look at the potential additional travel time savings because of implementing dedicated truck only lanes, freight signal priority, and freight truck queue jumping. These travel time savings were also calculated during the composite peak hour analyzed in the greater multimodal study, **and not** during off-peak hours where freight movement is more likely to be in operation. As a result, Table 1 provides a baseline of potential travel savings but the benefit could be greater. To quantify the potential net benefit, the project team determined that a reasonable range of additional travel time savings could be 10%-40%. Meaning that with the implementation of additional ITS technology along the corridor, specifically for truck movement, and the travel of trucks during off-peak times, we anticipate that travel times could be further reduced by 10%-40%. Table 2 below shows what those potential freight travel time savings would look like.

Table 1: Base Travel Times Savings

Origin	Destination	Access Ramp	Segment Distance (ft.)	Model Scenario - Travel Times (min)		
				Horizon Year No Build	Horizon Year All Build	Horizon Year Travel Time Differential
AM Peak Hour						
TAMT @ Cesar Chavez Parkway	I-5 NB	28th Street	7,050	10.5	9.4	**-1.1**
		8th Street	15,730	16.2	17.0	0.8
	I-5 SB	28th Street	6,610	9.2	7.6	**-1.6**
		8th Street	14,890	15.9	16.6	0.8
		Civic Center Drive (proxy for NCMT)	15,580	16.4	17.1	0.8
	I-15	32nd Street	8,920	13.3	13.1	**-0.3**
I-5 NB	TAMT @ Cesar Chavez Parkway	Civic Center Drive (proxy for NCMT)	17,080	32.0	20.5	**-11.5**
		28th Street	7,670	31.7	11.9	**-19.8**
I-5 SB		8th Street	15,790	52.1	23.3	**-28.8**
		28th Street	7,880	51.4	23.2	**-28.1**
I-15		32nd Street	11,400	48.2	22.5	**-25.8**
PM Peak Hour						
TAMT @ Cesar Chavez Parkway	I-5 NB	28th Street	7,050	16.5	7.1	**-9.3**
		8th Street	15,730	33.1	17.1	**-16.0**
	I-5 SB	28th Street	6,610	14.0	6.0	**-8.0**
		8th Street	14,890	27.3	14.2	**-13.1**
		Civic Center Drive (proxy for NCMT)	15,580	26.7	20.1	**-6.6**
	I-15	32nd Street	8,920	13.9	6.9	**-7.0**
I-5 NB	TAMT @ Cesar Chavez Parkway	Civic Center Drive (proxy for NCMT)	17,080	9.6	12.1	2.4
		28th Street	7,670	9.3	16.1	6.8
I-5 SB		8th Street	15,790	28.8	19.7	**-9.1**
		28th Street	7,880	5.6	7.0	1.4
I-15		32nd Street	11,400	13.9	8.5	**-5.4**

Table 2: Travel Time Savings Range (With ITS Components)

Origin	Destination	Access Ramp	Segment Distance (ft.)	Model Scenario - Travel Times (min)			
				Horizon Year No Build	Freight Travel Time (+10% Benefit)	Freight Travel Time (+40% Benefit)	Travel Time Savings Range
AM Peak Hour							
TAMT @ Cesar Chavez Parkway	I-5 NB	28th Street	7,050	10.5	8.4	5.6	**-2 to -4.8**
		8th Street	15,730	16.2	15.3	10.2	**-0.9 to -6**
	I-5 SB	28th Street	6,610	9.2	6.8	4.6	**-2.4 to -4.7**
		8th Street	14,890	15.9	15.0	10.0	**-0.9 to -5.9**
		Civic Center Drive (proxy for NCMT)	15,580	16.4	15.4	10.3	**-1 to -6.1**
	I-15	32nd Street	8,920	13.3	11.7	7.8	**-1.6 to -5.5**
I-5 NB	TAMT @ Cesar Chavez Parkway	Civic Center Drive (proxy for NCMT)	17,080	32.0	18.5	12.3	**-13.5 to -19.7**
		28th Street	7,670	31.7	10.7	7.1	**-21 to -24.6**
I-5 SB		8th Street	15,790	52.1	21.0	14.0	**-31.1 to -38.1**
		28th Street	7,880	51.4	20.9	13.9	**-30.4 to -37.4**
I-15		32nd Street	11,400	48.2	20.2	13.5	**-28 to -34.7**
PM Peak Hour							
TAMT @ Cesar Chavez Parkway	I-5 NB	28th Street	7,050	16.5	6.4	4.3	**-10 to -12.2**
		8th Street	15,730	33.1	15.4	10.3	**-17.7 to -22.8**
	I-5 SB	28th Street	6,610	14.0	5.4	3.6	**-8.6 to -10.4**
		8th Street	14,890	27.3	12.8	8.5	**-14.5 to -18.8**
		Civic Center Drive (proxy for NCMT)	15,580	26.7	18.1	12.0	**-8.6 to -14.6**
	I-15	32nd Street	8,920	13.9	6.2	4.1	**-7.7 to -9.7**
I-5 NB	TAMT @ Cesar Chavez Parkway	Civic Center Drive (proxy for NCMT)	17,080	9.6	10.9	7.2	**1.2 to -2.4**
		28th Street	7,670	9.3	14.5	9.7	**5.2 to 0.4**
I-5 SB		8th Street	15,790	28.8	17.7	11.8	**-11.1 to -17**
		28th Street	7,880	5.6	6.3	4.2	**0.7 to -1.4**
I-15		32nd Street	11,400	13.9	7.7	5.1	**-6.2 to -8.8**

ENVIRONMENTAL CONSIDERATIONS

The anticipated environmental documentation and list of technical studies are based on a high-level review of existing and readily accessible databases, online mapping tools, and conceptual design plans. The preliminary review focused on a qualitative environmental constraint analysis related to the HD 2.0 Concept Plan (Concept Plan).

Since the Concept Plan proposes to add a separated, dedicated truck lane along Harbor Drive, the proposed project would increase vehicular capacity along Harbor Drive and would be a non-exempt undertaking per the California Environmental Quality Act (CEQA). As a non-exempt undertaking, the proposed project would require an Initial Study (IS) as formal documentation of the CEQA process. It is anticipated the IS would lead to a Negative or Mitigated Negative Declaration.

The following list of technical reports may be required in support of the environmental documentation for the project:

- Air Quality and GHG Emissions Analysis
- Biological Evaluation/Assessment
- Cultural and Historic Evaluation Report
- Hazards and Hazardous Materials Assessment
- Hydrology and Water Quality Assessment
- Noise and Vibration Analysis
- Socioeconomic Assessment
- Traffic Impact Analysis
- Visual Impact Assessment

At this time, the only regulatory permits that are anticipated to be needed is a Coastal Development Permit, as impacts to jurisdictional waters, waters of the state, and regulated species are not expected to occur.

POTENTIAL COSTS

A preliminary rough order of magnitude cost estimate was developed for this conceptual project based on the engineering assumptions and evaluation, in accordance with standard practices.

PAVEMENT STRUCTURAL SECTION

The main part of the concept is the reconstruction of the existing roadway to include a dedicated truck-only lane for much of the corridor. Additionally, the lanes closest to the middle of the roadway would be used exclusively for trucks during the off-peak hours. With the additional truck usage and for the longevity of the new roadway based on this usage, a pavement structural section that would accommodate this use was developed for estimating purposes. This pavement was applied for the new dedicated lane as well as two additional lanes where there would be trucks during the off-peak times. The remaining lanes along Harbor Drive are proposed to be reconstructed with standard pavement for this type of roadway and would consist of a mill and overlay of the existing pavement.

RIGHT-OF-WAY

The unit costs are identified from standard sources, such as Caltrans Costs database.

ITS/ELECTRICAL

The ITS elements include fiber optic communication connections to all the traffic signals along the entire corridor as well as upgrades to the communications connections to the City of San Diego Transportation Management Center (TMC). New sign gantries and variable message signs are also included in the ITS costs. Electrical items would include upgraded lighting along the roadway and other electrical elements to support the overall communications and ITS elements.

CONTINGENCY

Based on standard practices for a project at this stage, a cost contingency of 40% was used.

UNIT COSTS AND OTHER ITEMS

Since this project is only at a preliminary stage of concept development, many work items in the estimate were developed using a percentage of the overall costs. This type of percentage estimate of costs is based on prior experience and projects. Other work item costs were estimated using databases of recent construction costs.

