Traffic Impact Analysis

Barrio Logan Community Plan Update

March 2011

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EXECUTIVE SUMMARY

This study, prepared by Kimley-Horn and Associates, Inc., evaluates the potential traffic-related impacts associated with the Barrio Logan Community Plan Update.

Two land use alternatives were presented and analyzed as part of the Barrio Logan Community Plan Update. The purpose of these alternatives is to regulate and guide the strategic growth of the community. In addition to the land use alternatives within the Barrio Logan Community Plan Update, a Mobility Element was prepared based on the existing conditions within the community, potential future transportation deficiencies and improvement recommendations and extensive input from the community stakeholders.

Based on the intersection peak-hour analysis included in this study, the Barrio Logan Community Plan Update Land Use Alternatives will be considered to have a cumulative traffic related impact at the following twenty intersections:

- *National Avenue and 16th Street;*
- *Harbor Drive and Sigsbee Street;*
- *Logan Avenue and Beardsley Street/I-5 SB off-ramp;*
- *National Avenue and Beardsley Street;*
- *Harbor Drive and Beardsley Street;*
- *Logan Avenue and Cesar Chavez Parkway;*
- *National Avenue and Cesar Chavez Parkway;*
- *Newton Avenue and Cesar Chavez Parkway;*
- *Main Street and Cesar Chavez Parkway;*
- *Harbor Drive and Cesar Chavez Parkway;*
- *Logan Avenue and Sampson Street;*
- *Main Street and 26th Street;*
- *Harbor Drive and Schley Street;*
- *National Avenue and 28th Street;*
- *Boston Avenue and 28th Street;*
- *Main Street and 28th Street;*
- *Harbor Drive and 28th Street;*
- *Boston Avenue and I-5 Southbound On-ramp;*
- *32nd Street and Wabash Street; and*
- *Harbor Drive and 32nd Street.*

The following intersection improvements are needed to mitigate the peak-hour intersection impacts of the proposed Barrio Logan Community Plan Update Land Use Alternatives. With the exception of the improvements recommended at the Harbor Drive/Cesar Chavez Parkway and Boston Avenue/28th Street intersections, all improvements would be the same for both alternative land use scenarios. Some improvements at the Harbor Drive /Cesar Chavez Parkway and Boston Avenue/28th Street intersections would only be needed with Alternative 2 Land Use scenario.

- National Avenue and 16th Street: A new traffic signal is recommended to be installed at this intersection.
- Harbor Drive and Sigsbee Street: A traffic signal is recommended to be installed at the intersection of Sigsbee Street and Harbor Drive. The signal is needed to serve the increased traffic from land uses proposed, as well as accommodating the traffic that would be diverted from Beardsley Street due to the median closure along Harbor Drive.
- Logan Avenue and Beardsley Street/I-5 SB off-ramp: A traffic signal is recommended to be installed at the intersection.
- National Avenue and Beardsley Street: A traffic signal is recommended to be installed at the intersection.
- Harbor Drive and Beardsley Street: This improvement would extend the raised median along Harbor Drive in front of Beardsley Street converting the intersection to right-in/right-out only movements.
- Logan Avenue and Cesar Chavez Parkway: The addition of an exclusive eastbound right-turn lane and a northbound right-turn overlap phase are recommended to be installed at this intersection. The addition of the exclusive eastbound right-turn lane could be implemented by restriping changes only. An existing MTS bus stop is located where the exclusive right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement. This improvement will not affect the existing on-street parking. The entrance to the State Route 75 ramps would be reconfigured to improve pedestrian circulation. This improvement could include the removal of the free northbound right-turn access from Cesar Chavez Parkway to the State Route 75 ramps.
- National Avenue and Cesar Chavez Parkway: Exclusive eastbound and westbound right-turn lanes are recommended to be installed at this intersection in order to reduce queuing along National Avenue. These improvements could be implemented by restriping changes only. These improvements will not affect the existing on-street parking. An existing MTS bus stop is located where the exclusive westbound right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement.
- Main Street and Cesar Chavez Parkway: An exclusive westbound right-turn lane is recommended to be installed at this intersection in order to reduce queuing along Main Street. This improvement could be implemented by restriping changes only. This improvement will not affect the existing on-street parking. An existing MTS bus stop is located where the exclusive westbound right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement.
- Harbor Drive and Cesar Chavez Parkway: A southbound right-turn overlap phase, dual eastbound left-turn lanes and an exclusive northbound right-turn lane are recommended to be installed. For Alternative 2 scenario, an exclusive westbound right-turn lane is also recommended. It is anticipated that the exclusive northbound right-turn lane will be completed by Caltrans in conjunction with the extension of the westbound left-turn lane.
- Logan Avenue and Sampson Street: A traffic signal is recommended to be installed. Also, southbound and northbound left-turn lanes are recommended. These lanes could be added with restriping changes only at the time of signalization, and would not require roadway widening. The configuration changes would require the removal of on-street parking along Sampson Street. A total of 16 parking spaces are anticipated to be removed as part of this improvement. The

removed parking spaces are likely serving commercial uses along Logan Avenue and multi-family residential units along Sampson Street. The removal of on-street parking spaces will create a shortage of on-street parking within the vicinity of this intersection.

- Main Street and 26th Street: A partial street closure is recommended at the intersection for truck traffic restrictions. The northbound through and eastbound left movements would be eliminated. This improvement is not required to mitigate intersection level of services, but it is recommended for a reduction of truck traffic along residential streets within the community.
- Harbor Drive and Schley Street: The southbound through and southbound left-turn movements are recommended to be prohibited. Right-turn overlap signal phasing is recommended for the southbound movement.
- National Avenue and 28th Street: An exclusive southbound right-turn lane is recommended to be added. This improvement could be accomplished by restriping the roadway without the need for widening. A removal of one on-street parking space would be required along the west side of National Avenue to accommodate a 100-foot southbound exclusive right-turn lane.
- Boston Avenue and 28th Street: An exclusive eastbound right-turn lane is recommended to be added. This improvement could be implemented by restriping changes only and will not affect on-street parking. This improvement is needed under Alternative 2 only.
- Harbor Drive and 28th Street: A second southbound left-turn lane and a second eastbound left-turn lane are recommended to be added.
- Boston Avenue and Interstate 5 Southbound Ramp-29th Street: This recommendation includes a truck right-turn prohibition for the northbound movement at the intersection of 28th Street and Boston Avenue and truck turning signage to encourage vehicles to use Main Street and 29th Street to enter the Interstate 5 southbound freeway. The Interstate 5 Southbound Ramp and Boston Avenue intersection is recommended to be signalized.
- 32nd Street and Wabash Boulevard: Potential improvements at this intersection will be further defined once Caltrans completes its truck access improvement study.
- Harbor Drive and 32nd Street: Same as the improvements for Wabash Boulevard and 32nd Street.

With the implementation of the recommended improvements, all intersections within the study area would operate at LOS D or better with the following exceptions:

- Harbor Drive and 28th Street (will continue to operate at LOS E during the afternoon peak-hour period);
- 32nd Street and Wabash Street (will continue to operate at LOS F and LOS E during the morning and afternoon peak-hour periods, respectively); and
- Harbor Drive and 32nd Street (will continue to operate at LOS F during both peak-hour periods).

The Harbor Drive/32nd Street and 32nd Street/Wabash Street intersections are being studied further in an on-going Caltrans study. The latest report includes the installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15. Another improvement under study is the Vesta Street Overcrossing at Harbor Drive which would connect the wet and dry sides of the Naval Base San Diego. On November 1, 2010 the Navy temporarily closed the eastern leg (Norman Scott Road) of the 32nd Street/Norman Street-Wabash Street intersection to improve safety. The Navy is monitoring traffic to determine if this closure should remain. A preliminary analysis indicates that the mentioned projects would improve the intersection to acceptable levels and decrease the potential queuing problems.

Harbor Drive/28th Street is projected to operate at LOS E, even with improvements. There is the potential that improvements to be made between Harbor Drive and State Route 15 (Caltrans study) could divert some traffic off of 28th Street, further improving this intersection

SANDAGs 2050 Regional Transportation Plan (RTP) unconstrained network recommends the grade separation of the trolley lines at 28th Street and at 32nd Street. A peak-hour intersection analysis was conducted for the intersections of 28th Street and 32nd Street with Harbor Drive assuming these proposed grade separations. The results of the analysis indicated that the proposed grade separation would improve both intersections to LOS D or better during both peak-hour periods under the Horizon Year scenario with either alternative. The proposed grade separations are included in the "revenue constrained scenario". Due to the benefits to adjacent intersections, these grade separation projects are recommended.

Based on the roadway segment capacity analysis included in this study, the Barrio Logan Community Plan Update will be considered to have a cumulative traffic related impact along the following roadway segments:

- *Cesar Chavez Parkway between Logan Avenue and National Avenue (both Alternatives);*
- *Cesar Chavez Parkway between National Avenue and Newton Avenue (both Alternatives);*
- *Cesar Chavez Parkway between Newton Avenue and Main Street (both Alternatives);*
- *Sampson Street between National Avenue and Harbor Drive (both Alternatives);*
- *26th Street between National Avenue and Main Street (both Alternatives);*
- *28th Street between I-5 and Boston Avenue (both Alternatives);*
- *29th Street between Boston Avenue and Main Street (Alternative 2 only);*
- *32nd Street between Main Street and Wabash Boulevard (both Alternatives);*
- *Vesta Street between Main Street and I-5 Ramps (both Alternatives);*
- *Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (both Alternatives);*
- *National Avenue between 16th Street and Sigsbee Street (Alternative 2 only);*
- *National Avenue between Sigsbee Street and Beardsley Street (Alternative 2 only);*
- *National Avenue between Beardsley Street and Cesar Chavez Parkway (both Alternatives);*
- *National Avenue between Cesar Chavez Parkway and Evans Street (both Alternatives);*
- *National Avenue between Sicard Street and 27th Street (both Alternatives);*
- *Boston Avenue between 28th Street and 29th Street (both Alternatives);*
- *Boston Avenue between 29th Street and 32nd Street (both Alternatives);*
- *Main Street between Cesar Chavez Parkway and Evans Street (both Alternatives);*
- *Main Street between Evans Street and 26th Street (both Alternatives);*
- *Main Street between 26th Street and 28th Street (both Alternatives);*
- *Main Street between 28th Street and 29th Street (both Alternatives);*
- *Main Street between 29th Street and 32nd Street (both Alternatives);*
- *Main Street between 32nd Street and Rigel Street (both Alternatives);*
- *Main Street between Rigel Street and Una Street (both Alternatives); and*
- *Main Street between Una Street and I-5 SB Off-ramp (both Alternatives).*

The following roadway segment improvements are recommended to mitigate the roadway segment cumulative impacts of the proposed Barrio Logan Community Plan Update. The improvements listed would be the same for both land use alternatives.

- Cesar Chavez Parkway between Logan Avenue and Harbor Drive: This roadway segment will be reclassified as a three-lane urban major facility between Logan Avenue and Main Street. Between Main Street and Harbor Drive, the roadway segment will be reclassified as a three-lane major arterial. A raised median will be installed between Harbor Drive and Logan Avenue. The roadway segment will have two lanes in the northbound direction and one lane in the southbound direction. On-street parking will be allowed between Logan Avenue and Main Street. A southbound right-turn auxiliary lane will be present between Main Street and Harbor Drive. The entire roadway segment should be considered for "sharrow" bicycle marking treatment and will be considered a class III bicycle facility.
- 28th Street between I-5 and National Avenue: This roadway segment will be reconfigured as a four-lane major arterial with a five-foot raised median. The new configuration would allow for two-lanes in each direction and an auxiliary lane in the southbound direction.
- National Avenue between Cesar Chavez Parkway and Evans Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.
- National Avenue between Sicard and 27th Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.
- Main Street between Evans Street and 26th Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.

Although the above listed improvements will not mitigate all the roadway segment cumulative impacts identified in the study, no additional improvements are being proposed.

Boston Avenue, National Avenue and 26th Street are desired by the community of Barrio Logan to be more pedestrian and bicycle friendly corridors. The widening of these roadways to improve vehicular circulation was not desired by the community. The vehicular operations along these three facilities could be congested during peak periods and vehicular speeds would be low. Additional widening is not recommended. Traffic calming measures should be evaluated along National Avenue to further enhance the pedestrian and bicycle circulation.

Additional improvements to the failing roadway segments of Sampson Street, 28th Street, 32nd Street, Vesta Street, Logan Avenue and Main Street are not recommended since the roadway segment analysis used in this study is based on theoretical capacities based on the number of travel lanes. The analysis does not take into account other physical features that can affect the capacity of a roadway segment like grades, number of traffic signals, number of driveways, parking availability, etc. In addition, the analysis does not take into account the different traffic peak periods experienced on these roadways due to the surrounding land uses. As an example, the Barrio Logan traffic patterns are unique in that they are heavily influenced by the Port of San Diego and the Navy Base traffic generators whose peak-hour of use do not correspond to typical peak-hour commuter traffic. Therefore, the typical planning level capacity for these streets may understate the carrying capacity of these roadways. To better represent the conditions of a roadway segment within the Barrio Logan community, the operations of the upstream and downstream intersections of each respective segment during the peak periods would indicate whether the roadway segment would have adequate capacity. As shown in the intersection analysis tables, all intersections along the failing roadway segments would operate at acceptable LOS.

In addition to the roadway segment improvements listed above, it is recommended that 28th Street between Harbor Drive and the I-5 Ramps be classified as a four-lane major arterial. For the segment between Harbor Drive and Main Street, a raised median should be installed with an entrance to the Navy

Commissary. The proposed configuration would allow two lanes in each direction with an auxiliary lane for the heavy southbound right-turn movements at Harbor Drive. Parking would need to be removed along both sides of the roadway, with a total loss of approximately 20 parking spaces. The removed parking spaces are likely utilized by NASCO employees or Naval Base San Diego employees or visitors. Additional diagonal parking is recommended to be evaluated for installation along Boston Avenue between 28th Street and 29th Street to replace the loss of parking along 28th Street. The west side of the roadway could be widened by 4 feet to accommodate the proposed interim cross-sections. The east sidewalk will widen to 10 feet to enhance pedestrian circulation. This improvement is not part of mitigation for a roadway segment impact. The improvement is recommended to encourage heavy truck traffic to use 28th Street instead of Main Street and to provide for pedestrians. The ultimate recommended cross-section of 28th Street will include a designated bike lane along both sides of the roadway and a fourteen foot parkway. The ultimate configuration along 28th Street will require additional roadway widening and right-of-way acquisition. An alignment study is required to further define the extent of additional right-way needed and future widening.

Based on the freeway segment capacity analysis included in this study, Barrio Logan Community Plan Update is considered to have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction;
- I-5 from SR-75 Junction to 28th Street;
- I-5 from 28th Street to I-15 Interchange;
- I-5 from I-15 Interchange to Division Street; and
- I-15 from I-5 Interchange to Ocean View Boulevard

SANDAG's Draft 2050 Regional Transportation Plan (RTP) hybrid network includes the following freeway improvements:

- Operational freeway improvements along Interstate 5 between Interstate 15 and Interstate 8; and
- Addition of one (1) main lane and one (1) managed lane in each direction between Interstate 15 and State Route 54;

Both improvements listed above were included in the hybrid network's revenue constrained scenario, approved by SANDAG's board for further study on December 17th, 2010. The improvements included in the RTP are recommended to enhance the regional connectivity and accommodate the forecasted growth of the San Diego region. It should be noted that both land use alternatives presented on this plan would generate less traffic than the current adopted Community Plan land use alternative. Either proposed alternative would lessen, but not eliminate cumulative freeway traffic impacts.

In addition to the proposed freeway improvements listed in the SANDAG's Draft 2050 RTP, the following freeway access improvements are recommended within the Barrio Logan Community:

- Signalization of the intersection of Logan Avenue and Beardsley Street/ Interstate 5 SB off-ramp;
- Traffic signal modification at the intersection of Logan Avenue and Cesar Chavez Parkway (State Route 75 on-ramp);
- Signalization of the intersection of Boston Avenue and Interstate 5 SB on-ramp- 29th Street;

- Roadway improvements along 28th Street to accommodate an additional southbound lane, including the potential for widening the Interstate 5 overcrossing;
- Signalization of the intersection of 28th Street and Interstate 5 southbound off-ramp;
- Changes to the roadway striping along Main Street between 28th Street and 29th Street to facilitate freeway access to the Interstate 5 southbound on-ramp at Boston Avenue;
- Installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15 (under study by the Port of San Diego, and Caltrans);
- Construction of the Vesta Street Overcrossing at Harbor Drive (under study by the Navy);
- Coordination of City of San Diego and Navy related to the closure of the east leg of the 32nd Street and Norman Street-Wabash Street intersection (recently completed on a trial basis by the Navy); and
- Grade separation of the trolley tracks at the 28th Street and Harbor Drive and 32nd Street and Harbor Drive intersections (to be completed by SANDAG and part of the 2050 draft RTP).

The improvements listed above would decrease congestion along the major freeway access locations within the community.

Figures E-1 and E-2 illustrates the summary of Horizon Year intersections and roadway segments level of services with the implementation of the recommended improvements associated with Alternative 1 and 2, respectively.

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- LOS A,B, or C
- LOS D
- LOS E
- LOS F
- Intersection LOS: AM / PM

0 500 1000 2000 feet

N

Figure E-1: Summary of Final LOS Results for Alternative 1 with Improvements

January 2011

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- LOS A,B, or C
- LOS D
- LOS E
- LOS F

0 500 1000 2000 feet

N

Figure E-2: Summary of Final LOS Results for Alternative 2 with Improvements

March 2011

Barrio Logan Community Plan Update

1.0 INTRODUCTION

The following traffic study has been prepared to determine and evaluate the traffic impacts associated with the Barrio Logan Community Plan Update. This evaluation assesses the impacts of the proposed Land Use Element and Mobility Element.

Project Description

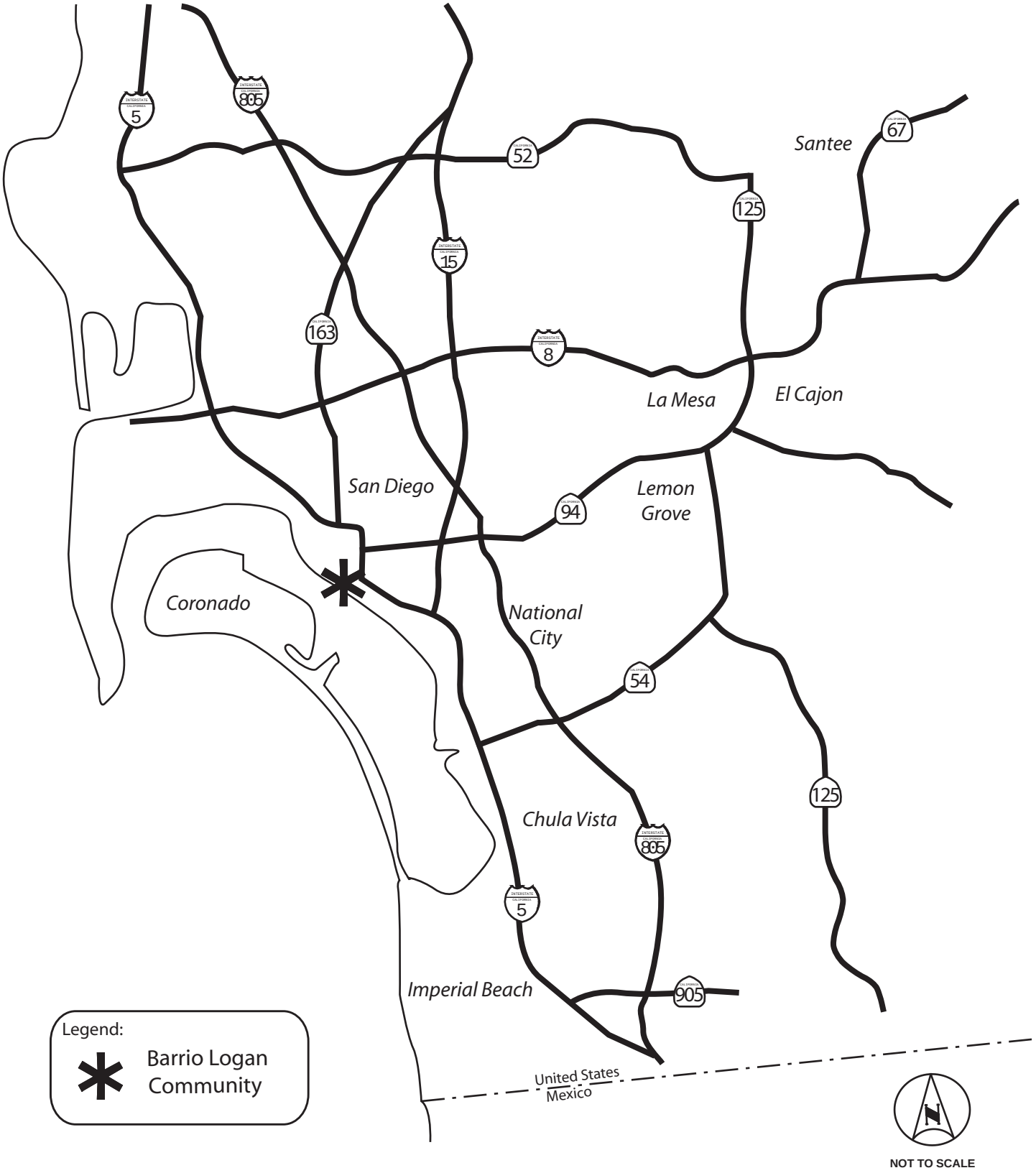
Two land use alternatives were presented and analyzed as part of the Barrio Logan Community Plan Update. The purpose of these alternatives is to regulate and guide the strategic growth of the community. In addition to the land use alternatives within the Barrio Logan Community Plan Update, a Mobility Element was prepared based on the existing conditions within the community, potential future transportation deficiencies and improvement recommendations, and extensive input from the community stakeholders. A copy of the Mobility Element is included in **Appendix A.**

Figure 1-1 depicts the location of the project in a regional context and **Figure 1-2** shows the project boundary for the Barrio Logan Community. **Figure 1-3** shows the adopted community plan land use designations. **Figures 1-4** and **1-5** shows the two alternative proposed land use designations presented under the project.

Analysis Scenarios

A total of four scenarios were analyzed as part of the project, which are listed below:

- ***Existing Conditions (2010)***
  - Existing Conditions: Represents the conditions of the existing street network.
- ***Horizon Year Conditions (2030)***
  - Horizon Year Conditions (Adopted Community Plan): Represents the traffic conditions of the street network assumed to be in place under Horizon Year conditions with the implementation of the Adopted Community Plan.
  - Horizon Year Conditions (Alternative 1): Represents the traffic conditions of the street network assumed to be in place under Horizon Year conditions with the implementation of the proposed Alternative 1 land use changes.
  - Horizon Year Conditions (Alternative 2): Represents the traffic conditions of the street network assumed to be in place under Horizon Year conditions with the implementation of the proposed Alternative 2 land use changes.


5
805
52
125
67
Santee
15
163
8
La Mesa
El Cajon
San Diego
94
Lemon
Grove
Coronado
National
City
54
125
Chula Vista
805
5
Imperial Beach
905
Legend:
Barrio Logan
Community
United States
Mexico
NOT TO SCALE

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

0 500 1000 2000 feet

N

Figure 1-2: Project Boundary Study Area

January 2011

Barrio Logan Adopted Land Use

Legend

Redevelopment Plan Land Use

- Mercado District
- Residential Use
- Commercial Use
- Commercial/Residential Use
- Light Industry/Commercial
- Public/Quasi-Public

Community Plan Land Use

- Exclusively Residential
- Residential/Commercial/Industrial
- Exclusively Industrial
- Parks and Open Space
- Military Use
- Right-of-Way
- Railroad Right of Way
- Port Tidelands

DRAFT

THE CITY OF SAN DIEGO

0 1,000 2,000 Feet

N W E S

June 9, 2010 T Galloway

N

Figure 1-3: Adopted Community Plan

Barrio Logan Draft Alternative 1 Land Use

Legend

- Community Commercial
- Community Village
- Neighborhood Commercial (Residential Permitted)
- Neighborhood Commercial (Residential Prohibited)
- Heavy Commercial
- Office Commercial (Transition Zone)
- Office Commercial
- Prime Industrial
- Residential Low
- Residential Medium
- School/Institutional
- Open Space
- Park
- Military Use
- Transit Center
- Railroad Right of Way
- Caltrans Right of Way
- Port Tidelands

DRAFT

THE CITY OF SAN DIEGO

0 1,000 2,000 Feet

N W E S

Oct. 8, 2010 T Galloway

N

Figure 1-4: Land Use Alternative 1

Barrio Logan Draft Alternative 2 Land Use

Legend

- Community Commercial
- Community Village
- Neighborhood Commercial (Residential Permitted)
- Neighborhood Commercial (Residential Prohibited)
- Heavy Commercial
- Office Commercial (Transition Zone)
- Office Commercial
- Prime Industrial
- Light Industrial
- Residential Low
- Residential Medium
- School/Institutional
- Open Space
- Park
- Military Use
- Transit Center
- Railroad Right of Way
- Caltrans Right of Way
- Port Tidelands

DRAFT

THE CITY OF SAN DIEGO

0 1,000 2,000 Feet

N W E S

Oct. 8, 2010 T Galloway

N

Figure 1-5: Land Use Alternative 2

2.0 METHODOLOGY

The following section describes the methodology used to determine study area, analysis of the study area operations, and determine significant impacts.

Study Area

The intersections within the project boundary to be included in the study area were selected based on several factors, which included the following:

- Roadways intersecting with each other that function as a collector or higher
- On- and off-ramp intersections to/from freeways
- Intersections near approved and pending projects

Based on the criteria listed above, a total of 41 intersections have been selected for analyses and are shown in **Table 2-1** below.

TABLE 2-1
STUDY INTERSECTIONS

	Intersection	Traffic Control (a)
1	Commercial St & 16th St	Signal
2	National Ave & 16th St	TWSC
3	National Ave & Sigsbee St	Signal
4	Newton Ave & Sigsbee St	AWSC
5	Main St and Sigsbee St	AWSC
6	Harbor Dr & Sigsbee St	OWSC
7	Logan Ave & I-5 SB off-ramp (Caltrans intersection)/ Beardsley St	AWSC
8	National Ave & Beardsley St	AWSC
9	Newton Ave & Beardsley St	AWSC
10	Main St & Beardsley St	AWSC
11	Harbor Dr & Beardsley St	OWSC
12	Kearny Ave & Cesar Chavez Pkwy	Signal
13	Logan Ave & Cesar Chavez Pkwy/SR-75 on-ramp	Signal
14	National Ave & Cesar Chavez Pkwy	Signal
15	Newton Ave & Cesar Chavez Pkwy	Signal
16	Main St & Cesar Chavez Pkwy	Signal
17	Harbor Dr & Cesar Chavez Pkwy	Signal
18	Logan Ave & I-5 SB on-ramp (Caltrans intersection)	Uncontrolled
19	National Ave & SR-75 off-ramp (Caltrans intersection)	OWSC
20	National Ave & Evans St	TWSC
21	Newton Ave & Evans St	TWSC
22	Main St & Evans St	OWSC
23	Logan Ave & Sampson St	AWSC

Notes:
(a) Signal = Traffic signal, OWSC = One-Way Stop-Control, Two-Way Stop-Control, AWSC = All-Way Stop-Control

TABLE 2-1
STUDY INTERSECTIONS (cont.)

	Intersection	Traffic Control (a)
24	National Ave & Sampson St	Signal
25	Newton Ave & Sampson St	AWSC
26	Main St & Sampson St	AWSC
27	Harbor Dr & Sampson St	Signal
28	National Ave & Sicard St	AWSC
29	National Ave & 26th St	TWSC
30	National Ave & 27th Street	OWSC
31	Main St & 26th St	AWSC
32	Harbor Dr & Schley St	Signal
33	National Ave & 28th St	Signal
34	Boston Ave & 28th St	Signal
35	Main St & 28th St	Signal
36	Harbor Dr & 28th St	Signal
37	Boston Ave & 29th St/I-5 SB on-ramp (Caltrans Intersection)	OWSC
38	Main St & 32nd St	Signal
39	Wabash & 32nd St	Signal
40	Harbor Dr & 32nd St	Signal
41	Main St & I-15 ramps (Caltrans Intersection)	Signal

Notes:
(a) Signal = Traffic signal, OWSC = One-Way Stop-Control, Two-Way Stop-Control, AWSC = All-Way Stop-Control

As shown in the table, 21 of the 41 intersections evaluated are signalized while 20 intersections are unsignalized with vehicles required to stop on one leg, two legs, or all legs of the intersection. Two of the intersections (Kearny Avenue/Cesar Chavez Parkway and National Avenue/28th Street) are outside of the project area boundary. However, these intersections have been included as part of the study area, since traffic heading to/from the Barrio Logan community via the freeway would travel through these two locations. **Figure 2-1** displays the location of the study intersections.

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- (XX) Study Intersection ID

0 500 1000 2000 feet

N

Figure 2-1: Study Intersections

January 2011

Analysis Process

The analysis process includes determining the levels of service at the study intersections and freeway segments for the a.m. and p.m. peak-hours and levels of service on roadway segments using ADT volumes.

The freeway ramps within the Community of Barrio Logan are not currently metered. It is uncertain whether or not Caltrans will meter these ramps in the future. Ramp meter analysis was not included in this study. In the case that Caltrans decides to implement ramp meter analysis in the future, a ramp meter evaluation should be prepared to document the impact of the ramp metering to the City of San Diego's surface streets.

Analysis Software

To analyze the vehicular operations of both signalized and unsignalized intersections, Synchro 6 (Trafficware) was used for the analysis. Synchro 6 uses the methodologies outlined in the 2000 *Highway Capacity Manual (HCM)*.

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

- Peak-hour factor (PHF) = A default PHF of 0.92 was use for all scenarios.
- Percent of heavy vehicle (PHV) = Measured in field PHV were used at all locations with available data (Harbor Drive, Cesar Chavez Parkway, Main Street, 28th Street and 32nd Street). For locations with no PHV data, a 2 percent value was used. The measured PHV ranged from 2 percent to 32 percent along Cesar Chavez Parkway south of Harbor Drive.
- Pedestrians & Bicycles = Measured in field pedestrian and bicycle data were used for the intersection analyses. Data was collected for the majority of the intersections.
- Signal Timing = With the exception of the traffic signals along Cesar Chavez Parkway between Main Street and Logan Avenue, all cycle lengths were optimized and account for the minimum pedestrian crossing times. Cesar Chavez Parkway between Main Street and Logan Avenue is a coordinated corridor with an 80 second cycle length. The coordinated 80 second cycle length for Cesar Chavez Parkway was used for all scenarios.

To accurately evaluate the interactions of the San Diego Trolley with the signalized intersections along Harbor Drive, a special signal phasing was used to simulate the signal interaction with the adjacent Light Rail crossing. When a trolley vehicle approaches a cross street, the crossing guards are lowered for approximately 30 seconds, allowing time for clearance of queues on the tracks and for the trolley to pass. This special phasing to replicate the trolley disruption to cross street traffic was simulated through the Synchro software. The phasing diagram used for the signalized intersections along Harbor Drive was extracted from a report prepared by Jeff G. Gerken and Sarah A. Tracy titled "Analysis of Traffic Impacts at Isolated Light Rail Transit (LRT) Crossings Using Sim Traffic." A copy of the report can be found in **Appendix B**.

Signalized and Unsignalized Intersections

The 2000 *HCM* published by the Transportation Research Board establishes procedures to evaluate highway facilities and rate their ability to process traffic volumes. The terminology "level of service" is used to provide a qualitative evaluation based on certain quantitative calculations, which are related to empirical values.

Level of service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria are stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in addition to the stop delay. The LOS for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. At an all-way stop controlled intersection, the delay reported is the average control delay of the intersection. At a one-way or two-way stop controlled intersection, the delay reported represents the worst movement, which are typically the left-turns from the minor street approach.

The criteria for the various levels of service designations are given in **Table 2-2**.

TABLE 2-2
LOS CRITERIA FOR INTERSECTIONS

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

Notes:
(a) 2000 Highway Capacity Manual, Chapter 16, Page 2, Exhibit 16-2
(b) 2000 Highway Capacity Manual, Chapter 17, Page 2, Exhibit 17-2

The acceptable Level of Service (LOS) standard for roadways and intersections in the City of San Diego is LOS D, except in the Centre City Community Plan area (Downtown) for which the acceptable LOS is E.

Roadway Segments

In order to determine the operations along the study area roadway segments, daily roadway traffic volumes were compared to assumed roadway capacities. **Table 2-3** has been developed by the City of San Diego and was used in this analysis. The segment traffic volumes under LOS E as shown in this table are considered at capacity because at LOS E the volume-to-capacity Ratio (v/c Ratio) is equal to 1.0. It should be noted that the values listed in the table are planning-level estimates only. The actual operations of a roadway segment would be affected by the type and frequency of traffic control, terrain, lane width, presence of raised median, local access/driveways, percent of heavy vehicles, distribution of traffic over the day, etc.

TABLE 2-3
ROADWAY SEGMENT CAPACITY AND LOS

Road		**Level of Service (LOS)**				
Class	**Lanes**	**A**	**B**	**C**	**D**	**E**
Expressway	6	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6	25,000	35,000	50,000	55,000	60,000
Major Arterial	6	20,000	28,000	40,000	45,000	50,000
Major Arterial	4	15,000	21,000	30,000	35,000	40,000
Collector	4	10,000	14,000	20,000	25,000	30,000
Collector (No center lane) (Continuous left-turn lane)	4 2	5,000	7,000	10,000	13,000	15,000
Collector (No fronting property)	2	4,000	5,500	7,500	9,000	10,000
Collector (Commercial/Industrial fronting)	2	2,500	3,500	5,000	6,500	8,000
Collector (Multi-family)	2	2,500	3,500	5,000	6,500	8,000
Sub-Collector (Single family)	2	---	---	2,200	---	---

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

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

Freeway Segments Analysis

In order to determine the impacts on the study area, freeway segments were evaluated using procedures developed by Caltrans District 11. The procedure involves comparing the peak-hour volume of the mainline freeway segment to the theoretical capacity of the segment, which results in a v/c ratio. The calculated v/c ratio is then compared to the accepted ranges of v/c ratio values corresponding to the respective LOS, as displayed in Table 2-4.

For this study, the freeway segment analysis includes the freeway segments along Interstate 5, Interstate 15 and State Route 75.

TABLE 2-4
LOS CRITERIA FOR FREEWAY SEGMENT ANALYSIS

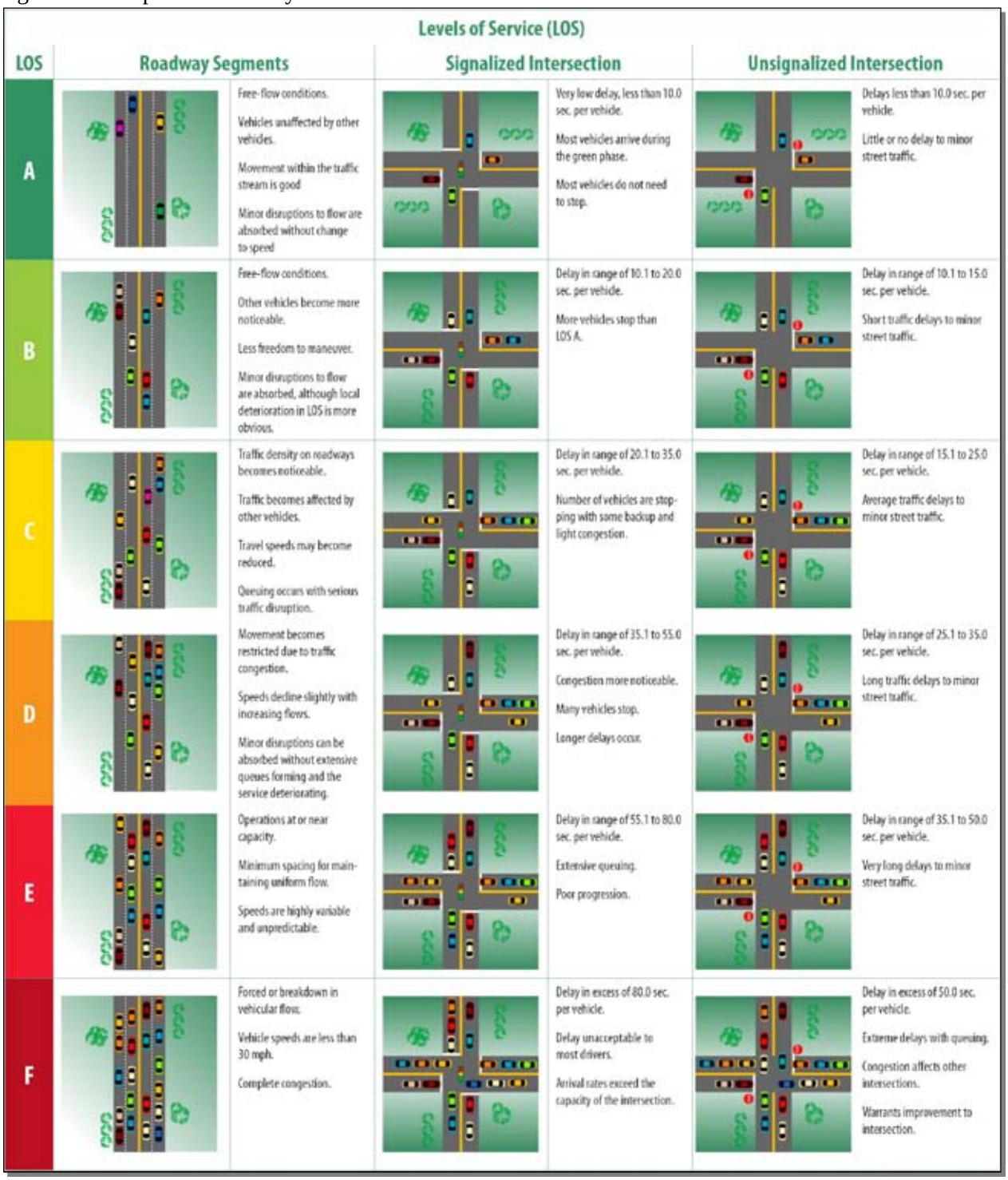
LOS	v/c Ratio	Congestion/Delay	Traffic Description
A	< 0.41	None	Free flow
B	0.41 – 0.62	None	Free to stable flow, light to moderate volumes
C	0.63 – 0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
D	0.81 – 0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, and very limited freedom to maneuver
E	0.93 – 1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor
F_0	1.01 – 1.25	Considerable 0 – 1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go
F_1	1.26 – 1.35	Severe 1 -2 hour delay	Very heavy congestion, very long queues
F_2	1.36 – 1.45	Very severe 2-3 hour delay	Extremely heavy congestion, very long queues
F_3	> 1.46	Extremely severe 3+ hours of delay	Gridlock

Notes:
Based on the 1992 Caltrans guidelines.

A graphical representation of the LOS definitions for the different facilities is shown in **Figure 2-2**.

It should be noted that all the freeway ramps within the Community of Barrio Logan are non-metered. Ramp meter analysis is not included in this study.

Figure 2-2 Graphical Summary of LOS Definitions



Source: Florida Department of Transportation 2002 *Quality/Level of Service Handbook*, Figure 1-2

Significance Determination

To determine the impacts to roadway/freeway segments and intersections, the City of San Diego has developed thresholds based on allowable increases in delay at intersections and volume to capacity (v/c) ratios for roadway and freeway segments. The existing condition analysis was compared to each of the Horizon Year conditions to determine where traffic impacts occur. . Since the Horizon Year conditions includes the project and Year 2030 growth for the San Diego region, traffic impacts that occur are considered to be cumulative impacts. At intersections, the measure of effectiveness (MOE) is based on allowable increases in delay. At roadway and freeway segments, the MOE is based on allowable increases in the v/c ratio. At intersections that are expected to operate at LOS E under Horizon Year 2030, the allowable increase in delay to existing conditions is two seconds, while for intersections that are expected to operate at LOS F, the allowable increase in delay is one second. If vehicle trips associated with the Barrio Logan Community Plan Update cause the delay at an intersection to increase by more than the City's threshold, this would be considered a significant traffic related impact. Under this condition, mitigation to restore the operations of the intersection to LOS D was investigated. If an existing intersection is operating at LOS E or F, the intersection would be considered an existing deficiency.

For roadway and freeway segments that are forecasted to operate at LOS E, the allowable increase in v/c ratio is 0.02, while for roadway and freeway segments that are forecasted to operate at LOS F, the allowable increase in v/c ratio is 0.01. An increase in v/c ratio higher than the City's thresholds would be considered a significant impact.

Table 2-5 shows the criteria for determining levels of significance for the different facilities in our study area.

TABLE 2-5
SIGNIFICANCE CRITERIA FOR FACILITIES IN STUDY AREA

Facility	Measurement of Effectiveness (MOE)	Significance Threshold (a)
Intersection	Seconds of delay	>2.0 seconds at LOS E or >1.0 seconds at LOS F
Roadway Segment	ADT, v/c ratio	>0.02 at LOS E or >0.01 at LOS F
Freeway Segment	v/c ratio	>0.01 at LOS E or >0.005 at LOS F

Notes: Any increment of delay to cause the operations of an intersection to go from LOS D to either LOS E or LOS F, is considered to cause a significant traffic related impact.
Source: City of San Diego Significance Determination Thresholds, page 71, January 2007.
(a) Significance threshold applies only when the type of facility operates at LOS E or F.

3.0 EXISTING CONDITIONS

This section summarizes the existing conditions within the Barrio Logan community with respect to the following:

- Roadway and Freeway Segments
- Intersections
- Parking
- Truck Traffic

Roadway & Freeways Segments

The following section provides a description of the existing study streets within the Barrio Logan community. Functional roadway classifications for the different roadways in the study area were based on field observations.

Cesar Chavez Parkway functions as a north-south, 4-lane collector between Logan Avenue and National Avenue and between Main Street and Harbor Drive. This road functions as a 3-lane collector between Logan Avenue and Kearny Avenue and between National Avenue and Main Street. Cesar Chavez Parkway is lined with sidewalks and curbs on both sides of the road, for the entire length of the street. Parallel parking is available on the west side of the street between National Avenue and Main Street. Signs prohibit trucks above five tons from traveling along Cesar Chavez Parkway. A northbound, I-5 on-ramp is located at the intersection of Cesar Chavez Parkway and Kearny Avenue. A westbound, SR-75 on-ramp is located at the intersection of Cesar Chavez Parkway and Logan Avenue. The posted speed limit is 30 miles per hour (mph).

Sampson Street functions as a north-south, 2-lane collector between I-5 and Harbor Drive. Sidewalks, curbs, and parallel parking spaces are located on both sides of the road. Trucks above five tons are prohibited by signage to travel along Sampson Street. The speed limit along Sampson Street is 25 mph within the study area.

26th Street functions as a north-south, 2-lane collector between Logan Avenue and Main Street. Sidewalks, curbs, and parallel parking spaces are located on both sides of the road. Signs prohibit trucks above five tons from traveling along 26th Street. The posted speed limit is 25 mph.

28th Street functions as a north-south, 4-lane collector between Boston Avenue and Main Street and a 4-lane with raised median major arterial between Main Street and Harbor Drive. Between National Avenue and Boston Avenue, 28th Street functions as a three-lane collector with two northbound lanes and a southbound lane. This street is a designated truck route. Sidewalks and curbs line both sides of the street for the entire length of the segment. Parallel parking is available on both sides of the street between Main Street and Harbor Drive. The NASSCO shipyard is located at the southern end of 28th Street. South of Main Street, Naval Base San Diego fronts on the east side of 28th Street, including an access gate to the base. I-5 on and off-ramps connect 28th Street to I-5 near the northern end of the segment. The posted speed limit is 30 mph.

32nd Street functions as a north-south, 2-lane collector between Main Street and Wabash Street and a 4-lane major arterial between Wabash Street and Harbor Drive. Between Wabash Street and Harbor Drive, 32nd Street has additional auxiliary lane for the northbound and southbound directions. This segment is a designated truck route. Sidewalks and curbs are located on both sides of the road. 32nd Street provides access to I-15 via Wabash Street, which functions as an on and off-ramp. South of Main Street, 32nd Street is completely fronted by Navy property. The entrance to Naval Base San Diego is located at the south end of 32nd Street. The speed limit along 32nd Street is 30 mph within the study area.

Rigel Street functions as a north-south, 2-lane collector between Dalbergia Street and I-5. This segment has sidewalks, curbs, and parallel parking spaces on both sides of the street. The posted speed limit is 25 mph.

Vesta Street functions as a north-south, 2-lane collector between Dalbergia Street and I-5. The road has sidewalks, curbs, and parallel parking spaces on both sides of the road. The posted speed limit is 25 mph.

Logan Avenue functions as an east-west, 2-lane collector between 17th Street and Sampson Street. This road has a two-way left-turn lane. Logan Avenue has a southbound I-5 off-ramp at the intersection with Beardsley Street and a southbound I-5 on-ramp located between Cesar Chavez Parkway and Evans Street. Signs prohibit trucks above five tons from traveling along Logan Avenue. This segment has sidewalks, curbs, and parallel parking on both sides of the road. The posted speed limit is 25 mph.

National Avenue functions as an east-west, 2-lane collector between 16th Street and 27th Street and a 4-lane collector between Commercial Street and 16th Street. Trucks above five tons are prohibited by signage to travel along National Avenue. An eastbound, SR-75 off-ramp is located along National Avenue between Cesar Chavez Parkway and Evans Street. This segment of National Avenue has sidewalks, curbs, and parallel parking on both sides of the road. Diagonal parking is provided on National Avenue on the south side of the street for portions of the segment between Beardsley Street and Evans Street. The posted speed limit is 30 mph.

Boston Avenue functions as an east-west, 2-lane collector between 28th Street and 32nd Street. This road has sidewalks, curbs, and parallel parking spaces on both sides of the street. A southbound, I-5 on-ramp is located at the intersection with 29th Street. The posted speed limit is 25 mph.

Main Street functions as an east-west, 2-lane collector between Beardsley Street and 26th Street and between Rigel Street and Yama Street. Main Street functions as a 3-lane collector between 26th Street and 27th Street and between 29th Street and 32nd Street, and a 4-lane collector between 27th Street and 29th Street and between 32nd Street and Rigel Street. Curbs and sidewalks are located on both sides of the road, along the entire length of the segment. Signs prohibit trucks over five tons from traveling on Main Street, west of 26th Street. A northbound I-15 on-ramp and a southbound I-15 off-ramp is located between 32nd Street and Rigel Street. Southbound I-5 on and off-ramps are also located near the intersection with Yama Street. Main Street is a designated class III bikeway. Parallel parking is intermittently permitted along both sides of the road. The posted speed limit is 35 mph.

Harbor Drive functions as an east-west, 4-lane major arterial between Sigsbee Street and Vesta Street. The road has a raised or landscaped median along the entire length of the segment. Harbor Drive is a designated truck route and has a class II bikeway with bike lanes along both sides of the road. The street has intermittent curbs, sidewalks, and parallel parking along the northern side of the road. The southern side of Harbor Dive has limited curbs and sidewalks. Parallel parking is intermittently permitted between Schley Street and 32nd Street. The posted speed limit is 40 and 45 mph.

Interstate 5 is classified and functions as an 8-lane freeway with four main lanes of traffic in each direction. Interstate 5 provides connections for the community to locations to the north and the south within the region.

Interstate 15 is classified and functions as a 6-lane freeway with three main lanes of traffic in each direction. Interstate 15 provides connections to locations to the east and north within the region. Interstate 15 is a major truck corridor in Southern California.

San Diego-Coronado Bridge is classified and functions as a 5-lane freeway. The traffic lanes on the bridge are separated by a movable median, which allows for three westbound traffic lanes in the morning and three eastbound traffic lanes in the afternoon and evening. The approach on each side of the bridge contains three lanes. An out-of-service toll plaza is located on the west side of the bridge and serves as a traffic calming

device for vehicles entering the island. The San Diego-Coronado Bridge is designated as State Route (SR) 75. The posted speed limit is 50 mph.

Figure 3-1 shows the existing geometrics of the study intersections within the study area and **Figure 3-2** shows the functional classification for the roadway segments in the study area.

Traffic Volumes

The peak-hour intersection turning movements at study area intersections were obtained from several sources. Where appropriate, traffic counts from previous studies were utilized since traffic volumes generally remained constant. For the counts listed in the Year 2003, traffic data was obtained from the *Barrio Logan Truck Study*, prepared by Willdan. For the counts listed in the Year 2005/2006, traffic data was obtained from the *Mercado Traffic Study*, prepared by Darnell and Associates. For the counts listed in June 2008, traffic data was obtained by National Data and Surveying Services. For the counts listed in the December 2008, traffic data was obtained from Caltrans Port Access Study.

Similar to the study area intersections, the roadway segment traffic data were obtained from several sources. All of the ramp volumes for I-5 and I-15 were obtained from Caltrans with most of the data coming from 2005/2006. All of the segment counts prior to the Year 2008 were obtained from the *Barrio Logan Truck Study*, prepared by Willdan, *Mercado Traffic Study*, prepared by Darnell and Associates, City of San Diego, and Wilson and Company. For the counts listed in the Year 2008 and 2010, traffic data was obtained by National Data and Surveying Services.

Freeway ADTs and peak-hour volumes were taken from Caltrans' traffic database and they correspond to the year 2008.

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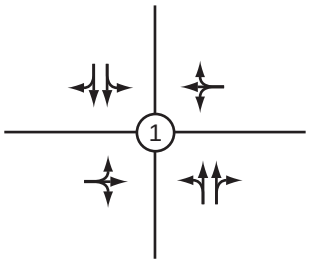	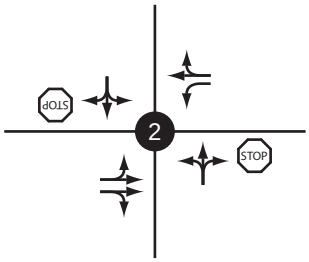	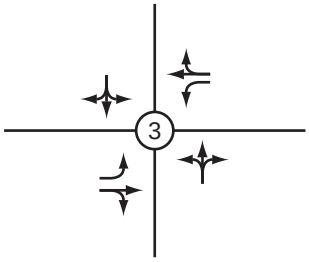	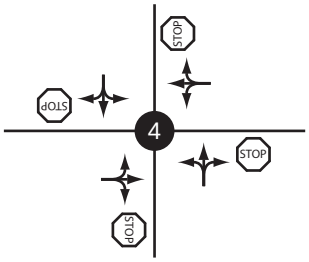
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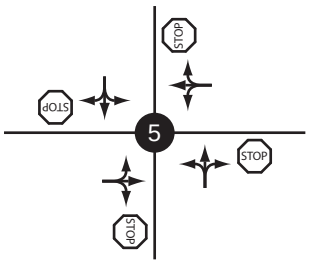	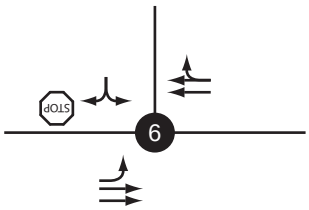	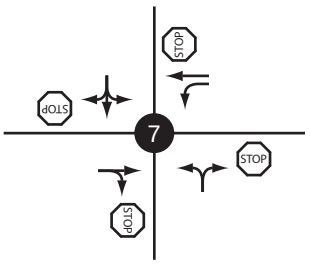	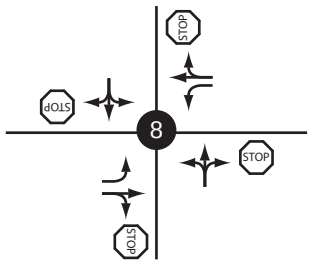
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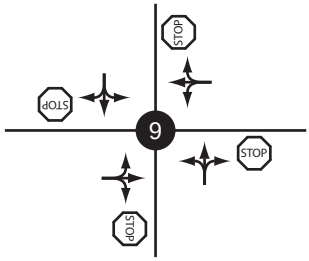	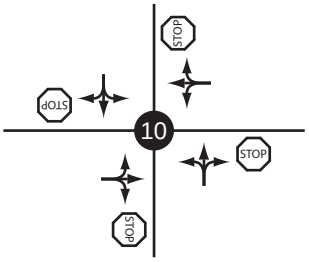	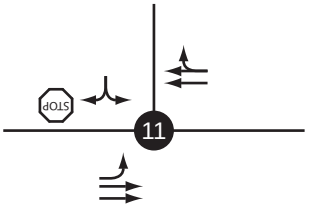	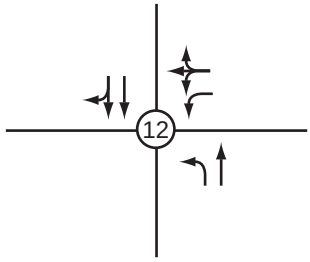

Legend:

- (X) Signalized
- X Unsignalized

NOT TO SCALE

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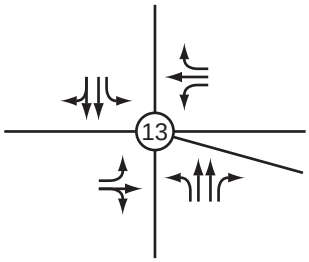
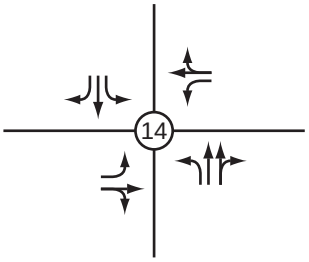
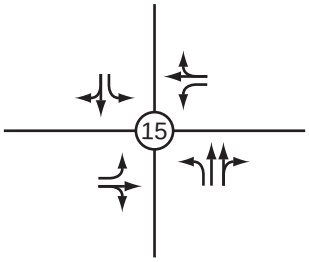
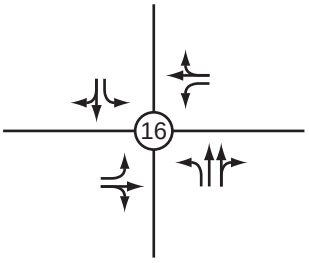
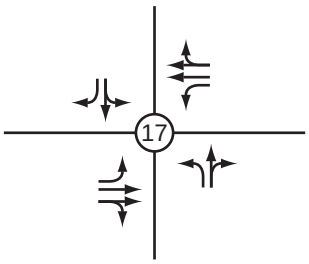
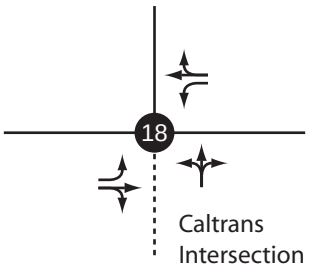
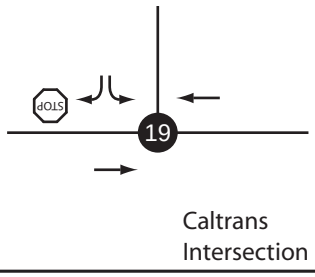
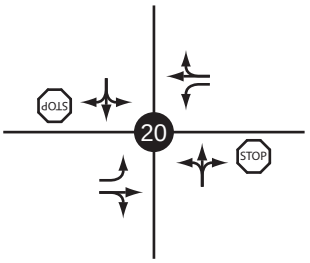
			
Harbor Dr/ Cesar Chavez Pkwy	**Logan Ave/ I-5 SB On-ramp**	**National Ave/ SR-75 Off-ramp**	**National Ave/ Evans St**
			
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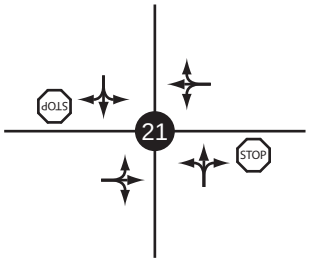
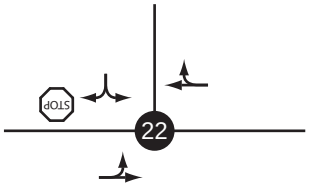
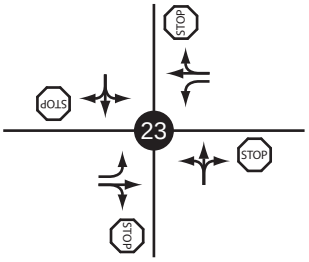
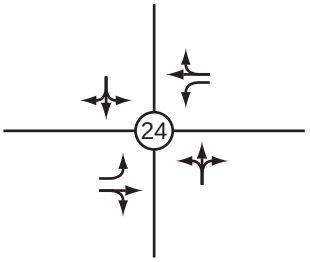
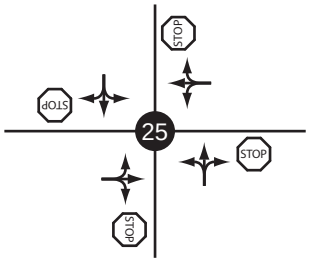
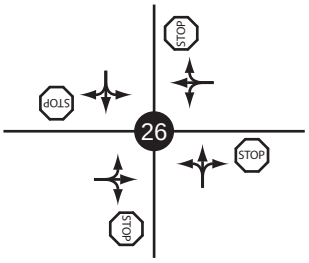
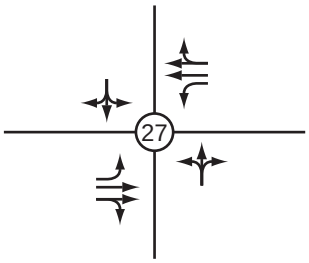
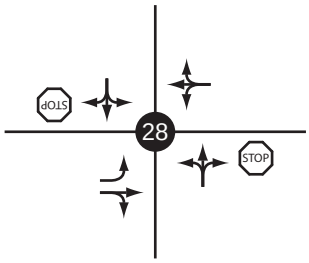
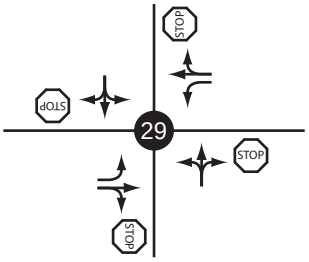
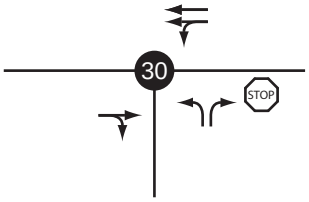
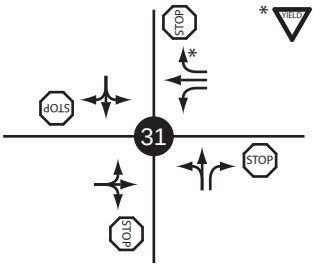
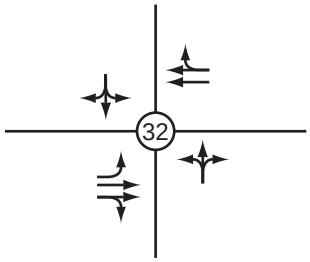
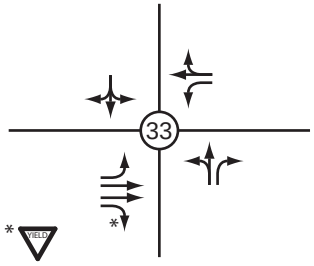
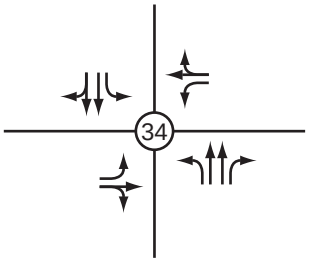
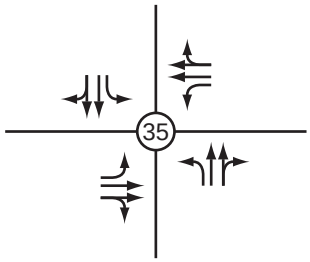
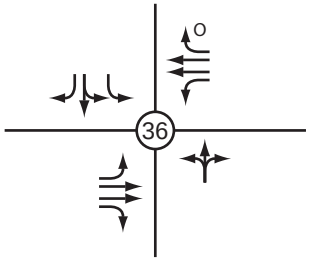
			

Legend:

- (X) Signalized
- X Unsignalized

NOT TO SCALE

Newton Ave/ Sampson St	Main St/ Sampson St	Harbor Dr/ Sampson St	National Ave/ Sicard St
			
National Ave/ 26th St	National Ave/ 27th St	Main St/ 26th St	Harbor Dr/ Schley St
			
National Ave/ 28th St	Boston Ave/ 28th St	Main St/ 28th St	Harbor Dr/ 28th St
			

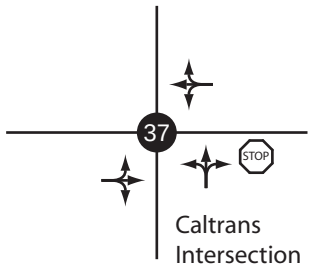
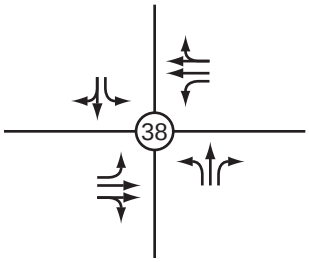
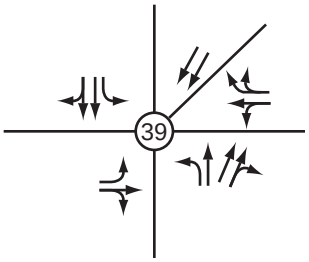
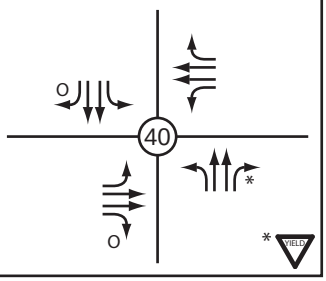
Legend:

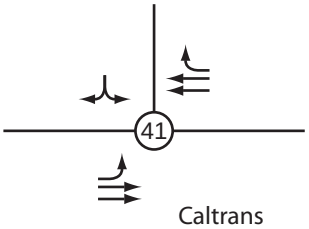
X Signalized

X Unsignalized

o Right-turn overlap

NOT TO SCALE

Boston Ave/ I-5 SB On-ramp	Main St/ 32nd St	Wabash Blvd/ 32nd St	Harbor Dr/ 32nd St
 Caltrans Intersection			

Main St / I-15 Ramps
 Caltrans Intersection

Legend:

X Signalized

X Unsignalized

o Right-turn overlap

NOT TO SCALE

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- 2- Lane Collector (without TWLT)-(60' to 80' ROW)
- 2- Lane Collector (with TWLT)-(80' ROW)
- 3- Lane Collector (without TWLT)-(80' ROW)
- 3- Lane Collector (with TWLT)-(ROW varies)
- 4- Lane Collector (without TWLT)(80' ROW)
- 4- Lane Collector (with TWLT)(ROW varies)
- 4-Lane Major (ROW varies)
- X Freeway main lane

0 500 1000 2000 feet

N

Figure 3-2: Existing Roadway Functional Classification

March 2011

Table 3-1 summarizes the date of the counts for the study intersections and **Table 3-2** summarizes the date of the counts for roadway segments. The existing traffic volume data is contained in **Appendix C**.

Figure 3-3 illustrates the existing peak-hour traffic volumes at the study intersections. **Figure 3-4** illustrates the existing ADT volumes along the roadway segments in the study area.

TABLE 3-1
STUDY INTERSECTIONS COUNT SOURCE DATA

	Intersection	Date of Count (a)
1	Commercial St & 16th St	6/3/08
2	National Ave & 16th St	6/3/08
3	National Ave & Sigsbee St	6/5/08
4	Newton Ave & Sigsbee St	6/4/08
5	Main St & Sigsbee St	6/4/08
6	Harbor Dr & Sigsbee St	12/2/08
7	Logan Ave & I-5 SB off-ramp	12/2/08
8	National Ave & Beardsley St	6/5/08
9	Newton Ave & Beardsley St	6/5/08

Notes:
(a) Traffic counts in the Year 2006 were obtained from the *Mercado Traffic Study* performed by Darnell and Associates. Traffic counts in the Year 2008 were obtained by National Data and Surveying Services and from the Port Access Study being prepared by Caltrans.

TABLE 3-1
STUDY INTERSECTIONS COUNT SOURCE DATA (cont.)

	Intersection	Date of Count (a)
10	Main St & Beardsley St	6/5/08
11	Harbor Dr & Beardsley St	2/16/06
12	Kearny Ave & Cesar Chavez Pkwy	12/2/08
13	Logan Ave & Cesar Chavez Pkwy/SR-75 on-ramp	6/5/08
14	National Ave & Cesar Chavez Pkwy	12/2/08
15	Newton Ave & Cesar Chavez Pkwy	12/2/08
16	Main St & Cesar Chavez Pkwy	6/5/08
17	Harbor Dr & Cesar Chavez Pkwy	6/4/08
18	Logan Ave & I-5 SB on-ramp	12/2/08
19	National Ave & SR-75 off-ramp	12/2/08
20	National Ave & Evans St	3/7/06
21	Newton Ave & Evans St	3/7/06
22	Main St & Evans St	12/2/08
23	Logan Ave & Sampson St	3/15/06
24	National Ave & Sampson St	6/5/08
25	Newton Ave & Sampson St	6/5/08
26	Main St & Sampson St	6/10/08
27	Harbor Dr & Sampson St	6/11/08
28	National Ave & Sicard St	6/10/08
29	National Ave & 26th St	6/10/08
30	National Ave & I-5 SB off-ramp	6/11/08
31	Main St & 26th St	6/10/08
32	Harbor Dr & Schley St	6/10/08
33	National Ave & 28th St	12/2/08
34	Boston Ave & 28th St	12/2/08
35	Main St & 28th St	6/11/08
36	Harbor Dr & 28th St	6/11/08
37	Boston Ave & 29th St/I-5 SB on-ramp	12/2/08
38	Main St & 32nd St	6/12/08
39	Wabash & 32nd St	12/2/08
40	Harbor Dr & 32nd St	6/12/08
41	Main St & I-15 ramps	6/12/08

Notes:
(a) Traffic counts in the Year 2006 were obtained from the *Mercado Traffic Study* performed by Darnell and Associates. Traffic counts in the Year 2008 were obtained by National Data and Surveying Services and from the Port Access Study being prepared by Caltrans.

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TABLE 3-2
ROADWAY SEGMENT COUNT SOURCE DATA

	Roadway Segment	Date of Count (a)
1	I-5 SB Off Ramp at Beardsley St	2005
2	I-5 SB On Ramp at Logan Ave	2005
3	I-5 SB Off Ramp at 27th St	2005
4	I-5 SB Off Ramp at 28th St	2005
5	I-5 SB On Ramp at Boston Ave	2006
6	I-5 SB Off Ramp at Main St	2006
7	I-15 SB Off Ramp at Main St	2006
8	I-15 NB On Ramp at Main St	1998
9	SR-75 Off Ramp at National Ave	6/10/08
10	SR-75 On Ramp at Cesar Chavez Pkwy	6/10/08
11	Cesar Chavez Pkwy north of Logan Ave	2/3/10
12	Cesar Chavez Pkwy between Logan Ave and National Ave	2/9/10
13	Cesar Chavez Pkwy between National Ave and Newton Ave	6/10/08
14	Cesar Chavez Pkwy between Newton Ave and Main St	2/3/10
15	Cesar Chavez Pkwy between Main St and Harbor Dr	6/10/08
16	Sampson St between I-5 and National Ave	6/10/08
17	Sampson St between National Ave and Harbor Dr	6/10/08
18	26th St between National Ave and Newton Ave	2/03
19	28th St north of I-5 SB Off ramp	6/11/08
20	28th St between I-5 and Main St	6/11/08
21	28th St between Main St and Harbor Dr	6/11/08
22	32nd St between Main St and Wabash Blvd	6/11/08
23	32nd St between Wabash Blvd and Harbor Drive	6/11/08
24	Rigel St between Dalbergia St and I-5	6/11/08
25	Vesta St between Dalbergia St and I-5	1/06
26	Logan Ave between 17th St and Sigsbee St	12/07
27	Logan Ave between I-5 SB Off ramp and Cesar Chavez Pkwy	2/3/10
28	Logan Ave between Evans St and Sampson St	6/10/08
29	National Ave between Commercial St and 16th St	2/04
30	National Ave between 16th St and Sigsbee St	12/07
31	National Ave between Sigsbee St and Beardsley St	2003
32	National Ave between Beardsley St and Cesar Chavez Pkwy	6/10/08
33	National Ave between Cesar Chavez Pkwy and Evans St	2/3/10
34	National Ave between Evans St and Sampson St	2/3/10
35	National Ave between Sampson St and 27th St	6/10/08
36	Boston Ave between 29th St and 30th St	6/10/08
37	Main St between Beardsley St and Cesar Chavez Pkwy	2/3/10

Notes:
(a) Traffic counts at the I-5 and I-15 ramps were provided by Caltrans. Traffic counts prior to the Year 2008 were obtained from the *Barrio Logan Truck Study* performed by Willdan, *Mercado Traffic Study* performed by Darnell and Associates, City of San Diego, and Wilson and Company. Traffic counts in the Year 2008 and 2010 were obtained by National Data and Surveying Services.

TABLE 3-2.1
ROADWAY SEGMENT COUNT SOURCE DATA (cont.)

	Roadway Segment	Date of Count (a)
38	Main St between Cesar Chavez Pkwy and Sampson St	6/10/08
39	Main St between 26th St and 28th St	10/06
40	Main St between 28th St and 32nd St	6/10/08
41	Main St between 32nd St and Rigel St	1999
42	Main St between Rigel St and Siva St	1/06
43	Main St between Dalbergia St and I-5 SB Off Ramp	1/07
44	Harbor Dr between Beardsley St and Cesar Chavez Pkwy	6/10/08
45	Harbor Dr between Cesar Chavez Pkwy and Sampson St	2/3/10
46	Harbor Dr between Sampson St and Schley St	6/11/08
47	Harbor Dr between Schley St and 28th St	6/11/08
48	Harbor Dr between 28th St and 32nd St	6/11/08
49	Harbor Dr between 32nd St and Vesta St	10/03

Notes:
(a) Traffic counts at the I-5 and I-15 ramps were provided by Caltrans. Traffic counts prior to the Year 2008 were obtained from the *Barrio Logan Truck Study* performed by Willdan, *Mercado Traffic Study* performed by Darnell and Associates, City of San Diego, and Wilson and Company. Traffic counts in the Year 2008 were obtained by National Data and Surveying Services.

1	29 / 19 49 / 16 7 / 6 **16th St**	22 / 24 125 / 192 13 / 0 **Commercial St**	**2**	13 / 7 36 / 25 24 / 16 **16th St**	25 / 25 101 / 90 3 / 3 **National Ave**	**3**	18 / 8 40 / 23 4 / 3 **Sigsbee St**	15 / 11 79 / 54 11 / 7 **National Ave**	**4**	15 / 7 50 / 25 13 / 6 **Sigsbee St**	20 / 8 34 / 23 3 / 1 **Newton Ave**
3 / 18 83 / 131 19 / 11		9 / 14 20 / 21 9 / 12	4 / 8 30 / 74 14 / 8		11 / 15 34 / 41 12 / 7	2 / 5 22 / 73 26 / 31		38 / 34 26 / 55 33 / 13	5 / 8 22 / 22 12 / 17		14 / 11 75 / 58 9 / 2
5	2 / 1 42 / 27 31 / 20 **Sigsbee St**	61 / 31 4 / 0 6 / 10 **Main St**	**6**	24 / 18 12 / 23 **Sigsbee St**	20 / 13 831 / 314 **Harbor Dr**	**7**	21 / 16 151 / 73 137 / 154 **I-5 SB Off-Ramp**	86 / 65 45 / 24 **Logan Ave**	**8**	23 / 11 138 / 83 20 / 29 **Beardsley St**	18 / 12 71 / 77 68 / 33 **National Ave**
1 / 4 5 / 1 1 / 3		1 / 0 39 / 39 5 / 1	22 / 82 247 / 1163			68 / 210 11 / 32	**Beardsley St**	16 / 27 38 / 73	8 / 19 41 / 96 8 / 2		4 / 9 30 / 43 13 / 43
9	28 / 9 137 / 81 52 / 44 **Beardsley St**	15 / 19 39 / 47 16 / 6 **Newton Ave**	**10**	52 / 17 57 / 39 20 / 15 **Beardsley St**	20 / 9 90 / 33 35 / 15 **Main St**	**11**	54 / 16 30 / 26 **Beardsley St**	16 / 16 907 / 329 **Harbor Dr**	**12**	14 / 15 192 / 250 **Cesar Chavez Pkwy**	60 / 113 134 / 54 516 / 415 **Kearney Ave**
13 / 5 31 / 28 3 / 1		5 / 1 23 / 66 11 / 16	15 / 22 62 / 49 4 / 4		2 / 0 8 / 25 16 / 31	13 / 60 209 / 1167					109 / 189 106 / 262

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

13				14				15				16			
61 / 39	528 / 394	70 / 114	Cesar Chavez Pkwy-SR-75 On-ramp	117 / 65	461 / 330	39 / 77	Cesar Chavez Pkwy	58 / 22	406 / 316	27 / 44	Cesar Chavez Pkwy	82 / 34	361 / 269	25 / 26	Cesar Chavez Pkwy
34 / 28	19 / 19	14 / 9	Logan Ave	54 / 75	72 / 57	90 / 51	National Ave	26 / 42	28 / 21	20 / 13	Newton Ave	45 / 60	47 / 22	25 / 18	Main St
54 / 97	109 / 205	69 / 44		42 / 88	29 / 75	18 / 36		28 / 52	19 / 55	16 / 21		56 / 53	43 / 34	1 / 7	
11 / 9	140 / 254	145 / 339		14 / 16	291 / 476	8 / 30		9 / 8	217 / 459	8 / 23		7 / 4	155 / 455	4 / 19	

17				18				19				20			
330 / 247	83 / 30	50 / 33	Cesar Chavez Pkwy				I-5 SB On-Ramp	156 / 133	16 / 72		SR-75 Off-Ramp	16 / 37	8 / 10	5 / 27	Evans St
76 / 43	422 / 166	55 / 19	Harbor Dr	53 / 51	60 / 73		Logan Ave		142 / 134		National Ave	16 / 15	123 / 103	18 / 17	National Ave
107 / 375	153 / 713	16 / 12		251 / 473	93 / 267	1 / 5	Park Dwy	67 / 160				7 / 18	65 / 212	9 / 14	
4 / 11	14 / 63	27 / 35		0 / 7	1 / 1	1 / 2						10 / 5	26 / 8	10 / 29	

21				22				23				24			
17 / 11	8 / 8	1 / 8	Evans St	14 / 7	5 / 10		Evans St	14 / 13	82 / 100	62 / 66	Sampson St	25 / 18	36 / 33	19 / 36	Sampson St
8 / 7	24 / 27	3 / 5	Newton Ave	7 / 9	114 / 78		Main St	50 / 54	62 / 75	17 / 29	Logan Ave	24 / 28	94 / 70	48 / 21	National Ave
12 / 13	33 / 46	9 / 16		11 / 5	52 / 87			90 / 101	125 / 135	28 / 36		13 / 25	50 / 111	12 / 12	
10 / 3	19 / 15	6 / 6						62 / 63	112 / 134	33 / 18		7 / 13	41 / 77	16 / 30	

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

25

	22 / 15	
	66 / 42	Sampson St
	3 / 5	
8 / 6		
17 / 16		
2 / 0		
Newton Ave		
15 / 23		
20 / 25		
10 / 12		
4 / 6		
35 / 63		
7 / 3		

26

	15 / 10	
	59 / 27	Sampson St
	10 / 8	
16 / 8		
115 / 44		
53 / 27		
Main St		
5 / 13		
33 / 82		
12 / 8		
14 / 5		
31 / 46		
35 / 49		

27

	32 / 26	
	75 / 66	Sampson St
	3 / 14	
12 / 8		
517 / 198		
75 / 19		
Harbor Dr		
10 / 56		
234 / 748		
28 / 5		
14 / 23		
61 / 111		
38 / 41		

28

	11 / 9	
	18 / 14	Sicard St
	4 / 4	
3 / 1		
155 / 124		
27 / 8		
National Ave		
4 / 10		
79 / 162		
7 / 8		
13 / 3		
25 / 25		
12 / 17		

29

	1 / 2	
	8 / 21	26th St
	43 / 77	
48 / 54		
191 / 117		
36 / 35		
National Ave		
3 / 5		
66 / 155		
10 / 23		
7 / 14		
18 / 19		
15 / 34		

30

224 / 194		
42 / 31		
National Ave		
110 / 275		
4 / 10		I-5 SB Off-ramp
28 / 32		
149 / 296		

31

	13 / 8	
	11 / 6	26th St
	16 / 26	
26 / 28		
148 / 45		
59 / 19		
Main St		
10 / 14		
50 / 167		
7 / 7		
11 / 2		
17 / 38		
39 / 80		

32

	70 / 27	
	12 / 4	Schley St
	12 / 16	
17 / 39		
531 / 182		
Harbor Dr		
58 / 75		
200 / 712		

33

	307 / 102	
	166 / 210	28th St
	34 / 70	
49 / 128		
422 / 327		
71 / 162		
National Ave		
106 / 94		
184 / 434		
18 / 85		
33 / 18		
83 / 98		
25 / 46		

34

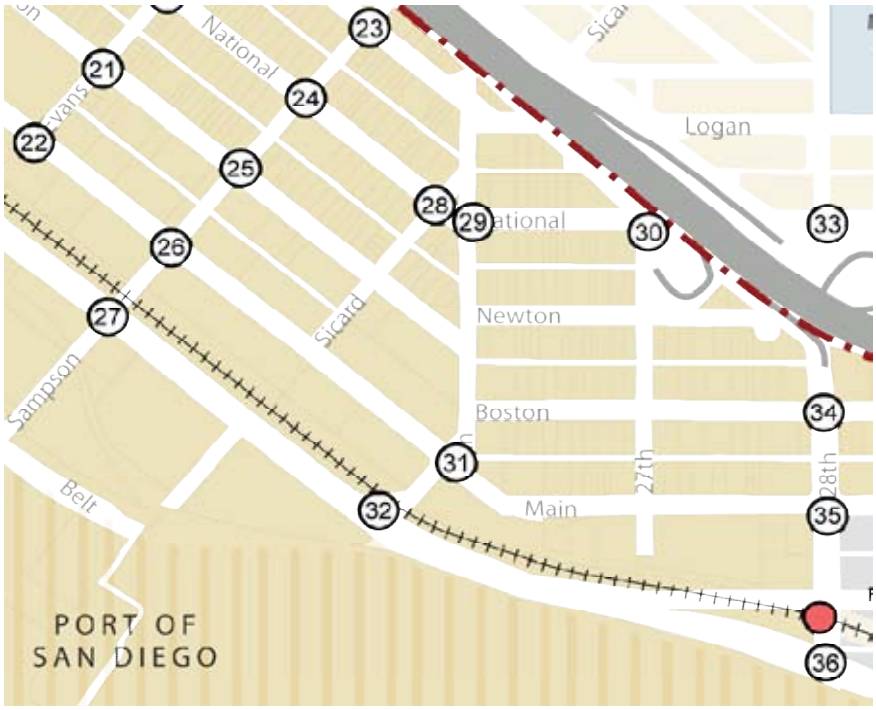
	31 / 28	
	623 / 693	28th St
	122 / 245	
64 / 43		
17 / 12		
8 / 7		
Boston Ave		
22 / 42		
50 / 131		
10 / 15		
9 / 7		
377 / 516		
90 / 203		

35

	58 / 79	
	565 / 487	28th St
	211 / 294	
147 / 238		
245 / 121		
49 / 78		
Main St		
58 / 174		
88 / 360		
24 / 19		
19 / 23		
163 / 607		
37 / 140		

36

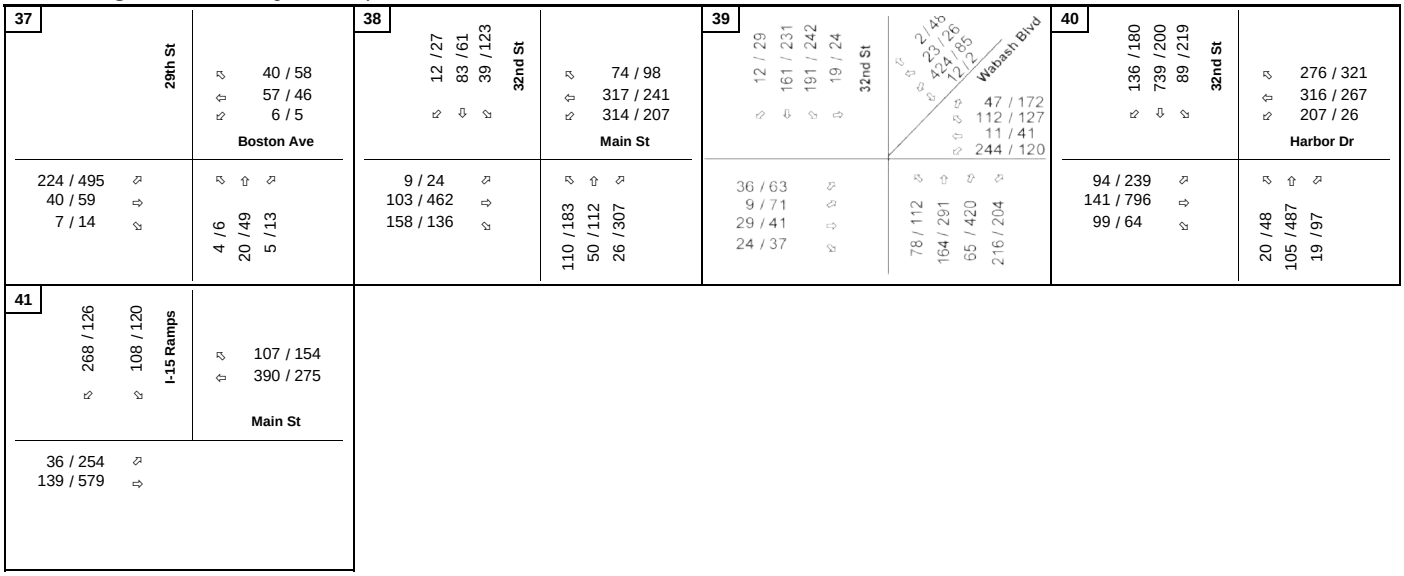
	22 / 13	
	15 / 12	28th St
	333 / 480	
115 / 221		
372 / 202		
13 / 8		
Harbor Dr		
56 / 156		
225 / 543		
2 / 1		
0 / 1		
5 / 133		
1 / 0		



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Figure 3-4: Existing ADT Volumes

January 2011

Intersection Analysis

Table 3-3 displays the LOS analysis results for the study intersections under Existing Conditions. As shown in the table, all intersections currently operate at LOS D or better during both peak periods, except for the following intersection:

- Boston Avenue & I-5 SB On-Ramp (LOS F – p.m. peak)

The movement that operates at LOS F is the northbound movement, which is stop controlled. In the afternoon peak, the majority of the vehicles traveling through the intersection are making a left-turn onto the I-5 Southbound Ramp from Boston Avenue and the vehicles in the northbound approach need to find a gap to turn onto Boston Avenue or continue across the intersection.

In addition to the level of service results based on intersection delay, a queuing analysis found that the following intersections have movements that may exceed the available storage capacity with a 95th percentile level of traffic volumes:

- Kearney Street & Cesar Chavez Parkway (Westbound movements - a.m. peak);
- Logan Avenue & Cesar Chavez Parkway (Southbound left-turn movement - p.m. peak);
- Harbor Drive & Cesar Chavez Parkway (Eastbound left-turn movement - a.m. and p.m. peak);
- Boston Avenue & 28th Street (Southbound left-turn movement- a.m. and p.m. peaks);
- Main Street & 28th Street (Southbound left-turn movement- a.m. and p.m. peaks);
- Harbor Drive & 28th Street (Eastbound left-turn movement- a.m. and p.m. peaks);
- Main Street & 32nd Street (Westbound left-turn and Northbound left-turn movements - a.m. and p.m. peaks); and
- Main Street & I-15 Ramps (Eastbound left-turn movement - p.m. peaks)

Based on Synchro 6.0 queuing report, none of the above listed intersections would have queuing interactions that would affect the LOS and/or capacity of the intersections.

Appendix D contains the LOS calculation worksheets.

Roadway Segment Analysis

Table 3-4 displays the roadway segments analysis under Existing Conditions. As shown in the table, based on planning level analysis and on ADT volumes, it is estimated that all roadway segments function at an acceptable LOS in the study area, except for the following segments:

- 28th Street between I-5 and Boston Avenue (LOS E)
- 32nd Street between Main Street and Wabash Boulevard (LOS E)
- National Avenue between Sicard Street and 27th Street (LOS F)
- Boston Avenue between 28th Street and 32nd Street (LOS F)
- Main Street between 32nd Street and Rigel Street (LOS F)
- Main Street between Rigel Street and Una Street (LOS F)
- Main Street between Una Street and I-5 SB Off-Ramp (LOS F)

The roadway segment analysis used in this study is based on theoretical capacities based on the number of travel lanes. The analysis does not take into account other physical features that can affect the capacity of a roadway segment like grades, number of traffic signals, number of driveways, parking availability, etc.

In addition, the analysis does not take into account the different traffic peak periods experienced on these roadways due to the surrounding land uses. As an example, the Barrio Logan traffic patterns are unique in that they are heavily influenced by the Port of San Diego and the Navy Base traffic generators who peak-hour of use do not correspond to typical peak-hour commuter traffic. Therefore, the typical planning level capacity for these streets may understate the carrying capacity of these roadways. To better represent the conditions of a roadway segment within the Barrio Logan community, the operations of the upstream and downstream intersections of each respective segment during the peak periods would indicate whether the roadway segment would have adequate capacity. As shown in the intersection analysis tables, all intersections along the failing roadway segments would operate at acceptable LOS.

Freeway Segment Analysis

Table 3-5 displays the freeway segments analysis under Existing Conditions. As shown in the table, it is estimated that all freeway segments function at an acceptable LOS in the study area, except for the segment of Interstate 5 between Interstate 15 and Division Street which operates at LOS E during the morning peak-hour period.

TABLE 3-3
EXISTING CONDITIONS
PEAK-HOUR INTERSECTION LOS SUMMARY

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING	
				DELAY (a)	LOS (b)
1	Commercial St & 16th St	Signal	AM	19.4	B
			PM	24.6	C
2	National Ave & 16th St	Two-Way Stop	AM	11.7	B
			PM	12.5	B
3	National Ave & Sigsbee St	Signal	AM	9.6	A
			PM	9.6	A
4	Newton Ave & Sigsbee St	All-Way Stop	AM	7.9	A
			PM	7.6	A
5	Main St & Sigsbee St	All-Way Stop	AM	7.4	A
			PM	7.4	A
6	Harbor Dr & Sigsbee St	One-Way Stop	AM	17.0	C
			PM	18.1	C
7	Logan Ave & Beardsley St- I-5 SB ramp	All-Way Stop	AM	11.1	B
			PM	11.9	B
8	National Ave & Beardsley St	All-Way Stop	AM	8.5	A
			PM	8.7	A
9	Newton Ave & Beardsley St	All-Way Stop	AM	8.5	A
			PM	8.2	A
10	Main St & Beardsley St	All-Way Stop	AM	8.5	A
			PM	7.8	A
11	Harbor Dr & Beardsley St	One-Way Stop	AM	20.3	C
			PM	18.3	C
12	Kearney St & Cesar E. Chavez Pkwy	Signal	AM	21.7	C
			PM	21.2	C
13	Logan Ave & Cesar E. Chavez Pkwy	Signal	AM	14.0	B
			PM	13.0	B
14	National Ave & Cesar E. Chavez Pkwy	Signal	AM	11.0	B
			PM	14.0	B
15	Newton Ave & Cesar E. Chavez Pkwy	Signal	AM	8.1	A
			PM	9.1	A
16	Main St & Cesar E. Chavez Pkwy	Signal	AM	9.6	A
			PM	8.7	A
17	Harbor Dr & Cesar E. Chavez Pkwy	Signal	AM	33.2	C
			PM	43.6	D
18	Logan Ave & I-5 SB On-ramp	One-Way Stop	AM	8.8	A
			PM	9.9	A
19	National Ave & SR-75 Off-ramp	One-Way Stop	AM	10.1	B
			PM	11.0	B
20	National Ave & Evans St	Two-Way Stop	AM	11.2	B
			PM	11.9	B

Notes:
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0
(c) Delay calculations based on SimTraffic 6.0 microsimulation. These intersections were analyzed with SimTraffic to account for interaction with the trolley

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TABLE 3-3
EXISTING CONDITIONS
PEAK-HOUR INTERSECTION LOS SUMMARY (cont.)

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING	
				DELAY (a)	LOS (b)
21	Newton Ave & Evans St	Two-Way Stop	AM	9.8	A
			PM	9.8	A
22	Main St & Evans St	One-Way Stop	AM	9.3	A
			PM	9.6	A
23	Logan Ave & Sampson St	All-Way Stop	AM	10.0	B
			PM	10.7	B
24	National Ave & Sampson St	Signal	AM	10.3	B
			PM	9.4	A
25	Newton Ave & Sampson St	All-Way Stop	AM	7.5	A
			PM	7.6	A
26	Main St & Sampson St	All-Way Stop	AM	8.6	A
			PM	8.2	A
27	Harbor Dr & Sampson St	Signal	AM	23.1	C
			PM	27.1	C
28	National Ave & Sicard St	Two-Way Stop	AM	12.0	B
			PM	11.4	B
29	National Ave & 26th St	All-Way Stop	AM	8.7	A
			PM	8.8	A
30	National Ave & I-5 SB Off-ramp	One-Way Stop	AM	11.5	B
			PM	17.8	C
31	Main St & 26th St-Schley St	All-Way Stop	AM	7.7	A
			PM	8.0	A
32	Harbor Dr & Schley St	Signal	AM	19.6	B
			PM	14.1	B
33	National Ave & 28th St	Signal	AM	35.3	D
			PM	29.8	C
34	Boston Ave & 28th St	Signal	AM	10.6	B
			PM	17.7	B
35	Main St & 28th St	Signal	AM	23.4	C
			PM	29.2	C
36	Harbor Dr & 28th St	Signal	AM	34.3	C
			PM	45.6	D
37	Boston Ave & I-5 SB On-ramp-29th St	One-Way Stop	AM	17.3	C
			PM	260.7	**F**
38	Main St & 32nd St	Signal	AM	21.9	C
			PM	29.2	C
39	32nd St & Wabash St	Signal	AM	38.5	D
			PM	32.0	C
40	Harbor Dr & 32nd St	Signal	AM	31.7	C
			PM	51.1	D
41	Main St & I-15 Ramps	Signal	AM	10.8	B
			PM	11.5	B

Notes:
Bold values indicate intersections operating at LOS E or F.
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0
(c) Delay calculations based on SimTraffic 6.0 microsimulation. These intersections were analyzed with SimTraffic to account for interaction with the trolley

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TABLE 3-4
EXISTING CONDITIONS
ROADWAY SEGMENT LOS SUMMARY

ROADWAY SEGMENT	ROADWAY CLASSIFICATION (a)	LOS E CAPACITY	ADT (b)	V/C RATIO (c)	LOS
Cesar Chavez Pkwy					
north of Logan Ave	3 Lane Collector (with TWLT)	22,500	14,170	0.63	C
between Logan Ave and National Ave	4 Lane Collector (with TWLT)	30,000	15,300	0.51	C
between National Ave and Newton Ave	3 Lane Collector (with TWLT)	22,500	12,494	0.56	C
between Newton Ave and Main St	3 Lane Collector (with TWLT)	22,500	11,812	0.53	C
between Main St and Harbor Dr	4 Lane Collector (with TWLT)	30,000	10,381	0.35	B
Sampson St					
between I-5 and National Ave	2 Lane Collector (No TWLT)	8,000	3,086	0.39	B
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	8,000	2,561	0.32	B
26th St					
between National Ave and Main St	2 Lane Collector (No TWLT)	8,000	2,380	0.30	A
28th St					
between I-5 and Boston Ave	3 Lane Collector (with TWLT)	22,500	22,000	0.98	**E**
between Boston Ave and Main St	4 Lane Collector (with TWLT)	30,000	18,856	0.63	C
between Main St and Harbor Dr	4 Lane Major Arterial	40,000	16,658	0.42	B
32nd St					
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	15,000	13,172	0.88	**E**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	40,000	19,785	0.50	B
Rigel St					
between Main St and I-5	2 Lane Collector (No TWLT)	8,000	1,723	0.22	A
Vesta St					
between Main St and I-5	2 Lane Collector (No TWLT)	8,000	4,900	0.61	C
Logan Ave					
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	15,000	3,659	0.24	A
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	15,000	7,478	0.50	C
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	15,000	2,954	0.20	A
National Ave					
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	15,000	2,603	0.17	A
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	15,000	4,500	0.30	A
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	8,000	3,511	0.44	C
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	8,000	4,643	0.58	C
between Evans St and Sicard St	2 Lane Collector (with TWLT)	15,000	3,677	0.25	A
between Sicard St and 27th St	2 Lane Collector (No TWLT)	8,000	8,445	1.06	**F**
Boston Ave					
between 28th St and 32th St	2 Lane Collector (No TWLT)	8,000	2,420	0.30	A
Main St					
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	8,000	3,566	0.45	C
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (No TWLT)	8,000	2,598	0.33	B
between 26th St and 28th St	3 Lane Collector (No TWLT)	11,250	7,435	0.66	C
between 28th St and 32nd St	3 Lane Collector (No TWLT)	11,250	11,266	1.00	**F**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	15,000	21,100	1.41	**F**
between Rigel St and Una St	2 Lane Collector (with TWLT)	15,000	15,944	1.06	**F**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	15,000	15,177	1.01	**F**
Harbor Dr					
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	40,000	12,094	0.30	A
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	40,000	13,778	0.34	A
between Sampson St and Schley St	4 Lane Major Arterial	40,000	9,080	0.23	A
between Schley St and 28th St	4 Lane Major Arterial	40,000	8,816	0.22	A
between 28th St and 32nd St	4 Lane Major Arterial	40,000	18,900	0.47	B
between 32nd St and Vesta St	4 Lane Major Arterial	40,000	16,320	0.41	B

Notes:
TWLT= Two-way left-turn lane (or centerlane)
Bold values indicate roadway segments operating at LOS E or F.
(a) Existing roadway classifications are based on field observations.
(b) Average Daily Traffic (ADT) volumes for the roadway segments were collected between 1999-2010.
(c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

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TABLE 3-5

EXISTING CONDITIONS

FREEWAY SEGMENT LOS SUMMARY

FREEWAY SEGMENT	DIRECTION	NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS
AM PEAK							
I-5							
J Street to SR-75 Junction	NB	4 M	9,400	164,000	7,793	0.829	D
	SB	4 M	9,400				
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000	7,603	0.809	D
	SB	4 M	9,400				
28th Street to I-15 Interchange	NB	4 M	9,400	154,000	7,317	0.778	C
	SB	4 M	9,400				
I-15 Interchange to Division St	NB	4 M	9,400	188,000	8,933	0.950	**E**
	SB	4 M	9,400				
I-15							
I-5 Interchange to Ocean View Blvd	NB	3 M	7,050	95,000			
	SB	3 M	7,050		4,722	0.670	C
SR-75 (d)							
I-5 Interchange to Glorietta Blvd	WB	2 M	4,700	73,000			
	EB	3 M	7,050		4,629	0.657	C
PM PEAK							
I-5							
J Street to SR-75 Junction	NB	4 M	9,400	164,000			
	SB	4 M	9,400		7,036	0.749	C
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000			
	SB	4 M	9,400		6,865	0.730	C
28th Street to I-15 Interchange	NB	4 M	9,400	154,000			
	SB	4 M	9,400		6,607	0.703	C
I-15 Interchange to Division St	NB	4 M	9,400	188,000			
	SB	4 M	9,400		8,066	0.858	D
I-15							
I-5 Interchange to Ocean View Blvd	NB	3 M	7,050	95,000	5,216	0.740	C
	SB	3 M	7,050				
SR-75 (d)							
I-5 Interchange to Glorietta Blvd	WB	3 M	7,050	73,000	4,585	0.650	C
	EB	2 M	4,700				

Notes:

Bold values indicate freeway segments operating at LOS E or F.