Table 3 Summary of Potential Costs

HARBOR DRIVE 2.0 CONNECTED FLEXIBLE CORRIDOR CONCEPT SUMMARY OF COSTS		
	Cost Range	
Summary of Items	**Low**	**High**
Pavement Structural Section	$6,300,000	$10,000,000
Drainage and Water Quality	$500,000	$500,000
Signing and Striping	$100,000	$100,000
Utilities	$300,000	$300,000
ITS/Electrical	$1,000,000	$1,500,000
Stage Construction	$350,000	$500,000
Traffic Signals (6 new + 13 mod)	$1,850,000	$2,475,000
Roadway Subtotal	*$10,400,000*	*$15,375,000*
Minor Items and Mobilization - 10%	$1,040,000	$1,537,500
Contingencies - 40%	$4,160,000	$6,150,000
Total Capital Construction Cost	**$15,600,000**	**$23,062,500**
Environmental Analyses	$500,000	$700,000
Preliminary Design - 5%	$780,000	$1,153,125
Final Design - 10%	$1,560,000	$2,306,250
Project Management - 5%	$780,000	$1,153,125
Construction Management - 12%	$1,872,000	$2,767,500
Professional Liability - 2.5%	$390,000	$576,563
Total Soft Costs	**$5,882,000**	**$8,656,563**
Total Project Cost	**$21,482,000**	**$31,719,063**

ATTACHMENT A: HARBOR DRIVE: POTENTIAL STRATEGIES TO LEVERAGE CAV TECHNOLOGIES

New Freight is creating a paradigm shift in how all participants in goods movement (from supplier to end consumer) interface with transportation infrastructure. This high-level overview outlines potential strategies to help advance the corridor's ability to leverage emerging technologies, such as those expected to be realized as more connected/automated trucks and cars on the road. This list of strategies is intended to help guide the team as plans and concepts are being developed for the Harbor Drive corridor that optimize freight movements.

INFRASTRUCTURE AND VEHICLE ASSETS

- Review and use regional ITS Architecture.
- Prepare for the latest technologies by including accommodations for CAV with new projects or improvement projects.
- Evaluate and document any telecommunications needs – fiber, cellular installations, conduit, power, etc. Make plans to improve if needed.
- Evaluate and document any signal controller needs. Make plans to improve if needed.
- Evaluate and document any centralized signal system needs. Make plans to improve if needed.
- Implement a process to include the consideration of new technologies in agency vehicle purchases and vehicle upgrades. These can be integrated into new vehicles, aftermarket installations, or in-vehicle mobile devices.

DEPLOYMENTS

The Harbor Drive corridor is ideal for freight focused pilot demonstration projects which are aligned with regional goals, including increasing awareness of residents, gaining agency experience, and furthering regional safety and mobility goals.

EXAMPLES

- Freight signal priority using MMITTS
- Freight specific traveler information / routing
- Sharing port data with corridor operations (e.g. when to expect higher volumes of trucks due to the arrival of a large ship)
- Incentive program to encourage use of New Freight routes
- Strong enforcement of prohibited truck activity
- Truck arrival and scheduling system for port gates
- Truck parking identification / development
- Truck parking data collection and sharing
- Providing enhancement to encourage autonomous truck operations along the corridor (e.g. lane marking, markers, policies)

DATA MANAGEMENT

- Enhance data sharing efforts between regional agencies, with academia, and with the private sector, including the City of San Diego, SANDAG, and the District.
- Develop a data business plan that will set a baseline for data sharing and operation system improvements based on data analytics and performance monitoring.
- Work with regional partners to develop an approach to sharing and warehousing standard connected vehicle data like signal information and information coming from vehicles (e.g. SPaT, MAP, and BSMs).
- Support the implementation of strong privacy principles for data management.

OUTREACH AND MARKETING

- Seek public understanding and acceptance of the goals and operations of any deployments or testing activities.
- Promote awareness and education for legislators and policymakers.

TECHNOLOGY AND WORKFORCE ADVANCEMENT

- Support the advancement of technological capabilities that are crucial to progressing the state of the practice, locally and more broadly.
- Develop plans to facilitate CAV knowledge, skill set development, and abilities in the local workforce.
- Collaborate with partners to identify common operational and maintenance needs arising from the introduction of CAV, and look to share knowledge and possibly resources.

POLICY AND REGULATIONS

- Review and update local regulations as appropriate to help achieve regional goals related to CAV, and advocate for updates to state and federal policy needed to accomplish our goals.
- Look at the federal, state, regional, and local levels to understand what the latest trends in CAV and tie these to future planning activities.
- Identify specific regulations or policies that may require special permission or exemptions to operate as planned.

PARTNERSHIPS

- Ensure ongoing communication and knowledge sharing among agencies, partners, and stakeholders through regional forums, such as SANDAG's Freight Stakeholders Working Group.
- Define private sector engagement guidelines and use these to promote the establishment of partnerships with industry affiliates.
- Work towards interoperability of systems (from different partners, across different jurisdictions) to support consistency and regional collaboration.

- Collaborate with local universities and other academic institutions for data analysis, development of safety applications, literature reviews, etc.

EVALUATION

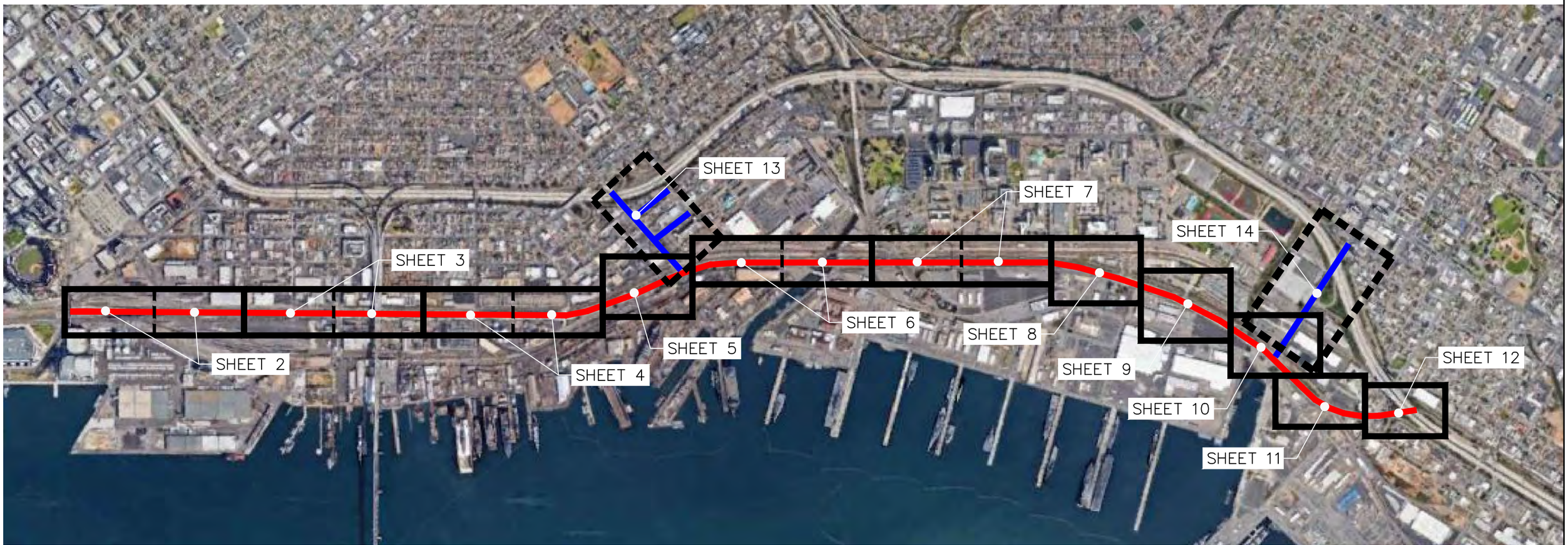
- Measure the economic impact and the ability to meet other regional goals, such as the reduction of GHGs and VMT.

FUNDED PROJECT EXAMPLES

- https://www.fhwa.dot.gov/fastact/factsheets/advtranscongmgmtfs.cfm
- https://ops.fhwa.dot.gov/fastact/atcmtd/2017/applications/portofva/project.htm (2017)
- https://www.fhwa.dot.gov/pressroom/fhwa1717i.cfm (2019)
- https://www.fhwa.dot.gov/pressroom/fhwa1651_losangeles.cfm (2016)

The examples above are just a select few funding opportunities chosen to be showcased for the purposes of this report. There are various potential local and federal funding opportunities that could contribute to this project's funding.

ATTACHMENT B: CONCEPTUAL PLANS



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HARBOR DR. 2.0

KEY MAP

PORT of SAN DIEGO

NORTH

DATE NOV 2019

SHEET NO. 1 OF 14

SCALE

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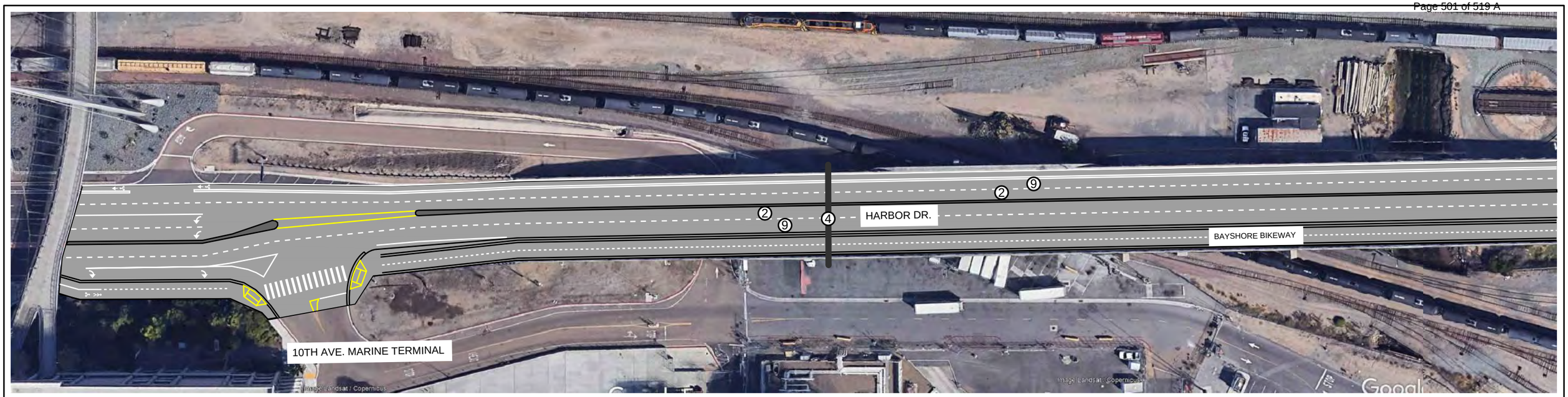

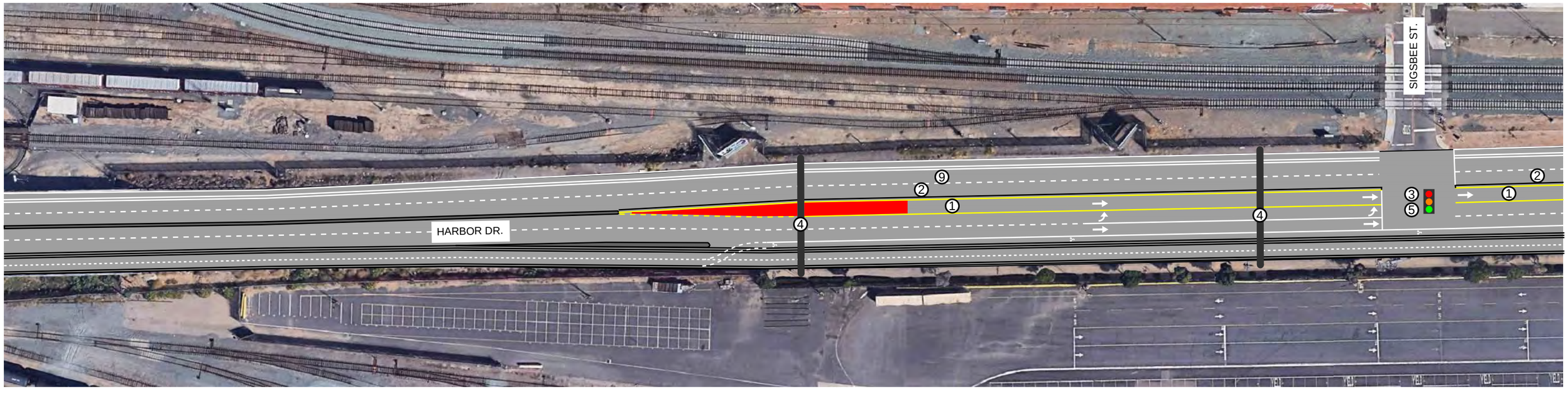

LEGEND

1. TRUCK ONLY LANE
2. TRUCK ONLY LANE DURING NON-PEAK HOURS
3. NEW TRAFFIC SIGNAL
4. WAYFINDING/ LANE CONTROL GANTRY
5. FREIGHT SIGNAL PRIORITY
6. CLOSE INTERSECTION – PAVE NEW MEDIAN
7. MIXED FLOW W/ TRUCK ROUTING
8. SIGNAL TRUCK QUEUE JUMP
9. AUTO ONLY DURING NON-PEAK
10. URBAN GREENING

EXISTING/PROPOSED TRAFFIC SIGNAL

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PORT of SAN DIEGO

NORTH

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DATE NOV 2019

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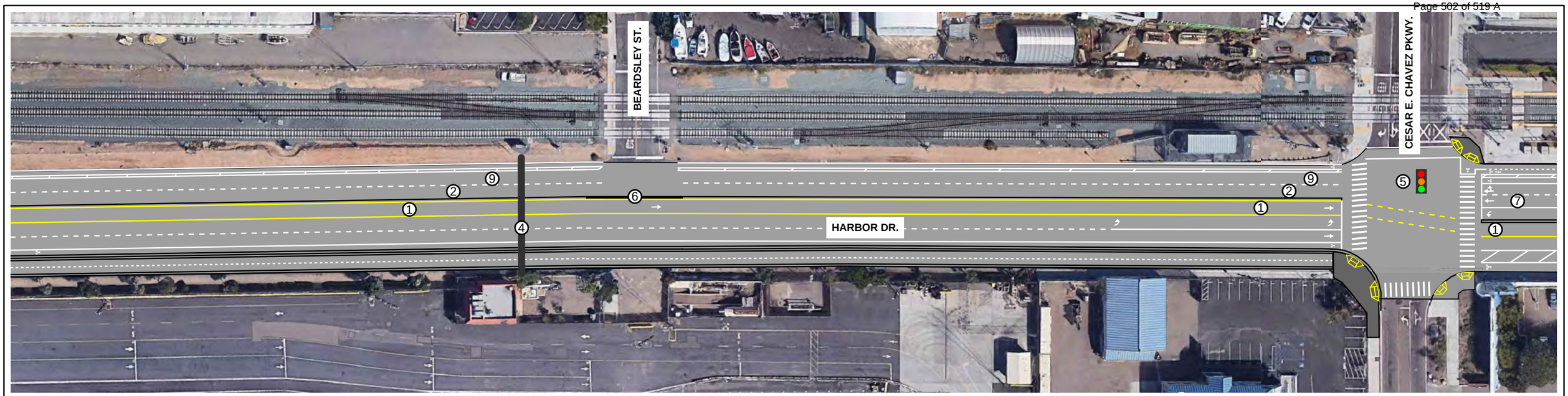