M=Main Lane; A= Auxiliary Lane.

This analysis evaluates the higher peak-hour direction of traffic

(a) The capacity is calculated as 2,350 ADT per main lane and 1,200 ADT per auxiliary lane

(b) Traffic volumes provided by Caltrans

(c) Peak-hour volume calculated by: (ADT*K*D)/Truck Factor

(d) SR-75 has reversable lanes.

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Parking

On-street

Parking has been a major issue and concern in Barrio Logan for decades. The community parking shortage is largely due to there not being enough parking provided on-site for workers at Harbor-related industries. The community and the city have undertaken various measures to control where people park through the use of residential permit parking districts and time limited parking.

Three time periods were selected for data collection to capture a snapshot of on-street parking occupancy in the Barrio Logan community. The first time period selected was between 9:00 a.m. and 11:00 a.m. This time period captured the majority of the industrial and military uses as most of the employees would be at work during this time period. The second time period selected was between 12:00 p.m. and 2:00 p.m. and captured the peak retail/commercial parking demand. This time period is consistent with the data obtained from the *Barrio Logan Parking Study*, dated April 20, 1999 and prepared by Linscott, Law & Greenspan Engineers. The third time period selected was between 7:00 p.m. and 9:00 p.m. and captured the peak residential uses as most people would be home during this time period.

An inventory of all on-street parking spaces was conducted in June 2008 and counted a total of 2,842 on-street parking spaces for the entire Barrio Logan community. Of the 2,842 parking spaces, the majority of them (2,325 spaces, 82 percent) are unrestricted and available for the general public. The remaining parking spaces have some sort of restriction, such as time restrictions or residential permit parking.

The on-street parking occupancy data collection was conducted on Thursday, June 5, 2008. In order to show the different peaking characteristics in different parts of the community, the Barrio Logan community was separated into the following five areas, with the first zone in the northwest portion of the community and the last zone in the southeastern portion of the community. **Figure 3-5** graphically displays the five areas.

- Area 1: Generally bounded by I-5 to the north, Harbor Drive to the south, SR-75 to the east, and 16th Street to the west. Land uses generally include commercial and residential.
- Area 2: Generally bounded by I-5 to the north, Harbor Drive to the south, 26th Street to the east, and SR-75 to the west. Land uses generally include commercial and residential.
- Area 3: Generally bounded by I-5 to the north, Harbor Drive to the south, 28th Street to the east, and 26th Street to the west. Land uses generally include industrial and some residential.
- Area 4: Generally bounded by I-5 to the north, Main Street to the south, 32nd Street to the east, and 28th Street to the west. Land uses generally include residential with some commercial and industrial.
- Area 5: Generally bounded by I-5 to the north, Main Street to the south, Woden Street to the east, and 32nd Street to the west. Land uses generally include industrial and commercial.

Table 3-6 summarizes the results of the on-street parking occupancy survey. As shown in the table, parking spaces are classified by restriction or type. The majority, 82 percent, of on-street parking spaces in the Barrio Logan Community are spaces without any restrictions. The residential permit restriction is the most prevalent restriction and accounts for 9 percent of the parking spaces. Time limit and metered parking accounts for 5 percent of the on-street parking supply. Loading zones account for 3 percent of the spaces and the remaining 1 percent accounts for handicap parking spaces.

Appendix E contains a more detailed summary by each block face for the entire community.

Total Barrio Logan Parking
72% / 74% / 42%
Total - 2,842

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

9:00AM/12:00PM/7:00PM
Total - XXX
Percentage of Occupied Parking Spaces
Total Available Parking Spaces

0 500 1000 2000 feet

N

Figure 3-5: Existing On-Street Parking Occupancy

January 2011

TABLE 3-6
EXISTING CONDITIONS
ON-STREET PARKING SUMMARY

AREA	Time Limit			Residential PERMIT	LOADING ZONE	METERED	HANDI-CAP	REMAINING SPACES	TOTAL SPACES
	15 MIN.	30 MIN.	2 HR.						
Zone 1	7	7	5	--	21	--	6	755	800
Zone 2	11	10	37	146	26	--	7	560	797
Zone 3	5	7	16	71	22	17	3	215	356
Zone 4	--	4	--	41	10	10	5	279	349
Zone 5	3	5	--	--	14	--	2	516	540
TOTAL	**26**	**33**	**58**	**258**	**93**	**27**	**23**	**2,325**	**2,842**
Percentage (a)	1%	1%	2%	9%	3%	1%	1%	82%	--

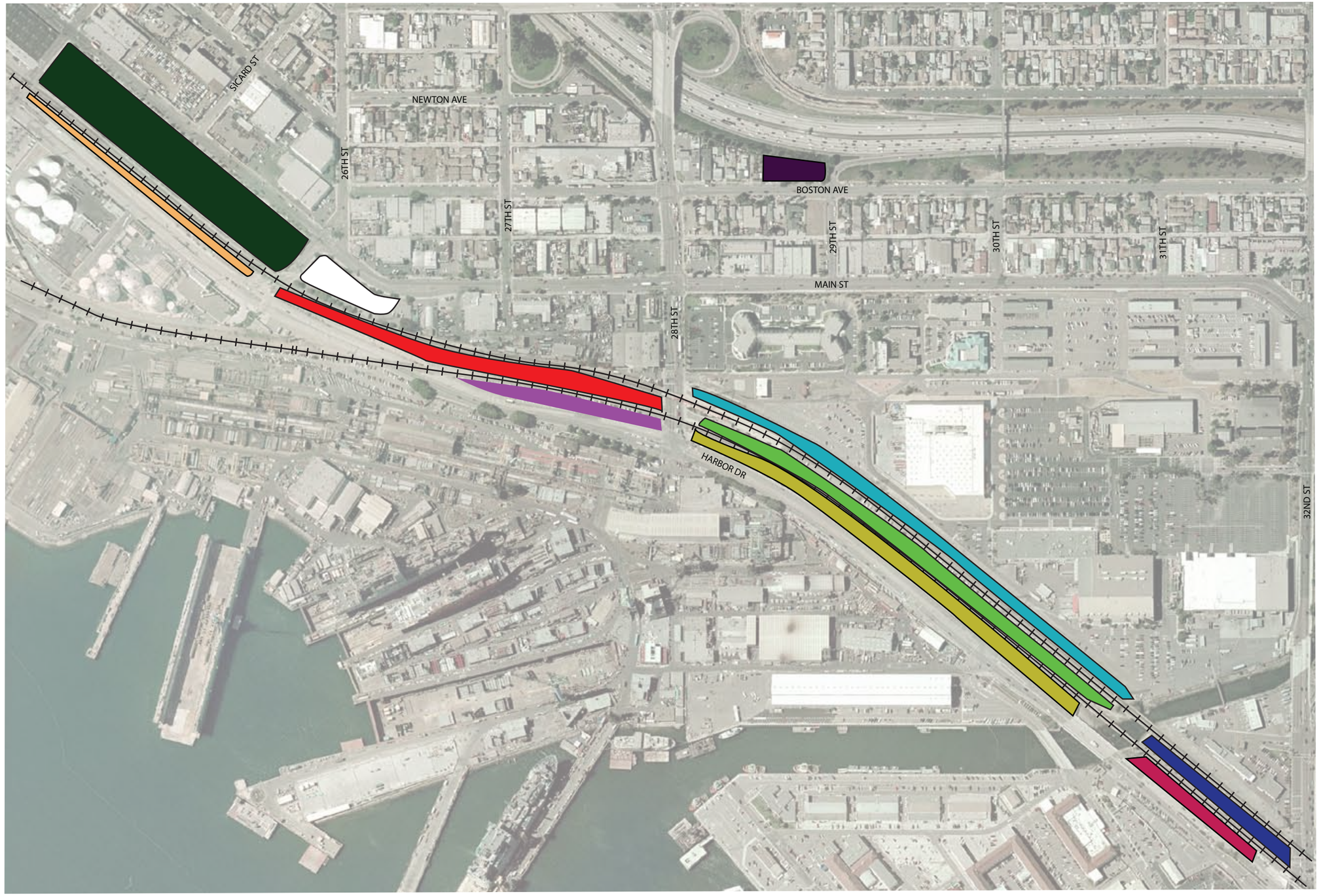
Notes:
Parking inventory taken on June 05, 2008.
K:\TPTO\095707000\Data\Parking Data\[Parking Occupancy Data Collection.xls]Parking Table

Offsite/Off-street

Several off-street parking areas in Barrio Logan were observed to be used by two major port tenants, NASSCO and BAE Systems. These lots are depicted on **Figure 3-6** and occur either in privately owned lots or in railroad right-of-way located north of Harbor Drive. **Table 3-7** provides a summary of the parking supply and description of each of these parking areas. Over 2,600 parking spaces are located in these lots, which were observed to be full or nearly full during working hours.

TABLE 3-7
EXISTING CONDITIONS
OFF-STREET PARKING SUMMARY

LOCATION	DESCRIPTION	USER	TOTAL SPACES
Harbor Dr between 32nd St , Chollas Creek and Railroad Tracks	Upper lot between Railroad and Navy base	NASSCO, owned by BN&SF Railroad	170
	Lower lot accessed from Harbor Dr		70
Harbor Dr between Chollas Creek and 28th St	Upper lot between Railroad and Navy Base		280
	Middle lot between freight and trolley tracks		390
	Lower lot access from Harbor Dr		280
Harbor Dr between 28th St and Schley St	Upper lot between freight tracks and Harbor Dr		240
	Lower lot between freight tracks and Harbor Drive		100
Harbor Dr between Schley St and Sampson St	Lot between trolley tracks and Harbor Dr, access is from Schley St and Harbor Dr		100
Main St between Sampson St, Schley St and trolley tracks	Privately owned lot	BAE Systems	780
Main St east of Schley St and north of trolley tracks	Privately owned lot	NASSCO	180
Boston Ave west of 29th St and south of I-5	Privately owned lot	NASSCO	70
TOTAL			**2,660**



LEGEND

- 170 parking spaces
- 70 parking spaces
- 280 parking spaces
- 390 parking spaces
- 280 parking spaces
- 240 parking spaces
- 100 parking spaces
- 100 parking spaces
- 780 parking spaces
- 180 parking spaces
- 70 parking spaces

N

Figure 3-6: Off-Site/Off-Street Parking

Truck Traffic

Within certain areas in the Barrio Logan community, trucks comprise a high percentage of the vehicular traffic on the roadways. Based on data obtained in October 2003 and provided in the *Barrio Logan Truck Study*, dated May 4, 2004 (Willdan), approximately 32 percent of the vehicles on Cesar Chavez Parkway south of Harbor Drive consisted of trucks. The large percentage was due to the Tenth Avenue Marine Terminal that requires trucks to transport goods to/from the terminal to the rest of the region. Along Cesar Chavez Parkway between Harbor Drive and I-5, the truck percentage ranged between 16 and 18 percent of the total traffic volume on the street. Along Harbor Drive, the percentage of truck traffic decreased from approximately 10 percent near Cesar Chavez Parkway to approximately seven percent near 32nd Street.

However, since the time that the study was completed, truck restrictions on various roadways in the community (as described under the Roadway Network section) have been implemented, and trucks to/from the Tenth Avenue Marine Terminal over five tons are required to use 28th Street to access I-5.

Vehicle classification counts were obtained on June 11 and 12, 2008 along Cesar Chavez Parkway between National Avenue and Newton Avenue. The average of the two days of data indicated that on a daily basis, 13 percent of the total vehicles along this segment are trucks. Although there has been a decline in truck traffic along Cesar Chavez Parkway, it appears that the truck restrictions along Cesar Chavez Parkway are not effective and field observations have verified that trucks are still present on this roadway.

Additional truck counts were collected during the morning and afternoon peak-hours along the Harbor Drive intersections between Cesar Chavez Parkway and Schley Street. These counts were collected in June and July 2009. The purpose of the counts was to estimate the existing truck distribution for the port industrial sites. The counts indicated that the majority of truck traffic uses Schley Street and Main Street to access the I-5 ramps at 28th Street and Boston Avenue. **Appendix F** contains copies of the truck count data.

Truck Restrictions

Based on the recommendation outlined in the *Barrio Logan Truck Study*, dated May 4, 2004 (Willdan), trucks over five tons are currently restricted along Cesar Chavez Parkway between I-5 and Harbor Drive. For the trucks accessing the Tenth Avenue Marine Terminal from I-5, the truck route is via 28th Street and Harbor Drive. As shown in **Figure 3-7** below, a sign indicating the truck route is placed on the south leg of the Cesar Chavez Parkway/Harbor Drive intersection.

However, based on field observations, trucks in excess of five tons are still using Cesar Chavez Parkway and Main Street via Sampson Street and Schley Street to access I-5. Trucks using Main Street to/from I-5 are avoiding the 28th Street/Harbor Drive intersection due to the geometric deficiencies (tight turns for large vehicles) and traffic congestion.

Figure 3-7 Truck Route Sign for Trucks Destined to I-5

An inventory of all existing truck restriction signs within the Barrio Logan community was completed in May 2008. Two types of truck restriction signs are present. The first type is a sign restricting trucks that weigh over one ton. All of these signs are located along Beardsley Street between Logan Avenue and Newton Avenue and along Newton Avenue between Sigsbee Street and Beardsley Street.

The second type is a sign restricting trucks that weigh over five tons. These signs are generally located in the area between Cesar Chavez Parkway and 27th Street, along the following street segments:

- Cesar Chavez Parkway between I-5 and Harbor Drive
- Evans Street between Logan Avenue and Main Street
- Sampson Street between Logan Avenue and Main Street
- Sicard Street between Logan Avenue and Main Street
- 26th Street between Logan Avenue and Main Street
- 27th Street between Newton Avenue and Main Street

Figure 3-8 shows examples of several truck restriction signs that are found in the community. It should be noted that truck restrictions do not apply to delivery trucks needing to access facilities located within the community. **Figure 3-9** graphically displays the truck routes and the truck restrictions in the Barrio Logan community.

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Figure 3-8 Examples of Truck Restriction Signs

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- Truck Routes
- Truck Weight Limit Prohibition (5 tons)
- Truck Weight Limit Prohibition (1 tons)
- Truck Parking Restriction

0 500 1000 2000 feet

N

Figure 3-9: Truck Routes and Restrictions

January 2011

4.0 HORIZON YEAR (2030) WITH BARRIO LOGAN ADOPTED COMMUNITY PLAN

This section summarizes the results of the Horizon Year (2030) conditions analysis within the Barrio Logan community taking into account the land use changes proposed under the Adopted Community Plan. This section is included for planning comparison purpose only. Since this report does not analyze for traffic related impact for the Adopted Community Plan, a detailed peak-hour intersection analysis was not included in this chapter.

Roadway Network

No roadway network changes are assumed to take place under this scenario, with the exception of the addition of a High Occupancy Vehicle (HOV) lane along the I-5 Corridor for both directions of traffic. The additional HOV lane is listed in Sandag's 2030 Regional Transportation Plan (RTP).

Traffic Volumes

The Horizon Year Average Daily Traffic (ADT) volumes on the roadway segments in the study area were derived from a City of San Diego traffic forecast model that incorporated the land use changes proposed under the Adopted Community Plan. A copy of the forecast model is included in **Appendix G.**

Table 4-1 presents a more detailed trip generation summary for the community with the land uses included in the Adopted Community Plan. As shown in the table, the land use designation of the Adopted Community Plan would generate a total of approximately 180,666 average daily trips, including 12,390 (9,713 in and 2,677 out) morning peak-hour trips and 18,484 (6,614 in and 11,870 out) afternoon peak-hour trips.

Modeled forecast volumes experienced some minor refinements. In the process of calibrating the existing model, it was concluded that three post model adjustments should be made to the 2030 traffic models. Traffic volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. Traffic volumes on 28th Street and 32nd between Main Street and Harbor Drive were increased by 4,000 ADT and 600 ADT, respectively, per calibration between base year model and actual traffic volume counts. Minor smoothing of traffic volumes were made to reflect the gross nature of model loadings from TAZs. Volumes for streets that were not in the traffic model were estimated applying a growth rate generally consistent with other facilities in the community. Resulting daily traffic volumes for the Adopted Community Plan are depicted in **Figure 4-1**.

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LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

(1) ADT volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. This adjustment was based on existing traffic patterns .

(2) ADT volumes along 28th Street between Boston Avenue and Harbor Drive were increased by 4,000 ADT as recommended during the traffic model calibration process.

(3) ADT volumes along 32th Street between Main Street and Harbor Drive were increased by 600 ADT as recommended during the traffic model calibration process.

0 500 1000 2000 feet

N

Figure 4-1: Horizon Year (2030) ADT Volumes (Adopted Community Plan)

January 2011

TABLE 4-1
TRIP GENERATION SUMMARY (ADOPTED COMMUNITY PLAN)

Land Use	Units[1]	Daily Trips	AM Peak-Hour			PM Peak-Hour		
			In	Out	Total	In	Out	Total
ACTIVE PARK	8.50 acre	372	0	15	15	0	30	30
ELEMENTARY SCHOOL (stu)	529.00 stu	1,539	286	191	477	117	175	292
FAST FOOD REST. (ksf)	19.50 ksf	13,675	328	219	547	547	548	1,095
FIRE OR POLICE STATION	1.00 site	229	31	3	34	3	31	34
HEAVY INDUSTRY (ksf)	3,490.30 ksf	14,140	1,400	155	1,555	339	1,358	1,697
INACTIVE USE	7.50 acre	0	0	0	0	0	0	0
JUNIOR COLLEGE (ksf)	70.00 ksf	1,295	140	15	155	31	73	104
LIGHT INDUSTRY (ksf)	3,009.40 ksf	48,157	4,767	531	5,298	1,156	4,623	5,779
LOW RISE OFFICE(3917)(ksf)	178.60 ksf	2,601	257	29	286	62	250	312
LOW RISE OFFICE(3921)(ksf)	132.30 ksf	2,464	244	27	271	59	237	296
LOW RISE OFFICE(3957)(ksf)	84.10 ksf	1,476	146	16	162	35	142	177
LOW RISE OFFICE(3988)(ksf)	31.30 ksf	698	69	8	77	17	67	84
LOW RISE OFFICE(FT3985)(ksf)	15.70 ksf	414	48	6	54	12	46	58
LOW RISE OFFICE(FT3988)(ksf)	120.90 ksf	1,937	227	25	252	54	217	271
MARINA (CCDC)	0.00 acre	0	0	0	0	0	0	0
MARINE TERMINAL	0.00 acre	0	0	0	0	0	0	0
MILITARY USE (Gate 9 - site)	0.00 site	7,581	68	159	227	318	213	531
MULTI-FAMILY (BL)	3,191.00 du	19,491	176	408	584	819	546	1,365
NEIGHBORHOOD SHOP CNT (ksf)	175.10 ksf	20,813	500	333	833	1,146	1,143	2,289
OTHER HEALTH CARE (ksf)	112.70 ksf	5,610	269	67	336	168	393	561
OTHER PUBLIC SERVICE	0.20 acre	58	5	0	5	2	5	7
OTHER TRANSPORTATION	5.10 acre	433	42	19	61	19	46	65
PARKING	0.50 acre	0	0	0	0	0	0	0
RAIL STATION (BL)	0.60 acre	181	18	7	25	8	19	27
REGIONAL COMM.(Mtro)(ksf)	0.00 ksf	5,817	81	35	116	262	262	524
SINGLE FAMILY (BL)	31.00 du	274	5	17	22	18	9	27
SPECIALTY COMM.(mtro)(ksf)	0.00 ksf	2,958	53	36	89	133	133	266
STREETFRONT COMMERCIAL (ksf)	698.60 ksf	27,994	505	335	840	1,260	1,260	2,520
WAREHOUSING (ksf)	90.60 ksf	459	48	21	69	29	44	73
WHOLESALE TRADE	0.00 acre	0	0	0	0	0	0	0
Total		**180,666**	**9,713**	**2,677**	**12,390**	**6,614**	**11,870**	**18,484**

Note:
1. du = Dwelling Unit; stu = Students; ksf = Thousand square feet

K:\SND_TPTO\095707000\Excel\[707000TG.xlsm]ACP Totals (LU)

Roadway Segment Analysis

Table 4-2 displays the roadway segment analysis under the Horizon Year (2030) conditions for the Adopted Community Plan. As shown in the table, based on planning level analysis and on ADT volumes, the Adopted Community Plan would be considered having a cumulative roadway segment impact along the following roadway segments:

- Cesar Chavez Parkway between Logan Avenue and National Avenue (LOS E);
- Cesar Chavez Parkway between National Avenue and Newton Avenue (LOS F);
- Cesar Chavez Parkway between Newton Avenue and Main Street (LOS F);
- Sampson Street between National Avenue and Harbor Drive (LOS F);
- 26th Street between National Avenue and Main Street (LOS F);
- 28th Street between I-5 and Boston Avenue (LOS F);
- 32nd Street between Main Street and Wabash Boulevard (LOS F);
- Vesta Street between Main Street and I-5 Ramps (LOS E);
- Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (LOS F);
- National Avenue between 16th Street and Sigsbee Street (LOS E);
- National Avenue between Sigsbee Street and Beardsley Street (LOS E);
- National Avenue between Beardsley Street and Cesar Chavez Parkway (LOS F);
- National Avenue between Cesar Chavez Parkway and Evans Street (LOS F);
- National Avenue between Sicard Street and 27th Street (LOS F);
- Boston Avenue between 28th Street and 29th Street (LOS F);
- Boston Avenue between 29th Street and 32nd Street (LOS F);
- Main Street between Cesar Chavez Parkway and Evans Street (LOS F);
- Main Street between Evans Street and 26th Street (LOS F);
- Main Street between 26th Street and 28th Street (LOS F);
- Main Street between 28th Street and 29th Street (LOS F);
- Main Street between 29th Street and 32nd Street (LOS F);
- Main Street between 32nd Street and Rigel Street (LOS F);
- Main Street between Rigel Street and Una Street (LOS F); and
- Main Street between Una Street and I-5 SB Off-ramp (LOS F).

Freeway Segment Analysis

Table 4-3 displays the freeway segments analysis under the Horizon Year (2030) conditions for the Adopted Community Plan. As shown in the table, the Adopted Community Plan would have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction (LOS F and LOS E for the morning and afternoon peak-hour periods, respectively);
- I-5 from SR-75 Junction to 28th Street (LOS F and LOS E for the morning and afternoon peak-hour periods, respectively);
- I-5 from 28th Street to I-15 Interchange (LOS E during the morning peak-hour periods);
- I-5 from I-15 Interchange to Division Street (LOS F both peak-hour periods); and
- I-15 from I-5 Interchange to Ocean View Boulevard (LOS E and LOS F for the morning and afternoon peak-hour periods, respectively)

TABLE 4-2

HORIZON YEAR (2030) CONDITIONS WITH ADOPTED COMMUNITY PLAN

ROADWAY SEGMENT LOS SUMMARY

ROADWAY SEGMENT	ROADWAY CLASSIFICATION (a)	HIGHEST ACCEPTABLE LOS D VOLUME	LOS E CAPACITY	EXISTING CONDITIONS			YEAR 2030 (ADOPTED COMMUNITY PLAN)			Δ in V/C	SIGNIFICANT?
				ADT	V/C RATIO (b)	LOS	ADT	V/C RATIO (b)	LOS		
Cesar Chavez Pkwy											
north of Logan Ave	3 Lane Collector (with TWLT)	18,750	22,500	14,170	0.630	C	16,000	0.711	D	0.081	NO
between Logan Ave and National Ave	4 Lane Collector (with TWLT)	25,000	30,000	15,300	0.510	C	27,600	0.920	**E**	0.410	**YES**
between National Ave and Newton Ave	3 Lane Collector (with TWLT)	18,750	22,500	12,494	0.555	C	27,300	1.213	**F**	0.658	**YES**
between Newton Ave and Main St	3 Lane Collector (with TWLT)	18,750	22,500	11,812	0.525	C	23,300	1.036	**F**	0.511	**YES**
between Main St and Harbor Dr	4 Lane Collector (with TWLT)	25,000	30,000	10,381	0.346	B	12,500	0.417	B	0.071	NO
Sampson St											
between I-5 and National Ave	2 Lane Collector (No TWLT)	6,500	8,000	3,086	0.386	B	6,200	0.775	D	0.389	NO
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	6,500	8,000	2,561	0.320	B	9,200	1.150	**F**	0.830	**YES**
26th St											
between National Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	2,380	0.298	A	8,700	1.088	**F**	0.790	**YES**
28th St											
between I-5 and Boston Ave	3 Lane Collector (with TWLT)	18,750	22,500	22,000	0.978	**E**	25,400	1.129	**F**	0.151	**YES**
between Boston Ave and Main St	4 Lane Collector (with TWLT)	25,000	30,000	18,856	0.629	C	21,200	0.707	D	0.078	NO
between Main St and Harbor Dr	4 Lane Major Arterial	35,000	40,000	16,658	0.416	B	19,600	0.490	B	0.074	NO
29th St											
between Boston Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	1,500	0.188	A	5,800	0.725	D	0.538	NO
32nd St											
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	13,000	15,000	13,172	0.878	**E**	15,000	1.000	**F**	0.122	**YES**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	35,000	40,000	19,785	0.495	B	27,200	0.680	C	0.185	NO
Rigel St											
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	1,723	0.215	A	1,400	0.175	A	-0.040	NO
Vesta St											
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	4,900	0.613	C	6,600	0.825	**E**	0.212	**YES**
Logan Ave											
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	3,659	0.244	A	11,400	0.760	D	0.516	NO
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	7,478	0.499	C	17,800	1.187	**F**	0.688	**YES**
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	2,954	0.197	A	6,900	0.460	B	0.263	NO
National Ave											
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	2,603	0.174	A	14,400	0.960	**E**	0.786	**YES**
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	13,000	15,000	4,500	0.300	A	14,400	0.960	**E**	0.660	**YES**
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	3,511	0.439	C	18,000	2.250	**F**	1.811	**YES**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	4,643	0.580	C	8,700	1.088	**F**	0.508	**YES**
between Evans St and Sicard St	2 Lane Collector (with TWLT)	13,000	15,000	3,677	0.245	A	8,700	0.580	C	0.335	NO
between Sicard St and 27th St	2 Lane Collector (No TWLT)	6,500	8,000	8,445	1.056	**F**	9,300	1.163	**F**	0.107	**YES**
Boston Ave											
between 28th and 29th St	2 Lane Collector (No TWLT)	6,500	8,000	2,420	0.303	A	17,100	2.138	**F**	1.835	**YES**
between 29th St and 32nd St	2 Lane Collector (No TWLT)	6,500	8,000	2,420	0.303	A	9,200	1.150	**F**	0.847	**YES**
Main St											
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	3,566	0.446	C	5,700	0.713	D	0.267	NO
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	2,598	0.325	B	10,300	1.288	**F**	0.963	**YES**
between Evans St and 26th St	2 Lane Collector (No TWLT)	6,500	8,000	2,598	0.325	C	17,100	2.138	**F**	1.813	**YES**
between 26th St and 28th St	3 Lane Collector (No TWLT)	9,750	11,250	7,435	0.661	C	14,300	1.271	**F**	0.610	**YES**
between 28th and 29th St	4 Lane Collector (No TWLT)	13,000	15,000	11,266	0.867	**F**	13,500	0.900	**F**	0.033	**YES**
between 29th St and 32nd St	3 Lane Collector (No TWLT)	9,750	11,250	11,266	1.407	**F**	19,400	1.724	**F**	0.317	**YES**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	13,000	15,000	21,100	1.407	**F**	26,300	1.753	**F**	0.346	**YES**
between Rigel St and Una St	2 Lane Collector (with TWLT)	13,000	15,000	15,944	1.063	**F**	20,100	1.340	**F**	0.277	**YES**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	13,000	15,000	15,177	1.012	**F**	17,500	1.167	**F**	0.155	**YES**
Harbor Dr											
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	35,000	40,000	12,094	0.302	A	30,200	0.755	D	0.453	NO
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	35,000	40,000	13,778	0.344	A	26,300	0.658	C	0.314	NO
between Sampson St and Schley St	4 Lane Major Arterial	35,000	40,000	9,080	0.227	A	25,300	0.633	C	0.406	NO
between Schley St and 28th St	4 Lane Major Arterial	35,000	40,000	8,816	0.220	A	20,700	0.518	B	0.298	NO
between 28th St and 32nd St	4 Lane Major Arterial	35,000	40,000	18,900	0.473	B	28,500	0.713	C	0.240	NO
between 32nd St and Vesta St	4 Lane Major Arterial	35,000	40,000	16,320	0.408	B	32,300	0.808	D	0.400	NO

Notes:
Bold values indicate roadway segments operating at LOS E or F.
(a) Roadway Functional Classifications are based on field observations.
(b) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

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TABLE 4-3
HORIZON YEAR (2030) CONDITIONS WITH ADOPTED COMMUNITY PLAN
FREEWAY SEGMENT LOS SUMMARY

FREEWAY SEGMENT	DIRECTION	EXISTING						ADOPTED COMMUNITY PLAN						V/C RATIO Δ	SIGNIFICANT?
		NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS	NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS		
AM PEAK															
I-5															
J Street to SR-75 Junction	NB	4 M	9,400	164,000	7,793	0.829	D	4 M + 1 H	11,000	244,500	11,618	1.056	**F0**	0.23	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000	7,603	0.809	D	4 M + 1 H	11,000	242,100	11,504	1.046	**F0**	0.24	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
28th Street to I-15 Interchange	NB	4 M	9,400	154,000	7,317	0.778	C	4 M + 1 H	11,000	222,900	10,591	0.963	**E**	0.18	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
I-15 Interchange to Division St	NB	4 M	9,400	188,000	8,933	0.950	**E**	4 M + 1 H	11,000	262,100	12,454	1.132	**F0**	0.18	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
I-15															--
I-5 Interchange to Ocean View Blvd	NB	3 M	7,050	95,000				3 M	7,050	130,800					--
	SB	3 M	7,050		4,722	0.670	C	3 M	7,050		6,501	0.922	**E**	0.25	**YES**
SR-75 (d)															--
I-5 Interchange to Glorietta Blvd	WB	2 M	4,700	73,000				2 M	4,700	89,800					--
	EB	3 M	7,050		4,629	0.657	C	3 M	7,050		5,694	0.808	D	0.15	--
PM PEAK															
I-5															
J Street to SR-75 Junction	NB	4 M	9,400	164,000				4 M + 1 H	11,000	244,500					--
	SB	4 M	9,400		7,036	0.749	C	4 M + 1 H	11,000		10,490	0.954	**E**	0.21	**YES**
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000				4 M + 1 H	11,000	242,100					--
	SB	4 M	9,400		6,865	0.730	C	4 M + 1 H	11,000		10,387	0.944	**E**	0.21	**YES**
28th Street to I-15 Interchange	NB	4 M	9,400	154,000				4 M + 1 H	11,000	222,900					--
	SB	4 M	9,400		6,607	0.703	C	4 M + 1 H	11,000		9,563	0.869	D	0.17	--
I-15 Interchange to Division St	NB	4 M	9,400	188,000				4 M + 1 H	11,000	262,100					--
	SB	4 M	9,400		8,066	0.858	D	4 M + 1 H	11,000		11,245	1.022	**F0**	0.16	**YES**
I-15															--
I-5 Interchange to Ocean View Blvd	NB	3 M	7,050	95,000	5,216	0.740	C	3 M	7,050	130,800	7,182	1.019	**F0**	0.28	**YES**
	SB	3 M	7,050					3 M	7,050						--
SR-75 (d)															--
I-5 Interchange to Glorietta Blvd	WB	3 M	7,050	73,000	4,585	0.650	C	3 M	7,050	89,800	5,640	0.800	D	0.15	--
	EB	2 M	4,700					2 M	4,700						--

Notes:

Bold values indicate freeway segments operating at LOS E or F.

M=Main Lane; A= Auxiliary Lane; H= HOV Lane.

This analysis evaluates the higher peak-hour direction of traffic

(a) The capacity is calculated as 2,350 ADT per main lane and 1,200 ADT per auxiliary lane

(b) Traffic volumes provided by Caltrans

(c) Peak-hour volume calculated by: (ADT*K*D)/Truck Factor

(d) SR-75 has reversable lanes.

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5.0 HORIZON YEAR (2030) WITH ALTERNATIVE 1

This section summarizes the results of the Horizon Year (2030) conditions analysis within the Barrio Logan community taking into account the land use changes proposed under the Alternative 1 of the Community Plan Update.

Roadway Network

No roadway network changes are assumed to take place under this scenario, with the exception of the addition of a High Occupancy Vehicle (HOV) lane along the I-5 Corridor for both directions of traffic. The additional HOV lane is listed in Sandag's 2030 Regional Transportation Plan (RTP).

Traffic Volumes

The Horizon Year Average Daily Traffic (ADT) volumes on the roadway segments in the study area were derived from a City of San Diego traffic forecast model that incorporated the land use changes proposed under the Alternative 1 scenario. A copy of the forecast model is included in **Appendix G**.

Table 5-1 presents a more detailed trip generation summary for the community with the land uses included in the Alternative 1 of the Community Plan Update. As shown in the table, the land use designation of Alternative 1 would generate a total of approximately 137,267 average daily trips, including 8,540 (5,216 in and 3,324 out) morning peak-hour trips and 13,692 (76,213 in and 7,479 out) afternoon peak-hour trips.

Modeled forecast volumes experienced some minor refinements. In the process of calibrating the existing model, it was concluded that three post model adjustments should be made to the 2030 traffic models. Traffic volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. Traffic volumes on 28th Street and 32nd between Main Street and Harbor Drive were increased by 4,000 ADT and 600 ADT, respectively, per calibration between base year model and actual traffic volume counts. Minor smoothing of traffic volumes were made to reflect the gross nature of model loadings from TAZs. Volumes for streets that were not in the traffic model were estimated applying a growth rate generally consistent with other facilities in the community. Resulting daily traffic volumes for the Adopted Community Plan are depicted in **Figure 5-1**.

To estimate the turning movement volumes at the study intersections, the existing turning movements at each respective study intersection were factored up based on the projected Average Daily Traffic (ADT) volumes along each segment shown in the model plot. Each respective movement was derived using an iterative approach that balances the inflows and outflows for each approach. The input values include the existing turning movement volumes and future year peak-hour approach and departure volumes along each leg of the intersection. The future peak-hour approach volumes would be estimated by applying the existing peak-hour factor (K-factor) and directional distributional percentage (D-factor) to the future ADT volumes along each approach. A more detailed description of the methodology used to forecast turning movement volumes is contained in National Cooperative Highway Research Program (NCHRP) 255 Highway Traffic Data for Urbanized Area Project Planning and Design, Chapter 8. An Excel model computes the forecast turning volumes from existing turning movement volumes and forecasted approach and departure volumes by the techniques described in NCHRP 255. A copy of the NCHRP 255 Report and excel calculation worksheets are included in **Appendix H**. **Figure 5-2** displays the Horizon Year peak-hour turning movements used in the analysis of Alternative 1.

TABLE 5-1
TRIP GENERATION SUMMARY (ALTERNATIVE 1 - TOTAL)

Land Use	Units[1]		Daily Trips	AM Peak-Hour			PM Peak-Hour		
				In	Out	Total	In	Out	Total
ACTIVE PARK	9.10	acre	398	0	16	16	0	32	32
ELEMENTARY SCHOOL (stu)	529.00	stu	1,539	286	191	477	117	175	292
FAST FOOD REST. (ksf)	19.50	ksf	13,675	328	219	547	547	548	1,095
FIRE OR POLICE STATION	1.00	site	229	31	3	34	3	31	34
HEAVY INDUSTRY (ksf)	3,130.40	ksf	12,682	1,256	139	1,395	304	1,218	1,522
JUNIOR COLLEGE (ksf)	70.00	ksf	1,295	0	0	0	0	0	0
LIGHT INDUSTRY (ksf)	79.50	ksf	1,272	126	14	140	31	122	153
LOW RISE OFFICE(FT3917)(ksf)	258.50	ksf	3,467	406	45	451	97	388	485
LOW RISE OFFICE(FT3921)(ksf)	162.90	ksf	2,435	285	32	317	68	273	341
LOW RISE OFFICE(FT3957)(ksf)	81.90	ksf	1,450	170	19	189	41	162	203
LOW RISE OFFICE(FT3988)(ksf)	121.30	ksf	1,943	227	26	253	54	218	272
LOW RISE OFFICE(FT3985)(ksf)	15.70	ksf	414	48	6	54	12	46	58
LUMBER STORE (mtro)(ksf)	0.00	ksf	0	0	0	0	0	0	0
MARINA (CCDC)	0.00	acre	0	0	0	0	0	0	0
MARINE TERMINAL	0.00	acre	0	0	0	0	0	0	0
MILITARY USE (Gate 9 - site)	0.00	site	0	0	0	0	0	0	0
MULTI-FAMILY(BL)(over 20DU)	4,203	du	25,377	407	1,622	2,029	1,599	686	2,285
NEIGHBORHOOD SHOP CNT (ksf)	175.10	ksf	20,813	500	333	833	1,146	1,143	2,289
OTHER HEALTH CARE (ksf)	112.70	ksf	5,610	269	67	336	168	393	561
OTHER PUBLIC SERVICE	0.20	acre	58	5	0	5	2	5	7
OTHER TRANSPORTATION	5.10	acre	433	42	19	61	19	46	65
PARKING	0.50	cre	0	0	0	0	0	0	0
RAIL STATION (BL)	0.60	acre	181	0	0	0	0	0	0
REGIONAL COMM.(Mtro)(ksf)	0.00	ksf	0	0	0	0	0	0	0
SINGLE FAMILY (BL)	69	du	607	9	38	47	43	19	62
SPECIALTY COMM.(mtro)(ksf)	0.00	ksf	0	0	0	0	0	0	0
STREETFRONT COMMERCIAL (ksf)	1,071.30	ksf	42,930	773	514	1,287	1,933	1,930	3,863
WAREHOUSING (ksf)	90.60	ksf	459	48	21	69	29	44	73
WHOLESALE TRADE	0.00	acre	0	0	0	0	0	0	0
Total			**137,267**	**5,216**	**3,324**	**8,540**	**6,213**	**7,479**	**13,692**

Note:
1. du = Dwelling Unit; stu = Students; ksf = Thousand square feet

K:\SND_TPTO\095707000\Excel\[707000TG.xlsm]Alt 1 Totals (LU)

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LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

(1) ADT volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. This adjustment was based on existing traffic patterns .

(2) ADT volumes along 28th Street between Boston Avenue and Harbor Drive were increased by 4,000 ADT as recommended during the traffic model calibration process.

(3) ADT volumes along 32th Street between Main Street and Harbor Drive were increased by 600 ADT as recommended during the traffic model calibration process.

0 500 1000 2000 feet

N

Figure 5-1: Horizon Year (2030) ADT Volumes (Alternative 1)

January 2011

1 136 / 77 ⇦ 250 / 490 ⇩ 47 / 40 ⇨ 16th St 114 / 122 ⇦ 295 / 488 ⇧ 24 / 0 ⇨ Commercial St 16 / 64 ⇦ 225 / 348 ⇩ 26 / 15 ⇨ 13 / 21 ⇦ 340 / 670 ⇧ 16 / 26 ⇨	**2** 91 / 70 ⇦ 36 / 25 ⇩ 56 / 127 ⇨ 16th St 34 / 25 ⇦ 495 / 458 ⇧ 3 / 3 ⇨ National Ave 40 / 91 ⇦ 194 / 347 ⇩ 40 / 31 ⇨ 40 / 61 ⇦ 34 / 41 ⇧ 12 / 7 ⇨	**3** 58 / 39 ⇦ 40 / 23 ⇩ 15 / 6 ⇨ Sigsbee St 36 / 27 ⇦ 367 / 246 ⇧ 16 / 9 ⇨ National Ave 10 / 34 ⇦ 140 / 315 ⇩ 51 / 62 ⇨ 63 / 75 ⇦ 26 / 61 ⇧ 58 / 13 ⇨	**4** 17 / 8 ⇦ 79 / 38 ⇩ 33 / 16 ⇨ Sigsbee St 51 / 23 ⇦ 80 / 50 ⇧ 15 / 9 ⇨ Newton Ave 6 / 9 ⇦ 48 / 50 ⇩ 19 / 29 ⇨ 24 / 20 ⇦ 111 / 91 ⇧ 34 / 12 ⇨
5 3 / 2 ⇦ 96 / 60 ⇩ 31 / 20 ⇨ Sigsbee St 61 / 31 ⇦ 8 / 0 ⇧ 31 / 38 ⇨ Main St 3 / 4 ⇦ 8 / 2 ⇩ 6 / 13 ⇨ 5 / 0 ⇦ 97 / 98 ⇧ 24 / 12 ⇨	**6** 110 / 80 ⇦ 110 / 100 ⇨ Sigsbee St 20 / 100 ⇦ 1670 / 780 ⇧ Harbor Dr 60 / 160 ⇦ 480 / 1945 ⇩	**7** 47 / 38 ⇦ 236 / 110 ⇩ 259 / 272 ⇨ I-5 SB Off-Ramp 202 / 154 ⇦ 87 / 41 ⇧ Logan Ave 170 / 515 ⇦ 24 / 69 ⇩ Beardsley St 31 / 56 ⇦ 68 / 122 ⇧	**8** 23 / 11 ⇦ 138 / 83 ⇩ 216 / 189 ⇨ Beardsley St 67 / 77 ⇦ 421 / 347 ⇧ 241 / 113 ⇨ National Ave 8 / 19 ⇦ 238 / 625 ⇩ 8 / 2 ⇨ 4 / 9 ⇦ 30 / 43 ⇧ 50 / 134 ⇨
9 41 / 12 ⇦ 156 / 94 ⇩ 56 / 46 ⇨ Beardsley St 15 / 19 ⇦ 82 / 93 ⇧ 29 / 13 ⇨ Newton Ave 18 / 7 ⇦ 74 / 60 ⇩ 9 / 4 ⇨ 13 / 5 ⇦ 23 / 71 ⇧ 19 / 37 ⇨	**10** 52 / 17 ⇦ 57 / 39 ⇩ 275 / 144 ⇨ Beardsley St 76 / 79 ⇦ 109 / 33 ⇧ 163 / 78 ⇨ Main St 15 / 22 ⇦ 74 / 64 ⇩ 4 / 4 ⇨ 2 / 0 ⇦ 8 / 25 ⇧ 52 / 109 ⇨	**11** 95 / 35 ⇦ 48 / 40 ⇨ Beardsley St 30 / 20 ⇦ 1610 / 860 ⇧ Harbor Dr 22 / 95 ⇦ 580 / 1950 ⇩	**12** 31 / 40 ⇦ 350 / 330 ⇩ Cesar Chavez Pkwy 192 / 154 ⇦ 259 / 157 ⇧ 613 / 517 ⇨ Kearney Ave 257 / 382 ⇦ 262 / 345 ⇧

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

13

82 / 52	Cesar Chavez Pkwy-SR-75 On-ramp	76 / 90
909 / 694		325 / 280
70 / 114		100 / 120
		Logan Ave
140 / 130		100 / 140
280 / 420		300 / 506
120 / 230		280 / 670

see note below

14

310 / 410	Cesar Chavez Pkwy	120 / 275
745 / 550		350 / 270
70 / 120		120 / 110
		National Ave
190 / 300		90 / 120
250 / 400		580 / 1000
180 / 290		50 / 100

15

140 / 55	Cesar Chavez Pkwy	65 / 120
810 / 890		50 / 70
95 / 165		40 / 90
		Newton Ave
75 / 135		40 / 40
40 / 130		410 / 795
60 / 70		30 / 60

16

180 / 260	Cesar Chavez Pkwy	190 / 270
580 / 540		330 / 230
150 / 250		70 / 70
		Main St
150 / 120		70 / 70
190 / 290		340 / 640
15 / 25		90 / 180

17

403 / 324	Cesar Chavez Pkwy	95 / 43
83 / 30		1047 / 465
72 / 33		80 / 50
		Harbor Dr
118 / 468		10 / 50
398 / 1500		14 / 63
40 / 40		27 / 35

18

	I-5 SB On-Ramp	84 / 73
		127 / 158
		Logan Ave
497 / 933		0 / 11
182 / 527		2 / 2
2 / 8		2 / 3
	Park Dwy	

19

280 / 238	SR-75 Off-Ramp	276 / 260
27 / 126		National Ave
128 / 308		

20

30 / 72	Evans St	26 / 23
18 / 22		226 / 192
9 / 45		37 / 32
		National Ave
17 / 37		28 / 13
115 / 390		49 / 18
22 / 36		24 / 62

21

37 / 21	Evans St	30 / 27
30 / 28		63 / 70
7 / 30		16 / 27
		Newton Ave
23 / 24		27 / 7
87 / 124		58 / 47
22 / 41		31 / 28

22

45 / 16	Evans St	65 / 62
56 / 75		350 / 239
		Main St
33 / 12		
153 / 270		

23

14 / 13	Sampson St	56 / 54
218 / 256		79 / 87
62 / 66		91 / 143
		Logan Ave
110 / 108		219 / 235
224 / 255		332 / 400
163 / 203		147 / 101

24

118 / 107	Sampson St	100 / 100
109 / 86		104 / 70
59 / 123		48 / 21
		National Ave
75 / 162		7 / 13
50 / 111		95 / 185
15 / 12		16 / 30

The northbounf right-turn volumes for Logan Avenue/SR-75 and Cesar Chavez Parkway intersection include the vehicles turning north from Cesar Chavez Parkway using the free northbound right-turn lane. The intersection analysis did not include a reduction for these volumes.

Legend

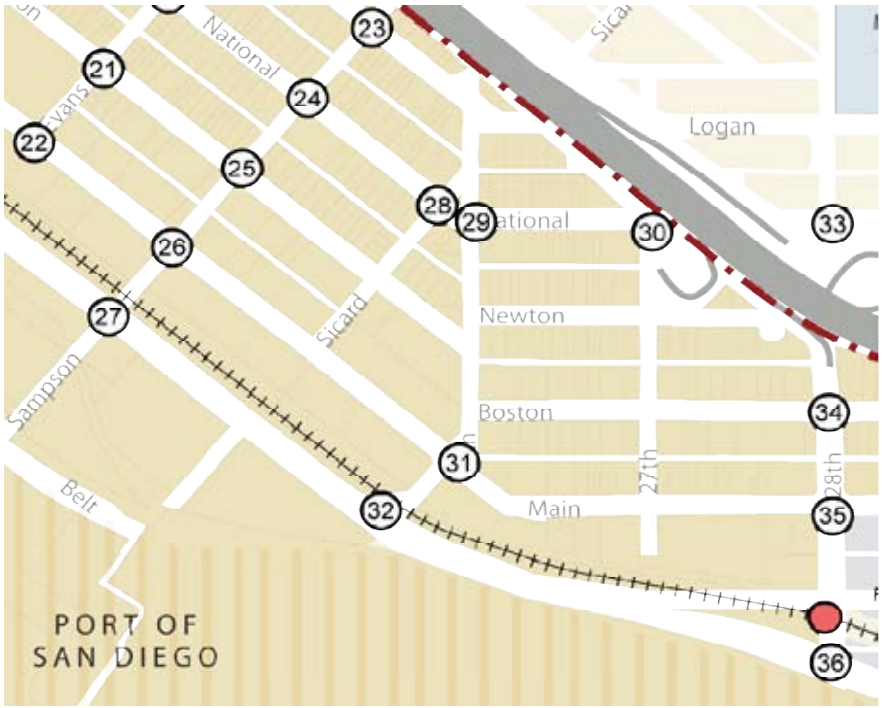
X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

FIGURE 5-2.1

Horizon Year (2030) Peak-Hour Volumes (Alternative 1) (cont.)

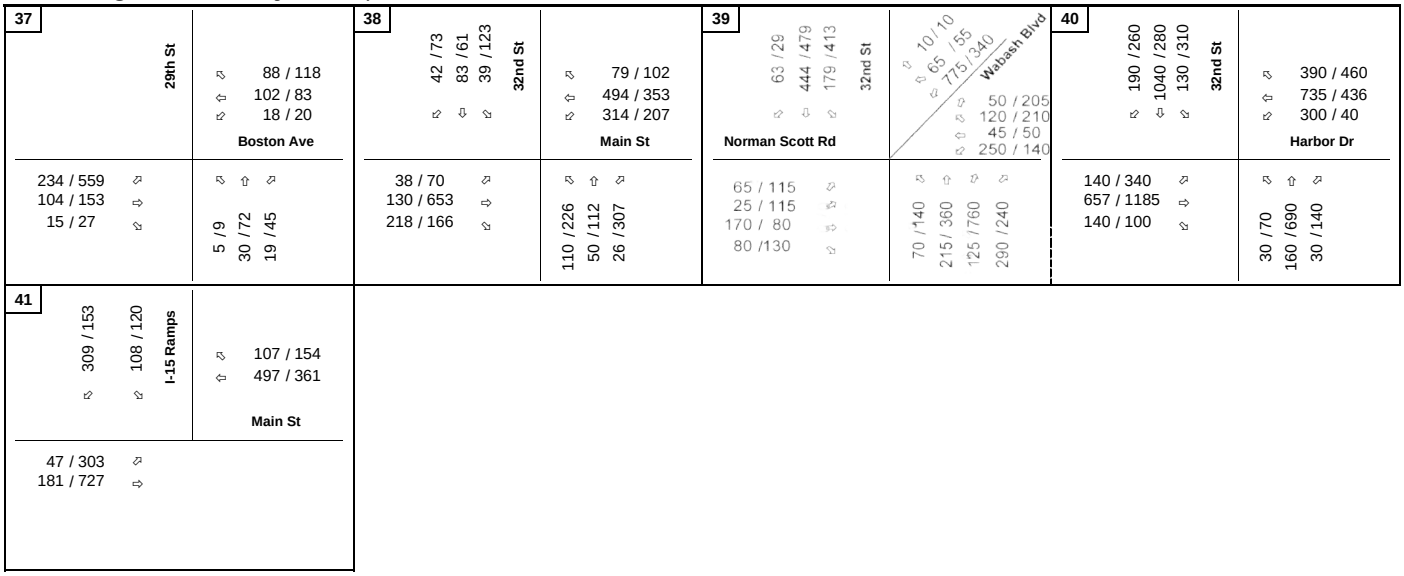
25 37 / 19 ⇦ 99 / 66 ⇩ 18 / 19 ⇙ **Sampson St** ⇗ 35 / 31 ⇦⇧ 81 / 76 ⇖ 15 / 0 **Newton Ave** 21 / 34 ⇗ 95 / 119 ⇨ 16 / 24 ⇙ ⇖ ⇧ ⇗ 7 / 13 40 / 90 31 / 20	**26** 172 / 85 ⇦ 59 / 27 ⇩ 10 / 8 ⇙ **Sampson St** ⇗ 16 / 8 ⇦⇧ 218 / 83 ⇖ 53 / 27 **Main St** 70 / 118 ⇗ 62 / 142 ⇨ 51 / 33 ⇙ ⇖ ⇧ ⇗ 50 / 60 31 / 46 35 / 49	**27** 32 / 26 ⇦ 75 / 66 ⇩ 64 / 58 ⇙ **Sampson St** ⇗ 44 / 62 ⇦⇧ 1284 / 488 ⇖ 75 / 19 **Harbor Dr** 10 / 56 ⇗ 716 / 1500 ⇨ 28 / 5 ⇙ ⇖ ⇧ ⇗ 14 / 23 61 / 111 38 / 41	**28** 36 / 42 ⇦ 41 / 18 ⇩ 4 / 4 ⇙ **Sicard St** ⇗ 3 / 1 ⇦⇧ 163 / 125 ⇖ 27 / 8 **National Ave** 21 / 40 ⇗ 79 / 169 ⇨ 36 / 38 ⇙ ⇖ ⇧ ⇗ 48 / 33 48 / 46 12 / 17
29 15 / 23 ⇦ 38 / 68 ⇩ 51 / 90 ⇙ **26th St** ⇗ 48 / 55 ⇦⇧ 223 / 124 ⇖ 36 / 35 **National Ave** 28 / 33 ⇗ 66 / 156 ⇨ 36 / 65 ⇙ ⇖ ⇧ ⇗ 27 / 46 47 / 60 15 / 34	**30** ⇗ 269 / 234 ⇦⇧ 42 / 31 **National Ave** 146 / 368 ⇗ 18 / 23 ⇙ **I-5 SB Off-ramp** ⇖ ⇗ 72 / 94 149 / 296	**31** 13 / 8 ⇦ 22 / 12 ⇩ 16 / 28 ⇙ **26th St** ⇗ 26 / 29 ⇦⇧ 161 / 50 ⇖ 143 / 49 **Main St** 10 / 14 ⇗ 50 / 180 ⇨ 17 / 16 ⇙ ⇖ ⇧ ⇗ 28 / 7 33 / 61 91 / 200	**32** 164 / 75 ⇦ 25 / 10 ⇩ 12 / 16 ⇙ **Schley St** ⇗ 17 / 39 ⇦⇧ 1422 / 538 **Harbor Dr** 124 / 203 ⇗ 454 / 1400 ⇨
33 307 / 102 ⇦ 205 / 210 ⇩ 115 / 199 ⇙ **28th St** ⇗ 123 / 240 ⇦⇧ 628 / 427 ⇖ 192 / 463 **National Ave** 106 / 94 ⇗ 258 / 612 ⇨ 18 / 85 ⇙ ⇖ ⇧ ⇗ 33 / 18 98 / 98 86 / 168	**34** 310 / 270 ⇦ 860 / 980 ⇩ 160 / 330 ⇙ **28th St** ⇗ 120 / 70 ⇦⇧ 70 / 70 ⇖ 45 / 60 **Boston Ave** 230 / 320 ⇗ 280 / 180 ⇨ 140 / 160 ⇙ ⇖ ⇧ ⇗ 90 / 50 700 / 1050 90 / 200	**35** 250 / 550 ⇦ 750 / 500 ⇩ 180 / 280 ⇙ **28th St** ⇗ 180 / 280 ⇦⇧ 490 / 290 ⇖ 90 / 150 **Main St** 190 / 270 ⇗ 300 / 600 ⇨ 50 / 40 ⇙ ⇖ ⇧ ⇗ 45 / 65 220 / 500 70 / 180	**36** 25 / 13 ⇦ 15 / 12 ⇩ 375 / 505 ⇙ **28th St** ⇗ 116 / 278 ⇦⇧ 822 / 474 ⇖ 17 / 14 **Harbor Dr** 110 / 290 ⇗ 560 / 1120 ⇨ 4 / 2 ⇙ ⇖ ⇧ ⇗ 0 / 10 6 / 134 2 / 0



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Intersection Analysis

Table 5-2 displays the LOS analysis results for the study intersections under Horizon Year with the Barrio Logan Community Plan Update conditions for Alternative 1 scenario. As shown in the table, all intersections would operate at LOS D or better during both peak-hour periods, with the exception of the following fourteen intersections:

- National Avenue and 16th Street (LOS F during both peak-hour periods);
- Harbor Drive and Sigsbee Street (LOS F during both peak-hour periods);
- Logan Avenue and Beardsley Street/I-5 SB off-ramp (LOS F during the afternoon peak-hour period);
- National Avenue and Beardsley Street (LOS E and LOS F in the morning and afternoon peak-hour periods, respectively);
- Harbor Drive and Beardsley Street (LOS F during both peak-hour periods);
- Logan Avenue and Cesar Chavez Parkway (LOS E in the afternoon peak-hour period);
- Harbor Drive and Cesar Chavez Parkway (LOS E and LOS F in the morning and afternoon peak-hour periods, respectively);
- Logan Avenue and Sampson Street (LOS F during both peak-hour periods);
- Harbor Drive and Schley Street (LOS E in the morning peak-hour period);
- National Avenue and 28th Street (LOS F and LOS E in the morning and afternoon peak-hour periods, respectively);
- Harbor Drive and 28th Street (LOS F in the afternoon peak-hour period);
- Boston Avenue and I-5 Southbound On-ramp (LOS F in the afternoon peak-hour period);
- 32nd Street and Wabash Street (LOS F during both peak-hour periods); and
- Harbor Drive and 32nd Street (LOS F during both peak-hour periods).

The Barrio Logan Community Plan Update Alternative 1 is considered to have a cumulative traffic related impact at all fourteen intersections listed above.

Appendix D contains the LOS calculation worksheets.

TABLE 5-2
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 1
PEAK-HOUR INTERSECTION LOS SUMMARY

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING		ALTERNATIVE 1			
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	Δ (c)	SIGNIFICANT?
1	Commercial St & 16th St	Signal	AM	19.4	B	12.8	B	-6.6	NO
			PM	24.6	C	27.7	C	3.1	NO
2	National Ave & 16th St	Two-Way Stop	AM	11.7	B	51.7 (NB)	**F**	40.0	**YES**
			PM	12.5	B	232.1 (SB)	**F**	219.6	**YES**
3	National Ave & Sigsbee St	Signal	AM	9.6	A	8.1	A	-1.5	NO
			PM	9.6	A	7.3	A	-2.3	NO
4	Newton Ave & Sigsbee St	All-Way Stop	AM	7.9	A	8.8	A	0.9	NO
			PM	7.6	A	8.0	A	0.4	NO
5	Main St & Sigsbee St	All-Way Stop	AM	7.4	A	8.1	A	0.7	NO
			PM	7.4	A	7.8	A	0.4	NO
6	Harbor Dr & Sigsbee St	One-Way Stop	AM	17.0	C	ECL (SB)	**F**	--	**YES**
			PM	18.1	C	ECL (SB)	**F**	--	**YES**
7	Logan Ave & Beardsley St- I-5 SB ramp	All-Way Stop	AM	11.1	B	33.1	D	22.0	NO
			PM	11.9	B	81.9 (EB)	**F**	70.0	**YES**
8	National Ave & Beardsley St	All-Way Stop	AM	8.5	A	39.9	**E**	31.4	**YES**
			PM	8.7	A	129.0 (EBL)	**F**	120.3	**YES**
9	Newton Ave & Beardsley St	All-Way Stop	AM	8.5	A	9.4	A	0.9	NO
			PM	8.2	A	8.6	A	0.4	NO
10	Main St & Beardsley St	All-Way Stop	AM	8.5	A	15.5	C	7.0	NO
			PM	7.8	A	9.5	A	1.7	NO
11	Harbor Dr & Beardsley St	One-Way Stop	AM	20.3	C	173.7 (SB)	**F**	153.4	**YES**
			PM	18.3	C	51.6 (SB)	**F**	33.3	**YES**
12	Kearney St & Cesar E. Chavez Pkwy	Signal	AM	21.7	C	46.6	D	24.9	NO
			PM	21.2	C	34.0	C	12.8	NO
13	Logan Ave & Cesar E. Chavez Pkwy	Signal	AM	14.0	B	31.1	C	17.1	NO
			PM	13.0	B	62.1	**E**	49.1	**YES**
14	National Ave & Cesar E. Chavez Pkwy	Signal	AM	11.0	B	30.4	C	19.4	NO
			PM	14.0	B	52.4	D	38.4	NO
15	Newton Ave & Cesar E. Chavez Pkwy	Signal	AM	8.1	A	9.1	A	1.0	NO
			PM	9.1	A	15.3	B	6.2	NO
16	Main St & Cesar E. Chavez Pkwy	Signal	AM	9.6	A	39.3	D	29.7	NO
			PM	8.7	A	42.5	D	33.8	NO
17	Harbor Dr & Cesar E. Chavez Pkwy	Signal	AM	33.2	C	77.5	**E**	44.3	**YES**
			PM	43.6	D	85.2	**F**	41.6	**YES**
18	Logan Ave & I-5 SB On-ramp	One-Way Stop	AM	8.8	A	9.5	A	0.7	NO
			PM	9.9	A	16.3	C	6.4	NO
19	National Ave & SR-75 Off-ramp	One-Way Stop	AM	10.1	B	13.2	B	3.1	NO
			PM	11.0	B	13.8	B	2.8	NO
20	National Ave & Evans St	Two-Way Stop	AM	11.2	B	14.6	B	3.4	NO
			PM	11.9	B	21.0	C	9.1	NO

Notes:
Bold values indicate intersections operating at LOS E or F.
SB= Southbound; NB= Northbound; EB=Eastbound; WB=Westbound
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 5-2
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 1
PEAK-HOUR INTERSECTION LOS SUMMARY (cont.)

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING		ALTERNATIVE 1			
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	Δ	SIGNIFICANT?
21	Newton Ave & Evans St	Two-Way Stop	AM	9.8	A	11.8	B	2.0	NO
			PM	9.8	A	12.4	B	2.6	NO
22	Main St & Evans St	One-Way Stop	AM	9.3	A	14.4	B	5.1	NO
			PM	9.6	A	14.3	B	4.7	NO
23	Logan Ave & Sampson St	All-Way Stop	AM	10.0	B	143.5 (WBT)	**F**	133.5	**YES**
			PM	10.7	B	197.1 (NB)	**F**	186.4	**YES**
24	National Ave & Sampson St	Signal	AM	10.3	B	8.1	A	-2.2	NO
			PM	9.4	A	9.1	A	-0.3	NO
25	Newton Ave & Sampson St	All-Way Stop	AM	7.5	A	8.7	A	1.2	NO
			PM	7.6	A	8.8	A	1.2	NO
26	Main St & Sampson St	All-Way Stop	AM	8.6	A	11.5	B	2.9	NO
			PM	8.2	A	10.4	B	2.2	NO
27	Harbor Dr & Sampson St	Signal	AM	23.1	C	29.2	C	6.1	NO
			PM	27.1	C	41.7	D	14.6	NO
28	National Ave & Sicard St	Two-Way Stop	AM	12.0	B	14.3	B	2.3	NO
			PM	11.4	B	14.0	B	2.6	NO
29	National Ave & 26th St	All-Way Stop	AM	8.7	A	9.5	A	0.8	NO
			PM	8.8	A	10.4	B	1.6	NO
30	National Ave & I-5 SB Off-ramp	One-Way Stop	AM	11.5	B	12.7	B	1.2	NO
			PM	17.8	C	20.9	C	3.1	NO
31	Main St & 26th St-Schley St	All-Way Stop	AM	7.7	A	8.2	A	0.5	NO
			PM	8.0	A	8.0	A	0.0	NO
32	Harbor Dr & Schley St	Signal	AM	19.6	B	76.2	**E**	56.6	**YES**
			PM	14.1	B	28.8	C	14.7	NO
33	National Ave & 28th St	Signal	AM	35.3	D	81.2	**F**	45.9	**YES**
			PM	29.8	C	70.8	**E**	41.0	**YES**
34	Boston Ave & 28th St (c)	Signal	AM	10.6	B	36.9	D	26.3	NO
			PM	17.7	B	45.1	D	27.4	NO
35	Main St & 28th St (c)	Signal	AM	23.4	C	31.6	C	8.2	NO
			PM	29.2	C	40.8	D	11.6	NO
36	Harbor Dr & 28th St	Signal	AM	34.3	C	43.3	D	9.0	NO
			PM	45.6	D	92.2	**F**	46.6	**YES**
37	Boston Ave & I-5 SB On-ramp-29th St	One-Way Stop	AM	17.3	C	21.0	C	3.7	NO
			PM	260.7	**F**	523.6 NB	**F**	262.9	**YES**
38	Main St & 32nd St	Signal	AM	21.9	C	22.7	C	0.8	NO
			PM	29.2	C	33.2	C	4.0	NO
39	32nd St & Wabash St	Signal	AM	38.5	D	112.7	**F**	74.2	**YES**
			PM	32.0	C	85.1	**F**	53.1	**YES**
40	Harbor Dr & 32nd St	Signal	AM	31.7	C	146.8	**F**	115.1	**YES**
			PM	51.1	D	92.3	**F**	41.2	**YES**
41	Main St & I-15 Ramps	Signal	AM	10.8	B	11.2	B	0.4	NO
			PM	11.5	B	12.5	B	1.0	NO

Notes:
Bold values indicate intersections operating at LOS E or F.
SB= Southbound; NB= Northbound; EB=Eastbound; WB=Westbound
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0
(c) The intersection may not operate as well as indicated due to potential queuing. See text of the report for additional explanation.

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Roadway Segment Analysis

Table 5-3 displays the roadway segment analysis under the Horizon Year (2030) conditions for the Alternative 1 scenario. As shown in the table, based on planning level analysis and on ADT volumes, the Alternative 1 scenario would be considered having a cumulative roadway segment impact along the following roadway segments:

- Cesar Chavez Parkway between Logan Avenue and National Avenue (LOS E);
- Cesar Chavez Parkway between National Avenue and Newton Avenue (LOS F);
- Cesar Chavez Parkway between Newton Avenue and Main Street (LOS E);
- Sampson Street between National Avenue and Harbor Drive (LOS E);
- 26th Street between National Avenue and Main Street (LOS E);
- 28th Street between I-5 and Boston Avenue (LOS F);
- 32nd Street between Main Street and Wabash Boulevard (LOS E);
- Vesta Street between Main Street and I-5 Ramps (LOS E);
- Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (LOS F);
- National Avenue between Beardsley Street and Cesar Chavez Parkway (LOS F);
- National Avenue between Cesar Chavez Parkway and Evans Street (LOS F);
- National Avenue between Sicard Street and 27th Street (LOS F);
- Boston Avenue between 28th Street and 29th Street (LOS F);
- Boston Avenue between 29th Street and 32nd Street (LOS F);
- Main Street between Cesar Chavez Parkway and Evans Street (LOS E);
- Main Street between Evans Street and 26th Street (LOS E);
- Main Street between 26th Street and 28th Street (LOS F);
- Main Street between 28th Street and 29th Street (LOS F);
- Main Street between 29th Street and 32nd Street (LOS F);
- Main Street between 32nd Street and Rigel Street (LOS F);
- Main Street between Rigel Street and Una Street (LOS F); and
- Main Street between Una Street and I-5 SB Off-ramp (LOS F)

Freeway Segment Analysis

Table 5-4 displays the freeway segments analysis under the Horizon Year (2030) conditions for the Alternative 1 scenario. As shown in the table, the Alternative 1 scenario would have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction (LOS F and LOS E for the morning and afternoon peak-hour periods, respectively);
- I-5 from SR-75 Junction to 28th Street (LOS F and LOS E for the morning and afternoon peak-hour periods, respectively);
- I-5 from 28th Street to I-15 Interchange (LOS E during the morning peak-hour periods);
- I-5 from I-15 Interchange to Division Street (LOS F both peak-hour periods); and
- I-15 from I-5 Interchange to Ocean View Boulevard (LOS F during the afternoon peak-hour period)

TABLE 5-3
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 1
ROADWAY SEGMENT LOS SUMMARY

ROADWAY SEGMENT	ROADWAY CLASSIFICATION (a)	HIGHEST ACCEPTABLE LOS D VOLUME	LOS E CAPACITY	EXISTING CONDITIONS			YEAR 2030 (ALTERNATIVE 1)			Δ in V/C	SIGNIFICANT?
				ADT	V/C RATIO (b)	LOS	ADT	V/C RATIO (b)	LOS		
Cesar Chavez Pkwy											
north of Logan Ave	3 Lane Collector (with TWLT)	18,750	22,500	14,170	0.630	C	14,900	0.662	C	0.032	NO
between Logan Ave and National Ave	4 Lane Collector (with TWLT)	25,000	30,000	15,300	0.510	C	25,200	0.840	**E**	0.330	**YES**
between National Ave and Newton Ave	3 Lane Collector (with TWLT)	18,750	22,500	12,494	0.555	C	24,300	1.080	**F**	0.525	**YES**
between Newton Ave and Main St	3 Lane Collector (with TWLT)	18,750	22,500	11,812	0.525	C	20,000	0.889	**E**	0.364	**YES**
between Main St and Harbor Dr	4 Lane Collector (with TWLT)	25,000	30,000	10,381	0.346	B	12,900	0.430	B	0.084	NO
Sampson St											
between I-5 and National Ave	2 Lane Collector (No TWLT)	6,500	8,000	3,086	0.386	B	5,800	0.725	D	0.339	NO
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	6,500	8,000	2,561	0.320	B	7,800	0.975	**E**	0.655	**YES**
26th St											
between National Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	2,380	0.298	A	7,000	0.875	**E**	0.577	**YES**
28th St											
between I-5 and Boston Ave	3 Lane Collector (with TWLT)	18,750	22,500	22,000	0.978	**E**	34,500	1.533	**F**	0.555	**YES**
between Boston Ave and Main St	4 Lane Collector (with TWLT)	25,000	30,000	18,856	0.629	C	24,200	0.807	D	0.178	NO
between Main St and Harbor Dr	4 Lane Major Arterial	35,000	40,000	16,658	0.416	B	23,300	0.583	C	0.167	NO
29th St											
between Boston Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	1,500	0.188	A	5,300	0.663	D	0.476	NO
32nd St											
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	13,000	15,000	13,172	0.878	**E**	14,500	0.967	**E**	0.089	**YES**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	35,000	40,000	19,785	0.495	B	25,800	0.645	C	0.150	NO
Rigel St											
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	1,723	0.215	A	1,400	0.175	A	-0.040	NO
Vesta St											
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	4,900	0.613	C	6,700	0.838	**E**	0.225	**YES**
Logan Ave											
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	3,659	0.244	A	10,500	0.700	D	0.456	NO
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	7,478	0.499	C	16,500	1.100	**F**	0.601	**YES**
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	2,954	0.197	A	5,700	0.380	B	0.183	NO
National Ave											
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	2,603	0.174	A	12,600	0.840	D	0.666	NO
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	13,000	15,000	4,500	0.300	A	12,600	0.840	D	0.540	NO
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	3,511	0.439	C	17,000	2.125	**F**	1.686	**YES**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	4,643	0.580	C	9,300	1.163	**F**	0.583	**YES**
between Evans St and Sicard St	2 Lane Collector (with TWLT)	13,000	15,000	3,677	0.245	A	8,700	0.580	C	0.335	NO
between Sicard St and 27th St	2 Lane Collector (No TWLT)	6,500	8,000	8,445	1.056	**F**	10,200	1.275	**F**	0.219	**YES**
Boston Ave											
between 28th and 29th St	2 Lane Collector (No TWLT)	6,500	8,000	2,420	0.303	A	15,000	1.875	**F**	1.572	**YES**
between 29th St and 32nd St	2 Lane Collector (No TWLT)	6,500	8,000	2,420	0.303	A	8,300	1.038	**F**	0.735	**YES**
Main St											
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	3,566	0.446	C	4,200	0.525	C	0.079	NO
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	2,598	0.325	B	7,900	0.988	**E**	0.663	**YES**
between Evans St and 26th St	2 Lane Collector (No TWLT)	6,500	8,000	2,598	0.325	C	12,000	1.500	**E**	1.175	**YES**
between 26th St and 28th St	3 Lane Collector (No TWLT)	9,750	11,250	7,435	0.661	C	12,700	1.129	**F**	0.468	**YES**
between 28th and 29th St	4 Lane Collector (No TWLT)	13,000	15,000	11,266	0.751	**F**	12,400	0.827	**F**	0.076	**YES**
between 29th St and 32nd St	3 Lane Collector (No TWLT)	9,750	11,250	11,266	1.001	**F**	18,700	1.662	**F**	0.661	**YES**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	13,000	15,000	21,100	1.407	**F**	26,100	1.740	**F**	0.333	**YES**
between Rigel St and Una St	2 Lane Collector (with TWLT)	13,000	15,000	15,944	1.063	**F**	20,600	1.373	**F**	0.310	**YES**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	13,000	15,000	15,177	1.012	**F**	18,100	1.207	**F**	0.195	**YES**
Harbor Dr											
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	35,000	40,000	12,094	0.302	A	30,400	0.760	D	0.458	NO
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	35,000	40,000	13,778	0.344	A	25,500	0.638	C	0.294	NO
between Sampson St and Schley St	4 Lane Major Arterial	35,000	40,000	9,080	0.227	A	23,400	0.585	C	0.358	NO
between Schley St and 28th St	4 Lane Major Arterial	35,000	40,000	8,816	0.220	A	18,800	0.470	B	0.250	NO
between 28th St and 32nd St	4 Lane Major Arterial	35,000	40,000	18,900	0.473	B	26,900	0.673	C	0.200	NO
between 32nd St and Vesta St	4 Lane Major Arterial	35,000	40,000	16,320	0.408	B	31,500	0.788	D	0.380	NO

Notes:
Bold values indicate roadway segments operating at LOS E or F.
(a) Roadway Functional Classifications are based on field observations.
(b) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

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TABLE 5-4

HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 1

FREEWAY SEGMENT LOS SUMMARY

FREEWAY SEGMENT	DIRECTION	EXISTING						ALTERNATIVE 1						V/C RATIO Δ	SIGNIFICANT?
		NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS	NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS		
AM PEAK															
I-5															
J Street to SR-75 Junction	NB	4 M	9,400	164,000	7,793	0.829	D	4 M + 1 H	11,000	243,100	11,551	1.050	**F0**	0.22	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000	7,603	0.809	D	4 M + 1 H	11,000	241,300	11,466	1.042	**F0**	0.23	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
28th Street to I-15 Interchange	NB	4 M	9,400	154,000	7,317	0.778	C	4 M + 1 H	11,000	221,600	10,530	0.957	**E**	0.18	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
I-15 Interchange to Division St	NB	4 M	9,400	188,000	8,933	0.950	**E**	4 M + 1 H	11,000	261,700	12,435	1.130	**F0**	0.18	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
I-15															--
I-5 Interchange to Ocean View Blv	NB	3 M	7,050	95,000				3 M	7,050	129,700					--
	SB	3 M	7,050		4,722	0.670	C	3 M	7,050		6,447	0.914	D	0.24	--
SR-75 (d)															--
I-5 Interchange to Glorietta Blvd	WB	2 M	4,700	73,000				2 M	4,700	93,500					--
	EB	3 M	7,050		4,629	0.657	C	3 M	7,050		5,929	0.841	D	0.18	--
PM PEAK															
I-5															
J Street to SR-75 Junction	NB	4 M	9,400	164,000				4 M + 1 H	11,000	243,100					--
	SB	4 M	9,400		7,036	0.749	C	4 M + 1 H	11,000		10,430	0.948	**E**	0.20	**YES**
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000				4 M + 1 H	11,000	241,300					--
	SB	4 M	9,400		6,865	0.730	C	4 M + 1 H	11,000		10,353	0.941	**E**	0.21	**YES**
28th Street to I-15 Interchange	NB	4 M	9,400	154,000				4 M + 1 H	11,000	221,600					--
	SB	4 M	9,400		6,607	0.703	C	4 M + 1 H	11,000		9,508	0.864	D	0.16	--
I-15 Interchange to Division St	NB	4 M	9,400	188,000				4 M + 1 H	11,000	261,700					--
	SB	4 M	9,400		8,066	0.858	D	4 M + 1 H	11,000		11,228	1.021	**F0**	0.16	**YES**
I-15															--
I-5 Interchange to Ocean View Blv	NB	3 M	7,050	95,000	5,216	0.740	C	3 M	7,050	129,700	7,121	1.010	**F0**	0.27	**YES**
	SB	3 M	7,050					3 M	7,050						--
SR-75 (d)															--
I-5 Interchange to Glorietta Blvd	WB	3 M	7,050	73,000	4,585	0.650	C	3 M	7,050	93,500	5,873	0.833	D	0.18	--
	EB	2 M	4,700					2 M	4,700						--

Notes:

Bold values indicate freeway segments operating at LOS E or F.

M=Main Lane; A= Auxiliary Lane; H= HOV Lane.

This analysis evaluates the higher peak-hour direction of traffic

(a) The capacity is calculated as 2,350 ADT per main lane and 1,200 ADT per auxiliary lane

(b) Traffic volumes provided by Caltrans

(c) Peak-hour volume calculated by: (ADT*K*D)/Truck Factor

(d) SR-75 has reversable lanes.

K:\SND_TPTO\095707000\Excel\[707000FR01.xls]Alternative 1

Mitigation

The following intersection improvements are needed to mitigate the peak-hour intersection impacts of the proposed Barrio Logan Community Plan Update Land Use Alternative 1:

- National Avenue and 16th Street: A new traffic signal is recommended to be installed at this intersection. A signal warrant worksheet for this intersection is included in **Appendix I**. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Harbor Drive and Sigsbee Street: A traffic signal is recommended to be installed at the intersection of Sigsbee Street and Harbor Drive. The signal is needed to serve the increased traffic from land uses proposed, as well as accommodating the traffic that would be diverted from Beardsley Street due to the median closure along Harbor Drive. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Logan Avenue and Beardsley Street/I-5 SB off-ramp: A traffic signal is recommended to be installed at the intersection. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- National Avenue and Beardsley Street: A traffic signal is recommended to be installed at the intersection. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Harbor Drive and Beardsley Street: This improvement would extend the raised median along Harbor Drive in front of Beardsley Street converting the intersection to right-in/right-out only movements.
- Logan Avenue and Cesar Chavez Parkway: The addition of an exclusive eastbound right-turn lane and a northbound right-turn overlap phase are recommended to be installed at this intersection. The addition of the exclusive eastbound right-turn lane could be implemented by restriping changes only. An existing MTS bus stop is located where the exclusive right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement. This improvement will not affect the existing on-street parking. The entrance to the State Route 75 ramps would be reconfigured to improve pedestrian circulation. This improvement could include the removal of the free northbound right-turn access from Cesar Chavez Parkway to the State Route 75 ramps.
- National Avenue and Cesar Chavez Parkway: Exclusive eastbound and westbound right-turn lanes are recommended to be installed at this intersection in order to reduce queuing along National Avenue. These improvements could be implemented by restriping changes only. These improvements will not affect the existing on-street parking. An existing MTS bus stop is located where the exclusive westbound right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement.
- Main Street and Cesar Chavez Parkway: An exclusive westbound right-turn lane is recommended to be installed at this intersection in order to reduce queuing along Main Street. This improvement could be implemented by restriping changes only. This improvement will not affect the existing on-street parking. An existing MTS bus stop is located where the exclusive westbound right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement.

- Harbor Drive and Cesar Chavez Parkway: A southbound right-turn overlap phase, dual eastbound left-turn lanes and an exclusive northbound right-turn lane are recommended to be installed. It is anticipated that the exclusive northbound right-turn lane will be completed by Caltrans in conjunction with the extension of the westbound left-turn lane.
- Logan Avenue and Sampson Street: A traffic signal is recommended to be installed. Also, southbound and northbound left-turn lanes are recommended. These lanes could be added with restriping changes only at the time of signalization, and would not require roadway widening. The configuration changes would require the removal of on-street parking along Sampson Street. A total of 16 parking spaces are anticipated to be removed as part of this improvement. The removed parking spaces are likely serving commercial uses along Logan Avenue and multi-family residential units along Sampson Street. The removal of on-street parking spaces will create a shortage of on-street parking within the vicinity of this intersection. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Main Street and 26th Street: A partial street closure is recommended at the intersection for truck traffic restrictions. The northbound through and eastbound left movements would be eliminated. This improvement is not required to mitigate intersection level of services, but it is recommended for a reduction of truck traffic along residential streets within the community.
- Harbor Drive and Schley Street: The southbound through and southbound left-turn movements are recommended to be prohibited. Right-turn overlap signal phasing is recommended for the southbound movement.
- National Avenue and 28th Street: An exclusive southbound right-turn lane is recommended to be added. This improvement could be accomplished by restriping the roadway without the need for widening. A removal of one on-street parking space would be required along the west side of National Avenue to accommodate a 100-foot southbound exclusive right-turn lane.
- Harbor Drive and 28th Street: A second southbound left-turn lane and a second eastbound left-turn lane are recommended to be added.
- Boston Avenue and Interstate 5 Southbound Ramp-29th Street: This recommendation includes a truck right-turn prohibition for the northbound movement at the intersection of 28th Street and Boston Avenue and truck turning signage to encourage vehicles to use Main Street and 29th Street to enter the Interstate 5 southbound freeway. The Interstate 5 Southbound Ramp and Boston Avenue intersection is recommended to be signalized. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- 32nd Street and Wabash Boulevard: Potential improvements at this intersection will be further defined once Caltrans completes its truck access improvement study.
- Harbor Drive and 32nd Street: Same as the improvements for Wabash Boulevard and 32nd Street.

Figure 5-3 illustrates the intersection geometrics within Barrio Logan with the recommended intersection improvements listed above.

The following roadway segment improvements are recommended to mitigate the roadway segment cumulative impacts of the proposed Barrio Logan Community Plan Update. The improvements listed would be the same for both land use alternatives.

- Cesar Chavez Parkway between Logan Avenue and Harbor Drive: This roadway segment will be reclassified as a three-lane urban major facility between Logan Avenue and Main Street. Between Main Street and Harbor Drive, the roadway segment will be reclassified as a three-lane major arterial. A raised median will be installed between Harbor Drive and Logan Avenue. The

roadway segment will have two lanes in the northbound direction and one lane in the southbound direction. On-street parking will be allowed between Logan Avenue and Main Street. A southbound right-turn auxiliary lane will be present between Main Street and Harbor Drive. The entire roadway segment should be considered for "sharrow" bicycle marking treatment and will be considered a class III bicycle facility.

- 28th Street between I-5 and National Avenue: This roadway segment will be reconfigured as a four-lane major arterial with a five-foot raised median. The new configuration would allow for two-lanes in each direction and an auxiliary lane in the southbound direction.
- National Avenue between Cesar Chavez and Evans Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.
- National Avenue between Sicard and 27th Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.
- Main Street between Evans Street and 26th Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.

It is anticipated that traffic patterns within the community will change based on some of the improvements listed above. Fewer vehicles are anticipated to use the roadway segment of Boston Avenue between 28th Street and 29th Street. This is due to the proposed improvements along 28th Street and Main Street and the signalization of Boston Avenue and 29th Street intersection, which serves as an entrance ramp to the I-5 Southbound freeway. It is anticipated that more vehicles would use Main Street and 29th Street. **Figure 5-4** illustrates the peak-hour turning volumes within the community with the anticipated change in traffic patterns.

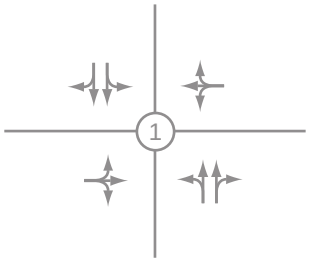
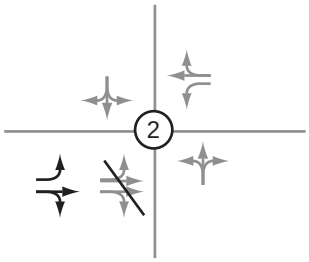
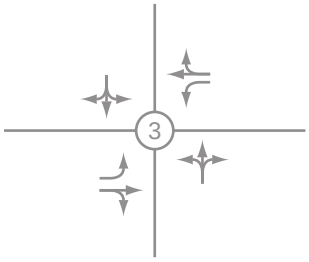
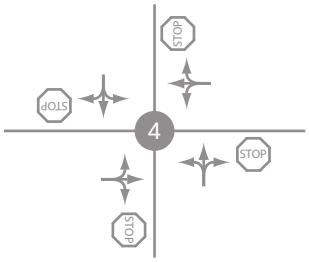
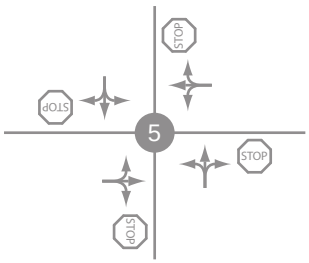
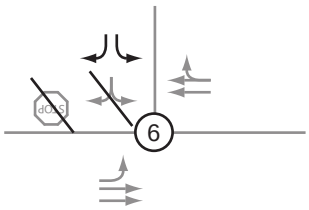
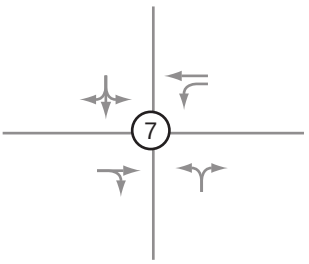
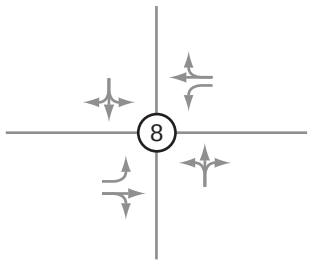
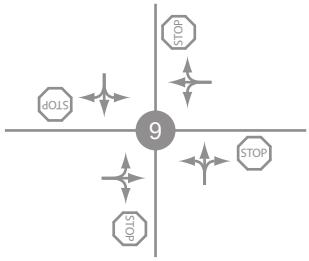
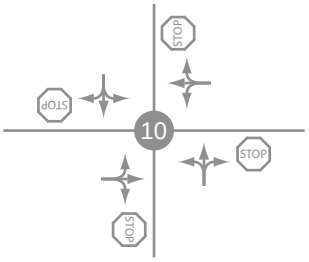
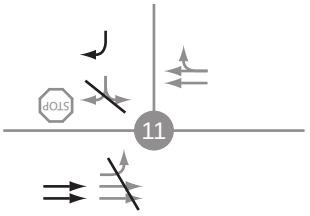
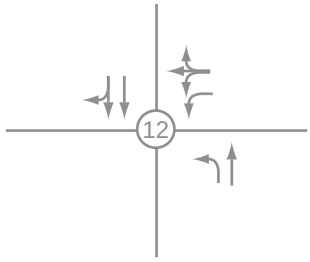
Table 5-5 displays the summary of the intersection peak-hour analysis with the proposed intersections and roadway segments improvements described above. As shown in Table, with the implementation of the recommended improvements, all intersections within the study area would operate at LOS D or better with the following exceptions:

- Harbor Drive and 28th Street (will continue to operate at LOS E during the afternoon peak-hour period);
- 32nd Street and Wabash Street (will continue to operate at LOS F and LOS E during the morning and afternoon peak-hour periods, respectively); and
- Harbor Drive and 32nd Street (will continue to operate at LOS F during both peak-hour periods).

The Harbor Drive/32nd Street and 32nd Street/Wabash Street intersections are being studied further in an on-going Caltrans study. The latest report includes the installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15. Another improvement under study is the Vesta Street Overcrossing at Harbor Drive which would connect the wet and dry sides of the Naval Base San Diego. On November 1, 2010 the Navy temporarily closed the eastern leg (Norman Scott Road) of the 32nd Street/Norman Street-Wabash Street intersection to improve safety. The Navy is monitoring traffic to determine if this closure should remain. A preliminary analysis indicates that the mentioned projects would improve the intersection to acceptable levels and decrease the potential queuing problems.