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PORT of SAN DIEGO

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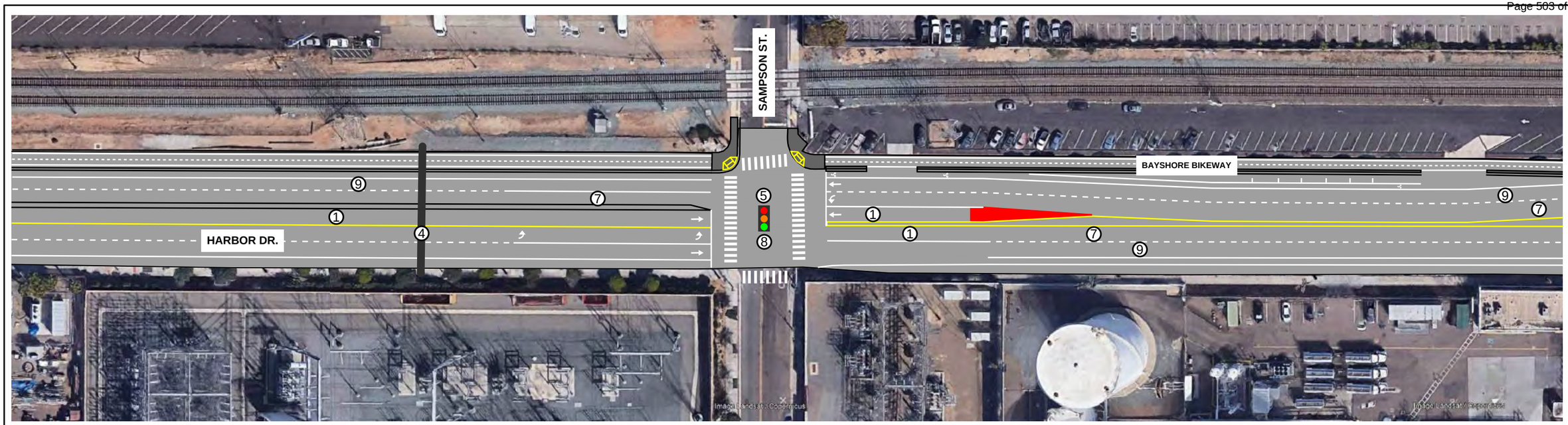
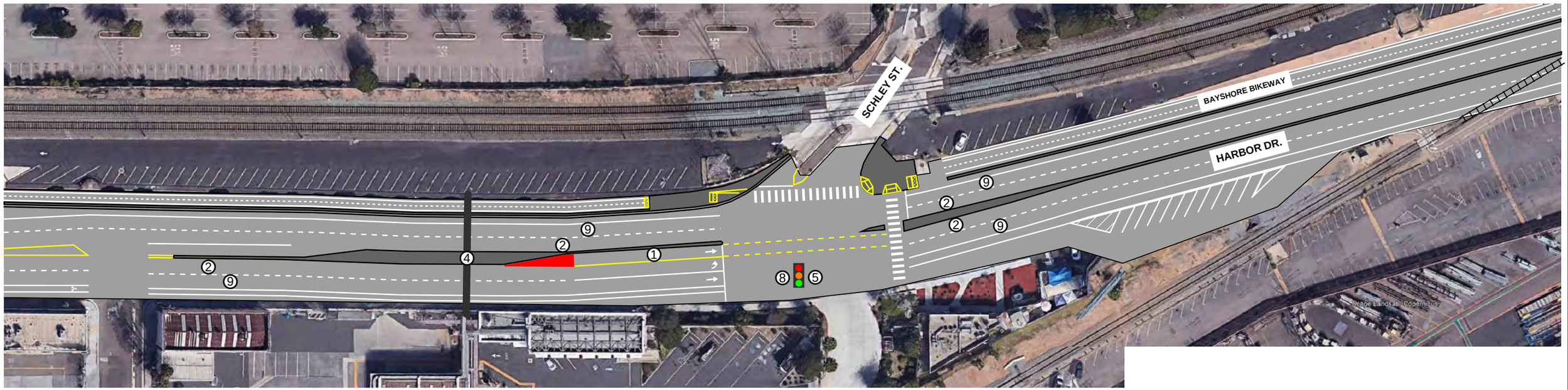
SHEET NO. 3 OF 14





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PORT of SAN DIEGO

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DATE NOV 2019

SHEET NO. 4 OF 14

LEGEND

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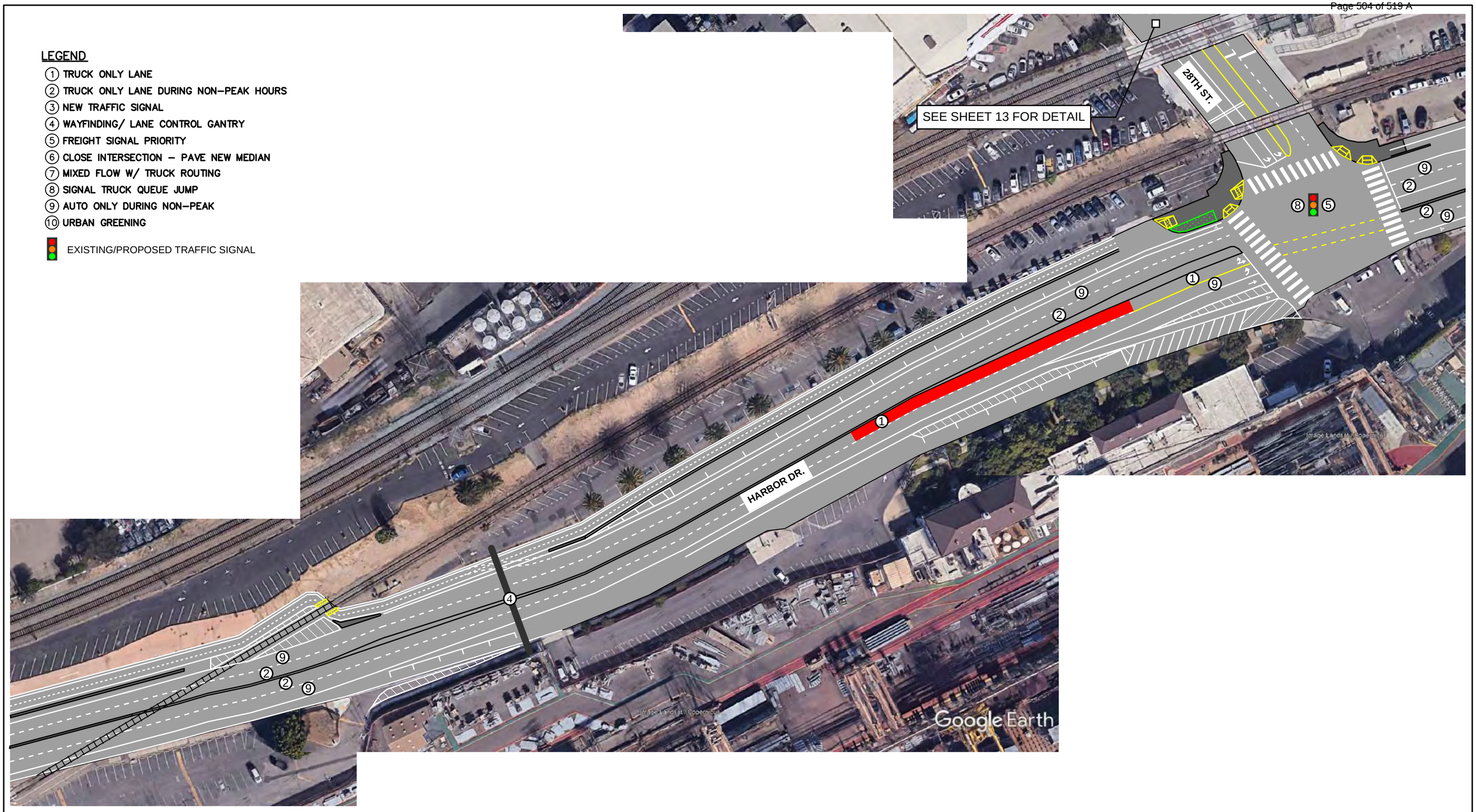

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PORT of SAN DIEGO

NORTH

DATE NOV 2019

SHEET NO. 5 OF 14

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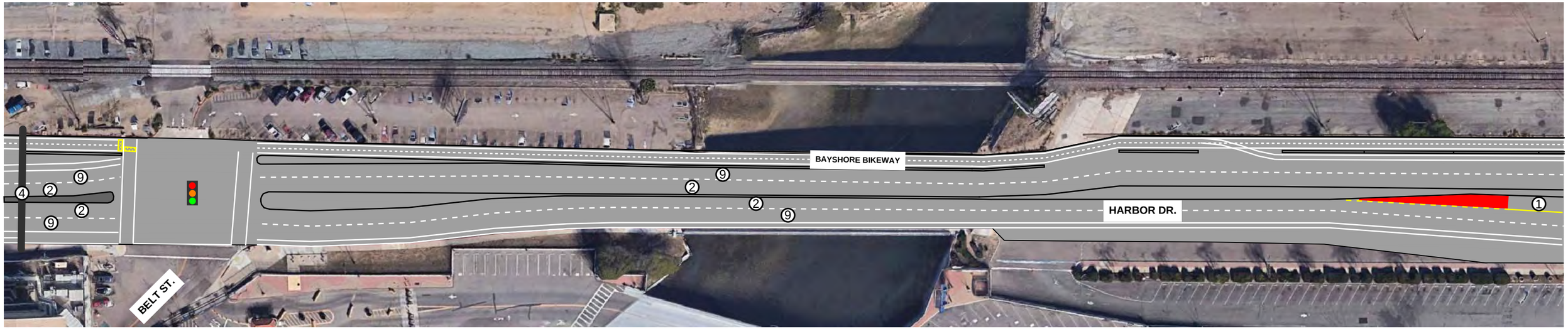