Harbor Drive/28th Street is projected to operate at LOS E, even with improvements. There is the potential that improvements to be made between Harbor Drive and State Route 15 (Caltrans study) could divert some traffic off of 28th Street, further improving this intersection

SANDAGs 2050 Regional Transportation Plan (RTP) unconstrained network recommends the grade separation of the trolley lines at 28th Street and at 32nd Street. A peak-hour intersection analysis was conducted for the intersections of 28th Street and 32nd Street with Harbor Drive assuming these proposed

Commercial St/ 16th St	National Ave/ 16th St	National Ave/ Sigsbee St	Newton Ave/ Sigsbee St
			
Main St/ Sigsbee St	Harbor Dr/ Sigsbee St	Logan Ave/Beardsley St- I-5 SB off-ramp	National Ave/ Beardsley St
			
Newton Ave/ Beardsley St	Main St/ Beardsley St	Harbor Dr/ Beardsley St	Kearney St/ Cesar Chavez Pkwy
			

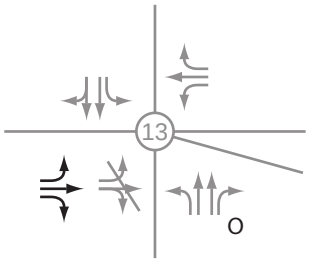
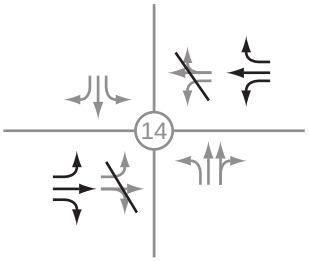
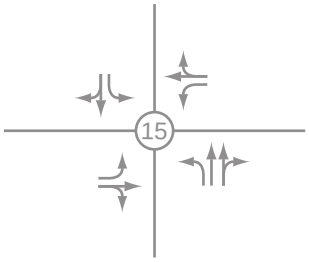
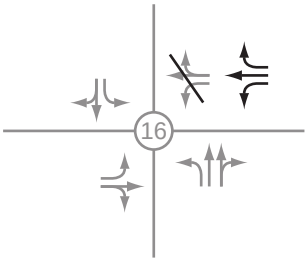
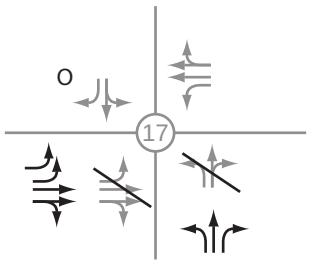
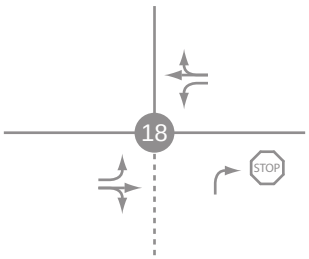
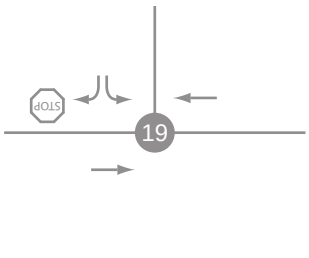
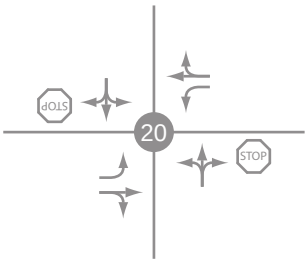
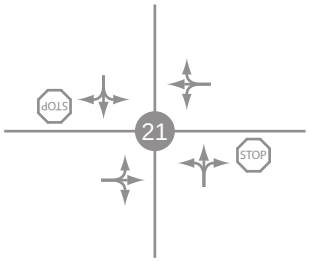
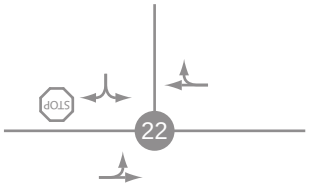
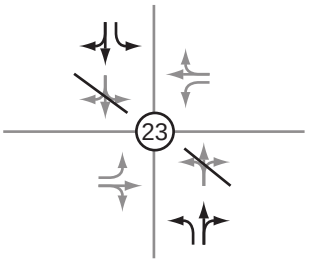
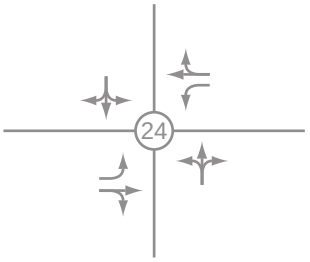
Legend:

- (X) Signalized
- X Unsignalized
- Mobility Element Recommended Lane Configuration
- Existing Lane Configuration to be modified

NOT TO SCALE

FIGURE 5-3

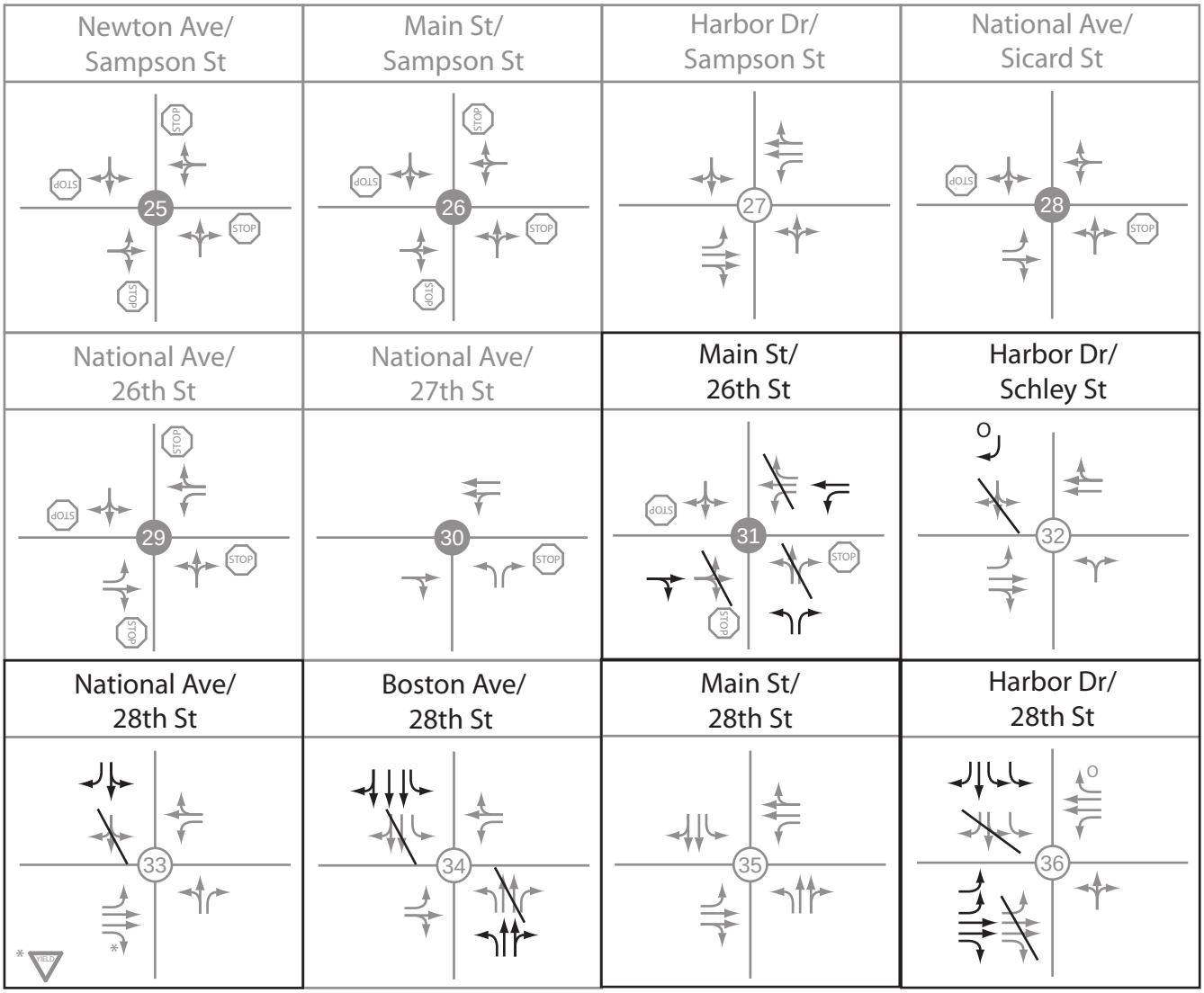
Horizon Year (2030) with Alternative 1 Improvements Intersection Geometrics

Logan Ave/ Cesar Chavez Pkwy	National Ave/ Cesar Chavez Pkwy	Newton Ave/ Cesar Chavez Pkwy	Main St/ Cesar Chavez Pkwy
			
Harbor Dr/ Cesar Chavez Pkwy	Logan Ave/ I-5 SB On-ramp	National Ave/ SR-75 Off-ramp	National Ave/ Evans St
			
Newton Ave/ Evans St	Main St/ Evans St	Logan Ave/ Sampson St	National Ave/ Sampson St
			

Legend:

- (X) Signalized
- X Unsignalized
- Mobility Element Recommended Lane Configuration
- Existing Lane Configuration to be modified

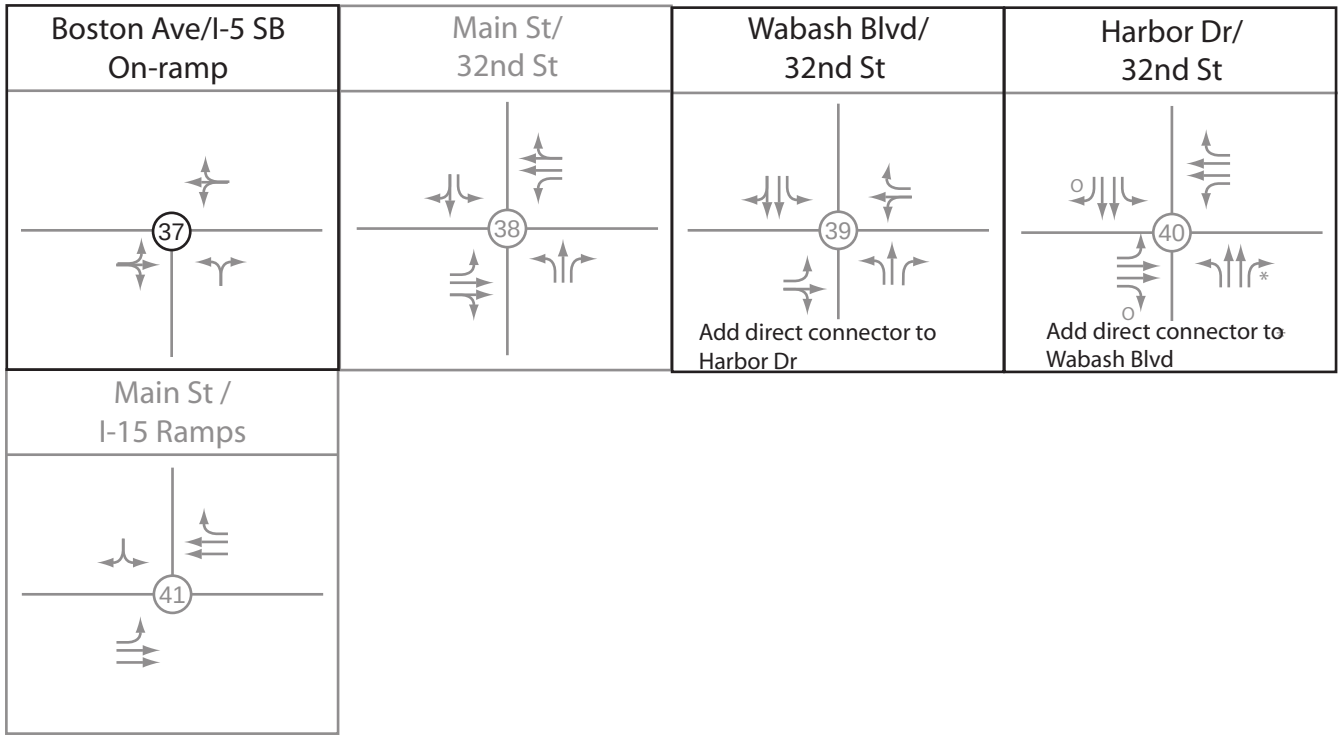
NOT TO SCALE



Legend:

- (X) Signalized
- (X) Unsignalized
- O Right-turn overlap
- Mobility Element Recommended Lane Configuration
- Existing Lane Configuration to be modified

NOT TO SCALE



Legend:

X Signalized

X Unsignalized

o Right-turn overlap

NOT TO SCALE

1				2				3				4			
136 / 77 250 / 490 47 / 40	16th St	114 / 122 295 / 488 24 / 0	Commercial St	91 / 70 36 / 25 56 / 127	16th St	34 / 25 495 / 458 3 / 3	National Ave	58 / 39 40 / 23 15 / 6	Sigsbee St	36 / 27 367 / 246 16 / 9	National Ave	17 / 8 79 / 38 33 / 16	Sigsbee St	51 / 23 80 / 50 15 / 9	Newton Ave
16 / 64 225 / 348 26 / 15		13 / 21 340 / 670 16 / 26		40 / 91 194 / 347 40 / 31		40 / 61 34 / 41 12 / 7		10 / 34 140 / 315 51 / 62		63 / 75 26 / 61 58 / 13		6 / 9 48 / 50 19 / 29		24 / 20 111 / 91 34 / 12	

5				6				7				8			
3 / 2 96 / 60 31 / 20	Sigsbee St	61 / 31 8 / 0 31 / 38	Main St	110 / 80 110 / 100	Sigsbee St	20 / 100 1670 / 780	Harbor Dr	47 / 38 236 / 110 259 / 272	I-5 SB Off-Ramp	202 / 154 87 / 41	Logan Ave	23 / 11 138 / 83 216 / 189	Beardsley St	67 / 77 421 / 347 241 / 113	National Ave
3 / 4 8 / 2 6 / 13		5 / 0 97 / 98 24 / 12		38 / 65 480 / 1945				170 / 515 24 / 69	Beardsley St	31 / 56 68 / 122		8 / 19 238 / 625 8 / 2		4 / 9 30 / 43 50 / 134	

9				10				11			12				
41 / 12 156 / 94 56 / 46	Beardsley St	15 / 19 82 / 93 29 / 13	Newton Ave	52 / 17 57 / 39 275 / 144	Beardsley St	76 / 79 109 / 33 163 / 78	Main St	143 / 75	Beardsley St	30 / 20 1610 / 860	Harbor Dr	31 / 40 350 / 330	Cesar Chavez Pkwy	192 / 154 259 / 157 613 / 517	Kearney Ave
18 / 7 74 / 60 9 / 4		13 / 5 23 / 71 19 / 37		15 / 22 74 / 64 4 / 4		2 / 0 8 / 25 52 / 109		580 / 1950						257 / 382 262 / 345	

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

13

82 / 52	Cesar Chavez Pkwy-SR-75 On-ramp	76 / 90
909 / 694		325 / 280
70 / 114		100 / 120
		Logan Ave
140 / 130		100 / 140
280 / 420		300 / 506
120 / 230		280 / 670

14

310 / 410	Cesar Chavez Pkwy	120 / 275
745 / 550		350 / 270
70 / 120		120 / 110
		National Ave
190 / 300		90 / 120
250 / 400		580 / 1000
180 / 290		50 / 100

15

140 / 55	Cesar Chavez Pkwy	65 / 120
810 / 890		50 / 70
95 / 165		40 / 90
		Newton Ave
75 / 135		40 / 40
40 / 130		410 / 795
60 / 70		30 / 60

16

180 / 260	Cesar Chavez Pkwy	190 / 270
580 / 540		330 / 230
150 / 250		70 / 70
		Main St
150 / 120		70 / 70
190 / 290		340 / 640
15 / 25		90 / 180

17

403 / 324	Cesar Chavez Pkwy	95 / 43
83 / 30		1047 / 465
72 / 33		80 / 50
		Harbor Dr
118 / 468		10 / 50
398 / 1500		14 / 63
40 / 40		27 / 35

18

	I-5 SB On-Ramp	84 / 73
		127 / 158
		Logan Ave
497 / 933		
182 / 527		
2 / 8	Park Dwy	4 / 16

19

280 / 238	SR-75 Off-Ramp	276 / 260
27 / 126		National Ave
128 / 308		

20

30 / 72	Evans St	26 / 23
18 / 22		226 / 192
9 / 45		37 / 32
		National Ave
17 / 37		28 / 13
115 / 390		49 / 18
22 / 36		24 / 62

21

37 / 21	Evans St	30 / 27
30 / 28		63 / 70
7 / 30		16 / 27
		Newton Ave
23 / 24		27 / 7
87 / 124		58 / 47
22 / 41		31 / 28

22

45 / 16	Evans St	65 / 62
56 / 75		350 / 239
		Main St
33 / 12		
153 / 270		

23

14 / 13	Sampson St	56 / 54
218 / 256		79 / 87
62 / 66		91 / 143
		Logan Ave
110 / 108		219 / 235
224 / 255		332 / 400
163 / 203		147 / 101

24

118 / 107	Sampson St	100 / 100
109 / 86		104 / 70
59 / 123		48 / 21
		National Ave
75 / 162		7 / 13
50 / 111		95 / 185
15 / 12		16 / 30

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

25

37 / 19	Sampson St	35 / 31
99 / 66		81 / 76
18 / 19		15 / 0
		Newton Ave
21 / 34		7 / 13
95 / 119		40 / 90
16 / 24		31 / 20

26

172 / 85	Sampson St	16 / 8
59 / 27		218 / 83
10 / 8		53 / 27
		Main St
70 / 118		50 / 60
62 / 142		31 / 46
51 / 33		35 / 49

27

32 / 26	Sampson St	44 / 62
75 / 66		1284 / 488
64 / 58		75 / 19
		Harbor Dr
10 / 56		14 / 23
716 / 1500		61 / 111
28 / 5		38 / 41

28

36 / 42	Sicard St	3 / 1
41 / 18		163 / 125
4 / 4		27 / 8
		National Ave
21 / 40		48 / 33
79 / 169		48 / 46
36 / 38		12 / 17

29

15 / 23	26th St	48 / 55
38 / 68		223 / 124
51 / 90		36 / 35
		National Ave
28 / 33		27 / 46
66 / 156		47 / 60
36 / 65		15 / 34

30

		269 / 234
		42 / 31
		National Ave
146 / 368	I-5 SB Off-ramp	72 / 94
18 / 23		149 / 296

31

13 / 8	26th St	187 / 79
22 / 12		143 / 49
16 / 28		Main St
60 / 194		28 / 7
17 / 16		124 / 261

32

81 / 51	Schley St	17 / 39
		1542 / 588
		Harbor Dr
74 / 83		
504 / 1520		

33

307 / 102	28th St	123 / 240
205 / 210		628 / 427
115 / 199		192 / 463
		National Ave
106 / 94		33 / 18
258 / 612		98 / 98
18 / 85		86 / 168

34

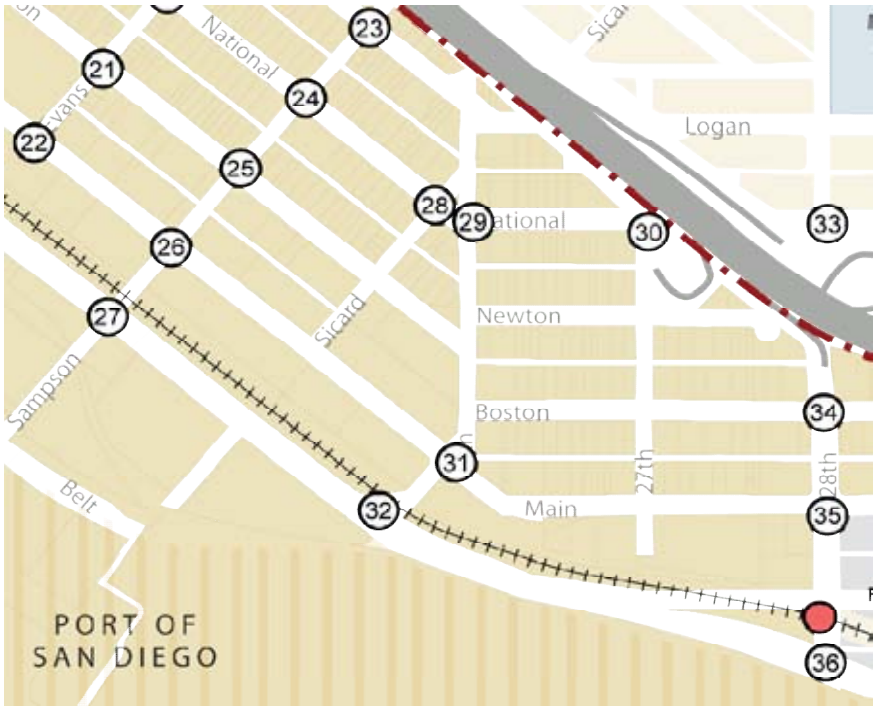
310 / 270	28th St	120 / 70
860 / 1060		70 / 70
160 / 250		45 / 60
		Boston Ave
230 / 320		90 / 50
180 / 100		700 / 1050
140 / 160		40 / 100

35

250 / 550	28th St	180 / 280
750 / 500		490 / 290
180 / 360		90 / 150
		Main St
190 / 220		45 / 65
400 / 730		170 / 450
50 / 40		120 / 230

36

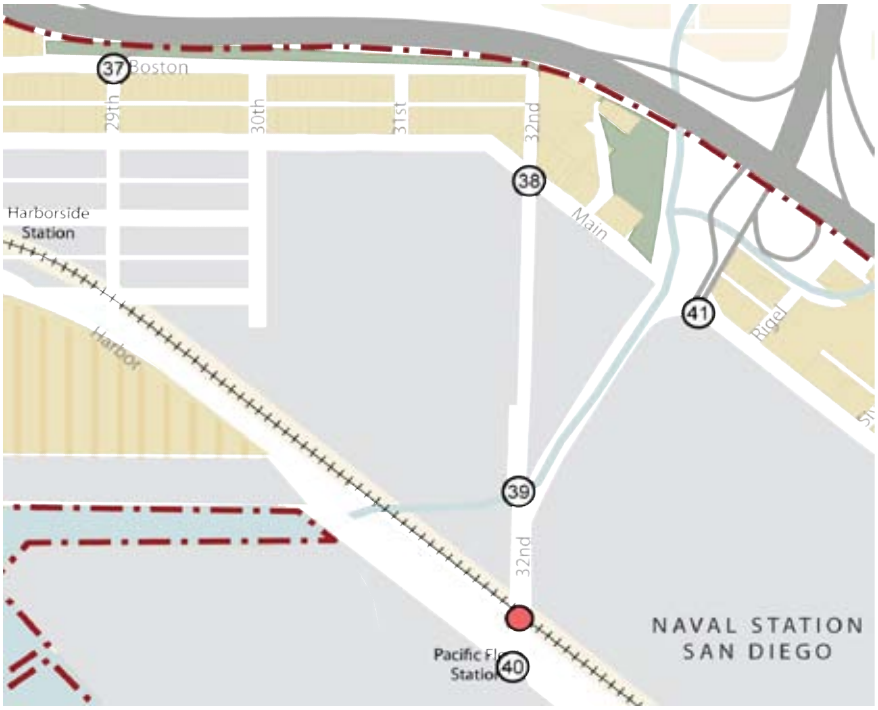
25 / 13	28th St	116 / 278
15 / 12		942 / 524
375 / 505		17 / 14
		Harbor Dr
50 / 140		0 / 10
670 / 1390		6 / 134
4 / 2		2 / 0



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

grade separations. The results of the analysis indicated that the proposed grade separation would improve both intersections to LOS D or better during both peak-hour periods under the Horizon Year scenario with either alternative. The proposed grade separations are included in the "revenue constrained scenario". Due to the benefits to adjacent intersections, these grade separation projects are recommended.

Table 5-6 displays the summary of the roadway segment analysis with the roadway segment improvements described above. As shown in the table, the following roadway segments would continue to operate at LOS E or F even with the implementation of the recommended improvements:

- Sampson Street between National Avenue and Harbor Drive (LOS E);
- 26th Street between National Avenue and Main Street (LOS E);
- 32nd St between Main St. and Wabash Blvd (LOS E);
- Vesta Street between Main Street and I-5 Ramps (LOS E);
- Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (LOS F);
- National Avenue between Beardsley Street and Cesar Chavez Parkway (LOS F);
- Boston Avenue between 28th Street and 29th Street (LOS F);
- Boston Avenue between 29th Street and 32nd Street (LOS F);
- Main Street between Cesar Chavez Parkway and Evans Street (LOS E);
- Main Street between 26th Street and 28th Street (LOS F);
- Main Street between 28th Street and 29th Street (LOS F);
- Main Street between 29th Street and 32nd Street (LOS F);
- Main Street between 32nd Street and Rigel Street (LOS F);
- Main Street between Rigel Street and Una Street (LOS F); and
- Main Street between Una Street and I-5 SB Off-ramp (LOS F)

Boston Avenue, National Avenue and 26th Street are desired by the community of Barrio Logan to be more pedestrian and bicycle friendly corridors. The widening of these roadways to improve vehicular circulation was not desired by the community. The vehicular operations along these three facilities could be congested during peak periods and vehicular speeds would be low. Additional widening is not recommended. Traffic calming measures should be evaluated along National Avenue to further enhance the pedestrian and bicycle circulation.

Additional improvements to the failing roadway segments of Sampson Street, 32nd Street, Vesta Street, Logan Avenue and Main Street are not recommended since the roadway segment analysis used in this study is based on theoretical capacities based on the number of travel lanes. The analysis does not take into account other physical features that can affect the capacity of a roadway segment like grades, number of traffic signals, number of driveways, parking availability, etc. In addition, the analysis does not take into account the different traffic peak periods experienced on these roadways due to the surrounding land uses. As an example, the Barrio Logan traffic patterns are unique in that they are heavily influenced by the Port of San Diego and the Navy Base traffic generators whose peak-hour of use do not correspond to typical peak-hour commuter traffic. To better represent the conditions of a roadway segment within the Barrio Logan community, the operations of the upstream and downstream intersections of each respective segment during the peak periods would indicate whether the roadway segment would have adequate capacity. As shown in the intersection analysis tables, all intersections along the failing roadway segments would operate at acceptable LOS.

In addition to the roadway segment improvements listed above, it is recommended that 28th Street between Harbor Drive and the I-5 Ramps be classified as a four-lane major arterial. For the segment between Harbor Drive and Main Street, a raised median should be installed with an entrance to the Navy

Commissary. The proposed configuration would allow two lanes in each direction with an auxiliary lane for the heavy southbound right-turn movements at Harbor Drive. Parking would need to be removed along both sides of the roadway, with a total loss of approximately 20 parking spaces. The removed parking spaces are likely utilized by NASCO employees or Naval Base San Diego employees or visitors. Additional diagonal parking is recommended to be evaluated for installation along Boston Avenue between 28th Street and 29th Street to replace the loss of parking along 28th Street. The west side of the roadway could be widened by 4 feet to accommodate the proposed interim cross-sections. The east sidewalk will widen to 10 feet to enhance pedestrian circulation. This improvement is not part of mitigation for a roadway segment impact. The improvement is recommended to encourage heavy truck traffic to use 28th Street instead of Main Street and to provide for pedestrians. The ultimate recommended cross-section of 28th Street will include a designated bike lane along both sides of the roadway and a fourteen foot parkway. The ultimate configuration along 28th Street will require additional roadway widening and right-of-way acquisition. An alignment study is required to further define the extent of additional right-way needed and future widening

Conceptual roadway segments improvement figures, including the proposed cross-sections are included in **Appendix K**.

Based on the freeway segment capacity analysis included in this study, Alternative 1 land use scenario is considered to have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction;
- I-5 from SR-75 Junction to 28th Street;
- I-5 from 28th Street to I-15 Interchange;
- I-5 from I-15 Interchange to Division Street; and
- I-15 from I-5 Interchange to Ocean View Boulevard

SANDAG's Draft 2050 Regional Transportation Plan (RTP) hybrid network includes the following freeway improvements:

- Operational freeway improvements along Interstate 5 between Interstate 15 and Interstate 8; and
- Addition of one (1) main lane and one (1) managed lane in each direction between Interstate 15 and State Route 54;

Both improvements listed above were included in the hybrid network's revenue constrained scenario, approved by SANDAG's board for further study on December 17th, 2010. The improvements included in the RTP are recommended to enhance the regional connectivity and accommodate the forecasted growth of the San Diego region. It should be noted that both land use alternatives presented on this plan would generate less traffic than the current adopted Community Plan land use alternative. Either proposed alternative would lessen, but not eliminate cumulative freeway traffic impacts.

In addition to the proposed freeway improvements listed in the SANDAG's Draft 2050 RTP, the following freeway access improvements are recommended within the Barrio Logan Community:

- Signalization of the intersection of Logan Avenue and Beardsley Street/ Interstate 5 SB off-ramp;
- Traffic signal modification at the intersection of Logan Avenue and Cesar Chavez Parkway (State Route 75 on-ramp);
- Signalization of the intersection of Boston Avenue and Interstate 5 SB on-ramp- 29th Street;

- Roadway improvements along 28th Street to accommodate an additional southbound lane, including the potential for widening the Interstate 5 overcrossing;
- Signalization of the intersection of 28th Street and Interstate 5 southbound off-ramp;
- Changes to the roadway striping along Main Street between 28th Street and 29th Street to facilitate freeway access to the Interstate 5 southbound on-ramp at Boston Avenue;
- Installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15 (under study by the Port of San Diego, and Caltrans);
- Construction of the Vesta Street Overcrossing at Harbor Drive (under study by the Navy);
- Coordination of City of San Diego and Navy related to the closure of the east leg of the 32nd Street and Norman Street-Wabash Street intersection (recently completed on a trial basis by the Navy); and
- Grade separation of the trolley tracks at the 28th Street and Harbor Drive and 32nd Street and Harbor Drive intersections (to be completed by SANDAG and part of the 2050 draft RTP).

The improvements listed above would decrease congestion along the major freeway access locations within the community.

TABLE 5-5
HORIZON YEAR (2030) ALTERNATIVE 1 WITH IMPROVEMENTS
PEAK-HOUR INTERSECTION LOS SUMMARY

	INTERSECTION	PEAK HOUR	ALTERNATIVE 1		ALTERNATIVE 1 WITH IMPROVEMENTS		DESCRIPTION OF IMPROVEMENT
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	
2	National Ave & 16th St	AM	51.7	**F**	14.1	B	Install Traffic Signal.
		PM	232.1	**F**	8.5	A	
6	Harbor Dr & Sigsbee St	AM	ECL	**F**	12.7	B	Install Traffic Signal.
		PM	ECL	**F**	7.6	A	
7	Logan Ave & Beardsley St- I-5 SB ramp	AM	33.1	D	26.7	C	Install Traffic Signal. (This improvement requires Caltrans approval)
		PM	81.9	**F**	46.8	D	
8	National Ave & Beardsley St	AM	39.9	**E**	12.9	B	Install Traffic Signal.
		PM	129.0	**F**	13.3	B	
11	Harbor Dr & Beardsley St	AM	173.7	**F**	17.5	C	Modify raised median along Harbor Drive and restrict the eastbound left-turn movements and southbound left-turn movements.
		PM	51.6	**F**	11.6	B	
13	Logan Ave & Cesar E. Chavez Pkwy	AM	31.1	C	26.9	C	Add exclusive eastbound right-turn lane. Add northbound overlap phase. (This improvement requires Caltrans approval)
		PM	62.1	**E**	52.6	D	
14	National Ave & Cesar E. Chavez Pkwy	AM	30.4	C	19.9	B	Add exclusive eastbound and westbound right-turn lanes. This improvement is recommended to mitigate a potential queing impact.
		PM	52.4	D	21.5	C	
16	Main St & Cesar E. Chavez Pkwy	AM	39.3	D	21.6	C	Add exclusive westbound right-turn lane. This improvement is recommended to mitigate a potential queing impact.
		PM	42.5	D	18.7	B	
17	Harbor Dr & Cesar E. Chavez Pkwy	AM	77.5	**E**	48.2	D	Add second eastbound left-turn lane, a southbound right-turn overlap phase and a northbound exclusive right-turn lane. In addition, extend the westbound left-turn pocket (to be done by Caltrans).
		PM	85.2	**F**	49.2	D	
23	Logan Ave & Sampson St	AM	143.5	**F**	10.0	B	Install Traffic Signal. Add northbound and southbound left-turn lanes.
		PM	197.1	**F**	29.7	C	
31	Main St & 26th St-Schley St	AM	8.2	A	8.2	A	Eliminate northbound through movement. This improvement is not needed based on a delay impact. It is part of a truck route improvement.
		PM	8.0	A	8.0	A	
32	Harbor Dr & Schley St	AM	76.2	**E**	32.9	C	Eliminate southbound left/through movement. Add southbound right-turn overlap phase.
		PM	28.8	C	16.0	B	
33	National Ave & 28th St	AM	81.2	**F**	39.7	D	Add exclusive southbound right-turn lane.
		PM	70.8	**E**	49.3	D	
34	Boston Ave & 28th St	AM	36.9	D	22.3	C	Add southbound through lane and remove exclusive northbound right-turn lane.
		PM	45.1	D	36.1	D	
36	Harbor Dr & 28th St (c)	AM	43.3	D	46.2	D	Add second eastbound and southbound left-turn lanes.
		PM	92.2	**F**	76.4	**E**	
37	Boston Ave & I-5 SB On-ramp-29th St	AM	21.0	C	20.0	C	Install Traffic Signal. (This improvement requires Caltrans approval)
		PM	523.6	**F**	31.9	C	
39	32nd St & Wabash St	AM	112.7	**F**	103.4	**F**	Construct a direct connector from Harbor Dr. to Wabash St. (under study by Caltrans)
		PM	85.1	**F**	75.4	**E**	
40	Harbor Dr & 32nd St (c)	AM	146.8	**F**	127.7	**F**	
		PM	92.3	**F**	90.2	**F**	
42	I-5 SB off-ramp & 28th St	AM	The intersection was not analyzed under this scenario		14.7	B	Install Traffic Signal. (This improvement requires Caltrans approval)
		PM			11.7	B	

Notes:

Bold values indicate intersections operating at LOS E or F.

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

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

(c) As part of Sandag's Draft 2050 RTP, a grade separation for the trolley lines at this intersection is being proposed under the hybrid network which is the preferred revenue constrained network . With the grade separation, the intersection would operate at LOS D or better. See appendix L for synchro results.

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TABLE 5-6
HORIZON YEAR (2030) ALTERNATIVE 1 WITH IMPROVEMENTS
ROADWAY SEGMENT LOS SUMMARY

ROADWAY SEGMENT	ROADWAY CLASSIFICATION (a)	HIGHEST ACCEPTABLE LOS D VOLUME	LOS E CAPACITY	YEAR 2030 (ALTERNATIVE 1) WITH IMPROVEMENTS		
				ADT	V/C RATIO (b)	LOS
Cesar Chavez Pkwy						
north of Logan Ave	3 Lane Collector (with TWLT)	18,750	22,500	14,900	0.662	C
between Logan Ave and National Ave	3 Lane Urban Major	26,250	30,000	25,200	0.840	D
between National Ave and Newton Ave	3 Lane Urban Major	26,250	30,000	24,300	0.810	D
between Newton Ave and Main St	3 Lane Urban Major	26,250	30,000	20,000	0.667	C
between Main St and Harbor Dr	3 Lane Major	26,250	30,000	12,900	0.430	B
Sampson St						
between I-5 and National Ave	2 Lane Collector (No TWLT)	6,500	8,000	5,800	0.725	D
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	6,500	8,000	7,800	0.975	**E**
26th St						
between National Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	7,000	0.875	**E**
28th St						
between I-5 and Boston Ave	4 Lane Major Arterial	35,000	40,000	34,500	0.863	D
between Boston Ave and Main St	4 Lane Major Arterial	35,000	40,000	24,200	0.605	C
between Main St and Harbor Dr	4 Lane Major Arterial	35,000	40,000	23,300	0.583	C
29th St						
between Boston Ave and Main St (c)	2 Lane Collector (No TWLT)	6,500	8,000	6,300	0.788	D
32nd St						
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	13,000	15,000	14,500	0.967	**E**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	35,000	40,000	25,800	0.645	C
Rigel St						
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	1,400	0.175	A
Vesta St						
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	6,700	0.838	**E**
Logan Ave						
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	10,500	0.700	D
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	16,500	1.100	**F**
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	5,700	0.380	B
National Ave						
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	12,600	0.840	D
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	13,000	15,000	12,600	0.840	D
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	17,000	1.133	**F**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (with TWLT)	13,000	15,000	9,300	0.620	C
between Evans St and Sicard St	2 Lane Collector (with TWLT)	13,000	15,000	8,700	0.580	C
between Sicard St and 27th St	2 Lane Collector (with TWLT)	13,000	15,000	10,200	0.680	D
Boston Ave						
between 28th and 29th St (c)	2 Lane Collector (No TWLT)	6,500	8,000	14,000	1.750	**F**
between 29th St and 32nd St	2 Lane Collector (No TWLT)	6,500	8,000	8,300	1.038	**F**
Main St						
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	4,200	0.525	C
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	7,900	0.988	**E**
between Evans St and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	12,700	0.847	D
between 26th St and 28th St	3 Lane Collector (No TWLT)	9,750	11,250	12,700	1.129	**F**
between 28th and 29th St	4 Lane Collector (No TWLT)	13,000	15,000	13,400	0.893	**E**
between 29th St and 32nd St	3 Lane Collector (No TWLT)	9,750	11,250	18,700	1.662	**F**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	13,000	15,000	26,100	1.740	**F**
between Rigel St and Una St	2 Lane Collector (with TWLT)	13,000	15,000	20,600	1.373	**F**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	13,000	15,000	18,100	1.207	**F**
Harbor Dr						
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	35,000	40,000	30,400	0.760	D
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	35,000	40,000	25,500	0.638	C
between Sampson St and Schley St	4 Lane Major Arterial	35,000	40,000	23,400	0.585	C
between Schley St and 28th St	4 Lane Major Arterial	35,000	40,000	18,800	0.470	B
between 28th St and 32nd St	4 Lane Major Arterial	35,000	40,000	26,900	0.673	C
between 32nd St and Vesta St	4 Lane Major Arterial	35,000	40,000	31,500	0.788	D

Notes:

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

(a) Roadway Classification are proposed under the Mobility Element.

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

(c) This segment was analyzed assuming a rerouting of traffic produced by the improvements along 28th Street and Main Street. A total of 1000 ADT were moved from Boston Avenue between 28th St and 29th St to Main St and 29th St.

6.0 HORIZON YEAR (2030) WITH ALTERNATIVE 2

This section summarizes the results of the Horizon Year (2030) conditions analysis within the Barrio Logan community taking into account the land use changes proposed under the Alternative 2 of the Community Plan Update.

Roadway Network

No roadway network changes are assumed to take place under this scenario, with the exception of the addition of a High Occupancy Vehicle (HOV) lane along the I-5 Corridor for both directions of traffic. The additional HOV lane is listed in Sandag's 2030 Regional Transportation Plan (RTP).

Traffic Volumes

The Horizon Year Average Daily Traffic (ADT) volumes on the roadway segments in the study area were derived from a City of San Diego traffic forecast model that incorporated the land use changes proposed under the Alternative 2 scenario. A copy of the forecast model is included in Appendix G.

Table 6-1 presents a more detailed trip generation summary for the community with the land uses included in the Alternative 2 of the Community Plan Update. As shown in the table, the land use designation of Alternative 2 would generate a total of approximately 152,430 average daily trips, including 11,131 (7,828 in and 3,303out) morning peak-hour trips and 15,939 (6,270in and 9,669 out) afternoon peak-hour trips.

Modeled forecast volumes experienced some minor refinements. In the process of calibrating the existing model, it was concluded that three post model adjustments should be made to the 2030 traffic models. Traffic volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. Traffic volumes on 28th Street and 32nd between Main Street and Harbor Drive were increased by 4,000 ADT and 600 ADT, respectively, per calibration between base year model and actual traffic volume counts. Minor smoothing of traffic volumes were made to reflect the gross nature of model loadings from TAZs. Volumes for streets that were not in the traffic model were estimated applying a growth rate generally consistent with other facilities in the community. Resulting daily traffic volumes for the Adopted Community Plan are depicted in **Figure 6-1**.

To estimate the turning movement volumes at the study intersections, the existing turning movements at each respective study intersection were factored up based on the projected Average Daily Traffic (ADT) volumes along each segment shown in the model plot. Each respective movement was derived using an iterative approach that balances the inflows and outflows for each approach. The input values include the existing turning movement volumes and future year peak-hour approach and departure volumes along each leg of the intersection. The future peak-hour approach volumes would be estimated by applying the existing peak-hour factor (K-factor) and directional distributional percentage (D-factor) to the future ADT volumes along each approach. A more detailed description of the methodology used to forecast turning movement volumes is contained in National Cooperative Highway Research Program (NCHRP) 255 Highway Traffic Data for Urbanized Area Project Planning and Design, Chapter 8. An Excel model computes the forecast turning volumes from existing turning movement volumes and forecasted approach and departure volumes by the techniques described in NCHRP 255. A copy of the NCHRP 255 Report and excel calculation worksheets are included in Appendix H. **Figure 6-2** displays the Horizon Year peak-hour turning movements used in the analysis of Alternative 2.

TABLE 6-1
TRIP GENERATION SUMMARY (ALTERNATIVE 2 - TOTAL)

Land Use	Units[1]		Daily Trips	AM Peak-Hour			PM Peak-Hour		
				In	Out	Total	In	Out	Total
ACTIVE PARK	9.10	acre	398	0	16	16	0	32	32
ELEMENTARY SCHOOL (stu)	529.00	stu	1,539	286	191	477	117	175	292
FAST FOOD REST. (ksf)	19.50	ksf	13,675	328	219	547	547	548	1,095
FIRE OR POLICE STATION	1.00	site	229	31	3	34	3	31	34
HEAVY INDUSTRY (ksf)	3,490.30	ksf	14,140	1,400	155	1,555	339	1,358	1,697
INACTIVE USE	10.50	acre	0	0	0	0	0	0	0
JUNIOR COLLEGE (ksf)	70.00	ksf	1,295	140	15	155	31	73	104
LIGHT INDUSTRY (ksf)	1,461.70	ksf	23,390	2,316	257	2,573	561	2,246	2,807
LOW RISE OFFICE(3957)(ksf)	249.50	ksf	3,347	331	37	368	80	322	402
LOW RISE OFFICE(3982)(ksf)	246.60	ksf	3,327	329	37	366	80	319	399
LOW RISE OFFICE(3988)(ksf)	31.30	ksf	794	79	8	87	19	76	95
LOW RISE OFFICE(FT3917)(ksf)	258.50	ksf	3,467	406	45	451	97	388	485
LOW RISE OFFICE(FT3921)(ksf)	162.90	ksf	2,435	285	32	317	68	273	341
LOW RISE OFFICE(FT3985)(ksf)	15.70	ksf	414	48	6	54	12	46	58
LUMBER STORE (mtro)(ksf)	0.00	ksf	0	0	0	0	0	0	0
MARINA (CCDC)	0.00	acre	0	0	0	0	0	0	0
MARINE TERMINAL	0.00	acre	0	0	0	0	0	0	0
MILITARY USE (Gate 9 - site)	0.00	site	0	0	0	0	0	0	0
MULTI-FAMILY (BL)	61.00	du	373	3	8	11	16	10	26
MULTI-FAMILY(BL)(over 20DU)	3,602	du	21,747	348	1,392	1,740	1,370	588	1,958
NEIGHBORHOOD SHOP CNT (ksf)	175.10	ksf	20,813	500	333	833	1,146	1,143	2,289
OTHER HEALTH CARE (ksf)	112.70	ksf	5,610	269	67	336	168	393	561
OTHER PUBLIC SERVICE	0.20	acre	58	5	0	5	2	5	7
OTHER TRANSPORTATION	5.10	acre	433	42	19	61	19	46	65
PARKING	0.50	cre	0	0	0	0	0	0	0
RAIL STATION (BL)	0.60	acre	181	18	7	25	8	19	27
REGIONAL COMM.(Mtro)(ksf)	0.00	ksf	0	0	0	0	0	0	0
SINGLE FAMILY (BL)	56	du	493	8	30	38	35	15	50
SPECIALTY COMM.(mtro)(ksf)	0.00	ksf	0	0	0	0	0	0	0
STREETFRONT COMMERCIAL (ksf)	843.80	ksf	33,813	608	405	1,013	1,523	1,519	3,042
WAREHOUSING (ksf)	90.60	ksf	459	48	21	69	29	44	73
WHOLESALE TRADE	0.00	acre	0	0	0	0	0	0	0
Total			**152,430**	**7,828**	**3,303**	**11,131**	**6,270**	**9,669**	**15,939**

Note:
1. du = Dwelling Unit; stu = Students; ksf = Thousand square feet

K:\SND_TPTO\095707000\Excel\[707000TG.xlsm]Alt 2 Totals (LU)

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

(1) ADT volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. This adjustment was based on existing traffic patterns .

(2) ADT volumes along 28th Street between Boston Avenue and Harbor Drive were increased by 4,000 ADT as recommended during the traffic model calibration process.

(3) ADT volumes along 32th Street between Main Street and Harbor Drive were increased by 600 ADT as recommended during the traffic model calibration process.

0 500 1000 2000 feet

N

Figure 6-1: Horizon Year (2030) ADT Volumes (Alternative 2)

January 2011

1				2				3				4			
138 / 81 270 / 510 43 / 36 16th St	112 / 119 299 / 493 23 / 0 Commercial St	17 / 68 226 / 350 31 / 17	15 / 25 360 / 700 18 / 28	91 / 70 36 / 25 65 / 125 16th St	34 / 25 495 / 458 3 / 3 National Ave	40 / 91 194 / 347 40 / 31	40 / 61 34 / 41 12 / 7	60 / 40 40 / 23 16 / 6 Sigsbee St	36 / 28 377 / 254 19 / 9 National Ave	11 / 35 146 / 325 49 / 62	65 / 78 26 / 58 58 / 13	17 / 8 79 / 38 33 / 16 Sigsbee St	51 / 23 80 / 50 15 / 9 Newton Ave	6 / 9 48 / 50 19 / 29	24 / 20 111 / 91 34 / 12

5				6				7				8			
3 / 2 96 / 60 31 / 20 Sigsbee St	61 / 31 8 / 0 31 / 38 Main St	3 / 4 8 / 2 6 / 13	5 / 0 97 / 98 24 / 12	100 / 70 100 / 90 Sigsbee St	20 / 100 1650 / 750 Harbor Dr	60 / 160 460 / 1945		47 / 39 233 / 109 264 / 272 I-5 SB Off-Ramp	209 / 160 88 / 40 Logan Ave	175 / 532 24 / 70	30 / 56 69 / 123 Beardsley St	23 / 11 138 / 83 213 / 188 Beardsley St	66 / 77 432 / 358 239 / 113 National Ave	8 / 19 243 / 635 8 / 2	4 / 9 30 / 43 50 / 132

9				10				11				12			
41 / 12 156 / 94 56 / 46 Beardsley St	15 / 19 82 / 93 29 / 13 Newton Ave	18 / 7 74 / 60 9 / 4	13 / 5 23 / 71 19 / 37	52 / 17 57 / 39 275 / 144 Beardsley St	76 / 79 109 / 33 163 / 78 Main St	15 / 22 74 / 64 4 / 4	2 / 0 8 / 25 52 / 109	90 / 30 48 / 40 Beardsley St	30 / 20 1580 / 820 Harbor Dr	22 / 95 560 / 1950		34 / 44 353 / 332 Cesar Chavez Pkwy	205 / 167 278 / 173 615 / 517 Kearney Ave		257 / 383 259 / 343

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

13

80 / 51	Cesar Chavez Pkwy-SR-75 On-ramp	76 / 90
818 / 684		350 / 350
70 / 114		100 / 100
		Logan Ave
140 / 130		100 / 140
300 / 450		300 / 506
120 / 230		300 / 700

see note below

14

310 / 410	Cesar Chavez Pkwy	110 / 275
765 / 550		350 / 270
60 / 120		120 / 110
		National Ave
190 / 300		100 / 120
250 / 400		570 / 1000
190 / 290		50 / 100

15

150 / 60	Cesar Chavez Pkwy	70 / 130
825 / 910		50 / 70
100 / 170		40 / 90
		Newton Ave
80 / 120		40 / 40
40 / 130		420 / 790
60 / 70		30 / 60

16

195 / 280	Cesar Chavez Pkwy	190 / 270
580 / 540		350 / 250
150 / 250		70 / 70
		Main St
150 / 120		85 / 85
190 / 290		340 / 640
15 / 25		90 / 180

17

510 / 314	Cesar Chavez Pkwy	99 / 43
83 / 30		1056 / 467
77 / 33		80 / 30
		Harbor Dr
109 / 590		10 / 50
404 / 1500		14 / 63
40 / 40		27 / 35

18

	I-5 SB On-Ramp	80 / 69
		125 / 156
		Logan Ave
475 / 891		0 / 11
182 / 523	Park Dwy	2 / 2
2 / 8		2 / 3

19

281 / 239	SR-75 Off-Ramp	269 / 253
29 / 129		National Ave
126 / 302		

20

28 / 70	Evans St	28 / 24
18 / 23		225 / 191
9 / 45		38 / 34
		National Ave
16 / 35		27 / 12
114 / 389		48 / 18
22 / 34		25 / 62

21

37 / 21	Evans St	30 / 27
30 / 28		63 / 70
7 / 30		16 / 27
		Newton Ave
23 / 24		27 / 7
87 / 124		58 / 47
22 / 41		31 / 28

22

34 / 9	Evans St	75 / 68
66 / 85		427 / 284
		Main St
24 / 6		
191 / 337		

23

14 / 13	Sampson St	60 / 54
237 / 275		77 / 81
62 / 66		106 / 167
		Logan Ave
101 / 101		212 / 230
220 / 251		366 / 443
161 / 200		174 / 124

24

121 / 109	Sampson St	106 / 105
124 / 98		101 / 70
62 / 132		48 / 21
		National Ave
78 / 166		7 / 13
50 / 111		107 / 208
15 / 12		16 / 30

The northbounf right-turn volumes for Logan Avenue/SR-75 and Cesar Chavez Parkway intersection include the vehicles turning north from Cesar Chavez Parkway using the free northbound right-turn lane. The intersection analysis did not include a reduction for these volumes.

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

25

39 / 21	Sampson St	37 / 33
113 / 76		79 / 73
20 / 21		15 / 0
		Newton Ave

23 / 35		7 / 13
92 / 117		48 / 103
17 / 24		32 / 20

26

205 / 105	Sampson St	16 / 8
59 / 27		282 / 113
10 / 8		53 / 27
		Main St

81 / 134		52 / 63
76 / 174		31 / 46
51 / 32		35 / 49

27

32 / 26	Sampson St	41 / 62
75 / 66		1312 / 493
61 / 56		75 / 19
		Harbor Dr

10 / 56		14 / 23
750 / 1500		61 / 111
28 / 5		38 / 41

28

37 / 42	Sicard St	3 / 1
39 / 17		164 / 125
4 / 4		27 / 8
		National Ave

20 / 41		48 / 34
79 / 170		49 / 45
38 / 39		12 / 17

29

16 / 20	26th St	48 / 54
45 / 80		222 / 123
50 / 91		36 / 35
		National Ave

26 / 35		31 / 54
66 / 155		55 / 68
43 / 74		15 / 34

30

		279 / 239
		42 / 31
		National Ave

151 / 373	I-5 SB Off-ramp	28 / 37
7 / 14		149 / 296

31

13 / 8	26th St	26 / 28
19 / 11		188 / 59
16 / 26		146 / 50
		Main St

11 / 14		33 / 9
59 / 212		32 / 58
19 / 17		92 / 204

32

169 / 80	Schley St	17 / 39
25 / 10		1473 / 558
12 / 16		Harbor Dr

126 / 208		
465 / 1400		

33

307 / 102	28th St	126 / 241
213 / 210		599 / 406
118 / 195		186 / 448
		National Ave

106 / 94		33 / 18
245 / 588		102 / 98
18 / 85		82 / 163

34

300 / 350	28th St	130 / 80
880 / 500		80 / 70
170 / 350		50 / 70
		Boston Ave

250 / 350		90 / 50
300 / 500		720 / 1100
150 / 170		90 / 200

35

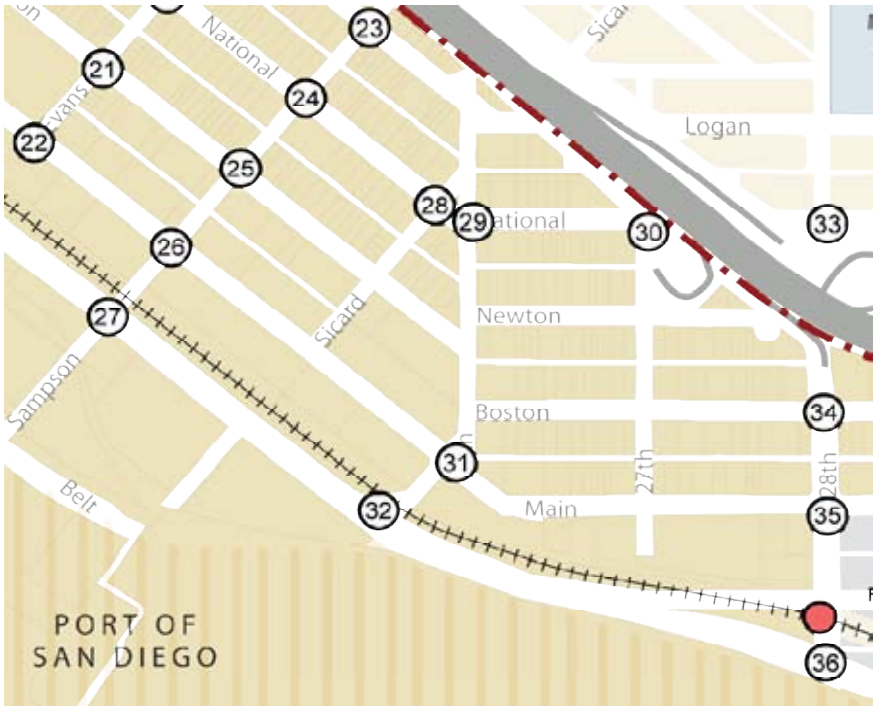
260 / 550	28th St	190 / 290
750 / 510		500 / 300
190 / 290		90 / 150
		Main St

190 / 270		40 / 60
300 / 600		220 / 500
50 / 40		70 / 180

36

22 / 13	28th St	115 / 255
15 / 12		843 / 491
339 / 480		18 / 18
		Harbor Dr

120 / 300		0 / 10
580 / 1120		6 / 133
4 / 2		2 / 0



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

FIGURE 6-2.2

Horizon Year (2030) Peak-Hour Volumes (Alternative 2) (cont.)

37

29th St

282 / 658 ⇦
104 / 151 ⇨
14 / 29 ⇙

⇗ 96 / 132
⇧ 107 / 86
⇖ 20 / 20

Boston Ave

⇗ ⇧ ⇖
6 /10
36 /88
19 /45

38

41 /68 ⇙
83 /61 ⇩
44 /148 ⇘

32nd St

36 / 63 ⇦
153 / 733 ⇨
200 / 139 ⇙

⇗ 100 / 132
⇧ 548 / 407
⇖ 314 / 207

Main St

⇗ ⇧ ⇖
110 /193
50 /112
26 /307

39

63 /29 ⇖
444 /479 ⇩
179 /413 ⇗

32nd St

Norman Scott Rd

65 / 115 ⇦
25 / 115 ⇦
170 / 80 ⇨
80 /130 ⇙

⇗ 10 /10
⇦ 65 /55
⇖ 775 /340

Wabash Blvd

⇨ 50 /205
⇧ 120 /210
⇦ 45 /50
⇖ 250 /140

⇖ ⇦ ⇨ ⇦
70 /140
215 /360
125 /760
290 /240

40

190 /260 ⇙
1040 /280 ⇩
130 /310 ⇘

32nd St

140 / 340 ⇦
641 / 1160 ⇨
140 / 100 ⇙

⇗ 390 / 460
⇧ 756 / 434
⇖ 300 / 40

Harbor Dr

⇗ ⇧ ⇖
30 /70
160 /690
30 /140

41

268 /129 ⇖
108 /120 ⇙

I-15 Ramps

⇗ 107 / 154
⇧ 516 / 373

Main St

37 / 255 ⇦
187 / 743 ⇨

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Intersection Analysis

Table 6-2 displays the LOS analysis results for the study intersections under Horizon Year with the Barrio Logan Community Plan Update conditions for Alternative 2 scenario. As shown in the table, all intersections would operate at LOS D or better during both peak-hour periods, with the exception of the following sixteen intersections:

- National Avenue and 16th Street (LOS F during both peak-hour periods);
- Harbor Drive and Sigsbee Street (LOS F during both peak-hour periods);
- Logan Avenue and Beardsley Street/I-5 SB off-ramp (LOS F during the afternoon peak-hour period);
- National Avenue and Beardsley Street (LOS E and LOS F in the morning and afternoon peak-hour periods, respectively);
- Harbor Drive and Beardsley Street (LOS F during both peak-hour periods);
- Logan Avenue and Cesar Chavez Parkway (LOS E in the afternoon peak-hour period);
- Harbor Drive and Cesar Chavez Parkway (LOS F both peak-hour periods);
- Logan Avenue and Sampson Street (LOS F during both peak-hour periods);
- Harbor Drive and Schley Street (LOS F in the morning peak-hour period);
- National Avenue and 28th Street (LOS E both peak-hour periods);
- Boston Avenue and 28th Street (LOS E in the afternoon peak-hour period);
- Harbor Drive and 28th Street (LOS F in the afternoon peak-hour period);
- Boston Avenue and I-5 Southbound On-ramp (LOS F in the afternoon peak-hour period);
- 32nd Street and Wabash Street (LOS F during both peak-hour periods); and
- Harbor Drive and 32nd Street (LOS F during both peak-hour periods).

The Barrio Logan Community Plan Update Alternative 2 is considered to have a cumulative traffic related impact at all fifteen intersections listed above.

Appendix D contains the LOS calculation worksheets.

TABLE 6-2
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 2
PEAK-HOUR INTERSECTION LOS SUMMARY

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING		ALTERNATIVE 2			
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	Δ (c)	SIGNIFICANT?
1	Commercial St & 16th St	Signal	AM	19.4	B	12.8	B	-6.6	NO
			PM	24.6	C	31.2	C	6.6	NO
2	National Ave & 16th St	Two-Way Stop	AM	11.7	B	53.1 (NB)	**F**	41.4	**YES**
			PM	12.5	B	225.9 (SB)	**F**	213.4	**YES**
3	National Ave & Sigsbee St	Signal	AM	9.6	A	8.2	A	-1.4	NO
			PM	9.6	A	7.3	A	-2.3	NO
4	Newton Ave & Sigsbee St	All-Way Stop	AM	7.9	A	8.8	A	0.9	NO
			PM	7.6	A	8.0	A	0.4	NO
5	Main St & Sigsbee St	All-Way Stop	AM	7.4	A	8.1	A	0.7	NO
			PM	7.4	A	7.8	A	0.4	NO
6	Harbor Dr & Sigsbee St	One-Way Stop	AM	17.0	C	ECL (SB)	**F**	--	**YES**
			PM	18.1	C	ECL (SB)	**F**	--	**YES**
7	Logan Ave & Beardsley St- I-5 SB ramp	All-Way Stop	AM	11.1	B	34.8	D	23.7	NO
			PM	11.9	B	90.7 (EB)	**F**	78.8	**YES**
8	National Ave & Beardsley St	All-Way Stop	AM	8.5	A	42.4	**E**	33.9	**YES**
			PM	8.7	A	131.5 (EB)	**F**	122.8	**YES**
9	Newton Ave & Beardsley St	All-Way Stop	AM	8.5	A	9.4	A	0.9	NO
			PM	8.2	A	8.6	A	0.4	NO
10	Main St & Beardsley St	All-Way Stop	AM	8.5	A	15.5	C	7.0	NO
			PM	7.8	A	9.5	A	1.7	NO
11	Harbor Dr & Beardsley St	One-Way Stop	AM	20.3	C	147.1 (SB)	**F**	126.8	**YES**
			PM	18.3	C	50.6	**F**	32.3	**YES**
12	Kearney St & Cesar E. Chavez Pkwy	Signal	AM	21.7	C	51.6	D	29.9	NO
			PM	21.2	C	35.4	D	14.2	NO
13	Logan Ave & Cesar E. Chavez Pkwy	Signal	AM	14.0	B	31.8	C	17.8	NO
			PM	13.0	B	66.5	**E**	53.5	**YES**
14	National Ave & Cesar E. Chavez Pkwy	Signal	AM	11.0	B	34.6	C	23.6	NO
			PM	14.0	B	52.5	D	38.5	NO
15	Newton Ave & Cesar E. Chavez Pkwy	Signal	AM	8.1	A	9.4	A	1.3	NO
			PM	9.1	A	16.0	B	6.9	NO
16	Main St & Cesar E. Chavez Pkwy	Signal	AM	9.6	A	48.5	D	38.9	NO
			PM	8.7	A	52.0	D	43.3	NO
17	Harbor Dr & Cesar E. Chavez Pkwy	Signal	AM	33.2	C	118.8	**F**	85.6	**YES**
			PM	43.6	D	103.2	**F**	59.6	**YES**
18	Logan Ave & I-5 SB On-ramp	One-Way Stop	AM	8.8	A	9.3	A	0.5	NO
			PM	9.9	A	14.8	B	4.9	NO
19	National Ave & SR-75 Off-ramp	One-Way Stop	AM	10.1	B	13.1	B	3.0	NO
			PM	11.0	B	13.7	B	2.7	NO
20	National Ave & Evans St	Two-Way Stop	AM	11.2	B	14.4	B	3.2	NO
			PM	11.9	B	21.1	C	9.2	NO

Notes:
Bold values indicate intersections operating at LOS E or F.
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 6-2
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 2
PEAK-HOUR INTERSECTION LOS SUMMARY (cont.)

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING		ALTERNATIVE 2			
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	Δ	SIGNIFICANT?
21	Newton Ave & Evans St	Two-Way Stop	AM	9.8	A	11.8	B	2.0	NO
			PM	9.8	A	12.4	B	2.6	NO
22	Main St & Evans St	One-Way Stop	AM	9.3	A	16.8	C	7.5	NO
			PM	9.6	A	16.8	C	7.2	NO
23	Logan Ave & Sampson St	All-Way Stop	AM	10.0	B	178.3 (NB)	**F**	168.3	**YES**
			PM	10.7	B	240.2 (NB)	**F**	229.5	**YES**
24	National Ave & Sampson St	Signal	AM	10.3	B	8.1	A	-2.2	NO
			PM	9.4	A	9.2	A	-0.2	NO
25	Newton Ave & Sampson St	All-Way Stop	AM	7.5	A	8.8	A	1.3	NO
			PM	7.6	A	8.9	A	1.3	NO
26	Main St & Sampson St	All-Way Stop	AM	8.6	A	13.8	B	5.2	NO
			PM	8.2	A	11.6	B	3.4	NO
27	Harbor Dr & Sampson St	Signal	AM	23.1	C	25.3	C	2.2	NO
			PM	27.1	C	41.7	D	14.6	NO
28	National Ave & Sicard St	Two-Way Stop	AM	12.0	B	14.3	B	2.3	NO
			PM	11.4	B	14.1	B	2.7	NO
29	National Ave & 26th St	All-Way Stop	AM	8.7	A	9.6	A	0.9	NO
			PM	8.8	A	10.8	B	2.0	NO
30	National Ave & I-5 SB Off-ramp	One-Way Stop	AM	11.5	B	12.1	B	0.6	NO
			PM	17.8	C	21.0	C	3.2	NO
31	Main St & 26th St-Schley St	All-Way Stop	AM	7.7	A	8.4	A	0.7	NO
			PM	8.0	A	8.2	A	0.2	NO
32	Harbor Dr & Schley St	Signal	AM	19.6	B	88.3	**F**	68.7	**YES**
			PM	14.1	B	30.3	C	16.2	NO
33	National Ave & 28th St	Signal	AM	35.3	D	79.6	**E**	44.3	**YES**
			PM	29.8	C	66.8	**E**	37.0	**YES**
34	Boston Ave & 28th St (c)	Signal	AM	10.6	B	27.8	C	17.2	NO
			PM	17.7	B	68.8	**E**	51.1	**YES**
35	Main St & 28th St (c)	Signal	AM	23.4	C	36.4	D	13.0	NO
			PM	29.2	C	45.3	D	16.1	NO
36	Harbor Dr & 28th St	Signal	AM	34.3	C	45.6	D	11.3	NO
			PM	45.6	D	97.4	**F**	51.8	**YES**
37	Boston Ave & I-5 SB On-ramp-29th St	One-Way Stop	AM	17.3	C	28.3	D	11.0	NO
			PM	260.7	**F**	ECL (NB)	**F**	--	**YES**
38	Main St & 32nd St	Signal	AM	21.9	C	21.8	C	-0.1	NO
			PM	29.2	C	31.8	C	2.6	NO
39	32nd St & Wabash St	Signal	AM	38.5	D	130.6	**F**	92.1	**YES**
			PM	32.0	C	85.1	**F**	53.1	**YES**
40	Harbor Dr & 32nd St	Signal	AM	31.7	C	144.3	**F**	112.6	**YES**
			PM	51.1	D	89.0	**F**	37.9	**YES**
41	Main St & I-15 Ramps	Signal	AM	10.8	B	10.3	B	-0.5	NO
			PM	11.5	B	11.6	B	0.1	NO

Notes:

Bold values indicate intersections operating at LOS E or F.

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

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

(c) The intersection may not operate as well as indicated due to potential queuing. See text of the report for additional explanation.

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Roadway Segment Analysis

Table 6-3 displays the roadway segment analysis under the Horizon Year (2030) conditions for the Alternative 2 scenario. As shown in the table, based on planning level analysis and on ADT volumes, the Alternative 2 scenario would be considered having a cumulative roadway segment impact along the following roadway segments:

- Cesar Chavez Parkway between Logan Avenue and National Avenue (LOS E);
- Cesar Chavez Parkway between National Avenue and Newton Avenue (LOS F);
- Cesar Chavez Parkway between Newton Avenue and Main Street (LOS E);
- Sampson Street between National Avenue and Harbor Drive (LOS F);
- 26th Street between National Avenue and Main Street (LOS F);
- 28th Street between I-5 and Boston Avenue (LOS F);
- 32nd Street between Main Street and Wabash Boulevard (LOS E);
- Vesta Street between Main Street and I-5 Ramps (LOS E);
- Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (LOS F);
- National Avenue between 16th Street and Sigsbee Street (LOS E);
- National Avenue between Sigsbee Street and Beardsley Street (LOS E);
- National Avenue between Beardsley Street and Cesar Chavez Parkway (LOS F);
- National Avenue between Cesar Chavez Parkway and Evans Street (LOS F);
- National Avenue between Sicard Street and 27th Street (LOS F);
- Boston Avenue between 28th Street and 29th Street (LOS F);
- Boston Avenue between 29th Street and 32nd Street (LOS F);
- Main Street between Cesar Chavez Parkway and Evans Street (LOS F);
- Main Street between Evans Street and 26th Street (LOS F);
- Main Street between 26th Street and 28th Street (LOS F);
- Main Street between 28th Street and 29th Street (LOS F);
- Main Street between 29th Street and 32nd Street (LOS F);
- Main Street between 32nd Street and Rigel Street (LOS F);
- Main Street between Rigel Street and Una Street (LOS F); and
- Main Street between Una Street and I-5 SB Off-ramp (LOS F).

Freeway Segment Analysis

Table 6-4 displays the freeway segments analysis under the Horizon Year (2030) conditions for the Alternative 2 scenario. As shown in the table, the Alternative 2 scenario would have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction (LOS F and LOS E for the morning and afternoon peak-hour periods, respectively);
- I-5 from SR-75 Junction to 28th Street (LOS F and LOS E for the morning and afternoon peak-hour periods, respectively);
- I-5 from 28th Street to I-15 Interchange (LOS E during the morning peak-hour periods);
- I-5 from I-15 Interchange to Division Street (LOS F both peak-hour periods); and
- I-15 from I-5 Interchange to Ocean View Boulevard (LOS F during the afternoon peak-hour period)

TABLE 6-3
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 2
ROADWAY SEGMENT LOS SUMMARY

ROADWAY SEGMENT	ROADWAY CLASSIFICATION (a)	HIGHEST ACCEPTABLE LOS D VOLUME	LOS E CAPACITY	EXISTING CONDITIONS			YEAR 2030 (ALTERNATIVE 2)			Δ in V/C	SIGNIFICANT?
				ADT	V/C RATIO (b)	LOS	ADT	V/C RATIO (b)	LOS		
Cesar Chavez Pkwy											
north of Logan Ave	3 Lane Collector (with TWLT)	18,750	22,500	14,170	0.630	C	15,800	0.702	D	0.072	NO
between Logan Ave and National Ave	4 Lane Collector (with TWLT)	25,000	30,000	15,300	0.510	C	26,200	0.873	**E**	0.363	**YES**
between National Ave and Newton Ave	3 Lane Collector (with TWLT)	18,750	22,500	12,494	0.555	C	26,100	1.160	**F**	0.605	**YES**
between Newton Ave and Main St	3 Lane Collector (with TWLT)	18,750	22,500	11,812	0.525	C	21,800	0.969	**E**	0.444	**YES**
between Main St and Harbor Dr	4 Lane Collector (with TWLT)	25,000	30,000	10,381	0.346	B	12,700	0.423	B	0.077	NO
Sampson St											
between I-5 and National Ave	2 Lane Collector (No TWLT)	6,500	8,000	3,086	0.386	B	5,700	0.713	D	0.327	NO
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	6,500	8,000	2,561	0.320	B	8,700	1.088	**F**	0.768	**YES**
26th St											
between National Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	2,380	0.298	A	8,300	1.038	**F**	0.740	**YES**
28th St											
between I-5 and Boston Ave	3 Lane Collector (with TWLT)	18,750	22,500	22,000	0.978	**E**	36,600	1.627	**F**	0.649	**YES**
between Boston Ave and Main St	4 Lane Collector (with TWLT)	25,000	30,000	18,856	0.629	C	24,300	0.810	D	0.181	NO
between Main St and Harbor Dr	4 Lane Major Arterial	35,000	40,000	16,658	0.416	B	23,700	0.593	C	0.177	NO
29th St											
between Boston Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	1,500	0.188	A	5,800	0.725	D	0.538	NO
32nd St											
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	13,000	15,000	13,172	0.878	**E**	14,100	0.940	E	0.062	**YES**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	35,000	40,000	19,785	0.495	B	26,700	0.668	C	0.173	NO
Rigel St											
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	1,723	0.215	A	1,400	0.175	A	-0.040	NO
Vesta St											
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	4,900	0.613	C	6,600	0.825	**E**	0.212	**YES**
Logan Ave											
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	3,659	0.244	A	10,800	0.720	D	0.476	NO
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	7,478	0.499	C	17,000	1.133	**F**	0.634	**YES**
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	2,954	0.197	A	6,000	0.400	B	0.203	NO
National Ave											
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	2,603	0.174	A	13,200	0.880	**E**	0.706	**YES**
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	13,000	15,000	4,500	0.300	A	13,200	0.880	**E**	0.580	**YES**
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	3,511	0.439	C	17,100	2.138	**F**	1.699	**YES**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	4,643	0.580	C	9,200	1.150	**F**	0.570	**YES**
between Evans St and Sicard St	2 Lane Collector (with TWLT)	13,000	15,000	3,677	0.245	A	8,900	0.593	C	0.348	NO
between Sicard St and 27th St	2 Lane Collector (No TWLT)	6,500	8,000	8,445	1.056	**F**	10,200	1.275	**F**	0.219	**YES**
Boston Ave											
between 28th and 29th St	2 Lane Collector (No TWLT)	6,500	8,000	2,420	0.303	A	16,400	2.050	**F**	1.747	**YES**
between 29th St and 32nd St	2 Lane Collector (No TWLT)	6,500	8,000	2,420	0.303	A	8,900	1.113	**F**	0.810	**YES**
Main St											
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	3,566	0.446	C	5,700	0.713	D	0.267	NO
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	2,598	0.325	B	9,400	1.175	**F**	0.850	**YES**
between Evans St and 26th St	2 Lane Collector (No TWLT)	6,500	8,000	2,598	0.325	B	15,400	1.925	**F**	1.600	**YES**
between 26th St and 28th St	3 Lane Collector (No TWLT)	9,750	11,250	7,435	0.661	C	13,600	1.209	**F**	0.548	**YES**
between 28th and 29th St	4 Lane Collector (No TWLT)	13,000	15,000	11,266	0.751	**F**	13,000	0.867	**F**	0.116	**YES**
between 29th St and 32nd St	3 Lane Collector (No TWLT)	9,750	11,250	11,266	1.001	**F**	19,300	1.716	**F**	0.715	**YES**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	13,000	15,000	21,100	1.407	**F**	25,800	1.720	**F**	0.313	**YES**
between Rigel St and Una St	2 Lane Collector (with TWLT)	13,000	15,000	15,944	1.063	**F**	20,300	1.353	**F**	0.290	**YES**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	13,000	15,000	15,177	1.012	**F**	17,800	1.187	**F**	0.175	**YES**
Harbor Dr											
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	35,000	40,000	12,094	0.302	A	30,400	0.760	D	0.458	NO
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	35,000	40,000	13,778	0.344	A	26,000	0.650	C	0.306	NO
between Sampson St and Schley St	4 Lane Major Arterial	35,000	40,000	9,080	0.227	A	24,800	0.620	C	0.393	NO
between Schley St and 28th St	4 Lane Major Arterial	35,000	40,000	8,816	0.220	A	20,200	0.505	B	0.285	NO
between 28th St and 32nd St	4 Lane Major Arterial	35,000	40,000	18,900	0.473	B	28,100	0.703	C	0.230	NO
between 32nd St and Vesta St	4 Lane Major Arterial	35,000	40,000	16,320	0.408	B	32,200	0.805	D	0.397	NO

Notes:
Bold values indicate roadway segments operating at LOS E or F.
(a) Roadway Functional Classifications are based on field observations.
(b) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

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TABLE 6-4
HORIZON YEAR (2030) CONDITIONS ALTERNATIVE 2
FREEWAY SEGMENT LOS SUMMARY

FREEWAY SEGMENT	DIRECTION	EXISTING						ALTERNATIVE 2							
		NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS	NUMBER OF LANES	CAPACITY (a)	ADT (b)	PEAK-HOUR VOLUME (c)	V/C RATIO	LOS	V/C RATIO Δ	SIGNIFICANT?
AM PEAK															
I-5															
J Street to SR-75 Junction	NB	4 M	9,400	164,000	7,793	0.829	D	4 M + 1 H	11,000	243,400	11,565	1.051	**F0**	0.22	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000	7,603	0.809	D	4 M + 1 H	11,000	241,000	11,451	1.041	**F0**	0.23	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
28th Street to I-15 Interchange	NB	4 M	9,400	154,000	7,317	0.778	C	4 M + 1 H	11,000	222,400	10,568	0.961	**E**	0.18	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
I-15 Interchange to Division St	NB	4 M	9,400	188,000	8,933	0.950	**E**	4 M + 1 H	11,000	262,100	12,454	1.132	**F0**	0.18	**YES**
	SB	4 M	9,400					4 M + 1 H	11,000						--
I-15															--
I-5 Interchange to Ocean View Blvd	NB	3 M	7,050	95,000				3 M	7,050	129,900					--
	SB	3 M	7,050		4,722	0.670	C	3 M	7,050		6,457	0.916	D	0.25	--
SR-75 (d)															--
I-5 Interchange to Glorietta Blvd	WB	2 M	4,700	94,700				2 M	4,700	93,500					--
	EB	3 M	7,050		4,629	0.657	C	3 M	7,050		5,929	0.841	D	0.18	--
PM PEAK															
I-5															
J Street to SR-75 Junction	NB	4 M	9,400	164,000				4 M + 1 H	11,000	243,400					--
	SB	4 M	9,400		7,036	0.749	C	4 M + 1 H	11,000		10,443	0.949	**E**	0.20	**YES**
SR-75 Junction to 28th Street	NB	4 M	9,400	160,000				4 M + 1 H	11,000	241,000					--
	SB	4 M	9,400		6,865	0.730	C	4 M + 1 H	11,000		10,340	0.940	**E**	0.21	**YES**
28th Street to I-15 Interchange	NB	4 M	9,400	154,000				4 M + 1 H	11,000	222,400					--
	SB	4 M	9,400		6,607	0.703	C	4 M + 1 H	11,000		9,542	0.867	D	0.16	--
I-15 Interchange to Division St	NB	4 M	9,400	188,000				4 M + 1 H	11,000	262,100					--
	SB	4 M	9,400		8,066	0.858	D	4 M + 1 H	11,000		11,245	1.022	**F0**	0.16	**YES**
I-15															--
I-5 Interchange to Ocean View Blvd	NB	3 M	7,050	95,000	5,216	0.740	C	3 M	7,050	129,900	7,132	1.012	**F0**	0.27	**YES**
	SB	3 M	7,050					3 M	7,050						--
SR-75 (d)															--
I-5 Interchange to Glorietta Blvd	WB	3 M	7,050	73,000	4,585	0.650	C	3 M	7,050	93,500	5,873	0.833	D	0.18	--
	EB	2 M	4,700					2 M	4,700						--

Notes:
Bold values indicate freeway segments operating at LOS E or F.
M=Main Lane; A= Auxiliary Lane; H= HOV Lane.
This analysis evaluates the higher peak-hour direction of traffic
(a) The capacity is calculated as 2,350 ADT per main lane and 1,200 ADT per auxiliary lane
(b) Traffic volumes provided by Caltrans
(c) Peak-hour volume calculated by: (ADT*K*D)/Truck Factor
(d) SR-75 has reversable lanes.

K:\SND_TPTO\095707000\Excel\[707000FR01.xls]Alternative 2

Mitigation

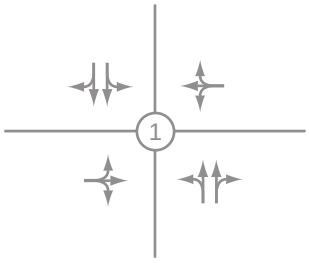
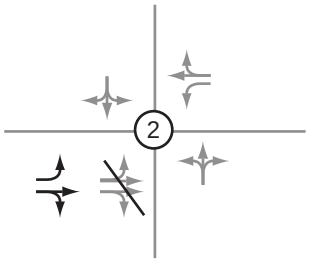
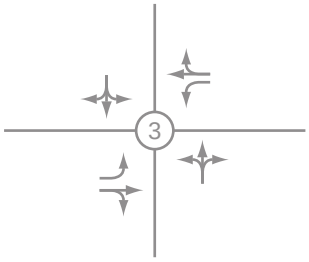
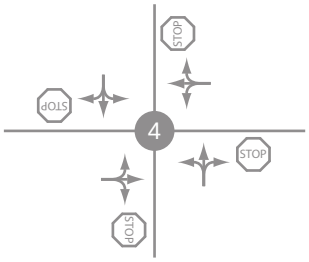
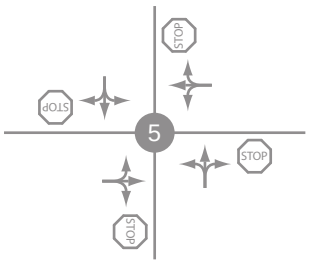
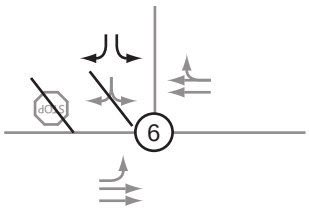
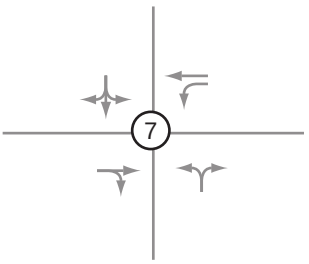
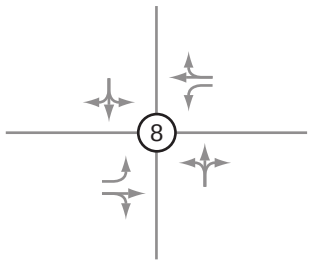
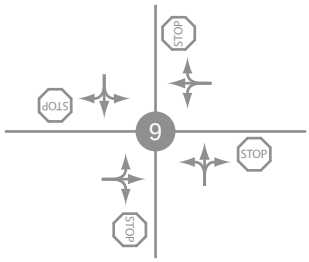
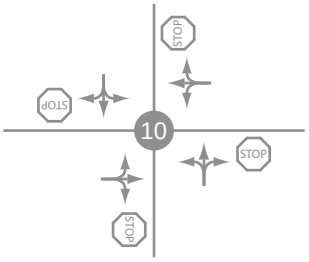
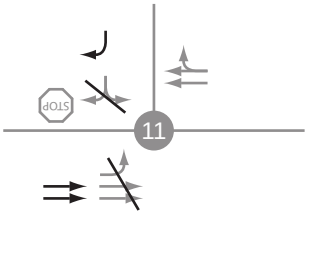
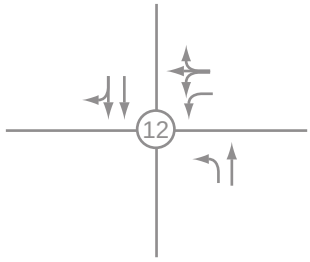
The following intersection improvements are needed to mitigate the peak-hour intersection impacts of the proposed Barrio Logan Community Plan Update Land Use Alternative 2:

- National Avenue and 16th Street: A new traffic signal is recommended to be installed at this intersection. A signal warrant worksheet for this intersection is included in **Appendix I**. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Harbor Drive and Sigsbee Street: A traffic signal is recommended to be installed at the intersection of Sigsbee Street and Harbor Drive. The signal is needed to serve the increased traffic from land uses proposed, as well as accommodating the traffic that would be diverted from Beardsley Street due to the median closure along Harbor Drive. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Logan Avenue and Beardsley Street/I-5 SB off-ramp: A traffic signal is recommended to be installed at the intersection. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- National Avenue and Beardsley Street: A traffic signal is recommended to be installed at the intersection. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Harbor Drive and Beardsley Street: This improvement would extend the raised median along Harbor Drive in front of Beardsley Street converting the intersection to right-in/right-out only movements.
- Logan Avenue and Cesar Chavez Parkway: The addition of an exclusive eastbound right-turn lane and a northbound right-turn overlap phase are recommended to be installed at this intersection. The addition of the exclusive eastbound right-turn lane could be implemented by restriping changes only. An existing MTS bus stop is located where the exclusive right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement. This improvement will not affect the existing on-street parking. The entrance to the State Route 75 ramps would be reconfigured to improve pedestrian circulation. This improvement could include the removal of the free northbound right-turn access from Cesar Chavez Parkway to the State Route 75 ramps.
- National Avenue and Cesar Chavez Parkway: Exclusive eastbound and westbound right-turn lanes are recommended to be installed at this intersection in order to reduce queuing along National Avenue. These improvements could be implemented by restriping changes only. These improvements will not affect the existing on-street parking. An existing MTS bus stop is located where the exclusive westbound right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement.
- Main Street and Cesar Chavez Parkway: An exclusive westbound right-turn lane is recommended to be installed at this intersection in order to reduce queuing along Main Street. This improvement could be implemented by restriping changes only. This improvement will not affect the existing on-street parking. An existing MTS bus stop is located where the exclusive westbound right-turn lane is recommended. To reduce the impact to on-street parking, the relocation of the existing MTS bus stop is not recommended at this point. Further coordination with MTS is required before the implementation of this improvement.

- Harbor Drive and Cesar Chavez Parkway: A southbound right-turn overlap phase, dual eastbound left-turn lanes, an exclusive northbound right-turn lane and an exclusive westbound right-turn lane are recommended. It is anticipated that the exclusive northbound right-turn lane will be completed by Caltrans in conjunction with the extension of the westbound left-turn lane.
- Logan Avenue and Sampson Street: A traffic signal is recommended to be installed. Also, southbound and northbound left-turn lanes are recommended. These lanes could be added with restriping changes only at the time of signalization, and would not require roadway widening. The configuration changes would require the removal of on-street parking along Sampson Street. A total of 16 parking spaces are anticipated to be removed as part of this improvement. The removed parking spaces are likely serving commercial uses along Logan Avenue and multi-family residential units along Sampson Street. The removal of on-street parking spaces will create a shortage of on-street parking within the vicinity of this intersection. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- Main Street and 26th Street: A partial street closure is recommended at the intersection for truck traffic restrictions. The northbound through and eastbound left movements would be eliminated. This improvement is not required to mitigate intersection level of services, but it is recommended for a reduction of truck traffic along residential streets within the community.
- Harbor Drive and Schley Street: The southbound through and southbound left-turn movements are recommended to be prohibited. Right-turn overlap signal phasing is recommended for the southbound movement.
- National Avenue and 28th Street: An exclusive southbound right-turn lane is recommended to be added. This improvement could be accomplished by restriping the roadway without the need for widening. A removal of one on-street parking space would be required along the west side of National Avenue to accommodate a 100-foot southbound exclusive right-turn lane.
- Boston Avenue and 28th Street: An exclusive eastbound right-turn lane is recommended to be added. This improvement could be implemented by restriping changes only and will not affect on-street parking.
- Harbor Drive and 28th Street: A second southbound left-turn lane and a second eastbound left-turn lane are recommended to be added.
- Boston Avenue and Interstate 5 Southbound Ramp-29th Street: This recommendation includes a truck right-turn prohibition for the northbound movement at the intersection of 28th Street and Boston Avenue and truck turning signage to encourage vehicles to use Main Street and 29th Street to enter the Interstate 5 southbound freeway. The Interstate 5 Southbound Ramp and Boston Avenue intersection is recommended to be signalized. A signal warrant worksheet for this intersection is included in Appendix I. This intersection would meet the peak-hour warrant evaluation based on the Horizon Year 2030 volumes.
- 32nd Street and Wabash Boulevard: Potential improvements at this intersection will be further defined once Caltrans completes its truck access improvement study.
- Harbor Drive and 32nd Street: Same as the improvements for Wabash Boulevard and 32nd Street.

Figure 6-3 illustrates the intersection geometrics within Barrio Logan with the recommended intersection improvements listed above.

The following roadway segment improvements are recommended to mitigate the roadway segment cumulative impacts of the proposed Barrio Logan Community Plan Update with Alternative 2 land use scenario:

Commercial St/ 16th St	National Ave/ 16th St	National Ave/ Sigsbee St	Newton Ave/ Sigsbee St
			
Main St/ Sigsbee St	Harbor Dr/ Sigsbee St	Logan Ave/Beardsley St- I-5 SB off-ramp	National Ave/ Beardsley St
			
Newton Ave/ Beardsley St	Main St/ Beardsley St	Harbor Dr/ Beardsley St	Kearney St/ Cesar Chavez Pkwy
			

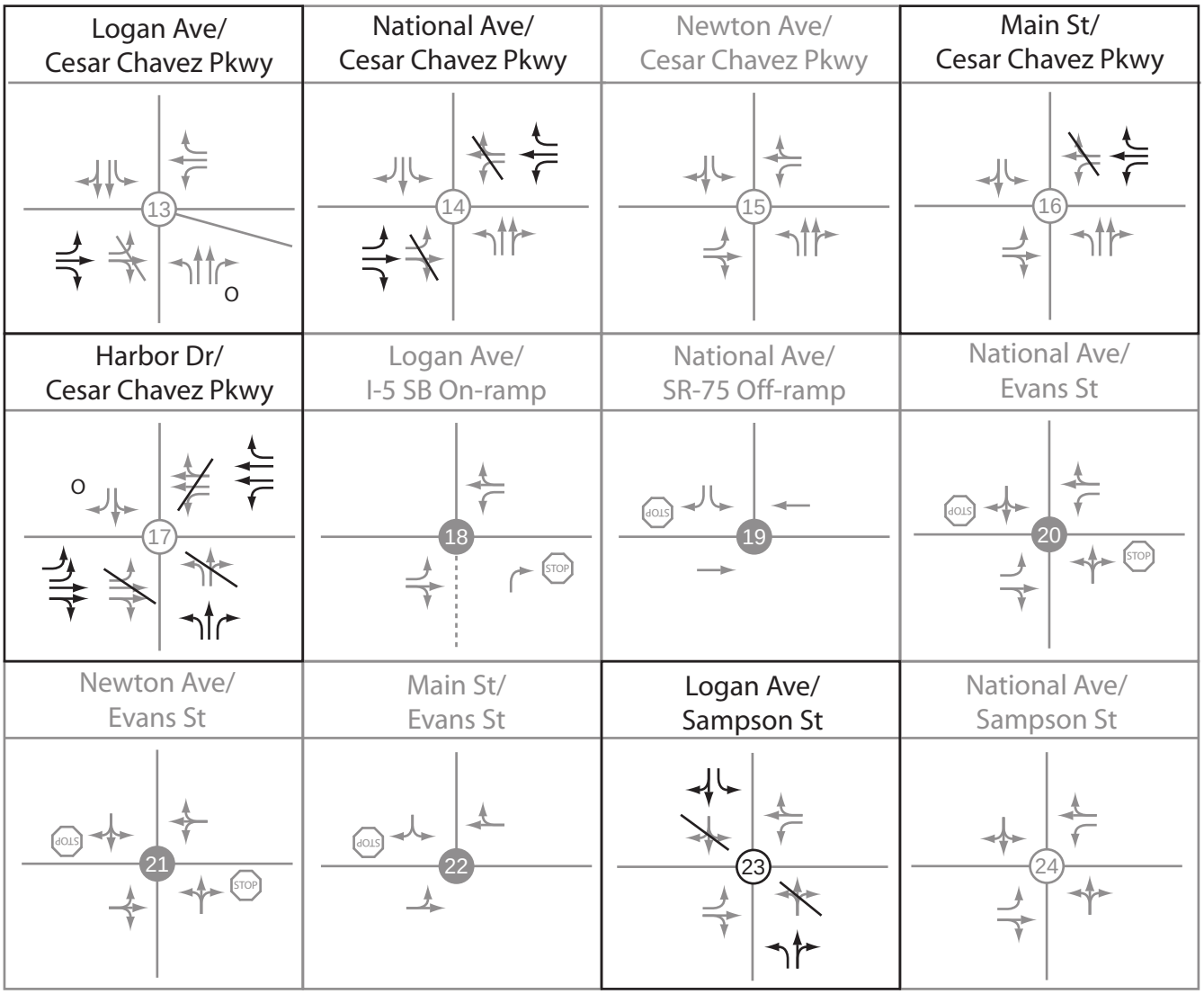
Legend:

- (X) Signalized
- X Unsignalized
- Mobility Element Recommended Lane Configuration
- Existing Lane Configuration to be modified

NOT TO SCALE

FIGURE 6-3

Horizon Year (2030) with Alternative 2 Improvements Intersection Geometrics



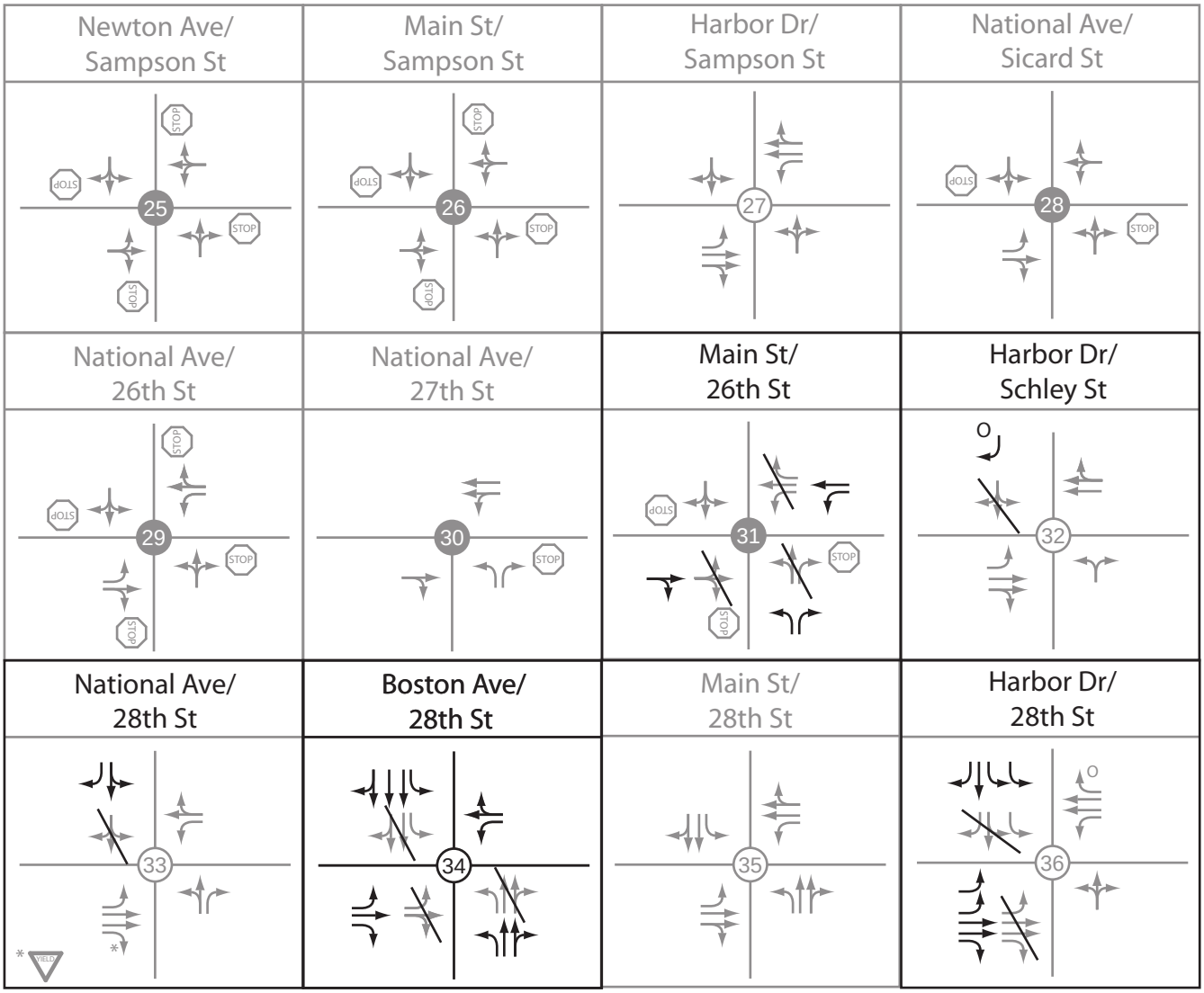
Legend:

- (X) Signalized
- (X) Unsignalized
- Mobility Element Recommended Lane Configuration
- Existing Lane Configuration to be modified

NOT TO SCALE

FIGURE 6-3.1

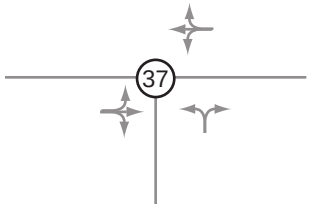
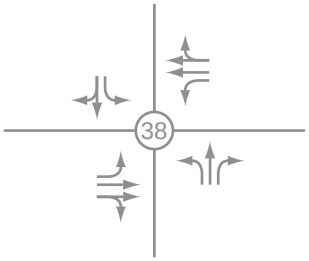
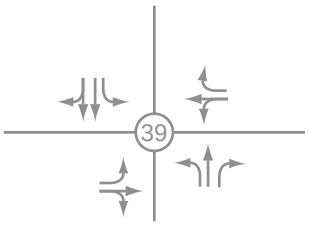
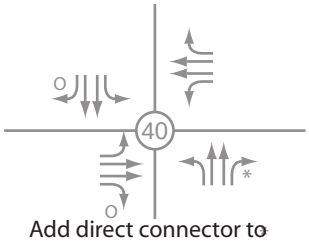
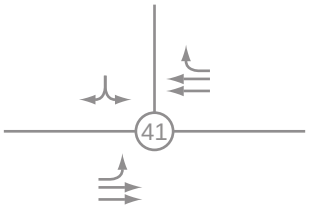
Horizon Year (2030) with Alternative 2 Improvements Intersection Geometrics



Legend:

- (X) Signalized
- (X) Unsignalized
- o Right-turn overlap
- Mobility Element Recommended Lane Configuration
- Existing Lane Configuration to be modified

NOT TO SCALE

Boston Ave/I-5 SB On-ramp	Main St/ 32nd St	Wabash Blvd/ 32nd St	Harbor Dr/ 32nd St
		 Add direct connector to Harbor Dr	 Add direct connector to Wabash Blvd
Main St / I-15 Ramps			
			

Legend:

- (X) Signalized
- X Unsignalized
- o Right-turn overlap

NOT TO SCALE

- Cesar Chavez Parkway between Logan Avenue and Harbor Drive: This roadway segment will be reclassified as a three-lane urban major facility between Logan Avenue and Main Street. Between Main Street and Harbor Drive, the roadway segment will be reclassified as a three-lane major arterial. A raised median will be installed between Harbor Drive and Logan Avenue. The roadway segment will have two lanes in the northbound direction and one lane in the southbound direction. On-street parking will be allowed between Logan Avenue and Main Street. A southbound right-turn auxiliary lane will be present between Main Street and Harbor Drive. The entire roadway segment should be considered for "sharrow" bicycle marking treatment and will be considered a class III bicycle facility.
- 28th Street between I-5 and National Avenue: This roadway segment will be reconfigured as a four-lane major arterial with a five-foot raised median. The new configuration would allow for two-lanes in each direction and an auxiliary lane in the southbound direction.
- National Avenue between Cesar Chavez and Evans Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.
- National Avenue between Sicard and 27th Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.
- Main Street between Evans Street and 26th Street: This roadway segment will be reclassified as a two-lane collector with a two-way left-turn lane.

It is anticipated that traffic patterns within the community will be affected based on some of the improvements listed above. Fewer vehicles are anticipated to use the roadway segment of Boston Avenue between 28th Street and 29th Street. This is due to the proposed improvements along 28th Street and Main Street and the signalization of Boston Avenue and 29th Street intersection, which serves as an entrance ramp to the I-5 Southbound freeway. It is anticipated that more vehicles would use Main Street and 29th Street. **Figure 6-4** illustrates the peak-hour turning volumes within the community with the anticipated change in traffic patterns.

Table 6-5 displays the summary of the intersection peak-hour analysis with the proposed intersections and roadway segments improvements described above. As shown in the Table, with the implementation of the recommended improvements, all intersections within the study area would operate at LOS D or better with the following exceptions:

- Harbor Drive and 28th Street (will continue to operate at LOS E during the afternoon peak-hour period);
- 32nd Street and Wabash Street (will continue to operate at LOS F and LOS E during the morning and afternoon peak-hour periods, respectively); and
- Harbor Drive and 32nd Street (will continue to operate at LOS F during both peak-hour periods).

The Harbor Drive/32nd Street and 32nd Street/Wabash Street intersections are being studied further in an on-going Caltrans study. The latest report includes the installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15. Another improvement under study is the Vesta Street Overcrossing at Harbor Drive which would connect the wet and dry sides of the Naval Base San Diego. On November 1, 2010 the Navy temporarily closed the eastern leg (Norman Scott Road) of the 32nd Street/Norman Street-Wabash Street intersection to improve safety. The Navy is monitoring traffic to determine if this closure should remain. A preliminary analysis indicates that the mentioned projects would improve the intersection to acceptable levels and decrease the potential queuing problems.

Harbor Drive/28th Street is projected to operate at LOS E, even with improvements. There is the potential that improvements to be made between Harbor Drive and State Route 15 (Caltrans study) could divert some traffic off of 28th Street, further improving this intersection

SANDAGs 2050 Regional Transportation Plan (RTP) unconstrained network recommends the grade separation of the trolley lines at 28th Street and at 32nd Street. A peak-hour intersection analysis was conducted for the intersections of 28th Street and 32nd Street with Harbor Drive assuming these proposed grade separations. The results of the analysis indicated that the proposed grade separation would improve both intersections to LOS D or better during both peak-hour periods under the Horizon Year scenario with either alternative. The proposed grade separations are included in the "revenue constrained scenario". Due to the benefits to adjacent intersections, these grade separation projects are recommended.

Table 6-6 displays the summary of the roadway segment analysis with the roadway segment improvements described above. As shown in the table, the following roadway segments would continue to operate at LOS E or F even with the implementation of the recommended improvements:

- Sampson Street between National Avenue and Harbor Drive (LOS F);
- 26th Street between National Avenue and Main Street (LOS F);
- 28th Street between I-5 Ramps and Boston Avenue (LOS E);
- 29th Street between Boston Avenue and Main Street (LOS E);
- 32nd Street between Main Street and Wabash Street (LOS E);
- Vesta Street between Main Street and I-5 Ramps (LOS E);
- Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (LOS F);
- National Avenue between 16th Street and Sigsbee Street (LOS E);
- National Avenue between Sigsbee Street and Beardsley Street (LOS E);
- National Avenue between Beardsley Street and Cesar Chavez Parkway (LOS F);
- Boston Avenue between 28th Street and 29th Street (LOS F);
- Boston Avenue between 29th Street and 32nd Street (LOS F);
- Main Street between Cesar Chavez Parkway and Evans Street (LOS E);
- Main Street between Evans Street and 26th Street (LOS F);
- Main Street between 26th Street and 28th Street (LOS F);
- Main Street between 28th Street and 29th Street (LOS E);
- Main Street between 29th Street and 32nd Street (LOS F);
- Main Street between 32nd Street and Rigel Street (LOS F);
- Main Street between Rigel Street and Una Street (LOS F); and
- Main Street between Una Street and I-5 SB Off-ramp (LOS F).

Boston Avenue, National Avenue and 26th Street are desired by the community of Barrio Logan to be more pedestrian and bicycle friendly corridors. The widening of these roadways to improve vehicular circulation was not desired by the community. The vehicular operations along these three facilities could be congested during peak periods and vehicular speeds would be low. Additional widening is not recommended. Traffic calming measures should be evaluated along National Avenue to further enhance the pedestrian and bicycle circulation.

Additional improvements to the failing roadway segments of Sampson Street, 28th Street, 29th Street, 32nd Street, Vesta Street, Logan Avenue and Main Street are not recommended since the roadway segment analysis used in this study is based on theoretical capacities based on the number of travel lanes. The analysis does not take into account other physical features that can affect the capacity of a roadway segment like grades, number of traffic signals, number of driveways, parking availability, etc. In addition, the analysis does not take into account the different traffic peak periods experienced on these roadways due to the surrounding land uses. As an example, the Barrio Logan traffic patterns are unique in that they are heavily influenced by the Port of San Diego and the Navy Base traffic generators whose peak-hour of use do not correspond to typical peak-hour commuter traffic. Therefore, the typical planning

level capacity for these streets may understate the carrying capacity of these roadways. To better represent the conditions of a roadway segment within the Barrio Logan community, the operations of the upstream and downstream intersections of each respective segment during the peak periods would indicate whether the roadway segment would have adequate capacity. As shown in the intersection analysis tables, all intersections along the failing roadway segments would operate at acceptable LOS.