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PORT of SAN DIEGO

NORTH

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DATE NOV 2019

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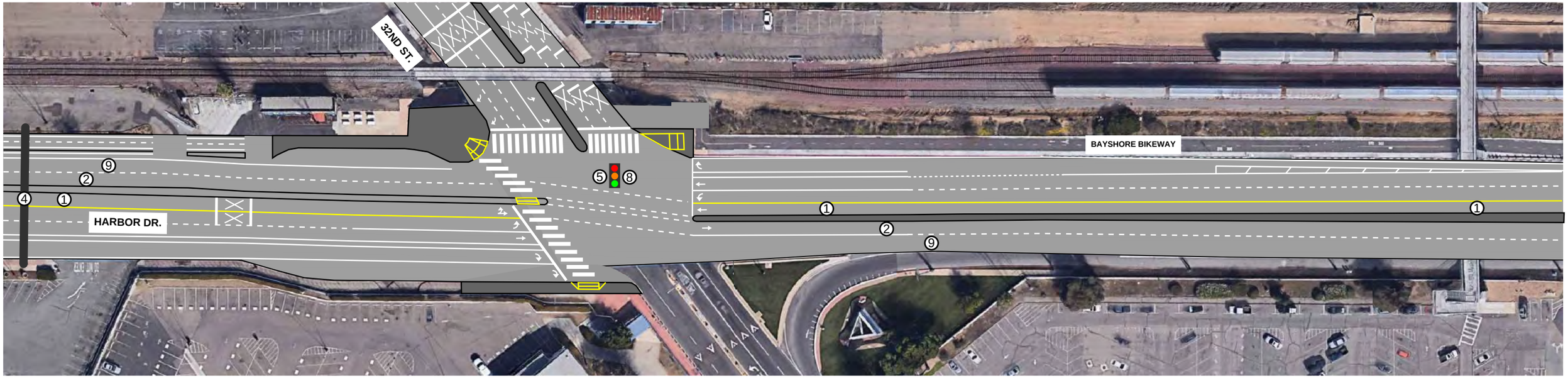

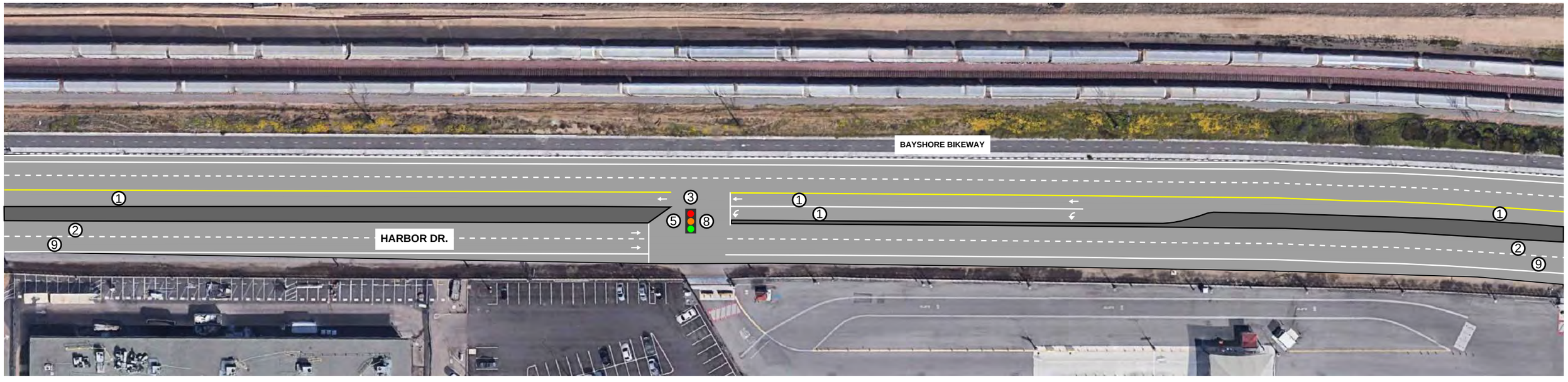

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PORT of SAN DIEGO

NORTH

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SHEET NO. 7 OF 14

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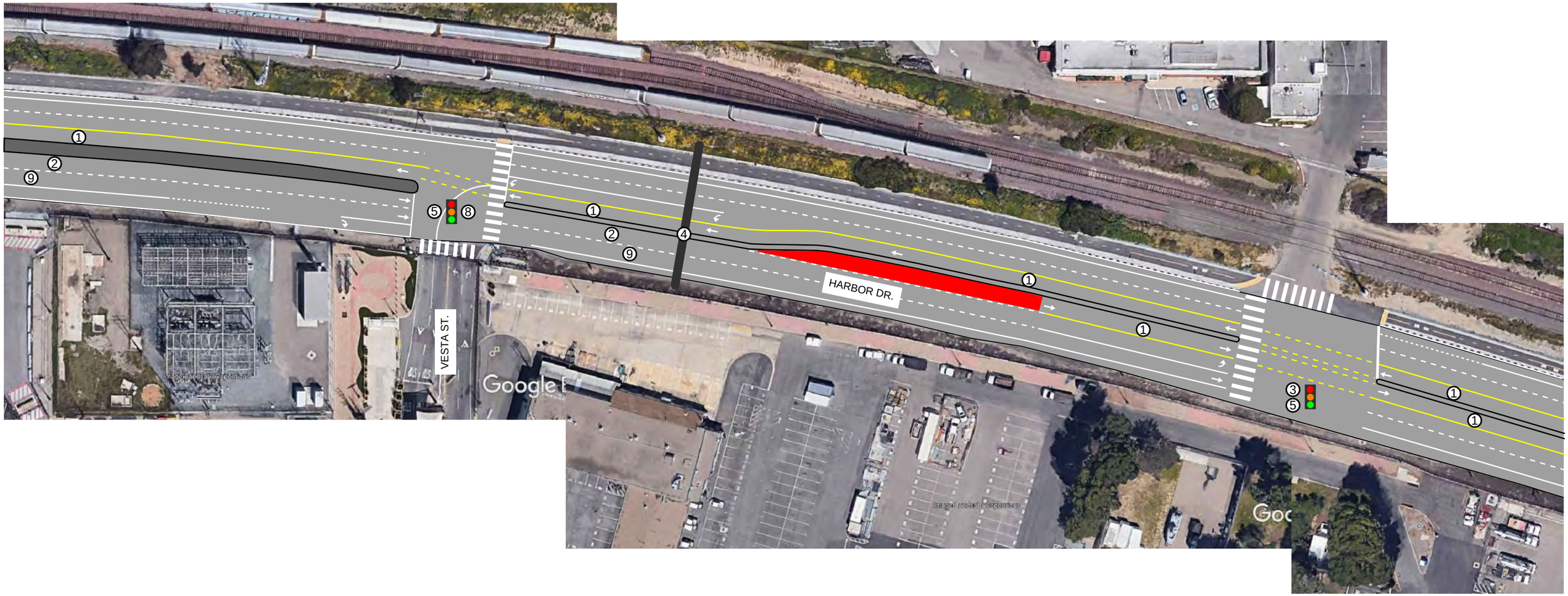