In addition to the roadway segment improvements listed above, it is recommended that 28th Street between Harbor Drive and the I-5 Ramps be classified as a four-lane major arterial. For the segment between Harbor Drive and Main Street, a raised median should be installed with an entrance to the Navy Commissary. The proposed configuration would allow two lanes in each direction with an auxiliary lane for the heavy southbound right-turn movements at Harbor Drive. Parking would need to be removed along both sides of the roadway, with a total loss of approximately 20 parking spaces. The removed parking spaces are likely utilized by NASCO employees or Naval Base San Diego employees or visitors. Additional diagonal parking is recommended to be evaluated for installation along Boston Avenue between 28th Street and 29th Street to replace the loss of parking along 28th Street. The west side of the roadway could be widened by 4 feet to accommodate the proposed interim cross-sections. The east sidewalk will widen to 10 feet to enhance pedestrian circulation. This improvement is not part of mitigation for a roadway segment impact. The improvement is recommended to encourage heavy truck traffic to use 28th Street instead of Main Street and to provide for pedestrians. The ultimate recommended cross-section of 28th Street will include a designated bike lane along both sides of the roadway and a fourteen foot parkway. The ultimate configuration along 28th Street will require additional roadway widening and right-of-way acquisition. An alignment study is required to further define the extent of additional right-way needed and future widening

Conceptual roadway segments improvement figures, including the proposed cross-sections are included in **Appendix K**.

Based on the freeway segment capacity analysis included in this study, Alternative 2 land use scenario is considered to have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction;
- I-5 from SR-75 Junction to 28th Street;
- I-5 from 28th Street to I-15 Interchange;
- I-5 from I-15 Interchange to Division Street; and
- I-15 from I-5 Interchange to Ocean View Boulevard

SANDAG's Draft 2050 Regional Transportation Plan (RTP) hybrid network includes the following freeway improvements:

- Operational freeway improvements along Interstate 5 between Interstate 15 and Interstate 8; and
- Addition of one (1) main lane and one (1) managed lane in each direction between Interstate 15 and State Route 54;

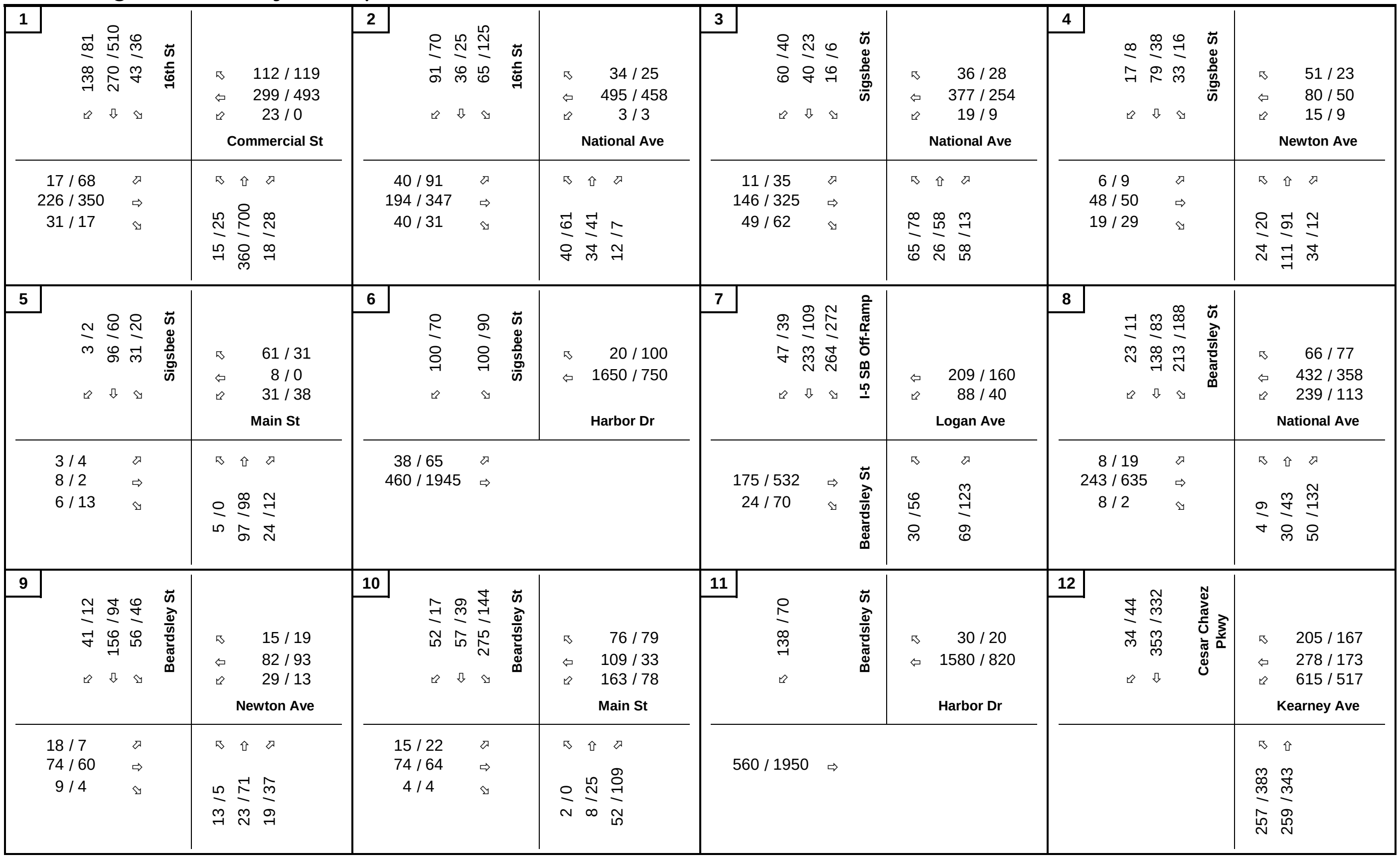
Both improvements listed above were included in the hybrid network's revenue constrained scenario, approved by SANDAG's board for further study on December 17th, 2010. The improvements included in the RTP are recommended to enhance the regional connectivity and accommodate the forecasted growth of the San Diego region. It should be noted that both land use alternatives presented on this plan would generate less traffic than the current adopted Community Plan land use alternative. Either proposed alternative would lessen, but not eliminate cumulative freeway traffic impacts.

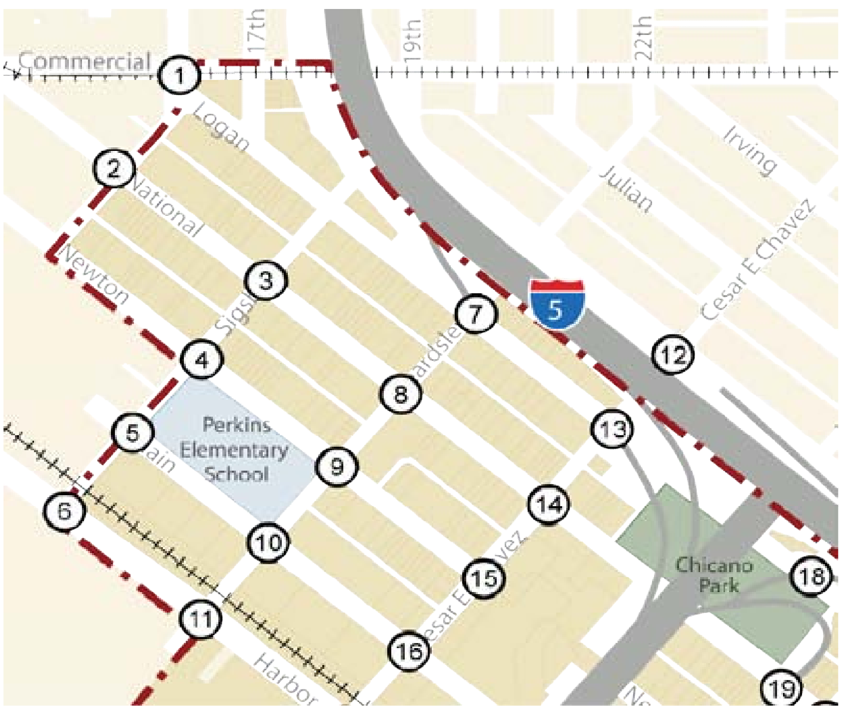
In addition to the proposed freeway improvements listed in the SANDAG's Draft 2050 RTP, the following freeway access improvements are recommended within the Barrio Logan Community:

- Signalization of the intersection of Logan Avenue and Beardsley Street/ Interstate 5 SB off-ramp;
- Traffic signal modification at the intersection of Logan Avenue and Cesar Chavez Parkway (State Route 75 on-ramp);
- Signalization of the intersection of Boston Avenue and Interstate 5 SB on-ramp- 29th Street;
- Roadway improvements along 28th Street to accommodate an additional southbound lane, including the potential for widening the Interstate 5 overcrossing;
- Signalization of the intersection of 28th Street and Interstate 5 southbound off-ramp;
- Changes to the roadway striping along Main Street between 28th Street and 29th Street to facilitate freeway access to the Interstate 5 southbound on-ramp at Boston Avenue;
- Installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15 (under study by the Port of San Diego, and Caltrans);
- Construction of the Vesta Street Overcrossing at Harbor Drive (under study by the Navy);
- Coordination of City of San Diego and Navy related to the closure of the east leg of the 32nd Street and Norman Street-Wabash Street intersection (recently completed on a trial basis by the Navy); and
- Grade separation of the trolley tracks at the 28th Street and Harbor Drive and 32nd Street and Harbor Drive intersections (to be completed by SANDAG and part of the 2050 draft RTP).

The improvements listed above would decrease congestion along the major freeway access locations within the community.

Barrio Logan Community Plan Update





Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

13

80 / 51	Cesar Chavez Pkwy-SR-75 On-ramp	76 / 90
818 / 684		350 / 350
70 / 114		100 / 100
		Logan Ave
140 / 130		100 / 140
300 / 450		300 / 506
120 / 230		300 / 700

14

310 / 410	Cesar Chavez Pkwy	110 / 275
765 / 550		350 / 270
60 / 120		120 / 110
		National Ave
190 / 300		100 / 120
250 / 400		570 / 1000
190 / 290		50 / 100

15

150 / 60	Cesar Chavez Pkwy	70 / 130
825 / 910		50 / 70
100 / 170		40 / 90
		Newton Ave
80 / 120		40 / 40
40 / 130		420 / 790
60 / 70		30 / 60

16

195 / 280	Cesar Chavez Pkwy	190 / 270
580 / 540		350 / 250
150 / 250		70 / 70
		Main St
150 / 120		85 / 85
190 / 290		340 / 640
15 / 25		90 / 180

17

510 / 314	Cesar Chavez Pkwy	99 / 43
83 / 30		1056 / 467
77 / 33		80 / 30
		Harbor Dr
109 / 590		10 / 50
404 / 1500		14 / 63
40 / 40		27 / 35

18

	I-5 SB On-Ramp	80 / 69
		125 / 156
		Logan Ave
475 / 891	Park Dwy	
182 / 523		4 / 16
2 / 8		

19

281 / 239	SR-75 Off-Ramp	269 / 253
29 / 129		National Ave
126 / 302		

20

28 / 70	Evans St	28 / 24
18 / 23		225 / 191
9 / 45		38 / 34
		National Ave
16 / 35		27 / 12
114 / 389		48 / 18
22 / 34		25 / 62

21

37 / 21	Evans St	30 / 27
30 / 28		63 / 70
7 / 30		16 / 27
		Newton Ave
23 / 24		27 / 7
87 / 124		58 / 47
22 / 41		31 / 28

22

34 / 9	Evans St	75 / 68
66 / 85		427 / 284
		Main St
24 / 6		
191 / 337		

23

14 / 13	Sampson St	60 / 54
237 / 275		77 / 81
62 / 66		106 / 167
		Logan Ave
101 / 101		212 / 230
220 / 251		366 / 443
161 / 200		174 / 124

24

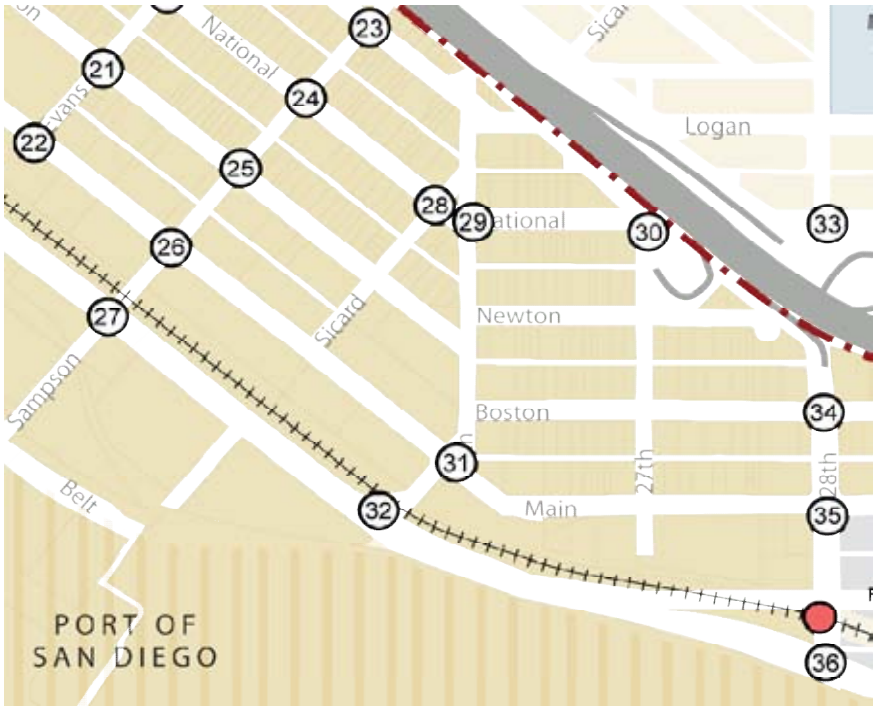
121 / 109	Sampson St	106 / 105
124 / 98		101 / 70
62 / 132		48 / 21
		National Ave
78 / 166		7 / 13
50 / 111		107 / 208
15 / 12		16 / 30

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

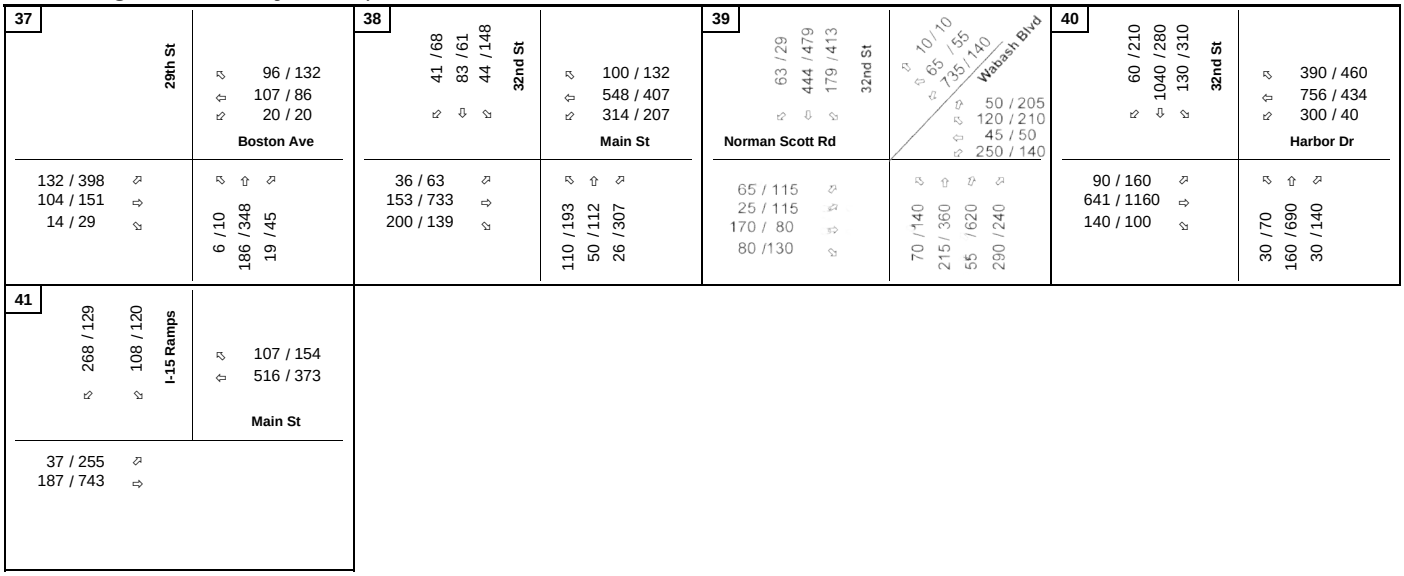
25 39 / 21 ⇦ 113 / 76 ⇩ 20 / 21 ⇙ **Sampson St** 37 / 33 ⇦ 79 / 73 ⇧ 15 / 0 ⇖ **Newton Ave** 23 / 35 ⇦ 92 / 117 ⇨ 17 / 24 ⇙ 7 / 13 ⇦ 48 / 103 ⇧ 32 / 20 ⇗	**26** 205 / 105 ⇦ 59 / 27 ⇩ 10 / 8 ⇙ **Sampson St** 16 / 8 ⇦ 282 / 113 ⇧ 53 / 27 ⇖ **Main St** 81 / 134 ⇦ 76 / 174 ⇨ 51 / 32 ⇙ 52 / 63 ⇦ 31 / 46 ⇧ 35 / 49 ⇗	**27** 32 / 26 ⇦ 75 / 66 ⇩ 61 / 56 ⇙ **Sampson St** 41 / 62 ⇦ 1312 / 493 ⇧ 75 / 19 ⇖ **Harbor Dr** 10 / 56 ⇦ 750 / 1500 ⇨ 28 / 5 ⇙ 14 / 23 ⇦ 61 / 111 ⇧ 38 / 41 ⇗	**28** 37 / 42 ⇦ 39 / 17 ⇩ 4 / 4 ⇙ **Sicard St** 3 / 1 ⇦ 164 / 125 ⇧ 27 / 8 ⇖ **National Ave** 20 / 41 ⇦ 79 / 170 ⇨ 38 / 39 ⇙ 48 / 34 ⇦ 49 / 45 ⇧ 12 / 17 ⇗
29 16 / 20 ⇦ 45 / 80 ⇩ 50 / 91 ⇙ **26th St** 48 / 54 ⇦ 222 / 123 ⇧ 36 / 35 ⇖ **National Ave** 26 / 35 ⇦ 66 / 155 ⇨ 43 / 74 ⇙ 31 / 54 ⇦ 55 / 68 ⇧ 15 / 34 ⇗	**30** 279 / 239 ⇧ 42 / 31 ⇖ **National Ave** 151 / 373 ⇦ 7 / 14 ⇙ **I-5 SB Off-ramp** 28 / 37 ⇦ 149 / 296 ⇗	**31** 13 / 8 ⇦ 19 / 11 ⇩ 16 / 26 ⇙ **26th St** 214 / 87 ⇦ 146 / 50 ⇖ **Main St** 70 / 226 ⇦ 19 / 17 ⇙ 33 / 9 ⇦ 124 / 262 ⇗	**32** 86 / 56 ⇖ **Schley St** 17 / 39 ⇧ 1573 / 598 ⇖ **Harbor Dr** 86 / 108 ⇦ 505 / 1500 ⇨
33 307 / 102 ⇦ 213 / 210 ⇩ 118 / 195 ⇙ **28th St** 126 / 241 ⇦ 599 / 406 ⇧ 186 / 448 ⇖ **National Ave** 106 / 94 ⇦ 245 / 588 ⇨ 18 / 85 ⇙ 33 / 18 ⇦ 102 / 98 ⇧ 82 / 163 ⇗	**34** 300 / 350 ⇦ 880 / 580 ⇩ 170 / 270 ⇙ **28th St** 130 / 80 ⇦ 80 / 70 ⇧ 50 / 70 ⇖ **Boston Ave** 250 / 350 ⇦ 200 / 420 ⇨ 150 / 170 ⇙ 90 / 50 ⇦ 720 / 1100 ⇧ 40 / 100 ⇗	**35** 260 / 550 ⇦ 750 / 510 ⇩ 190 / 370 ⇙ **28th St** 190 / 290 ⇦ 500 / 300 ⇧ 90 / 150 ⇖ **Main St** 190 / 220 ⇦ 400 / 730 ⇨ 50 / 40 ⇙ 40 / 60 ⇦ 170 / 450 ⇧ 120 / 230 ⇗	**36** 22 / 13 ⇦ 15 / 12 ⇩ 339 / 480 ⇙ **28th St** 115 / 255 ⇦ 943 / 531 ⇧ 18 / 18 ⇖ **Harbor Dr** 70 / 170 ⇦ 670 / 1350 ⇨ 4 / 2 ⇙ 0 / 10 ⇦ 6 / 133 ⇧ 2 / 0 ⇗



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

FIGURE 6-4.3

Horizon Year (2030) with Alternative 2 Improvements Peak-Hour Turning Volumes (cont.)

TABLE 6-5
HORIZON YEAR (2030) ALTERNATIVE 2 WITH IMPROVEMENTS
PEAK-HOUR INTERSECTION LOS SUMMARY

	INTERSECTION	PEAK HOUR	ALTERNATIVE 2		ALTERNATIVE 2 WITH IMPROVEMENTS		DESCRIPTION OF IMPROVEMENT
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	
2	National Ave & 16th St	AM	53.1	**F**	12.0	B	Install Traffic Signal.
		PM	225.9	**F**	9.6	A	
6	Harbor Dr & Sigsbee St	AM	ECL	**F**	12.6	B	Install Traffic Signal.
		PM	ECL	**F**	7.3	A	
7	Logan Ave & Beardsley St- I-5 SB ramp	AM	34.8	D	28.2	C	Install Traffic Signal. (This improvement requires Caltrans approval)
		PM	90.7	**F**	52.5	D	
8	National Ave & Beardsley St	AM	42.4	**E**	12.9	B	Install Traffic Signal.
		PM	131.5	**F**	13.5	B	
11	Harbor Dr & Beardsley St	AM	147.1	**F**	16.9	C	Modify raised median along Harbor Drive and restrict the eastbound left-turn movements and southbound left-turn movements.
		PM	50.6	**F**	11.3	B	
13	Logan Ave & Cesar E. Chavez Pkwy	AM	31.8	C	27.1	C	Add exclusive eastbound right-turn lane. Add northbound right-turn overlap phase. (This improvement requires Caltrans approval)
		PM	66.5	**E**	52.1	D	
14	National Ave & Cesar E. Chavez Pkwy	AM	34.6	C	21.2	C	Add exclusive eastbound and westbound right-turn lanes. This improvement is recommended to mitigate a potential queing impact.
		PM	52.5	D	24.4	C	
16	Main St & Cesar E. Chavez Pkwy	AM	48.5	D	23.1	C	Add exclusive westbound right-turn lane. This improvement is recommended to mitigate a potential queing impact.
		PM	52.0	D	18.7	B	
17	Harbor Dr & Cesar E. Chavez Pkwy	AM	118.8	**F**	47.9	D	Add second eastbound left-turn lane. Add a southbound right-turn overlap phase. Add exclusive westbound right-turn lane. Add exclusive northbound right-turn lane. In addition, extend the westbound left-turn pocket (to be done by Caltrans).
		PM	103.2	**F**	41.1	D	
23	Logan Ave & Sampson St	AM	178.3	**F**	10.6	B	Install Traffic Signal. Add northbound and southbound left-turn lanes.
		PM	240.2	**F**	24.0	C	
31	Main St & 26th St-Schley St	AM	8.4	A	8.4	A	Eliminate northbound through movement. This improvement is not needed based on a delay impact. It is part of a truck route improvement.
		PM	8.2	A	8.2	A	
32	Harbor Dr & Schley St	AM	88.3	**F**	48.1	D	Eliminate southbound left/through movement. Add southbound right-turn overlap phase.
		PM	30.3	C	16.7	B	
33	National Ave & 28th St	AM	79.6	**E**	39.0	D	Add exclusive southbound right-turn lane.
		PM	66.8	**E**	45.9	D	
34	Boston Ave & 28th St	AM	27.8	C	22.3	C	Add southbound through lane and remove exclusive northbound right-turn lane (part of 28th St improvements).Add exclusive eastbound right-turn lane.
		PM	68.8	**E**	45.1	D	
36	Harbor Dr & 28th St (c)	AM	45.6	D	43.6	D	Add second eastbound and southbound left-turn lanes.
		PM	97.4	**F**	83.0	**F**	
37	Boston Ave & I-5 SB On-ramp-29th St	AM	28.3	D	22.6	C	Install Traffic Signal. (This improvement requires Caltrans approval)
		PM	ECL	**F**	44.5	D	
39	32nd St & Wabash St	AM	130.6	**F**	119.4	**F**	Construct a direct connector from Harbor Dr. to Wabash St. (under study by Caltrans)
		PM	85.1	**F**	75.4	**E**	
40	Harbor Dr & 32nd St (c)	AM	144.3	**F**	121.3	**F**	
		PM	89.0	**F**	81.5	**F**	
42	I-5 SB off-ramp & 28th St	AM	The intersection was not analyzed under this scenario		14.1	B	Install Traffic Signal. (This improvement requires Caltrans approval)
		PM			4.9	A	

Notes:

Bold values indicate intersections operating at LOS E or F.

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

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

(c) As part of Sandag's Draft 2050 RTP, a grade separation for the trolley lines at this intersection is being proposed under the hybrid network which is the preferred revenue constrained network . With the grade separation, the intersection would operate at LOS D or better. See appendix L for synchro results.

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TABLE 6-6
HORIZON YEAR (2030) ALTERNATIVE 2 WITH IMPROVEMENTS
ROADWAY SEGMENT LOS SUMMARY

ROADWAY SEGMENT	ROADWAY CLASSIFICATION (a)	HIGHEST ACCEPTABLE LOS D VOLUME	LOS E CAPACITY	YEAR 2030 (ALTERNATIVE 2) WITH IMPROVEMENTS		
				ADT	V/C RATIO (b)	LOS
Cesar Chavez Pkwy						
north of Logan Ave	3 Lane Collector (with TWLT)	18,750	22,500	15,800	0.702	D
between Logan Ave and National Ave	3 Lane Urban Major	26,250	30,000	26,200	0.873	D
between National Ave and Newton Ave	3 Lane Urban Major	26,250	30,000	26,100	0.870	D
between Newton Ave and Main St	3 Lane Urban Major	26,250	30,000	21,800	0.727	C
between Main St and Harbor Dr	3 Lane Major	26,250	30,000	12,700	0.423	B
Sampson St						
between I-5 and National Ave	2 Lane Collector (No TWLT)	6,500	8,000	5,700	0.713	D
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	6,500	8,000	8,700	1.088	**F**
26th St						
between National Ave and Main St	2 Lane Collector (No TWLT)	6,500	8,000	8,300	1.038	**F**
28th St						
between I-5 and Boston Ave	4 Lane Major Arterial	35,000	40,000	36,600	0.915	**E**
between Boston Ave and Main St	4 Lane Major Arterial	35,000	40,000	24,300	0.608	C
between Main St and Harbor Dr	4 Lane Major Arterial	35,000	40,000	23,700	0.593	C
29th St						
between Boston Ave and Main St (c)	2 Lane Collector (No TWLT)	6,500	8,000	6,800	0.850	**E**
32nd St						
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	13,000	15,000	14,100	0.940	**E**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	35,000	40,000	26,700	0.668	C
Rigel St						
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	1,400	0.175	A
Vesta St						
between Main St and I-5	2 Lane Collector (No TWLT)	6,500	8,000	6,600	0.825	**E**
Logan Ave						
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	10,800	0.720	D
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	17,000	1.133	**F**
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	6,000	0.400	B
National Ave						
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	13,000	15,000	13,200	0.880	**E**
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	13,000	15,000	13,200	0.880	**E**
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	13,000	15,000	17,100	1.140	**F**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (with TWLT)	13,000	15,000	9,200	0.613	C
between Evans St and Sicard St	2 Lane Collector (with TWLT)	13,000	15,000	8,900	0.593	C
between Sicard St and 27th St	2 Lane Collector (with TWLT)	13,000	15,000	10,200	0.680	D
Boston Ave						
between 28th and 29th St (c)	2 Lane Collector (No TWLT)	6,500	8,000	16,400	2.050	**F**
between 29th St and 32nd St	2 Lane Collector (No TWLT)	6,500	8,000	8,900	1.113	**F**
Main St						
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	6,500	8,000	5,700	0.713	D
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	6,500	8,000	9,400	1.175	**F**
between Evans St and 26th St	2 Lane Collector (with TWLT)	13,000	15,000	15,400	1.027	**F**
between 26th St and 28th St	3 Lane Collector (No TWLT)	9,750	11,250	13,600	1.209	**F**
between 28th and 29th St	4 Lane Collector (No TWLT)	13,000	15,000	14,000	0.933	**E**
between 29th St and 32nd St	3 Lane Collector (No TWLT)	9,750	11,250	19,300	1.716	**F**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	13,000	15,000	25,800	1.720	**F**
between Rigel St and Una St	2 Lane Collector (with TWLT)	13,000	15,000	20,300	1.353	**F**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	13,000	15,000	17,800	1.187	**F**
Harbor Dr						
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	35,000	40,000	30,400	0.760	D
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	35,000	40,000	26,000	0.650	C
between Sampson St and Schley St	4 Lane Major Arterial	35,000	40,000	24,800	0.620	C
between Schley St and 28th St	4 Lane Major Arterial	35,000	40,000	20,200	0.505	B
between 28th St and 32nd St	4 Lane Major Arterial	35,000	40,000	28,100	0.703	C
between 32nd St and Vesta St	4 Lane Major Arterial	35,000	40,000	32,200	0.805	D

Notes:

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

(a) Roadway Classification are proposed under the Mobility Element.

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

(c) This segment was analyzed assuming a rerouting of traffic produced by the improvements along 28th Street and Main Street. A total of 1000 ADT were moved from Boston Avenue between 28th St and 29th St to Main St and 29th St.

7.0 ADDITIONAL TOPICS

The following section provides a discussion regarding the following additional topics: Intersection queuing, parking, transit and truck traffic.

Queuing

A queuing analysis was conducted at all signalized intersection within the study area for the Horizon Year with Alternative 1 and 2 with the proposed improvements. The purpose of the analysis was to identify locations where the calculated level of service may not accurately reflect the actual delay experienced by drivers and additional improvements may be appropriate. The queuing analysis was conducted using Synchro 6.0 software. A copy of the queuing analysis worksheets can be found in **Appendix J**. The following intersections were identified as having potential queuing that would exceed the available storage capacity for at least one of the peak-hour periods evaluated:

- Kearney Street and Cesar Chavez Parkway: The analysis shows that the 95th percentile queue for the **westbound** movement would exceed the available storage capacity during both peak-hour periods, while the **northbound** movement would exceed the available storage capacity during the afternoon peak-hour period. The potential queuing is caused by vehicles exiting the I-5 NB off-ramp and turning south on Cesar Chavez Parkway and by vehicles turning left from Cesar Chavez Parkway traveling west along Kearny Street. Due to the signal spacing between this intersection and Logan Avenue and the I-5 NB off-ramp, the storage capacity for the northbound and westbound movement cannot be extended without major reconstruction of the I-5 bridge over Cesar Chavez Parkway and the ramp connectors to the SR-75 freeway. It is anticipated that this potential queuing problem would only be found during the morning and afternoon peak-hour periods. Additional improvements to this locations based on potential queuing are not recommended.

- Logan Avenue and Cesar Chavez Parkway: The analysis shows that the 95th percentile queue for several movements would exceed the available storage capacity during both peak-hour periods. Due to the signal spacing between intersections due to the grid street network, the storage capacity of this intersection cannot be extended. It is anticipated that this potential queuing problem would only be found during the morning and afternoon peak-hour periods. Additional improvements to this location based on potential queuing are not recommended.

- National Avenue and Cesar Chavez Parkway: The analysis shows that the 95th percentile queue for the **eastbound left-turn** movement and the **southbound** movements would exceed the available storage capacity during both peak-hour periods. Due to the signal spacing between this intersection and Logan Avenue and Main Street, the storage capacity for the northbound movement and the southbound movements cannot be extended. A potential mitigation for the southbound queuing could be the removal of parking during the peak-hour periods along the west side of Cesar Chavez Parkway. The peak-hour parking removal would provide the room for an additional southbound lane and provide additional queuing capacity. Additional improvements to this location based on potential queuing are not recommended.

- Newton Avenue and Cesar Chavez Parkway: The analysis shows that the 95th percentile queue for the **southbound** movements would exceed the available storage capacity during both peak-hour periods. Due to the signal spacing between this intersection and National Avenue, the storage capacity for the southbound movements cannot be extended. A potential mitigation for

the southbound queuing could be the removal of parking during the peak-hour periods along the west side of Cesar Chavez Parkway. The peak-hour parking removal would provide the room for an additional southbound lane and provide additional queuing capacity. Additional improvements to this location based on potential queuing are not recommended.

- Main Street and Cesar Chavez Parkway: The analysis shows that the 95th percentile queue for the **southbound** movements would exceed the available storage capacity during both peak-hour periods. Due to the signal spacing between this intersection and Newton Avenue, the storage capacity for the southbound movements cannot be extended. A potential mitigation for the southbound queuing could be the removal of parking during the peak-hour periods along the west side of Cesar Chavez Parkway. The peak-hour parking removal would provide the room for an additional southbound lane and provide additional queuing capacity. Additional improvements to this location based on queuing are not recommended.

- Harbor Drive and Cesar Chavez Parkway: The analysis shows that the 95th percentile queue for the **westbound** left-turn movements would be approximately 200 feet during the morning peak-hour periods. As part of the Port of San Diego/Caltrans truck access improvements, the westbound left-turn pocket will be extended to accommodate the anticipated queuing at this intersection. In addition to the westbound left-turn movements, the southbound right turn movement could have a maximum potential queue of approximately 600 feet during the morning peak-hours. Due to the signal spacing between this intersection and Main Street and the existing MTS trolley lines, the storage capacity for the southbound right-turn movement cannot be extended. Additional improvements to this location based on potential queuing are not recommended.

- National Avenue and 28th Street: The analysis shows that the 95th percentile queue for the **eastbound** left-turn, the **westbound** left-turn and the **southbound** through movement would exceed the available storage capacity during both peak-hour periods. In order to mitigate queuing at this location, an additional westbound lane would need to be constructed. The additional westbound lane would require additional right-of-way along the north side of National Avenue. This improvement would significantly affect the existing properties along the north side of National Avenue. Due to physical constraints, the additional westbound lane is not recommended at this time. Additional improvements to this location based on potential queuing are not recommended.

- Boston Avenue and 28th Street: The analysis shows that the 95th percentile queue for the **southbound** left-turn, the **northbound** thru and the **eastbound** movements would exceed the available storage capacity during the afternoon peak-hour. Physical constraints at this intersection due to the distance to adjacent intersections suggest that the storage capacity for any of those movements cannot be extended. Additional physical improvements to this location based on queuing are not recommended.

- Main Street and 28th Street: The analysis shows that the 95th percentile queue for the **eastbound** left-turn and the **southbound** movements would exceed the available storage capacity during the afternoon peak-hour period. Physical constraints at this intersection due to the distance to adjacent intersections suggest that the storage capacity for any of those movements cannot be extended. It is anticipated that this potential queuing problem would only be found during the morning and afternoon peak-hour periods. Additional physical improvements to this location based on potential queuing are not recommended.

- Main Street and 32nd Street: The analysis shows that the 95th percentile queue for the **westbound** left-turn, the **northbound** left-turn and the **southbound** left-turn movements would exceed the available storage capacity during the afternoon peak-hour period. Physical constraints at this intersection due to access to surrounding buildings suggest that the storage capacity for any of those movements cannot be extended. Additional improvements to this location based on potential queuing are not recommended.

- Main Street and I-15 Ramps: The analysis shows that the 95th percentile queue for the **eastbound** left-turn movement would be approximately 220 feet long and would exceed the available storage capacity of 150 feet. In order to improve the storage capacity for the eastbound movement, the bridge over the Chollas Creek would need to be widened. This improvement is not recommended. The queuing for the eastbound left-turn movement would only be experienced during the peak-hour periods. Additional improvements to this location based on queuing are not recommended.

- 32nd Street and Norman Street - Wabash Street: The analysis shows that the 95th percentile queue for the **westbound** and **southbound** movements would exceed the available storage capacity. This intersection is being studied in an on-going Caltrans report. The latest report includes the installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15. Another improvement under study is the Vesta Street Overcrossing at Harbor Drive connecting the wet and dry sides of the Naval Base San Diego. On November 1, 2010 the Navy temporarily closed the eastern leg (Norman Scott Road) of the 32nd Street/Norman Street-Wabash Street intersection to improve safety. The Navy is monitoring traffic to determine if this closure should remain. A preliminary analysis indicates that the projects under study would improve the intersection to acceptable levels and decrease the potential queuing problems.

- 32nd Street and Harbor Drive: The analysis shows that the 95th percentile queue would exceed the available storage capacity of several movements. This intersection is being studied in an on-going Caltrans report. The latest report includes the installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15. Another improvement under study is the Vesta Street Overcrossing at Harbor Drive connecting the wet and dry sides of the Naval Base San Diego. On November 1, 2010 the Navy temporarily closed the eastern leg (Norman Scott Road) of the 32nd Street/Norman Street-Wabash Street intersection to improve safety. The Navy is monitoring traffic to determine if this closure should remain. In addition to the Port of San Diego and Navy improvements, the preferred revenue constrained network for the RTP, approved by SANDAG's board for further study, includes the grade separation of the trolley tracks at the 32nd Street and Harbor Drive intersection. A preliminary analysis indicates that the mentioned projects would improve the intersection to acceptable levels and decrease the potential queuing problems.

In order to verify whether or not the potential queuing at the above listed intersections would cause the analysis results previously reported to be understated, Synchro 6.0 intersection analysis methodology was used. The Synchro 6.0 methodology calculates a "queuing delay" for each movement of the intersection, this calculation is not included in the HCM level of service analysis. The queuing delay accounts for queuing interaction at intersections and looks at how queues can reduce capacity through spillback, starvation, and storage blocking between lane groups. A review of Synchro's queuing reports indicated that the following intersections would have a "queuing delay" that could affect the level of service and capacity of the intersections:

- Logan Avenue and Cesar Chavez Parkway (Northbound right-turn movement during the afternoon peak-hour period);

- Main Street and Cesar Chavez Parkway (Southbound through movement during both peak-hour periods);
- **Boston Avenue and 28th Street** (Northbound through movement during the afternoon peak-hour period); and
- **Main Street and 28th Street** (Eastbound left-turn movement during the afternoon peak-hour period)

When comparing the average intersection delay reported by both the HCM and Synchro 6.0 methodologies for the above listed intersections, it was found that the LOS results at the Boston Avenue/28th Street and Main Street/28th Street intersection would decrease from LOS D to LOS E due to potential queue interaction. These intersections are shown in bold. The level of service results for the other two intersections would not worsen by considering queue interaction.

To mitigate the potential capacity decrease at these intersections along 28th Street due to queue interaction, it is recommended that the signal timing along the 28th Street corridor between Harbor Drive and National Avenue be synchronized in a way to maximize vehicular progression through the closely spaced intersections, while providing queue clearance. The coordination along 28th Street would be enhanced with the grade separation of the trolley lines at the intersection of Harbor Drive and 28th Street assumed in the preferred revenue constrained network for the RTP, approved by SANDAG's board for further study on December 17th, 2010. **Appendix L** includes the HCM and queuing analysis worksheets for the intersections along Cesar Chavez Parkway, 28th Street and 32nd Street with the following improvements assumed to be completed:

- Additional southbound lane along Cesar Chavez Parkway between Logan Avenue and Main Street. This additional lane could be provided by the removal of on-street parking along the west side of Cesar Chavez Parkway during the morning and afternoon peak-hour periods;
- Grade separation for the trolley tracks at the intersection of 28th Street and Harbor Drive;
- Grade separation for the trolley tracks at the intersection of 32nd Street and Harbor Drive;
- Traffic signal coordination along 28th Street between National Avenue and Harbor Drive;
- Traffic signal coordination along 32nd Street between Harbor Drive and Wabash Avenue; and
- Closure of the east leg of Norman Street at the intersection of 32nd Street and Norman Street-Wabash Street, recently implemented on a temporary/trial basis by the Navy.

As shown in Appendix L, the improvements listed above would decrease the potential queuing problems for the critical movements. Additional potential queuing may be experienced along minor movements due to signal coordination parameters. It is anticipated that a detailed coordinated plan would be evaluated in the future based on actual traffic volumes to better serve the demand of each corridor system.

Parking

Parking in Barrio Logan is accommodated through on-site parking, leased surface parking lots, and on-street parking. The lack of adequate on-street and structured parking is a primary issue in Barrio Logan. This shortage of parking is due to the lack of on-site parking being provided for workers at harbor-related industries. These workers use parking lots along the north side of Harbor Drive and surface lots within Barrio Logan, which have been leased by their employers, and on-street parking in Barrio Logan. The use of on-street parking has led to the City establishing residential parking districts in Barrio Logan to ensure that residential areas have adequate parking. In order to implement the Bayshore Bikeway through the community, approximately 1,350 spaces of the leased harbor-working parking would be lost, potentially resulting in further demands for on-street parking.

In order to address parking deficiencies, the community plan identifies the following strategies:

- Require new development to provide adequate off-street parking to serve their needs
- Encourage the development of multi-story parking structures within the identified Transition Zone along Main Street between Evans Street and 28th Street to provide for additional parking for Port tenants, thereby reducing the potential for spillover onto on-street parking.
- Work with the Navy and Port of San Diego to enhance their Transportation Demand Management (TDM) strategies for reducing single occupant vehicle travel (and parking demand). Strategies increase use of van pools or car pools, shuttle vehicles from transit stations and park and ride lots, shared use parking for workers use during work hours and for residential and recreational use outside of work hours, and bicycle storage facilities. Currently there two major employers near Barrio Logan who participate in the TDM programs:
    - NASSCO: The approximately 3,500 employees of NASSCO have accessibility to parking spots for vanpools. The company subsidizes 25% of the cost of transit pass and/or vanpool cost. The company also provides bike racks and pre-tax payroll deductions for the purchase of transit passes, and a commuter information system for users of the TDM program.
    - Naval Base San Diego: The approximately 42,000 military personnel and 7,000 civilian workers have access to vanpools and transit passes. Military personnel are able to apply for the Transportation Incentive Program (TIP) established by the Navy. The TIP is designed to pay for mass transit cost incurred by personnel in their local commute from residence to permanent duty station. As of January 2011 participants of the TIP program are eligible for transit benefits up to $120.00 per month for specific pre-approved commuter mass transit transportation cost.

Transit

The Barrio Logan Community is well served by Metropolitan Transit System existing transit service that is expected to be maintained and enhanced in the future. The Blue Line which operates with Light Rail Transit (LRT) service is expected to see both increases in frequency and express service. The express service will not stop at every station, as a means to speed travel times. In addition, LRT grade separations are planned at 28th Street and at 32nd Street. A potential upgrade in service from Bus to Rapid Bus operation is planned for Route 11 which passes through Barrio Logan using Logan Avenue and National Avenue. All these improvements are listed in the "Hybrid constrained scenario" included in SANDAG's 2050 Regional Transportation Plan approved in December 17th, 2010.

The Barrio Logan Community Plan proposes a land use pattern that takes advantage of the existing and future transit network. The plan increases the amount of residential and employment use within walking distance of transit service. This, along with planned increases in transit service, is expected to result in an increase in transit ridership in Barrio Logan. According to travel forecast models, this plan is expected to increase transit use from an existing level of 3.8 percent of the total travel to 3.9 percent for Alternative 1 and 4.1 percent for Alternative 2. This increase in transit use is expected to reduce the amount of automobile travel, which will have positive benefits to air quality and global warming.

Truck Routes

Figure 7-1 illustrates the recommended truck routes for the community of Barrio Logan. As shown in the figure, the recommended truck routes within the community include Harbor Drive, 28th Street, 32nd Street and Wabash Avenue. These facilities should provide sufficient truck access from the industrial sites along the Port of San Diego to the Interstate freeway facilities surrounding the community.

Figure 7-2 illustrates the anticipated truck volumes along the recommended truck routes for Alternative 1 land use scenario. **Figure 7-3** illustrates the anticipated truck volumes along the recommended truck routes for Alternative 2 land use scenario.

Intersection and roadway segment improvements were identified to encourage truck traffic to use the recommended truck routes. The following are the locations where improvements are recommended:

- Prohibition of northbound through movements at the intersection of Main Street/ 26th Street/ Schley Street;
- Addition of a second eastbound left-turn lane at the intersection of Harbor Drive and 28th Street;
- Addition of a northbound auxiliary lane along 28th Street between Harbor Drive and Main Street.
- Striping changes along Main Street between 28th Street and 29th Street to accommodate turning movement onto 29th Street (This improvements should be coordinated with the signalization of Boston Avenue and the I-5 SB on-ramps);
- Signalization of the intersection of Boston Avenue and 29th Street/I-5 Southbound on-ramps;
- Caltrans improvements at the Harbor Drive and 32nd Street and 32nd Street and Wabash Avenue intersections;
- Grade separation of the trolley tracks at the 28th Street and Harbor Drive and 32nd Street and Harbor Drive intersections (to be completed by SANDAG and part of the 2050 draft RTP);
- Addition of the exclusive northbound right-turn lane and extension of the westbound left-turn lane at the intersection of Harbor Drive and Cesar Chavez Parkway (to be completed by Caltrans); and
- Implementation of context sensitive solutions to discourage truck traffic along Cesar Chavez Parkway (to be completed by Caltrans).

A complete description of the improvements is included in the mitigation sections of Chapter 5 and 6. Conceptual figures showing the recommended improvements are included in **Appendix K**.

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- Truck Routes
- Truck Weight Limit Prohibition (5 tons)
- Truck Weight Limit Prohibition (1 tons)
- Truck Parking Restriction

0 500 1000 2000 feet

N

Figure 7-1: Recommended Truck Routes

January 2011

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- XXX - Daily Truck Traffic along roadway segments

0 500 1000 2000 feet

N

Figure 7-2: Anticipated Truck Volumes for Alternative 1 Scenario

January 2011

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- XXX - Daily Truck Traffic along roadway segments

0 500 1000 2000 feet

N

Figure 7-3: Anticipated Truck Volumes for Alternative 2 Scenario

January 2011

8.0 FINDINGS AND CONCLUSIONS

The following section provides a summary of the key findings and study recommendations and includes a summary table that compares the results from the different scenarios.

Summary of Traffic Generation

Table 8-1 presents a comparison between the land uses alternatives included in this study. As shown in the table, the 2003 Base Year scenario is estimated to generate a total of 103,777 average daily trips. The build out of the Adopted Community Plan Land Uses could generate a total of 180,666 average daily trips, which would represent a 74 percent increase over the 2003 Base Year scenario.

The build out of the proposed Alternative 1 land use scenario would generate a total 137,267 average daily trips which would represent a 32 percent increase from the 2003 Base Year scenario. Compared to the Adopted Community Plan, Alternative 1 would represent a 24 percent decrease of the total trip generation.

The build out of the proposed Alternative 2 land use scenario would generate a total 152,430 average daily trips which would represent a 47 percent increase from the 2003 Base Year scenario. Compared to the Adopted Community Plan, Alternative 2 would represent a 16 percent decrease of the total trip generation. Alternative 2 would generate 11 percent more vehicle trips than Alternative 1.

It should be noted that both proposed land use alternatives would generate 16-24 percent less total traffic than the Adopted Community Plan, and this document identifies transportation-related improvements beyond what is included in the current facility finance plan.

Summary of Intersection Analyses

Table 8-2 shows the summary of the peak-hour intersection analysis for Alternative 1 Land Use scenario. As shown in the table, Alternative 1 would have significant impact at 14 of the 41 intersections analyzed.

Table 8-3 shows the summary of the peak-hour intersection analysis for Alternative 2 Land Use scenario. As shown in the table, Alternative 2 would have significant impact at 16 of the 41 intersections analyzed. In addition to the intersections identified for Alternative 1, Alternative 2 would also have a significant impact at the Main Street and Cesar Chavez Parkway and Boston Avenue and 28th Street intersections.

As shown in the table, the recommended improvements associated with Alternative 1 and Alternative 2 would mitigate all the peak-hour delay based significant impacts at intersections with the exception of the following locations:

- Harbor Drive and 28th Street (will continue to operate at LOS E during the afternoon peak-hour period);
- 32nd Street and Wabash Street (will continue to operate at LOS F and LOS E during the morning and afternoon peak-hour periods, respectively); and
- Harbor Drive and 32nd Street (will continue to operate at LOS F during both peak-hour periods).

The Harbor Drive/32nd Street and 32nd Street/Wabash Street intersections are being studied further in an on-going Caltrans study. The latest report includes the installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15. Another improvement under study is the

TABLE 8-1
SUMMARY OF TRIP GENERATIONS FOR EACH HORIZON YEAR ALTERNATIVE

	2003 BASE YEAR SCENARIO	**ADOPTED COMMUNITY PLAN**	**ALTERNATIVE 1**	**ALTERNATIVE 2**
Total Daily Trip Generation	**103,777**	**180,666**	**137,267**	**152,430**
Comparison to Existing		76,889	33,490	48,653
		74%	*32%*	*47%*
Comparison to Adopted Community Plan			-43,399	-28,236
			-24%	*-16%*
Alternative 2 vs Alternative 1				15,163
				11%

TABLE 8-2

SUMMARY OF INTERSECTION ANALYSIS FOR ALTERNATIVE 1

	INTERSECTION	PEAK HOUR	BEFORE IMPROVEMENTS LOS (a)	DOES THE PROJECT CAUSE A SIGNIFICANT IMPACT?	RECOMMENDED IMPROVEMENT	AFTER IMPROVEMENTS LOS (a)	IS THE IMPACT MITIGATED ?
1	Commercial St & 16th St	AM	B	NO	N/a	B	N/a
		PM	C	NO		C	
2	National Ave & 16th St	AM	**F**	**YES**	Install Traffic Signal.	B	YES
		PM	**F**	**YES**		A	
3	National Ave & Sigsbee St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
4	Newton Ave & Sigsbee St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
5	Main St & Sigsbee St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
6	Harbor Dr & Sigsbee St	AM	**F**	**YES**	Install Traffic Signal.	B	YES
		PM	**F**	**YES**		A	
7	Logan Ave & Beardsley St- I-5 SB ramp	AM	D	NO	Install Traffic Signal. (This improvement requires Caltrans approval)	C	YES
		PM	**F**	**YES**		D	
8	National Ave & Beardsley St	AM	**E**	**YES**	Install Traffic Signal.	B	YES
		PM	**F**	**YES**		B	
9	Newton Ave & Beardsley St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
10	Main St & Beardsley St	AM	C	NO	N/a	C	N/a
		PM	A	NO		A	
11	Harbor Dr & Beardsley St	AM	**F**	**YES**	Modify raised median along Harbor Drive and restrict the eastbound left-turn movements and southbound left-turn movements.	C	YES
		PM	**F**	**YES**		B	
12	Kearney St & Cesar E. Chavez Pkwy	AM	D	NO	N/a	D	N/a
		PM	C	NO		C	
13	Logan Ave & Cesar E. Chavez Pkwy	AM	C	NO	Add exclusive eastbound right-turn lane. Add northbound overlap phase. (This improvement requires Caltrans approval)	C	YES
		PM	**E**	**YES**		D	
14	National Ave & Cesar E. Chavez Pkwy	AM	C	NO	Add exclusive eastbound and westbound right-turn lanes. This improvement is recommended to mitigate a potential queing impact.	B	YES
		PM	D	NO		C	
15	Newton Ave & Cesar E. Chavez Pkwy	AM	A	NO	N/a	A	N/a
		PM	B	NO		B	
16	Main St & Cesar E. Chavez Pkwy	AM	D	NO	Add exclusive westbound right-turn lane. This improvement is recommended to mitigate a potential queing impact.	C	YES
		PM	D	NO		B	
17	Harbor Dr & Cesar E. Chavez Pkwy	AM	**E**	**YES**	Add second eastbound left-turn lane, a southbound right-turn overlap phase and a northbound exclusive right-turn lane. In addition, extend the westbound left-turn pocket (to be done by Caltrans).	D	YES
		PM	**F**	**YES**		D	
18	Logan Ave & I-5 SB On-ramp	AM	A	NO	N/a	A	N/a
		PM	C	NO		C	
19	National Ave & SR-75 Off-ramp	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
20	National Ave & Evans St	AM	B	NO	N/a	B	N/a
		PM	C	NO		C	

Notes:

Bold values indicate intersections operating at LOS E or F

(a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 6.0

TABLE 8-2

SUMMARY OF INTERSECTION ANALYSIS FOR ALTERNATIVE 1 (cont.)

	INTERSECTION	PEAK HOUR	BEFORE IMPROVEMENTS LOS (a)	DOES THE PROJECT CAUSE A SIGNIFICANT IMPACT?	RECOMMENDED IMPROVEMENT	AFTER IMPROVEMENTS LOS (a)	IS THE IMPACT MITIGATED ?
21	Newton Ave & Evans St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
22	Main St & Evans St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
23	Logan Ave & Sampson St	AM	**F**	**YES**	Install Traffic Signal. Add northbound and southbound left-turn lanes.	B	YES
		PM	**F**	**YES**		C	
24	National Ave & Sampson St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
25	Newton Ave & Sampson St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
26	Main St & Sampson St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
27	Harbor Dr & Sampson St	AM	C	NO	N/a	C	N/a
		PM	D	NO		D	
28	National Ave & Sicard St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
29	National Ave & 26th St	AM	A	NO	N/a	A	N/a
		PM	B	NO		B	
30	National Ave & I-5 SB Off-ramp	AM	B	NO	N/a	B	N/a
		PM	C	NO		C	
31	Main St & 26th St-Schley St	AM	A	NO	Eliminate northbound through movement. This improvement is not needed based on a delay impact. It is part of a truck route improvement.	A	YES
		PM	A	NO		A	
32	Harbor Dr & Schley St	AM	**E**	**YES**	Eliminate southbound left/through movement. Add southbound right-turn overlap phase.	C	YES
		PM	C	NO		B	
33	National Ave & 28th St	AM	**F**	**YES**	Add exclusive southbound right-turn lane.	D	YES
		PM	**E**	**YES**		D	
34	Boston Ave & 28th St (b)	AM	D	NO	Add southbound through lane and remove exclusive northbound right-turn lane.	C	YES
		PM	D	NO		D	
35	Main St & 28th St (b)	AM	C	NO	N/a	C	N/a
		PM	D	NO		D	
36	Harbor Dr & 28th St (c)	AM	D	NO	Add second eastbound and southbound left-turn lanes.	D	**NO**
		PM	**F**	**YES**		**E**	
37	Boston Ave & I-5 SB On-ramp-29th St	AM	C	NO	Install Traffic Signal. (This improvement requires Caltrans approval)	C	YES
		PM	**F**	**YES**		C	
38	Main St & 32nd St	AM	C	NO	N/a	C	N/a
		PM	C	NO		C	
39	32nd St & Wabash St	AM	**F**	**YES**	Construct a direct connector from Harbor Dr. to Wabash St. (under study by Caltrans)	**F**	**NO**
		PM	**F**	**YES**		**E**	
40	Harbor Dr & 32nd St (c)	AM	**F**	**YES**		**F**	**NO**
		PM	**F**	**YES**		**F**	
41	Main St & I-15 Ramps	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	

Notes:

Bold values indicate intersections operating at LOS E or F

(a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 6.0

(b) The intersection may not operate as well as indicated due to potential queuing. See text of the report for additional explanation.

(c) As part of Sandag's Draft 2050 RTP, a grade separation for the trolley lines at this intersection is being proposed under the hybrid network which is the preferred revenue constrained network . With the grade separation, the intersection would operate at LOS D or better. See appendix L for synchro results.

Shaded cells indicates that the intersection is not fully mitigated.

TABLE 8-3

SUMMARY OF INTERSECTION ANALYSIS FOR ALTERNATIVE 2

	INTERSECTION	PEAK HOUR	BEFORE IMPROVEMENTS LOS (a)	DOES THE PROJECT CAUSE A SIGNIFICANT IMPACT?	RECOMMENDED IMPROVEMENT	AFTER IMPROVEMENTS LOS (a)	IS THE IMPACT MITIGATED ?
1	Commercial St & 16th St	AM	B	NO	N/a	B	N/a
		PM	C	NO		C	
2	National Ave & 16th St	AM	**F**	**YES**	Install Traffic Signal.	B	YES
		PM	**F**	**YES**		A	
3	National Ave & Sigsbee St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
4	Newton Ave & Sigsbee St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
5	Main St & Sigsbee St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
6	Harbor Dr & Sigsbee St	AM	**F**	**YES**	Install Traffic Signal.	B	YES
		PM	**F**	**YES**		A	
7	Logan Ave & Beardsley St- I-5 SB ramp	AM	D	NO	Install Traffic Signal. (This improvement requires Caltrans approval)	C	YES
		PM	**F**	**YES**		D	
8	National Ave & Beardsley St	AM	**E**	**YES**	Install Traffic Signal.	B	YES
		PM	**F**	**YES**		B	
9	Newton Ave & Beardsley St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
10	Main St & Beardsley St	AM	C	NO	N/a	C	N/a
		PM	A	NO		A	
11	Harbor Dr & Beardsley St	AM	**F**	**YES**	Modify raised median along Harbor Drive and restrict the eastbound left-turn movements and southbound left-turn movements.	C	YES
		PM	**F**	**YES**		B	
12	Kearney St & Cesar E. Chavez Pkwy	AM	D	NO	N/a	D	N/a
		PM	D	NO		D	
13	Logan Ave & Cesar E. Chavez Pkwy	AM	C	NO	Add exclusive eastbound right-turn lane. Add northbound right-turn overlap phase. (This improvement requires Caltrans approval)	C	YES
		PM	**E**	**YES**		D	
14	National Ave & Cesar E. Chavez Pkwy	AM	C	NO	Add exclusive eastbound and westbound right-turn lanes. This improvement is recommended to mitigate a potential queing impact.	C	YES
		PM	D	NO		C	
15	Newton Ave & Cesar E. Chavez Pkwy	AM	A	NO	N/a	B	N/a
		PM	B	NO		B	
16	Main St & Cesar E. Chavez Pkwy	AM	D	NO	Add exclusive westbound right-turn lane. This improvement is recommended to mitigate a potential queing impact.	C	YES
		PM	D	NO		B	
17	Harbor Dr & Cesar E. Chavez Pkwy	AM	**F**	**YES**	Add second eastbound left-turn lane. Add a southbound right-turn overlap phase. Add exclusive westbound right-turn lane. Add exclusive northbound right-turn lane. In addition, extend the westbound left-turn pocket (to be done by Caltrans).	D	YES
		PM	**F**	**YES**		D	
18	Logan Ave & I-5 SB On-ramp	AM	A	NO	N/a	A	N/a
		PM	B	NO		B	
19	National Ave & SR-75 Off-ramp	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
20	National Ave & Evans St	AM	B	NO	N/a	B	N/a
		PM	C	NO		C	

Notes:

Bold values indicate intersections operating at LOS E or F

(a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 6.0

TABLE 8-3

SUMMARY OF INTERSECTION ANALYSIS FOR ALTERNATIVE 2 (cont.)

	INTERSECTION	PEAK HOUR	BEFORE IMPROVEMENTS LOS (a)	DOES THE PROJECT CAUSE A SIGNIFICANT IMPACT?	RECOMMENDED IMPROVEMENT	AFTER IMPROVEMENTS LOS (a)	IS THE IMPACT MITIGATED ?
21	Newton Ave & Evans St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
22	Main St & Evans St	AM	C	NO	N/a	C	N/a
		PM	C	NO		C	
23	Logan Ave & Sampson St	AM	**F**	**YES**	Install Traffic Signal. Add northbound and southbound left-turn lanes.	B	YES
		PM	**F**	**YES**		C	
24	National Ave & Sampson St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
25	Newton Ave & Sampson St	AM	A	NO	N/a	A	N/a
		PM	A	NO		A	
26	Main St & Sampson St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
27	Harbor Dr & Sampson St	AM	C	NO	N/a	C	N/a
		PM	D	NO		D	
28	National Ave & Sicard St	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	
29	National Ave & 26th St	AM	A	NO	N/a	A	N/a
		PM	B	NO		B	
30	National Ave & I-5 SB Off-ramp	AM	B	NO	N/a	B	N/a
		PM	C	NO		C	
31	Main St & 26th St-Schley St	AM	A	NO	Eliminate northbound through movement. This improvement is not needed based on a delay impact. It is part of a truck route improvement.	A	YES
		PM	A	NO		A	
32	Harbor Dr & Schley St	AM	**F**	**YES**	Eliminate southbound left/through movement. Add southbound right-turn overlap phase.	D	YES
		PM	C	NO		B	
33	National Ave & 28th St	AM	**E**	**YES**	Add exclusive southbound right-turn lane.	D	YES
		PM	**E**	**YES**		D	
34	Boston Ave & 28th St (b)	AM	C	NO	Add southbound through lane and remove exclusive northbound right-turn lane (part of 28th St improvements).Add exclusive eastbound right-turn lane.	C	YES
		PM	**E**	**YES**		D	
35	Main St & 28th St (b)	AM	D	NO	N/a	D	N/a
		PM	D	NO		D	
36	Harbor Dr & 28th St (c)	AM	D	NO	Add second eastbound and southbound left-turn lanes.	D	**NO**
		PM	**F**	**YES**		**F**	
37	Boston Ave & I-5 SB On-ramp-29th St	AM	D	NO	Install Traffic Signal. (This improvement requires Caltrans approval)	C	YES
		PM	**F**	**YES**		D	
38	Main St & 32nd St	AM	C	NO	N/a	C	N/a
		PM	C	NO		C	
39	32nd St & Wabash St	AM	**F**	**YES**	Construct a direct connector from Harbor Dr. to Wabash St. (under study by Caltrans)	**F**	**NO**
		PM	**F**	**YES**		**E**	
40	Harbor Dr & 32nd St (c)	AM	**F**	**YES**		**F**	**NO**
		PM	**F**	**YES**		**F**	
41	Main St & I-15 Ramps	AM	B	NO	N/a	B	N/a
		PM	B	NO		B	

Notes:

Bold values indicate intersections operating at LOS E or F

(a) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 6.0

(b) The intersection may not operate as well as indicated due to potential queuing. See text of the report for additional explanation.

(c) As part of Sandag's Draft 2050 RTP, a grade separation for the trolley lines at this intersection is being proposed under the hybrid network which is the preferred revenue constrained network . With the grade separation, the intersection would operate at LOS D or better. See appendix L for synchro results.

Shaded cells indicates that the intersection is not fully mitigated.

Vesta Street Overcrossing at Harbor Drive connecting the wet and dry sides of the Naval Base San Diego. On November 1, 2010 the Navy temporarily closed the eastern leg (Norman Scott Road) of the 32nd Street/Norman Street-Wabash Street intersection to improve safety. The Navy is monitoring traffic to determine if this closure should remain. A preliminary analysis indicates that the mentioned projects would improve the intersection to acceptable levels and decrease the potential queuing problems.

Harbor Drive/28th Street is projected to operate at LOS E, even with improvements. There is the potential that improvements to be made between Harbor Drive and State Route 15 (Caltrans study) could divert some traffic off of 28th Street, improving this intersection.

A review of Synchro's queuing reports indicated that the following four intersections would have a "queuing delay" that could affect the level of service and capacity of the intersections:

- Logan Avenue and Cesar Chavez Parkway (Northbound right-turn movement during the afternoon peak-hour period);
- Main Street and Cesar Chavez Parkway (Southbound through movement during both peak-hour periods);
- **Boston Avenue and 28th Street** (Northbound through movement during the afternoon peak-hour period); and
- **Main Street and 28th Street** (Eastbound left-turn movement during the afternoon peak-hour period)

When comparing the average intersection delay reported by both the HCM and Synchro 6.0 methodologies for the above listed intersections, it was found that the LOS results at the Boston Avenue/28th Street and Main Street/28th Street intersection would decrease from LOS D to LOS E due to potential queue interaction. These intersections are shown in bold. The level of service results for the other two intersections would not worsen by considering queue interaction.

To mitigate the potential capacity decrease at these intersections along 28th Street due to queue interaction, it is recommended that the signal timing along the 28th Street corridor between Harbor Drive and National Avenue be synchronized in a way to maximize vehicular progression through the closely spaced intersections, while providing queue clearance.

Along Cesar Chavez Parkway, an additional southbound lane could be provided between Logan Avenue and Main Street to increase the southbound storage capacity. The additional southbound lane could be added by the removal of on-street parking spaces along the west side of the roadway during peak-hour periods only.

SANDAGs 2050 Regional Transportation Plan (RTP) unconstrained network recommends the grade separation of the trolley lines at 28th Street and at 32nd Street. A peak-hour intersection analysis was conducted for the intersections of 28th Street and 32nd Street with Harbor Drive assuming these proposed grade separations. The results of the analysis indicated that the proposed grade separation would improve both intersections to LOS D or better during both peak-hour periods under the Horizon Year scenario with either alternative. The proposed grade separations are included in the "revenue constrained scenario". Due to the benefits to adjacent intersections, these grade separation projects are recommended.

Summary of Roadway Segment Analyses

Table 8-4 presents a summary of the roadway segment analysis results included in the study. As shown in the table, the increase of traffic volumes related to the Adopted Community Plan land use scenario would be considered to have a significant traffic related impact along 24 of the 42 roadway segments analyzed.

The traffic related to the Alternative 1 land use scenario for the Community Plan Update would have a traffic related impact along 22 of the 42 roadway segments analyzed. The two roadway segments significantly impacted by the Adopted Community Plan but not impacted by the Alternative 1 land use plan are:

- National Avenue between 16th Street and Sigsbee Street; and
- National Avenue between Sigsbee Street and Beardsley Street.

The Alternative 2 land use scenario was found to have the same traffic related roadway segment significant impacts as the Adopted Community Plan.

Table 8-4 also shows the comparison between the number of roadway segments operating at LOS E and F for each land use alternative. As shown in the table, Alternative 1 would have a total of eight (8) and fourteen (14) roadway segments operating at LOS E and LOS F, respectively. Alternative 2 in contrast would have six (6) and eighteen (18) roadway segments operating at LOS E and LOS F, respectively. The Adopted Community Plan would have four (4) segments operating at LOS E and twenty (20) segments operating at LOS F. Alternative 1 is shown to have the lowest number of failing roadway segments with 22 and the lowest number of segments operating at LOS F with fourteen (14).

Table 8-5 illustrates the proposed roadway classifications recommended to accommodate the future traffic growth anticipated based on the Alternative 1 and Alternative 2 land use scenarios. **Figure 8-6** shows the recommended ultimate classification for the community of Barrio Logan.

The summary of the roadway segment level of service results after the incorporation of the roadway classification changes is included in Table 8-4. As shown in the table, the following roadway segment impacts would not be mitigated with the recommended roadway segment classification changes:

- Sampson Street between National Avenue and Harbor Drive (Both Alternatives);
- 26th Street between National Avenue and Main Street (Both Alternatives);
- 28th Street between National Avenue and I-5 Ramps (Alternative 2 only);
- 29th Street between Boston Avenue and Main Street (Alternative 2 only);
- 32nd Street between Main Street and Wabash Street (Both Alternatives);
- Vesta Street between Main Street and I-5 Ramps (Both Alternatives);
- Logan Avenue between Sigsbee Street and Cesar Chavez Parkway (Both Alternatives);
- National Avenue between 16th Street and Sigsbee Street (Alternative 2 only);
- National Avenue between Sigsbee Street and Beardsley Street (Alternative 2 only);
- National Avenue between Beardsley Street and Cesar Chavez Parkway (Both Alternatives);
- Boston Avenue between 28th Street and 29th Street (Both Alternatives);
- Boston Avenue between 29th Street and 32nd Street (Both Alternatives);
- Main Street between Cesar Chavez Parkway and Evans Street (Both Alternatives);
- Main Street between Evans Street and 26th Street (Alternative 2 only);
- Main Street between 26th Street and 28th Street (Both Alternatives);
- Main Street between 28th Street and 29th Street (Both Alternatives);
- Main Street between 29th Street and 32nd Street (Both Alternatives);

- Main Street between 32nd Street and Rigel Street (Both Alternatives);
- Main Street between Rigel Street and Una Street (Both Alternatives); and
- Main Street between Una Street and I-5 SB Off-ramp (Both Alternatives).

After the incorporation of the proposed roadway segment improvements, both Alternatives 1 and 2 would have a total of six (6) segments operating at LOS E. In addition, Alternative 1 would have nine (9) segments operating at LOS F, while Alternative 2 would have thirteen (13).

Boston Avenue, National Avenue and 26th Street are desired by the community of Barrio Logan to be more pedestrian and bicycle friendly corridors. The widening of these roadways to improve vehicular circulation was not desired by the community. The vehicular operations along these three facilities could be congested during peak periods and vehicular speeds would be low. Additional widening is not recommended. Traffic calming measures should be evaluated along National Avenue to further enhance the pedestrian and bicycle circulation.

Additional improvements to the failing roadway segments of Sampson Street, 28th Street, 32nd Street, Vesta Street, Logan Avenue and Main Street are not recommended since the roadway segment analysis used in this study is based on theoretical capacities based on the number of travel lanes. The analysis does not take into account other physical features that can affect the capacity of a roadway segment like grades, number of traffic signals, number of driveways, parking availability, etc. In addition, the analysis does not take into account the different traffic peak periods experienced on these roadways due to the surrounding land uses. As an example, the Barrio Logan traffic patterns are unique in that they are heavily influenced by the Port of San Diego and the Navy Base traffic generators whose peak-hour of use do not correspond to typical peak-hour commuter traffic. To better represent the conditions of a roadway segment within the Barrio Logan community, the operations of the upstream and downstream intersections of each respective segment during the peak periods would indicate whether the roadway segment would have adequate capacity. As shown in the intersection analysis tables, all intersections along the failing roadway segments would operate at acceptable LOS.

In addition to the roadway segment improvements listed above, it is recommended that 28th Street between Harbor Drive and the I-5 Ramps be classified as a four-lane major arterial. For the segment between Harbor Drive and Main Street, a raised median should be installed with an entrance to the Navy Commissary. The proposed configuration would allow two lanes in each direction with an auxiliary lane for the heavy southbound right-turn movements at Harbor Drive. Parking would need to be removed along both sides of the roadway, with a total loss of approximately 20 parking spaces. The removed parking spaces are likely utilized by NASCO employees or Naval Base San Diego employees or visitors. Additional diagonal parking is recommended to be evaluated for installation along Boston Avenue between 28th Street and 29th Street to replace the loss of parking along 28th Street. The west side of the roadway could be widened by 4 feet to accommodate the proposed interim cross-sections. The east sidewalk will widen to 10 feet to enhance pedestrian circulation. This improvement is not part of mitigation for a roadway segment impact. The improvement is recommended to encourage heavy truck traffic to use 28th Street instead of Main Street and to provide for pedestrians. The ultimate recommended cross-section of 28th Street will include a designated bike lane along both sides of the roadway and a fourteen foot parkway. The ultimate configuration along 28th Street will require additional roadway widening and right-of-way acquisition. An alignment study is required to further define the extent of additional right-way needed and future widening

Conceptual roadway segment improvement figures, including the proposed cross-sections are included in **Appendix K**. **Figure 8-1** shows the Recommended Roadway Classification for the community. **Figure 8-2** shows a summary of all recommended improvements within the community.

TABLE 8-4
SUMMARY OF ROADWAY SEGMENT ANALYSIS RESULTS

ROADWAY SEGMENT	EXISTING FUNCTIONAL ROADWAY CLASSIFICATION	HORIZON YEAR LOS WITH EXISTING STREET CAPACITY			WOULD THE PROJECT HAVE A SIGNIFICANT IMPACT?			RECOMMENDED ROADWAY CLASSIFICATION	HORIZON YEAR WITH NEW CLASSIFICATION LOS		WOULD THE SIGNIFICANT IMPACT BE MITIGATED?	
		ACP (a)	ALT 1	ALT 2	ACP	ALT 1	ALT 2		ALT 1	ALT 2	ALT 1	ALT 2
Cesar Chavez Pkwy												
north of Logan Ave	3 Lane Collector (with TWLT)	D	C	D	NO	NO	NO	3 Lane Collector (with TWLT)	C	D	N/A	N/A
between Logan Ave and National Ave	4 Lane Collector (with TWLT)	**E**	**E**	**E**	**YES**	**YES**	**YES**	3 Lane Urban Major	D	D	YES	YES
between National Ave and Newton Ave	3 Lane Collector (with TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	3 Lane Urban Major	D	D	YES	YES
between Newton Ave and Main St	3 Lane Collector (with TWLT)	**F**	**E**	**E**	**YES**	**YES**	**YES**	3 Lane Urban Major	C	C	YES	YES
between Main St and Harbor Dr	4 Lane Collector (with TWLT)	B	B	B	NO	NO	NO	3 Lane Major	B	B	N/A	N/A
Sampson St												
between I-5 and National Ave	2 Lane Collector (No TWLT)	D	D	D	NO	NO	NO	2 Lane Collector (No TWLT)	D	D	N/A	N/A
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	**F**	**E**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (No TWLT)	**E**	**F**	**NO**	**NO**
26th St												
between National Ave and Main St	2 Lane Collector (No TWLT)	**F**	**E**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (No TWLT)	**E**	**F**	**NO**	**NO**
28th St												
between I-5 and Boston Ave	3 Lane Collector (with TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	4 Lane Major Arterial	D	**E**	YES	**NO**
between Boston Ave and Main St	4 Lane Collector (with TWLT)	D	D	D	NO	NO	NO	4 Lane Major Arterial	C	C	N/A	N/A
between Main St and Harbor Dr	4 Lane Major Arterial	B	C	C	NO	NO	NO	4 Lane Major Arterial	C	C	N/A	N/A
29th St												
between Boston Ave and Main St	2 Lane Collector (No TWLT)	D	D	D	NO	NO	NO	2 Lane Collector (No TWLT)	D	**E**	N/A	**NO**
32nd St												
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	**F**	**E**	**E**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	**E**	**E**	**NO**	**NO**
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial	C	C	C	NO	NO	NO	4 Lane Major Arterial	C	C	N/A	N/A
Rigel St												
between Main St and I-5	2 Lane Collector (No TWLT)	A	A	A	NO	NO	NO	2 Lane Collector (No TWLT)	A	A	N/A	N/A
Vesta St												
between Main St and I-5	2 Lane Collector (No TWLT)	**E**	**E**	**E**	**YES**	**YES**	**YES**	2 Lane Collector (No TWLT)	**E**	**E**	**NO**	**NO**
Logan Ave												
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	D	D	D	NO	NO	NO	2 Lane Collector (with TWLT)	D	D	N/A	N/A
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	**F**	**F**	**NO**	**NO**
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	B	B	B	NO	NO	NO	2 Lane Collector (with TWLT)	B	B	N/A	N/A
National Ave												
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	**E**	D	**E**	**YES**	NO	**YES**	2 Lane Collector (with TWLT)	D	**E**	N/A	**NO**
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	**E**	D	**E**	**YES**	NO	**YES**	2 Lane Collector (with TWLT)	D	**E**	N/A	**NO**
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	**F**	**F**	**NO**	**NO**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	C	C	YES	YES
between Evans St and Sicard St	2 Lane Collector (with TWLT)	C	C	C	NO	NO	NO	2 Lane Collector (with TWLT)	C	C	N/A	N/A
between Sicard St and 27th St	2 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	D	D	YES	YES
Boston Ave												
between 28th and 29th St	2 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (No TWLT)	**F**	**F**	**NO**	**NO**
between 29th St and 32nd St	2 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (No TWLT)	**F**	**F**	**NO**	**NO**
Main St												
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	D	C	D	NO	NO	NO	2 Lane Collector (No TWLT)	C	D	N/A	N/A
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	**F**	**E**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (No TWLT)	**E**	**F**	**NO**	**NO**
between Evans St and 26th St	2 Lane Collector (No TWLT)	**F**	**E**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	D	**F**	YES	**NO**
between 26th St and 28th St	3 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	3 Lane Collector (No TWLT)	**F**	**F**	**NO**	**NO**
between 28th and 29th St	4 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	4 Lane Collector (No TWLT)	**E**	**E**	**NO**	**NO**
between 29th St and 32nd St	3 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	3 Lane Collector (No TWLT)	**F**	**F**	**NO**	**NO**
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	4 Lane Collector (No TWLT)	**F**	**F**	**NO**	**NO**
between Rigel St and Una St	2 Lane Collector (with TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	**F**	**F**	**NO**	**NO**
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	**F**	**F**	**F**	**YES**	**YES**	**YES**	2 Lane Collector (with TWLT)	**F**	**F**	**NO**	**NO**
Harbor Dr												
between Beardsley St and Cesar Chavez Pkwy	4 Lane Major Arterial	D	D	D	NO	NO	NO	4 Lane Major Arterial	D	D	N/A	N/A
between Cesar Chavez Pkwy and Sampson St	4 Lane Major Arterial	C	C	C	NO	NO	NO	4 Lane Major Arterial	C	C	N/A	N/A
between Sampson St and Schley St	4 Lane Major Arterial	C	C	C	NO	NO	NO	4 Lane Major Arterial	C	C	N/A	N/A
between Schley St and 28th St	4 Lane Major Arterial	B	B	B	NO	NO	NO	4 Lane Major Arterial	B	B	N/A	N/A
between 28th St and 32nd St	4 Lane Major Arterial	C	C	C	NO	NO	NO	4 Lane Major Arterial	C	C	N/A	N/A
between 32nd St and Vesta St	4 Lane Major Arterial	D	D	D	NO	NO	NO	4 Lane Major Arterial	D	D	N/A	N/A
Total Number of Roadway Segments with LOS E		**4**	**8**	**6**					**6**	**7**		
Total Number of Roadway Segments with LOS F		**20**	**14**	**18**					**9**	**13**		
Total Number of Roadway Segments with Failing LOS		**24**	**22**	**24**					**15**	**20**		

Notes:
Bold values indicate roadway segments operating at LOS E or F.
Shaded cell indicates that the significant impact was not mitigated by the recommended improvements.
(a) ACP = Adopted Community Plan

TABLE 8-5
RECOMMENDED ROADWAY CLASSIFICATION CHANGES

ROADWAY SEGMENT	EXISTING CONDITIONS			HORIZON YEAR (ALT 1 AND ALT 2)			
	FUNCTIONAL CLASSIFICATION	CURB TO CURB WIDTH	ROW	RECOMMENDED CLASSIFICATION	CURB TO CURB WIDTH	ROW	REMARKS
Cesar Chavez Pkwy							
north of Logan Ave	3 Lane Collector (with TWLT)	76 feet	96 feet	3 Lane Collector (with TWLT)	76 feet	96 feet	Changes are not recommended
between Logan Ave and National Ave	4 Lane Collector (with TWLT)	76 feet	96 feet	**3 Lane Urban Major**	76 feet	**104 feet**	**2 NB lanes and 1 SB lane**
between National Ave and Newton Ave	3 Lane Collector (with TWLT)	64 feet	84 feet	**3 Lane Urban Major**	72 feet	**96 feet**	**2 NB lanes and 1 SB lane**
between Newton Ave and Main St	3 Lane Collector (with TWLT)	64 feet	84 feet	**3 Lane Urban Major**	72 feet	**96 feet**	**2 NB lanes and 1 SB lane**
between Main St and Harbor Dr	4 Lane Collector (with TWLT)	64 feet	84 feet	**3 Lane Major**	64 feet	**92 feet**	**2 NB lanes, 1 SB lane and 1 Aux SB lane**
Sampson St							
between I-5 and National Ave	2 Lane Collector (No TWLT)	40 feet	60 feet	2 Lane Collector (No TWLT)	40 feet	60 feet	Changes are not recommended
between National Ave and Harbor Dr	2 Lane Collector (No TWLT)	40 feet	60 feet	2 Lane Collector (No TWLT)	40 feet	60 feet	Changes are not recommended
26th St							
between National Ave and Main St	2 Lane Collector (No TWLT)	40 feet	60 feet	2 Lane Collector (No TWLT)	40 feet	60 feet	Part of the Green Street
28th St							
between I-5 and Boston Ave	3 Lane Collector (with TWLT)	68 feet	85 feet	**4 Lane Major Arterial**	74 feet	**108 feet**	**3 SB lanes and 2 NB lanes**
between Boston Ave and Main St	4 Lane Collector (with TWLT)	74 feet	100 feet	**4 Lane Major Arterial**	74 feet	**114 feet**	**3 SB lanes and 2 NB lanes**
between Main St and Harbor Dr	4 Lane Major Arterial	80 feet	100 feet	**4 Lane Major Arterial**	84 feet	**124 feet**	**2 SB lanes (with 1 Aux lane) and 2 NB lanes**
32nd St							
between Main St and Wabash Blvd	2 Lane Collector (with TWLT)	40 feet	60 feet	2 Lane Collector (with TWLT)			Changes are not recommended
between Wabash Blvd and Harbor Drive	4 Lane Major Arterial			4 Lane Major Arterial			Changes are not recommended
Rigel St							
between Main St and I-5	2 Lane Collector (No TWLT)	40 feet	60 feet	2 Lane Collector (No TWLT)	40 feet	60 feet	Changes are not recommended
Vesta St							
between Main St and I-5	2 Lane Collector (No TWLT)	40 feet	60 feet	2 Lane Collector (No TWLT)	40 feet	60 feet	Changes are not recommended
Logan Ave							
between 17th St and Sigsbee St	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Changes are not recommended
between Sigsbee St and Cesar Chavez Pkwy	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Changes are not recommended
between Cesar Chavez Pkwy and 26th St	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Changes are not recommended
National Ave							
between 16th St and Sigsbee St	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Part of the Green Street
between Sigsbee St and Beardsley St	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Part of the Green Street
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	52 feet	80 feet	**2 Lane Collector (with TWLT)**	52 feet	**80 feet**	**Part of the Green Street**
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	52 feet	80 feet	**2 Lane Collector (with TWLT)**	52 feet	**80 feet**	**Part of the Green Street**
between Evans St and Sicard St	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Part of the Green Street
between Sicard St and 27th St	2 Lane Collector (No TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Part of the Green Street
Boston Ave							
between 28th and 29th St	2 Lane Collector (No TWLT)	52 feet	80 feet	2 Lane Collector (No TWLT)	52 feet	80 feet	Part of the Green Street
between 29th St and 32nd St	2 Lane Collector (No TWLT)	52 feet	80 feet	2 Lane Collector (No TWLT)	52 feet	80 feet	Part of the Green Street
Main St							
between Beardsley St and Cesar Chavez Pkwy	2 Lane Collector (No TWLT)	52 feet	80 feet	2 Lane Collector (No TWLT)	52 feet	80 feet	Changes are not recommended
between Cesar Chavez Pkwy and Evans St	2 Lane Collector (No TWLT)	52 feet	80 feet	2 Lane Collector (No TWLT)	52 feet	80 feet	Changes are not recommended
between Evans St and 26th St	2 Lane Collector (No TWLT)	52 feet	80 feet	**2 Lane Collector (with TWLT)**	52 feet	**80 feet**	**Changes within the existing ROW**
between 26th St and 28th St	3 Lane Collector (No TWLT)	52 feet	80 feet	3 Lane Collector (No TWLT)	52 feet	80 feet	2 EB lanes and 1 WB lane
between 28th and 29th St	4 Lane Collector (No TWLT)	52 feet	80 feet	4 Lane Collector (No TWLT)	52 feet	80 feet	Changes are not recommended
between 29th St and 32nd St	3 Lane Collector (No TWLT)	52 feet	80 feet	3 Lane Collector (No TWLT)	52 feet	80 feet	2 WB lanes and 1 EB lane
between 32nd St and Rigel St	4 Lane Collector (No TWLT)	52 feet	80 feet	4 Lane Collector (No TWLT)	52 feet	80 feet	Changes are not recommended
between Rigel St and Una St	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Changes are not recommended
between Una St and I-5 SB Off Ramp	2 Lane Collector (with TWLT)	52 feet	80 feet	2 Lane Collector (with TWLT)	52 feet	80 feet	Changes are not recommended

Notes:
Bold indicates roadway segments were the classification is proposed to be changed.
NB= Northbound; SB= Southbound; EB= Eastbound; WB=Westbound; Aux= Auxiliary lane

K:\SND_TPTO\095707000\Excel\[707000RS01.xlsm]Change

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

- 2 - Lane Collector (without TWLT)-(Existing ROW)
- 2 - Lane Collector (with TWLT)-(80' ROW)
- 3 - Lane Collector (without TWLT)-(80' ROW -see notes)
- 3 - Lane Collector (with TWLT)-(2 NB and 1 SB - 104' ROW)
- 4 - Lane Collector (without TWLT)(Existing ROW)
- 4 - Lane Collector (with TWLT)(122' ROW)
- 3 -Lane Major (2 NB and 1 SB - 92' ROW)
- 3 -Lane Urban Major (2 NB and 1 SB - 96' ROW)
- 4-Lane Major (see notes below)

Notes:
1. 3 SB lanes and 2 NB lanes (108' ROW)
2. 3 SB lanes and 2 NB lanes (114' ROW)
3. 2 SB lanes, 2 NB Lanes, 1 auxiliary lane in southbound direction (114' ROW)
4. 2 EB lanes and 1 WB lane (80' ROW)
5. 1 EB lanes and 2 WB lanes (80' ROW)

0 500 1000 2000 feet

# + #H — Freeway lanes in each direction:
# = number of freeway main lanes
H = number of high occupancy lanes

N

Figure 8-1: Horizon Year (2030) Recommended Roadway Classification

March 2011

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego
- "Green Street" Corridor

Roadway Segments:

- A See Figures K-1 and K-2
- B See Figures K-5 and K-6
- C See Figures K-5 and K-7
- D See Figures K-9 and K-11
- E See Figures K-10 and K-12
- F See Figures K-6 and K-13
- G See Figures K-6 and K-14
- H See Figure K-14
- I See Figures K-15 and K-16

intersections:

- 2 See Figures 5.1 and 6.1
- 6 See Figures 5.1 and 6.1
- 7 See Figures 5.1 and 6.1
- 8 See Figures 5.1 and 6.1
- 11 See Figures 5.1and 6.1
- 13 See Figures 5.2 and 6.2
- 14 See Figures 5.2 and 6.2
- 17 See Figures 5.2 and 6.2
- 23 See Figures 5.2 and 6-2
- 31 See Figures 5.2 and 6.2
- 33 See Figures 5.3 and 6.3
- 35 See Figures 5.3 and 6.3
- 36 See Figures 5.3 and 6.3
- 37 See Figures 5.4 and 6.4
- 39 See Figures 5.4 and 6.4
- 40 See Figures 5.4 and 6.4

0 500 1000 2000 feet

Note: Figures K-1 thru K-16 are included in Appendix K.

N

Figure 8-2: Recommended Transportation Improvements

January 2011

Summary of Freeway Segment Analysis

Table 8-6 shows the summary of the freeway analysis for each of the Horizon Year land use alternatives. As shown in the table, all Horizon Year land use alternatives would have a significant traffic related impact at all freeway segments analyzed with the exception of SR-75. The LOS results along the freeway segments would be the same for the two alternatives.

Based on the freeway segment capacity analysis included in this study, Barrio Logan Community Plan Update is considered to have a cumulative traffic related impact along the following freeway segments:

- I-5 from J Street to SR-75 Junction;
- I-5 from SR-75 Junction to 28th Street;
- I-5 from 28th Street to I-15 Interchange;
- I-5 from I-15 Interchange to Division Street; and
- I-15 from I-5 Interchange to Ocean View Boulevard

SANDAG's Draft 2050 Regional Transportation Plan (RTP) hybrid network includes the following freeway improvements:

- Operational freeway improvements along Interstate 5 between Interstate 15 and Interstate 8; and
- Addition of one (1) main lane and one (1) managed lane in each direction between Interstate 15 and State Route 54;

Both improvements listed above were included in the hybrid network's revenue constrained scenario, approved by SANDAG's board for further study on December 17th, 2010. The improvements included in the RTP are recommended to enhance the regional connectivity and accommodate the forecasted growth of the San Diego region. It should be noted that both land use alternatives presented on this plan would generate less traffic than the current adopted Community Plan land use alternative. Either proposed alternative would lessen, but not eliminate cumulative freeway traffic impacts.

In addition to the proposed freeway improvements listed in the SANDAG's Draft 2050 RTP, the following freeway access improvements are recommended within the Barrio Logan Community:

- Signalization of the intersection of Logan Avenue and Beardsley Street/ Interstate 5 SB off-ramp;
- Traffic signal modification at the intersection of Logan Avenue and Cesar Chavez Parkway (State Route 75 on-ramp);
- Signalization of the intersection of Boston Avenue and Interstate 5 SB on-ramp- 29th Street;
- Roadway improvements along 28th Street to accommodate an additional southbound lane, including the potential for widening the Interstate 5 overcrossing;
- Signalization of the intersection of 28th Street and Interstate 5 southbound off-ramp;
- Changes to the roadway striping along Main Street between 28th Street and 29th Street to facilitate freeway access to the Interstate 5 southbound on-ramp at Boston Avenue;
- Installation of a unidirectional connector ramp from eastbound Harbor Drive to northbound State Route 15 (under study by the Port of San Diego, and Caltrans);
- Construction of the Vesta Street Overcrossing at Harbor Drive (under study by the Navy);
- Coordination of City of San Diego and Navy related to the closure of the east leg of the 32nd Street and Norman Street-Wabash Street intersection (recently completed on a trial basis by the Navy); and

- Grade separation of the trolley tracks at the 28th Street and Harbor Drive and 32nd Street and Harbor Drive intersections (to be completed by SANDAG and part of the 2050 draft RTP).

The improvements listed above would decrease congestion along the major freeway access locations within the community.

TABLE 8-6

SUMMARY OF FREEWAY SEGMENT ANALYSIS

FREEWAY SEGMENT	DIRECTION	ADOPTED COMMUNITY PLAN		ALTERNATIVE 1		ALTERNATIVE 2	
		LOS	SIGNIFICANT?	LOS	SIGNIFICANT?	LOS	SIGNIFICANT?
AM PEAK							
I-5							
J Street to SR-75 Junction	NB	**F0**	**YES**	**F0**	**YES**	**F0**	**YES**
	SB						
SR-75 Junction to 28th Street	NB	**F0**	**YES**	**F0**	**YES**	**F0**	**YES**
	SB						
28th Street to I-15 Interchange	NB	**E**	**YES**	**E**	**YES**	**E**	**YES**
	SB						
I-15 Interchange to Division St	NB	**F0**	**YES**	**F0**	**YES**	**F0**	**YES**
	SB						
I-15							
I-5 Interchange to Ocean View Blvd	NB						
	SB	**E**	**YES**	D	--	D	--
SR-75							
I-5 Interchange to Glorietta Blvd	WB						
	EB	D	--	D	--	D	--
PM PEAK							
I-5							
J Street to SR-75 Junction	NB						
	SB	**E**	**YES**	**E**	**YES**	**E**	**YES**
SR-75 Junction to 28th Street	NB						
	SB	**E**	**YES**	**E**	**YES**	**E**	**YES**
28th Street to I-15 Interchange	NB						
	SB	D	--	D	--	D	--
I-15 Interchange to Division St	NB						
	SB	**F0**	**YES**	**F0**	**YES**	**F0**	**YES**
I-15							
I-5 Interchange to Ocean View Blvd	NB	**F0**	**YES**	**F0**	**YES**	**F0**	**YES**
	SB						
SR-75							
I-5 Interchange to Glorietta Blvd	WB	D	--	D	--	D	--
	EB						

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

K:\SND_TPTO\095707000\Excel\[707000FR01.xls]Summary Impacts

APPENDICES

APPENDIX A

- Barrio Logan Community Plan Update – Mobility Element

APPENDIX B

- Copy of the “Analysis of Traffic Impacts at Isolated Light Rail Transit (LRT) Crossings using SimTraffic”

ANALYSIS OF TRAFFIC IMPACTS AT ISOLATED LIGHT RAIL TRANSIT (LRT) CROSSINGS USING SIMTRAFFIC

Jeff G. Gerken, Sarah A. Tracy

ABSTRACT

As an increasing number of metropolitan areas study the possibility of implementing Light Rail Transit (LRT) as part of their overall transportation system, the need to depict the impacts of LRT to the current or future roadway system must be determined. A recent LRT impact analysis study of offset running LRT was conducted to better understand the impacts to traffic flow when LRT is introduced at an isolated intersection.

Delay and queue impacts were determined using the microscopic traffic engineering software program SimTraffic Version 4.0. Although the program was not explicitly designed to handle transit analysis, recent enhancements have enabled advanced users to program work-arounds to approximate the behavior of the LRT crossing controllers as well as depict the interaction of the LRT and vehicular traffic. Specific programming enhancements include the ability to program the ring and barrier design and the ability to cluster multiple intersection controllers, thereby more accurately representing the interaction of LRT and vehicular traffic.

Analysis output included vehicular delay and queues for LRT and non-LRT scenarios. For the case study presented in this paper and the actual impact study project, the level of service impact to vehicular traffic due to LRT was approximately one increment degradation from non-LRT conditions. All simulation scenarios were run multiple times to achieve statistical confidence. An overview of the major work-arounds is presented in this paper.

Although this paper covers LRT analysis applications, almost any interaction of traffic and headway-based flow can be modeled to develop an understanding of impacts to the traffic stream.

INTRODUCTION

As an increasing number of metropolitan areas study the possibility of implementing Light Rail Transit (LRT) as part of their overall transportation system, the need to depict the impacts of LRT to the current or future roadway system must be determined. This paper covers the analysis methodology that was used in a recent LRT impact analysis study. The purpose of the study was to better understand the impacts to vehicular traffic when LRT is introduced into an existing corridor at isolated intersections. For purposes of this paper an isolated intersection is defined as any intersection that would not be normally considered for coordination. The microsimulation traffic analysis tool, SimTraffic 4.0, was used to determine the impacts of LRT.

Several questions this paper will address are:

- Why study the impacts of LRT on vehicular traffic?
- Is SimTraffic the correct software tool to conduct this analysis?
- How was SimTraffic programmed to conduct this analysis?
- What were the results of the study?

It is worth noting the goal of the study referenced in this paper and the methodology used to conduct the analysis is of an impact perspective, not to generate detailed timing and preemption plans.

BACKGROUND INFORMATION ON LRT OPERATIONS

According to ITE Recommended Practice[1]: Where a signalized highway intersection exists in close proximity to a railroad grade crossing, the railroad signal control equipment and the traffic signal control equipment should be interconnected, and the normal operation of the traffic signals controlling the intersection should be preempted to operate in a special control mode when trains are approaching. A preemption sequence compatible with the railroad grade crossing active warning devices, such as gates and flashing lights, is extremely important to provide safe vehicular, pedestrian, and train movements. Such preemption serves to ensure that the actions of these separate traffic control devices complement rather than conflict with each other.

Given this mandate, traffic engineers may be required to determine the impacts of LRT on the current or proposed transportation systems. For purposes of this paper, the term LRT will be used to describe a transit vehicle facility that operates at a predetermined headway on its own right-of-way in close proximity to roadway infrastructure. Certainly many configurations of LRT interaction with vehicular traffic are in use today, this paper focuses on only the "offset" LRT arrangement depicted in Figure 1.

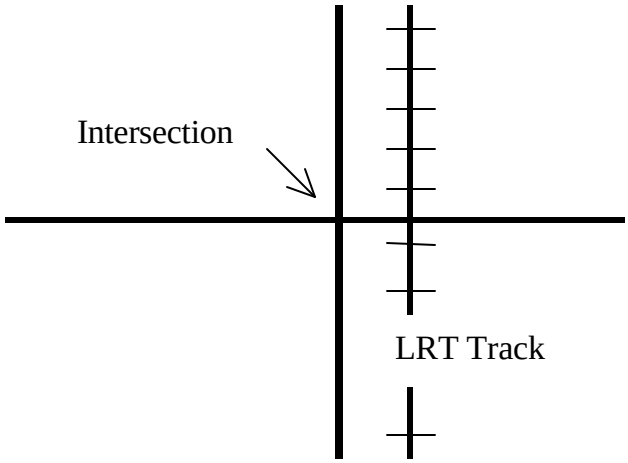

Figure 1: LRT-Intersection Diagram

The main reason, from the point of view of the traffic engineer, for studying the interaction of LRT and vehicular traffic is to understand the delay and queue impacts to the vehicular traffic stream. It is assumed that for purposes of this paper that the LRT will preempt the traffic signal controller in order to transition through the intersection with minimal delay to the LRT vehicle. More detail on the preemption of the traffic signal controller is presented in later sections. Given this assumption, it is clear that any impacts of LRT will be observed on the "traffic side" of the modal system. "How bad will LRT affect traffic?" is the essence of the analysis.

LRT Variables

There are several variables that describe LRT characteristics. A brief discussion of each is presented below.

Headway

An important variable when analyzing LRT is the operating headways. Headway is defined as the time between LRT vehicles operating in the same direction. Headways can vary over the day by demand but for our purposes is considered constant. A 10-minute headway indicates that a LRT vehicle will be

generated from each direction approximately every 10 minutes. Since the analysis considers two-way operation of the LRT track, authors assumed the worst case impact to be when the LRT vehicles arrive at the intersection every 5 minutes.

LRT Vehicle Speed and Size
LRT vehicle speed indicates the operating speed of the vehicle on level terrain in a tangent section of track. For purposes of this analysis, a speed of 15 mph was chosen to represent the speed at which the LRT vehicle traverses the intersection. LRT transit vehicles vary in size, capacity, and performance. A LRT vehicle length of 90 feet and a maximum acceleration of 4 feet/sec^2 were chosen. It is worth noting that the goal of the analysis was to determine impacts to traffic based on some general LRT characteristics, not to analyze the LRT mode.

Distance between the tracks and signalized intersection
The distance between the LRT track crossing and the signalized intersection is assumed to be fixed by design standards and right-of-way constraints. The analysis conducted assumed a distance of approximately 200 feet from the center of the intersection to the center of the LRT track. According to the Manual of Uniform Traffic Control Devices[2] (MUTCD) a distance of 200 feet between the grade crossing and the intersection would require the two controllers to operate together. Additional guidance on the interconnection of closely spaced grade crossings and vehicular intersections can is provided in reference three. More information concerning the operation of the LRT track crossing controller and the intersection signal controller is discussed in later sections.

There are many other variables when considering the LRT facility design including but not limited to intersection and crossing geometry:

- crossing angle
- length of crossing
- track clearance distance
- intersection width
- sight distance issues
- approach grades and parallel streets

Clearly, there are many factors that go into the design and operation of a LRT crossing. More detail on all these issues can be found in the references listed at the end of this paper.

Sequence of Controller Operation

Given that two closely spaced intersections, one LRT crossing and one signalized for traffic, are required to operate as a system an understanding of the operation of these controllers is needed. Figures 2 through 4 illustrate the phasing sequence of operations prior to and while a LRT vehicle approaches the grade crossing.

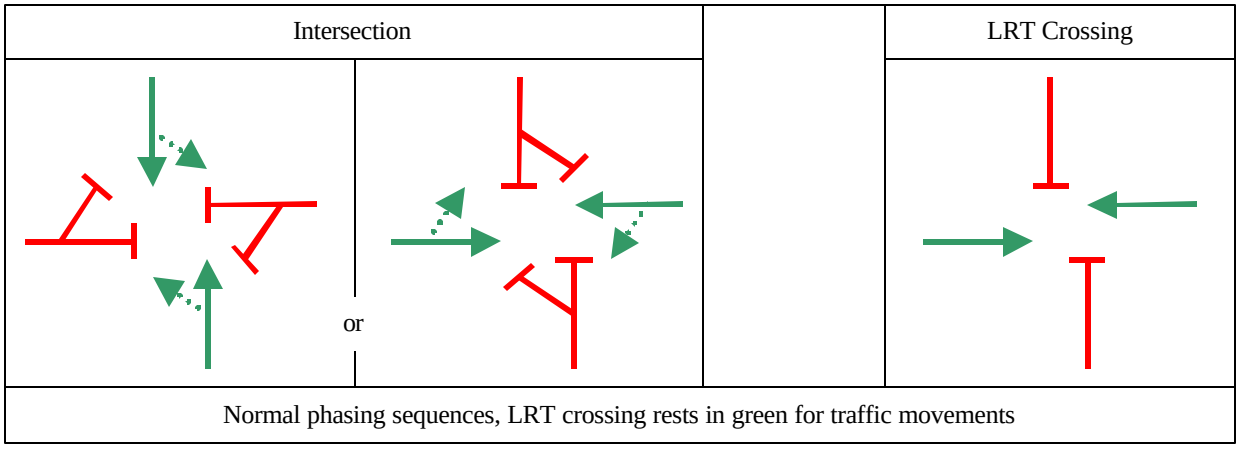

Figure 2: Sequence of Controller Operation, No LRT

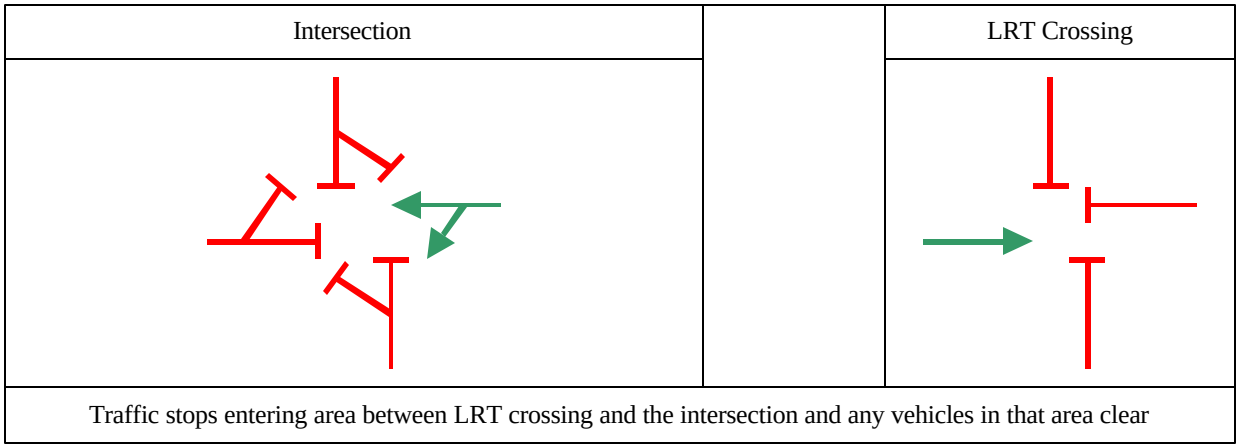

Figure 3: Sequence of Controller Operation, LRT Approaching

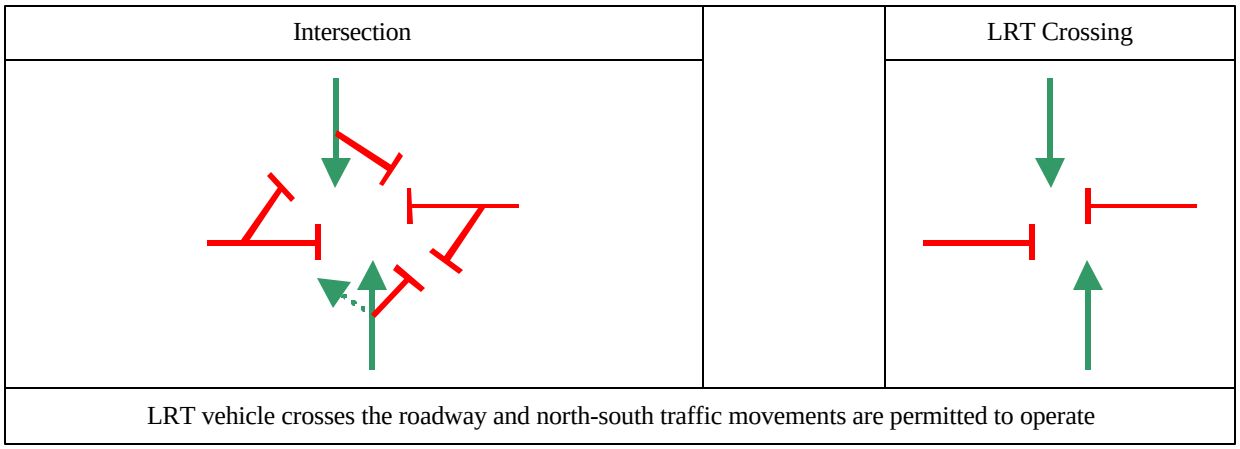

Figure 4: Sequence of Controller Operation, LRT Crossing

Prior to and after a LRT vehicle has been serviced the traffic controller will operate normally, servicing phases based on detection calls from traffic flow and showing green for the traffic movements at the grade crossing. This operation is illustrated in Figure 2.

Once a LRT vehicle has placed a request for service the controller terminates the current phases, providing the proper change intervals and without violating local standards for pedestrian timing. The traffic signal controller then provides a "clearance" phase and services the traffic between the intersection and the LRT grade crossing. This is accomplished by terminating westbound traffic movements across the grade crossing and providing an exclusive westbound phase for traffic at the signalized intersection. These two operations prevent additional traffic from entering the area between the intersection and the LRT crossing and clear out any vehicles from this area. This operation is illustrated in Figure 3. The required clearance time can be calculated by using the following formula:

$$t(sec) = 4 + 2(n)$$

where n = the number of vehicles that queue between the intersection and the LRT crossing[3]

Once the proper clearance phase has terminated the LRT movement phase is serviced. It is allowable to provide green time to non-conflicting traffic movements while servicing the LRT. In the case of our example, the north and south movements can be serviced, however, northbound right turns are not allowed. This operation is illustrated in Figure 4. Once the LRT has cleared the crossing, normal operation can be resumed.

ANALYSIS METHODS

Given the complexities of the phasing sequence and variables involved, a macroscopic analysis tool does not provide for the most accurate analysis. A microscopic analysis tool would provide for the complex interaction of individual vehicles operating under the phase scheme described previously. The traffic engineering software package SimTraffic was chosen as the traffic analysis tool.

SimTraffic

SimTraffic is not an explicit analysis tool for transit applications. In fact, the developers of SimTraffic have cautioned users from attempting this analysis unless they have advanced knowledge of the program. However, given the ability to program the ring and barrier designer and the ability to cluster two or more intersections, the authors felt this was a reasonable tool to approximate the LRT interaction. Additionally, at the time of development of this methodology, LRT operations were being analyzed with the CORSIM package. The authors felt that the SimTraffic option was far superior to the CORSIM program for the ability to approximate the interaction of LRT and vehicular traffic. It is also acknowledged that there are transit software packages available that conduct this analysis without the need for "work-arounds". The specific work-arounds will be described in later sections of this paper.

SimTraffic is a microscopic, stochastic model that provides the ability to test alternatives based on input variables such as traffic volumes, traffic signal control schemes, geometric conditions, and a host of other variables. The input processor for the SimTraffic model is Synchro. The package version that was used for this analysis was 4.0.

CASE STUDY

The inspiration for this paper comes from a recent project in Union County, New Jersey. The objectives of that project were to determine the impacts to traffic at an existing isolated intersection once LRT

operations were introduced. The actual project included an analysis of four peak periods over three volume horizon years. To better illustrate the concepts presented in this paper, the intersection geometry and traffic volumes used for the analysis were simplified. The traffic volumes and geometry used for this paper's analysis are illustrated in Figure 5.

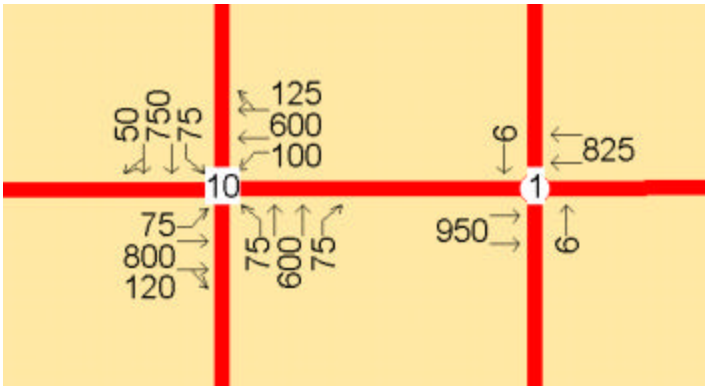

Figure 5 : Case Study Hourly Traffic Volumes and Geometry

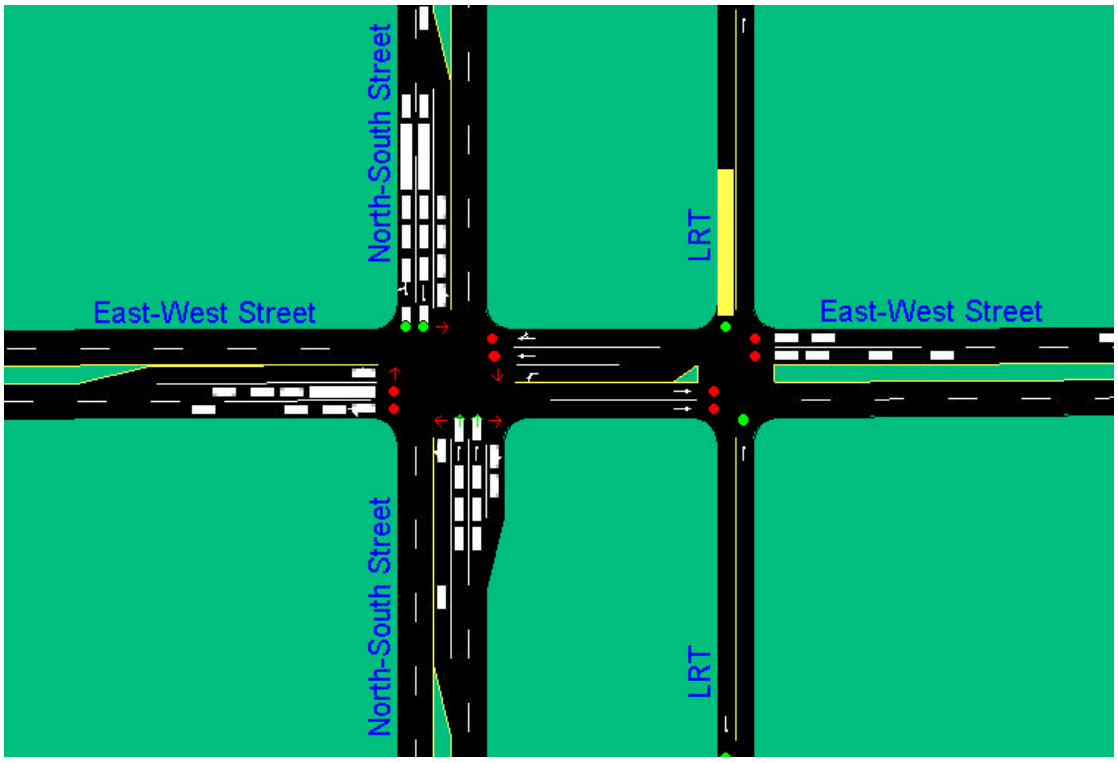

Figure 6 : Image of the SimTraffic Animation (LRT moving southbound)

Coding Issues

To ensure proper evaluation of the intersection impacts several assumptions were made concerning intersection operations and SimTraffic coding. Specific SimTraffic coding issues follow:

1. Simulation of the LRT vehicles.

Simulation of the LRT vehicle was achieved by coding another "roadway" link within close proximity to the standard traffic roadway links. The LRT roadway volumes were coded to only contain 100 percent heavy vehicles. To ensure trucks were evaluated within the traffic stream, a vehicle type in SimTraffic was altered to have the same size and performance characteristics as standard trucks. The LRT vehicles were coded to replicate the size and acceleration parameters desired.

2. Operation of the complex phasing arrangement and timing.

Programming the ring and barrier designer in Synchro allowed for the complex phasing arrangement needed. The traffic signal phases were coded in rings A and B, and the LRT phases were coded using ring C.

3. Operation of the clearance phases.

The clearance phase was programmed using the ring and barrier designer and the ability to code movements under several phases. The specific time of the clearance phase was determined by using the equation presented in earlier sections.

4. Operation of the intersection and LRT crossing as one controller.

The cluster editor feature in Synchro was used to operate both the traffic intersection and the LRT crossing intersection as one controller. Figure 7 illustrates the final timing and phasing sequence for the signal controller. The traffic intersection movements are indicated with the shaded arrows and the non-shaded arrows indicate the LRT crossing phases. As illustrated in Figure 5, the traffic intersection was coded with a node number of 10 and the grade crossing was coded as a node number of 1.

5. Preempting the traffic signal controllers.

Preempting the traffic signal controller is <u>not</u> within the capability of the Synchro or SimTraffic programs. To approximate the preemption, advance detectors were placed upstream of the LRT crossing. As a LRT vehicle approaches the grade crossing a call is placed to the controller so that the intersection would conduct the clearance phase and be operating in the LRT movement phase when the LRT arrived. The operating phase is not terminated by an LRT call. This is a deviation from the actual operating parameters that would be observed in the field. To better replicate the LRT interruption, a second set of LRT clearance and LRT crossing phases was introduced after each barrier point. This is illustrated in Figure 7. It is worth noting that in some instances the LRT vehicle does get delayed prior to crossing. Keeping in mind that impacts to the traffic stream were the main concern, these minor LRT delays were not considered to affect the results of the study.

6. Metering the LRT vehicle headways.

Since the LRT track is simply another roadway link, an inlet meter was developed to control the arrival rate of the LRT vehicles. The original LRT headways were at 10-minute intervals. The limit of Synchro's cycle length is 360 seconds. Using the Universal Traffic Data Formatting (UTDF) features of Synchro a separate database file was created to allow for long cycle lengths at the inlet meters.

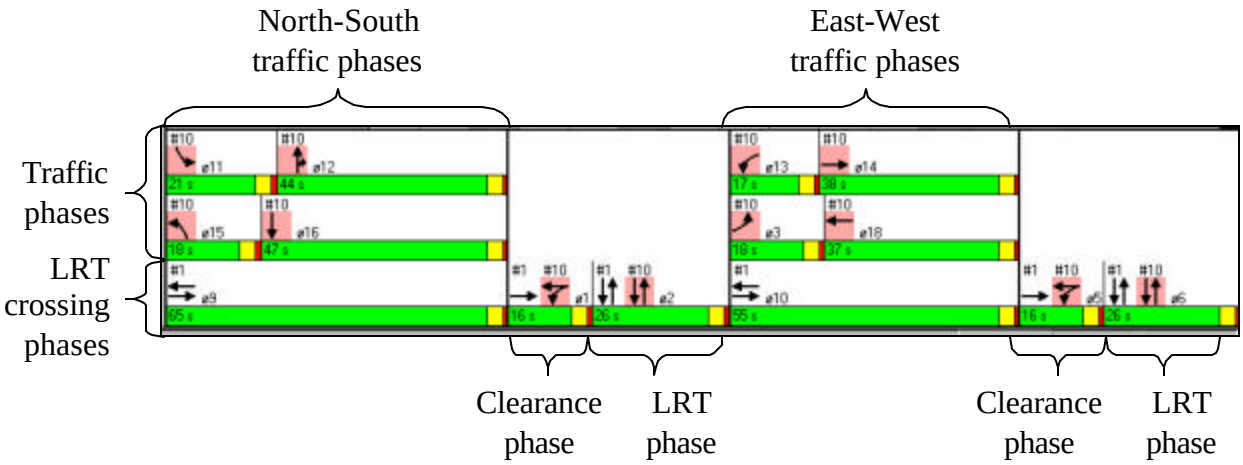

Figure 7: Timing and Phasing Operation

FINDINGS

Output Measures of Effectiveness

The output summarized in this section was developed from three 60-minute runs of the SimTraffic program. The random seed number was changed for each run to develop the stochastic robustness of the simulation. Each individual vehicle's statistics are tracked throughout the simulation period, providing measures of effectiveness (MOEs) that otherwise would be difficult to obtain. The output measures of delay and queue lengths were determined to be of most interest. The comparisons presented in this section are between No-LRT and the 10-minute headway operation of LRT. The only difference between the two models was that under the No-LRT scenario the clearance and LRT phases were never called.

The overall Level of Service for the intersection went from C (33.3 seconds of delay per vehicle) to D (39.9 seconds of delay per vehicle), an approximately 12 percent increase in delay. Given that the north-south movements were provided green time during the LRT crossings, this result is well within what was expected. Although the specific input variables of traffic volume and intersection geometry were altered for this paper, a one-increment LOS degradation was generally observed for all peak periods for the actual project variables.

Queue lengths for the east and west approaches were expected to increase; however the north and south approach queue lengths were not expected to degrade with any significance. The eastbound queue (maximum observed queue) went from 245 feet to 308 feet, an approximate 26 percent increase. The westbound approach queue length went from 207 feet to 259 feet, an approximate 25 percent increase. The westbound approach queue accounted for the queues at both the intersection and the LRT crossing.

Sensitivity Analysis

In an effort to determine the impacts of varying the LRT headways, a sensitivity analysis was conducted at 5-minute and 20-minute headways. The same coding parameters were utilized as with the 10-minute headway LRT scenarios, with the minor exception of changes in the LRT meter cycle length to achieve the desired headways.

Table 1 summarizes the average delay for the No-LRT and the three LRT headway scenarios studied. As would be expected, delay increases once LRT is introduced into the system for the eastbound and

westbound approaches. However, the northbound and southbound approaches do not incur any significant delay, and in some cases delay decreases, due to the fact that these phases receive green time when the LRT crossing is in operation.

Table 1 LRT Headway Sensitivity Analysis, Average Delay

Scenario	Average Delay/Vehicle (sec)			
	Eastbound	Westbound	Northbound	Southbound
No LRT	36.4	35.8	29.2	30.9
LRT (5 Minute Headways)	66.1	51.8	30.9	29.1
LRT (10 Minute Headways)	46.4	41.1	30.2	28.7
LRT (20 Minute Headways)	42.1	39.4	29.7	29.8

Table 2 summarizes the average queue lengths for the No-LRT and the three LRT headway scenarios studied. As with the delay MOEs, queues increase once LRT is introduced into the system at the eastbound and westbound approaches. The northbound and southbound queue lengths did not increase under any of the LRT scenarios.

Table 2 LRT Headway Sensitivity Analysis, Queue Lengths

Scenario	Average Queue Lengths (feet/percent increase)			
	Eastbound	Eastbound	Westbound	Westbound
No LRT	245	----	207	----
LRT (5 Minute Headways)	387	58%	322	56%
LRT (10 Minute Headways)	308	26%	259	25%
LRT (20 Minute Headways)	282	15%	232	12%

CONCLUSIONS

As more municipalities study the possibility of introducing LRT into the existing traffic infrastructure the analysis methods need to provide accurate impact measures of effectiveness. This paper reviewed the analysis of the impacts to vehicular traffic at an offset-running LRT crossing using the simulation package SimTraffic 4.0.

The LOS impacts of introducing offset-running LRT appear to be approximately a one LOS degradation, with the conflicting approaches absorbing nearly all of the delay. Depending on the LRT headways, queue lengths on the conflicting approaches can increase dramatically. Of course, inputs such as signal timing, traffic volumes, and LRT headways will have a major impact on the results of any particular analysis.

SimTraffic does not explicitly model transit operations. However, given the recent enhancements to the program and the ability of the traffic engineer to provide clever work-arounds, the resulting output can be very helpful in determining the impacts of LRT on the current traffic network. It is worth noting that other “off-the-shelf” programs are available to model transit operations and should be evaluated at the onset of a project to determine the best program to meet your project goals.

Two final comments. It is not the intention of the authors to either endorse or discourage the use of any traffic software analysis package. The SimTraffic program was used to conduct this analysis because it offered several enhancements over the current methodology and it was readily available to the analysts. Finally, the coding procedures used to study the LRT impacts could easily be applied to any headway-based or reoccurring interruption to a traffic stream. Other applications could be drawbridge operations, heavy-rail applications, or special incidents to name a few.

ACKNOWLEDGEMENTS

The analysis methodology presented in this paper was develop while working on the Union County LRT Traffic Impact Study as part of the Supplement Draft Environmental Impact Statement. Special thanks to the project participants.

REFERENCES

1. *Preemption of Traffic Signals At or Near Railroad Grade Crossings with Active Warning Devices*, Institute of Transportation Engineers. Washington, DC, 1997.
2. *Manual on Uniform Traffic Control Devices for Street and Highways*, Federal Highway Administration, Washington, DC, 1988
3. *Program of Instruction for the Highway-Grade Crossing Workshop*, The Traffic Institute Northwestern University. Evanston, IL, 1999.

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APPENDIX C

- Existing Traffic Volume Data

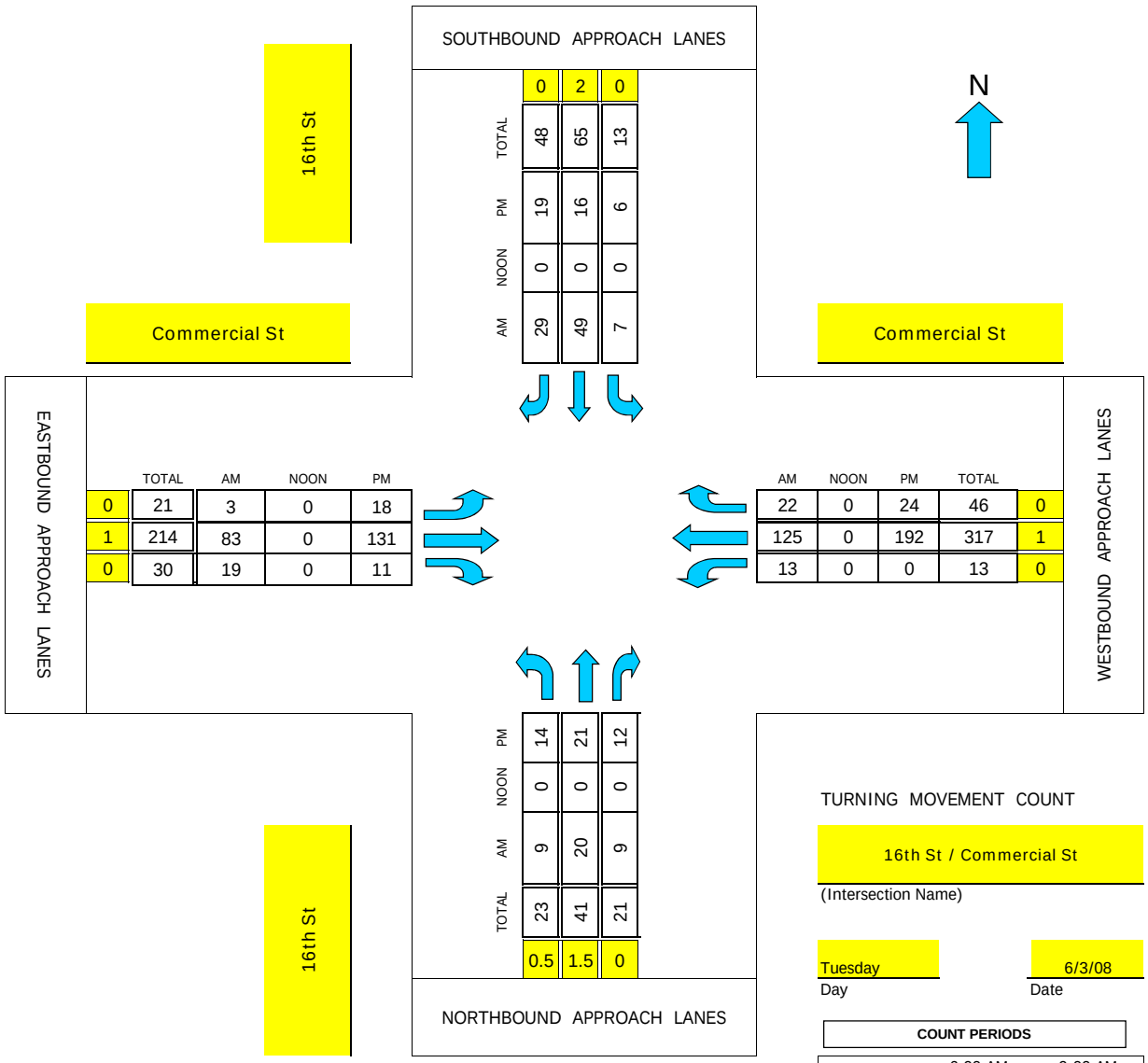
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 16th St/Commercial St

Project #: 08-4148-001



TURNING MOVEMENT COUNT

16th St / Commercial St

(Intersection Name)

Tuesday — Day

6/3/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 16th St DATE: 06/03/2008 LOCATION: City of San Diego

E-W STREET: Commercial St DAY: TUESDAY PROJECT# 08-4148-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	1.5	0	0	2	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	3	3	0	10	5	0	26	1	3	21	0	74
7:15 AM	5	1	1	1	8	2	0	24	2	1	16	1	62
7:30 AM	2	4	2	3	16	3	1	20	1	1	28	5	86
7:45 AM	3	3	4	2	17	9	1	28	3	4	32	8	114
8:00 AM	2	7	1	0	20	5	0	19	5	0	29	3	91
8:15 AM	3	4	3	2	9	9	1	13	5	5	31	8	93
8:30 AM	1	6	1	3	3	6	1	23	6	4	33	3	90
8:45 AM	4	4	2	1	4	4	2	22	6	3	33	3	88
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	22	32	17	12	87	43	6	175	29	21	223	31	698

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	9	20	9	7	49	29	3	83	19	13	125	22	388
PEAK HR. FACTOR:		0.950			0.759			0.820			0.909		0.851

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 16th St DATE: 06/03/2008 LOCATION: City of San Diego

E-W STREET: Commercial St DAY: TUESDAY PROJECT# 08-4148-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	1.5	0	0	2	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	7	6	2	1	5	8	5	44	9	0	47	7	141
4:15 PM	2	6	3	2	1	4	3	35	0	0	45	3	104
4:30 PM	2	4	5	1	7	3	3	29	1	0	54	8	117
4:45 PM	3	5	2	2	3	4	7	23	1	0	46	6	102
5:00 PM	2	5	0	1	3	2	10	32	2	0	46	6	109
5:15 PM	7	2	0	3	3	2	4	24	0	0	42	7	94
5:30 PM	5	6	0	2	5	6	3	25	3	3	30	8	96
5:45 PM	0	1	2	4	2	3	1	24	3	0	40	4	84
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 28	NT 35	NR 14	SL 16	ST 29	SR 32	EL 36	ET 236	ER 19	WL 3	WT 350	WR 49	TOTAL 847

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	14	21	12	6	16	19	18	131	11	0	192	24	464
PEAK HR. FACTOR:		0.783			0.732			0.690			0.871		0.823

CONTROL: Signalized

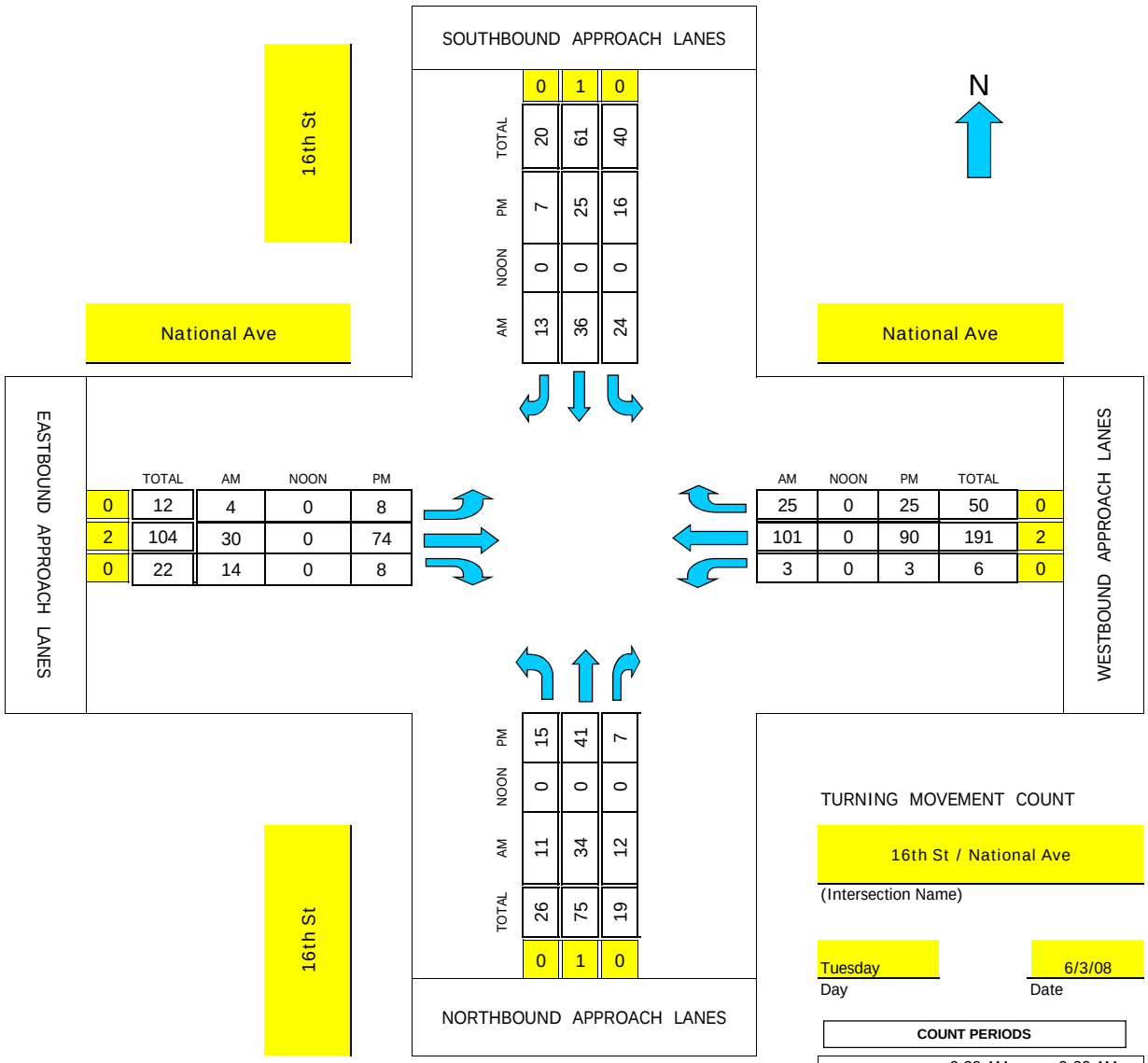
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 16th St/National Ave

Project #: 08-4148-002



TURNING MOVEMENT COUNT

16th St / National Ave

(Intersection Name)

Tuesday — Day

6/3/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 2-Way Stop Sign (N/S)

AM PEAK HOUR	730 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 16th St DATE: 06/03/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: TUESDAY PROJECT# 08-4148-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	2	1	3	9	1	0	7	1	1	21	4	52
7:15 AM	1	1	0	5	10	3	1	8	5	3	20	1	58
7:30 AM	4	7	4	4	14	6	2	6	4	1	20	4	76
7:45 AM	3	8	1	8	11	2	0	9	4	0	36	10	92
8:00 AM	2	5	4	5	5	1	0	10	1	2	27	6	68
8:15 AM	2	14	3	7	6	4	2	5	5	0	18	5	71
8:30 AM	1	5	0	7	12	3	2	11	1	0	18	6	66
8:45 AM	3	11	1	4	16	4	6	6	3	1	13	2	70
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	18	53	14	43	83	24	13	62	24	8	173	38	553

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	11	34	12	24	36	13	4	30	14	3	101	25	307
PEAK HR. FACTOR:		0.750			0.760			0.923			0.701		0.834

CONTROL: 2-Way Stop Sign (N/S)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 16th St DATE: 06/03/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: TUESDAY PROJECT# 08-4148-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	2	0	0	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	6	2	8	6	4	4	17	4	1	28	10	93
4:15 PM	2	7	1	3	5	2	2	12	2	1	19	5	61
4:30 PM	4	17	2	4	6	1	2	23	1	1	25	7	93
4:45 PM	6	11	2	1	8	0	0	22	1	0	18	3	72
5:00 PM	5	11	0	3	4	2	3	37	0	1	16	9	91
5:15 PM	1	10	0	2	3	3	0	20	0	0	12	7	58
5:30 PM	0	4	0	4	4	0	0	10	0	0	14	8	44
5:45 PM	1	4	0	6	7	3	0	9	2	0	12	9	53
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 22	NT 70	NR 7	SL 31	ST 43	SR 15	EL 11	ET 150	ER 10	WL 4	WT 144	WR 58	TOTAL 565

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	15	41	7	16	25	7	8	74	8	3	90	25	319
PEAK HR. FACTOR:		0.685			0.667			0.865			0.756		0.858

CONTROL: 2-Way Stop Sign (N/S)

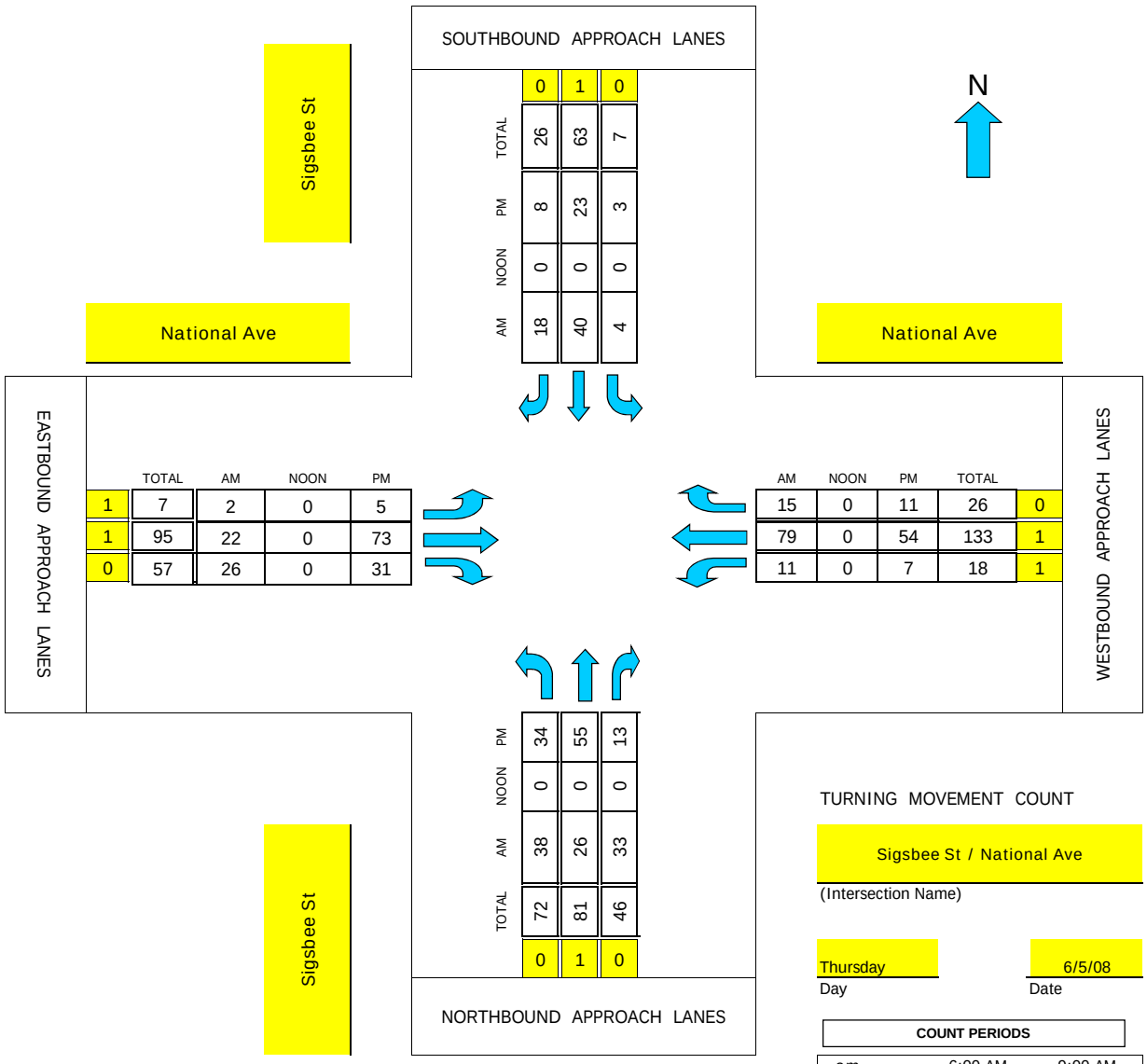
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sigsbee St / National Ave

Project #: 08-4148-003



TURNING MOVEMENT COUNT

Sigsbee St / National Ave

(Intersection Name)

Thursday — Day

6/5/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	415 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sigsbee St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: THURSDAY PROJECT# 08-4148-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	0	1	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	4	6	2	4	7	2	1	9	3	1	12	4	55
7:15 AM	5	1	4	1	7	5	0	5	8	2	12	1	51
7:30 AM	6	6	4	1	11	6	1	11	6	3	15	4	74
7:45 AM	15	5	6	2	10	9	0	5	9	1	26	5	93
8:00 AM	4	7	8	2	9	6	0	5	3	4	22	1	71
8:15 AM	4	8	7	0	11	2	1	5	6	0	15	3	62
8:30 AM	15	6	12	0	10	1	1	7	8	6	16	6	88
8:45 AM	5	7	11	2	8	8	2	9	3	1	9	4	69
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	58	46	54	12	73	39	6	56	46	18	127	28	563

AM Peak Hr Begins at: 745 AM

PEAK													
VOLUMES =	38	26	33	4	40	18	2	22	26	11	79	15	314
PEAK HR. FACTOR:		0.735			0.738			0.781			0.820		0.844

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sigsbee St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: THURSDAY PROJECT# 08-4148-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	0	1	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	6	14	5	3	4	1	3	15	3	3	17	0	74
4:15 PM	12	11	4	1	7	3	1	14	4	3	13	3	76
4:30 PM	16	8	3	2	7	2	0	17	8	0	12	1	76
4:45 PM	4	13	1	0	5	1	2	11	9	1	21	2	70
5:00 PM	2	23	5	0	4	2	2	31	10	3	8	5	95
5:15 PM	3	13	2	2	5	1	1	20	1	2	11	0	61
5:30 PM	7	10	0	0	2	1	1	13	3	1	13	6	57
5:45 PM	3	14	2	0	5	2	2	10	5	1	17	1	62
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 53	NT 106	NR 22	SL 8	ST 39	SR 13	EL 12	ET 131	ER 43	WL 14	WT 112	WR 18	TOTAL 571

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	34	55	13	3	23	8	5	73	31	7	54	11	317
PEAK HR. FACTOR:		0.850			0.773			0.634			0.750		0.834

CONTROL: Signalized

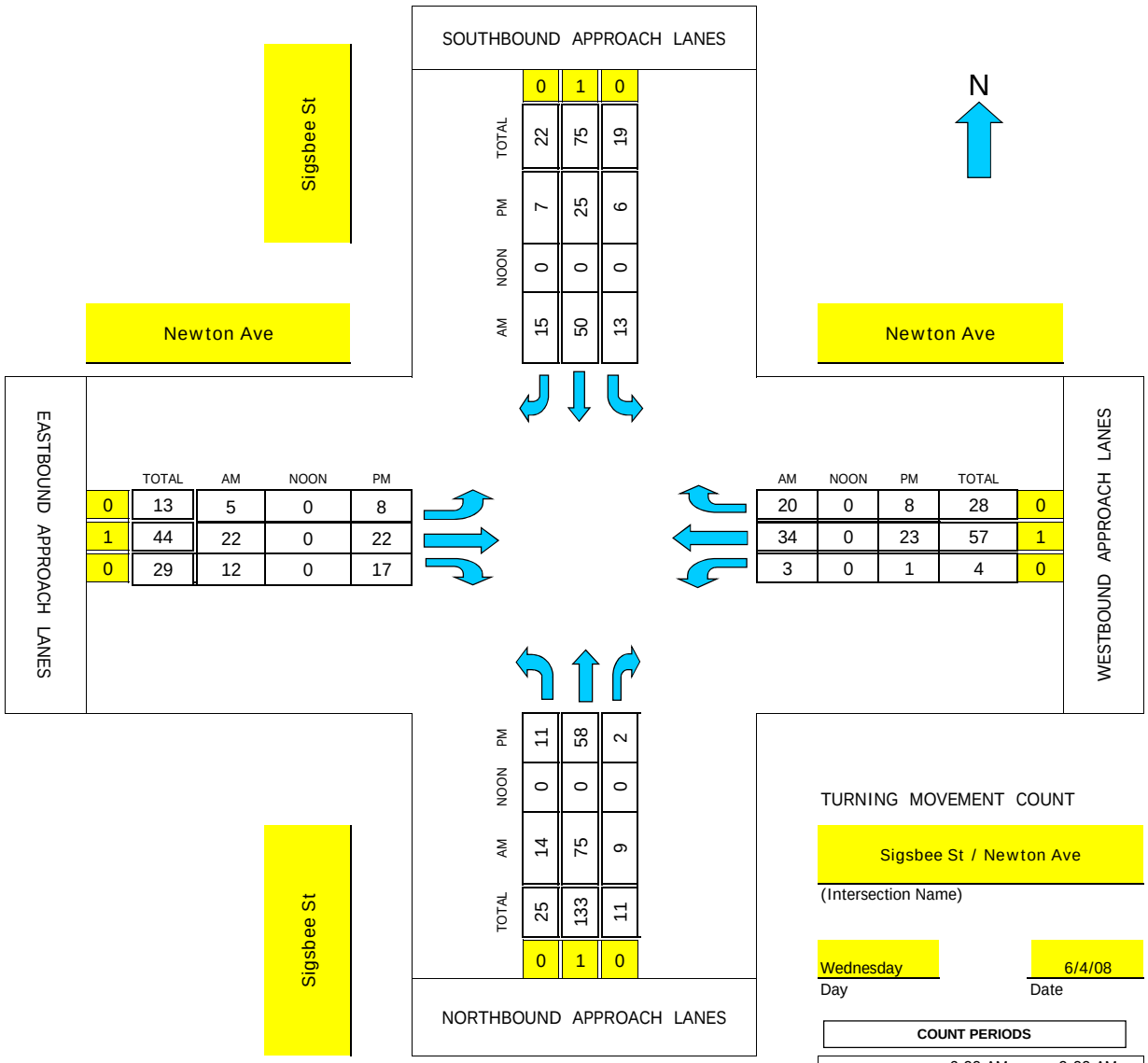
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sigsbee St/Newton Ave

Project #: 08-4148-004



TURNING MOVEMENT COUNT

Sigsbee St / Newton Ave

(Intersection Name)

Wednesday — Day

6/4/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	800 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sigsbee St DATE: 06/04/2008 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: WEDNESDAY PROJECT# 08-4148-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	6	0	3	6	2	2	5	1	1	8	1	35
7:15 AM	2	5	1	1	16	3	1	4	5	0	11	0	49
7:30 AM	2	20	1	2	10	4	0	3	5	2	6	4	59
7:45 AM	4	15	3	2	14	1	1	6	6	2	8	1	63
8:00 AM	3	13	0	3	6	5	1	4	3	0	10	3	51
8:15 AM	5	18	0	4	13	3	3	8	5	1	9	7	76
8:30 AM	2	20	6	6	12	2	1	7	3	0	7	5	71
8:45 AM	4	24	3	0	19	5	0	3	1	2	8	5	74
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	22	121	14	21	96	25	9	40	29	8	67	26	478

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	14	75	9	13	50	15	5	22	12	3	34	20	272
PEAK HR. FACTOR:		0.790			0.813			0.609			0.838		0.895

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sigsbee St DATE: 06/04/2008 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: WEDNESDAY PROJECT# 08-4148-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	6	10	1	4	9	4	1	7	2	0	5	2	51
4:15 PM	3	14	0	0	2	1	1	4	6	0	7	2	40
4:30 PM	0	21	1	1	10	1	4	6	6	1	9	1	61
4:45 PM	2	13	0	1	4	1	2	5	3	0	2	3	36
5:00 PM	2	10	0	2	12	0	4	6	3	0	2	4	45
5:15 PM	1	13	1	2	11	1	1	2	3	0	4	0	39
5:30 PM	4	19	0	0	10	1	0	1	3	2	3	2	45
5:45 PM	3	10	3	1	9	3	0	2	0	0	5	2	38
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	21	110	6	11	67	12	13	33	26	3	37	16	355

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	11	58	2	6	25	7	8	22	17	1	23	8	188
PEAK HR. FACTOR:		0.807			0.559			0.734			0.727		0.770

CONTROL: 4-Way Stop Sign

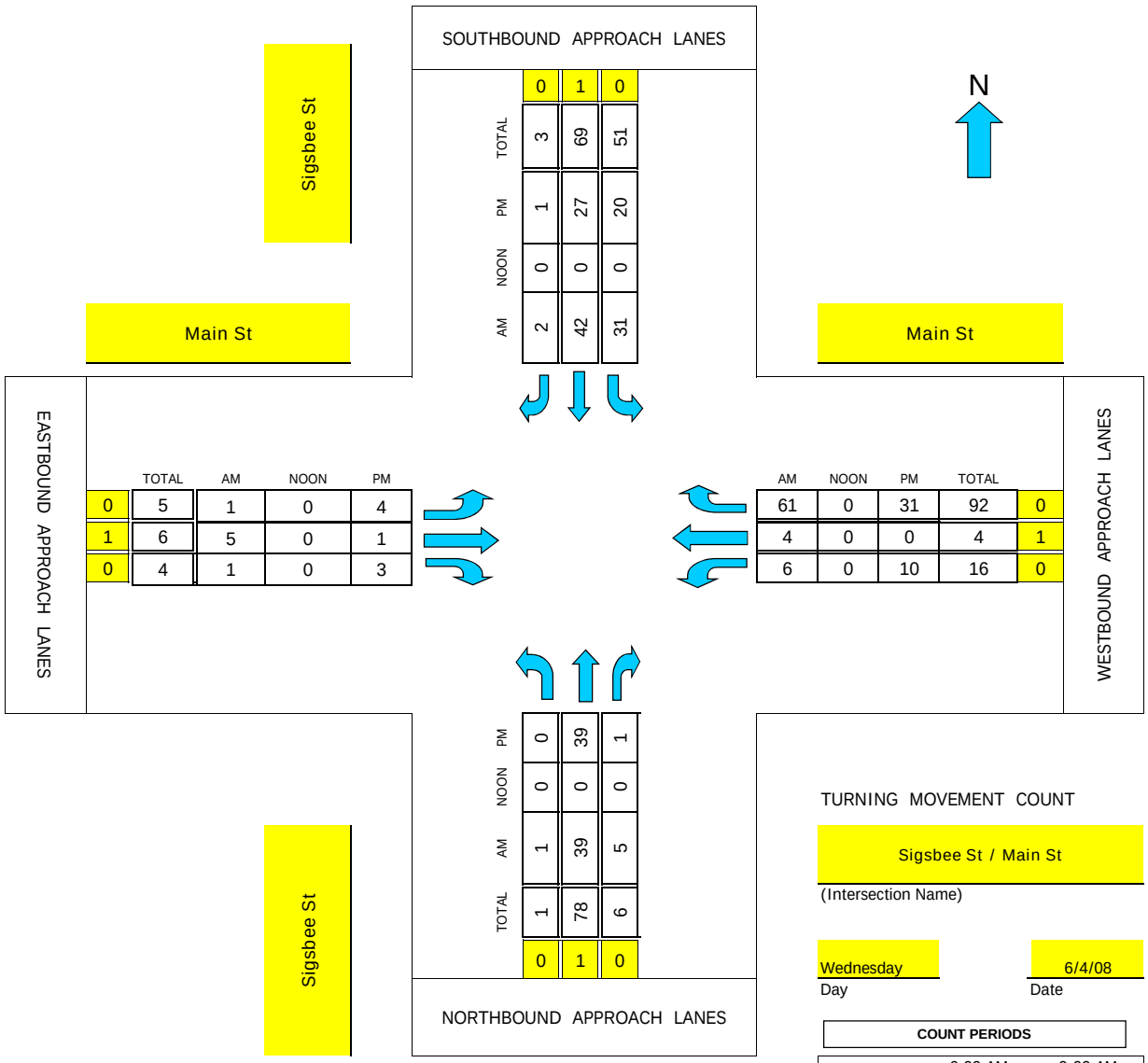
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sigsbee St / Main St

Project #: 08-4148-005



TURNING MOVEMENT COUNT

Sigsbee St / Main St

(Intersection Name)

Wednesday — Day

6/4/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-way stop sign

AM PEAK HOUR	800 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sigsbee St DATE: 06/04/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: WEDNESDAY PROJECT# 08-4148-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	6	0	2	10	0	0	3	0	0	1	2	24
7:15 AM	0	4	0	4	15	0	1	1	0	1	2	5	33
7:30 AM	1	12	1	6	12	1	0	0	0	0	0	11	44
7:45 AM	1	11	0	8	8	2	0	3	0	2	1	13	49
8:00 AM	0	7	0	4	9	1	0	1	0	1	1	12	36
8:15 AM	0	10	1	10	10	1	0	1	0	2	0	13	48
8:30 AM	1	10	3	9	9	0	0	1	1	2	2	17	55
8:45 AM	0	12	1	8	14	0	1	2	0	1	1	19	59
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	3	72	6	51	87	5	2	12	1	9	8	92	348

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	1	39	5	31	42	2	1	5	1	6	4	61	198
PEAK HR. FACTOR:		0.804			0.852			0.583			0.845		0.839

CONTROL: 4-way stop sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sigsbee St DATE: 06/04/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: WEDNESDAY PROJECT# 08-4148-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM		10	0	4	8	0	0	0	3	1	0	12	38
4:15 PM		8	0	2	6	0	3	1	0	3	0	6	29
4:30 PM		15	1	8	9	1	1	0	0	0	0	7	42
4:45 PM		6	0	6	4	0	0	0	0	6	0	6	28
5:00 PM		8	5	6	5	0	0	0	0	0	0	6	30
5:15 PM		11	0	9	3	0	0	0	0	0	1	9	33
5:30 PM		17	2	5	9	0	0	0	0	0	0	11	44
5:45 PM		7	0	7	6	0	0	0	0	2	0	7	29
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	82	8	47	50	1	4	1	3	12	1	64	273

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	0	39	1	20	27	1	4	1	3	10	0	31	137
PEAK HR. FACTOR:		0.625			0.667			0.500			0.788		0.815

CONTROL: 4-way stop sign

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-010

Location: Sigsbee St & E. Harbor Dr City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	0	0	0	0	1	0	1	2	0	0	2	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS				1		2	6	69			122	0
	2-axle								1			12	
	3-axle											1	
	4-axle												
	5-axle +											2	1
7:15	CARS				0		6	6	80			131	3
	2-axle				1			1	4			6	
	3-axle								1				
	4-axle												
	5-axle +				1							1	
7:30	CARS				0		5	2	70			191	3
	2-axle								4			11	
	3-axle												
	4-axle											1	
	5-axle +											1	
7:45	CARS				0		4	6	79			184	4
	2-axle				1				6			4	1
	3-axle												
	4-axle												
	5-axle +								1				
8:00	CARS				0		1	7	44			176	2
	2-axle						1		7			8	
	3-axle												
	4-axle								1				
	5-axle +											2	
8:15	CARS				1		4	1	38			147	0
	2-axle							3	7			7	1
	3-axle							1					1
	4-axle												
	5-axle +												1
8:30	CARS				0		10	3	31			117	1
	2-axle				1		4	3	10			8	1
	3-axle											1	
	4-axle												
	5-axle +				2				5				
8:45	CARS				2		6	0	56			98	2
	2-axle				1			1	1			11	
	3-axle								3				
	4-axle												
	5-axle +							1					

MOVEMENT TOTALS

CARS	0	0	0	4	0	38	31	467	0	0	1166	15
2-axle	0	0	0	4	0	5	8	40	0	0	67	3
3-axle	0	0	0	0	0	0	1	4	0	0	2	1
4-axle	0	0	0	0	0	0	0	1	0	0	1	0
5-axle +	0	0	0	3	0	0	1	6	0	0	6	2
TOTALS	0	0	0	11	0	43	41	518	0	0	1242	21
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 715 AM

CONTROL: 1-Way Stop (SB)

0	0	0	3	0	17	22	297	0	0	716	13
	0.000			0.625			0.867			0.880	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-010

Location: Sigsbee St & E. Harbor Dr City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	0	0	0	1	0	1	2	0	0	2	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS					1		3	11	199			83	1
	2-axle							1		6			3	
	3-axle													1
	4-axle													
	5-axle +									2				
16:15	CARS					2		4	10	224			78	1
	2-axle								1	9			1	
	3-axle												1	
	4-axle													
	5-axle +													
16:30	CARS					1		1	16	278			82	2
	2-axle							1	1	10				1
	3-axle													
	4-axle													
	5-axle +													
16:45	CARS					1		2	13	278			91	2
	2-axle								2	2			2	
	3-axle									1			2	
	4-axle													
	5-axle +									3			1	
17:00	CARS					5		3	22	289			66	0
	2-axle							1					4	
	3-axle									1				
	4-axle													
	5-axle +									1				
17:15	CARS					0		6	22	290			63	6
	2-axle													
	3-axle													
	4-axle													
	5-axle +													
17:30	CARS					1		1	4	236			51	1
	2-axle							2		4				1
	3-axle													
	4-axle													
	5-axle +					1				1				
17:45	CARS					2		1	13	170			46	1
	2-axle													
	3-axle													
	4-axle													
	5-axle +							1						

MOVEMENT TOTALS

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
CARS	0	0	0	13	0	21	111	1964	0	0	560	14
2-axle	0	0	0	0	0	5	4	31	0	0	10	2
3-axle	0	0	0	0	0	0	0	2	0	0	3	1
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	0	0	1	0	1	0	7	0	0	1	0
TOTALS	0	0	0	14	0	27	115	2004	0	0	574	17
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1630 PM

CONTROL: 1-Way Stop (SB)

0	0	0	7	0	14	76	1153	0	0	311	11
	0.000			0.583			0.982			0.821	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-001

Location: Beardsley St/I-5 SB Off-Ramp & Logan Ave City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	1	0	0	1	0	0	1	0	1	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		5			56	18	1		12	2	6	17	
	2-axle		1		4					4	1		6	
	3-axle				3			1						
	4-axle									1				
	5-axle +									4	1			
7:15	CARS				1	55	33	4		13	3	2	9	
	2-axle									2	1		4	
	3-axle							1		3			2	
	4-axle													
	5-axle +		2		2									
7:30	CARS					33	43	3		11	2	4	14	
	2-axle		1		7		1						3	
	3-axle		1			1		1						
	4-axle									1				
	5-axle +													
7:45	CARS				7	18	46	7		17	1	14	15	
	2-axle		3		4	1	2	1		1			3	
	3-axle										1			
	4-axle													
	5-axle +													
8:00	CARS				10	17	38	3		18	6	6	2	
	2-axle		2		1		3			1		1	9	
	3-axle													
	4-axle									1				
	5-axle +		1											
8:15	CARS		4		15	24	33	3		13	3	5	13	
	2-axle		2		1	1	3			8	1		7	
	3-axle						2							
	4-axle													
	5-axle +					1		1					1	
8:30	CARS				10	38	29	3		15	3	4	9	
	2-axle		2				2	2		1		3	4	
	3-axle													
	4-axle													
	5-axle +				1			1						
8:45	CARS				11	25	32			16	1	22	14	
	2-axle				3		1	1		2	1	2	5	
	3-axle													
	4-axle													
	5-axle +		2		1									

MOVEMENT TOTALS

CARS	9	0	54	266	272	24	0	115	21	63	93	0
2-axle	11	0	20	2	12	4	0	19	4	6	41	0
3-axle	1	0	3	1	2	3	0	3	1	0	2	0
4-axle	0	0	0	0	0	0	0	3	0	0	0	0
5-axle +	5	0	4	1	0	2	0	4	1	0	1	0
TOTALS	26	0	81	270	286	33	0	144	27	69	137	0
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

Control: 4-Way Stop

13	0	28	164	143	19	0	69	12	26	73	0
	0.732			0.876			0.810			0.773	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-001

Location: Beardsley St/I-5 SB Off-Ramp & Logan Ave City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	0	1	0	0	1	0	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS	3		14	27	15	4		39	3	6	9	
	2-axle	1			1	3	1		5	1	1	1	
	3-axle												
	4-axle												
	5-axle +			1									
16:15	CARS	1		14	25	9	3		24	2	6	8	
	2-axle	2			1	1			4			1	
	3-axle					1							
	4-axle												
	5-axle +												
16:30	CARS	6		16	31	10	2		42	4	4	9	
	2-axle	1		1		2			5			3	
	3-axle												
	4-axle												
	5-axle +												
16:45	CARS	7		12	32	8	2		35		4	14	
	2-axle			4						3	4		
	3-axle									1			
	4-axle												
	5-axle +												
17:00	CARS	8		16	24	5	3		43	3	4	10	
	2-axle	2			2	1			3	1	1	4	
	3-axle					2							
	4-axle												
	5-axle +				1	2							
17:15	CARS	8		12	29	12	2		34	5	6	9	
	2-axle			2	1	3	1		2	1	1		
	3-axle												
	4-axle												
	5-axle +												
17:30	CARS	4		12	21	6			31	6	7	3	
	2-axle	1			2				4			2	
	3-axle												
	4-axle											1	
	5-axle +	1										1	
17:45	CARS	3		8	9	7	1		31	1	4	7	
	2-axle								2			2	
	3-axle												
	4-axle												
	5-axle +												

MOVEMENT TOTALS

CARS	40	0	104	198	72	17	0	279	24	41	69	0
2-axle	7	0	7	7	10	2	0	25	6	7	13	0
3-axle	0	0	0	0	3	0	0	0	1	0	0	0
4-axle	0	0	0	0	0	0	0	0	0	0	1	0
5-axle +	1	0	1	1	2	0	0	0	0	0	1	0
TOTALS	48	0	112	206	87	19	0	304	31	48	84	0
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1630 PM

Control: 4-Way Stop

32	0	63	120	45	10	0	164	18	24	49	0
	0.913			0.911			0.892			0.830	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-001

Location: Beardsley St/I-5 SB Off-Ramp & Logan Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	0	1	0	0	1	0	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	4		5	53	18	0		19		5	26	
	2-axle	1		2					1			3	
	3-axle			1			1						
	4-axle												
	5-axle +								1	2			
7:15	CARS	3		1	54	36	1		16	0	1	17	
	2-axle	1								1		1	
	3-axle						1		4			1	
	4-axle												
	5-axle +			1									
7:30	CARS	0		2	32	47	6		11	3	5	13	
	2-axle	1		3		2						2	
	3-axle			1									
	4-axle								1				
	5-axle +				1								
7:45	CARS	5		10	18	50	9		21	0	14	21	
	2-axle			2		1	1		1			2	
	3-axle									2			
	4-axle												
	5-axle +	1											
8:00	CARS	4		8	14	43	0		11	5	8	5	
	2-axle	1		2		1	2		2	1	1	3	
	3-axle												
	4-axle								1				
	5-axle +											1	
8:15	CARS	4		17	27	33	4		15	2	3	22	
	2-axle	1		1		2			3	1	1	2	
	3-axle					1							
	4-axle												
	5-axle +				1							1	
8:30	CARS			12	37	29	2		14	3	5	11	
	2-axle	2					2		2		2	2	
	3-axle												
	4-axle												
	5-axle +			1			1				1		
8:45	CARS	6		11	24	27	4		18	5	12	13	
	2-axle			3		2			2	2	1	3	
	3-axle												
	4-axle												
	5-axle +	1											

MOVEMENT TOTALS

CARS	26	0	66	259	283	26	0	125	18	53	128	0
2-axle	7	0	13	0	8	5	0	11	5	5	18	0
3-axle	0	0	2	0	1	2	0	4	2	0	1	0
4-axle	0	0	0	0	0	0	0	2	0	0	0	0
5-axle +	2	0	2	2	0	1	0	1	2	1	2	0
TOTALS	35	0	83	261	292	34	0	143	27	59	149	0
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

Control: 4-Way Stop

16	0	28	158	154	19	0	75	8	25	86	0
	0.611			0.899			0.865			0.750	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-001

Location: Beardsley St/I-5 SB Off-Ramp & Logan Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	0	1	0	0	1	0	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS	12		16	53	18	8		76	12	7	21	
	2-axle	1		2		1			5			1	
	3-axle												
	4-axle												
	5-axle +												
16:15	CARS	3		22	48	31	8		63	15	5	17	
	2-axle	1				1			3			1	
	3-axle												
	4-axle												
	5-axle +												
16:30	CARS	6		27	48	20	8		55	7	5	12	
	2-axle	1		1					4		1	4	
	3-axle				1							1	
	4-axle								1				
	5-axle +				1								
16:45	CARS	3		20	46	25	8		59	17	14	16	
	2-axle					1			5	1	1	4	
	3-axle												
	4-axle												
	5-axle +				1	1							
17:00	CARS	6		29	31	23	9		58	9	3	5	
	2-axle				1				4			1	
	3-axle												
	4-axle												
	5-axle +												
17:15	CARS	4		15	37	14	8		64	9	7	10	
	2-axle					1			2		1	1	
	3-axle												
	4-axle												
	5-axle +												
17:30	CARS	10		26	49	25	8		48	26	9	14	
	2-axle				1	1			1			1	
	3-axle					1							
	4-axle												
	5-axle +												
17:45	CARS	3		7	34	11	4		56	11	8	7	
	2-axle					1			2			3	
	3-axle												
	4-axle												
	5-axle +												

MOVEMENT TOTALS

CARS	47	0	162	346	167	61	0	479	106	58	102	0
2-axle	3	0	3	2	6	0	0	26	1	3	16	0
3-axle	0	0	0	1	1	0	0	0	0	0	1	0
4-axle	0	0	0	0	0	0	0	1	0	0	0	0
5-axle +	0	0	0	2	1	0	0	0	0	0	0	0
TOTALS	50	0	165	351	175	61	0	506	107	61	119	0
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

Control: 4-Way Stop

27	0	88	198	98	32	0	271	52	33	77	0
	0.821			0.932			0.868			0.786	

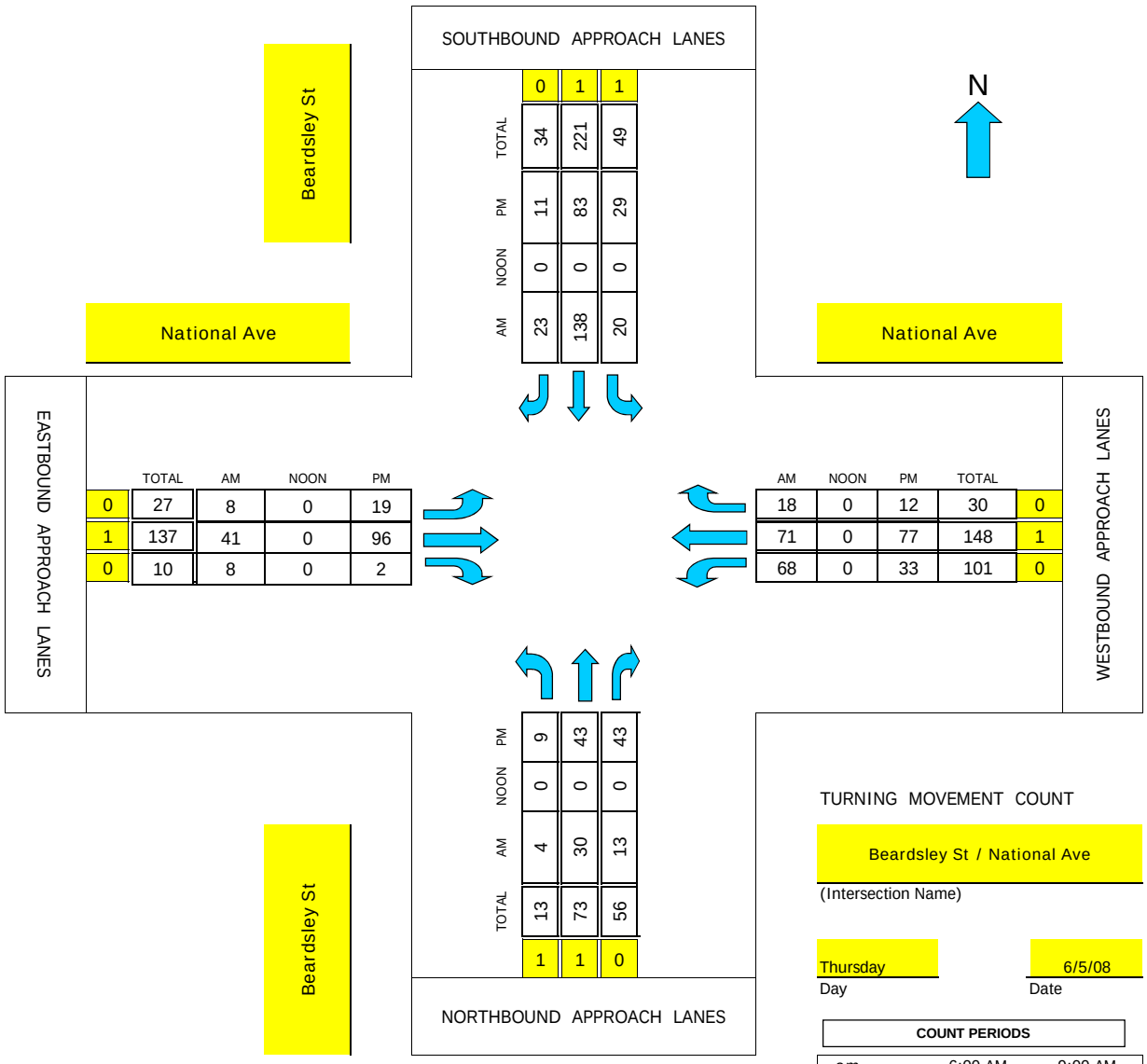
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Beardsley St / National Ave

Project #: 08-4148-008



TURNING MOVEMENT COUNT

Beardsley St / National Ave

(Intersection Name)

Thursday — Day

6/5/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	415 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Beardsley St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: THURSDAY PROJECT# 08-4148-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	7	5	1	23	4	2	9	1	6	13	2	73
7:15 AM	3	3	2	7	33	6	3	8	1	7	18	5	96
7:30 AM	1	8	3	2	38	8	5	11	0	11	12	1	100
7:45 AM	2	8	2	3	37	8	0	6	3	15	25	9	118
8:00 AM	1	10	7	5	38	8	4	12	1	17	16	5	124
8:15 AM	0	7	3	5	32	1	1	11	4	15	15	4	98
8:30 AM	1	5	1	7	31	6	3	12	0	21	15	0	102
8:45 AM	2	9	6	8	35	2	1	6	0	5	23	5	102
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	10	57	29	38	267	43	19	75	10	97	137	31	813

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	4	30	13	20	138	23	8	41	8	68	71	18	442
PEAK HR. FACTOR:		0.653			0.887			0.838			0.801		0.891

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Beardsley St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: THURSDAY PROJECT# 08-4148-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	4	11	9	8	20	5	5	25	3	6	17	5	118
4:15 PM	2	9	9	7	19	5	4	23	1	9	19	2	109
4:30 PM	3	11	9	8	29	3	3	22	0	10	19	3	120
4:45 PM	4	6	7	6	16	1	6	19	0	9	28	2	104
5:00 PM	0	17	18	8	19	2	6	32	1	5	11	5	124
5:15 PM	8	15	4	7	16	0	2	19	1	5	7	3	87
5:30 PM	0	13	4	7	12	3	0	20	0	5	16	2	82
5:45 PM	2	9	5	7	16	4	3	7	2	5	16	0	76
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 23	NT 91	NR 65	SL 58	ST 147	SR 23	EL 29	ET 167	ER 8	WL 54	WT 133	WR 22	TOTAL 820

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	9	43	43	29	83	11	19	96	2	33	77	12	457
PEAK HR. FACTOR:		0.679			0.769			0.750			0.782		0.921

CONTROL: 4-Way Stop Sign

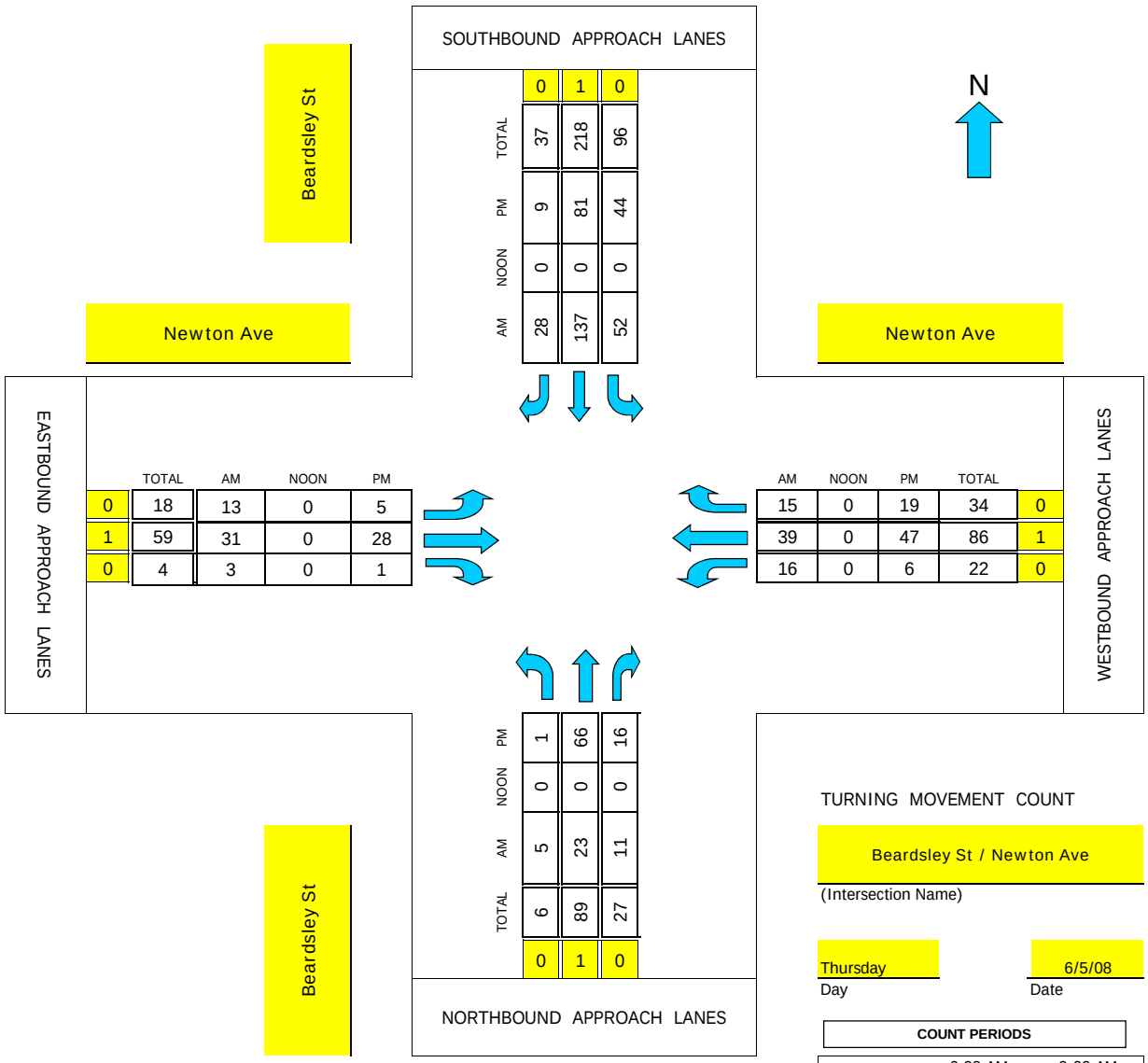
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Beardsley St/Newton Ave

Project #: 08-4148-009



TURNING MOVEMENT COUNT

Beardsley St / Newton Ave

(Intersection Name)

Thursday — Day

6/5/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Beardsley St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: THURSDAY PROJECT# 08-4148-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	8	1	9	19	3	1	7	1	4	6	2	61
7:15 AM	0	9	2	7	29	6	1	8	3	0	5	2	72
7:30 AM	0	6	4	2	29	5	0	9	0	9	11	6	81
7:45 AM	2	9	4	12	33	6	2	7	2	5	8	7	97
8:00 AM	1	8	2	13	31	10	6	8	0	4	9	4	96
8:15 AM	2	1	1	14	39	6	3	7	0	4	9	3	89
8:30 AM	0	5	4	13	34	6	2	9	1	3	13	1	91
8:45 AM	0	10	4	12	25	3	1	12	1	3	9	6	86
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	5	56	22	82	239	45	16	67	8	32	70	31	673

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	5	23	11	52	137	28	13	31	3	16	39	15	373
PEAK HR. FACTOR:		0.650			0.919			0.839			0.875		0.961

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Beardsley St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: THURSDAY PROJECT# 08-4148-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	20	6	9	19	2	1	7	0	3	14	5	86
4:15 PM	0	16	3	11	19	1	0	5	1	0	12	5	73
4:30 PM	0	17	2	14	26	3	3	10	0	2	12	5	94
4:45 PM	1	13	5	10	17	3	1	6	0	1	9	4	70
5:00 PM	1	14	2	5	17	2	4	10	0	3	12	6	76
5:15 PM	1	17	4	7	14	2	2	6	0	3	13	6	75
5:30 PM	1	12	0	7	14	2	3	9	1	3	9	2	63
5:45 PM	2	15	1	2	15	1	1	8	0	5	9	1	60
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 6	NT 124	NR 23	SL 65	ST 141	SR 16	EL 15	ET 61	ER 2	WL 20	WT 90	WR 34	TOTAL 597

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	1	66	16	44	81	9	5	28	1	6	47	19	323
PEAK HR. FACTOR:		0.798			0.779			0.654			0.818		0.859

CONTROL: 4-Way Stop Sign

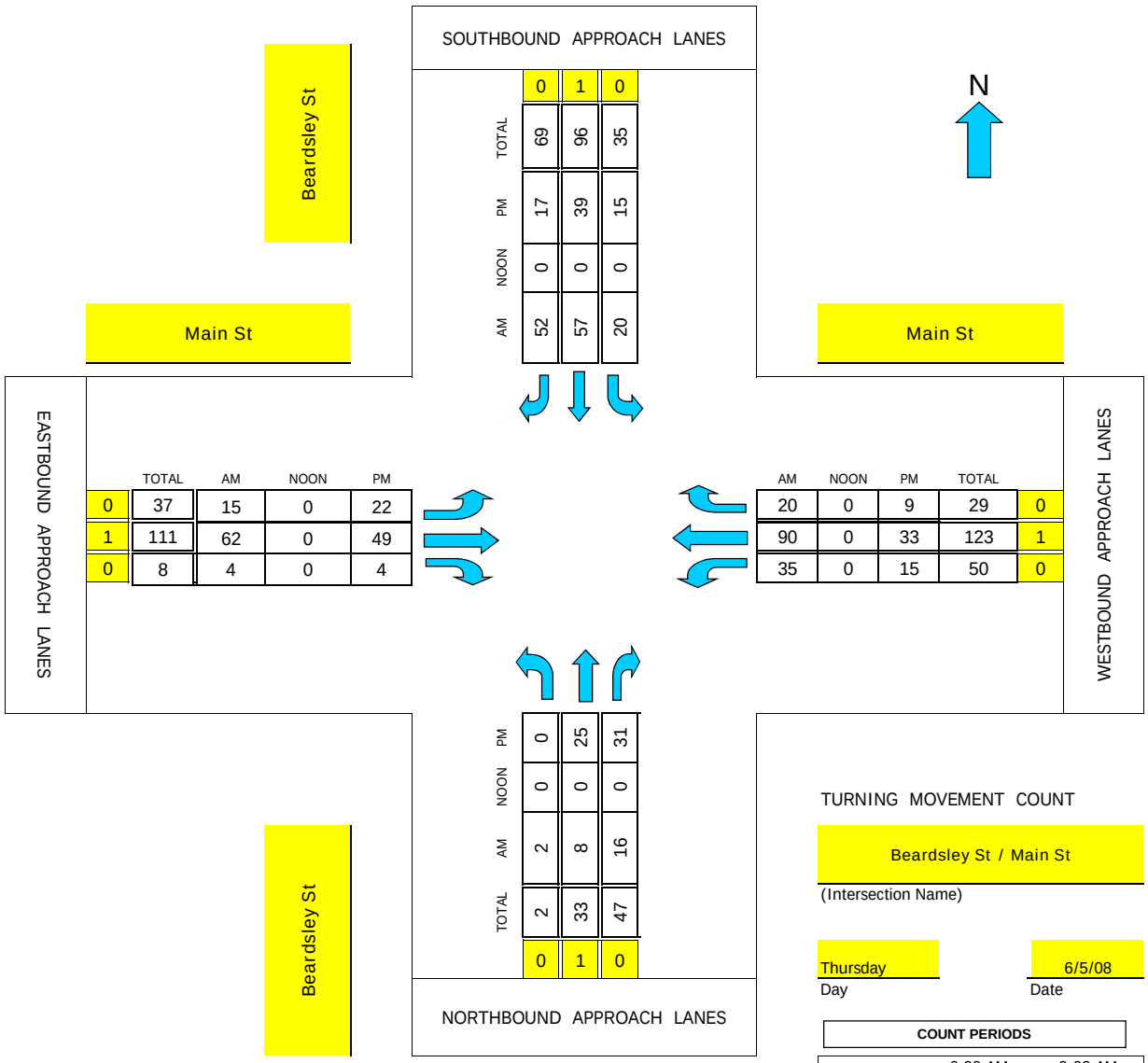
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Beardsley St / Main St

Project #: 08-4148-010



TURNING MOVEMENT COUNT

Beardsley St / Main St

(Intersection Name)

Thursday — Day

6/5/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	800 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Beardsley St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	7	0	2	17	4	3	2	0	5	5	3	48
7:15 AM	0	1	0	7	25	1	2	1	3	9	9	7	65
7:30 AM	0	4	0	6	30	11	1	14	0	6	15	7	94
7:45 AM	1	3	0	5	19	9	4	15	1	8	21	6	92
8:00 AM	2	1	7	7	15	9	5	11	1	8	19	3	88
8:15 AM	0	1	2	6	12	19	1	15	1	8	22	7	94
8:30 AM	0	1	2	3	17	15	1	19	1	7	37	3	106
8:45 AM	0	5	5	4	13	9	8	17	1	12	12	7	93
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	3	23	16	40	148	77	25	94	8	63	140	43	680

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	2	8	16	20	57	52	15	62	4	35	90	20	381
PEAK HR. FACTOR:		0.650			0.872			0.779			0.771		0.899

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Beardsley St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	11	8	3	14	1	4	14	0	5	6	1	67
4:15 PM	0	5	6	4	8	3	8	14	0	4	10	4	66
4:30 PM	0	2	5	6	10	10	7	12	1	4	10	3	70
4:45 PM	0	7	12	2	7	3	3	9	3	2	7	1	56
5:00 PM	0	7	7	3	10	6	2	6	6	5	8	5	65
5:15 PM	1	14	5	3	3	5	2	5	1	3	1	1	44
5:30 PM	1	7	7	2	6	9	2	6	2	1	7	2	52
5:45 PM	0	8	5	9	6	6	4	11	0	2	8	2	61
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 2	NT 61	NR 55	SL 32	ST 64	SR 43	EL 32	ET 77	ER 13	WL 26	WT 57	WR 19	TOTAL 481

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	0	25	31	15	39	17	22	49	4	15	33	9	259
PEAK HR. FACTOR:		0.737			0.683			0.852			0.792		0.925

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Harbor Dr. DATE: 2/16/2006 LOCATION: City of San Diego

E-W STREET: Beardsley St. DAY: THURSDAY PROJECT# 06-4058-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	1	2	0	0	0	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM		180	6	5	34					9		15	249
7:15 AM		238	3	3	61					7		13	325
7:30 AM		204	5	6	46					8		19	288
7:45 AM		259	2	1	65					5		9	341
8:00 AM		206	6	3	37					10		13	275
8:15 AM		180	1	2	47					2		12	244
8:30 AM		162	3	4	36					6		14	225
8:45 AM		200	5	2	58					4		10	279
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1629	31	26	384	0	0	0	0	51	0	105	2226

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
1660	1734	410	435	0	57	156	0

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =													
	0	907	16	13	209	0	0	0	0	30	0	54	1229
PEAK HR. FACTOR:		0.884			0.841			0.000			0.778		0.901

CONTROL: 1WayStop(WB)

A-23

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Harbor Dr. DATE: 2/16/2006 LOCATION: City of San Diego

E-W STREET: Beardsley St. DAY: THURSDAY PROJECT# 06-4058-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	1	2	0	0	0	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM		50	4	19	281					5	5		364
4:15 PM		63	7	16	267					9	2		364
4:30 PM		90	3	20	277					6	4		400
4:45 PM		84	2	10	310					7	1		414
5:00 PM		78	6	17	291					5	6		403
5:15 PM		77	5	13	289					8	5		397
5:30 PM		58	8	10	220					4	3		303
5:45 PM		70	4	8	258					5	2		347
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	0	570	39	113	2193	0	0	0	0	49	0	28	2992
	nb a	nb d		sb a	sb d		eb a	eb d		wb a	nb d		
	609	598		2306	2242		0	152		77	0		

PM Peak Hr Begins at: 430 PM

PEAK VOLUMES =	0	329	16	60	1167	0	0	0	0	26	0	16	1614
PEAK HR. FACTOR:		0.927			0.959			0.000			0.808		0.975

CONTROL: 1WayStop(WB)

A 24

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-003

Location: Cesar Chavez Pkwy & Kearny Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	1.5	0.5	0	0	1.5	0.5	0	0	0	1.3	0.3	0.3
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	24	18			40	6				97	20	16
	2-axle	5	1			1					6		
	3-axle												
	4-axle										1		
	5-axle +												
7:15	CARS	26	15			26	5				90	23	14
	2-axle					3					5		1
	3-axle										1		
	4-axle												
	5-axle +	1										2	
7:30	CARS	25	23			41	4				115	24	16
	2-axle	2				3					8		
	3-axle										1		
	4-axle	1											
	5-axle +										1		
7:45	CARS	24	28			49	2				126	45	21
	2-axle	5	5			3					5		
	3-axle					2							
	4-axle												
	5-axle +											2	
8:00	CARS	19	26			44	4				113	40	12
	2-axle	3	2			5	2				10		
	3-axle										3		
	4-axle					1							
	5-axle +										1		
8:15	CARS	27	18			43	2				126	21	11
	2-axle	3	4			1					5	1	
	3-axle										1		
	4-axle												
	5-axle +										1	1	
8:30	CARS	15	29			46	0				94	16	24
	2-axle	2				5	1				4		
	3-axle	1				1						1	
	4-axle												
	5-axle +		1									1	
8:45	CARS	23	24			46	2				124	14	11
	2-axle	4	1			7					11		1
	3-axle	1				1							
	4-axle											2	
	5-axle +										6		

MOVEMENT TOTALS

CARS	183	181	0	0	335	25	0	0	0	885	203	125
2-axle	24	13	0	0	28	3	0	0	0	54	1	2
3-axle	2	0	0	0	4	0	0	0	0	6	1	0
4-axle	1	0	0	0	1	0	0	0	0	1	2	0
5-axle +	1	1	0	0	0	0	0	0	0	9	6	0
TOTALS	211	195	0	0	368	28	0	0	0	955	213	127
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 730 AM

CONTROL: Signalized

109	106	0	0	192	14	0	0	0	516	134	60
	0.867			0.920			0.000			0.892	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-003

Location: Cesar Chavez Pkwy & Kearny Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	1.5	0.5	0	0	1.5	0.5	0	0	0	1.3	0.3	0.3
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS	44	39			49	13				109	29	27
	2-axle	3	3			2					1		
	3-axle	1									4		
	4-axle												1
	5-axle +												
16:15	CARS	48	65			64	2				112	14	35
	2-axle	6	5			2					2		1
	3-axle	1											
	4-axle												
	5-axle +												
16:30	CARS	34	53			52	5				110	14	26
	2-axle					4					5		
	3-axle												
	4-axle					1							
	5-axle +	1											
16:45	CARS	52	58			59	3				88	8	24
	2-axle	1	1			3					1	1	
	3-axle					1							
	4-axle												
	5-axle +												
17:00	CARS	42	78			63	5				94	17	27
	2-axle	4	2			1					3		
	3-axle												
	4-axle												
	5-axle +												
17:15	CARS	50	63			56	4				61	14	17
	2-axle	1				1					2		
	3-axle												
	4-axle												
	5-axle +												
17:30	CARS	32	57			61	1				110	21	25
	2-axle										2		
	3-axle										1		
	4-axle												
	5-axle +												
17:45	CARS	26	73			72	5				103	14	25
	2-axle												
	3-axle												
	4-axle												
	5-axle +												

MOVEMENT TOTALS

CARS	328	486	0	0	476	38	0	0	0	787	131	206
2-axle	15	11	0	0	13	0	0	0	0	16	1	1
3-axle	2	0	0	0	1	0	0	0	0	5	0	0
4-axle	0	0	0	0	1	0	0	0	0	0	0	1
5-axle +	1	0	0	0	0	0	0	0	0	0	0	0
TOTALS	346	497	0	0	491	38	0	0	0	808	132	208
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1615 PM

CONTROL: Signalized

189	262	0	0	250	15	0	0	0	415	54	113
	0.895			0.960			0.000			0.887	

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy-SR-75 On- DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Logan Ave DAY: THURSDAY PROJECT# 08-4148-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	1	0	1	1	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	3	22	28	17	115	20	15	19	11	4	6	7	267
7:15 AM	5	23	28	13	118	11	23	17	23	1	4	6	272
7:30 AM	2	35	44	17	123	14	19	19	16	3	7	10	309
7:45 AM	2	27	42	28	148	14	17	31	17	6	4	8	344
8:00 AM	5	38	34	15	117	16	10	31	17	1	5	7	296
8:15 AM	2	40	25	10	140	17	8	28	19	4	3	9	305
8:30 AM	2	39	30	12	119	24	17	31	8	1	6	6	295
8:45 AM	4	36	48	19	96	19	7	25	18	1	4	7	284
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	25	260	279	131	976	135	116	201	129	21	39	60	2372

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	11	140	145	70	528	61	54	109	69	14	19	34	1254
PEAK HR. FACTOR:		0.914			0.867			0.892			0.838		0.911

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy-SR-75 On- DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Logan Ave DAY: THURSDAY PROJECT# 08-4148-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	1	0	1	1	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	61	72	27	106	8	23	41	10	3	5	9	367
4:15 PM	3	62	69	30	94	7	30	57	13	2	5	9	381
4:30 PM	0	62	109	33	100	11	22	56	11	3	6	7	420
4:45 PM	4	69	89	24	94	13	22	51	10	1	3	3	383
5:00 PM	0	80	102	25	71	2	18	47	6	1	3	4	359
5:15 PM	5	56	88	30	68	0	31	38	8	2	3	7	336
5:30 PM	3	47	77	26	81	1	24	45	10	3	2	8	327
5:45 PM	3	37	76	35	82	0	21	51	10	0	4	5	324
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 20	NT 474	NR 682	SL 230	ST 696	SR 42	EL 191	ET 386	ER 78	WL 15	WT 31	WR 52	TOTAL 2897

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	9	254	339	114	394	39	97	205	44	9	19	28	1551
PEAK HR. FACTOR:		0.880			0.950			0.865			0.824		0.923

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy-SR-75 On- DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Logan Ave DAY: THURSDAY PROJECT# 08-4148-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	1	0	1	1	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM			15	1					0	1			17
7:15 AM			26	5					1	0			32
7:30 AM			23	10					0	0			33
7:45 AM			26	9					2	0			37
8:00 AM			15	3					2	0			20
8:15 AM			18	1					3	1			23
8:30 AM			18	5					1	1			25
8:45 AM			33	1					1	0			35
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	174	35	0	0	0	0	10	3	0	0	222

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	0	0	90	27	0	0	0	0	5	0	0	0	122
PEAK HR. FACTOR:		0.865			0.675			0.625			0.000		0.824

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy-SR-75 On- DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Logan Ave DAY: THURSDAY PROJECT# 08-4148-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	1	0	1	1	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM			44	3					2				49
4:15 PM			37	7					9				53
4:30 PM			39	6					4				49
4:45 PM			51	3					6				60
5:00 PM			46	6					4				56
5:15 PM			63	3					4				70
5:30 PM			43	4					5				52
5:45 PM			36	6					5				47
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	359	38	0	0	0	0	39	0	0	0	436

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	0	0	203	16	0	0	0	0	19	0	0	0	238
PEAK HR. FACTOR:		0.806			0.667			0.792			0.000		0.850

CONTROL: Signalized

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-004

Location: Cesar Chavez Pkwy & National Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	1	2	0	1	1.5	0.5	1	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	2	58	0	5	68	10	3	1	5	10	11	12
	2-axle	1	1	1		1		1		1		1	1
	3-axle												
	4-axle					1		1					
	5-axle +		1			1		1					
7:15	CARS	4	49	2	5	82	5	13	8	3	16	9	17
	2-axle							1			1	1	
	3-axle												
	4-axle												
	5-axle +				1					1			
7:30	CARS	4	72	0	5	85	11	11	1	3	18	9	4
	2-axle		1			1	3				1	1	
	3-axle					1							
	4-axle												
	5-axle +							1					
7:45	CARS	8	42	3	11	103	15	10	5	3	29	10	3
	2-axle		4	1		1		4	1			1	1
	3-axle					2		1					
	4-axle							1					
	5-axle +				1				1				
8:00	CARS	5	45	1	13	98	28	3	3	5	21	9	6
	2-axle		5	2	1	5	1	1				1	1
	3-axle					3				1			
	4-axle												
	5-axle +		1								1		
8:15	CARS	4	39	3	12	109	25	7	4	4	20	13	10
	2-axle		1			1	1	2	1			1	1
	3-axle					2							
	4-axle		1			1							
	5-axle +					1							
8:30	CARS	0	58	2	7	88	15	3	8	1	21	15	10
	2-axle	1	3			5	1	3	1			1	
	3-axle		2			1							
	4-axle												
	5-axle +		1										1
8:45	CARS	2	56	0	11	101	26	9	11	2	5	11	12
	2-axle	1	6	2		6	4	1	1			2	
	3-axle		3			2							
	4-axle												
	5-axle +					5					1		

MOVEMENT TOTALS

CARS	29	419	11	69	734	135	59	41	26	140	87	74
2-axle	3	21	6	1	20	10	13	4	1	2	9	4
3-axle	0	5	0	0	11	0	1	0	1	0	0	0
4-axle	0	1	0	0	2	0	2	0	0	0	0	0
5-axle +	0	3	0	2	7	0	2	1	1	2	0	1
TOTALS	32	449	17	72	774	145	77	46	29	144	96	79
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 800 AM