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NORTH

SCALE 0 80 160 Feet

DATE NOV 2019

SHEET NO. 8 OF 14

LEGEND

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NORTH

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DATE NOV 2019

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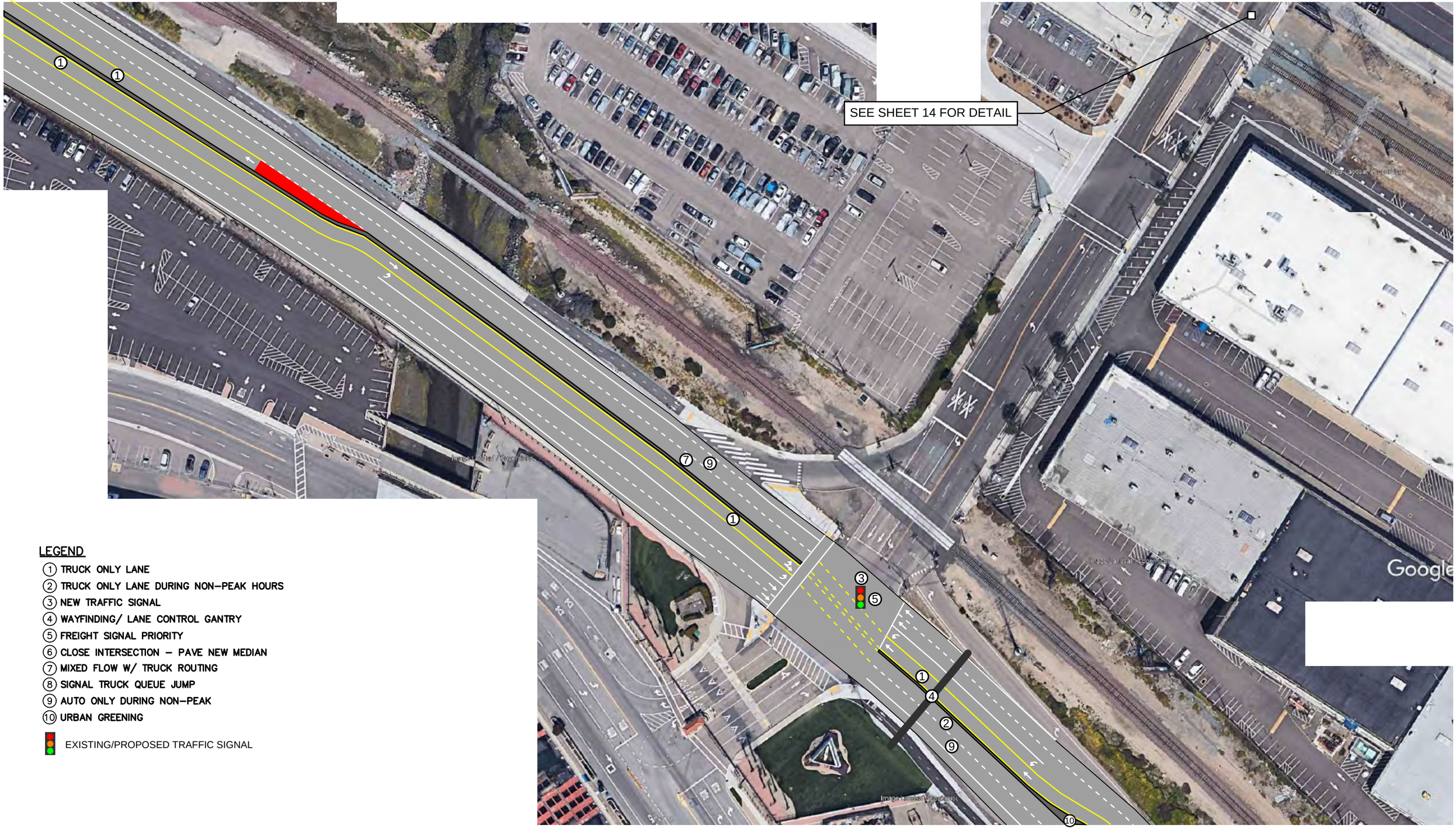

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HARBOR DR.

PORT of SAN DIEGO

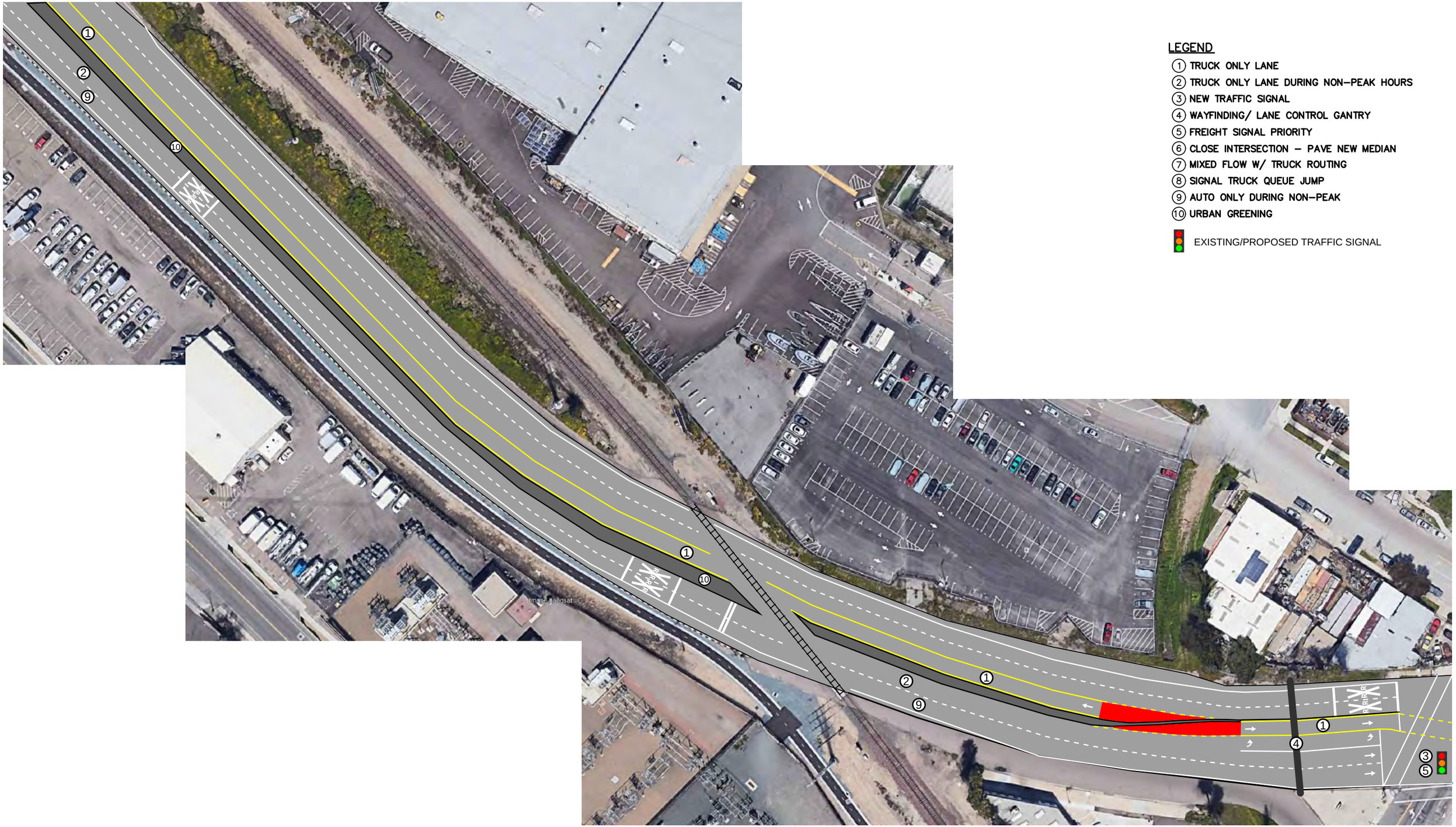
NORTH

SCALE

0 80 160 Feet

DATE NOV 2019

SHEET NO. 10 OF 14



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HARBOR DR. 2.0

HARBOR DR.

PORT of SAN DIEGO

NORTH

DATE NOV 2019

SHEET NO. 11 OF 14

SCALE

0 80 160 Feet

LEGEND

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HARBOR DR. 2.0

HARBOR DR.