CONTROL: Signalized

13	221	10	44	428	101	29	29	13	69	53	41
	0.871			0.924			0.740			0.849	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-004

Location: Cesar Chavez Pkwy & National Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	1	2	0	1	1.5	0.5	1	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS	6	101	8	40	84	7	10	26	11	8	13	13
	2-axle		1			1	1	1	1				
	3-axle		1			1	1						
	4-axle												
	5-axle +												
16:15	CARS	3	116	8	18	85	18	11	19	8	3	12	11
	2-axle	1	5				1				1		
	3-axle		2										
	4-axle												
	5-axle +												
16:30	CARS	4	119	8	14	89	17	10	12	10	5	19	13
	2-axle		1			1	1	1	2				
	3-axle		1										
	4-axle						1						
	5-axle +		1										
16:45	CARS	4	142	7	20	92	21	22	22	6	5	11	15
	2-axle		1			1	1	2	1		1	1	
	3-axle												
	4-axle												
	5-axle +												
17:00	CARS	4	121	7	21	82	12	26	22	11	7	5	7
	2-axle		1			2	1	1					
	3-axle												
	4-axle												
	5-axle +												
17:15	CARS	1	125	8	29	75	14	16	7	12	2	12	17
	2-axle		1	1			1		1				
	3-axle		1										
	4-axle												
	5-axle +												
17:30	CARS	2	124	2	17	53	11	24	25	10	12	9	35
	2-axle					1		1	1		1		
	3-axle					1				2		1	
	4-axle												
	5-axle +		1										
17:45	CARS	1	124	4	24	62	6	15	8	7	12	15	44
	2-axle												
	3-axle												
	4-axle												
	5-axle +		1										

MOVEMENT TOTALS

CARS	25	972	52	183	622	106	134	141	75	54	96	155
2-axle	1	10	1	0	6	6	6	6	0	3	1	0
3-axle	0	5	0	0	2	1	0	0	2	0	1	0
4-axle	0	0	0	0	0	1	0	0	0	0	0	0
5-axle +	0	3	0	0	0	0	0	0	0	0	0	0
TOTALS	26	990	53	183	630	114	140	147	77	57	98	155
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1645 PM

CONTROL: Signalized

18	517	31	92	354	69	92	83	41	28	56	74
	0.898			0.954			0.841			0.885	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-005

Location: Cesar Chavez Pkwy & Newton Ave City: San Diego Date: 12/2/08 Day: Tuesday

		LANES:	0	2	0	1	1	0	1	1	0	0	2	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		2	46	2	2	87	3	8	2	0	1	3	6
	2-axle			5			3	1						
	3-axle													
	4-axle						1							
	5-axle +		1	1						1	1			
7:15	CARS		1	51	1	6	90	6	3	2	2	0	2	7
	2-axle		1	2			2							1
	3-axle			1										
	4-axle													
	5-axle +						1	1						
7:30	CARS		3	54	5	4	86	12	7	5	2	1	4	10
	2-axle			1			1							
	3-axle						1	1						
	4-axle			1										
	5-axle +													
7:45	CARS		3	38	4	4	112	8	10	5	3	1	6	8
	2-axle		2	4			2	1		1		2		
	3-axle						1							
	4-axle													
	5-axle +													
8:00	CARS		1	40	2	6	107	16	2	6	2	0	3	8
	2-axle			7		2	3				1			
	3-axle						5						1	
	4-axle													
	5-axle +													
8:15	CARS		1	38	0	6	87	23	7	2	3	3	4	4
	2-axle			1		1	1	1						
	3-axle						2							
	4-axle			1			1							
	5-axle +						1							
8:30	CARS		2	44	4	4	93	12	7	4	2	8	10	10
	2-axle			4			3	1			1			
	3-axle			4			1							
	4-axle													
	5-axle +			1			2							
8:45	CARS		1	54	3	6	89	12	9	4	0	6	13	5
	2-axle		1	6		1	4	1			5			
	3-axle			1			1							
	4-axle													
	5-axle +						4							

MOVEMENT TOTALS

CARS	14	365	21	38	751	92	53	30	14	20	45	58
2-axle	4	30	0	4	19	5	0	1	7	2	0	1
3-axle	0	6	0	0	11	1	0	0	0	0	1	0
4-axle	0	2	0	0	2	0	0	0	0	0	0	0
5-axle +	1	2	0	0	8	1	0	1	1	0	0	0
TOTALS	19	405	21	42	791	99	53	32	22	22	46	59
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 800 AM

CONTROL: Signalized

6	201	9	26	404	66	25	16	14	17	31	27
	0.818			0.892			0.764			0.670	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-005

Location: Cesar Chavez Pkwy & Newton Ave City: San Diego Date: 12/2/08 Day: Tuesday

		LANES:	0	2	0	1	1	0	1	1	0	0	2	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		2	107	2	13	69	8	12	4	4	1	1	3
	2-axle			1	1		1		1				1	1
	3-axle			1			1							
	4-axle													
	5-axle +													
16:15	CARS		0	84	5	11	71	5	15	13	2	1	0	5
	2-axle			5										
	3-axle			1										
	4-axle													
	5-axle +													
16:30	CARS		1	102	3	11	84	5	17	11	7	2	1	4
	2-axle			1			1							
	3-axle			1										
	4-axle													
	5-axle +			1										
16:45	CARS		3	134	3	18	90	7	14	8	6	1	2	7
	2-axle			1			2			1				
	3-axle													
	4-axle													
	5-axle +													
17:00	CARS		3	126	4	10	90	5	12	11	5	3	2	7
	2-axle													
	3-axle													
	4-axle													
	5-axle +													
17:15	CARS		0	118	6	10	71	4	8	10	4	2	1	7
	2-axle			2			2							
	3-axle													
	4-axle													
	5-axle +													
17:30	CARS		0	112	2	15	55	10	9	14	3	3	0	13
	2-axle			1										
	3-axle						2							
	4-axle													
	5-axle +													
17:45	CARS		1	116	2	14	73	8	10	4	1	5	1	4
	2-axle			2										
	3-axle													
	4-axle													
	5-axle +			1										

MOVEMENT TOTALS

CARS	10	899	27	102	603	52	97	75	32	18	8	50
2-axle	0	13	1	0	6	0	1	1	0	0	1	1
3-axle	0	3	0	0	3	0	0	0	0	0	0	0
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	2	0	0	0	0	0	0	0	0	0	0
TOTALS	10	917	28	102	612	52	98	76	32	18	9	51
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1630 PM

CONTROL: Signalized

7	486	16	49	340	21	51	41	22	8	6	25
	0.902			0.876			0.814			0.813	

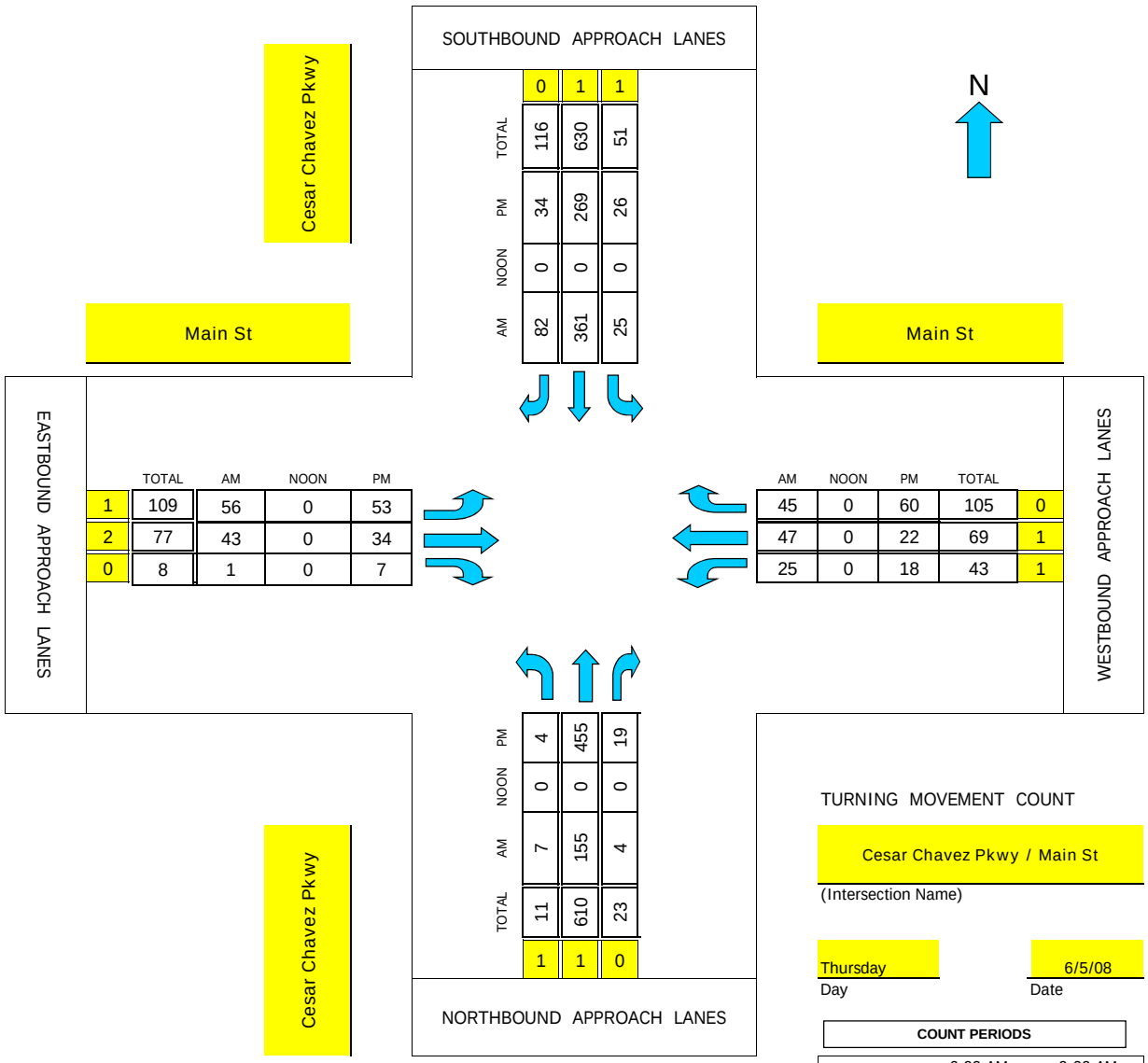
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Cesar Chavez Pkwy/Main St

Project #: 08-4148-016



TURNING MOVEMENT COUNT

Cesar Chavez Pkwy / Main St
(Intersection Name)

Thursday
Day

6/5/08
Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	730 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-016

	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	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	45	3	5	91	12	2	9	0	12	6	8	194
7:15 AM	0	36	3	10	93	17	4	4	2	6	11	11	197
7:30 AM	1	47	1	4	106	21	10	9	0	8	9	15	231
7:45 AM	4	40	0	4	92	14	15	10	0	7	15	8	209
8:00 AM	2	41	1	7	81	22	17	12	0	7	10	9	209
8:15 AM	0	27	2	10	82	25	14	12	1	3	13	13	202
8:30 AM	1	44	3	8	68	29	13	12	0	5	16	10	209
8:45 AM	4	50	4	6	50	20	14	11	1	9	7	14	190
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	13	330	17	54	663	160	89	79	4	57	87	88	1641

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	7	155	4	25	361	82	56	43	1	25	47	45	851
PEAK HR. FACTOR:		0.847			0.893			0.862			0.914		0.921

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-016

	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	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	101	5	6	63	5	12	10	2	5	7	9	227
4:15 PM	1	124	6	8	71	11	15	7	3	3	6	14	269
4:30 PM	0	127	4	6	62	12	12	9	1	7	4	22	266
4:45 PM	1	103	4	6	73	6	14	8	1	3	5	15	239
5:00 PM	0	100	1	5	58	8	7	9	0	3	7	20	218
5:15 PM	1	105	4	6	61	4	9	6	0	4	1	8	209
5:30 PM	0	108	2	6	73	9	10	3	1	1	5	8	226
5:45 PM	0	103	4	3	67	9	14	14	1	3	6	6	230
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 5	NT 871	NR 30	SL 46	ST 528	SR 64	EL 93	ET 66	ER 9	WL 29	WT 41	WR 102	TOTAL 1884

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	4	455	19	26	269	34	53	34	7	18	22	60	1001
PEAK HR. FACTOR:		0.912			0.914			0.940			0.758		0.930

CONTROL: Signalized

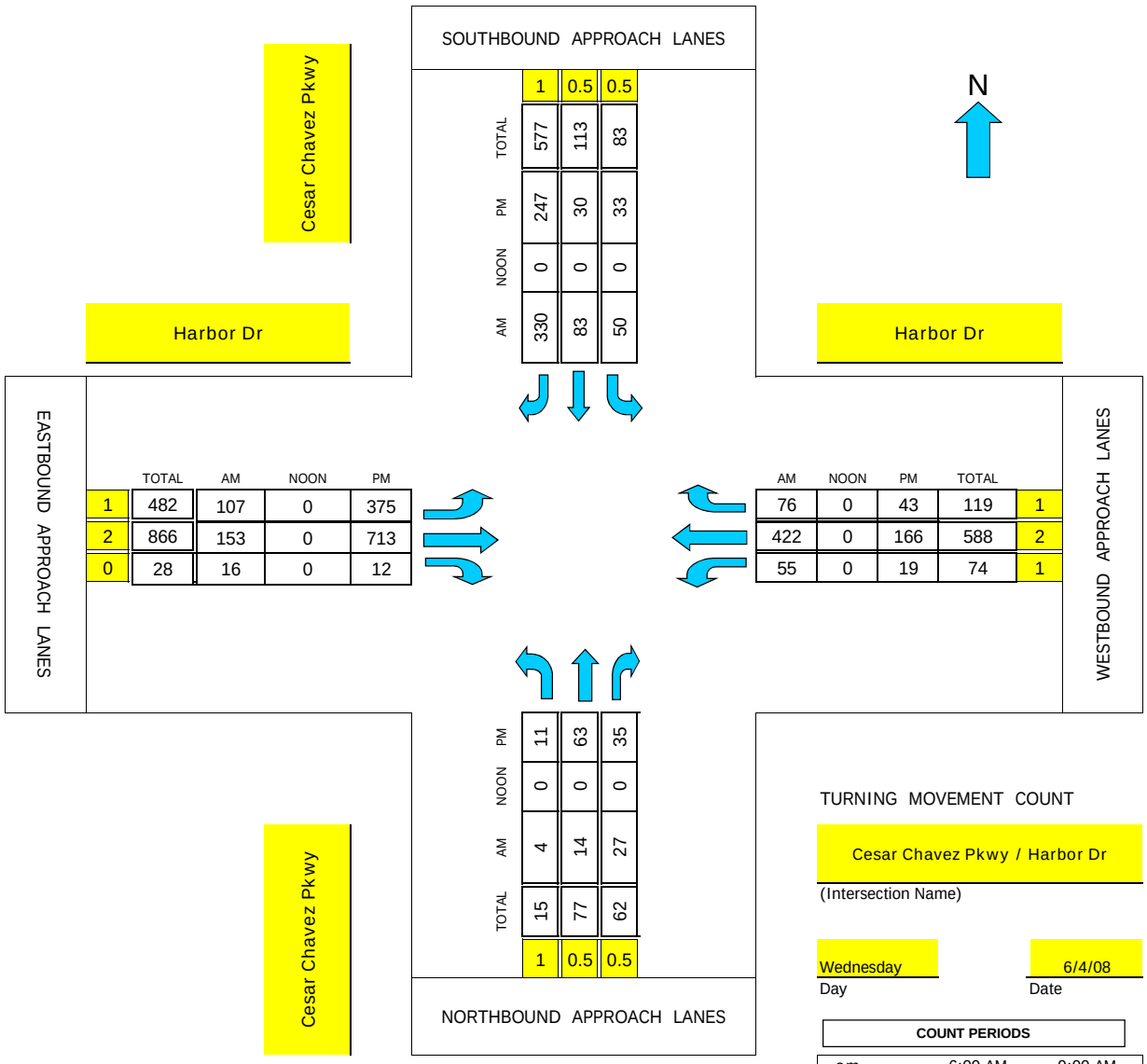
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Cesar Chavez Pkwy/Harbor Dr

Project #: 08-4148-017



TURNING MOVEMENT COUNT

Cesar Chavez Pkwy / Harbor Dr
(Intersection Name)

Wednesday
Day

6/4/08
Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	715 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy DATE: 06/04/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: WEDNESDAY PROJECT# 08-4148-017

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0.5	0.5	0.5	0.5	1	1	2	0	1	2	1	
6:00 AM	0	2	9	20	2	56	11	18	2	5	14	4	143
6:15 AM	1	2	7	20	11	68	26	32	2	6	33	11	219
6:30 AM	1	9	7	24	16	77	28	39	3	15	48	14	281
6:45 AM	1	3	10	22	20	75	37	42	5	11	79	19	324
7:00 AM	1	4	9	16	13	61	32	50	4	9	58	9	266
7:15 AM	2	5	7	11	19	89	28	39	1	10	76	17	304
7:30 AM	0	2	9	16	32	67	34	39	9	18	132	21	379
7:45 AM	2	2	6	16	21	89	18	39	5	22	105	23	348
8:00 AM	0	5	5	7	11	85	27	36	1	5	109	15	306
8:15 AM	3	3	8	8	9	61	28	42	5	9	70	10	256
8:30 AM	2	4	9	8	9	60	24	31	3	16	64	11	241
8:45 AM	0	5	5	7	11	58	34	37	4	7	33	9	210
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	13	46	91	175	174	846	327	444	44	133	821	163	3277

AM Peak Hr Begins at: 715 AM

PEAK													
VOLUMES =	4	14	27	50	83	330	107	153	16	55	422	76	1337
PEAK HR. FACTOR:		0.804			0.919			0.841			0.808		0.882

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Cesar Chavez Pkwy DATE: 06/04/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: WEDNESDAY PROJECT# 08-4148-017

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0.5	0.5	0.5	0.5	1	1	2	0	1	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM	3	34	11	8	4	51	75	60	2	7	40	20	315
3:15 PM	3	26	8	15	11	38	73	79	5	12	57	22	349
3:30 PM	1	14	13	16	11	58	98	108	1	8	43	14	385
3:45 PM	7	8	14	6	15	72	93	138	1	3	42	17	416
4:00 PM	2	16	6	3	5	50	88	127	2	13	32	15	359
4:15 PM	1	20	9	8	5	68	79	152	1	2	43	12	400
4:30 PM	4	16	6	7	4	65	98	185	4	7	40	13	449
4:45 PM	2	17	13	10	10	60	91	180	4	0	51	12	450
5:00 PM	2	18	11	9	6	68	94	162	2	7	30	14	423
5:15 PM	3	12	5	7	10	54	92	186	2	5	45	4	425
5:30 PM	2	10	3	2	9	46	81	158	2	1	22	5	341
5:45 PM	0	26	9	4	6	50	77	98	2	6	26	11	315
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 30	NT 217	NR 108	SL 95	ST 96	SR 680	EL 1039	ET 1633	ER 28	WL 71	WT 471	WR 159	TOTAL 4627

PM Peak Hr Begins at: 430 PM

PEAK VOLUMES =	11	63	35	33	30	247	375	713	12	19	166	43	1747
PEAK HR. FACTOR:		0.852			0.934			0.958			0.905		0.971

CONTROL: Signalized

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-002

Location: I-5 SB On-Ramp & Logan Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	0	1	0	0	0	0	1	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	0	0	0				37	12	0	1	12	3
	2-axle								3			2	1
	3-axle								1			1	
	4-axle											1	
	5-axle +							1					
7:15	CARS	1	0	0				34	17	0	0	15	6
	2-axle								1			3	
	3-axle												
	4-axle								1				
	5-axle +												
7:30	CARS	0	1	0				66	12	1	0	14	11
	2-axle							2	2			4	
	3-axle												
	4-axle												
	5-axle +							4					
7:45	CARS	2	0	0				46	8	0	0	8	16
	2-axle							3	2	1		3	2
	3-axle							1	2			1	
	4-axle							1				1	
	5-axle +							1					
8:00	CARS	0	0	1				54	14	0	0	7	11
	2-axle							2	5			3	1
	3-axle							1					
	4-axle								1				
	5-axle +								1				
8:15	CARS	0	2	0				30	14	0	0	9	6
	2-axle							3	1			2	1
	3-axle							1				1	
	4-axle							1					
	5-axle +							1					1
8:30	CARS	0	0	0				61	15	1	0	17	14
	2-axle							2	1			1	2
	3-axle												
	4-axle												
	5-axle +							1	2				
8:45	CARS	0	0	0				54	17	0	0	9	16
	2-axle							5	3			1	
	3-axle							1					
	4-axle												
	5-axle +												

MOVEMENT TOTALS

CARS	3	3	1	0	0	0	382	109	2	1	91	83
2-axle	0	0	0	0	0	0	17	18	1	0	19	7
3-axle	0	0	0	0	0	0	4	3	0	0	3	0
4-axle	0	0	0	0	0	0	2	2	0	0	2	0
5-axle +	0	0	0	0	0	0	8	3	0	0	0	1
TOTALS	3	3	1	0	0	0	413	135	3	1	115	91
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 800 AM

CONTROL: 1-Way Stop (NB)

0	2	1	0	0	0	217	74	1	0	50	52
	0.375			0.000			0.880			0.750	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-002

Location: I-5 SB On-Ramp & Logan Ave City: San Diego Date: 12/2/08 Day: Tuesday

		LANES:	0	1	0	0	0	0	1	1	0	1	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		0	0	0				145	45	0	0	10	28
	2-axle								2	4			1	
	3-axle								1					
	4-axle													
	5-axle +													
16:15	CARS		2	0	0				166	58	0	0	15	11
	2-axle									4			2	1
	3-axle													
	4-axle													
	5-axle +													
16:30	CARS		2	1	0				154	66	1	0	17	15
	2-axle								3	4			2	
	3-axle													
	4-axle													
	5-axle +													
16:45	CARS		4	1	1				138	84	4	0	30	14
	2-axle								1	4				
	3-axle								2					
	4-axle													
	5-axle +													
17:00	CARS		2	0	0				159	66	1	0	14	14
	2-axle								3	4			1	
	3-axle												2	2
	4-axle													
	5-axle +													
17:15	CARS		6	0	0				102	107	2	0	23	12
	2-axle								2	2			2	
	3-axle								1					
	4-axle									1				
	5-axle +													
17:30	CARS		7	0	1				59	43	4	0	29	11
	2-axle									5			1	
	3-axle													
	4-axle													
	5-axle +								1					
17:45	CARS		0	1	1				59	78	0	0	10	7
	2-axle								3	1			2	
	3-axle													
	4-axle													
	5-axle +													

MOVEMENT TOTALS

CARS	23	3	3	0	0	0	982	547	12	0	148	112
2-axle	0	0	0	0	0	0	14	28	0	0	11	1
3-axle	0	0	0	0	0	0	4	0	0	0	2	2
4-axle	0	0	0	0	0	0	0	1	0	0	0	0
5-axle +	0	0	0	0	0	0	1	0	0	0	0	0
TOTALS	23	3	3	0	0	0	1001	576	12	0	161	115
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1630 PM

CONTROL: 1-Way Stop (NB)

14	2	1	0	0	0	565	338	8	0	91	57
	0.708			0.000			0.977			0.841	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-002

Location: I-5 SB On-Ramp & Logan Ave City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	1	0	0	0	0	1	1	0	1	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS								32	15			11	5
	2-axle								2	2			2	
	3-axle								5					
	4-axle													
	5-axle +													
7:15	CARS								40	22			12	9
	2-axle								2	3			4	1
	3-axle													
	4-axle									2				
	5-axle +													
7:30	CARS								48	20			10	17
	2-axle									1				
	3-axle													
	4-axle													
	5-axle +													
7:45	CARS								55	8			10	10
	2-axle								1	3			1	1
	3-axle													
	4-axle													
	5-axle +													
8:00	CARS								56	16			13	8
	2-axle								2	2			2	1
	3-axle													
	4-axle													
	5-axle +									1				
8:15	CARS								60	11			3	9
	2-axle								2	4			5	
	3-axle								2					
	4-axle									1				
	5-axle +													
8:30	CARS								60	27			10	14
	2-axle								2	1			2	2
	3-axle													
	4-axle													
	5-axle +													
8:45	CARS								53	18			12	16
	2-axle								3				4	
	3-axle												1	
	4-axle													
	5-axle +													

MOVEMENT TOTALS

CARS	0	0	0	0	0	0	404	137	0	0	81	88
2-axle	0	0	0	0	0	0	14	16	0	0	20	5
3-axle	0	0	0	0	0	0	7	0	0	0	1	0
4-axle	0	0	0	0	0	0	0	3	0	0	0	0
5-axle +	0	0	0	0	0	0	0	1	0	0	0	0
TOTALS	0	0	0	0	0	0	425	157	0	0	102	93
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 800 AM

CONTROL: 1-Way Stop (NB)

0	0	0	0	0	0	240	81	0	0	52	50
	0.000			0.000			0.892			0.773	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-002

Location: I-5 SB On-Ramp & Logan Ave City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	1	0	0	0	0	1	1	0	1	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		2		0				107	45	1	0	11	15
	2-axle								3	3			1	
	3-axle								1					
	4-axle													
	5-axle +													
16:15	CARS		0		0				90	39	0	0	13	9
	2-axle									3		1	2	1
	3-axle								1					
	4-axle													
	5-axle +													
16:30	CARS		0		0				104	65	0	0	13	12
	2-axle								1	3			1	
	3-axle													
	4-axle													
	5-axle +													
16:45	CARS		0		1				90	67	0	0	14	9
	2-axle								1	4			2	
	3-axle								1					
	4-axle													
	5-axle +													
17:00	CARS		0		0				118	53	0	0	18	18
	2-axle													
	3-axle								1	3			1	
	4-axle													
	5-axle +													
17:15	CARS		2		0				91	59	1	0	18	10
	2-axle								4					
	3-axle													
	4-axle													
	5-axle +													
17:30	CARS		2		0				79	46	0	2	15	7
	2-axle								1	2			1	1
	3-axle													
	4-axle								1					
	5-axle +													
17:45	CARS		0		0				90	22	0	1	9	8
	2-axle								1	3			1	
	3-axle								1					
	4-axle													
	5-axle +													

MOVEMENT TOTALS

CARS	6	0	1	0	0	0	769	396	2	3	111	88
2-axle	0	0	0	0	0	0	11	18	0	1	8	2
3-axle	0	0	0	0	0	0	5	3	0	0	1	0
4-axle	0	0	0	0	0	0	1	0	0	0	0	0
5-axle +	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	6	0	1	0	0	0	786	417	2	4	120	90
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1630 PM

CONTROL: 1-Way Stop (NB)

2	0	1	0	0	0	411	254	1	0	67	49
	0.375			0.000			0.951			0.784	

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: National Ave. DATE: 3/7/2006 LOCATION: City of San Diego

E-W STREET: SR-75 Off Ramp DAY: TUESDAY PROJECT# 06-4071-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	1	0	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM		26			9					4		27	66
7:15 AM		23			12					8		25	68
7:30 AM		32			13					7		39	91
7:45 AM		41			20					4		46	111
8:00 AM		29			18					2		30	79
8:15 AM		40			16					3		41	100
8:30 AM		22			10					5		33	70
8:45 AM		26			20					5		30	81
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	239	0	0	118	0	0	0	0	38	0	271	666

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
239	510	118	156	0	0	309	0

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =													
	0	142	0	0	67	0	0	0	0	16	0	156	381
PEAK HR. FACTOR:		0.866			0.838			0.000			0.860		0.858

CONTROL: 1WayStop(WB)

A-29

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: National Ave. DATE: 3/7/2006 LOCATION: City of San Diego

E-W STREET: SR-75 Off Ramp DAY: TUESDAY PROJECT# 06-4071-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	1	0	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM		34			37					21	21	113	
4:15 PM		31			39					15	26	111	
4:30 PM		28			46					14	30	118	
4:45 PM		39			31					20	42	132	
5:00 PM		36			44					23	35	138	
5:15 PM		29			28					16	31	104	
5:30 PM		22			31					15	23	91	
5:45 PM		35			36					11	20	102	
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	0	254	0	0	292	0	0	0	0	135	0	228	909

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
254	482	292	427	0	0	363	0

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	0	134	0	0	160	0	0	0	0	72	0	133	499
PEAK HR. FACTOR:		0.859			0.870			0.000			0.827		0.904

CONTROL: 1WayStop(WB)

A-30

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: National Ave. DATE: 3/7/2006 LOCATION: City of San Diego

E-W STREET: Evans St. DAY: TUESDAY PROJECT# 06-4071-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	17	1	4	10	2	1	7	2	2	3	4	55
7:15 AM	2	18	1	3	11	3	0	5	4	1	2	2	52
7:30 AM	4	25	3	3	15	1	4	9	1	1	1	6	73
7:45 AM	8	30	4	2	22	2	2	8	3	1	0	5	87
8:00 AM	5	26	3	2	13	4	2	5	3	2	3	4	72
8:15 AM	1	42	6	0	15	2	2	4	3	1	4	1	81
8:30 AM	3	18	4	1	15	4	3	5	1	1	4	3	62
8:45 AM	3	26	4	1	18	5	1	6	2	2	3	2	73
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	28	202	26	16	119	23	15	49	19	11	20	27	555

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
256	244	158	149	83	91	58	71

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	18	123	16	7	65	9	10	26	10	5	8	16	313
PEAK HR. FACTOR:		0.801			0.779			0.821			0.806		0.899

CONTROL: 2WayStop(NS)

A-31

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: National Ave. DATE: 3/7/2006 LOCATION: City of San Diego

E-W STREET: Evans St. DAY: TUESDAY PROJECT# 06-4071-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	31	4	3	49	3	0	5	8	3	4	5	117
4:15 PM	4	25	3	4	48	2	1	4	6	4	2	4	107
4:30 PM	1	22	2	7	60	4	2	3	7	7	5	7	127
4:45 PM	2	29	4	3	48	2	1	1	4	6	1	11	112
5:00 PM	7	30	3	6	63	2	0	1	10	9	2	9	142
5:15 PM	7	22	6	2	41	6	2	3	8	5	2	10	114
5:30 PM	6	17	4	3	43	4	1	4	7	6	4	6	105
5:45 PM	2	21	3	5	33	5	2	1	6	3	5	8	94
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	31	197	29	33	385	28	9	22	56	43	25	60	918

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
257	266	446	484	87	84	128	84

PM Peak Hr Begins at: 430 PM

PEAK VOLUMES =	17	103	15	18	212	14	5	8	29	27	10	37	495
PEAK HR. FACTOR:		0.844			0.859			0.808			0.925		0.871

CONTROL: 2WayStop(NS)

A-32

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Evans St DATE: 3/7/2006 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: TUESDAY PROJECT# 06-4071-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	7	2	1	2	3	2	1	4	1	7	1	33
7:15 AM	2	5	0	3	2	1	2	5	4	0	4	1	29
7:30 AM	3	9	1	0	1	1	1	11	2	0	3	3	35
7:45 AM	2	5	3	0	4	5	5	8	1	3	9	3	48
8:00 AM	3	2	1	0	2	5	4	7	2	0	5	0	31
8:15 AM	2	3	1	1	1	6	2	7	4	0	7	2	36
8:30 AM	2	4	2	0	4	2	1	7	4	2	2	2	32
8:45 AM	3	5	0	1	3	1	4	7	0	0	9	1	34
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	19	40	10	6	19	24	21	53	21	6	46	13	278
	nb a	nb d		sb a	sb d		eb a	eb d		wb a	nb d		
	69	74		49	46		95	69		65	89		
AM Peak Hr Begins at:	730 AM												
PEAK VOLUMES =	10	19	6	1	8	17	12	33	9	3	24	8	150
PEAK HR. FACTOR:		0.673			0.722			0.964			0.583		0.781

CONTROL: 2-Way Stop N/S

A-33

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Evans St DATE: 3/7/2006 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: TUESDAY PROJECT# 06-4071-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	1	4	2	1	1	0	4	9	3	2	5	0	32
4:15 PM	0	3	0	2	1	3	2	10	3	3	7	1	35
4:30 PM	2	6	2	1	2	4	3	13	6	0	7	4	50
4:45 PM	0	2	2	3	2	0	2	8	4	1	7	0	31
5:00 PM	4	4	2	2	3	4	6	15	3	1	6	2	52
5:15 PM	0	2	0	0	2	4	3	10	4	0	4	1	30
5:30 PM	0	2	0	3	3	4	4	10	5	1	7	0	39
5:45 PM	0	1	1	2	1	2	0	3	2	0	5	1	18
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	7	24	9	14	15	21	24	78	30	8	48	9	287

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
40	57	50	53	132	101	65	76

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	6	15	6	8	8	11	13	46	16	5	27	7	168
PEAK HR. FACTOR:		0.675			0.750			0.781			0.886		0.808

CONTROL: 2-Way Stop N/S

A-34

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-011

Location: Evans St & Main St City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	0	0	0	0	1	0	0	1	0	0	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS				0		2	0	14			13	1
	2-axle								1			1	
	3-axle								2			2	
	4-axle												
	5-axle +												
7:15	CARS				1		1	0	9			20	1
	2-axle						1		1			2	
	3-axle												
	4-axle												
	5-axle +								1				
7:30	CARS				2		2	1	11			22	1
	2-axle								1			2	
	3-axle												
	4-axle												
	5-axle +								2			1	
7:45	CARS				1		4	1	9			23	1
	2-axle								3			1	
	3-axle								1				
	4-axle												
	5-axle +											2	
8:00	CARS				1		3	2	12			27	1
	2-axle								2			1	
	3-axle											1	
	4-axle												
	5-axle +												
8:15	CARS				1		5	1	13			30	3
	2-axle								1			2	
	3-axle												
	4-axle												
	5-axle +												
8:30	CARS				1		2	4	7			25	0
	2-axle								2			3	
	3-axle							1	1				
	4-axle												
	5-axle +												
8:45	CARS				0		5	4	20			18	0
	2-axle								1			4	
	3-axle												
	4-axle												
	5-axle +								1			1	

MOVEMENT TOTALS

CARS	0	0	0	7	0	24	13	95	0	0	178	8
2-axle	0	0	0	0	0	1	0	12	0	0	16	0
3-axle	0	0	0	0	0	0	1	4	0	0	3	0
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	0	0	0	0	0	0	4	0	0	4	0
TOTALS	0	0	0	7	0	25	14	115	0	0	201	8
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 800 AM

CONTROL: 1-Way Stop (SB)

0	0	0	3	0	15	12	60	0	0	112	4
	0.000			0.750			0.692			0.829	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-011

Location: Evans St & Main St City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	0	0	0	1	0	0	1	0	0	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS					0		4	1	17			14	5
	2-axle									2			2	
	3-axle													
	4-axle													
	5-axle +									1				
16:15	CARS					1		1	0	18			22	0
	2-axle									3			1	
	3-axle													
	4-axle													
	5-axle +													
16:30	CARS					2		3	2	15			16	0
	2-axle					1				1			1	
	3-axle													
	4-axle													
	5-axle +													
16:45	CARS					3		3	1	18			15	2
	2-axle									1			1	
	3-axle													
	4-axle													
	5-axle +												1	
17:00	CARS					0		1	1	19			17	1
	2-axle									2				
	3-axle													
	4-axle													
	5-axle +													
17:15	CARS					1		1	1	21			5	1
	2-axle									2			1	
	3-axle													
	4-axle													
	5-axle +													
17:30	CARS					0		0	2	17			12	0
	2-axle									3			2	
	3-axle													
	4-axle													
	5-axle +													
17:45	CARS					1		3	4	12			12	2
	2-axle									2				
	3-axle													
	4-axle													
	5-axle +													

MOVEMENT TOTALS

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
CARS	0	0	0	8	0	16	12	137	0	0	113	11
2-axle	0	0	0	1	0	0	0	16	0	0	8	0
3-axle	0	0	0	0	0	0	0	0	0	0	0	0
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	0	0	0	0	0	0	1	0	0	1	0
TOTALS	0	0	0	9	0	16	12	154	0	0	122	11
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: 1-Way Stop (SB)

0	0	0	7	0	11	4	76	0	0	73	7
	0.000			0.750			0.952			0.870	

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Logan St | DATE: 3/15/2006 | LOCATION: City of San Diego

E-W STREET: Sampson St | DAY: WEDNESDAY | PROJECT# 06-4071-005B

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	8	5	12	22	2	11	21	0	4	8	0	93
7:15 AM	1	9	4	11	24	0	13	16	0	4	10	2	94
7:30 AM	2	11	6	16	20	3	10	24	3	7	12	1	115
7:45 AM	4	15	10	22	27	5	15	31	4	10	15	2	160
8:00 AM	5	16	12	24	31	5	14	30	6	15	20	4	182
8:15 AM	4	18	15	26	35	8	18	28	10	14	21	3	200
8:30 AM	3	14	12	19	29	7	14	25	8	15	19	4	169
8:45 AM	5	14	11	21	30	8	16	29	9	18	22	3	186
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	24	105	75	151	218	38	111	204	40	87	127	19	1199
	nb a	nb d		sb a	sb d		eb a	eb d		wb a	nb d		
	204	235		407	345		355	430		233	189		

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =													
	17	62	50	90	125	28	62	112	33	62	82	14	737
PEAK HR. FACTOR:		0.872			0.880			0.924			0.919		0.921

CONTROL: 4-Way Stop

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Logan St DATE: 3/15/2006 LOCATION: City of San Diego

E-W STREET: Sampson St DAY: WEDNESDAY PROJECT# 06-4071-005B

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	12	8	19	28	6	15	30	1	9	16	0	146
4:15 PM	3	10	9	18	35	3	6	29	0	9	17	3	142
4:30 PM	3	13	11	20	32	6	17	33	2	13	20	4	174
4:45 PM	5	16	15	26	31	8	15	30	1	15	22	3	187
5:00 PM	8	19	15	27	38	10	19	36	4	19	26	4	225
5:15 PM	7	22	14	24	35	11	18	37	4	17	28	2	219
5:30 PM	9	18	12	26	31	8	15	32	3	14	22	3	193
5:45 PM	5	16	13	24	31	7	11	29	7	16	24	4	187
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	42	126	97	184	261	59	116	256	22	112	175	23	1473

nb a	nb d	sb a	sb d	eb a	eb d	wb a	nb d
265	265	504	395	394	537	310	276

PM Peak Hr Begins at: 500 PM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES =	29	75	54	101	135	36	63	134	18	66	100	13	824
PEAK HR. FACTOR:		0.919			0.907			0.911			0.913		0.916

CONTROL: 4-Way Stop

A-40

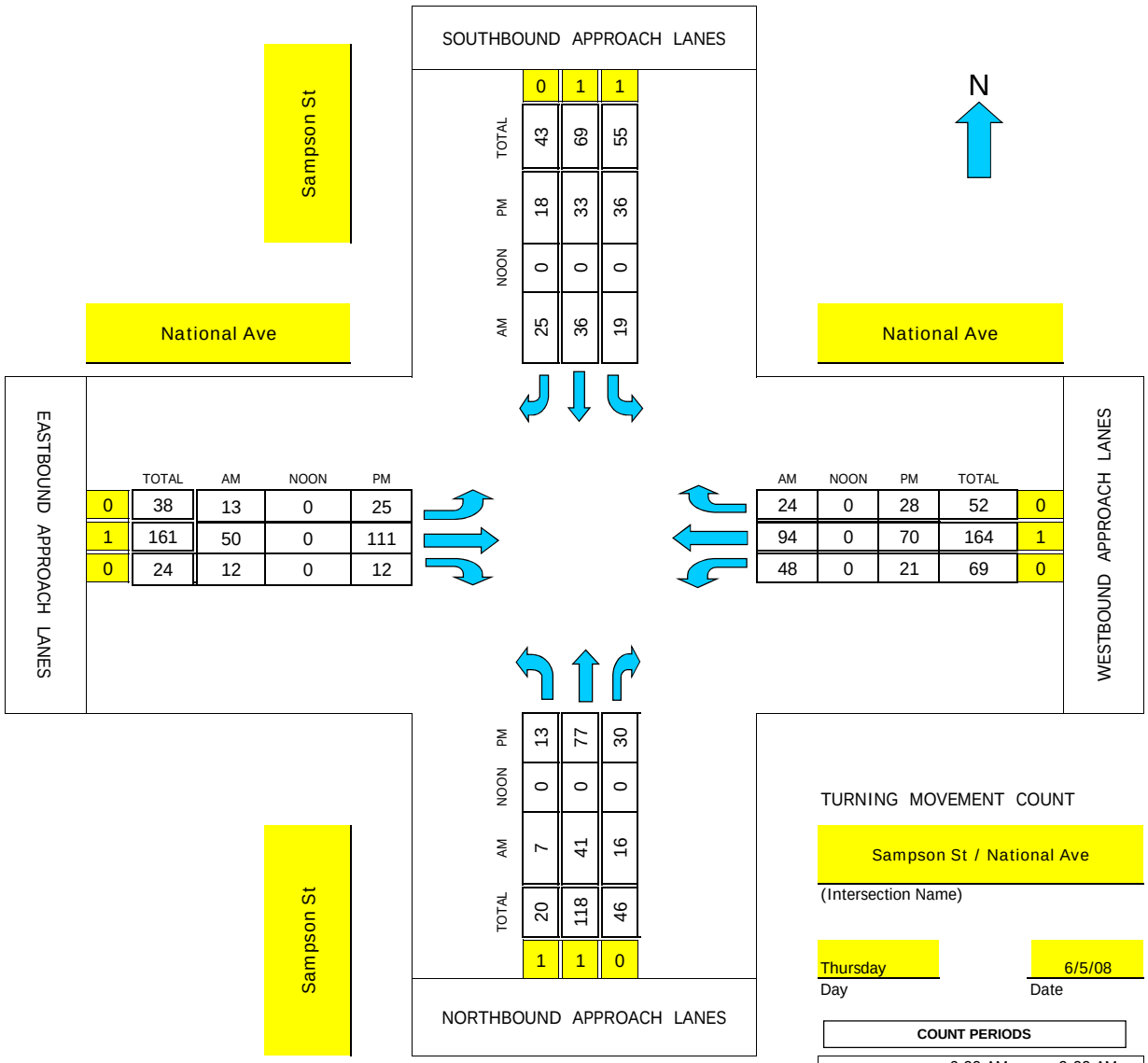
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sampson St/National Ave

Project #: 08-4148-024



TURNING MOVEMENT COUNT

Sampson St / National Ave

(Intersection Name)

Thursday — Day

6/5/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	800 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: THURSDAY PROJECT# 08-4148-024

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	9	3	4	9	5	3	6	2	10	15	1	68
7:15 AM	2	9	4	2	7	5	3	7	3	7	7	2	58
7:30 AM	3	9	4	4	15	5	2	7	3	9	16	4	81
7:45 AM	0	12	4	3	11	7	6	5	3	11	32	9	103
8:00 AM	0	10	5	7	6	7	3	10	5	12	16	7	88
8:15 AM	1	9	1	1	7	6	4	9	3	9	29	6	85
8:30 AM	3	11	5	5	14	6	2	13	1	15	24	5	104
8:45 AM	3	11	5	6	9	6	4	18	3	12	25	6	108
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	13	80	31	32	78	47	27	75	23	85	164	40	695

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	7	41	16	19	36	25	13	50	12	48	94	24	385
PEAK HR. FACTOR:		0.842			0.800			0.750			0.943		0.891

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: THURSDAY PROJECT# 08-4148-024

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	19	7	9	9	4	7	24	5	6	13	5	111
4:15 PM	5	21	7	7	8	4	8	29	4	4	19	12	128
4:30 PM	4	17	10	10	9	5	5	30	1	6	20	5	122
4:45 PM	1	20	6	10	7	5	5	28	2	5	18	6	113
5:00 PM	3	17	11	10	6	3	3	17	5	3	13	7	98
5:15 PM	4	13	6	11	10	7	4	21	1	3	18	3	101
5:30 PM	4	13	11	8	6	2	4	18	1	5	17	6	95
5:45 PM	2	10	5	5	6	4	2	15	2	4	18	4	77
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 26	NT 130	NR 63	SL 70	ST 61	SR 34	EL 38	ET 182	ER 21	WL 36	WT 136	WR 48	TOTAL 845

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	13	77	30	36	33	18	25	111	12	21	70	28	474
PEAK HR. FACTOR:		0.909			0.906			0.902			0.850		0.926

CONTROL: Signalized

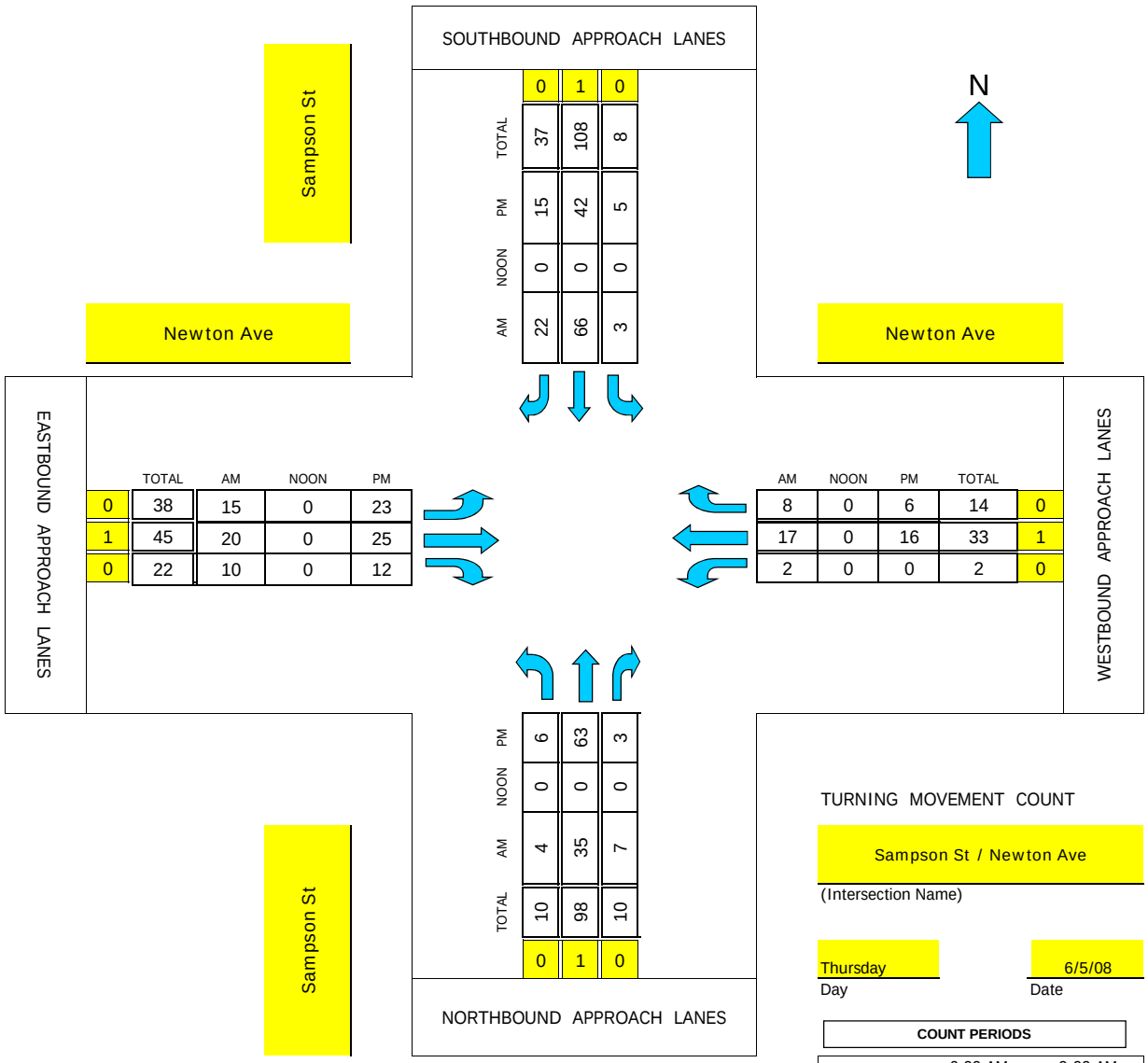
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sampson St/Newton Ave

Project #: 08-4148-025



TURNING MOVEMENT COUNT

Sampson St / Newton Ave

(Intersection Name)

Thursday — Day

6/5/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	800 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: THURSDAY PROJECT# 08-4148-025

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	3	0	1	14	0	4	2	3	0	3	0	30
7:15 AM	0	5	2	1	10	3	2	4	0	2	4	3	36
7:30 AM	0	11	2	1	20	7	5	3	3	0	2	1	55
7:45 AM	4	5	0	0	17	5	3	6	1	3	5	3	52
8:00 AM	2	9	2	0	19	5	1	4	3	0	3	2	50
8:15 AM	0	4	2	0	14	3	3	6	2	1	2	1	38
8:30 AM	2	10	1	1	16	10	5	3	5	1	3	4	61
8:45 AM	0	12	2	2	17	4	6	7	0	0	9	1	60
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	8	59	11	6	127	37	29	35	17	7	31	15	382

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	4	35	7	3	66	22	15	20	10	2	17	8	209
PEAK HR. FACTOR:		0.821			0.843			0.865			0.675		0.857

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/05/2008 LOCATION: City of San Diego

E-W STREET: Newton Ave DAY: THURSDAY PROJECT# 08-4148-025

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	17	0	1	14	2	3	9	1	0	5	2	57
4:15 PM	0	16	0	1	8	2	7	5	2	0	3	1	45
4:30 PM	1	18	2	2	9	5	7	6	3	0	5	1	59
4:45 PM	2	12	1	1	11	6	6	5	6	0	3	2	55
5:00 PM	1	13	2	0	10	3	4	10	1	1	5	1	51
5:15 PM	3	15	3	0	11	3	1	3	1	0	1	2	43
5:30 PM	1	11	0	2	6	7	7	7	2	0	3	2	48
5:45 PM	0	8	2	2	4	4	4	2	0	0	2	0	28
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	11	110	10	9	73	32	39	47	16	1	27	11	386

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	6	63	3	5	42	15	23	25	12	0	16	6	216
PEAK HR. FACTOR:		0.857			0.861			0.882			0.786		0.915

CONTROL: 4-Way Stop Sign

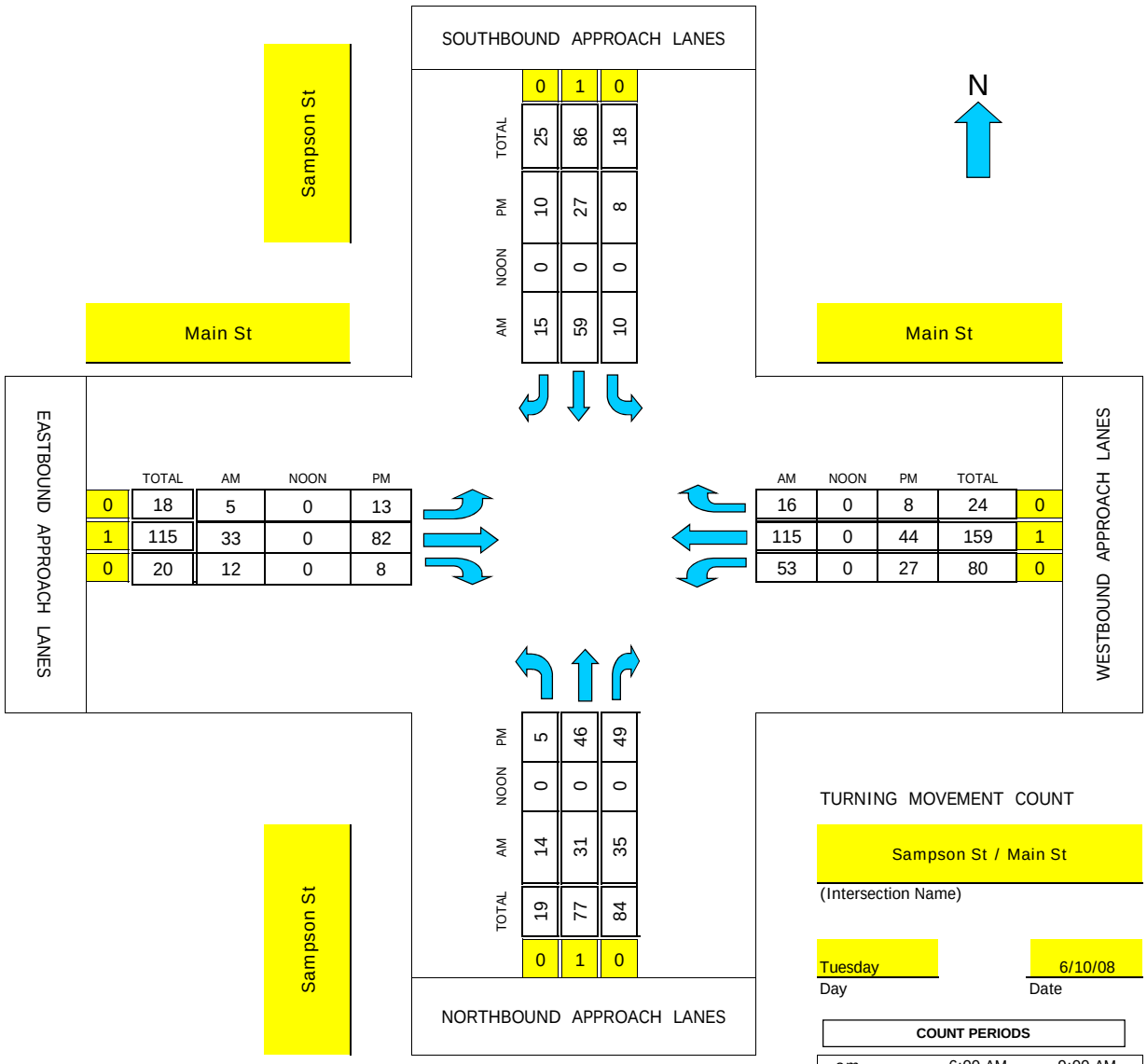
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sampson St/Main St

Project #: 08-4148-026



TURNING MOVEMENT COUNT

Sampson St / Main St

(Intersection Name)

Tuesday — Day

6/10/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	715 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: TUESDAY PROJECT# 08-4148-026

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	3	5	2	13	0	2	4	2	16	14	2	64
7:15 AM	6	5	8	2	15	1	2	7	4	10	28	0	88
7:30 AM	0	6	5	3	12	6	2	7	2	20	28	6	97
7:45 AM	4	9	12	3	15	3	0	9	3	11	32	4	105
8:00 AM	4	11	10	2	17	5	1	10	3	12	27	6	108
8:15 AM	4	9	14	2	12	2	2	7	0	9	16	2	79
8:30 AM	2	8	4	0	18	6	4	9	0	10	27	2	90
8:45 AM	4	4	10	3	11	1	5	15	4	10	15	1	83
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	25	55	68	17	113	24	18	68	18	98	187	23	714

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	14	31	35	10	59	15	5	33	12	53	115	16	398
PEAK HR. FACTOR:		0.800			0.875			0.893			0.852		0.921

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: TUESDAY PROJECT# 08-4148-026

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	15	14	2	7	1	3	15	1	8	13	1	82
4:15 PM	2	9	12	2	8	4	3	22	1	9	16	2	90
4:30 PM	0	11	15	2	7	2	4	27	4	3	9	1	85
4:45 PM	1	11	8	2	5	3	3	18	2	7	6	4	70
5:00 PM	2	9	10	4	5	1	2	20	2	6	13	0	74
5:15 PM	0	7	5	3	7	8	3	13	0	5	12	1	64
5:30 PM	1	5	11	2	5	2	2	16	0	5	8	1	58
5:45 PM	1	15	4	2	5	5	2	7	2	3	9	0	55
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 9	NT 82	NR 79	SL 19	ST 49	SR 26	EL 22	ET 138	ER 12	WL 46	WT 86	WR 10	TOTAL 578

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	5	46	49	8	27	10	13	82	8	27	44	8	327
PEAK HR. FACTOR:		0.806			0.804			0.736			0.731		0.908

CONTROL: 4-Way Stop Sign

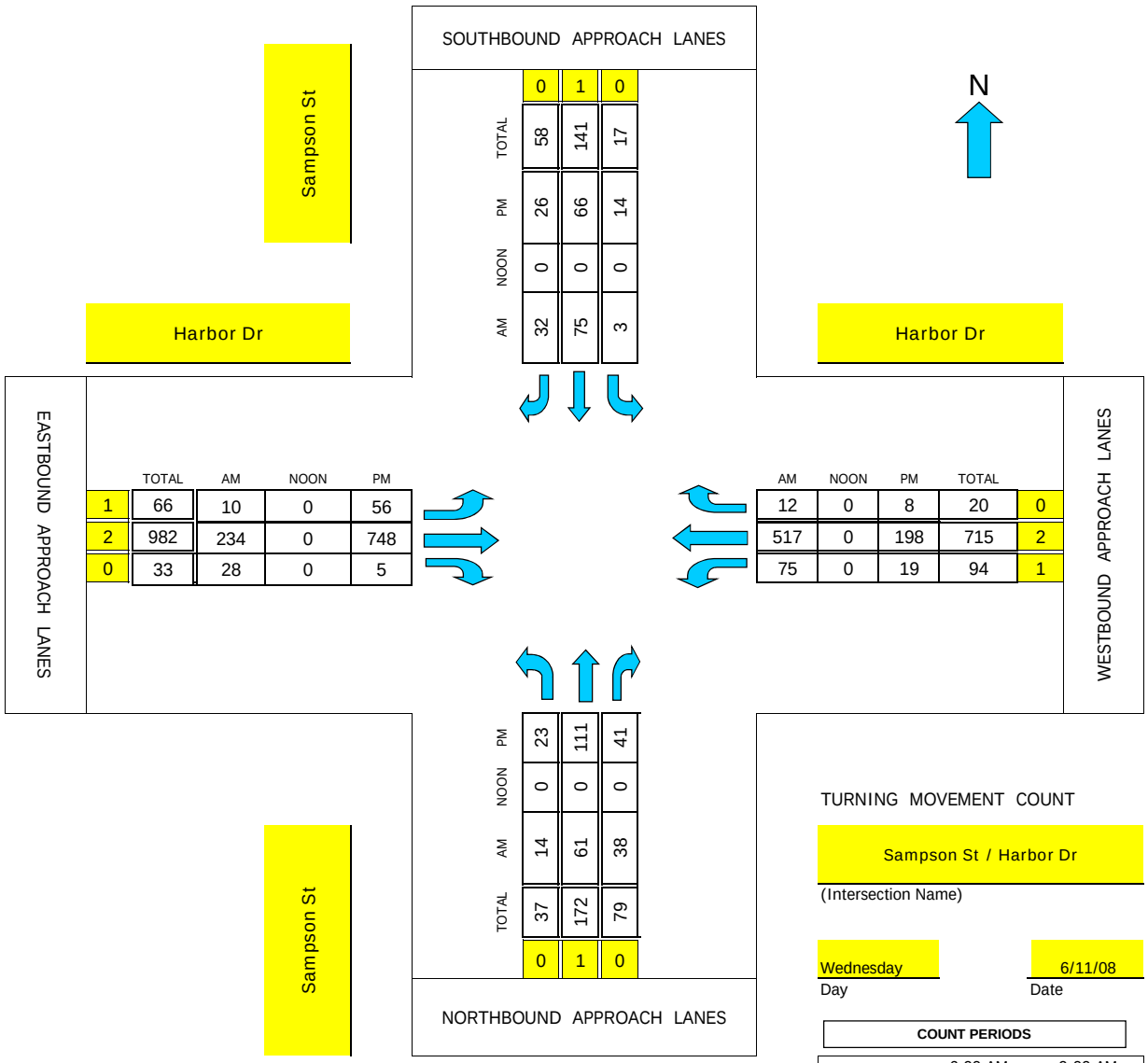
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sampson St / Harbor Dr

Project #: 08-4148-027



TURNING MOVEMENT COUNT

Sampson St / Harbor Dr

(Intersection Name)

Wednesday — Day

6/11/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	700 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: WEDNESDAY PROJECT# 08-4148-027

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	18	8	1	18	7	1	63	14	16	96	4	247
7:15 AM	6	14	7	1	18	7	1	55	4	24	143	4	284
7:30 AM	3	14	12	0	22	7	2	58	4	17	154	1	294
7:45 AM	4	15	11	1	17	11	6	58	6	18	124	3	274
8:00 AM	3	13	12	0	32	5	9	46	3	11	97	1	232
8:15 AM	2	15	15	2	15	4	7	61	4	17	75	2	219
8:30 AM	4	15	15	3	18	5	2	39	3	15	66	2	187
8:45 AM	8	16	11	3	14	2	4	41	7	10	48	3	167
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	31	120	91	11	154	48	32	421	45	128	803	20	1904

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	14	61	38	3	75	32	10	234	28	75	517	12	1099
PEAK HR. FACTOR:		0.942			0.948			0.872			0.878		0.935

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sampson St DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: WEDNESDAY PROJECT# 08-4148-027

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	9	40	13	5	18	7	17	159	3	3	41	1	316
4:15 PM	2	27	11	2	19	10	8	166	2	5	53	1	306
4:30 PM	6	21	7	3	11	4	21	212	0	7	60	2	354
4:45 PM	6	23	10	4	18	5	10	211	0	4	44	4	339
5:00 PM	3	21	9	5	17	7	12	189	0	2	37	0	302
5:15 PM	2	9	4	0	10	5	8	194	1	5	41	0	279
5:30 PM	1	14	3	1	11	6	6	158	1	1	26	0	228
5:45 PM	1	10	1	1	6	3	11	106	2	1	35	3	180
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	30	165	58	21	110	47	93	1395	9	28	337	11	2304

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	23	111	41	14	66	26	56	748	5	19	198	8	1315
PEAK HR. FACTOR:		0.706			0.855			0.868			0.815		0.929

CONTROL: Signalized

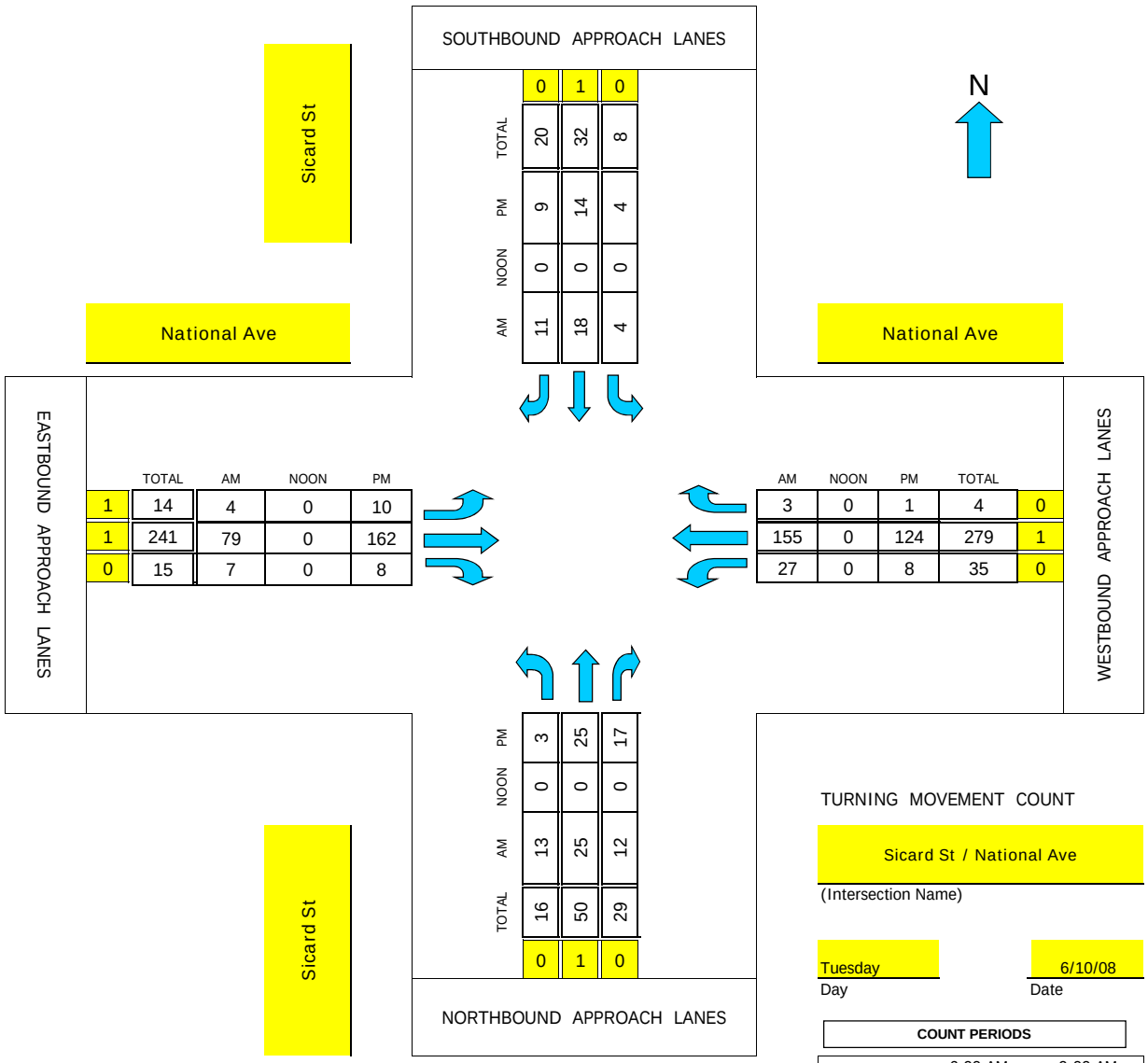
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Sicard St / National Ave

Project #: 08-4148-028



TURNING MOVEMENT COUNT

Sicard St / National Ave

(Intersection Name)

Tuesday — Day

6/10/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 2-Way Stop Sign (N/S)

AM PEAK HOUR	800 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sicard St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: TUESDAY PROJECT# 08-4148-028

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	4	2	1	1	0	1	11	4	1	28	2	55
7:15 AM	1	4	2	0	6	1	1	14	2	2	27	1	61
7:30 AM	2	6	1	1	4	1	2	14	0	7	29	2	69
7:45 AM	3	5	3	0	5	6	0	18	0	13	45	0	98
8:00 AM	5	6	1	1	3	2	1	16	3	11	42	1	92
8:15 AM	2	3	1	2	5	1	2	17	0	3	27	1	64
8:30 AM	6	7	1	1	4	4	1	17	2	4	51	1	99
8:45 AM	0	9	9	0	6	4	0	29	2	9	35	0	103
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	19	44	20	6	34	19	8	136	13	50	284	8	641

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	13	25	12	4	18	11	4	79	7	27	155	3	358
PEAK HR. FACTOR:		0.694			0.825			0.726			0.826		0.869

CONTROL: 2-Way Stop Sign (N/S)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Sicard St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: TUESDAY PROJECT# 08-4148-028

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	1	8	4	2	3	2	2	43	3	3	38	0	109
4:15 PM	0	9	8	2	6	2	3	36	1	0	29	1	97
4:30 PM	2	6	4	0	5	5	1	39	2	2	32	0	98
4:45 PM	0	2	1	0	0	0	4	44	2	3	25	0	81
5:00 PM	1	9	7	2	3	1	2	35	7	2	23	1	93
5:15 PM	2	8	5	0	4	2	3	30	0	4	24	2	84
5:30 PM	0	8	7	0	5	5	1	28	0	6	31	4	95
5:45 PM	4	6	2	2	2	1	1	28	0	2	34	1	83
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 10	NT 56	NR 38	SL 8	ST 28	SR 18	EL 17	ET 283	ER 15	WL 22	WT 236	WR 9	TOTAL 740

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	3	25	17	4	14	9	10	162	8	8	124	1	385
PEAK HR. FACTOR:		0.662			0.675			0.900			0.811		0.883

CONTROL: 2-Way Stop Sign (N/S)

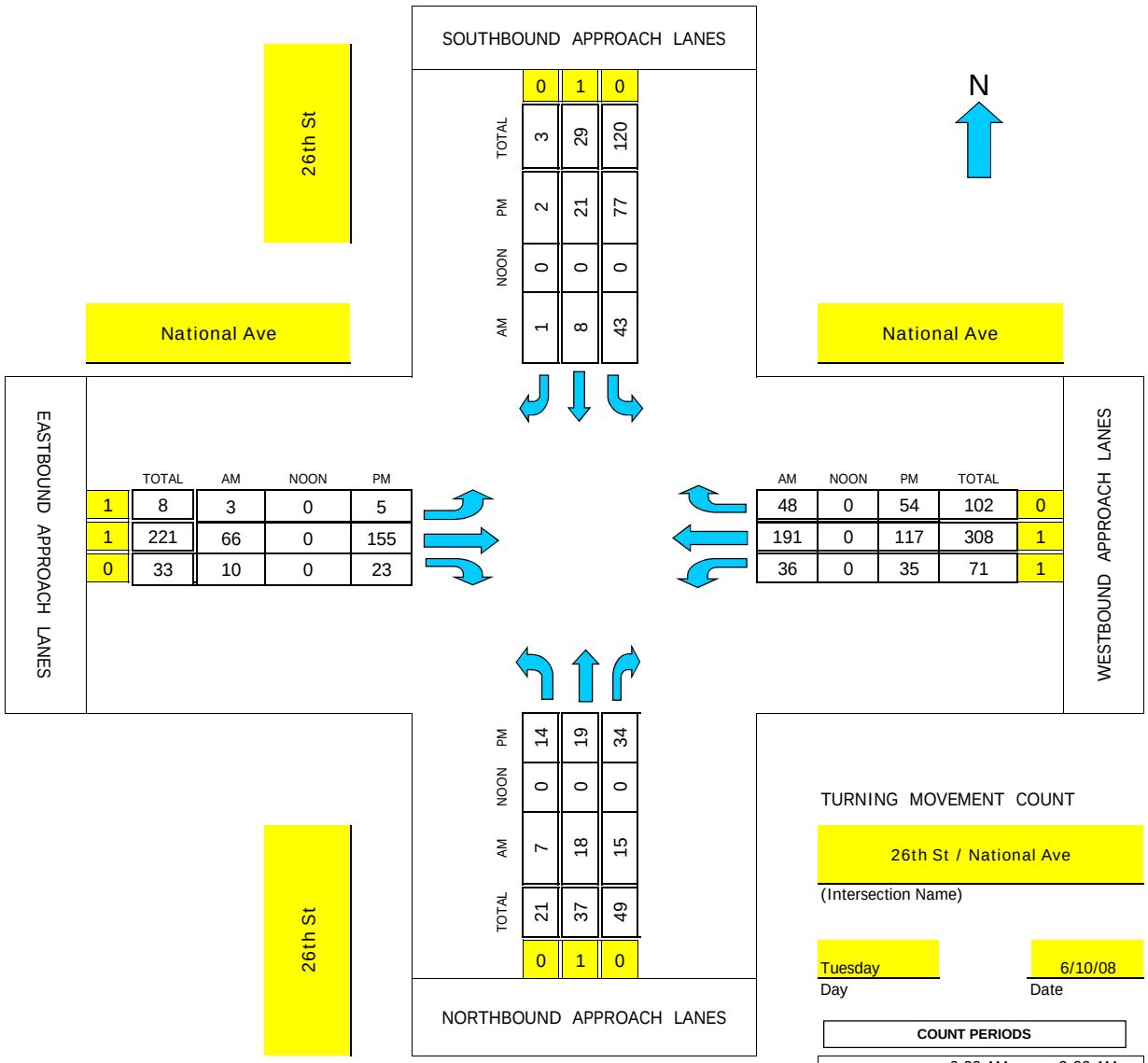
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 26th St/National Ave

Project #: 08-4148-029



TURNING MOVEMENT COUNT

26th St / National Ave

(Intersection Name)

Tuesday — Day

6/10/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 2-Way Stop Sign (N/S)

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 26th St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: TUESDAY PROJECT# 08-4148-029

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	0	1	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	3	4	4	4	3	1	1	12	1	7	27	12	79
7:15 AM	1	3	3	8	1	1	0	15	1	7	28	9	77
7:30 AM	4	4	1	11	4	0	1	15	0	7	34	10	91
7:45 AM	3	3	5	9	4	0	1	18	2	11	55	15	126
8:00 AM	3	5	4	11	2	1	1	13	4	9	50	12	115
8:15 AM	0	8	5	8	0	0	1	17	2	7	31	14	93
8:30 AM	1	2	1	15	2	0	0	18	2	9	55	7	112
8:45 AM	1	2	5	8	0	1	1	22	2	8	42	11	103
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	16	31	28	74	16	4	6	130	14	65	322	90	796

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	7	18	15	43	8	1	3	66	10	36	191	48	446
PEAK HR. FACTOR:		0.769			0.765			0.940			0.849		0.885

CONTROL: 2-Way Stop Sign (N/S)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 26th St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: TUESDAY PROJECT# 08-4148-029

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	1	0	1	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	5	6	12	22	5	1	2	43	4	6	35	15	156
4:15 PM	2	8	11	18	9	0	2	42	2	9	28	14	145
4:30 PM	4	3	6	23	2	1	0	36	7	11	29	12	134
4:45 PM	3	2	5	14	5	0	1	34	10	9	25	13	121
5:00 PM	3	8	9	19	5	0	1	41	2	1	23	20	132
5:15 PM	2	4	4	18	6	0	0	34	1	2	28	17	116
5:30 PM	0	3	7	26	11	1	0	32	3	4	40	14	141
5:45 PM	4	6	5	17	7	1	3	28	1	11	32	16	131
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 23	NT 40	NR 59	SL 157	ST 50	SR 4	EL 9	ET 290	ER 30	WL 53	WT 240	WR 121	TOTAL 1076

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	14	19	34	77	21	2	5	155	23	35	117	54	556
PEAK HR. FACTOR:		0.728			0.893			0.934			0.920		0.891

CONTROL: 2-Way Stop Sign (N/S)

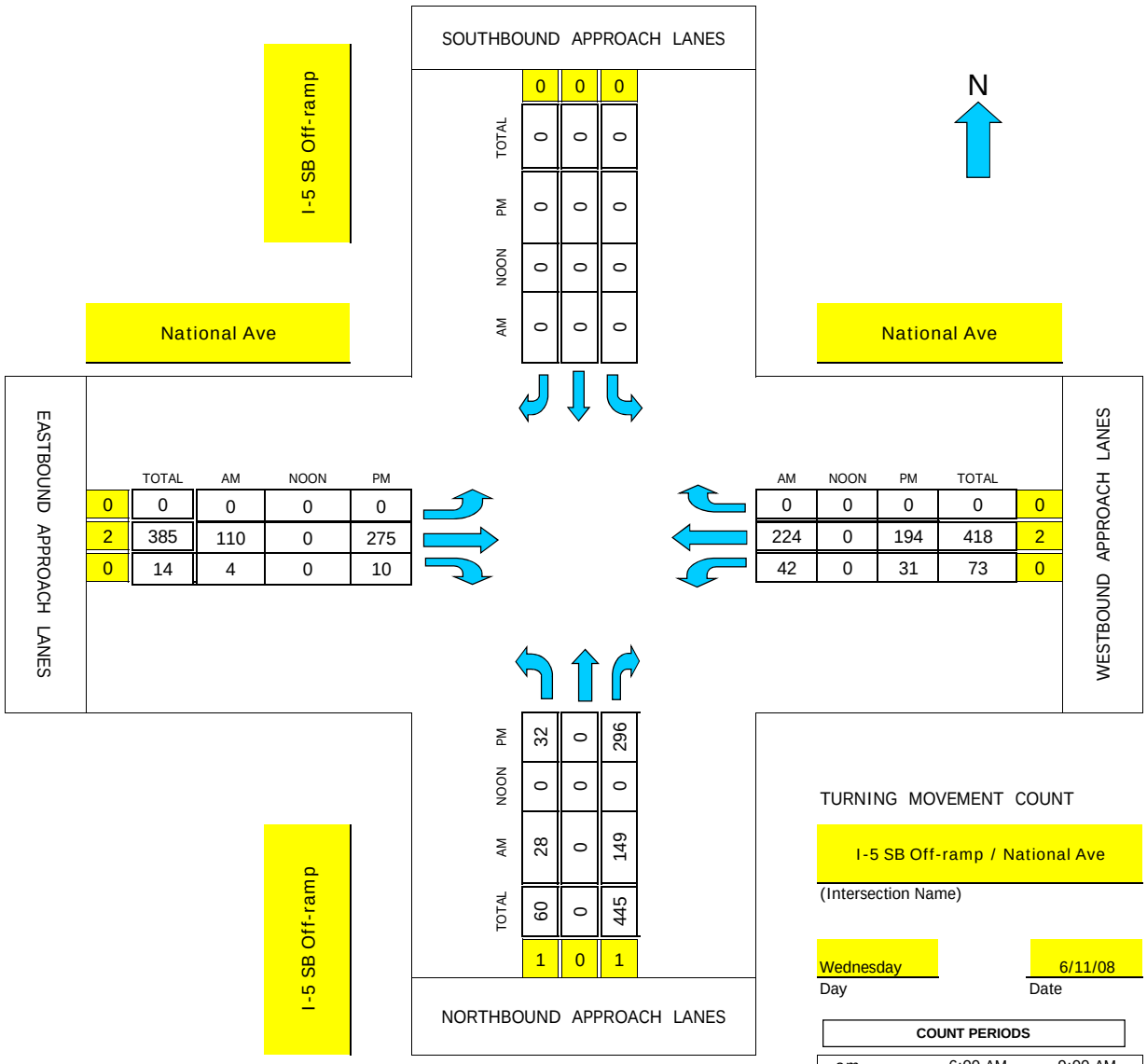
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of I-5 SB Off-ramp/National Ave

Project #: 08-4148-030



TURNING MOVEMENT COUNT

I-5 SB Off-ramp / National Ave

(Intersection Name)

Wednesday — Day

6/11/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 1-Way Stop Sign (NB)

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-5 SB Off-ramp DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: WEDNESDAY PROJECT# 08-4148-030

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0	1	0	0	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	7		35					20	2	4	28		96
7:15 AM	6		53					22	1	10	27		119
7:30 AM	6		38					17	1	12	49		123
7:45 AM	4		46					24	0	10	66		150
8:00 AM	12		46					30	0	16	53		157
8:15 AM	4		27					26	3	6	53		119
8:30 AM	8		30					30	1	10	52		131
8:45 AM	7		28					34	2	11	55		137
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	54	0	303	0	0	0	0	203	10	79	383	0	1032

AM Peak Hr Begins at: 745 AM

PEAK													
VOLUMES =	28	0	149	0	0	0	0	110	4	42	224	0	557
PEAK HR. FACTOR:		0.763			0.000			0.919			0.875		0.887

CONTROL: 1-Way Stop Sign (NB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-5 SB Off-ramp DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: National Ave DAY: WEDNESDAY PROJECT# 08-4148-030

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0	1	0	0	0	0	2	0	0	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	6		97					72	3	9	55		242
4:15 PM	12		66					71	1	8	43		201
4:30 PM	4		62					70	2	7	46		191
4:45 PM	10		71					62	4	7	50		204
5:00 PM	6		64					81	1	13	50		215
5:15 PM	6		63					56	2	9	48		184
5:30 PM	5		45					67	3	6	43		169
5:45 PM	8		39					49	4	4	60		164
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	57	0	507	0	0	0	0	528	20	63	395	0	1570

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	32	0	296	0	0	0	0	275	10	31	194	0	838
PEAK HR. FACTOR:		0.796			0.000			0.950			0.879		0.866

CONTROL: 1-Way Stop Sign (NB)

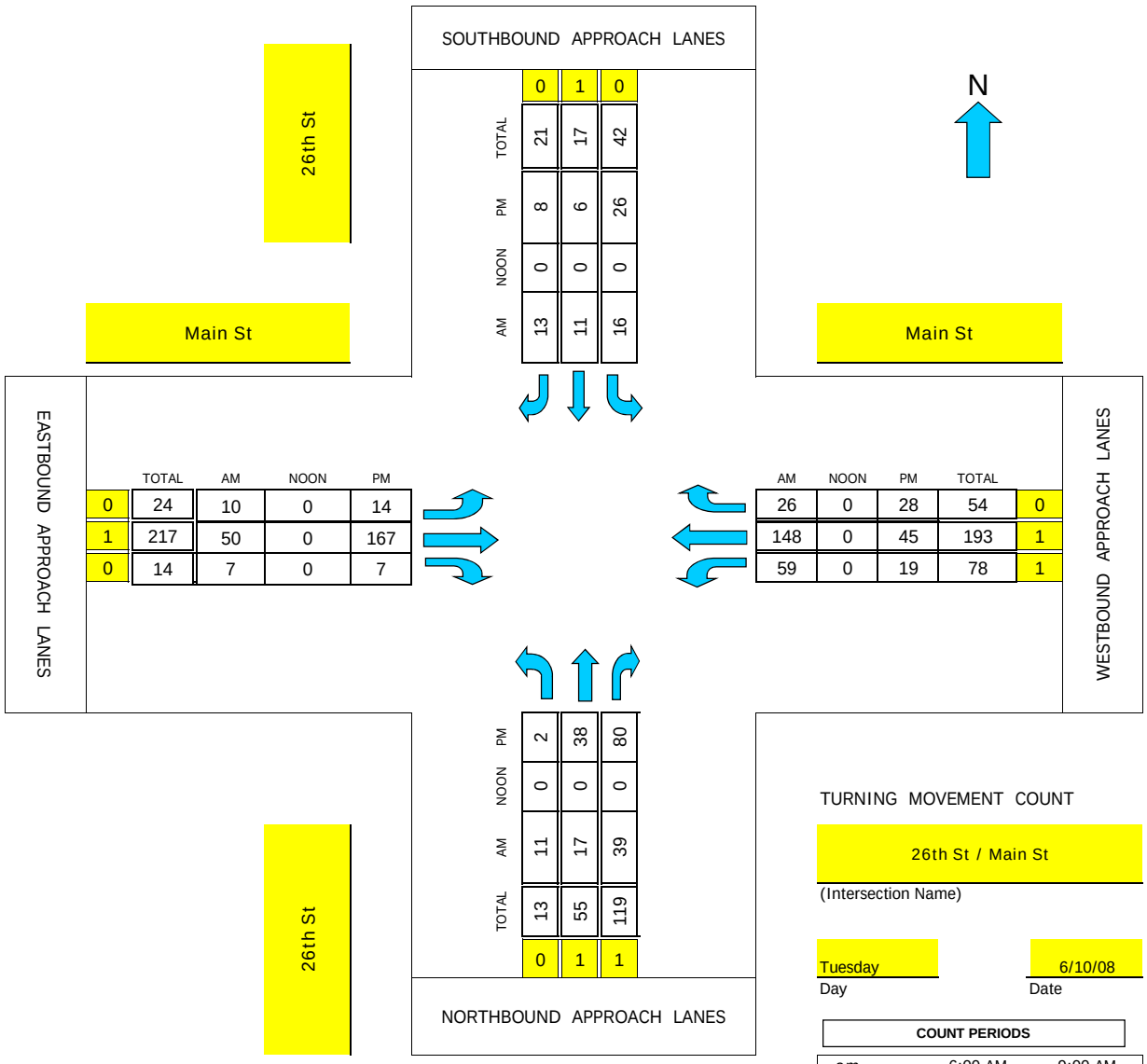
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 26th St/Main St

Project #: 08-4148-031



TURNING MOVEMENT COUNT

26th St / Main St

(Intersection Name)

Tuesday — Day

6/10/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 4-Way Stop Sign

AM PEAK HOUR	700 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	415 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 26th St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: TUESDAY PROJECT# 08-4148-031

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	1	0	1	0	0	1	0	1	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	5	8	15	4	2	2	1	15	1	15	29	8	105
7:15 AM	2	3	9	1	3	4	3	9	5	9	34	5	87
7:30 AM	4	1	6	5	1	3	3	11	0	15	42	9	100
7:45 AM	0	5	9	6	5	4	3	15	1	20	43	4	115
8:00 AM	5	3	9	3	5	5	1	14	4	12	31	8	100
8:15 AM	0	3	9	5	2	1	3	22	4	11	21	8	89
8:30 AM	0	2	5	1	2	2	1	19	2	9	32	2	77
8:45 AM	0	1	7	2	3	1	2	28	0	3	22	3	72
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	16	26	69	27	23	22	17	133	17	94	254	47	745

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	11	17	39	16	11	13	10	50	7	59	148	26	407
PEAK HR. FACTOR:		0.598			0.667			0.882			0.869		0.885

CONTROL: 4-Way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 26th St DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: TUESDAY PROJECT# 08-4148-031

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	1	0	1	0	0	1	0	1	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	17	35	6	0	1	2	38	1	5	16	5	126
4:15 PM	0	12	17	9	3	3	1	41	3	4	14	11	118
4:30 PM	1	5	20	6	1	1	1	45	0	3	9	5	97
4:45 PM	0	15	16	7	2	3	5	33	2	4	6	4	97
5:00 PM	1	6	27	4	0	1	7	48	2	8	16	8	128
5:15 PM	0	5	15	6	1	3	1	21	2	13	7	6	80
5:30 PM	0	6	18	7	2	2	5	22	0	5	9	2	78
5:45 PM	0	4	13	7	0	1	3	10	0	1	8	6	53
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	2	70	161	52	9	15	25	258	10	43	85	47	777

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	2	38	80	26	6	8	14	167	7	19	45	28	440
PEAK HR. FACTOR:		0.882			0.667			0.825			0.719		0.859

CONTROL: 4-Way Stop Sign

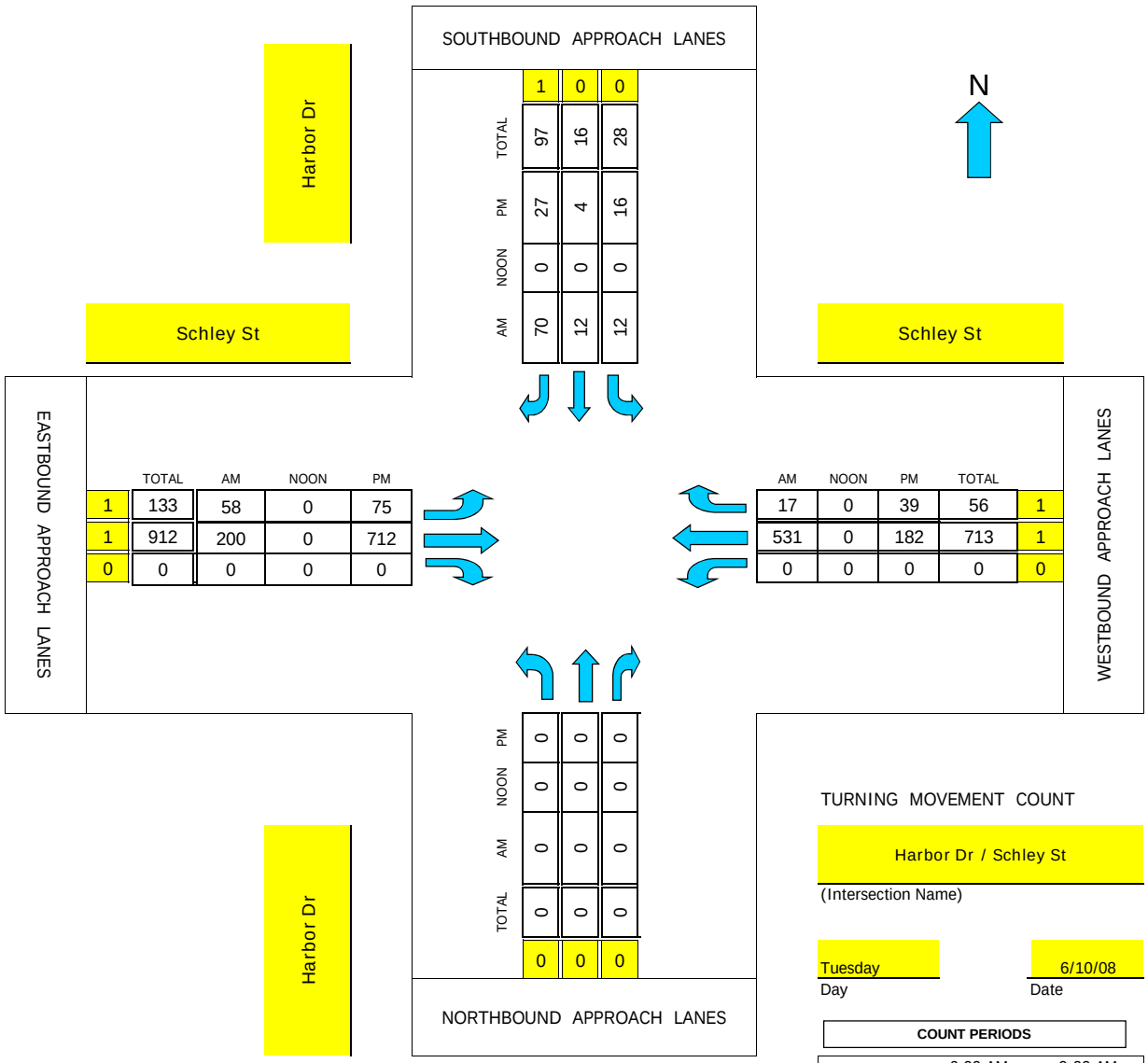
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Harbor Dr/Schley St

Project #: 08-4148-032



TURNING MOVEMENT COUNT

Harbor Dr / Schley St

(Intersection Name)

Tuesday — Day

6/10/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: 1-Way Stop Sign (SB)

AM PEAK HOUR	715 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Harbor Dr DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: Schley St DAY: TUESDAY PROJECT# 08-4148-032

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	1	1	1	0	0	1	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0			5	1	17	13	60	0		49	15	160
7:15 AM	0			5	0	15	16	54	0		147	4	241
7:30 AM	0			3	4	16	12	54	0		139	3	231
7:45 AM	0			1	2	27	14	39	0		144	7	234
8:00 AM	0			3	6	12	16	53	0		101	3	194
8:15 AM	0			3	0	18	14	55	3		79	1	173
8:30 AM	0			3	0	14	9	57	0		81	2	166
8:45 AM	1			0	2	8	12	42	0		50	1	116
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	1	0	0	23	15	127	106	414	3	0	790	36	1515

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	0	0	0	12	12	70	58	200	0	0	531	17	900
PEAK HR. FACTOR:		0.000			0.783			0.921			0.907		0.934

CONTROL: 1-Way Stop Sign (SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Harbor Dr DATE: 06/10/2008 LOCATION: City of San Diego

E-W STREET: Schley St DAY: TUESDAY PROJECT# 08-4148-032

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	1	1	1	0	0	1	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM				3	0	3	23	136			47	28	240
4:15 PM				2	0	3	14	157			54	14	244
4:30 PM				0	0	5	16	180			58	10	269
4:45 PM				6	0	4	25	174			45	8	262
5:00 PM				5	4	6	26	182			40	11	274
5:15 PM				5	0	12	8	176			39	10	250
5:30 PM				2	0	8	15	166			28	10	229
5:45 PM				0	0	2	15	84			38	5	144
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 23	ST 4	SR 43	EL 142	ET 1255	ER 0	WL 0	WT 349	WR 96	TOTAL 1912

PM Peak Hr Begins at: 430 PM

PEAK VOLUMES =	0	0	0	16	4	27	75	712	0	0	182	39	1055
PEAK HR. FACTOR:		0.000			0.691			0.946			0.813		0.963

CONTROL: 1-Way Stop Sign (SB)

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-006

Location: 28th St & National Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	0	2	0	0	1	0	1	2	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	14	22	3	10	30	102	15	34	10	13	97	9
	2-axle	1			1			1	5		1	4	
	3-axle		1					1	1				
	4-axle												
	5-axle +											1	
7:15	CARS	11	17	5	10	41	114	34	53	4	15	86	13
	2-axle		1				1	1	1	1		5	
	3-axle					1			1			1	
	4-axle										1	1	
	5-axle +										1		
7:30	CARS	13	27	8	7	46	57	35	41	1	11	84	15
	2-axle						1		3	1	1	1	
	3-axle							3	2				
	4-axle												
	5-axle +							1					
7:45	CARS	3	23	6	9	43	75	16	34	2	10	103	12
	2-axle				2	1		1	5		2	2	
	3-axle						1		3				
	4-axle												
	5-axle +							5					
8:00	CARS	7	9	10	9	37	48	19	32	5	12	127	7
	2-axle			1		2		1	6	2	2		1
	3-axle					1		1	1	1	1	1	
	4-axle												
	5-axle +							2	1		1		
8:15	CARS	6	10	5	6	25	28	9	30	5	26	132	18
	2-axle				1				4	2		5	2
	3-axle							1	1			2	
	4-axle									1			
	5-axle +							1					
8:30	CARS	5	14	2	6	21	24	9	31	7	32	92	20
	2-axle	1		1		2	3		7	3	1	1	
	3-axle					1	1	1	1			1	
	4-axle												
	5-axle +							1				1	
8:45	CARS	4	18	3	14	34	22	12	39	9	33	83	29
	2-axle	1		1		2	1	2	2			4	
	3-axle								1				
	4-axle											1	
	5-axle +							1	1				

MOVEMENT TOTALS

CARS	63	140	42	71	277	470	149	294	43	152	804	123
2-axle	3	1	3	4	7	6	6	33	9	7	22	3
3-axle	0	1	0	0	3	2	7	11	1	1	5	0
4-axle	0	0	0	0	0	0	0	0	1	1	2	0
5-axle +	0	0	0	0	0	0	11	2	0	2	2	0
TOTALS	66	142	45	75	287	478	173	340	54	163	835	126
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

CONTROL: Signalized

42	91	22	39	162	351	113	183	19	55	385	49
	0.807			0.826			0.829			0.948	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-006

Location: 28th St & National Ave City: San Diego Date: 12/2/08 Day: Tuesday

		LANES:	0	2	0	0	1	0	1	2	0	1	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		9	24	14	26	58	28	21	80	31	35	82	27
	2-axle						1		1	4			2	
	3-axle													
	4-axle													
	5-axle +								1					
16:15	CARS		3	30	11	18	58	25	16	91	21	48	87	23
	2-axle						1	2	1	1			4	2
	3-axle													
	4-axle													
	5-axle +													
16:30	CARS		2	28	12	15	52	23	17	96	22	44	80	38
	2-axle						3	1		5			3	1
	3-axle								1					
	4-axle													
	5-axle +								1					
16:45	CARS		4	23	9	22	49	16	19	92	24	34	76	36
	2-axle									3	1	1	4	
	3-axle													
	4-axle													
	5-axle +													
17:00	CARS		5	21	11	22	44	23	13	101	38	53	70	25
	2-axle													
	3-axle													
	4-axle													
	5-axle +													
17:15	CARS		6	18	13	20	60	19	6	74	33	44	61	44
	2-axle					1							3	
	3-axle								1	1				
	4-axle													
	5-axle +								1					
17:30	CARS		7	22	15	17	58	15	18	89	20	29	79	25
	2-axle						3	1		3	1		4	1
	3-axle							1						
	4-axle													
	5-axle +											1		
17:45	CARS		5	25	15	16	52	14	16	98	35	37	55	23
	2-axle						1			1	2		3	1
	3-axle													
	4-axle													
	5-axle +						1							

MOVEMENT TOTALS

CARS	41	191	100	156	431	163	126	721	224	324	590	241
2-axle	0	0	0	1	9	4	2	17	4	1	23	5
3-axle	0	0	0	0	0	1	2	1	0	0	0	0
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	0	0	0	1	0	3	0	0	1	0	0
TOTALS	41	191	100	157	441	168	133	739	228	326	613	246
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: Signalized