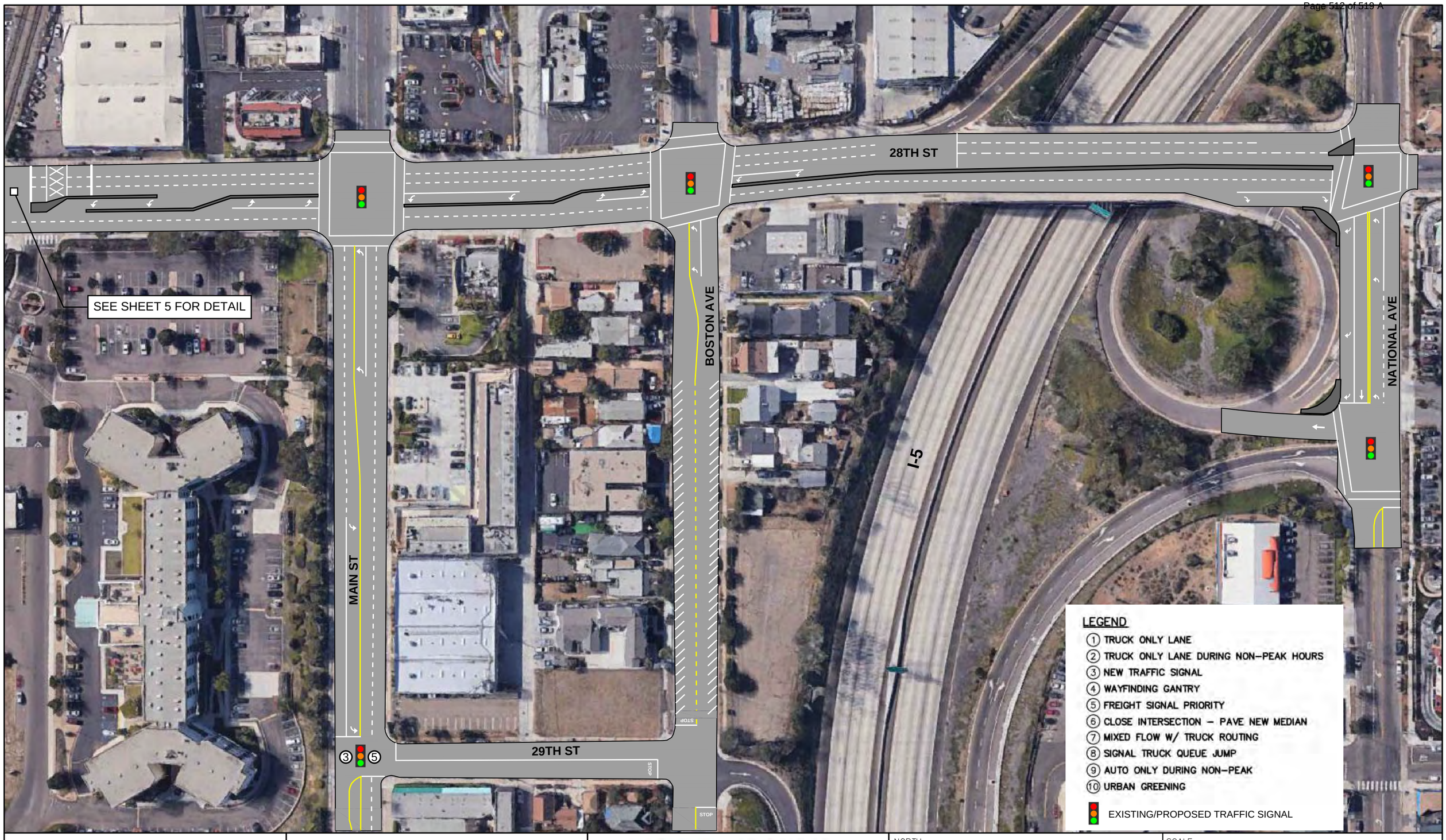
PORT of SAN DIEGO

NORTH

SCALE

DATE NOV 2019

SHEET NO. 12 OF 14



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HARBOR DR. 2.0

28TH STREET

PORT of SAN DIEGO

NORTH

SCALE

0 100 200 Feet

DATE NOV 2019

SHEET NO. 13 OF 14

wsp
401 B STREET, SUITE 1650 SAN DIEGO, CA 92101
TEL (619) 338-9376 FAX (619) 338-8123

HARBOR DR. 2.0

8TH STREET

PORT of SAN DIEGO

NORTH

DATE NOV 2019

SHEET NO. 14 OF 14

SCALE

0 120 240 Feet

APPENDIX

I TIDELANDS TRUCK PARKING EXHIBITS

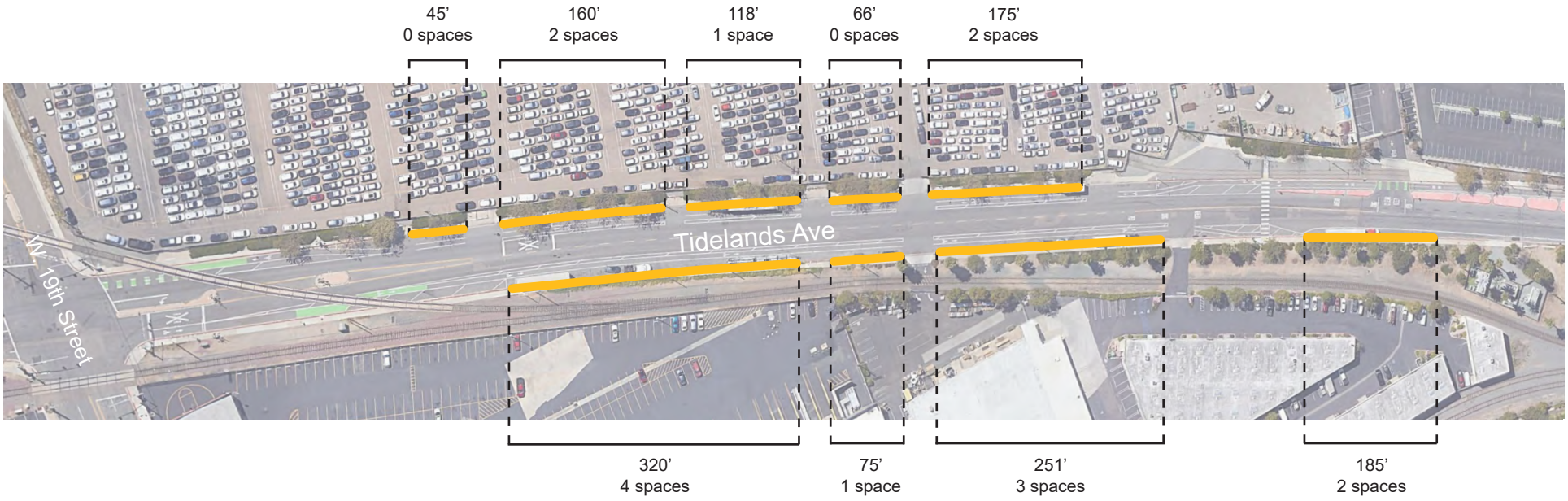
HARBOR DRIVE MULTIMODAL CORRIDOR STUDY

Tidelands Truck Parking

- The conceptual Tidelands Truck Parking project is conceived as a reconfiguration of Tidelands Avenue in National City to better accommodate parking for trucks on-street.
- The reconfiguration also includes the implementation of SMART Truck Parking ITS technology to facilitate efficient use of the on-street parking spaces.
- To provide an estimate for the potential number of spaces that can be achieved, the project team assumed a standard WB-50 truck (55' in length) as the typical truck for the corridor and 70' as the typical length for a WB-50 truck parking space.
- Additionally, the project team assumed that the existing driveway configuration on Tidelands Avenue would remain the same.
- Based on these assumptions, a total of 67 truck parking spaces are possible along this stretch of Tidelands Avenue.
- The exhibits on the following pages represent the locations of these spaces.

TIDELANDS AVENUE TRUCK PARKING

EXHIBIT 1: FROM W. 19TH STREET TO CIVIC CENTER DRIVE



Available Curb

General Location

Prepared for:

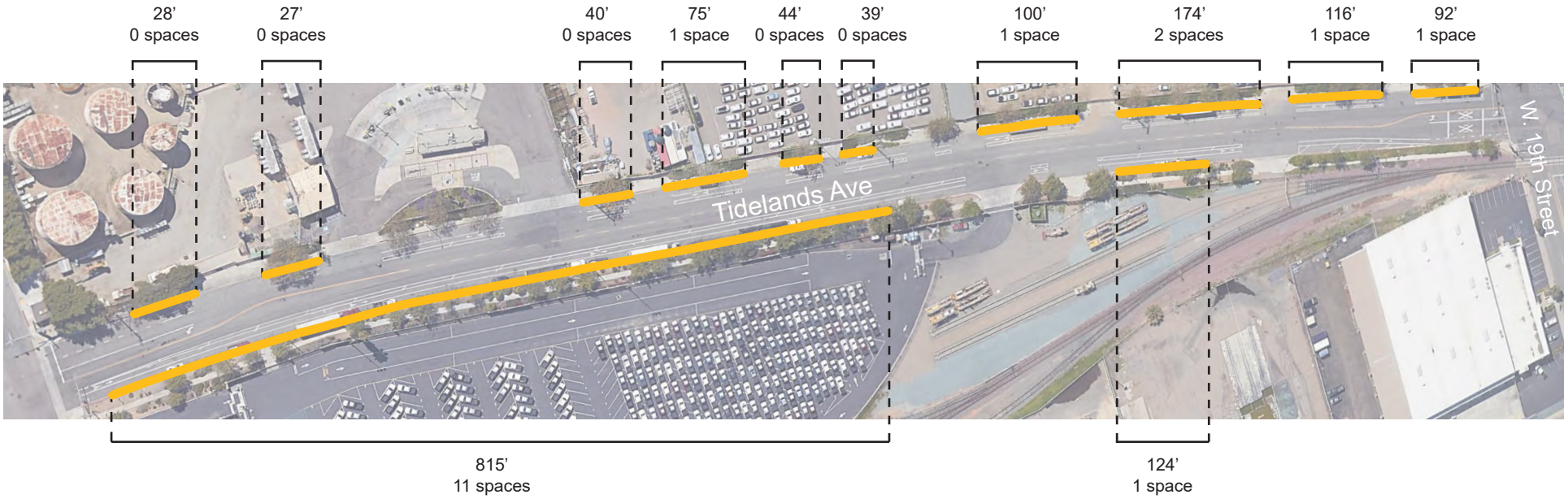
PORT of SAN DIEGO

Prepared by:

WSP

TIDELANDS AVENUE TRUCK PARKING

EXHIBIT 2: FROM BAY MARINA DRIVE TO W. 19TH STREET



Available Curb

General Location

Prepared for:

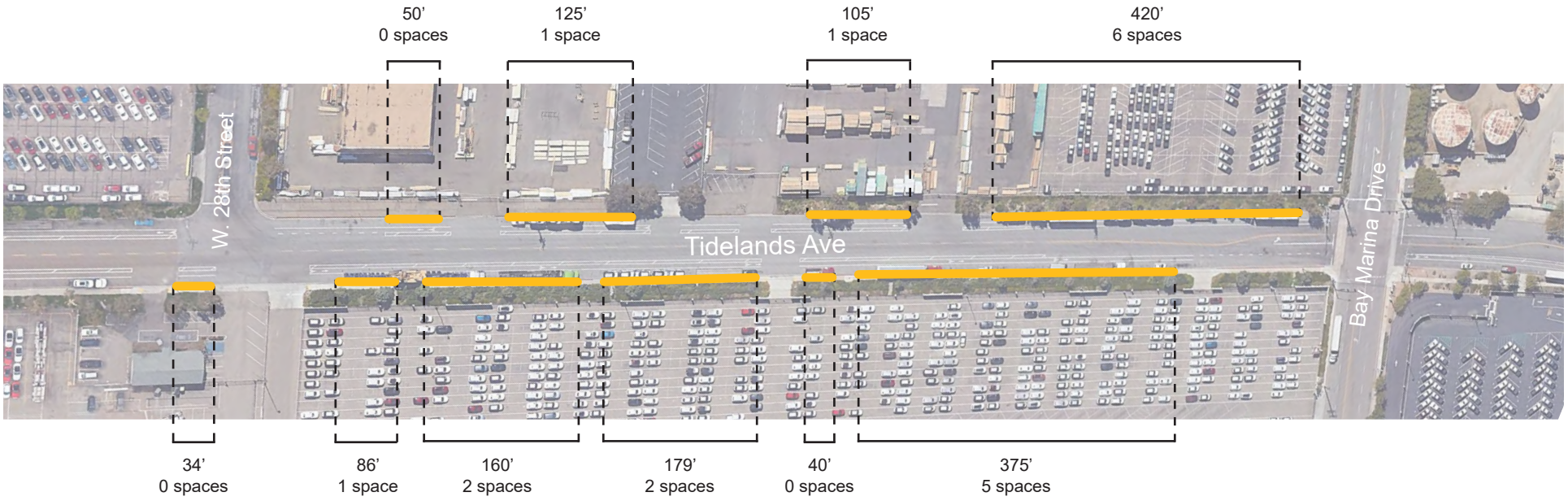
PORT of SAN DIEGO

Prepared by:

WSP

TIDELANDS AVENUE TRUCK PARKING

EXHIBIT 3: FROM W. 28TH STREET TO BAY MARINA DRIVE



Available Curb

General Location

Prepared for:

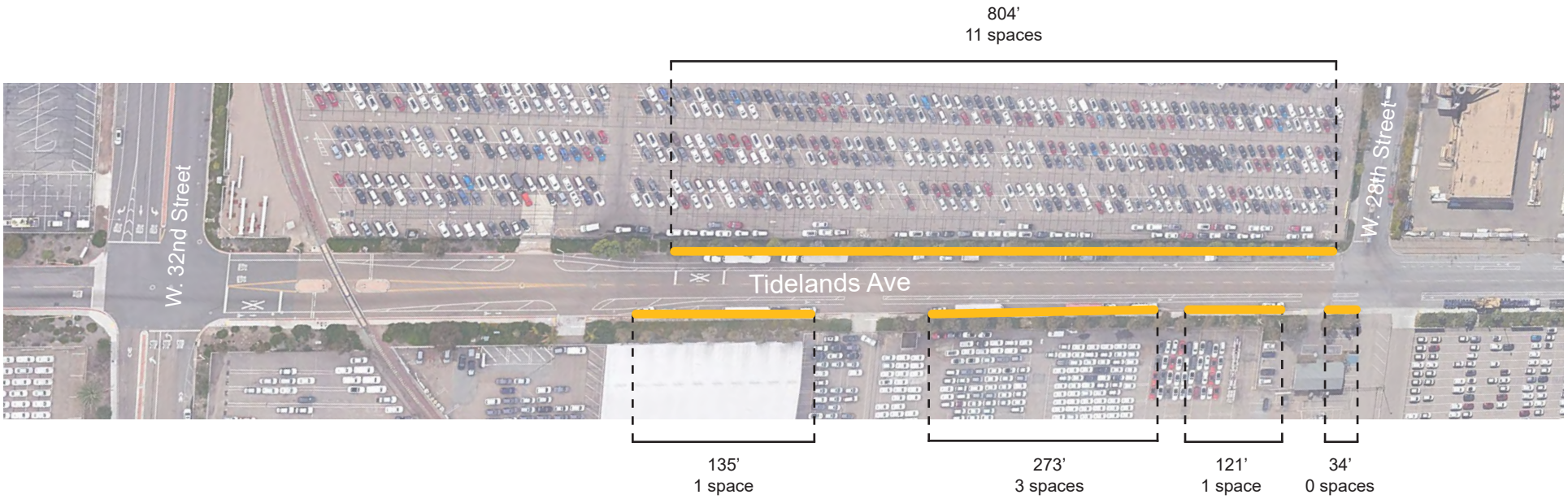
PORT of SAN DIEGO

Prepared by:

WSP

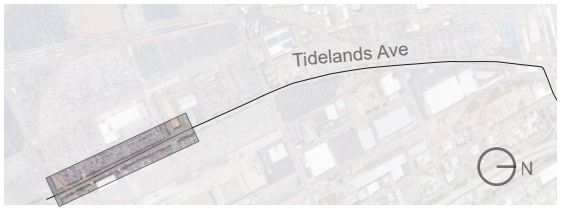
TIDELANDS AVENUE TRUCK PARKING

EXHIBIT 4: FROM W. 32ND STREET TO W. 28TH STREET



Available Curb

General Location



Prepared for:

PORT of SAN DIEGO

Prepared by:

WSP