18	105	46	81	222	95	78	372	99	162	338	127
	0.899			0.881			0.967			0.944	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-006

Location: 28th St & National Ave City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	0	2	0	0	1	0	1	2	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	7	16	9	8	34	69	23	24	0	21	106	17
	2-axle						1		5	1	3	6	1
	3-axle					1		1				1	
	4-axle												
	5-axle +							2	1			2	
7:15	CARS	2	15	7	10	50	83	18	43	1	24	98	13
	2-axle					1	1		2	6	1	5	1
	3-axle					1	1	2					
	4-axle												
	5-axle +								1			2	
7:30	CARS	3	25	6	3	41	51	31	61	4	15	110	8
	2-axle	1							5		1	4	
	3-axle					2		1	2			2	
	4-axle												
	5-axle +							1	1			1	
7:45	CARS	10	18	6	8	36	53	17	32	5	19	118	7
	2-axle					3	3		8		2	3	1
	3-axle							1					
	4-axle												
	5-axle +					1		1				1	
8:00	CARS	2	12	4	7	30	31	16	42	13	25	139	7
	2-axle	1		1				1	9		1	4	1
	3-axle					1		2			1	2	
	4-axle												
	5-axle +							2	1				
8:15	CARS	7	22	9	6	24	27	8	24	4	34	98	35
	2-axle						1	2	4	3	2	5	2
	3-axle			1		1		1	1			1	
	4-axle					1		1					
	5-axle +				1	1		2	2			3	
8:30	CARS	7	13	2	5	24	22	2	31	6	40	96	21
	2-axle	1	1	1		2	1	3	2	2	2	6	2
	3-axle		1				1	1				3	
	4-axle							1					
	5-axle +							2				1	
8:45	CARS	2	14	2	9	26	22	8	26	13	29	98	24
	2-axle		1		11	1	3	2	11	1	2	5	1
	3-axle		1						3			1	
	4-axle			1									
	5-axle +											2	

MOVEMENT TOTALS

CARS	40	135	45	56	265	358	123	283	46	207	863	132
2-axle	3	2	2	11	7	10	8	46	13	14	38	9
3-axle	0	2	1	0	6	2	9	6	0	1	10	0
4-axle	0	0	1	0	1	0	2	0	0	0	0	0
5-axle +	0	0	0	1	2	0	10	6	0	0	12	0
TOTALS	43	139	49	68	281	370	152	341	59	222	923	141
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

CONTROL: Signalized

23	74	28	29	170	262	98	185	17	86	459	48
	0.893			0.784			0.708			0.944	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-006

Location: 28th St & National Ave City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	2	0	0	1	0	1	2	0	1	1	0
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		6	20	10	23	56	25	27	123	17	38	83	33
	2-axle									4			5	
	3-axle									1				
	4-axle													
	5-axle +								1					
16:15	CARS		4	23	18	12	45	20	25	122	15	38	74	31
	2-axle			1		1	1	1	1	2			5	
	3-axle													
	4-axle													
	5-axle +							1		1			1	
16:30	CARS		4	19	9	11	39	33	29	124	15	38	73	36
	2-axle						1	2		3	1		4	
	3-axle													
	4-axle													
	5-axle +								1				1	
16:45	CARS		3	27	9	12	55	26	21	112	22	48	66	29
	2-axle			1			1		1	4			2	
	3-axle								1					
	4-axle								1					
	5-axle +								1				1	
17:00	CARS		6	23	10	9	52	24	21	86	25	43	67	44
	2-axle					2				1	1		2	
	3-axle													
	4-axle													
	5-axle +								1					
17:15	CARS		3	20	15	20	40	14	20	105	15	38	74	37
	2-axle													
	3-axle		1		1	1			1	2	1	1	1	
	4-axle								1					
	5-axle +													
17:30	CARS		3	34	16	17	49	11	21	98	19	34	56	35
	2-axle						1	1	2	1	1	1	2	1
	3-axle											1		
	4-axle													
	5-axle +													
17:45	CARS		4	14	17	10	49	15	22	60	10	46	65	40
	2-axle									2		1	3	
	3-axle									1				
	4-axle													
	5-axle +								1				1	

MOVEMENT TOTALS

CARS	33	180	104	114	385	168	186	830	138	323	558	285
2-axle	0	2	0	3	4	4	4	17	3	2	23	1
3-axle	1	0	1	1	0	0	2	4	1	2	1	0
4-axle	0	0	0	0	0	0	2	0	0	0	0	0
5-axle +	0	0	0	0	0	1	5	1	0	0	4	0
TOTALS	34	182	105	118	389	173	199	852	142	327	586	286
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: Signalized

17	91	46	59	198	108	109	496	70	162	315	129
	0.837			0.877			0.975			0.953	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-007

Location: 28th St & Boston Ave City: San Diego Date: 12/2/08 Day: Tuesday

	LANES:	1	2	1	1	1.5	0.5	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	1	123	29	28	172	9	4	12	1	1	6	26
	2-axle		5			1	4		1		2	1	
	3-axle	1	1										
	4-axle												
	5-axle +			1		4							
7:15	CARS	2	103	10	32	146	7	6	9	4	5	0	22
	2-axle		4			1	3		2			1	
	3-axle		2					1	1				
	4-axle					1			1				
	5-axle +		3	2		5							
7:30	CARS	3	94	18	32	134	6	2	13	3	0	3	17
	2-axle		3	1					1				
	3-axle			1		4			1				
	4-axle												
	5-axle +					4	1						
7:45	CARS	1	71	21	24	125	4	6	6	4	1	6	13
	2-axle		1	3		2		1	1	2		1	
	3-axle		2			2							
	4-axle												
	5-axle +			1		7		1	1				
8:00	CARS	2	75	16	31	101	1	5	8	1	1	6	9
	2-axle		1	2		3	3	1	2				
	3-axle		3		1								
	4-axle		1										
	5-axle +					8	1						
8:15	CARS	1	63	11	24	104	2	2	8	1	5	1	10
	2-axle					4	2		3				
	3-axle		1		1	2		2	1				
	4-axle												
	5-axle +		4	1		3							
8:30	CARS	2	63	16	32	118	0	0	8	0	2	2	5
	2-axle		4			3	4	3	3				
	3-axle		2			3	1						
	4-axle		1										
	5-axle +		1	1		2		1					
8:45	CARS	1	81	11	35	116	10	7	8	4	0	3	5
	2-axle	1	1	2	1	2		2	4				
	3-axle	1	2	1		1			1				
	4-axle												
	5-axle +		1	1	1	3							

MOVEMENT TOTALS

CARS	13	673	132	238	1016	39	32	72	18	15	27	107
2-axle	1	19	8	1	16	16	7	17	2	2	3	0
3-axle	2	13	2	2	12	1	3	4	0	0	0	0
4-axle	0	2	0	0	1	0	0	1	0	0	0	0
5-axle +	0	9	7	1	36	2	2	1	0	0	0	0
TOTALS	16	716	149	242	1081	58	44	95	20	17	30	107
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

CONTROL: Signalized

8	412	87	116	608	34	21	49	14	9	18	78
	0.787			0.869			0.875			0.729	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-007

Location: 28th St & Boston Ave | City: San Diego | Date: 12/2/08 | Day: Tuesday

	LANES:	1	2	1	1	1.5	0.5	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS	2	132	47	69	122	1	9	39	2	0	5	8
	2-axle		1				1		3		1		
	3-axle			3			2						
	4-axle												
	5-axle +	1		4		1	3	2	1				
16:15	CARS	0	133	60	64	157	7	8	22	4	2	2	11
	2-axle			2		2			3				
	3-axle			2									
	4-axle												
	5-axle +		3	1									
16:30	CARS	1	116	62	62	148	4	14	39	5	1	1	12
	2-axle					1	3	1					
	3-axle			2		2							
	4-axle												
	5-axle +		3	1		1	2						
16:45	CARS	0	113	49	57	156	5	6	22	3	1	3	7
	2-axle												
	3-axle			2		1				1			
	4-axle												
	5-axle +			1									
17:00	CARS	2	120	55	57	140	4	7	39	2	1	5	3
	2-axle								1		1		
	3-axle						1		2				
	4-axle		1										
	5-axle +		2	1									
17:15	CARS	0	107	52	50	155	11	7	27	3	1	1	7
	2-axle		1	1		1	1		1				
	3-axle								1				
	4-axle												
	5-axle +		2	2		1							
17:30	CARS	1	133	46	41	144	6	6	17	8	2	1	7
	2-axle					2	3						
	3-axle												
	4-axle												
	5-axle +		1	1									
17:45	CARS	1	91	30	51	176	5	8	22	8	3	3	4
	2-axle					1	2						
	3-axle												
	4-axle												
	5-axle +			1		1							

MOVEMENT TOTALS

CARS	7	945	401	451	1198	43	65	227	35	11	21	59
2-axle	0	2	3	0	7	10	1	8	0	2	0	0
3-axle	0	0	9	0	3	3	0	3	1	0	0	0
4-axle	0	1	0	0	0	0	0	0	0	0	0	0
5-axle +	1	11	12	0	4	5	2	1	0	0	0	0
TOTALS	8	959	425	451	1212	61	68	239	36	13	21	59
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: Signalized

4	501	236	252	591	28	40	129	15	5	11	38
	0.922			0.947			0.780			0.900	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-007

Location: 28th St & Boston Ave City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	1	2	1	1	1.5	0.5	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	1	83	32	20	157	5	4	8	0	1	2	8
	2-axle		2			2							
	3-axle		2		1	3							
	4-axle												
	5-axle +		1	3		6						1	
7:15	CARS	0	72	17	36	180	6	6	20	2	3	4	10
	2-axle		1	1		4	1		2				
	3-axle												
	4-axle												
	5-axle +			2	1	3							
7:30	CARS	1	89	19	35	152	5	6	9	0	0	1	22
	2-axle		3	1	1	3		3					
	3-axle					1	1	1					
	4-axle												
	5-axle +	1		2		4		1					
7:45	CARS	6	85	12	32	115	6	2	8	4	1	8	9
	2-axle		1	1	1	3	1		3				
	3-axle		3			1	2						
	4-axle				1								
	5-axle +			2		4			1		1		
8:00	CARS	1	56	16	29	93	6	6	15	1	2	1	11
	2-axle		3	1	2	2	2		1				
	3-axle		1										
	4-axle		2	2		3	1		1				
	5-axle +												
8:15	CARS	2	78	16	31	106	3	5	12	3	1	3	8
	2-axle				1	6	2	1	2				
	3-axle			1		1	1		2		2		
	4-axle					1							
	5-axle +			5		7							
8:30	CARS	0	61	13	40	134	3	1	3	2	3	2	12
	2-axle		4	4		3		3	2				
	3-axle			2		1	1		2				
	4-axle												
	5-axle +		4	4					1				
8:45	CARS	1	61	19	30	118	7	3	11	6	1	4	14
	2-axle		2			2	1		2		3		
	3-axle		3		1	3		1				1	
	4-axle												
	5-axle +		2	2	1	3							

MOVEMENT TOTALS

CARS	12	585	144	253	1055	41	33	86	18	12	25	94
2-axle	0	16	8	5	25	7	7	12	0	3	0	0
3-axle	0	9	3	2	10	5	2	4	0	2	1	0
4-axle	0	2	2	1	4	1	0	1	0	0	0	0
5-axle +	1	7	20	2	27	0	1	2	0	1	1	0
TOTALS	13	619	177	263	1121	54	43	105	18	18	27	94
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

CONTROL: Signalized

9	342	92	128	638	27	23	51	6	6	16	49
	0.893			0.858			0.667			0.772	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-007

Location: 28th St & Boston Ave | City: San Diego | Date: 12/3/08 | Day: Wednesday

	LANES:	1	2	1	1	1.5	0.5	0	1	0	1	1	0
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS	1	134	49	61	182	6	10	40	3	1	5	13
	2-axle		2	1	1	1	2		1		1		
	3-axle					3	1						
	4-axle												
	5-axle +		1	2		1							
16:15	CARS	2	146	37	60	188	7	12	26	7	4	3	9
	2-axle				2	3							
	3-axle					1			1				
	4-axle												
	5-axle +		2	2		1		1	1				
16:30	CARS	0	133	40	54	195	7	12	36	2	1	3	13
	2-axle	1	4		1	1	1						
	3-axle					2			1				
	4-axle												
	5-axle +					1			1				
16:45	CARS	5	106	38	59	212	1	8	24	2	1	2	12
	2-axle		1			1	2						
	3-axle					1			1				
	4-axle					1							
	5-axle +		1	1		1					1		
17:00	CARS	5	126	40	59	194	8	14	34	3	5	4	7
	2-axle		2										
	3-axle												
	4-axle												
	5-axle +			2			1		1				
17:15	CARS	1	103	51	49	151	1	4	27	4	2	2	8
	2-axle								3				
	3-axle						1						
	4-axle												
	5-axle +			1		1							
17:30	CARS	1	124	34	55	153	2	13	23	1	2	3	13
	2-axle						4		1				
	3-axle												
	4-axle												
	5-axle +		2	2		1	1		1				
17:45	CARS	2	75	36	55	140	6	8	20	2	1	1	5
	2-axle												
	3-axle												
	4-axle												
	5-axle +		1	2		1			1				

MOVEMENT TOTALS

CARS	17	947	325	452	1415	38	81	230	24	17	23	80
2-axle	1	9	1	4	6	9	0	5	0	1	0	0
3-axle	0	0	0	0	7	2	0	3	0	0	0	0
4-axle	0	0	0	0	1	0	0	0	0	0	0	0
5-axle +	0	7	12	0	7	2	1	5	0	1	0	0
TOTALS	18	963	338	456	1436	51	82	243	24	19	23	80
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: Signalized

9	530	170	238	795	27	43	132	14	9	13	47
	0.933			0.953			0.875			0.863	

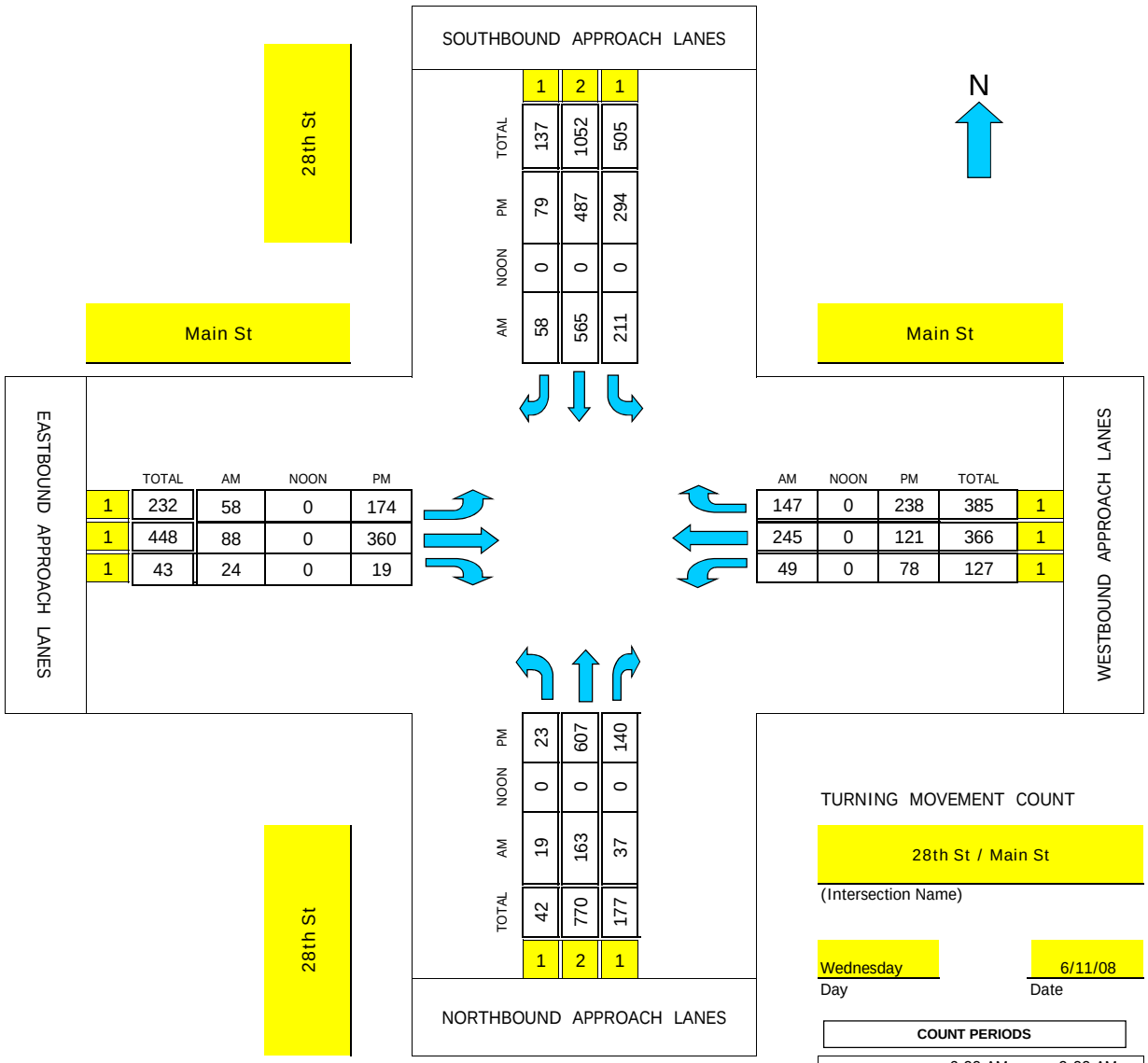
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 28th St/Main St

Project #: 08-4148-035



TURNING MOVEMENT COUNT

28th St / Main St

(Intersection Name)

Wednesday — Day

6/11/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	630 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	300 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 28th St DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: WEDNESDAY PROJECT# 08-4148-035

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	1	1	1	1	1	
6:00 AM	2	28	10	32	86	19	17	26	6	17	84	16	343
6:15 AM	5	30	17	16	89	20	23	37	19	20	81	18	375
6:30 AM	7	34	11	67	155	17	16	26	4	15	90	27	469
6:45 AM	4	33	2	55	123	13	14	29	8	14	53	42	390
7:00 AM	2	56	14	48	157	7	12	14	8	11	51	44	424
7:15 AM	6	40	10	41	130	21	16	19	4	9	51	34	381
7:30 AM	6	46	9	35	114	20	15	13	6	15	67	44	390
7:45 AM	5	42	7	35	126	16	18	20	3	8	41	38	359
8:00 AM	2	48	7	27	98	13	25	21	10	9	41	30	331
8:15 AM	7	35	3	23	77	16	18	27	5	9	44	33	297
8:30 AM	12	39	13	43	103	17	25	34	6	11	40	27	370
8:45 AM	8	66	12	39	91	14	18	32	4	6	26	35	351
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	66	497	115	461	1349	193	217	298	83	144	669	388	4480

AM Peak Hr Begins at: 630 AM

PEAK VOLUMES =	19	163	37	211	565	58	58	88	24	49	245	147	1664
PEAK HR. FACTOR:		0.760			0.872			0.833			0.835		0.887

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 28th St DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: WEDNESDAY PROJECT# 08-4148-035

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	1	1	1	1	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM	6	144	33	57	104	18	52	118	3	20	32	60	647
3:15 PM	7	170	53	67	138	23	40	101	2	27	43	61	732
3:30 PM	6	140	20	90	139	21	49	77	5	20	28	58	653
3:45 PM	4	153	34	80	106	17	33	64	9	11	18	59	588
4:00 PM	8	139	21	77	98	11	29	75	6	13	22	66	565
4:15 PM	6	101	22	60	104	10	24	52	1	10	22	51	463
4:30 PM	8	108	23	56	68	8	41	49	6	5	19	42	433
4:45 PM	5	104	19	43	87	8	20	49	2	9	15	37	398
5:00 PM	4	106	14	53	74	7	38	49	4	2	12	47	410
5:15 PM	7	81	14	39	75	9	26	39	4	5	24	47	370
5:30 PM	4	86	9	36	61	12	11	32	4	4	15	28	302
5:45 PM	5	82	15	36	46	15	21	27	4	2	18	43	314
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 70	NT 1414	NR 277	SL 694	ST 1100	SR 159	EL 384	ET 732	ER 50	WL 128	WT 268	WR 599	TOTAL 5875

PM Peak Hr Begins at: 300 PM

PEAK VOLUMES =	23	607	140	294	487	79	174	360	19	78	121	238	2620
PEAK HR. FACTOR:		0.837			0.860			0.799			0.834		0.895

CONTROL: Signalized

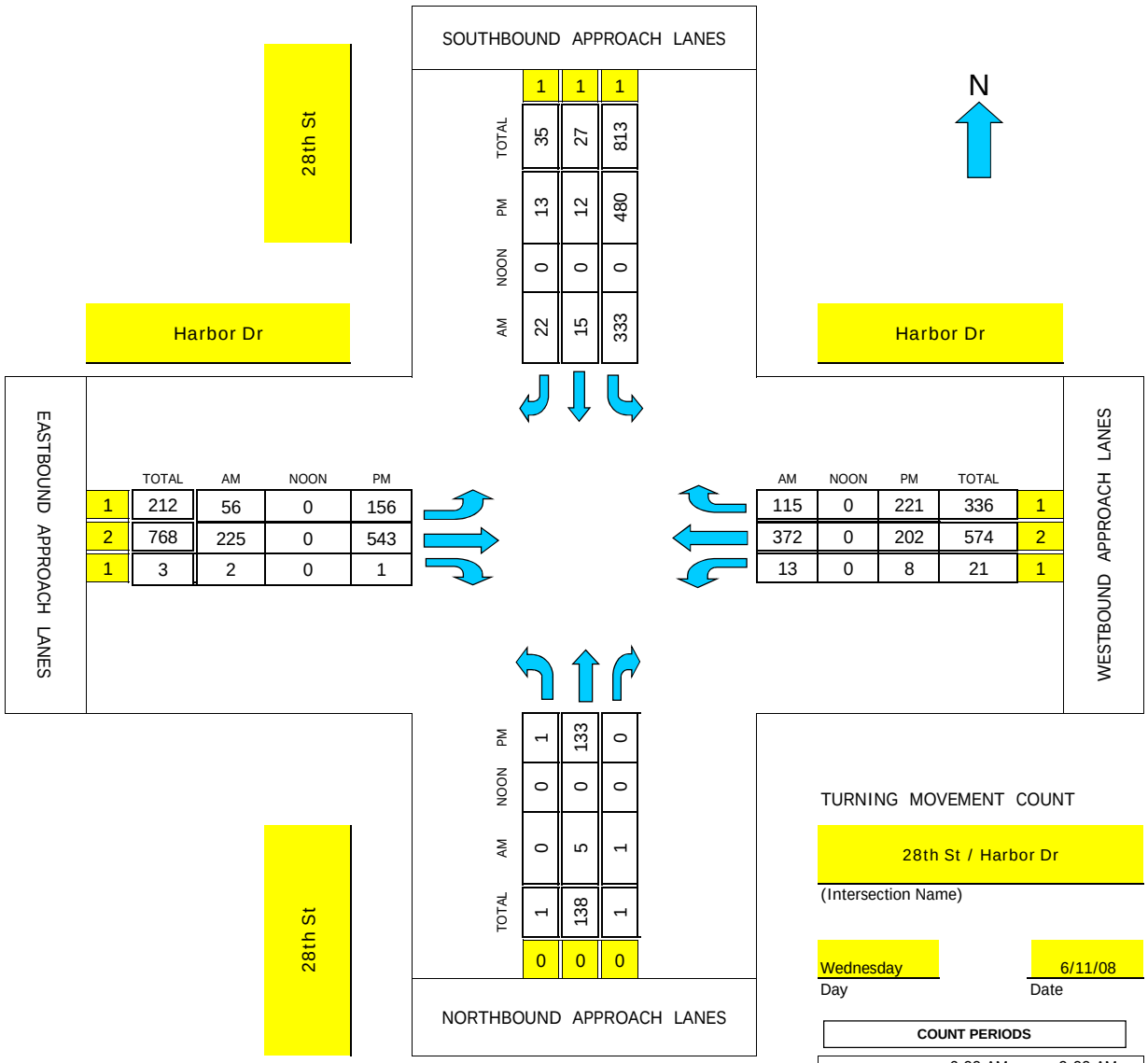
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 28th St/Harbor Dr

Project #: 08-4148-036



TURNING MOVEMENT COUNT

28th St / Harbor Dr

(Intersection Name)

Wednesday — Day

6/11/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	700 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	300 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 28th St DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: WEDNESDAY PROJECT# 08-4148-036

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1	1	1	1	2	1	1	2	1	
6:00 AM	0	1	0	29	6	0	7	22	0	1	36	40	142
6:15 AM	0	7	0	65	4	11	29	69	0	0	39	35	259
6:30 AM	0	6	0	102	2	18	27	59	0	1	41	25	281
6:45 AM	0	1	0	75	2	12	3	43	0	1	73	30	240
7:00 AM	0	2	0	97	6	5	22	58	1	2	74	32	299
7:15 AM	0	1	0	96	3	3	12	63	1	2	78	28	287
7:30 AM	0	0	1	63	1	9	13	65	0	6	108	25	291
7:45 AM	0	2	0	77	5	5	9	39	0	3	112	30	282
8:00 AM	0	2	0	73	2	9	11	27	0	2	52	25	203
8:15 AM	1	0	1	42	1	4	6	43	1	0	50	26	175
8:30 AM	1	1	1	47	3	4	14	42	3	1	76	33	226
8:45 AM	0	1	0	54	2	5	15	36	1	0	38	48	200
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	2	24	3	820	37	85	168	566	7	19	777	377	2885

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	0	5	1	333	15	22	56	225	2	13	372	115	1159
PEAK HR. FACTOR:		0.750			0.856			0.873			0.862		0.969

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 28th St DATE: 06/11/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: WEDNESDAY PROJECT# 08-4148-036

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1	1	1	1	2	1	1	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM	0	52	0	130	0	4	35	137	0	5	44	84	491
3:15 PM	0	50	0	121	3	6	53	119	0	2	54	65	473
3:30 PM	1	12	0	140	8	1	31	142	0	1	49	36	421
3:45 PM	0	19	0	89	1	2	37	145	1	0	55	36	385
4:00 PM	1	14	1	142	1	2	37	165	0	1	26	47	437
4:15 PM	1	7	1	98	1	5	17	187	0	3	38	45	403
4:30 PM	0	5	0	50	1	6	28	214	0	1	33	57	395
4:45 PM	3	7	0	58	1	8	22	240	0	0	37	33	409
5:00 PM	1	6	0	52	3	3	20	209	0	0	32	26	352
5:15 PM	0	0	2	66	1	14	21	218	0	0	33	24	379
5:30 PM	1	3	0	58	1	7	13	135	0	2	18	36	274
5:45 PM	0	1	1	45	2	4	12	111	0	1	34	28	239
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 8	NT 176	NR 5	SL 1049	ST 23	SR 62	EL 326	ET 2022	ER 1	WL 16	WT 453	WR 517	TOTAL 4658

PM Peak Hr Begins at: 300 PM

PEAK VOLUMES =	1	133	0	480	12	13	156	543	1	8	202	221	1770
PEAK HR. FACTOR:		0.644			0.847			0.956			0.810		0.901

CONTROL: Signalized

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-013

Location: 29th St/I-5 SB On-Ramp & Boston Ave City: San Diego Date: 12/2/08 Day: Tuesday

		LANES:	0	1	0	0	0	0	2	1	0	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		0	5	0				41	9	1	0	14	7
	2-axle								1					
	3-axle								1					
	4-axle								1					
	5-axle +								3					3
7:15	CARS		0	1	0				51	5	3	1	9	6
	2-axle								2					1
	3-axle								3					2
	4-axle								1					
	5-axle +								2					
7:30	CARS		1	6	3				35	8	4	1	17	10
	2-axle								4					2
	3-axle								2					
	4-axle			1					1					
	5-axle +			1					5					
7:45	CARS		1	1	1				39	5	1	3	13	6
	2-axle			1					2	2			2	
	3-axle								2				3	
	4-axle									1				
	5-axle +								2					
8:00	CARS		0	0	1				55	10	2	1	13	4
	2-axle								6				2	1
	3-axle													
	4-axle													
	5-axle +								3					
8:15	CARS		0	2	3				50	6	2	1	5	7
	2-axle								4	1				
	3-axle								1					
	4-axle								1					
	5-axle +								1					
8:30	CARS		2	4	1				45	6	0	1	9	7
	2-axle			1					3		1		1	
	3-axle								1					1
	4-axle													
	5-axle +								1					
8:45	CARS		2	1	1				49	4	1	0	5	5
	2-axle		1		1				7					1
	3-axle								2					1
	4-axle													
	5-axle +								2					

MOVEMENT TOTALS

CARS	6	20	10	0	0	0	365	53	14	8	85	52
2-axle	1	2	1	0	0	0	29	3	1	0	5	5
3-axle	0	0	0	0	0	0	12	0	0	0	3	4
4-axle	0	1	0	0	0	0	4	1	0	0	0	0
5-axle +	0	1	0	0	0	0	19	0	0	0	0	3
TOTALS	7	24	11	0	0	0	429	57	15	8	93	64
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 715 AM

CONTROL: 3-Way Stop (N/E/W)

2	11	5	0	0	0	215	31	10	6	59	32
	0.375			0.000			0.842			0.808	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-013

Location: 29th St/I-5 SB On-Ramp & Boston Ave City: San Diego Date: 12/2/08 Day: Tuesday

		LANES:	0	1	0	0	0	0	2	1	0	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		3	13	1				145	11	4	1	11	18
	2-axle				2				3					
	3-axle								3					
	4-axle													
	5-axle +								5					
16:15	CARS		1	10	3				129	14	2	1	14	7
	2-axle								5					1
	3-axle		1						1					1
	4-axle													
	5-axle +								1					
16:30	CARS		1	19	3				126	19	4	1	6	13
	2-axle								3					1
	3-axle								2					
	4-axle													
	5-axle +								1					
16:45	CARS		1	8	3				98	13	6	2	11	13
	2-axle								2					
	3-axle													
	4-axle													
	5-axle +			1					1					
17:00	CARS		0	18	6				120	22	5	1	8	20
	2-axle								1					
	3-axle								1	1				
	4-axle													
	5-axle +			1					2					
17:15	CARS		0	8	1				138	12	1	2	10	16
	2-axle										1			1
	3-axle								2					
	4-axle													
	5-axle +								1					
17:30	CARS		3	9	4				114	14	1	0	18	18
	2-axle													
	3-axle								1					
	4-axle										1			
	5-axle +								1					
17:45	CARS		0	5	1				101	13	2	0	8	16
	2-axle										1			
	3-axle													
	4-axle													
	5-axle +								1					

MOVEMENT TOTALS

CARS	9	90	22	0	0	0	971	118	25	8	86	121
2-axle	0	0	2	0	0	0	14	0	2	0	0	3
3-axle	1	0	0	0	0	0	10	1	0	0	0	1
4-axle	0	0	0	0	0	0	0	0	1	0	0	0
5-axle +	0	2	0	0	0	0	13	0	0	0	0	0
TOTALS	10	92	24	0	0	0	1008	119	28	8	86	125
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: 3-Way Stop (N/E/W)

7	51	12	0	0	0	525	57	16	5	42	54
	0.761			0.000			0.874			0.842	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-013

Location: 29th St/I-5 SB On-Ramp & Boston Ave City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	0	1	0	0	0	0	2	1	0	0	1	1
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	2	4	0				48	6	1	1	10	6
	2-axle		1					2					1
	3-axle							1					
	4-axle		2										
	5-axle +							3					
7:15	CARS	1	4	0				65	12	0	3	9	15
	2-axle							6				1	1
	3-axle												
	4-axle							1					
	5-axle +		1					3					
7:30	CARS	1	4	0				45	10	2	1	20	6
	2-axle		1					2	2				2
	3-axle		1					2					1
	4-axle							1					
	5-axle +		3					2					
7:45	CARS	1	3	3				37	10	1	1	11	11
	2-axle		1					4				1	
	3-axle							1					
	4-axle							1	1				
	5-axle +		1					3					
8:00	CARS	2	9	2				51	10	1	1	12	10
	2-axle							3	3			1	1
	3-axle												1
	4-axle												
	5-axle +		1					5					
8:15	CARS	1	3	0				44	6	4	0	9	4
	2-axle							3				1	
	3-axle							5					
	4-axle											1	
	5-axle +							5				1	
8:30	CARS	2	3	0				48	6	2	0	11	8
	2-axle		1					6				1	
	3-axle							4				1	
	4-axle							2					
	5-axle +		2					5					
8:45	CARS	1	4	0				56	3	1	2	14	5
	2-axle							3				1	
	3-axle											2	
	4-axle												
	5-axle +		1					2					

MOVEMENT TOTALS

CARS	11	34	5	0	0	0	394	63	12	9	96	65
2-axle	0	4	0	0	0	0	29	5	0	0	6	5
3-axle	0	1	0	0	0	0	13	0	0	0	3	2
4-axle	0	2	0	0	0	0	5	1	0	0	1	0
5-axle +	0	9	0	0	0	0	28	0	0	0	1	0
TOTALS	11	50	5	0	0	0	469	69	12	9	107	72
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 715 AM

CONTROL: 3-Way Stop (N/E/W)

5	29	5	0	0	0	232	48	4	6	55	48
	0.696			0.000			0.816			0.908	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-013

Location: 29th St/I-5 SB On-Ramp & Boston Ave City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	0	1	0	0	0	0	2	1	0	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		0	10	1				130	19	1	0	16	20
	2-axle			1					3	1			1	1
	3-axle													
	4-axle													
	5-axle +								1					
16:15	CARS		1	11	2				100	16	2	2	10	17
	2-axle								2	1				
	3-axle								2					
	4-axle													
	5-axle +								3					
16:30	CARS		0	8	7				120	12	4	1	10	13
	2-axle		2	1					4					
	3-axle													
	4-axle													
	5-axle +								2					
16:45	CARS		2	14	3				92	12	5	1	13	11
	2-axle								3					
	3-axle								2					
	4-axle													
	5-axle +			1					1					
17:00	CARS		0	6	3				113	16	0	2	12	9
	2-axle													
	3-axle								1					
	4-axle								1					
	5-axle +			1					4					
17:15	CARS		1	5	0				113	12	1	2	11	13
	2-axle								3					1
	3-axle								2					
	4-axle													
	5-axle +				1				1					
17:30	CARS		2	5	2				87	17	3	0	15	15
	2-axle								3					
	3-axle								4					
	4-axle			1					1					1
	5-axle +			1					3					
17:45	CARS		1	3	1				81	12	4	1	5	13
	2-axle								2					
	3-axle								2					
	4-axle													
	5-axle +		1						3					

MOVEMENT TOTALS

CARS	7	62	19	0	0	0	836	116	20	9	92	111
2-axle	2	2	0	0	0	0	20	2	0	0	1	2
3-axle	0	0	0	0	0	0	13	0	0	0	0	0
4-axle	0	1	0	0	0	0	2	0	0	0	0	1
5-axle +	1	3	1	0	0	0	18	0	0	0	0	0
TOTALS	10	68	20	0	0	0	889	118	20	9	93	114
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: 3-Way Stop (N/E/W)

5	46	13	0	0	0	465	61	12	4	50	62
	0.800			0.000			0.868			0.763	

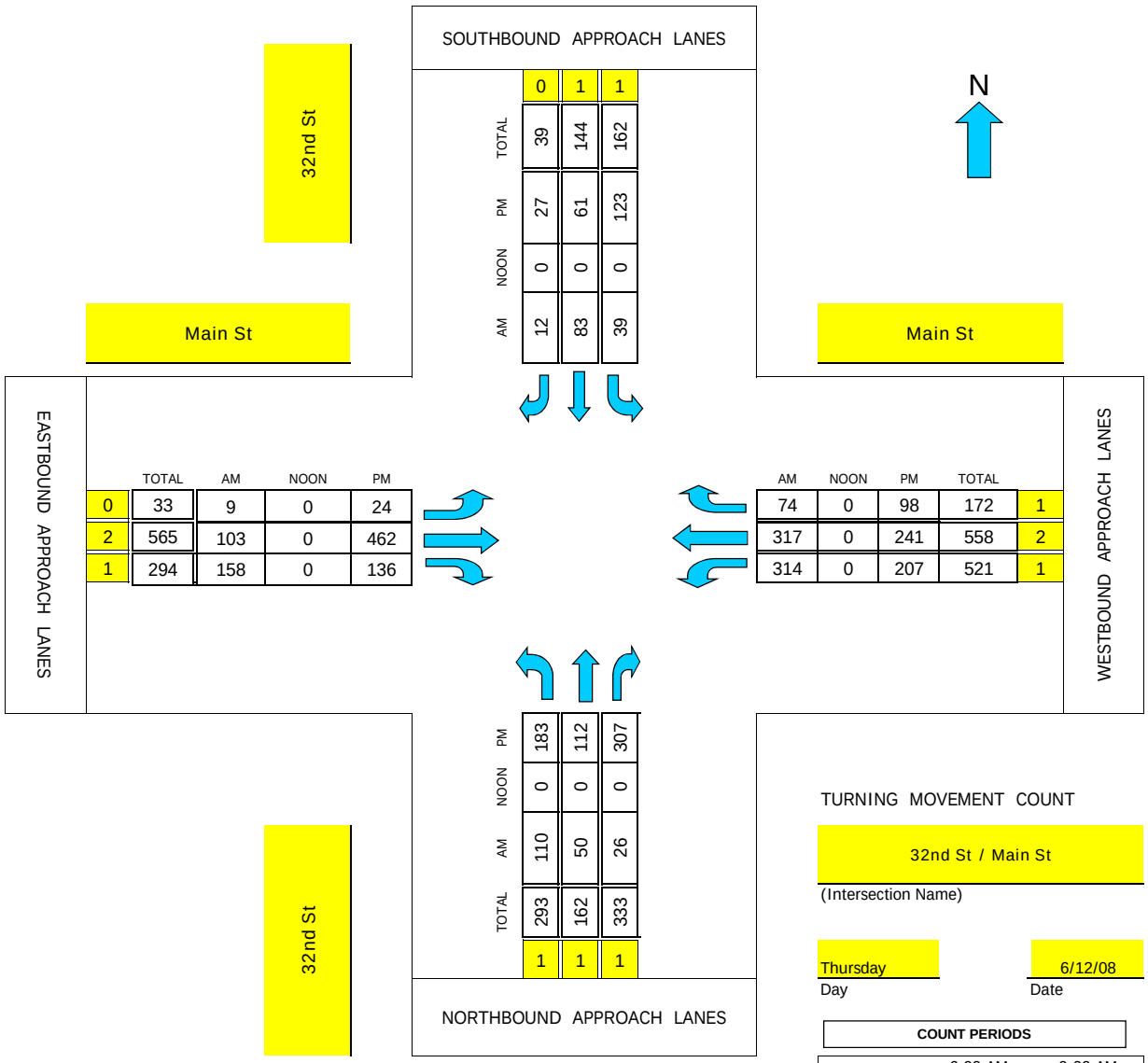
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 32nd St/Main St

Project #: 08-4148-038



TURNING MOVEMENT COUNT

32nd St / Main St

(Intersection Name)

Thursday — Day

6/12/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	645 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	300 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 32nd St DATE: 06/12/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-038

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	1	0	0	2	1	1	2	1	
6:00 AM	14	8	5	5	17	3	1	23	30	42	85	11	244
6:15 AM	20	11	6	8	14	0	1	28	36	63	109	18	314
6:30 AM	34	6	5	11	13	1	0	24	39	64	91	11	299
6:45 AM	33	12	7	12	27	1	3	30	44	78	71	14	332
7:00 AM	18	11	8	12	23	2	0	31	46	75	72	21	319
7:15 AM	29	13	4	5	19	3	3	19	33	90	86	18	322
7:30 AM	30	14	7	10	14	6	3	23	35	71	88	21	322
7:45 AM	24	8	16	11	12	2	4	26	30	39	66	16	254
8:00 AM	27	9	10	16	11	6	0	32	18	53	62	15	259
8:15 AM	20	10	21	16	11	1	1	31	36	53	58	18	276
8:30 AM	17	10	18	16	9	1	1	30	18	69	42	11	242
8:45 AM	14	14	23	18	11	3	2	27	16	70	54	12	264
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	280	126	130	140	181	29	19	324	381	767	884	186	3447

AM Peak Hr Begins at: 645 AM

PEAK VOLUMES =	110	50	26	39	83	12	9	103	158	314	317	74	1295
PEAK HR. FACTOR:		0.894			0.838			0.877			0.909		0.975

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 32nd St DATE: 06/12/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-038

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	1	0	0	2	1	1	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM	42	32	79	33	11	4	3	122	36	58	64	26	510
3:15 PM	56	30	83	35	18	6	9	143	31	53	71	20	555
3:30 PM	39	28	72	23	18	7	3	96	30	57	69	27	469
3:45 PM	46	22	73	32	14	10	9	101	39	39	37	25	447
4:00 PM	48	33	99	29	12	3	6	114	49	42	43	16	494
4:15 PM	26	32	78	36	16	6	7	99	41	53	39	26	459
4:30 PM	23	13	79	26	10	6	6	102	46	69	35	18	433
4:45 PM	34	15	77	37	15	4	7	80	28	46	36	25	404
5:00 PM	25	13	77	29	7	9	11	70	30	36	27	25	359
5:15 PM	36	23	70	24	15	3	8	65	19	42	27	17	349
5:30 PM	30	21	59	24	14	3	4	38	42	38	38	11	322
5:45 PM	20	10	51	17	9	5	3	48	30	48	28	13	282
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 425	NT 272	NR 897	SL 345	ST 159	SR 66	EL 76	ET 1078	ER 421	WL 581	WT 514	WR 249	TOTAL 5083

PM Peak Hr Begins at: 300 PM

PEAK VOLUMES =	183	112	307	123	61	27	24	462	136	207	241	98	1981
PEAK HR. FACTOR:		0.891			0.894			0.850			0.892		0.892

CONTROL: Signalized

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-009

Location: 32nd St & Norman Scott Rd City: San Diego Date: 12/3/08 Day: Wednesday

	LANES:	1	3	0	1	1.5	0.5	1	0.5	0.5	0	1	1
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	18	29	80	56	43	3	5	11	7	57	3	22
	2-axle		1			1		1			3		1
	3-axle					5							
	4-axle										1		
	5-axle +				2	5							
7:15	CARS	17	44	57	52	43	6	6	7	9	60	3	29
	2-axle		1		1	5					2	1	
	3-axle		1										
	4-axle												
	5-axle +												
7:30	CARS	16	34	38	44	21	1	9	3	7	64	3	38
	2-axle	2	4	3	2	1					3		
	3-axle		2										
	4-axle												
	5-axle +												
7:45	CARS	25	47	33	34	34	2	15	8	1	52	1	21
	2-axle			5		3					2		1
	3-axle		1										
	4-axle												
	5-axle +												
8:00	CARS	21	48	31	28	45	3	10	4	4	65	3	16
	2-axle			3	1	2		1			2		1
	3-axle		1			1							
	4-axle												
	5-axle +												
8:15	CARS	17	45	36	21	26	2	13	5	9	78	6	18
	2-axle		3	3		2							2
	3-axle												
	4-axle										2	1	

	5-axle +												
8:30	CARS	24	41	43	32	42	1	13	2	1	40	6	13
	2-axle		4	2	1	1	2		2	2			7
	3-axle			1									
	4-axle						1						
	5-axle +		1										
8:45	CARS	22	43	26	22	34	3	17	3	4	48	7	18
	2-axle		2	5	4	3	1		1	6	3		2
	3-axle												
	4-axle												
	5-axle +												

MOVEMENT TOTALS

CARS	160	331	344	289	288	21	88	43	42	464	32	175
2-axle	2	15	21	9	18	3	2	3	8	15	1	14
3-axle	0	5	1	0	6	0	0	0	0	0	0	0
4-axle	0	0	0	0	0	1	0	0	0	3	1	0
5-axle +	0	1	0	2	5	0	0	0	0	0	0	0
TOTALS	162	352	366	300	317	25	90	46	50	482	34	189
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begir 700 AM

CONTROL: Signalized

	78	164	216	191	161	12	36	29	24	244	11	112
		0.895			0.791			0.927			0.850	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-009

Location: 32nd St & Norman Scott Rd City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	1	3	0	1	1.5	0.5	1	0.5	0.5	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		28	69	55	77	51	0	14	4	12	31	16	22
	2-axle						3	2			1	1		2
	3-axle													
	4-axle													
	5-axle +													
16:15	CARS		29	66	57	54	37	11	20	14	5	33	9	45
	2-axle						1							
	3-axle													
	4-axle													
	5-axle +													
16:30	CARS		22	66	41	58	55	6	17	8	7	18	8	26
	2-axle					2	1		2					
	3-axle													
	4-axle													
	5-axle +													
16:45	CARS		33	90	51	51	83	10	9	15	12	37	8	32
	2-axle								1					
	3-axle													
	4-axle													
	5-axle +													
17:00	CARS		23	49	38	59	54	4	10	6	9	26	7	37
	2-axle			1		2	2				1			
	3-axle													
	4-axle													
	5-axle +													
17:15	CARS		34	57	30	62	45	2	21	6	9	20	5	18
	2-axle													
	3-axle													
	4-axle													

	5-axle +												
17:30	CARS	20	48	41	53	35	5	21	10	9	18	7	41
	2-axle		1										
	3-axle					1							
	4-axle												
	5-axle +												
17:45	CARS	24	36	33	37	45	6	26	9	1	26	3	33
	2-axle				1	1							
	3-axle												
	4-axle												
	5-axle +					1							

MOVEMENT TOTALS

CARS	213	481	346	451	405	44	138	72	64	209	63	254
2-axle	0	2	0	5	8	2	3	0	2	1	0	2
3-axle	0	0	0	0	1	0	0	0	0	0	0	0
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	0	0	0	1	0	0	0	0	0	0	0
TOTALS	213	483	346	456	415	46	141	72	66	210	63	256
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begir 1600 PM

CONTROL: Signalized

112	291	204	242	231	29	63	41	37	120	41	127
	0.872			0.872			0.904			0.828	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

See legends at the bottom of the page Project # 08-4335-009 5th Leg

Location: 32nd St / Wabash Blvd & Norman Scott Rd City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	1	3	0	0	2	0	1	0.5	0.5	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		2	11		4	131	9	1	6	1	0	0	4
	2-axle			2		3								1
	3-axle													
	4-axle													
	5-axle +			1										
7:15	CARS		0	14		1	119	3	3	5	1	0	0	2
	2-axle						2	2			1			
	3-axle													
	4-axle													1
	5-axle +		1											
7:30	CARS		0	18		0	96	4	2	4	1	0	1	10
	2-axle			2										1
	3-axle													
	4-axle						1			1				1
	5-axle +			1										
7:45	CARS		1	16		4	71	5	3	3	0	0	1	26
	2-axle						3							1
	3-axle													
	4-axle						1							
	5-axle +													
8:00	CARS		0	18		1	53	1	2	2	2	0	0	8
	2-axle			5			4							
	3-axle						1							
	4-axle			1						1				1
	5-axle +			1		2								
8:15	CARS		1	22		0	56	1	6	1	1	0	2	15
	2-axle						2		1	1				1
	3-axle													
	4-axle													
	5-axle +			1										

8:30	CARS	1	20		1	11	8	2	3	0	0	2	11
	2-axle		5			3		1					1
	3-axle		1			3							
	4-axle					1							
	5-axle +		1										
8:45	CARS	0	12		0	50	4	4	3	3	0	1	10
	2-axle		2		4			1					2
	3-axle		1		1								
	4-axle												
	5-axle +		1										

MOVEMENT TOTALS

CARS	5	131	0	11	587	35	23	27	9	0	7	86
2-axle	0	16	0	7	14	2	3	1	1	0	0	7
3-axle	0	2	0	1	4	0	0	0	0	0	0	0
4-axle	0	1	0	0	3	0	0	2	0	0	0	3
5-axle +	1	6	0	2	0	0	0	0	0	0	0	0
TOTALS	6	156	0	21	608	37	26	30	10	0	7	96
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

CONTROL: Signalized

4	65	0	12	424	23	9	19	4	0	2	47
	0.821			0.781			0.800			0.438	

LEGENDS:

NL = Cars going from 32nd St NB making u-turn onto 32nd St SB
NT = Cars going from 32nd St NB onto Wabash Blvd NB
SL = Cars going from Wabash Blvd SB turning left onto Norman Scott Rd WB
ST = Cars going from Wabash Blvd SB onto 32nd St SB
SR = Cars going from Wabash Blvd SB turning right onto Norman Scott Rd EB
EL = Cars going from Norman Scott Rd EB turning left onto Wabash Blvd NB
ET = Cars going from 32nd St SB making hard left turn onto Wabash Blvd NB
ER = Cars going from Wabash Blvd SB making u-turn onto Wabash Blvd NB
WL = Cars going from Norman Scott Rd WB making u-turn onto Norman Scott Rd EB
WT = Cars going from Wabash Blvd SB making hard right turn onto 32nd St NB
WR = Cars going from Norman Scott Rd WB turning right onto Wabash Blvd NB

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

See legends at the bottom of the page Project # 08-4335-009 5th Leg

Location: 32nd St / Wabash Blvd & Norman Scott Rd City: San Diego Date: 12/3/08 Day: Wednesday

		LANES:	1	3	0	0	2	0	1	0.5	0.5	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		1	119		0	9	0	8	7	1	0	11	43
	2-axle						1		2	1			2	4
	3-axle													
	4-axle								1					1
	5-axle +													
16:15	CARS		1	104		0	19	6	24	4	1	2	12	42
	2-axle			2					3		1		1	5
	3-axle													
	4-axle									1				2
	5-axle +													
16:30	CARS		0	108		1	29	10	9	4	6	0	6	38
	2-axle							1	3	2			2	3
	3-axle													
	4-axle													1
	5-axle +													
16:45	CARS		2	87		1	27	9	19	4	1	1	13	29
	2-axle								2	1				3
	3-axle													
	4-axle												1	1
	5-axle +													
17:00	CARS		2	73		0	34	18	16	5	1	0	10	33
	2-axle			1					3	1			1	3
	3-axle													
	4-axle			1										2
	5-axle +													
17:15	CARS		0	70		0	37	8	6	5	3	0	16	27
	2-axle			2					3	2			2	4
	3-axle													
	4-axle									1				
	5-axle +													

17:30	CARS	0	78		0	70	6	7	3	1	2	5	22
	2-axle						1	2	1			1	2
	3-axle												
	4-axle								1				
	5-axle +												
17:45	CARS	1	51		0	74	13	11	3	1	0	13	21
	2-axle							1	1			2	3
	3-axle												
	4-axle												1
	5-axle +												

MOVEMENT TOTALS

CARS	7	690	0	2	299	70	100	35	15	5	86	255
2-axle	0	5	0	0	1	2	19	9	1	0	11	27
3-axle	0	0	0	0	0	0	0	0	0	0	0	0
4-axle	0	1	0	0	0	0	1	3	0	0	1	8
5-axle +	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	7	696	0	2	300	72	120	47	16	5	98	290
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: Signalized

	4	420	0	2	85	26	71	24	10	3	48	172
		0.883			0.689			0.772			0.871	

LEGENDS:

NL = Cars going from 32nd St NB making u-turn onto 32nd St SB
NT = Cars going from 32nd St NB onto Wabash Blvd NB
SL = Cars going from Wabash Blvd SB turning left onto Norman Scott Rd WB
ST = Cars going from Wabash Blvd SB onto 32nd St SB
SR = Cars going from Wabash Blvd SB turning right onto Norman Scott Rd EB
EL = Cars going from Norman Scott Rd EB turning left onto Wabash Blvd NB
ET = Cars going from 32nd St SB making hard left turn onto Wabash Blvd NB
ER = Cars going from Wabash Blvd SB making u-turn onto Wabash Blvd NB
WL = Cars going from Norman Scott Rd WB making u-turn onto Norman Scott Rd EB
WT = Cars going from Wabash Blvd SB making hard right turn onto 32nd St NB
WR = Cars going from Norman Scott Rd WB turning right onto Wabash Blvd NB

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-009

Location: 32nd St & Norman Scott Rd City: San Diego Date: 12/4/08 Day: Thursday

	LANES:	1	3	0	1	1.5	0.5	1	0.5	0.5	0	1	1
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS	3	29	69	63	36	2	5	12	15	38	6	29
	2-axle		3	2		2			1				
	3-axle												1
	4-axle					1							1
	5-axle +		1			1						1	
7:15	CARS	9	30	74	49	37	3	7	16	16	34	3	29
	2-axle		2			2							
	3-axle					2							
	4-axle		1										
	5-axle +												
7:30	CARS	9	42	62	50	41	4	11	5	15	45	4	25
	2-axle		1	1									
	3-axle												
	4-axle												
	5-axle +		1										
7:45	CARS	16	36	37	14	31	1	8	8	19	39	10	14
	2-axle		5			1					1		
	3-axle		1										
	4-axle												
	5-axle +		1										
8:00	CARS	12	34	33	18	25	1	16	3	12	41	6	25
	2-axle		3					1			1		
	3-axle												
	4-axle												
	5-axle +												
8:15	CARS	11	43	42	17	30	3	10	3	10	31	7	19
	2-axle		5			2					1		
	3-axle												
	4-axle												

	5-axle +												
8:30	CARS	13	42	39	14	34	3	9	9	13	31	8	11
	2-axle			2		3					2		1
	3-axle												
	4-axle												
	5-axle +												
8:45	CARS	17	50	44	21	30	4	14	5	15	36	8	18
	2-axle			1									
	3-axle					3							
	4-axle												
	5-axle +			1		1							

MOVEMENT TOTALS

CARS	90	306	400	246	264	21	80	61	115	295	52	170
2-axle	0	19	6	0	10	0	1	1	0	5	0	1
3-axle	0	1	0	0	5	0	0	0	0	0	0	1
4-axle	0	1	0	0	1	0	0	0	0	0	0	1
5-axle +	0	3	1	0	2	0	0	0	0	0	1	0
TOTALS	90	330	407	246	282	21	81	62	115	300	53	173
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begir 700 AM

CONTROL: Signalized

37	153	245	176	154	10	31	42	65	157	24	99
	0.938			0.810			0.885			0.921	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # 08-4335-009

Location: 32nd St & Norman Scott Rd City: San Diego Date: 12/4/08 Day: Thursday

		LANES:	1	3	0	1	1.5	0.5	1	0.5	0.5	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		15	72	51	33	56	4	17	6	17	24	4	30
	2-axle						1							
	3-axle													
	4-axle													
	5-axle +							1				1		
16:15	CARS		24	52	42	32	50	7	18	6	17	26	7	43
	2-axle													
	3-axle			1										
	4-axle													
	5-axle +			1										
16:30	CARS		30	65	47	45	69	6	21	11	22	15	9	31
	2-axle						1							
	3-axle			1										
	4-axle													
	5-axle +													
16:45	CARS		28	70	50	37	59	2	14	14	15	24	6	30
	2-axle		1	1			1							
	3-axle													
	4-axle													
	5-axle +			1										
17:00	CARS		36	50	43	37	44	7	15	8	22	17	5	32
	2-axle			2										
	3-axle													
	4-axle													
	5-axle +			3										
17:15	CARS		27	39	34	43	54	5	23	13	22	22	4	22
	2-axle													
	3-axle													
	4-axle													

	5-axle +												
17:30	CARS	19	39	36	32	36	10	24	24	15	22	8	37
	2-axle												
	3-axle												
	4-axle												
	5-axle +												
17:45	CARS	27	42	47	52	48	8	18	28	15	28	6	38
	2-axle			1									
	3-axle												
	4-axle												
	5-axle +												

MOVEMENT TOTALS

CARS	206	429	350	311	416	49	150	110	145	178	49	263
2-axle	1	3	1	0	3	0	0	0	0	0	0	0
3-axle	0	2	0	0	0	0	0	0	0	0	0	0
4-axle	0	0	0	0	0	0	0	0	0	0	0	0
5-axle +	0	5	0	0	0	1	0	0	0	1	0	0
TOTALS	207	439	351	311	419	50	150	110	145	179	49	263
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begir 1600 PM

CONTROL: Signalized

98	264	190	147	237	20	70	37	71	90	26	134
	0.914			0.835			0.824			0.822	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

See legends at the bottom of the page Project # 08-4335-009 5th Leg

Location: 32nd St / Wabash Blvd & Norman Scott Rd City: San Diego Date: 12/4/08 Day: Thursday

		LANES:	1	3	0	0	2	0	1	0.5	0.5	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		1	14		0	126	15	0	6	3	0	1	5
	2-axle						1		1					1
	3-axle													
	4-axle									1				1
	5-axle +			1			1							
7:15	CARS		0	10		2	121	16	2	4	2	1	0	2
	2-axle						3		2					1
	3-axle													
	4-axle									1				
	5-axle +													
7:30	CARS		0	23		1	94	14	2	5	3	0	2	6
	2-axle						3			1				2
	3-axle						1							
	4-axle													
	5-axle +													
7:45	CARS		1	15		0	67	12	2	1	1	0	1	12
	2-axle						2			1				4
	3-axle						1							
	4-axle						1							1
	5-axle +													
8:00	CARS		2	19		2	65	8	2	1	1	0	0	11
	2-axle								1					3
	3-axle													
	4-axle									1				
	5-axle +													
8:15	CARS		2	21		2	56	9	4	1	2	0	2	12
	2-axle						1		2					2
	3-axle			1			1					1		
	4-axle									1				2
	5-axle +			1										

8:30	CARS	1	22		0	47	7	1	1	0	0	3	5
	2-axle		3			4	1	1					1
	3-axle					1							
	4-axle								1				2
	5-axle +												
8:45	CARS	0	18		2	15	11	3	2	2	0	2	9
	2-axle					4		1				1	
	3-axle					2							
	4-axle												2
	5-axle +					3							

MOVEMENT TOTALS

CARS	7	142	0	9	591	92	16	21	14	1	11	62
2-axle	0	3	0	0	18	1	8	2	0	0	1	14
3-axle	0	1	0	0	6	0	0	0	0	1	0	0
4-axle	0	0	0	0	1	0	0	5	0	0	0	8
5-axle +	0	2	0	0	4	0	0	0	0	0	0	0
TOTALS	7	148	0	9	620	93	24	28	14	2	12	84
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 700 AM

CONTROL: Signalized

2	63	0	3	421	57	9	20	9	1	4	35
	0.707			0.841			0.864			0.556	

LEGENDS:

NL = Cars going from 32nd St NB making u-turn onto 32nd St SB
NT = Cars going from 32nd St NB onto Wabash Blvd NB
SL = Cars going from Wabash Blvd SB turning left onto Norman Scott Rd WB
ST = Cars going from Wabash Blvd SB onto 32nd St SB
SR = Cars going from Wabash Blvd SB turning right onto Norman Scott Rd EB
EL = Cars going from Norman Scott Rd EB turning left onto Wabash Blvd NB
ET = Cars going from 32nd St SB making hard left turn onto Wabash Blvd NB
ER = Cars going from Wabash Blvd SB making u-turn onto Wabash Blvd NB
WL = Cars going from Norman Scott Rd WB making u-turn onto Norman Scott Rd EB
WT = Cars going from Wabash Blvd SB making hard right turn onto 32nd St NB
WR = Cars going from Norman Scott Rd WB turning right onto Wabash Blvd NB

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

See legends at the bottom of the page Project # 08-4335-009 5th Leg

Location: 32nd St / Wabash Blvd & Norman Scott Rd City: San Diego Date: 12/4/08 Day: Thursday

		LANES:	1	3	0	0	2	0	1	0.5	0.5	0	1	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		3	124		2	22	17	12	4	0	0	13	55
	2-axle						2		2				3	5
	3-axle													
	4-axle													
	5-axle +													
16:15	CARS		0	84		0	23	12	22	4	8	0	25	43
	2-axle			2			3		2				4	3
	3-axle													
	4-axle													
	5-axle +													
16:30	CARS		0	105		0	21	8	12	5	6	0	11	45
	2-axle						3		1				1	4
	3-axle			2										
	4-axle													1
	5-axle +													
16:45	CARS		4	67		2	21	3	27	4	3	0	16	26
	2-axle												2	3
	3-axle						2		1					
	4-axle													1
	5-axle +			1										
17:00	CARS		1	82		0	29	10	28	4	1	0	9	31
	2-axle												1	2
	3-axle						1							
	4-axle						1						1	
	5-axle +													
17:15	CARS		2	69		0	21	13	8	5	6	0	10	35
	2-axle			1			1		1				2	3
	3-axle						1							
	4-axle								1					1
	5-axle +													

17:30	CARS	1	62		2	33	9	9	4	1	0	2	18
	2-axle					1		1				1	2
	3-axle												
	4-axle												1
	5-axle +		1			3							
17:45	CARS	1	58		0	25	10	8	5	1	0	12	25
	2-axle					1		1				1	2
	3-axle		1										
	4-axle								1				1
	5-axle +					1							

MOVEMENT TOTALS

CARS	12	651	0	6	195	82	126	35	26	0	98	278
2-axle	0	3	0	0	11	0	8	0	0	0	15	24
3-axle	0	3	0	0	4	0	1	0	0	0	0	0
4-axle	0	0	0	0	1	0	1	1	0	0	1	5
5-axle +	0	2	0	0	4	0	0	0	0	0	0	0
TOTALS	12	659	0	6	215	82	136	36	26	0	114	307
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begi 1600 PM

CONTROL: Signalized

7	385	0	4	97	40	79	17	17	0	75	186
	0.772			0.820			0.785			0.859	

LEGENDS:

NL = Cars going from 32nd St NB making u-turn onto 32nd St SB
NT = Cars going from 32nd St NB onto Wabash Blvd NB
SL = Cars going from Wabash Blvd SB turning left onto Norman Scott Rd WB
ST = Cars going from Wabash Blvd SB onto 32nd St SB
SR = Cars going from Wabash Blvd SB turning right onto Norman Scott Rd EB
EL = Cars going from Norman Scott Rd EB turning left onto Wabash Blvd NB
ET = Cars going from 32nd St SB making hard left turn onto Wabash Blvd NB
ER = Cars going from Wabash Blvd SB making u-turn onto Wabash Blvd NB
WL = Cars going from Norman Scott Rd WB making u-turn onto Norman Scott Rd EB
WT = Cars going from Wabash Blvd SB making hard right turn onto 32nd St NB
WR = Cars going from Norman Scott Rd WB turning right onto Wabash Blvd NB

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 32nd St DATE: 06/12/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: THURSDAY PROJECT# 08-4148-040

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	2	1	1	2	1	
6:00 AM	2	7	3	16	54	16	9	53	8	16	50	20	254
6:15 AM	10	16	3	61	156	34	32	53	19	38	71	45	538
6:30 AM	9	22	6	30	148	28	16	41	20	36	73	52	481
6:45 AM	4	24	0	17	164	41	23	31	23	43	73	80	523
7:00 AM	5	30	6	25	180	22	20	32	24	53	70	59	526
7:15 AM	6	21	7	26	227	43	30	44	32	81	78	72	667
7:30 AM	5	30	6	21	168	30	21	34	20	30	95	65	525
7:45 AM	6	26	3	33	127	22	22	41	21	27	77	48	453
8:00 AM	5	33	7	25	109	29	18	37	23	15	44	45	390
8:15 AM	7	44	9	22	79	57	24	46	19	3	52	58	420
8:30 AM	15	34	3	35	77	36	11	43	16	6	57	48	381
8:45 AM	13	52	8	21	79	19	19	40	15	8	31	57	362
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	87	339	61	332	1568	377	245	495	240	356	771	649	5520

AM Peak Hr Begins at: 645 AM

PEAK													
VOLUMES =	20	105	19	89	739	136	94	141	99	207	316	276	2241
PEAK HR. FACTOR:		0.878			0.814			0.788			0.865		0.840

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: 32nd St DATE: 06/12/2008 LOCATION: City of San Diego

E-W STREET: Harbor Dr DAY: THURSDAY PROJECT# 08-4148-040

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	2	1	1	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM	17	149	32	55	25	23	39	173	4	11	111	97	736
3:15 PM	11	123	23	61	61	63	77	255	10	5	68	76	833
3:30 PM	13	109	23	66	61	55	94	168	21	6	42	91	749
3:45 PM	7	106	19	37	53	39	29	200	29	4	46	57	626
4:00 PM	19	125	29	52	59	34	62	167	12	2	35	58	654
4:15 PM	9	71	16	70	45	21	61	177	10	9	32	55	576
4:30 PM	12	77	10	84	77	25	41	132	15	2	28	55	558
4:45 PM	15	81	15	53	40	14	44	196	11	3	28	60	560
5:00 PM	16	68	11	57	47	27	47	170	12	4	24	38	521
5:15 PM	22	50	13	60	60	18	41	166	15	10	36	65	556
5:30 PM	12	51	13	72	54	15	29	148	17	2	26	34	473
5:45 PM	9	48	7	45	45	12	16	120	25	6	19	48	400
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 162	NT 1058	NR 211	SL 712	ST 627	SR 346	EL 580	ET 2072	ER 181	WL 64	WT 495	WR 734	TOTAL 7242

PM Peak Hr Begins at: 300 PM

PEAK VOLUMES =	48	487	97	219	200	180	239	796	64	26	267	321	2944
PEAK HR. FACTOR:		0.798			0.809			0.803			0.701		0.884

CONTROL: Signalized

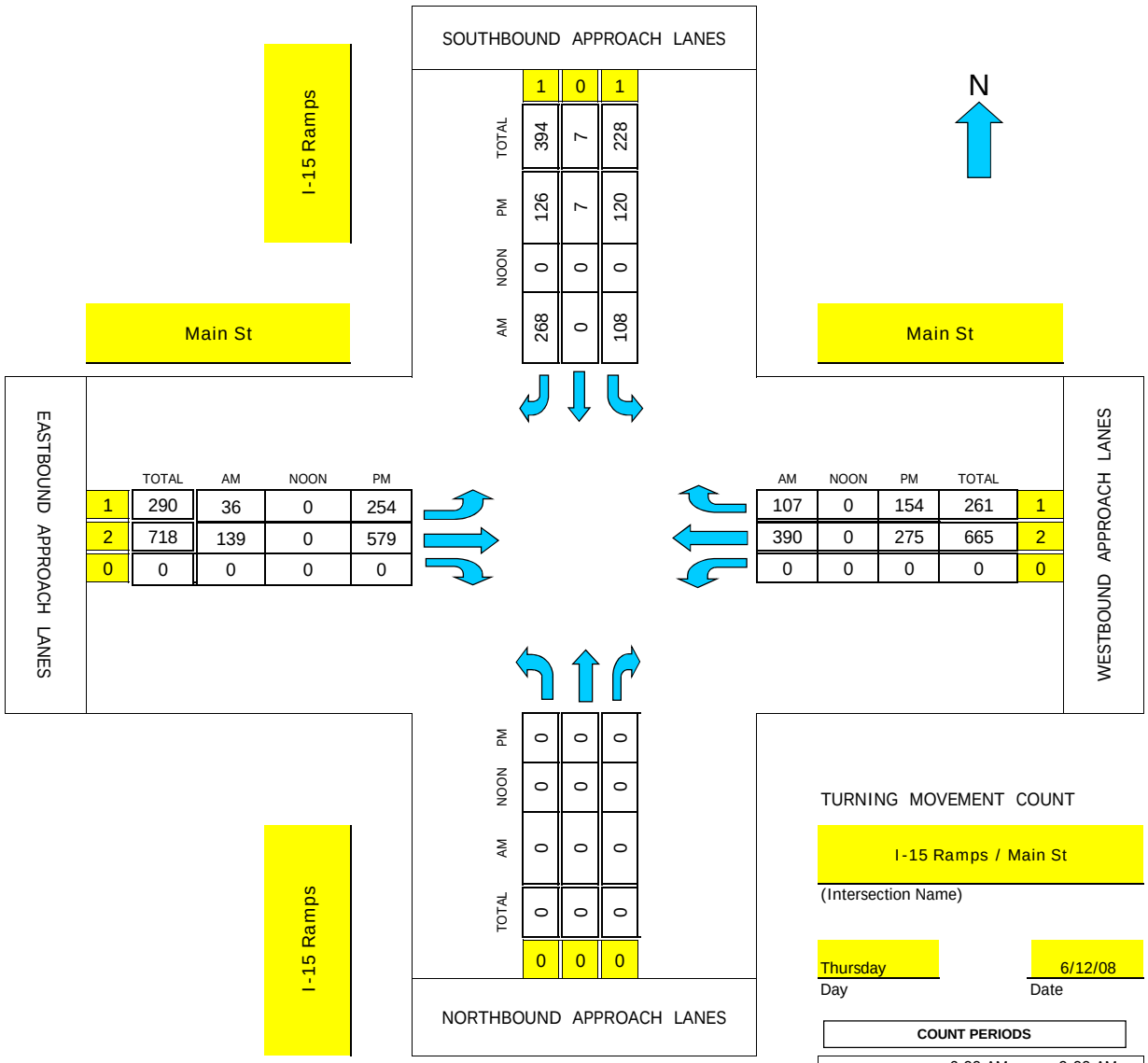
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of I-15 Ramps/Main St

Project #: 08-4148-041



TURNING MOVEMENT COUNT

I-15 Ramps / Main St

(Intersection Name)

Thursday — Day

6/12/08 — Date

COUNT PERIODS			
am	6:00 AM	-	9:00 AM
noon		-	
pm	3:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	700 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-15 Ramps DATE: 06/12/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-041

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1	0	1	1	2	0	0	2	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM				41		71	9	42			106	23	292
7:15 AM				25		90	9	25			93	24	266
7:30 AM				24		60	7	36			103	30	260
7:45 AM				18		47	11	36			88	30	230
8:00 AM				14		43	12	42			77	28	216
8:15 AM				13		36	15	50			86	13	213
8:30 AM				22		41	12	56			92	16	239
8:45 AM				24		37	15	62			89	18	245
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	0	0	0	181	0	425	90	349	0	0	734	182	1961

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	0	0	0	108	0	268	36	139	0	0	390	107	1048
PEAK HR. FACTOR:		0.000			0.817			0.858			0.934		0.897

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: I-15 Ramps DATE: 06/12/2008 LOCATION: City of San Diego

E-W STREET: Main St DAY: THURSDAY PROJECT# 08-4148-041

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1	0	1	1	2	0	0	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM				35	0	32	68	152			61	54	402
4:15 PM				27	0	30	68	160			88	33	406
4:30 PM				26	7	34	61	137			54	31	350
4:45 PM				32	0	30	57	130			72	36	357
5:00 PM				28	0	21	59	117			53	25	303
5:15 PM				24	4	26	39	107			56	18	274
5:30 PM				20	0	31	41	79			59	29	259
5:45 PM				23	0	29	31	78			53	28	242
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	215	11	233	424	960	0	0	496	254	2593

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	0	0	0	120	7	126	254	579	0	0	275	154	1515
PEAK HR. FACTOR:		0.000			0.944			0.913			0.886		0.933

CONTROL: Signalized

11-SD-005

PP	POST MILE	PS	DESCRIPTION	1997 ADT	1998 ADT	1999 ADT	2000 ADT	2001 ADT	2002 ADT	2003 ADT	2004 ADT	2005 ADT	2006 ADT
R	010.754		NB OFF TO 9TH ST./PLAZA BLV			3150			3000			3400	3500
R	010.776		SB OFF TO CLEVELAND AVE			3250			4150			3450	3850
R	010.955		SB ON FRM 8TH ST.			3750			4500			4350	4450
R	010.981		NB ON FRM CIVIC CNTR DRIVE			3500			4550			4200	4100
R	011.130		SB OFF TO 8TH STREET						9100			8700	8500
R	011.342		NB ON FRM 7TH & 8TH			9600			11000				
R	011.614		SB ON FRM MAIN ST.			5300			6200			5200	4900
R	011.708		NB OFF TO NAT'L /DIVISION			5300			5000			5200	5000
R	011.868		NB ON FRM NAT'L / DIVISION			7600			8100			9100	9600
R	012.189		SB ON FROM SB RTE 15			22700			34500			34000	32000
R	012.294		NB OFF TO NB RTE 15			24400			32000			31500	29500
R	012.373		SB OFF TO MAIN STREET			5300			3850			5600	5900
R	012.688		SB OFF TO NB RTE 15			5400			6400			8600	9100
R	012.806		DUM NB ON FR SB RTE 15			6900			8400			12700	13400
R	013.172		NB OFF TO 28TH AND NAT'L			6600			6800			7000	7000
R	013.194		SB ON FRM BOSTON @29TH			6700			6100			6500	6500
R	013.432		NB ON FRM NB 28TH/NAT'L			6700			5500			6000	5900
R	013.480		SEG SB OFF TO 28TH ST.									7000	
R	013.540		SB OFF TO 28TH / NATIONAL A			10600			9700			11000	
R	013.557		NB ON FRM WB NATIONAL			3150			3450			3850	
R	013.825		NB OFF TO SB RTE. 75			9600			10900			13000	
R	013.904		SB ON FROM BRIDGE (NB 75)			9500			11200			12000	

11-SD-005

PP	POST MILE	PS	DESCRIPTION	1997 ADT	1998 ADT	1999 ADT	2000 ADT	2001 ADT	2002 ADT	2003 ADT	2004 ADT	2005 ADT	2006 ADT
R	013.938		SB ON FROM LOGAN AT 5/75			5000			5100			7800	
R	014.028		NB OFF TO KEARNEY AVE			5600			5900			7600	
R	014.175		SB OFF TO SB RTE 75			21100			19900			21200	
R	014.281		NB ON FROM NB RTE 75			23800			23100			24400	
R	014.341		SB OFF TO BEARDSLEY/LOGAN A			3150			3450			3850	
R	014.591		NB OFF TO J ST & 19TH ST.			8200			7600			7400	
R	014.595		SB ON FROM 17TH & J STREET			4050			3800			4150	
R	014.709		SB OFF TO 17TH & IMPERIAL A			4900			5200			6900	
R	014.723		NB ON FROM 19TH STREET			6500			7000			8400	
R	014.938		NB OFF TO PERSHING & "B" ST			9700			9600				10500
R	014.957		SB ON FRM E ST.			4500			4450				4900
R	015.155		SB ON FRM PERSHING & C ST.			6600			6100			8100	
R	015.156		SB ON FROM C STREET									2950	
R	015.157		SB ON FROM PERSHING DR									4700	
R	015.260		NB ON FROM WB 94 & F ST			19200			19300			33500	
R	015.381		SB ON FROM 163 & PARK			19000			17000			17800	
R	015.530		SEG NB ON FRM B ST									4550	
R	015.535		SEG NB ON FRM PERSHING									8400	
R	015.539		NB ON FROM B & PERSHING			12000			11700			11900	
R	015.638		SB 5 OFF TO EB RTE 94									31000	
R	015.639		SB 5 OFF TO G STREET									2350	
R	015.640		SB 5 OFF TO G ST & EB 94			28000			28000			30500	

11-SD-008

P P	POST MILE	P S	DESCRIPTION	1997 ADT	1998 ADT	1999 ADT	2000 ADT	2001 ADT	2002 ADT	2003 ADT	2004 ADT	2005 ADT	2006 ADT
R	073.848		WB ON FRM CARRIZO ROAD	340			710			610			710
R	073.868		EB OFF TO CARRIZO ROAD	650			1050			870			1100
R	074.075		EB ON FRM CARRIZO ROAD	600			850			820			790
R	074.116		WB OFF TO CARRIZO ROAD	460			540			550			450
R	076.550		EB OFF TO TRUCK STOP				500						320
R	076.901		EB ON FROM TRUCK STOP				500						260
R	077.482		EB OFF TO IN KO PAH	55			50			50			55

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-001

Location: SR-75 Off Ramp @ National Ave

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00		0				12:00		30			
00:15		3				12:15		11			
00:30		3				12:30		30			
00:45		2	8		8	12:45		18	89		89
01:00		1				13:00		38			
01:15		1				13:15		30			
01:30		2				13:30		21			
01:45		1	5		5	13:45		14	103		103
02:00		1				14:00		40			
02:15		0				14:15		30			
02:30		1				14:30		25			
02:45		0	2		2	14:45		29	124		124
03:00		0				15:00		37			
03:15		2				15:15		37			
03:30		0				15:30		28			
03:45		0	2		2	15:45		49	151		151
04:00		2				16:00		42			
04:15		0				16:15		32			
04:30		1				16:30		35			
04:45		1	4		4	16:45		60	169		169
05:00		0				17:00		47			
05:15		3				17:15		56			
05:30		6				17:30		28			
05:45		15	24		24	17:45		38	169		169
06:00		16				18:00		37			
06:15		20				18:15		33			
06:30		19				18:30		41			
06:45		27	82		82	18:45		28	139		139
07:00		17				19:00		25			
07:15		27				19:15		16			
07:30		40				19:30		12			
07:45		61	145		145	19:45		20	73		73
08:00		52				20:00		11			
08:15		33				20:15		13			
08:30		34				20:30		4			
08:45		28	147		147	20:45		11	39		39
09:00		31				21:00		8			
09:15		25				21:15		13			
09:30		37				21:30		4			
09:45		13	106		106	21:45		10	35		35
10:00		9				22:00		8			
10:15		11				22:15		12			
10:30		22				22:30		9			
10:45		13	55		55	22:45		7	36		36
11:00		23				23:00		7			
11:15		7				23:15		9			
11:30		25				23:30		1			
11:45		30	85		85	23:45		6	23		23
Total Vol.			665		665				1150		1150

Daily Totals

NB	SB	EB	WB
	1815	Combined	
		1815	

	AM		PM	
Split %	100.0%	36.6%	100.0%	63.4%
Peak Hour	07:30	07:30	16:30	16:30
Volume	186	186	198	198
P.H.F.	0.76	0.76	0.83	0.83

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-001

Location: SR-75 Off Ramp @ National Ave

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00		1				12:00		32			
00:15		1				12:15		23			
00:30		0				12:30		32			
00:45		3	5		5	12:45		31	118		118
01:00		0				13:00		18			
01:15		0				13:15		24			
01:30		3				13:30		24			
01:45		1	4		4	13:45		22	88		88
02:00		0				14:00		29			
02:15		0				14:15		24			
02:30		1				14:30		27			
02:45		0	1		1	14:45		31	111		111
03:00		2				15:00		37			
03:15		1				15:15		44			
03:30		0				15:30		25			
03:45		0	3		3	15:45		44	150		150
04:00		0				16:00		27			
04:15		0				16:15		44			
04:30		1				16:30		38			
04:45		0	1		1	16:45		60	169		169
05:00		5				17:00		43			
05:15		6				17:15		39			
05:30		9				17:30		50			
05:45		17	37		37	17:45		31	163		163
06:00		14				18:00		40			
06:15		16				18:15		38			
06:30		21				18:30		36			
06:45		22	73		73	18:45		34	148		148
07:00		36				19:00		17			
07:15		22				19:15		11			
07:30		38				19:30		24			
07:45		42	138		138	19:45		15	67		67
08:00		43				20:00		14			
08:15		30				20:15		18			
08:30		26				20:30		13			
08:45		33	132		132	20:45		12	57		57
09:00		20				21:00		10			
09:15		18				21:15		15			
09:30		21				21:30		7			
09:45		25	84		84	21:45		6	38		38
10:00		33				22:00		5			
10:15		17				22:15		9			
10:30		24				22:30		3			
10:45		30	104		104	22:45		6	23		23
11:00		41				23:00		11			
11:15		20				23:15		5			
11:30		40				23:30		4			
11:45		31	132		132	23:45		3	23		23
Total Vol.			714		714				1155		1155

Daily Totals

NB	SB	EB	WB
	1869		

Combined: **1869**

	AM		PM	
Split %	100.0%	38.2%	100.0%	61.8%
Peak Hour	07:30	07:30	16:45	16:45
Volume	153	153	192	192
P.H.F.	0.89	0.89	0.80	0.80

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-002

Location: SR-75 On Ramp @ Cesar Chavez Pkwy

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00			4			12:00			16		
00:15			2			12:15			23		
00:30			5			12:30			30		
00:45			3	14	14	12:45			20	89	89
01:00			0			13:00			27		
01:15			0			13:15			26		
01:30			4			13:30			38		
01:45			1	5	5	13:45			41	132	132
02:00			0			14:00			29		
02:15			0			14:15			29		
02:30			0			14:30			27		
02:45			0	0		14:45			45	130	130
03:00			0			15:00			48		
03:15			0			15:15			31		
03:30			1			15:30			40		
03:45			0	1	1	15:45			45	164	164
04:00			0			16:00			48		
04:15			1			16:15			33		
04:30			2			16:30			40		
04:45			2	5	5	16:45			44	165	165
05:00			2			17:00			61		
05:15			8			17:15			61		
05:30			13			17:30			36		
05:45			14	37	37	17:45			44	202	202
06:00			16			18:00			30		
06:15			18			18:15			20		
06:30			23			18:30			18		
06:45			27	84	84	18:45			15	83	83
07:00			25			19:00			17		
07:15			25			19:15			15		
07:30			33			19:30			18		
07:45			24	107	107	19:45			11	61	61
08:00			21			20:00			12		
08:15			28			20:15			11		
08:30			28			20:30			14		
08:45			23	100	100	20:45			16	53	53
09:00			24			21:00			24		
09:15			19			21:15			15		
09:30			14			21:30			20		
09:45			19	76	76	21:45			20	79	79
10:00			30			22:00			22		
10:15			20			22:15			26		
10:30			19			22:30			25		
10:45			22	91	91	22:45			13	86	86
11:00			30			23:00			8		
11:15			38			23:15			13		
11:30			38			23:30			9		
11:45			28	134	134	23:45			4	34	34
Total Vol.				654	654					1278	1278

Daily Totals

NB	SB	EB	WB
		Combined	1932

1932

	AM		PM	
Split %	100.0%	33.9%	100.0%	66.1%
Peak Hour	11:00	11:00	16:30	16:30
Volume	134	134	206	206
P.H.F.	0.88	0.88	0.84	0.84

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-002

Location: SR-75 On Ramp @ Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB	PM Period	NB	SB	EB		WB
00:00			3			12:00			26		
00:15			2			12:15			42		
00:30			3			12:30			30		
00:45			3	11	11	12:45			31	129	129
01:00			2			13:00			26		
01:15			0			13:15			30		
01:30			2			13:30			28		
01:45			0	4	4	13:45			27	111	111
02:00			2			14:00			23		
02:15			0			14:15			25		
02:30			1			14:30			23		
02:45			0	3	3	14:45			36	107	107
03:00			0			15:00			36		
03:15			0			15:15			36		
03:30			1			15:30			48		
03:45			0	1	1	15:45			35	155	155
04:00			1			16:00			33		
04:15			0			16:15			42		
04:30			3			16:30			44		
04:45			2	6	6	16:45			57	176	176
05:00			1			17:00			46		
05:15			7			17:15			44		
05:30			10			17:30			31		
05:45			9	27	27	17:45			28	149	149
06:00			16			18:00			27		
06:15			19			18:15			33		
06:30			18			18:30			27		
06:45			20	73	73	18:45			19	106	106
07:00			21			19:00			25		
07:15			25			19:15			15		
07:30			27			19:30			13		
07:45			18	91	91	19:45			23	76	76
08:00			22			20:00			19		
08:15			22			20:15			15		
08:30			27			20:30			16		
08:45			23	94	94	20:45			25	75	75
09:00			19			21:00			23		
09:15			31			21:15			26		
09:30			21			21:30			34		
09:45			30	101	101	21:45			19	102	102
10:00			15			22:00			27		
10:15			20			22:15			16		
10:30			17			22:30			17		
10:45			28	80	80	22:45			12	72	72
11:00			26			23:00			9		
11:15			32			23:15			5		
11:30			24			23:30			10		
11:45			33	115	115	23:45			3	27	27
Total Vol.				606	606					1285	1285

Daily Totals

NB	SB	EB	WB
		Combined	1891

1891

	AM		PM	
Split %	100.0%	32.0%	100.0%	68.0%
Peak Hour	11:45	11:45	16:30	16:30
Volume	131	131	191	191
P.H.F.	0.78	0.78	0.84	0.84

Prepared by NDS/ATD

Volumes for: Wednesday, February 03, 2010		City:	San Diego	Daily Totals NB	SB	EB	WB	Total
Location:	Cesar Chavez Pkwy between Kearny Ave & Logan Ave	Project:	10-4045-001	5,028	9,142	0	0	14,170

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	9		8					12:00	97		128				
00:15	1		9					12:15	84		108				
00:30	4		3					12:30	86		129				
00:45	6	20	5	25			45	12:45	73	340	130	495			835
01:00	1		8					13:00	81		140				
01:15	3		3					13:15	68		127				
01:30	7		12					13:30	96		132				
01:45	5	16	10	33			49	13:45	102	347	122	521			868
02:00	3		3					14:00	84		132				
02:15	2		8					14:15	98		158				
02:30	3		4					14:30	131		164				
02:45	3	11	9	24			35	14:45	140	453	180	634			1087
03:00	0		8					15:00	136		130				
03:15	2		14					15:15	133		156				
03:30	3		20					15:30	122		159				
03:45	1	6	21	63			69	15:45	125	516	141	586			1102
04:00	9		26					16:00	110		105				
04:15	3		46					16:15	126		119				
04:30	9		79					16:30	110		104				
04:45	8	29	90	241			270	16:45	101	447	140	468			915
05:00	12		114					17:00	122		108				
05:15	16		138					17:15	115		128				
05:30	14		212					17:30	89		102				
05:45	20	62	174	638			700	17:45	87	413	106	444			857
06:00	26		125					18:00	84		113				
06:15	30		165					18:15	57		119				
06:30	30		155					18:30	60		107				
06:45	48	134	164	609			743	18:45	62	263	90	429			692
07:00	47		140					19:00	38		84				
07:15	57		152					19:15	51		63				
07:30	59		163					19:30	53		61				
07:45	59	222	182	637			859	19:45	26	168	66	274			442
08:00	61		181					20:00	49		84				
08:15	58		219					20:15	42		73				
08:30	55		196					20:30	29		49				
08:45	62	236	156	752			988	20:45	59	179	52	258			437
09:00	74		165					21:00	38		56				
09:15	63		138					21:15	30		65				
09:30	58		138					21:30	32		49				
09:45	61	256	132	573			829	21:45	23	123	50	220			343
10:00	67		116					22:00	26		38				
10:15	55		136					22:15	22		48				
10:30	75		121					22:30	38		39				
10:45	74	271	133	506			777	22:45	16	102	33	158			260
11:00	83		119					23:00	19		29				
11:15	82		122					23:15	22		28				
11:30	74		103					23:30	18		23				
11:45	101	340	117	461			801	23:45	15	74	13	93			167
Total Vol.		1603		4562			6165			3425		4580			8005

	NB	SB	EB	WB	Total
Daily Totals :	5,028	9,142	0	0	14,170

	AM				PM			
Split %	26.0%	74.0%	43.5%		42.8%	57.2%		56.5%
AM				PM				
Peak Hr.	11:45	07:45	07:45	Peak Hr.	14:30	14:00		14:30
Volume	368	778	1011	Volume	540	634		1170
P.H.F.	0.911	0.888	0.912	P.H.F.	0.964	0.881		0.914
7 - 9 Vol.	458	1389	1847	4 - 6 Vol.	860	912		1772
Peak Hr.	07:30	07:45	07:45	Peak Hr.	16:15	16:30		16:15
Volume	237	778	1011	Volume	459	480		930
P.H.F.	0.971	0.888	0.912	P.H.F.	0.911	0.857		0.949

Day: Wednesday
Date: 06/11/08

Classification Report / Prepared by: National Data & Surveying Services
Location: Cesar Chavez btwn National Ave & Newton Ave

City: San Diego
Project #: 08-4149-003N

North Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	0	67	9	0	0	0	0	1	0	0	0	0	0	77
01:00	0	34	1	0	3	0	0	0	0	0	0	0	0	38
02:00	0	25	7	0	0	0	0	0	1	0	0	0	0	33
03:00	0	13	1	0	0	0	0	0	0	0	0	0	0	14
04:00	0	33	4	0	2	0	0	0	0	0	0	0	0	39
05:00	0	77	11	1	6	1	0	1	0	0	0	0	0	97
06:00	1	166	21	3	19	1	0	2	0	0	0	0	0	213
07:00	2	179	27	4	13	2	1	5	3	0	2	0	0	238
08:00	0	190	37	3	27	2	1	12	6	0	2	0	0	280
09:00	1	200	51	3	21	8	0	10	3	0	3	0	0	300
10:00	0	201	47	2	19	1	1	13	3	0	3	0	0	290
11:00	4	273	49	5	24	5	1	19	4	0	3	0	0	387
12:00 PM	2	286	59	5	22	4	0	21	9	0	8	0	0	416
13:00	7	292	64	3	20	6	1	9	3	0	5	0	0	410
14:00	5	325	70	5	11	6	3	30	27	0	18	0	0	500
15:00	2	430	69	2	13	4	0	33	13	0	8	0	0	574
16:00	4	456	45	0	10	2	1	30	11	0	6	0	0	565
17:00	3	368	35	4	13	2	0	19	8	0	11	0	0	463
18:00	2	228	29	2	6	5	0	13	3	0	0	0	0	288
19:00	0	187	15	1	2	1	1	5	2	0	2	0	0	216
20:00	3	180	14	0	10	0	0	8	0	0	0	0	0	215
21:00	1	322	28	6	5	2	0	26	19	0	7	0	0	416
22:00	0	243	13	2	2	5	0	12	1	0	6	0	0	284
23:00	0	129	17	0	1	1	0	3	0	0	0	0	0	151
Totals	37	4904	723	51	249	58	10	272	116		84			6504
% of Totals	1%	75%	11%	1%	4%	1%	0%	4%	2%		1%			100%
	8	1458	265	21	134	20	4	63	20	0	13	0	0	2006
% AM	0%	22%	4%	0%	2%	0%	0%	1%	0%		0%			31%
AM Peak Hour	11:00	11:00	09:00	11:00	08:00	09:00	07:00	11:00	08:00		09:00			11:00
Volume	4	273	51	5	27	8	1	19	6		3			387
	29	3446	458	30	115	38	6	209	96	0	71	0	0	4498
% PM	0%	53%	7%	0%	2%	1%	0%	3%	1%		1%			69%
PM Peak Hour	13:00	16:00	14:00	21:00	12:00	13:00	14:00	15:00	14:00		14:00			15:00
Volume	7	456	70	6	22	6	3	33	27		18			574

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	518 ⟷	8%	826 ⟷	13%	1028 ⟷	16%	4132 ⟷	64%

Day: Wednesday
Date: 06/11/08

Classification Report / Prepared by: National Data & Surveying Services
Location: Cesar Chavez btwn National Ave & Newton Ave

City: San Diego
Project #: 08-4149-003S

South Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	0	21	2	0	1	0	0	0	1	0	0	0	0	25
01:00	0	21	1	0	3	0	0	0	0	0	0	0	0	25
02:00	0	21	3	0	0	0	0	0	0	0	0	0	0	24
03:00	0	44	6	0	2	0	0	0	2	0	0	0	0	54
04:00	0	145	23	0	1	0	0	4	2	0	1	0	0	176
05:00	2	374	64	0	19	1	0	22	1	0	4	0	0	487
06:00	4	367	47	4	18	3	0	28	5	0	9	0	0	485
07:00	1	376	54	4	17	1	0	28	7	0	12	0	0	500
08:00	3	345	40	1	13	4	0	23	5	0	9	0	0	443
09:00	4	255	42	1	12	4	0	17	3	0	3	0	0	341
10:00	2	201	35	2	16	4	0	12	5	0	5	0	0	282
11:00	2	253	31	4	18	1	0	17	8	0	4	0	0	338
12:00 PM	3	208	43	1	24	4	0	17	4	0	6	0	0	310
13:00	4	244	40	4	18	3	0	10	4	0	8	0	0	335
14:00	2	253	49	4	14	3	0	11	2	0	4	0	0	342
15:00	2	284	35	1	9	2	0	17	2	0	5	0	0	357
16:00	3	269	23	2	12	0	0	14	1	0	3	0	0	327
17:00	3	211	16	2	11	2	0	9	1	0	4	0	0	259
18:00	4	239	25	0	6	2	0	17	2	0	4	0	0	299
19:00	0	133	7	1	4	0	0	5	0	0	0	0	0	150
20:00	1	90	8	0	2	0	0	1	2	0	2	0	0	106
21:00	2	100	6	1	2	0	0	3	1	0	2	0	0	117
22:00	1	77	2	0	0	0	0	1	0	0	0	0	0	81
23:00	0	66	6	0	1	1	0	0	0	0	0	0	0	74
Totals	43	4597	608	32	223	35		256	58		85			5937
% of Totals	1%	77%	10%	1%	4%	1%		4%	1%		1%			100%
	18	2423	348	16	120	18	0	151	39	0	47	0	0	3180
% AM	0%	41%	6%	0%	2%	0%		3%	1%		1%			54%
AM Peak Hour	06:00	07:00	05:00	06:00	05:00	08:00		06:00	11:00		07:00			07:00
Volume	4	376	64	4	19	4		28	8		12			500
	25	2174	260	16	103	17	0	105	19	0	38	0	0	2757
% PM	0%	37%	4%	0%	2%	0%		2%	0%		1%			46%
PM Peak Hour	13:00	15:00	14:00	13:00	12:00	12:00		12:00	12:00		13:00			15:00
Volume	4	284	49	4	24	4		17	4		8			357

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	943 ⟷	16%	645 ⟷	11%	586 ⟷	10%	3763 ⟷	63%

Day: Wednesday
Date: 6/11/08

Classification Report / Prepared by: National Data & Surveying Services
Location: Cesar Chavez btwn National Ave & Newton Ave

City: San Diego
Project #: 08-4149-003

SUMMARY

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	0	88	11	0	1	0	0	1	1	0	0	0	0	102
01:00	0	55	2	0	6	0	0	0	0	0	0	0	0	63
02:00	0	46	10	0	0	0	0	0	1	0	0	0	0	57
03:00	0	57	7	0	2	0	0	0	2	0	0	0	0	68
04:00	0	178	27	0	3	0	0	4	2	0	1	0	0	215
05:00	2	451	75	1	25	2	0	23	1	0	4	0	0	584
06:00	5	533	68	7	37	4	0	30	5	0	9	0	0	698
07:00	3	555	81	8	30	3	1	33	10	0	14	0	0	738
08:00	3	535	77	4	40	6	1	35	11	0	11	0	0	723
09:00	5	455	93	4	33	12	0	27	6	0	6	0	0	641
10:00	2	402	82	4	35	5	1	25	8	0	8	0	0	572
11:00	6	526	80	9	42	6	1	36	12	0	7	0	0	725
12:00 PM	5	494	102	6	46	8	0	38	13	0	14	0	0	726
13:00	11	536	104	7	38	9	1	19	7	0	13	0	0	745
14:00	7	578	119	9	25	9	3	41	29	0	22	0	0	842
15:00	4	714	104	3	22	6	0	50	15	0	13	0	0	931
16:00	7	725	68	2	22	2	1	44	12	0	9	0	0	892
17:00	6	579	51	6	24	4	0	28	9	0	15	0	0	722
18:00	6	467	54	2	12	7	0	30	5	0	4	0	0	587
19:00	0	320	22	2	6	1	1	10	2	0	2	0	0	366
20:00	4	270	22	0	12	0	0	9	2	0	2	0	0	321
21:00	3	422	34	7	7	2	0	29	20	0	9	0	0	533
22:00	1	320	15	2	2	5	0	13	1	0	6	0	0	365
23:00	0	195	23	0	2	2	0	3	0	0	0	0	0	225
Totals	80	9501	1331	83	472	93	10	528	174		169			12441
% of Totals	1%	76%	11%	1%	4%	1%	0%	4%	1%		1%			100%
	26	3881	613	37	254	38	4	214	59	0	60	0	0	5186
% AM	0%	31%	5%	0%	2%	0%	0%	2%	0%		0%			42%
AM Peak Hour	11:00	07:00	09:00	11:00	11:00	09:00	07:00	11:00	11:00		07:00			07:00
Volume	6	555	93	9	42	12	1	36	12		14			738
	54	5620	718	46	218	55	6	314	115	0	109	0	0	7255
% PM	0%	45%	6%	0%	2%	0%	0%	3%	1%		1%			58%
PM Peak Hour	13:00	16:00	14:00	14:00	12:00	13:00	14:00	15:00	14:00		14:00			15:00
Volume	11	725	119	9	46	9	3	50	29		22			931

Peak Period Totals	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
	Volume	%	Volume	%	Volume	%	Volume	%
	1461 ⟷	12%	1471 ⟷	12%	1614 ⟷	13%	7895 ⟷	63%

Day: Thursday
Date: 06/12/08

Classification Report / Prepared by: National Data & Surveying Services
Location: Cesar Chavez btwn National Ave & Newton Ave

City: San Diego
Project #: 08-4149-003N

North Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	0	74	4	0	0	0	0	0	0	0	0	0	0	78
01:00	0	25	5	0	0	0	0	0	0	0	0	0	0	30
02:00	0	19	4	0	0	0	0	1	0	0	0	0	0	24
03:00	0	17	0	0	0	0	0	0	0	0	0	0	0	17
04:00	1	41	5	0	1	0	0	0	0	0	0	0	0	48
05:00	1	75	7	1	6	0	0	0	1	0	0	0	0	91
06:00	1	154	21	5	13	0	2	5	1	0	0	0	0	202
07:00	3	169	35	4	20	4	0	9	2	0	1	0	0	247
08:00	1	185	42	6	27	3	1	9	5	0	0	0	0	279
09:00	2	173	43	5	19	4	1	16	8	0	5	0	0	276
10:00	1	204	48	3	21	5	0	10	4	0	3	0	0	299
11:00	2	258	47	4	24	3	0	14	10	0	4	0	0	366
12:00 PM	5	266	68	4	24	2	0	17	9	0	3	0	0	398
13:00	4	330	36	7	17	5	0	25	13	0	9	0	0	446
14:00	2	425	84	2	14	8	1	42	24	0	14	0	0	616
15:00	5	400	72	4	13	9	0	67	71	0	32	0	0	673
16:00	3	436	52	5	14	7	0	44	32	0	18	0	0	611
17:00	4	367	43	4	14	4	0	28	10	0	6	0	0	480
18:00	3	245	25	5	5	4	0	16	4	0	4	0	0	311
19:00	3	168	20	1	4	0	1	5	2	0	0	0	0	204
20:00	0	197	17	2	6	0	0	4	0	0	3	0	0	229
21:00	1	159	19	1	5	1	0	3	0	0	1	0	0	190
22:00	0	201	21	0	1	0	1	12	1	0	0	0	0	237
23:00	0	135	10	0	1	0	0	3	1	0	1	0	0	151
Totals	42	4723	728	63	249	59	7	330	198		104			6503
% of Totals	1%	73%	11%	1%	4%	1%	0%	5%	3%		2%			100%
	12	1394	261	28	131	19	4	64	31	0	13	0	0	1957
% AM	0%	21%	4%	0%	2%	0%	0%	1%	0%		0%			30%
AM Peak Hour	07:00	11:00	10:00	08:00	08:00	10:00	06:00	09:00	11:00		09:00			11:00
Volume	3	258	48	6	27	5	2	16	10		5			366
	30	3329	467	35	118	40	3	266	167	0	91	0	0	4546
% PM	0%	51%	7%	1%	2%	1%	0%	4%	3%		1%			70%
PM Peak Hour	12:00	16:00	14:00	13:00	12:00	15:00	14:00	15:00	15:00		15:00			15:00
Volume	5	436	84	7	24	9	1	67	71		32			673

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	526 ⟷	8%	844 ⟷	13%	1091 ⟷	17%	4042 ⟷	62%

Day: Thursday
Date: 06/12/08

Classification Report / Prepared by: National Data & Surveying Services
Location: Cesar Chavez btwn National Ave & Newton Ave

City: San Diego
Project #: 08-4149-003S

South Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	0	23	1	0	0	0	0	0	1	0	0	0	0	25
01:00	0	17	1	0	1	0	0	0	0	0	0	0	0	19
02:00	0	20	2	0	1	0	0	0	0	0	0	0	0	23
03:00	0	44	4	0	0	0	0	0	0	0	0	0	0	48
04:00	1	142	17	0	4	0	0	0	1	0	0	0	0	165
05:00	2	373	68	0	14	1	0	33	1	0	8	0	0	500
06:00	3	353	66	3	18	2	0	40	7	0	10	0	0	502
07:00	4	325	55	2	24	3	0	49	4	0	15	0	0	481
08:00	3	293	36	6	13	4	0	24	14	0	16	0	0	409
09:00	2	256	39	1	21	2	0	18	4	0	3	0	0	346
10:00	4	240	45	2	24	5	0	19	5	0	5	0	0	349
11:00	5	278	46	2	19	4	0	30	8	0	8	0	0	400
12:00 PM	3	304	55	5	15	0	0	30	9	0	15	0	0	436
13:00	1	266	50	4	10	0	0	17	2	0	7	0	0	357
14:00	4	245	56	5	33	5	0	12	3	0	4	0	0	367
15:00	3	228	47	2	25	2	0	13	3	0	10	0	0	333
16:00	0	254	43	3	30	0	0	8	2	0	1	0	0	341
17:00	4	209	31	3	24	0	0	6	0	0	1	0	0	278
18:00	2	124	19	0	9	0	0	3	0	0	0	0	0	157
19:00	2	97	18	1	6	1	0	4	0	0	0	0	0	129
20:00	2	90	12	0	8	0	0	3	2	0	1	0	0	118
21:00	0	96	9	1	2	0	0	2	0	0	0	0	0	110
22:00	0	78	9	0	4	0	0	1	0	0	0	0	0	92
23:00	0	49	7	0	3	0	0	0	0	0	0	0	0	59
Totals	45	4404	736	40	308	29		312	66		104			6044
% of Totals	1%	73%	12%	1%	5%	0%		5%	1%		2%			100%
	24	2364	380	16	139	21	0	213	45	0	65	0	0	3267
% AM	0%	39%	6%	0%	2%	0%		4%	1%		1%			54%
AM Peak Hour	11:00	05:00	05:00	08:00	07:00	10:00		07:00	08:00		08:00			06:00
Volume	5	373	68	6	24	5		49	14		16			502
	21	2040	356	24	169	8	0	99	21	0	39	0	0	2777
% PM	0%	34%	6%	0%	3%	0%		2%	0%		1%			46%
PM Peak Hour	14:00	12:00	14:00	12:00	14:00	14:00		12:00	12:00		12:00			12:00
Volume	4	304	56	5	33	5		30	9		15			436

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	890 ⟷	15%	793 ⟷	13%	619 ⟷	10%	3742 ⟷	62%

Day: Thursday
Date: 06/12/08

Classification Report / Prepared by: National Data & Surveying Services
Location: Cesar Chavez btwn National Ave & Newton Ave

City: San Diego
Project #: 08-4149-003

SUMMARY

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	0	97	5	0	0	0	0	0	1	0	0	0	0	103
01:00	0	42	6	0	1	0	0	0	0	0	0	0	0	49
02:00	0	39	6	0	1	0	0	1	0	0	0	0	0	47
03:00	0	61	4	0	0	0	0	0	0	0	0	0	0	65
04:00	2	183	22	0	5	0	0	0	1	0	0	0	0	213
05:00	3	448	75	1	20	1	0	33	2	0	8	0	0	591
06:00	4	507	87	8	31	2	2	45	8	0	10	0	0	704
07:00	7	494	90	6	44	7	0	58	6	0	16	0	0	728
08:00	4	478	78	12	40	7	1	33	19	0	16	0	0	688
09:00	4	429	82	6	40	6	1	34	12	0	8	0	0	622
10:00	5	444	93	5	45	10	0	29	9	0	8	0	0	648
11:00	7	536	93	6	43	7	0	44	18	0	12	0	0	766
12:00 PM	8	570	123	9	39	2	0	47	18	0	18	0	0	834
13:00	5	596	86	11	27	5	0	42	15	0	16	0	0	803
14:00	6	670	140	7	47	13	1	54	27	0	18	0	0	983
15:00	8	628	119	6	38	11	0	80	74	0	42	0	0	1006
16:00	3	690	95	8	44	7	0	52	34	0	19	0	0	952
17:00	8	576	74	7	38	4	0	34	10	0	7	0	0	758
18:00	5	369	44	5	14	4	0	19	4	0	4	0	0	468
19:00	5	265	38	2	10	1	1	9	2	0	0	0	0	333
20:00	2	287	29	2	14	0	0	7	2	0	4	0	0	347
21:00	1	255	28	2	7	1	0	5	0	0	1	0	0	300
22:00	0	279	30	0	5	0	1	13	1	0	0	0	0	329
23:00	0	184	17	0	4	0	0	3	1	0	1	0	0	210
Totals	87	9127	1464	103	557	88	7	642	264		208			12547
% of Totals	1%	73%	12%	1%	4%	1%	0%	5%	2%		2%			100%
	36	3758	641	44	270	40	4	277	76	0	78	0	0	5224
% AM	0%	30%	5%	0%	2%	0%	0%	2%	1%		1%			42%
AM Peak Hour	07:00	11:00	10:00	08:00	10:00	10:00	06:00	07:00	08:00		07:00			11:00
Volume	7	536	93	12	45	10	2	58	19		16			766
	51	5369	823	59	287	48	3	365	188	0	130	0	0	7323
% PM	0%	43%	7%	0%	2%	0%	0%	3%	1%		1%			58%
PM Peak Hour	12:00	16:00	14:00	13:00	14:00	14:00	14:00	15:00	15:00		15:00			15:00
Volume	8	690	140	11	47	13	1	80	74		42			1006

Peak Period Totals	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
	Volume	%	Volume	%	Volume	%	Volume	%
	1416 ⟷	11%	1637 ⟷	13%	1710 ⟷	14%	7784 ⟷	62%

Prepared by NDS/ATD

Volumes for: Wednesday, February 03, 2010		City:	San Diego	Daily Totals				
				NB	SB	EB	WB	Total
Location:	Cesar Chavez Pkwy between Newton Ave & Main St	Project:	10-4045-002	6,129	5,683	0	0	11,812

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	14		1					12:00	81		58				
00:15	8		6					12:15	113		74				
00:30	15		2					12:30	97		78				
00:45	18	55	2	11			66	12:45	85	376	82	292			668
01:00	7		4					13:00	87		72				
01:15	3		2					13:15	85		67				
01:30	8		4					13:30	115		78				
01:45	4	22	1	11			33	13:45	127	414	108	325			739
02:00	6		1					14:00	106		96				
02:15	5		1					14:15	135		105				
02:30	3		3					14:30	225		106				
02:45	1	15	5	10			25	14:45	204	670	93	400			1070
03:00	4		3					15:00	142		81				
03:15	2		9					15:15	157		95				
03:30	1		14					15:30	174		113				
03:45	1	8	16	42			50	15:45	136	609	81	370			979
04:00	4		19					16:00	145		42				
04:15	2		42					16:15	102		76				
04:30	6		61					16:30	142		72				
04:45	7	19	74	196			215	16:45	136	525	103	293			818
05:00	22		104					17:00	150		73				
05:15	30		134					17:15	117		62				
05:30	23		191					17:30	124		53				
05:45	38	113	177	606			719	17:45	112	503	54	242			745
06:00	34		116					18:00	91		36				
06:15	53		119					18:15	59		34				
06:30	59		112					18:30	67		22				
06:45	53	199	131	478			677	18:45	66	283	35	127			410
07:00	55		102					19:00	48		16				
07:15	52		116					19:15	50		17				
07:30	77		149					19:30	57		21				
07:45	67	251	125	492			743	19:45	48	203	26	80			283
08:00	50		121					20:00	45		18				
08:15	73		110					20:15	40		26				
08:30	51		132					20:30	42		18				
08:45	66	240	86	449			689	20:45	39	166	21	83			249
09:00	65		89					21:00	60		22				
09:15	59		79					21:15	68		30				
09:30	64		73					21:30	49		16				
09:45	63	251	99	340			591	21:45	44	221	27	95			316
10:00	69		64					22:00	56		25				
10:15	67		69					22:15	38		30				
10:30	63		66					22:30	77		24				
10:45	67	266	88	287			553	22:45	35	206	23	102			308
11:00	81		54					23:00	45		17				
11:15	68		79					23:15	40		18				
11:30	77		77					23:30	65		16				
11:45	114	340	80	290			630	23:45	24	174	11	62			236
Total Vol.		1779		3212			4991			4350		2471			6821

	NB	SB	EB	WB	Total
Daily Totals :	6,129	5,683	0	0	11,812

	AM				PM			
Split %	35.6%	64.4%	42.3%		63.8%	36.2%		57.7%
AM				PM				
Peak Hr.	11:45	05:15	07:30	Peak Hr.	14:30	13:45		14:30
Volume	405	618	772	Volume	728	415		1103
P.H.F.	0.888	0.809	0.854	P.H.F.	0.809	0.961		0.833
7 - 9 Vol.	491	941	1432	4 - 6 Vol.	1028	535		1563
Peak Hr.	07:30	07:15	07:30	Peak Hr.	16:30	16:15		16:30
Volume	267	511	772	Volume	545	324		855
P.H.F.	0.867	0.857	0.854	P.H.F.	0.908	0.786		0.894

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-004

Location: Cesar Chavez Pkwy btwn Main St & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	24		7					12:00	65		49				
00:15	16		6					12:15	61		48				
00:30	16		4					12:30	88		54				
00:45	11	67	3	20			87	12:45	59	273	69	220			493
01:00	10		8					13:00	75		65				
01:15	5		3					13:15	83		64				
01:30	6		4					13:30	90		64				
01:45	7	28	8	23			51	13:45	82	330	80	273			603
02:00	5		6					14:00	85		75				
02:15	5		1					14:15	102		79				
02:30	3		2					14:30	195		94				
02:45	1	14	8	17			31	14:45	150	532	75	323			855
03:00	2		6					15:00	201		60				
03:15	3		10					15:15	118		59				
03:30	6		7					15:30	118		83				
03:45	1	12	12	35			47	15:45	130	567	98	300			867
04:00	3		21					16:00	118		86				
04:15	2		25					16:15	97		81				
04:30	7		38					16:30	122		74				
04:45	11	23	55	139			162	16:45	156	493	73	314			807
05:00	15		61					17:00	137		76				
05:15	21		84					17:15	146		73				
05:30	27		124					17:30	102		53				
05:45	29	92	154	423			515	17:45	114	499	58	260			759
06:00	29		112					18:00	84		78				
06:15	35		115					18:15	66		67				
06:30	50		117					18:30	64		65				
06:45	48	162	116	460			622	18:45	44	258	73	283			541
07:00	42		105					19:00	41		34				
07:15	57		119					19:15	47		36				
07:30	67		122					19:30	62		21				
07:45	36	202	119	465			667	19:45	37	187	20	111			298
08:00	46		105					20:00	27		19				
08:15	43		79					20:15	37		20				
08:30	33		77					20:30	43		19				
08:45	55	177	79	340			517	20:45	43	150	17	75			225
09:00	36		78					21:00	54		13				
09:15	48		57					21:15	53		27				
09:30	37		64					21:30	66		14				
09:45	51	172	57	256			428	21:45	79	252	27	81			333
10:00	43		44					22:00	131		22				
10:15	38		36					22:15	112		21				
10:30	41		53					22:30	169		28				
10:45	53	175	40	173			348	22:45	125	537	18	89			626
11:00	79		51					23:00	84		12				
11:15	74		44					23:15	50		8				
11:30	90		70					23:30	44		11				
11:45	88	331	70	235			566	23:45	24	202	18	49			251
Total Vol.		1455		2586			4041			4280		2378			6658

Daily Totals

NB	SB		EB	WB
5735	4964	Combined		
		10699		

	AM			PM		
Split %	36.0%	64.0%	37.8%	64.3%	35.7%	62.2%
Peak Hour	11:00	05:30	06:45	14:30	15:30	14:15
Volume	331	505	676	664	348	956
P.H.F.	0.92	0.82	0.89	0.93	0.89	0.83

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-004

Location: Cesar Chavez Pkwy btwn Main St & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	11		9					12:00	65		67				
00:15	14		5					12:15	80		63				
00:30	18		4					12:30	100		58				
00:45	21	64	10	28			92	12:45	73	318	64	252			570
01:00	13		4					13:00	58		55				
01:15	5		7					13:15	90		65				
01:30	6		6					13:30	83		63				
01:45	9	33	6	23			56	13:45	82	313	61	244			557
02:00	7		3					14:00	91		62				
02:15	5		3					14:15	114		57				
02:30	5		5					14:30	196		85				
02:45	3	20	9	20			40	14:45	128	529	65	269			798
03:00	1		7					15:00	166		45				
03:15	5		13					15:15	101		66				
03:30	8		11					15:30	124		87				
03:45	3	17	17	48			65	15:45	92	483	70	268			751
04:00	1		17					16:00	96		63				
04:15	5		20					16:15	108		66				
04:30	7		35					16:30	119		58				
04:45	4	17	55	127			144	16:45	136	459	67	254			713
05:00	12		71					17:00	102		66				
05:15	17		76					17:15	109		42				
05:30	21		125					17:30	80		69				
05:45	25	75	136	408			483	17:45	70	361	57	234			595
06:00	27		111					18:00	66		57				
06:15	41		126					18:15	66		70				
06:30	42		113					18:30	59		74				
06:45	51	161	133	483			644	18:45	39	230	68	269			499
07:00	43		120					19:00	57		38				
07:15	40		130					19:15	45		24				
07:30	40		113					19:30	41		34				
07:45	41	164	111	474			638	19:45	41	184	24	120			304
08:00	36		82					20:00	42		20				
08:15	36		88					20:15	37		22				
08:30	55		70					20:30	54		20				
08:45	35	162	60	300			462	20:45	73	206	18	80			286
09:00	46		52					21:00	89		19				
09:15	54		49					21:15	105		21				
09:30	38		67					21:30	101		23				
09:45	50	188	61	229			417	21:45	94	389	31	94			483
10:00	36		43					22:00	83		20				
10:15	51		47					22:15	80		13				
10:30	49		51					22:30	78		23				
10:45	67	203	52	193			396	22:45	50	291	17	73			364
11:00	68		43					23:00	47		12				
11:15	60		75					23:15	20		14				
11:30	70		69					23:30	46		15				
11:45	81	279	47	234			513	23:45	26	139	13	54			193
Total Vol.		1383		2567			3950			3902		2211			6113

Daily Totals

NB	SB		EB	WB
5285	4778	Combined		
		10063		

	AM			PM		
Split %	35.0%	65.0%	39.3%	63.8%	36.2%	60.7%
Peak Hour	11:45	05:30	06:30	14:15	15:15	14:15
Volume	326	498	672	604	286	856
P.H.F.	0.82	0.92	0.91	0.72	0.82	0.76

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-005

Location: Sampson St btwn I-5 & National Ave

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	0		0					12:00	31		27				
00:15	2		9					12:15	18		23				
00:30	4		0					12:30	28		21				
00:45	1	7	2	11			18	12:45	31	108	16	87			195
01:00	0		0					13:00	17		25				
01:15	0		0					13:15	27		22				
01:30	0		0					13:30	33		35				
01:45	1	1	0	0			1	13:45	37	114	27	109			223
02:00	3		0					14:00	33		31				
02:15	0		0					14:15	40		25				
02:30	2		2					14:30	71		31				
02:45	0	5	2	4			9	14:45	74	218	25	112			330
03:00	0		1					15:00	61		31				
03:15	0		0					15:15	38		22				
03:30	1		0					15:30	41		17				
03:45	2	3	1	2			5	15:45	37	177	24	94			271
04:00	0		1					16:00	38		22				
04:15	5		7					16:15	30		17				
04:30	6		12					16:30	38		33				
04:45	5	16	11	31			47	16:45	39	145	25	97			242
05:00	1		17					17:00	25		27				
05:15	5		27					17:15	29		22				
05:30	8		30					17:30	31		15				
05:45	13	27	34	108			135	17:45	31	116	15	79			195
06:00	17		18					18:00	26		14				
06:15	12		27					18:15	16		15				
06:30	18		18					18:30	10		14				
06:45	17	64	26	89			153	18:45	18	70	13	56			126
07:00	13		16					19:00	32		9				
07:15	17		17					19:15	22		10				
07:30	27		27					19:30	16		4				
07:45	25	82	26	86			168	19:45	10	80	3	26			106
08:00	23		18					20:00	13		12				
08:15	14		23					20:15	14		11				
08:30	18		14					20:30	6		0				
08:45	17	72	16	71			143	20:45	8	41	8	31			72
09:00	20		18					21:00	7		3				
09:15	21		10					21:15	10		3				
09:30	18		16					21:30	6		9				
09:45	24	83	17	61			144	21:45	3	26	11	26			52
10:00	24		16					22:00	3		2				
10:15	38		20					22:15	6		8				
10:30	21		24					22:30	6		0				
10:45	30	113	25	85			198	22:45	2	17	2	12			29
11:00	29		26					23:00	7		0				
11:15	20		31					23:15	2		3				
11:30	33		20					23:30	6		0				
11:45	26	108	26	103			211	23:45	2	17	0	3			20
Total Vol.		581		651			1232			1129		732			1861

Daily Totals

NB	SB		EB	WB
1710	1383	Combined		
		3093		

	AM			PM		
Split %	47.2%	52.8%	39.8%	60.7%	39.3%	60.2%
Peak Hour	10:15	05:15	10:45	14:15	13:30	14:15
Volume	118	109	214	246	118	358
P.H.F.	0.78	0.80	0.97	0.88	0.84	0.88

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-005

Location: Sampson St btwn I-5 & National Ave

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	2		5					12:00	25		20				
00:15	5		2					12:15	16		18				
00:30	1		1					12:30	20		23				
00:45	2	10	2	10			20	12:45	24	85	21	82			167
01:00	2		1					13:00	19		27				
01:15	0		0					13:15	18		16				
01:30	1		0					13:30	30		29				
01:45	1	4	0	1			5	13:45	27	94	42	114			208
02:00	0		0					14:00	40		27				
02:15	0		0					14:15	52		24				
02:30	1		5					14:30	74		20				
02:45	1	2	3	8			10	14:45	91	257	21	92			349
03:00	0		0					15:00	64		30				
03:15	1		0					15:15	66		22				
03:30	0		1					15:30	39		23				
03:45	0	1	0	1			2	15:45	35	204	28	103			307
04:00	1		6					16:00	37		20				
04:15	4		7					16:15	36		22				
04:30	1		10					16:30	36		19				
04:45	11	17	12	35			52	16:45	52	161	26	87			248
05:00	1		13					17:00	31		25				
05:15	5		24					17:15	31		16				
05:30	9		42					17:30	32		15				
05:45	13	28	27	106			134	17:45	24	118	20	76			194
06:00	21		18					18:00	24		18				
06:15	13		21					18:15	19		17				
06:30	14		19					18:30	21		15				
06:45	13	61	19	77			138	18:45	15	79	16	66			145
07:00	16		18					19:00	10		13				
07:15	15		20					19:15	16		16				
07:30	25		22					19:30	15		10				
07:45	20	76	18	78			154	19:45	9	50	16	55			105
08:00	18		20					20:00	7		12				
08:15	21		19					20:15	4		11				
08:30	21		13					20:30	7		8				
08:45	14	74	19	71			145	20:45	11	29	9	40			69
09:00	17		14					21:00	6		6				
09:15	15		17					21:15	3		2				
09:30	22		14					21:30	7		4				
09:45	28	82	17	62			144	21:45	5	21	5	17			38
10:00	30		30					22:00	8		4				
10:15	20		27					22:15	3		5				
10:30	22		15					22:30	5		6				
10:45	27	99	20	92			191	22:45	9	25	0	15			40
11:00	23		28					23:00	9		4				
11:15	27		20					23:15	3		1				
11:30	22		17					23:30	6		0				
11:45	24	96	26	91			187	23:45	2	20	1	6			26
Total Vol.		550		632			1182			1143		753			1896

Daily Totals

NB	SB		EB	WB
1693	1385	Combined		
		3078		

	AM			PM		
Split %	46.5%	53.5%	38.4%	60.3%	39.7%	61.6%
Peak Hour	09:30	05:15	10:00	14:30	13:30	14:30
Volume	100	111	191	295	122	388
P.H.F.	0.83	0.66	0.80	0.80	0.73	0.87

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-006

Location: Sampson St btwn National Ave & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	0		0					12:00	28		21				
00:15	1		3					12:15	15		17				
00:30	8		2					12:30	20		21				
00:45	1	10	1	6			16	12:45	14	77	17	76			153
01:00	0		2					13:00	16		21				
01:15	0		1					13:15	16		22				
01:30	0		0					13:30	18		33				
01:45	0	0	0	3			3	13:45	22	72	19	95			167
02:00	1		0					14:00	33		25				
02:15	0		1					14:15	50		26				
02:30	1		1					14:30	87		36				
02:45	0	2	4	6			8	14:45	73	243	20	107			350
03:00	0		0					15:00	57		19				
03:15	1		2					15:15	40		23				
03:30	1		2					15:30	38		19				
03:45	0	2	7	11			13	15:45	16	151	14	75			226
04:00	0		10					16:00	36		10				
04:15	2		17					16:15	20		13				
04:30	1		26					16:30	31		8				
04:45	2	5	19	72			77	16:45	20	107	9	40			147
05:00	3		37					17:00	23		8				
05:15	10		46					17:15	20		13				
05:30	9		61					17:30	16		12				
05:45	17	39	53	197			236	17:45	25	84	8	41			125
06:00	27		47					18:00	17		2				
06:15	20		42					18:15	10		5				
06:30	22		38					18:30	6		4				
06:45	13	82	35	162			244	18:45	7	40	4	15			55
07:00	12		22					19:00	5		6				
07:15	10		17					19:15	2		6				
07:30	15		23					19:30	7		2				
07:45	11	48	23	85			133	19:45	3	17	2	16			33
08:00	16		19					20:00	1		4				
08:15	17		18					20:15	6		1				
08:30	13		24					20:30	3		1				
08:45	16	62	14	75			137	20:45	1	11	1	7			18
09:00	12		12					21:00	1		2				
09:15	11		12					21:15	2		3				
09:30	14		18					21:30	3		7				
09:45	16	53	17	59			112	21:45	2	8	4	16			24
10:00	13		23					22:00	0		2				
10:15	13		13					22:15	4		8				
10:30	16		20					22:30	2		2				
10:45	15	57	13	69			126	22:45	1	7	0	12			19
11:00	19		16					23:00	2		1				
11:15	12		10					23:15	1		1				
11:30	21		19					23:30	5		3				
11:45	23	75	22	67			142	23:45	3	11	3	8			19
Total Vol.		435		812			1247			828		508			1336

Daily Totals

NB	SB		EB	WB
1263	1320	Combined		
		2583		

	AM			PM		
Split %	34.9%	65.1%	48.3%	62.0%	38.0%	51.7%
Peak Hour	11:30	05:15	05:30	14:15	14:00	14:15
Volume	87	207	276	267	107	368
P.H.F.	0.78	0.85	0.93	0.81	0.74	0.75

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-006

Location: Sampson St btwn National Ave & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	2		2					12:00	11		11				
00:15	2		2					12:15	18		12				
00:30	1		5					12:30	15		9				
00:45	1	6	2	11			17	12:45	18	62	17	49			111
01:00	2		0					13:00	18		24				
01:15	0		1					13:15	22		22				
01:30	2		0					13:30	27		29				
01:45	1	5	1	2			7	13:45	20	87	31	106			193
02:00	0		1					14:00	37		33				
02:15	0		0					14:15	56		32				
02:30	0		3					14:30	77		26				
02:45	1	1	1	5			6	14:45	83	253	29	120			373
03:00	0		0					15:00	65		22				
03:15	0		1					15:15	37		18				
03:30	0		3					15:30	31		21				
03:45	0	0	3	7			7	15:45	21	154	18	79			233
04:00	0		11					16:00	24		12				
04:15	1		18					16:15	21		13				
04:30	1		17					16:30	17		21				
04:45	1	3	25	71			74	16:45	12	74	10	56			130
05:00	5		37					17:00	22		9				
05:15	13		41					17:15	13		4				
05:30	21		64					17:30	19		9				
05:45	18	57	49	191			248	17:45	10	64	11	33			97
06:00	18		36					18:00	5		8				
06:15	35		32					18:15	8		4				
06:30	26		37					18:30	5		7				
06:45	12	91	26	131			222	18:45	5	23	4	23			46
07:00	7		18					19:00	2		5				
07:15	4		17					19:15	8		3				
07:30	9		22					19:30	5		4				
07:45	10	30	19	76			106	19:45	4	19	5	17			36
08:00	13		18					20:00	1		0				
08:15	18		20					20:15	3		4				
08:30	23		17					20:30	1		1				
08:45	15	69	18	73			142	20:45	4	9	4	9			18
09:00	19		16					21:00	4		1				
09:15	11		12					21:15	2		3				
09:30	16		17					21:30	9		9				
09:45	12	58	12	57			115	21:45	0	15	3	16			31
10:00	17		13					22:00	2		5				
10:15	14		27					22:15	0		4				
10:30	20		20					22:30	4		5				
10:45	14	65	18	78			143	22:45	6	12	1	15			27
11:00	19		13					23:00	4		2				
11:15	14		16					23:15	1		1				
11:30	15		19					23:30	4		1				
11:45	18	66	22	70			136	23:45	4	13	3	7			20
Total Vol.		451		772			1223			785		530			1315

Daily Totals

NB	SB		EB	WB
1236	1302	Combined		
		2538		

	AM			PM		
Split %	36.9%	63.1%	48.2%	59.7%	40.3%	51.8%
Peak Hour	05:45	05:00	05:30	14:15	13:30	14:15
Volume	97	191	273	281	125	390
P.H.F.	0.69	0.75	0.80	0.90	0.95	0.87

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : 26 ST
Title2 : NEWTON AV (N)
Title3 : NATIONAL AV

Site: 2815
Date: 02/04/03

Day: Tuesday

Interval Begin	AM - BOTH		PM - BOTH	
12:00	8	21	44	143
12:15	2		33	
12:30	3		20	
12:45	8		46	
1:00	8	14	42	136
1:15	0		32	
1:30	0		26	
1:45	6		36	
2:00	1	20	20	153
2:15	10		45	
2:30	8		48	
2:45	1		40	
3:00	1	13	41	284
3:15	4		67	
3:30	6		102	
3:45	2		74	
4:00	4	52	55	195
4:15	9		50	
4:30	19		50	
4:45	20		40	
5:00	19	113	36	129
5:15	25		48	
5:30	31		19	
5:45	38		26	
6:00	42	200	14	74
6:15	68		24	
6:30	60		11	
6:45	30		25	
7:00	22	119	10	49
7:15	23		14	
7:30	36		11	
7:45	38		14	
8:00	25	118	12	51
8:15	28		12	
8:30	35		14	
8:45	30		13	
9:00	26	111	12	49
9:15	17		14	
9:30	42		16	
9:45	26		7	
10:00	28	132	21	43
10:15	27		6	
10:30	48		8	
10:45	29		8	
11:00	26	123	8	18
11:15	34		3	
11:30	30		5	
11:45	33		2	
Total	1,036		1,324	
Peak Hou	5:45		3:15	
Volume	208		298	
Facto	0.76		0.73	
DayTotal	**2,360**			

0163-03

ADT: 2380

Data File : 0163-03

Printed : 2/11/03

Page

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : 26 ST

Title2 : NEWTON AV (N)

Title3 : NATIONAL AV

Site: 2815

Date: 02/05/03

Day: Wednesday

Interval Begin	AM - BOTH		PM - BOTH	
12:00	6	17	42	133
12:15	4		29	
12:30	6		32	
12:45	1		30	
1:00	8	13	38	171
1:15	2		46	
1:30	0		48	
1:45	3		39	
2:00	4	16	36	180
2:15	6		52	
2:30	4		52	
2:45	2		40	
3:00	6	20	28	248
3:15	4		68	
3:30	2		86	
3:45	8		66	
4:00	10	65	64	196
4:15	18		41	
4:30	22		43	
4:45	15		48	
5:00	18	106	50	131
5:15	20		34	
5:30	30		24	
5:45	38		23	
6:00	36	188	33	78
6:15	66		18	
6:30	46		11	
6:45	40		16	
7:00	28	117	16	61
7:15	34		13	
7:30	25		20	
7:45	30		12	
8:00	26	108	19	48
8:15	28		9	
8:30	30		10	
8:45	24		10	
9:00	34	101	12	48
9:15	27		9	
9:30	16		18	
9:45	24		9	
10:00	38	123	10	44
10:15	19		4	
10:30	32		22	
10:45	34		8	
11:00	34	171	4	17
11:15	52		1	
11:30	42		11	
11:45	43		1	
Total	1,045		1,355	
Peak Hou	6:00		3:15	
Volume	188		284	
Facto	0.71		0.83	
DayTotal	**2,400**			

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-007

Location: 28th St N/o I-5 SB Off ramp

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	17		14					12:00	154		126				
00:15	7		22					12:15	149		115				
00:30	36		14					12:30	136		105				
00:45	26	86	13	63			149	12:45	144	583	110	456			1039
01:00	11		11					13:00	138		109				
01:15	9		11					13:15	121		103				
01:30	5		11					13:30	121		97				
01:45	7	32	8	41			73	13:45	128	508	96	405			913
02:00	5		7					14:00	142		103				
02:15	3		10					14:15	151		121				
02:30	6		7					14:30	175		110				
02:45	5	19	14	38			57	14:45	152	620	134	468			1088
03:00	5		11					15:00	215		143				
03:15	8		12					15:15	220		145				
03:30	3		13					15:30	201		150				
03:45	14	30	24	60			90	15:45	174	810	115	553			1363
04:00	9		16					16:00	219		93				
04:15	7		31					16:15	150		102				
04:30	13		35					16:30	162		95				
04:45	14	43	49	131			174	16:45	132	663	92	382			1045
05:00	23		76					17:00	140		95				
05:15	13		115					17:15	128		113				
05:30	35		108					17:30	108		81				
05:45	63	134	97	396			530	17:45	120	496	105	394			890
06:00	67		110					18:00	86		78				
06:15	76		95					18:15	86		83				
06:30	83		98					18:30	78		71				
06:45	89	315	79	382			697	18:45	67	317	86	318			635
07:00	95		63					19:00	62		79				
07:15	97		96					19:15	83		59				
07:30	122		86					19:30	66		70				
07:45	95	409	81	326			735	19:45	49	260	57	265			525
08:00	85		67					20:00	58		61				
08:15	82		83					20:15	60		63				
08:30	82		89					20:30	56		71				
08:45	115	364	73	312			676	20:45	36	210	53	248			458
09:00	91		94					21:00	51		56				
09:15	143		76					21:15	41		48				
09:30	119		96					21:30	52		54				
09:45	98	451	80	346			797	21:45	45	189	58	216			405
10:00	124		66					22:00	45		54				
10:15	109		92					22:15	31		35				
10:30	149		103					22:30	33		36				
10:45	131	513	92	353			866	22:45	21	130	22	147			277
11:00	168		97					23:00	23		27				
11:15	154		110					23:15	16		18				
11:30	154		107					23:30	17		19				
11:45	136	612	107	421			1033	23:45	16	72	23	87			159
Total Vol.		3008		2869			5877			4858		3939			8797

Daily Totals

NB	SB		EB	WB
7866	6808	Combined		
		14674		

	AM			PM		
Split %	51.2%	48.8%	40.1%	55.2%	44.8%	59.9%
Peak Hour	11:00	11:30	11:15	15:15	14:45	15:00
Volume	612	455	1048	814	572	1363
P.H.F.	0.91	0.90	0.94	0.87	0.95	0.93

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-007

Location: 28th St N/o I-5 SB Off ramp

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	14		24					12:00	158		126				
00:15	11		15					12:15	140		101				
00:30	39		19					12:30	136		108				
00:45	17	81	12	70			151	12:45	132	566	112	447			1013
01:00	9		11					13:00	147		106				
01:15	8		7					13:15	145		93				
01:30	7		11					13:30	131		100				
01:45	8	32	5	34			66	13:45	135	558	92	391			949
02:00	7		8					14:00	145		105				
02:15	7		17					14:15	142		103				
02:30	11		16					14:30	170		120				
02:45	2	27	12	53			80	14:45	161	618	116	444			1062
03:00	8		17					15:00	170		141				
03:15	5		13					15:15	203		165				
03:30	7		17					15:30	194		148				
03:45	4	24	23	70			94	15:45	167	734	120	574			1308
04:00	8		19					16:00	176		106				
04:15	8		38					16:15	132		102				
04:30	13		32					16:30	146		88				
04:45	13	42	42	131			173	16:45	158	612	92	388			1000
05:00	19		74					17:00	117		103				
05:15	32		100					17:15	118		85				
05:30	35		113					17:30	106		96				
05:45	47	133	107	394			527	17:45	112	453	70	354			807
06:00	63		103					18:00	94		71				
06:15	100		81					18:15	82		75				
06:30	100		75					18:30	75		76				
06:45	89	352	100	359			711	18:45	71	322	83	305			627
07:00	86		76					19:00	75		62				
07:15	104		99					19:15	65		62				
07:30	128		91					19:30	60		85				
07:45	80	398	75	341			739	19:45	71	271	68	277			548
08:00	71		66					20:00	64		95				
08:15	109		84					20:15	48		69				
08:30	90		89					20:30	54		64				
08:45	67	337	83	322			659	20:45	50	216	63	291			507
09:00	99		95					21:00	44		45				
09:15	99		85					21:15	49		57				
09:30	101		102					21:30	90		54				
09:45	133	432	85	367			799	21:45	68	251	58	214			465
10:00	118		74					22:00	84		64				
10:15	126		99					22:15	57		44				
10:30	144		100					22:30	54		36				
10:45	130	518	103	376			894	22:45	42	237	34	178			415
11:00	163		96					23:00	39		28				
11:15	171		99					23:15	34		20				
11:30	186		107					23:30	22		25				
11:45	182	702	127	429			1131	23:45	13	108	14	87			195
Total Vol.		3078		2946			6024			4946		3950			8896

Daily Totals

NB	SB		EB	WB
8024	6896	Combined		
		14920		

	AM			PM		
Split %	51.1%	48.9%	40.4%	55.6%	44.4%	59.6%
Peak Hour	11:00	11:45	11:15	15:15	15:00	15:00
Volume	702	462	1156	740	574	1308
P.H.F.	0.94	0.91	0.94	0.90	0.87	0.89

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-008

Location: 28th St btwn I-5 & Main St

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	18		21					12:00	134		174				
00:15	7		22					12:15	138		178				
00:30	36		18					12:30	145		172				
00:45	27	88	17	78			166	12:45	130	547	177	701			1248
01:00	11		16					13:00	131		165				
01:15	8		13					13:15	121		147				
01:30	4		13					13:30	123		145				
01:45	7	30	10	52			82	13:45	130	505	158	615			1120
02:00	6		8					14:00	136		163				
02:15	4		14					14:15	150		179				
02:30	5		9					14:30	192		153				
02:45	5	20	20	51			71	14:45	220	698	184	679			1377
03:00	5		11					15:00	269		203				
03:15	9		14					15:15	258		216				
03:30	4		14					15:30	230		224				
03:45	10	28	25	64			92	15:45	240	997	205	848			1845
04:00	7		21					16:00	229		175				
04:15	7		31					16:15	178		174				
04:30	15		43					16:30	194		146				
04:45	11	40	65	160			200	16:45	155	756	150	645			1401
05:00	23		83					17:00	180		129				
05:15	12		150					17:15	149		142				
05:30	35		159					17:30	128		115				
05:45	60	130	159	551			681	17:45	149	606	131	517			1123
06:00	64		171					18:00	106		103				
06:15	68		115					18:15	100		112				
06:30	76		194					18:30	91		90				
06:45	98	306	172	652			958	18:45	68	365	98	403			768
07:00	90		188					19:00	66		90				
07:15	92		190					19:15	76		85				
07:30	115		162					19:30	64		77				
07:45	97	394	161	701			1095	19:45	48	254	73	325			579
08:00	84		132					20:00	61		71				
08:15	86		144					20:15	55		64				
08:30	75		146					20:30	53		65				
08:45	113	358	141	563			921	20:45	42	211	55	255			466
09:00	83		127					21:00	47		75				
09:15	132		112					21:15	41		63				
09:30	116		144					21:30	56		66				
09:45	98	429	146	529			958	21:45	49	193	65	269			462
10:00	125		117					22:00	50		58				
10:15	107		139					22:15	34		41				
10:30	144		169					22:30	30		46				
10:45	133	509	153	578			1087	22:45	22	136	30	175			311
11:00	163		167					23:00	20		29				
11:15	155		167					23:15	21		20				
11:30	145		164					23:30	18		31				
11:45	143	606	164	662			1268	23:45	16	75	24	104			179
Total Vol.		2938		4641			7579			5343		5536			10879

Daily Totals

NB	SB		EB	WB
8281	10177	Combined		
		18458		

	AM			PM		
Split %	38.8%	61.2%	41.1%	49.1%	50.9%	58.9%
Peak Hour	11:00	06:30	11:00	15:00	15:00	15:00
Volume	606	744	1268	997	848	1845
P.H.F.	0.93	0.96	0.96	0.92	0.95	0.97

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-008

Location: 28th St btwn I-5 & Main St

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	16		29					12:00	168		164				
00:15	10		14					12:15	132		187				
00:30	39		19					12:30	132		186				
00:45	20	85	14	76			161	12:45	144	576	202	739			1315
01:00	10		14					13:00	140		179				
01:15	8		12					13:15	132		161				
01:30	9		12					13:30	124		160				
01:45	7	34	8	46			80	13:45	134	530	149	649			1179
02:00	9		13					14:00	139		174				
02:15	6		15					14:15	134		142				
02:30	11		20					14:30	169		168				
02:45	4	30	18	66			96	14:45	199	641	176	660			1301
03:00	10		14					15:00	209		190				
03:15	6		17					15:15	255		180				
03:30	8		18					15:30	242		202				
03:45	3	27	23	72			99	15:45	209	915	184	756			1671
04:00	7		21					16:00	249		194				
04:15	9		36					16:15	166		194				
04:30	13		36					16:30	185		164				
04:45	18	47	51	144			191	16:45	199	799	163	715			1514
05:00	22		86					17:00	149		136				
05:15	28		129					17:15	168		147				
05:30	35		162					17:30	142		129				
05:45	45	130	162	539			669	17:45	135	594	127	539			1133
06:00	67		170					18:00	125		99				
06:15	102		164					18:15	109		97				
06:30	93		160					18:30	98		98				
06:45	80	342	198	692			1034	18:45	74	406	95	389			795
07:00	98		174					19:00	77		75				
07:15	103		190					19:15	67		85				
07:30	120		162					19:30	70		100				
07:45	78	399	158	684			1083	19:45	73	287	81	341			628
08:00	77		146					20:00	74		90				
08:15	101		134					20:15	47		72				
08:30	83		126					20:30	57		63				
08:45	67	328	131	537			865	20:45	53	231	78	303			534
09:00	93		141					21:00	48		53				
09:15	111		129					21:15	51		83				
09:30	105		142					21:30	105		109				
09:45	116	425	152	564			989	21:45	69	273	108	353			626
10:00	112		139					22:00	83		128				
10:15	131		157					22:15	52		78				
10:30	137		135					22:30	58		75				
10:45	115	495	164	595			1090	22:45	42	235	71	352			587
11:00	160		155					23:00	34		52				
11:15	156		198					23:15	32		48				
11:30	193		164					23:30	25		29				
11:45	157	666	183	700			1366	23:45	13	104	14	143			247
Total Vol.		3008		4715			7723			5591		5939			11530

Daily Totals

NB	SB		EB	WB
8599	10654	Combined		
		19253		

	AM			PM		
Split %	38.9%	61.1%	40.1%	48.5%	51.5%	59.9%
Peak Hour	11:15	06:45	11:15	15:15	15:30	15:15
Volume	674	724	1383	955	774	1715
P.H.F.	0.87	0.91	0.97	0.90	0.96	0.97

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-009

Location: 28th St btwn Main St & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	41		13					12:00	207		144				
00:15	35		13					12:15	155		145				
00:30	83		23					12:30	171		131				
00:45	36	195	13	62			257	12:45	166	699	140	560			1259
01:00	14		9					13:00	160		118				
01:15	12		7					13:15	192		126				
01:30	13		5					13:30	187		114				
01:45	9	48	1	22			70	13:45	153	692	126	484			1176
02:00	8		7					14:00	175		129				
02:15	6		14					14:15	198		152				
02:30	11		12					14:30	249		118				
02:45	10	35	10	43			78	14:45	198	820	136	535			1355
03:00	13		13					15:00	253		165				
03:15	8		15					15:15	307		176				
03:30	6		20					15:30	224		198				
03:45	12	39	27	75			114	15:45	227	1011	139	678			1689
04:00	11		26					16:00	147		115				
04:15	16		30					16:15	116		121				
04:30	15		44					16:30	136		83				
04:45	26	68	68	168			236	16:45	121	520	93	412			932
05:00	34		109					17:00	122		74				
05:15	28		155					17:15	94		84				
05:30	41		174					17:30	93		74				
05:45	77	180	203	641			821	17:45	96	405	60	292			697
06:00	46		182					18:00	92		62				
06:15	80		168					18:15	95		72				
06:30	70		204					18:30	95		58				
06:45	54	250	145	699			949	18:45	81	363	41	233			596
07:00	60		156					19:00	83		43				
07:15	61		120					19:15	73		41				
07:30	52		134					19:30	67		30				
07:45	46	219	117	527			746	19:45	72	295	44	158			453
08:00	50		108					20:00	54		41				
08:15	41		104					20:15	54		31				
08:30	66		113					20:30	59		31				
08:45	79	236	108	433			669	20:45	37	204	28	131			335
09:00	109		100					21:00	32		24				
09:15	118		97					21:15	51		34				
09:30	130		104					21:30	45		27				
09:45	148	505	117	418			923	21:45	54	182	30	115			297
10:00	160		82					22:00	41		33				
10:15	161		125					22:15	30		28				
10:30	165		115					22:30	42		19				
10:45	168	654	136	458			1112	22:45	36	149	20	100			249
11:00	193		127					23:00	20		14				
11:15	220		123					23:15	22		14				
11:30	201		139					23:30	19		25				
11:45	195	809	137	526			1335	23:45	11	72	17	70			142
Total Vol.		3238		4072			7310			5412		3768			9180

Daily Totals

NB	SB		EB	WB
8650	7840	Combined		
		16490		

	AM			PM		
Split %	44.3%	55.7%	44.3%	59.0%	41.0%	55.7%
Peak Hour	11:15	05:45	11:15	15:00	15:00	15:00
Volume	823	757	1366	1011	678	1689
P.H.F.	0.94	0.93	0.97	0.82	0.86	0.87

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-009

Location: 28th St btwn Main St & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	43		16					12:00	203		133				
00:15	52		15					12:15	183		140				
00:30	95		17					12:30	188		140				
00:45	43	233	10	58			291	12:45	175	749	131	544			1293
01:00	21		7					13:00	170		142				
01:15	16		5					13:15	161		128				
01:30	14		7					13:30	165		135				
01:45	12	63	6	25			88	13:45	143	639	113	518			1157
02:00	10		10					14:00	178		133				
02:15	6		9					14:15	174		119				
02:30	9		8					14:30	263		150				
02:45	5	30	16	43			73	14:45	184	799	132	534			1333
03:00	15		13					15:00	254		166				
03:15	12		19					15:15	259		169				
03:30	8		16					15:30	223		182				
03:45	9	44	25	73			117	15:45	238	974	131	648			1622
04:00	19		27					16:00	157		127				
04:15	18		48					16:15	123		110				
04:30	21		43					16:30	155		89				
04:45	23	81	69	187			268	16:45	119	554	91	417			971
05:00	28		97					17:00	96		77				
05:15	35		143					17:15	116		85				
05:30	37		198					17:30	85		77				
05:45	44	144	196	634			778	17:45	91	388	54	293			681
06:00	59		186					18:00	94		54				
06:15	68		169					18:15	98		52				
06:30	43		121					18:30	91		50				
06:45	54	224	148	624			848	18:45	68	351	46	202			553
07:00	71		136					19:00	69		46				
07:15	63		184					19:15	66		44				
07:30	66		154					19:30	81		52				
07:45	58	258	136	610			868	19:45	67	283	39	181			464
08:00	55		111					20:00	71		38				
08:15	73		101					20:15	70		33				
08:30	72		96					20:30	39		25				
08:45	66	266	118	426			692	20:45	54	234	31	127			361
09:00	110		104					21:00	54		29				
09:15	107		115					21:15	56		28				
09:30	134		111					21:30	47		29				
09:45	182	533	114	444			977	21:45	55	212	35	121			333
10:00	135		106					22:00	61		46				
10:15	136		130					22:15	31		35				
10:30	145		99					22:30	41		27				
10:45	182	598	159	494			1092	22:45	33	166	22	130			296
11:00	204		119					23:00	24		15				
11:15	242		160					23:15	23		21				
11:30	231		154					23:30	38		14				
11:45	226	903	161	594			1497	23:45	21	106	16	66			172
Total Vol.		3377		4212			7589			5455		3781			9236

Daily Totals

NB	SB		EB	WB
8832	7993	Combined		
		16825		

	AM			PM		
Split %	44.5%	55.5%	45.1%	59.1%	40.9%	54.9%
Peak Hour	11:00	05:30	11:15	15:00	14:45	15:00
Volume	903	749	1510	974	649	1622
P.H.F.	0.93	0.95	0.94	0.93	0.89	0.95

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-010

Location: 32nd St btwn Main St & Wabash Blvd

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	10		8					12:00	113		164				
00:15	4		7					12:15	136		154				
00:30	3		7					12:30	119		157				
00:45	9	26	3	25			51	12:45	112	480	140	615			1095
01:00	2		4					13:00	98		119				
01:15	3		6					13:15	112		109				
01:30	0		2					13:30	106		104				
01:45	1	6	5	17			23	13:45	124	440	116	448			888
02:00	2		2					14:00	120		130				
02:15	2		1					14:15	109		130				
02:30	1		2					14:30	103		125				
02:45	0	5	3	8			13	14:45	132	464	136	521			985
03:00	1		3					15:00	112		129				
03:15	0		0					15:15	130		135				
03:30	3		4					15:30	127		141				
03:45	1	5	8	15			20	15:45	102	471	154	559			1030
04:00	2		10					16:00	136		110				
04:15	4		13					16:15	124		89				
04:30	5		18					16:30	102		104				
04:45	4	15	22	63			78	16:45	119	481	103	406			887
05:00	9		27					17:00	138		97				
05:15	6		40					17:15	141		73				
05:30	16		59					17:30	154		80				
05:45	21	52	62	188			240	17:45	151	584	74	324			908
06:00	33		85					18:00	105		82				
06:15	31		139					18:15	87		78				
06:30	36		137					18:30	74		75				
06:45	40	140	148	509			649	18:45	75	341	82	317			658
07:00	45		154					19:00	85		78				
07:15	42		123					19:15	61		109				
07:30	40		108					19:30	56		96				
07:45	47	174	85	470			644	19:45	59	261	84	367			628
08:00	55		74					20:00	42		64				
08:15	65		95					20:15	48		66				
08:30	60		109					20:30	34		49				
08:45	62	242	104	382			624	20:45	59	183	44	223			406
09:00	88		97					21:00	49		46				
09:15	96		101					21:15	36		41				
09:30	102		103					21:30	38		46				
09:45	112	398	98	399			797	21:45	28	151	38	171			322
10:00	100		99					22:00	19		21				
10:15	115		89					22:15	13		19				
10:30	125		104					22:30	13		25				
10:45	148	488	107	399			887	22:45	14	59	25	90			149
11:00	166		129					23:00	18		18				
11:15	151		151					23:15	11		12				
11:30	131		161					23:30	5		7				
11:45	148	596	145	586			1182	23:45	12	46	7	44			90
Total Vol.		2147		3061			5208			3961		4085			8046

Daily Totals

NB	SB		EB	WB
6108	7146	Combined		
		13254		

	AM			PM		
Split %	41.2%	58.8%	39.3%	49.2%	50.8%	60.7%
Peak Hour	10:45	11:30	11:00	17:00	12:00	12:00
Volume	596	624	1182	584	615	1095
P.H.F.	0.90	0.95	0.98	0.95	0.94	0.94

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-010

Location: 32nd St btwn Main St & Wabash Blvd

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	7		6					12:00	134		150				
00:15	7		11					12:15	126		154				
00:30	9		9					12:30	106		125				
00:45	3	26	6	32			58	12:45	103	469	145	574			1043
01:00	8		9					13:00	123		124				
01:15	4		3					13:15	122		127				
01:30	3		4					13:30	130		124				
01:45	0	15	3	19			34	13:45	111	486	110	485			971
02:00	3		7					14:00	126		110				
02:15	7		4					14:15	120		124				
02:30	3		4					14:30	103		107				
02:45	2	15	2	17			32	14:45	115	464	131	472			936
03:00	1		3					15:00	137		154				
03:15	3		3					15:15	118		147				
03:30	2		5					15:30	128		166				
03:45	1	7	5	16			23	15:45	134	517	132	599			1116
04:00	4		6					16:00	163		128				
04:15	1		9					16:15	136		118				
04:30	8		13					16:30	124		104				
04:45	4	17	21	49			66	16:45	98	521	92	442			963
05:00	8		30					17:00	103		88				
05:15	7		43					17:15	118		94				
05:30	14		46					17:30	88		91				
05:45	22	51	60	179			230	17:45	100	409	85	358			767
06:00	24		76					18:00	89		96				
06:15	26		106					18:15	86		69				
06:30	33		112					18:30	71		97				
06:45	33	116	127	421			537	18:45	64	310	74	336			646
07:00	43		162					19:00	57		85				
07:15	60		119					19:15	72		87				
07:30	54		104					19:30	43		73				
07:45	48	205	96	481			686	19:45	60	232	71	316			548
08:00	46		75					20:00	52		70				
08:15	54		84					20:15	42		69				
08:30	46		81					20:30	46		53				
08:45	64	210	93	333			543	20:45	51	191	52	244			435
09:00	92		71					21:00	46		51				
09:15	94		90					21:15	29		43				
09:30	106		101					21:30	26		50				
09:45	92	384	113	375			759	21:45	23	124	29	173			297
10:00	95		102					22:00	23		26				
10:15	160		104					22:15	19		36				
10:30	126		95					22:30	18		19				
10:45	141	522	107	408			930	22:45	13	73	27	108			181
11:00	155		105					23:00	16		14				
11:15	136		156					23:15	19		24				
11:30	157		163					23:30	15		19				
11:45	143	591	149	573			1164	23:45	7	57	11	68			125
Total Vol.		2159		2903			5062			3853		4175			8028

Daily Totals

NB	SB		EB	WB
6012	7078	Combined		
		13090		

	AM			PM		
Split %	42.7%	57.3%	38.7%	48.0%	52.0%	61.3%
Peak Hour	11:00	11:15	11:15	15:30	15:00	15:00
Volume	591	618	1188	561	599	1116
P.H.F.	0.94	0.95	0.93	0.90	0.90	0.95

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-011

Location: 32nd St btwn Wabash Blvd & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	15		4					12:00	190		173				
00:15	23		10					12:15	212		178				
00:30	27		4					12:30	207		188				
00:45	16	81	5	23			104	12:45	163	772	149	688			1460
01:00	9		7					13:00	164		160				
01:15	5		7					13:15	164		167				
01:30	3		9					13:30	197		151				
01:45	2	19	4	27			46	13:45	206	731	194	672			1403
02:00	3		2					14:00	255		180				
02:15	10		1					14:15	246		127				
02:30	1		1					14:30	255		168				
02:45	5	19	7	11			30	14:45	271	1027	149	624			1651
03:00	2		7					15:00	263		177				
03:15	3		10					15:15	283		176				
03:30	4		23					15:30	206		147				
03:45	9	18	31	71			89	15:45	254	1006	147	647			1653
04:00	10		43					16:00	177		114				
04:15	12		45					16:15	200		126				
04:30	19		62					16:30	155		120				
04:45	17	58	105	255			313	16:45	149	681	117	477			1158
05:00	20		117					17:00	148		102				
05:15	37		190					17:15	133		133				
05:30	66		230					17:30	116		112				
05:45	61	184	226	763			947	17:45	117	514	96	443			957
06:00	63		220					18:00	86		95				
06:15	89		314					18:15	76		67				
06:30	117		223					18:30	72		88				
06:45	114	383	276	1033			1416	18:45	54	288	60	310			598
07:00	130		299					19:00	62		66				
07:15	96		189					19:15	55		73				
07:30	98		171					19:30	48		68				
07:45	96	420	168	827			1247	19:45	60	225	81	288			513
08:00	132		171					20:00	53		55				
08:15	121		141					20:15	44		44				
08:30	166		132					20:30	43		51				
08:45	166	585	126	570			1155	20:45	54	194	65	215			409
09:00	162		159					21:00	34		48				
09:15	146		130					21:15	40		44				
09:30	166		116					21:30	69		51				
09:45	141	615	127	532			1147	21:45	64	207	43	186			393
10:00	158		111					22:00	48		28				
10:15	208		150					22:15	31		29				
10:30	192		158					22:30	26		26				
10:45	231	789	218	637			1426	22:45	20	125	24	107			232
11:00	246		153					23:00	17		21				
11:15	231		175					23:15	13		17				
11:30	211		168					23:30	15		16				
11:45	213	901	209	705			1606	23:45	14	59	12	66			125
Total Vol.		4072		5454			9526			5829		4723			10552

Daily Totals

NB	SB		EB	WB
9901	10177	Combined		
		20078		

	AM			PM		
Split %	42.7%	57.3%	47.4%	55.2%	44.8%	52.6%
Peak Hour	10:45	06:15	10:45	14:30	13:15	14:30
Volume	919	1112	1633	1072	692	1742
P.H.F.	0.93	0.89	0.91	0.97	0.89	0.95

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-011

Location: 32nd St btwn Wabash Blvd & Harbor Dr

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	17		9					12:00	165		164				
00:15	24		7					12:15	191		185				
00:30	16		5					12:30	141		174				
00:45	11	68	6	27			95	12:45	181	678	169	692			1370
01:00	6		6					13:00	199		160				
01:15	10		3					13:15	188		156				
01:30	9		4					13:30	146		129				
01:45	3	28	5	18			46	13:45	237	770	149	594			1364
02:00	11		7					14:00	220		172				
02:15	7		4					14:15	246		127				
02:30	2		6					14:30	253		145				
02:45	4	24	6	23			47	14:45	308	1027	155	599			1626
03:00	4		7					15:00	254		166				
03:15	5		10					15:15	253		157				
03:30	8		13					15:30	219		144				
03:45	8	25	24	54			79	15:45	233	959	153	620			1579
04:00	8		38					16:00	190		136				
04:15	10		41					16:15	176		122				
04:30	13		49					16:30	171		112				
04:45	21	52	93	221			273	16:45	129	666	157	527			1193
05:00	26		136					17:00	165		143				
05:15	49		173					17:15	117		122				
05:30	68		243					17:30	125		139				
05:45	63	206	242	794			1000	17:45	92	499	100	504			1003
06:00	88		266					18:00	80		61				
06:15	93		214					18:15	68		58				
06:30	125		244					18:30	79		73				
06:45	105	411	284	1008			1419	18:45	69	296	64	256			552
07:00	121		271					19:00	58		94				
07:15	105		195					19:15	65		56				
07:30	93		174					19:30	60		64				
07:45	88	407	168	808			1215	19:45	82	265	58	272			537
08:00	120		161					20:00	50		53				
08:15	97		127					20:15	62		55				
08:30	143		110					20:30	37		37				
08:45	114	474	105	503			977	20:45	38	187	46	191			378
09:00	129		128					21:00	27		33				
09:15	119		122					21:15	34		49				
09:30	148		114					21:30	47		33				
09:45	183	579	105	469			1048	21:45	31	139	40	155			294
10:00	220		162					22:00	21		32				
10:15	198		147					22:15	25		18				
10:30	202		145					22:30	28		33				
10:45	213	833	161	615			1448	22:45	23	97	27	110			207
11:00	206		166					23:00	18		16				
11:15	221		236					23:15	27		12				
11:30	204		186					23:30	14		9				
11:45	205	836	189	777			1613	23:45	16	75	16	53			128
Total Vol.		3943		5317			9260			5658		4573			10231

Daily Totals

NB	SB		EB	WB
9601	9890	Combined		
		19491		

	AM			PM		
Split %	42.6%	57.4%	47.5%	55.3%	44.7%	52.5%
Peak Hour	10:45	06:15	11:00	14:30	12:00	14:30
Volume	844	1013	1613	1068	692	1691
P.H.F.	0.95	0.89	0.88	0.87	0.94	0.91

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-012

Location: Rigel St btwn Dalbergia St & I-5

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	4		0					12:00	12		10				
00:15	2		0					12:15	15		16				
00:30	4		0					12:30	15		12				
00:45	2	12	0	0			12	12:45	17	59	11	49			108
01:00	0		1					13:00	16		11				
01:15	1		0					13:15	12		15				
01:30	0		1					13:30	12		16				
01:45	4	5	2	4			9	13:45	14	54	10	52			106
02:00	1		0					14:00	17		9				
02:15	1		1					14:15	18		10				
02:30	0		0					14:30	31		11				
02:45	1	3	1	2			5	14:45	26	92	9	39			131
03:00	1		1					15:00	25		15				
03:15	0		1					15:15	14		11				
03:30	2		0					15:30	22		11				
03:45	1	4	1	3			7	15:45	25	86	9	46			132
04:00	0		1					16:00	25		13				
04:15	1		2					16:15	23		12				
04:30	0		2					16:30	21		16				
04:45	2	3	1	6			9	16:45	21	90	21	62			152
05:00	1		6					17:00	19		20				
05:15	8		12					17:15	23		17				
05:30	4		11					17:30	14		15				
05:45	7	20	13	42			62	17:45	18	74	11	63			137
06:00	3		8					18:00	18		12				
06:15	6		9					18:15	14		7				
06:30	5		10					18:30	12		10				
06:45	1	15	19	46			61	18:45	13	57	9	38			95
07:00	9		18					19:00	11		7				
07:15	11		14					19:15	11		9				
07:30	8		23					19:30	14		9				
07:45	14	42	16	71			113	19:45	11	47	9	34			81
08:00	18		21					20:00	9		7				
08:15	18		13					20:15	6		10				
08:30	15		11					20:30	8		5				
08:45	17	68	15	60			128	20:45	8	31	10	32			63
09:00	14		16					21:00	8		8				
09:15	12		10					21:15	6		6				
09:30	13		5					21:30	9		4				
09:45	8	47	12	43			90	21:45	5	28	5	23			51
10:00	5		6					22:00	8		4				
10:15	8		8					22:15	8		2				
10:30	9		12					22:30	7		2				
10:45	5	27	9	35			62	22:45	4	27	2	10			37
11:00	10		8					23:00	5		2				
11:15	12		4					23:15	5		2				
11:30	14		11					23:30	8		1				
11:45	14	50	6	29			79	23:45	5	23	2	7			30
Total Vol.		296		341			637			668		455			1123

Daily Totals

NB	SB		EB	WB
964	796	Combined		
		1760		

	AM			PM		
Split %	46.5%	53.5%	36.2%	59.5%	40.5%	63.8%
Peak Hour	08:00	06:45	07:30	14:15	16:30	16:30
Volume	68	74	131	100	74	158
P.H.F.	0.94	0.80	0.84	0.81	0.88	0.94

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-012

Location: Rigel St btwn Dalbergia St & I-5

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	2		2					12:00	14		15				
00:15	1		1					12:15	10		10				
00:30	2		0					12:30	11		9				
00:45	2	7	0	3			10	12:45	5	40	7	41			81
01:00	4		1					13:00	13		8				
01:15	4		0					13:15	12		6				
01:30	0		0					13:30	16		9				
01:45	1	9	4	5			14	13:45	12	53	9	32			85
02:00	4		1					14:00	15		8				
02:15	0		0					14:15	26		9				
02:30	1		0					14:30	32		7				
02:45	2	7	0	1			8	14:45	27	100	10	34			134
03:00	2		0					15:00	20		11				
03:15	1		0					15:15	16		11				
03:30	1		1					15:30	23		8				
03:45	1	5	1	2			7	15:45	20	79	12	42			121
04:00	3		3					16:00	21		17				
04:15	0		1					16:15	27		15				
04:30	1		2					16:30	23		15				
04:45	3	7	5	11			18	16:45	22	93	12	59			152
05:00	2		6					17:00	16		10				
05:15	8		11					17:15	15		12				
05:30	1		13					17:30	17		15				
05:45	3	14	11	41			55	17:45	22	70	12	49			119
06:00	2		10					18:00	20		11				
06:15	4		14					18:15	15		19				
06:30	5		12					18:30	12		15				
06:45	3	14	18	54			68	18:45	9	56	6	51			107
07:00	10		15					19:00	12		13				
07:15	10		14					19:15	12		12				
07:30	5		21					19:30	8		9				
07:45	7	32	15	65			97	19:45	13	45	7	41			86
08:00	6		16					20:00	13		12				
08:15	11		12					20:15	16		7				
08:30	16		11					20:30	13		4				
08:45	4	37	12	51			88	20:45	13	55	5	28			83
09:00	9		4					21:00	16		6				
09:15	7		11					21:15	5		1				
09:30	5		7					21:30	6		4				
09:45	10	31	9	31			62	21:45	12	39	5	16			55
10:00	12		6					22:00	5		4				
10:15	16		8					22:15	4		6				
10:30	14		3					22:30	3		2				
10:45	15	57	6	23			80	22:45	7	19	4	16			35
11:00	20		7					23:00	4		1				
11:15	13		12					23:15	4		1				
11:30	17		7					23:30	5		1				
11:45	10	60	12	38			98	23:45	7	20	0	3			23
Total Vol.		280		325			605			669		412			1081

Daily Totals

NB	SB		EB	WB
949	737	Combined		
		1686		

	AM			PM		
Split %	46.3%	53.7%	35.9%	61.9%	38.1%	64.1%
Peak Hour	10:15	06:45	11:15	14:15	15:45	16:00
Volume	65	68	100	105	59	152
P.H.F.	0.81	0.81	0.86	0.88	0.87	0.90

Volumes for: Tuesday, January 24, 2006 City: San Diego FILE#: 0023-06

Location: VESTA ST (DALBERGIA ST - MAIN ST) [3355] ADT: 4900

AM Period	NB		SB			PM Period	NB		SB		
00:00	2		4			12:00	26		30		
00:15	4		7			12:15	36		25		
00:30	4		2			12:30	29		25		
00:45	2	12	1	14	26	12:45	32	123	26	106	229
01:00	1		1			13:00	32		33		
01:15	2		2			13:15	23		30		
01:30	1		2			13:30	22		33		
01:45	2	6	3	8	14	13:45	40	117	31	127	244
02:00	0		5			14:00	32		29		
02:15	0		8			14:15	42		31		
02:30	2		6			14:30	42		30		
02:45	1	3	2	21	24	14:45	57	173	29	119	292
03:00	0		4			15:00	58		46		
03:15	1		7			15:15	76		47		
03:30	2		7			15:30	62		22		
03:45	6	9	6	24	33	15:45	64	260	38	153	413
04:00	2		10			16:00	106		53		
04:15	4		9			16:15	104		32		
04:30	3		7			16:30	101		41		
04:45	6	15	8	34	49	16:45	84	395	50	176	571
05:00	8		10			17:00	69		44		
05:15	10		18			17:15	86		49		
05:30	15		20			17:30	76		45		
05:45	22	55	27	75	130	17:45	76	307	45	183	490
06:00	28		31			18:00	66		42		
06:15	27		45			18:15	36		34		
06:30	32		21			18:30	28		31		
06:45	32	119	31	128	247	18:45	22	152	20	127	279
07:00	35		60			19:00	25		31		
07:15	34		54			19:15	27		28		
07:30	42		64			19:30	20		25		
07:45	34	145	62	240	385	19:45	27	99	17	101	200
08:00	46		80			20:00	23		18		
08:15	33		70			20:15	19		12		
08:30	28		60			20:30	23		16		
08:45	19	126	40	250	376	20:45	21	86	10	56	142
09:00	22		20			21:00	27		8		
09:15	18		15			21:15	19		14		
09:30	21		10			21:30	20		17		
09:45	20	81	15	60	141	21:45	17	83	12	51	134
10:00	18		18			22:00	12		12		
10:15	18		20			22:15	13		3		
10:30	19		21			22:30	16		6		
10:45	21	76	30	89	165	22:45	8	49	1	22	71
11:00	20		30			23:00	8		4		
11:15	20		25			23:15	5		4		
11:30	28		26			23:30	5		6		
11:45	30	98	27	108	206	23:45	7	25	0	14	39
Total Vol.		745		1051	1796			1869		1235	3104

Daily Totals

NB	SB	Combined
2614	2286	4900

	AM			PM		
Split %	41.5%	58.5%	36.7%	60.2%	39.8%	63.3%
Peak Hour	07:15	07:30	07:30	16:00	16:45	16:00
Volume	156	276	431	395	188	571
P.H.F.	0.85	0.86	0.86	0.97	0.94	0.90

Transportation Studies, Inc.
1350 Reynolds Avenue, Ste 115
Irvine, CA. 92614

Location : LOGAN AVENUE
Segment : B/T 16TH ST & SIGSBEE ST
Client : WILSON CO

Site: SAN DIEGO
Date: 12/04/07

Interval	SB				NB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	0	5	54	163	4	11	40	131	4	16	94	294	
12:15	2		33		2		26		4		59		
12:30	1		45		4		34		5		79		
12:45	2		31		1		31		3		62		
01:00	0	4	36	149	0	6	32	120	0	10	68	269	
01:15	2		34		2		28		4		62		
01:30	1		34		0		32		1		66		
01:45	1		45		4		28		5		73		
02:00	0	1	32	133	0	3	31	143	0	4	63	276	
02:15	0		34		0		34		0		68		
02:30	0		29		0		38		0		67		
02:45	1		38		3		40		4		78		
03:00	1	4	38	183	3	6	59	152	4	10	97	335	
03:15	0		50		1		33		1		83		
03:30	1		50		2		34		3		84		
03:45	2		45		0		26		2		71		
04:00	2	15	58	170	2	17	30	134	4	32	88	304	
04:15	3		31		4		28		7		59		
04:30	2		43		5		40		7		83		
04:45	8		38		6		36		14		74		
05:00	6	67	48	127	4	38	40	107	10	105	88	234	
05:15	9		24		10		27		19		51		
05:30	18		34		10		22		28		56		
05:45	34		21		14		18		48		39		
06:00	26	100	26	68	12	67	20	62	38	167	46	130	
06:15	30		17		15		14		45		31		
06:30	22		11		22		16		44		27		
06:45	22		14		18		12		40		26		
07:00	22	109	14	34	24	131	7	41	46	240	21	75	
07:15	19		6		33		12		52		18		
07:30	26		10		40		14		66		24		
07:45	42		4		34		8		76		12		
08:00	32	111	14	43	31	113	9	43	63	224	23	86	
08:15	22		10		22		8		44		18		
08:30	38		10		26		16		64		26		
08:45	19		9		34		10		53		19		
09:00	28	123	6	25	36	121	2	12	64	244	8	37	
09:15	30		7		23		1		53		8		
09:30	33		8		36		5		69		13		
09:45	32		4		26		4		58		8		
10:00	32	131	4	16	26	116	0	7	58	247	4	23	
10:15	42		5		34		4		76		9		
10:30	22		3		28		3		50		6		
10:45	35		4		28		0		63		4		
11:00	31	140	4	25	19	122	3	10	50	262	7	35	
11:15	35		12		34		4		69		16		
11:30	32		4		34		3		66		7		
11:45	42		5		35		0		77		5		
Totals	810		1,136		751		962		1,561		2,098		
Split%	51.9		54.1		48.1		45.9						
Day Totals		1,946				1,713				3,659			
Day Splits		53.2				46.8							
Peak Hour	11:00		03:15		07:15		02:15		11:00		02:45		
Volume	140		203		138		171		262		342		
Factor	0.83		0.88		0.86		0.72		0.85		0.88		

Data File : D0711791

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-013

Location: Logan Ave btwn I-5 SB Off-ramp & Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			12		0			12:00			94		16		
00:15			9		1			12:15			101		26		
00:30			9		0			12:30			130		22		
00:45			8	38	0	1	39	12:45			128	453	24	88	541
01:00			9		1			13:00			116		27		
01:15			8		0			13:15			114		23		
01:30			6		0			13:30			77		17		
01:45			13	36	0	1	37	13:45			107	414	19	86	500
02:00			8		0			14:00			118		20		
02:15			1		0			14:15			106		19		
02:30			9		0			14:30			134		22		
02:45			7	25	0	0	25	14:45			106	464	19	80	544
03:00			11		0			15:00			116		15		
03:15			1		3			15:15			111		13		
03:30			4		2			15:30			120		16		
03:45			13	29	0	5	34	15:45			104	451	14	58	509
04:00			8		0			16:00			140		17		
04:15			12		3			16:15			156		15		
04:30			26		0			16:30			198		18		
04:45			21	67	0	3	70	16:45			164	658	9	59	717
05:00			20		5			17:00			174		7		
05:15			38		8			17:15			156		12		
05:30			56		0			17:30			148		13		
05:45			69	183	0	13	196	17:45			162	640	10	42	682
06:00			57		0			18:00			78		14		
06:15			60		6			18:15			58		17		
06:30			76		0			18:30			59		6		
06:45			66	259	0	6	265	18:45			53	248	2	39	287
07:00			76		14			19:00			61		0		
07:15			83		2			19:15			58		1		
07:30			83		2			19:30			35		0		
07:45			76	318	22	40	358	19:45			35	189	2	3	192
08:00			85		22			20:00			48		0		
08:15			90		28			20:15			39		6		
08:30			82		22			20:30			42		10		
08:45			101	358	10	82	440	20:45			42	171	6	22	193
09:00			77		26			21:00			24		2		
09:15			89		7			21:15			48		0		
09:30			74		14			21:30			60		0		
09:45			77	317	15	62	379	21:45			54	186	7	9	195
10:00			104		16			22:00			51		0		
10:15			85		12			22:15			52		0		
10:30			98		10			22:30			77		0		
10:45			87	374	14	52	426	22:45			24	204	0	0	204
11:00			118		14			23:00			28		0		
11:15			114		19			23:15			33		0		
11:30			103		13			23:30			18		0		
11:45			122	457	12	58	515	23:45			11	90	0	0	90
Total Vol.				2461		323	2784					4168		486	4654

Daily Totals

	NB	SB		EB	WB
			Combined	6629	809
			7438		

	AM			PM		
Split %	88.4%	11.6%	37.4%	89.6%	10.4%	62.6%
Peak Hour	11:00	07:45	11:45	16:15	12:15	16:15
Volume	457	94	523	692	99	741
P.H.F.	0.94	0.84	0.86	0.87	0.92	0.86

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-013

Location: Logan Ave btwn I-5 SB Off-ramp & Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			16		0			12:00			94		30		
00:15			6		1			12:15			110		12		
00:30			5		0			12:30			106		19		
00:45			10	37	0	1	38	12:45			114	424	29	90	514
01:00			8		0			13:00			105		19		
01:15			14		0			13:15			102		15		
01:30			5		0			13:30			108		16		
01:45			8	35	0	0	35	13:45			111	426	17	67	493
02:00			6		0			14:00			114		20		
02:15			1		1			14:15			116		22		
02:30			1		1			14:30			120		17		
02:45			4	12	0	2	14	14:45			91	441	16	75	516
03:00			7		0			15:00			138		17		
03:15			4		2			15:15			123		13		
03:30			7		0			15:30			135		16		
03:45			10	28	0	2	30	15:45			187	583	20	66	649
04:00			12		0			16:00			210		17		
04:15			14		0			16:15			160		19		
04:30			21		0			16:30			160		16		
04:45			36	83	0	0	83	16:45			150	680	7	59	739
05:00			30		0			17:00			170		11		
05:15			29		4			17:15			159		10		
05:30			65		0			17:30			141		7		
05:45			56	180	0	4	184	17:45			124	594	13	41	635
06:00			48		2			18:00			84		10		
06:15			61		13			18:15			52		14		
06:30			60		17			18:30			64		7		
06:45			67	236	10	42	278	18:45			48	248	5	36	284
07:00			76		17			19:00			50		1		
07:15			62		11			19:15			57		5		
07:30			78		19			19:30			73		0		
07:45			75	291	17	64	355	19:45			48	228	7	13	241
08:00			88		13			20:00			49		4		
08:15			94		16			20:15			26		5		
08:30			94		13			20:30			43		4		
08:45			44	320	12	54	374	20:45			30	148	1	14	162
09:00			56		20			21:00			32		0		
09:15			91		33			21:15			55		0		
09:30			83		17			21:30			141		0		
09:45			83	313	16	86	399	21:45			79	307	5	5	312
10:00			73		17			22:00			46		0		
10:15			114		12			22:15			40		0		
10:30			94		15			22:30			41		0		
10:45			92	373	27	71	444	22:45			13	140	0	0	140
11:00			86		18			23:00			34		0		
11:15			119		21			23:15			20		0		
11:30			108		18			23:30			27		0		
11:45			104	417	30	87	504	23:45			14	95	0	0	95
Total Vol.				2325		413	2738					4314		466	4780

Daily Totals

	NB	SB		EB	WB
			Combined	6639	879
			7518		

	AM			PM		
Split %	84.9%	15.1%	36.4%	90.3%	9.7%	63.6%
Peak Hour	11:15	11:15	11:15	15:45	12:00	15:45
Volume	425	99	524	717	90	789
P.H.F.	0.89	0.83	0.94	0.85	0.75	0.87

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-014

Location: Logan Ave btwn Evans St & Sampson St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			3		0			12:00			26		24		
00:15			2		1			12:15			32		20		
00:30			3		1			12:30			25		20		
00:45			1	9	1	3	12	12:45			25	108	31	95	203
01:00			1		1			13:00			26		18		
01:15			0		1			13:15			27		21		
01:30			1		0			13:30			21		23		
01:45			4	6	2	4	10	13:45			22	96	19	81	177
02:00			2		3			14:00			22		28		
02:15			1		0			14:15			26		26		
02:30			2		0			14:30			33		32		
02:45			1	6	0	3	9	14:45			34	115	44	130	245
03:00			1		0			15:00			30		32		
03:15			0		3			15:15			33		21		
03:30			0		1			15:30			40		19		
03:45			3	4	0	4	8	15:45			37	140	26	98	238
04:00			0		0			16:00			39		27		
04:15			2		4			16:15			40		31		
04:30			3		5			16:30			41		27		
04:45			4	9	4	13	22	16:45			28	148	32	117	265
05:00			1		4			17:00			31		33		
05:15			7		6			17:15			39		17		
05:30			6		10			17:30			37		22		
05:45			8	22	14	34	56	17:45			22	129	21	93	222
06:00			12		16			18:00			23		21		
06:15			14		18			18:15			15		19		
06:30			9		16			18:30			21		14		
06:45			16	51	17	67	118	18:45			14	73	20	74	147
07:00			16		19			19:00			19		14		
07:15			11		17			19:15			14		11		
07:30			16		20			19:30			14		9		
07:45			18	61	26	82	143	19:45			17	64	11	45	109
08:00			21		28			20:00			15		18		
08:15			24		17			20:15			13		15		
08:30			19		19			20:30			14		17		
08:45			20	84	16	80	164	20:45			12	54	12	62	116
09:00			22		20			21:00			17		10		
09:15			18		18			21:15			14		16		
09:30			17		19			21:30			19		12		
09:45			31	88	17	74	162	21:45			15	65	10	48	113
10:00			21		16			22:00			13		6		
10:15			20		25			22:15			10		4		
10:30			18		15			22:30			4		9		
10:45			19	78	23	79	157	22:45			3	30	2	21	51
11:00			22		17			23:00			5		4		
11:15			23		23			23:15			5		2		
11:30			31		27			23:30			2		7		
11:45			32	108	19	86	194	23:45			2	14	4	17	31
Total Vol.				526		529	1055					1036		881	1917

Daily Totals

	NB	SB		EB	WB
			Combined	1562	1410
			2972		

	AM			PM		
Split %	49.9%	50.1%	35.5%	54.0%	46.0%	64.5%
Peak Hour	11:30	11:15	11:30	15:45	14:15	15:45
Volume	121	93	211	157	134	268
P.H.F.	0.95	0.86	0.91	0.96	0.76	0.94

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-014

Location: Logan Ave btwn Evans St & Sampson St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			2		3			12:00			30		25		
00:15			1		2			12:15			29		22		
00:30			1		2			12:30			17		29		
00:45			0	4	2	9	13	12:45			21	97	25	101	198
01:00			3		1			13:00			26		13		
01:15			1		1			13:15			24		20		
01:30			4		0			13:30			26		25		
01:45			2	10	3	5	15	13:45			19	95	24	82	177
02:00			1		3			14:00			30		30		
02:15			0		1			14:15			29		31		
02:30			0		0			14:30			35		37		
02:45			2	3	0	4	7	14:45			30	124	39	137	261
03:00			0		1			15:00			36		39		
03:15			0		2			15:15			33		26		
03:30			0		0			15:30			39		22		
03:45			1	1	0	3	4	15:45			48	156	25	112	268
04:00			4		1			16:00			40		26		
04:15			1		3			16:15			38		22		
04:30			1		4			16:30			46		18		
04:45			2	8	4	12	20	16:45			32	156	19	85	241
05:00			5		5			17:00			39		20		
05:15			7		7			17:15			28		24		
05:30			3		10			17:30			29		19		
05:45			10	25	14	36	61	17:45			23	119	24	87	206
06:00			9		11			18:00			18		20		
06:15			6		19			18:15			15		24		
06:30			10		15			18:30			18		21		
06:45			16	41	21	66	107	18:45			20	71	17	82	153
07:00			14		16			19:00			13		12		
07:15			15		23			19:15			16		13		
07:30			20		24			19:30			23		12		
07:45			16	65	28	91	156	19:45			17	69	11	48	117
08:00			20		24			20:00			25		9		
08:15			16		19			20:15			18		12		
08:30			16		24			20:30			14		12		
08:45			16	68	19	86	154	20:45			19	76	9	42	118
09:00			19		23			21:00			10		10		
09:15			19		10			21:15			13		12		
09:30			22		16			21:30			15		11		
09:45			26	86	24	73	159	21:45			11	49	13	46	95
10:00			22		16			22:00			7		6		
10:15			20		11			22:15			5		2		
10:30			21		17			22:30			4		8		
10:45			19	82	22	66	148	22:45			4	20	3	19	39
11:00			22		22			23:00			7		8		
11:15			30		18			23:15			5		3		
11:30			23		24			23:30			3		3		
11:45			24	99	23	87	186	23:45			2	17	2	16	33
Total Vol.				492		538	1030					1049		857	1906

Daily Totals

	NB	SB		EB	WB
			Combined	1541	1395
			2936		

	AM			PM		
Split %	47.8%	52.2%	35.1%	55.0%	45.0%	64.9%
Peak Hour	11:15	07:15	11:30	15:45	14:15	14:15
Volume	107	99	200	172	146	276
P.H.F.	0.89	0.88	0.91	0.90	0.94	0.92

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : NATIONAL AV
Title2 : COMMERCIAL ST
Title3 : 16 ST

Site: NONE
Date: 02/25/04

Day: Wednesday

Interval Begin	AM - EB		PM - EB	
12:00	9	33	21	72
12:15	8		20	
12:30	8		14	
12:45	8		17	
1:00	4	14	20	94
1:15	4		18	
1:30	3		26	
1:45	3		30	
2:00	6	19	12	92
2:15	6		17	
2:30	5		35	
2:45	2		28	
3:00	1	5	30	86
3:15	2		20	
3:30	2		20	
3:45	0		16	
4:00	4	11	20	91
4:15	0		17	
4:30	4		36	
4:45	3		18	
5:00	2	22	22	67
5:15	4		20	
5:30	8		13	
5:45	8		12	
6:00	7	24	14	33
6:15	6		6	
6:30	6		7	
6:45	5		6	
7:00	10	32	8	21
7:15	6		6	
7:30	8		1	
7:45	8		6	
8:00	10	42	7	23
8:15	14		4	
8:30	8		5	
8:45	10		7	
9:00	18	62	5	20
9:15	15		2	
9:30	13		7	
9:45	16		6	
10:00	19	74	5	19
10:15	14		6	
10:30	11		6	
10:45	30		2	
11:00	16	79	6	15
11:15	24		0	
11:30	11		7	
11:45	28		2	
Total	417		633	
Peak Hou	10:30		2:30	
Volume	81		113	
Facto	0.68		0.81	
DayTotal	**1,050**			

ADT: 940

0161-04

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : NATIONAL AV
Title2 : COMMERCIAL ST
Title3 : 16 ST

Site: NONE
Date: 02/26/04

Interval
Day: Thursday

Begin	AM - EB		PM - EB	
12:00	3	13	18	69
12:15	2		16	
12:30	5		19	
12:45	3		16	
1:00	0	4	22	76
1:15	3		15	
1:30	1		18	
1:45	0		21	
2:00	2	2	14	88
2:15	0		17	
2:30	0		33	
2:45	0		24	
3:00	0	1	24	82
3:15	1		22	
3:30	0		22	
3:45	0		14	
4:00	2	7	19	89
4:15	1		21	
4:30	2		25	
4:45	2		24	
5:00	3	17	24	63
5:15	2		9	
5:30	6		20	
5:45	6		10	
6:00	4	39	6	21
6:15	10		4	
6:30	11		3	
6:45	14		8	
7:00	7	41	4	17
7:15	11		3	
7:30	15		7	
7:45	8		3	
8:00	14	59	3	16
8:15	11		4	
8:30	18		4	
8:45	16		5	
9:00	17	51	8	37
9:15	7		13	
9:30	10		8	
9:45	17		8	
10:00	11	78	4	19
10:15	20		7	
10:30	19		5	
10:45	28		3	
11:00	10	59	4	12
11:15	18		4	
11:30	15		4	
11:45	16		0	
Total	371		589	
Peak Hou	10:00		2:30	
Volume	78		103	
Facto	0.7		0.78	
DayTotal	**960**			

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : NATIONAL AV
Title2 : COMMERCIAL ST
Title3 : 16 ST

Site: NONE
Date: 02/27/04

Day: Friday

Interval Begin	AM - EB		PM - EB	
12:00	5	11	14	61
12:15	1		18	
12:30	2		12	
12:45	3		17	
1:00	1	4	16	48
1:15	3		10	
1:30	0		14	
1:45	0		8	
2:00	2	5	13	66
2:15	0		9	
2:30	1		30	
2:45	2		14	
3:00	1	1	14	66
3:15	0		23	
3:30	0		13	
3:45	0		16	
4:00	6	11	23	84
4:15	0		18	
4:30	2		26	
4:45	3		17	
5:00	5	20	27	79
5:15	2		14	
5:30	7		18	
5:45	6		20	
6:00	4	29	17	42
6:15	9		12	
6:30	8		10	
6:45	8		3	
7:00	8	36	5	21
7:15	10		10	
7:30	8		2	
7:45	10		4	
8:00	8	34	2	16
8:15	6		4	
8:30	11		4	
8:45	9		6	
9:00	10	56	9	26
9:15	20		8	
9:30	10		1	
9:45	16		8	
10:00	18	47	7	11
10:15	12		3	
10:30	10		1	
10:45	7		0	
11:00	17	58	6	15
11:15	13		5	
11:30	10		3	
11:45	18		1	
Total	312		535	
Peak Hou	9:15		4:15	
Volume	64		88	
Facto	0.8		0.81	
DayTotal	847			

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : NATIONAL AV
Title2 : COMMERCIAL ST
Title3 : 16 ST

Site: NONE
Date: 03/01/04

Interval Day: Monday

Begin	AM - EB		PM - EB	
12:00	2	7	15	66
12:15	0		18	
12:30	2		16	
12:45	3		17	
1:00	3	7	18	70
1:15	1		10	
1:30	1		22	
1:45	2		20	
2:00	0	6	16	79
2:15	3		10	
2:30	1		32	
2:45	2		21	
3:00	0	3	40	85
3:15	1		15	
3:30	2		12	
3:45	0		18	
4:00	0	4	20	102
4:15	1		27	
4:30	2		27	
4:45	1		28	
5:00	6	30	20	65
5:15	4		17	
5:30	7		14	
5:45	13		14	
6:00	8	33	11	31
6:15	10		6	
6:30	9		9	
6:45	6		5	
7:00	12	34	5	19
7:15	4		5	
7:30	14		6	
7:45	4		3	
8:00	13	45	5	20
8:15	12		8	
8:30	12		5	
8:45	8		2	
9:00	18	56	13	34
9:15	13		12	
9:30	15		5	
9:45	10		4	
10:00	9	55	1	6
10:15	16		4	
10:30	14		1	
10:45	16		0	
11:00	15	75	5	14
11:15	18		0	
11:30	16		4	
11:45	26		5	
Total	355		591	
Peak Hou	11:00		2:30	
Volume	75		108	
Facto	0.72		0.68	
DayTotal	**946**			

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : NATIONAL AV
Title2 : COMMERCIAL ST
Title3 : 16 ST

Site: NONE
Date: 03/02/04

Interval Day: Tuesday

Begin	AM - EB		PM - EB	
12:00	3	8	21	73
12:15	1		10	
12:30	2		23	
12:45	2		19	
1:00	0	2	15	56
1:15	1		14	
1:30	0		12	
1:45	1		15	
2:00	0	6	15	71
2:15	3		14	
2:30	0		24	
2:45	3		18	
3:00	2	3	26	79
3:15	1		19	
3:30	0		16	
3:45	0		18	
4:00	0	9	28	103
4:15	1		18	
4:30	4		34	
4:45	4		23	
5:00	2	16	24	61
5:15	0		13	
5:30	6		14	
5:45	8		10	
6:00	6	25	10	32
6:15	6		10	
6:30	9		4	
6:45	4		8	
7:00	12	38	4	24
7:15	4		9	
7:30	14		4	
7:45	8		7	
8:00	8	43	12	31
8:15	16		8	
8:30	9		2	
8:45	10		9	
9:00	10	49	8	23
9:15	12		3	
9:30	14		6	
9:45	13		6	
10:00	12	57	7	18
10:15	19		5	
10:30	12		5	
10:45	14		1	
11:00	22	70	7	12
11:15	19		2	
11:30	13		3	
11:45	16		0	
Total	326		583	
Peak Hou	11:00		4:00	
Volume	70		103	
Facto	0.8		0.76	
DayTotal	909			

CITY OF SAN DIEGO

TRANSPORTATION DEPARTMENT

VEHICLE VOLUME SUMMARY

Title1 : NATIONAL AV
Title2 : COMMERCIAL ST
Title3 : 16 ST

Site: NONE
Date: 03/03/04

Day: Wednesday

Interval Begin	AM - EB		PM - EB	
12:00	4	9	18	63
12:15	0		11	
12:30	2		12	
12:45	3		22	
1:00	2	5	18	65
1:15	3		14	
1:30	0		9	
1:45	0		24	
2:00	0	5	14	93
2:15	1		14	
2:30	1		36	
2:45	3		29	
3:00	0	2	30	96
3:15	2		20	
3:30	0		26	
3:45	0		20	
4:00	1	5	18	95
4:15	0		22	
4:30	4		28	
4:45	0		27	
5:00	4	16	27	61
5:15	2		10	
5:30	4		8	
5:45	6		16	
6:00	1	18	6	28
6:15	4		11	
6:30	7		7	
6:45	6		4	
7:00	11	43	5	23
7:15	8		6	
7:30	10		5	
7:45	14		7	
8:00	14	43	7	25
8:15	8		3	
8:30	10		7	
8:45	11		8	
9:00	10	48	4	20
9:15	16		3	
9:30	12		3	
9:45	10		10	
10:00	14	53	4	16
10:15	10		8	
10:30	10		2	
10:45	19		2	
11:00	21	78	6	13
11:15	18		1	
11:30	16		4	
11:45	23		2	
Total	325		598	
Peak Hou	11:00		2:30	
Volume	78		115	
Facto	0.85		0.8	
DayTotal	**923**			

Transportation Studies, Inc.

1350 Reynolds Avenue, Ste 115

Irvine, CA. 92614

Location : NATIONAL AVENUE

Segment : B/T 16TH ST & SIGSBEE ST

Client : WILSON CO

Site: SAN DIEGO

Date: 12/04/07

Day: Tuesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	1	8	24	75	2	6	24	126	3	14	48	201
12:15	2		22		0		44		2		66	
12:30	2		13		1		32		3		45	
12:45	3		16		3		26		6		42	
01:00	3	10	13	83	2	7	22	107	5	17	35	190
01:15	3		22		2		18		5		40	
01:30	3		24		2		28		5		52	
01:45	1		24		1		39		2		63	
02:00	1	3	13	76	0	2	27	131	1	5	40	207
02:15	2		11		0		30		2		41	
02:30	0		26		2		34		2		60	
02:45	0		26		0		40		0		66	
03:00	1	3	19	91	0	5	36	114	1	8	55	205
03:15	0		26		1		26		1		52	
03:30	0		28		1		38		1		66	
03:45	2		18		3		14		5		32	
04:00	1	6	25	106	2	18	30	93	3	24	55	199
04:15	0		20		5		20		5		40	
04:30	3		34		5		25		8		59	
04:45	2		27		6		18		8		45	
05:00	2	16	41	91	8	33	15	67	10	49	56	158
05:15	2		15		2		22		4		37	
05:30	10		18		8		18		18		36	
05:45	2		17		15		12		17		29	
06:00	5	31	7	34	10	57	11	47	15	88	18	81
06:15	3		9		9		16		12		25	
06:30	13		12		20		12		33		24	
06:45	10		6		18		8		28		14	
07:00	10	44	4	23	12	79	10	36	22	123	14	59
07:15	8		5		16		14		24		19	
07:30	14		8		20		5		34		13	
07:45	12		6		31		7		43		13	
08:00	21	58	6	26	31	113	12	57	52	171	18	83
08:15	8		5		21		14		29		19	
08:30	10		8		35		26		45		34	
08:45	19		7		26		5		45		12	
09:00	20	101	8	18	25	118	8	22	45	219	16	40
09:15	30		4		27		3		57		7	
09:30	26		2		34		5		60		7	
09:45	25		4		32		6		57		10	
10:00	15	78	7	19	24	114	4	17	39	192	11	36
10:15	15		5		30		7		45		12	
10:30	22		4		28		2		50		6	
10:45	26		3		32		4		58		7	
11:00	26	100	5	11	28	114	2	9	54	214	7	20
11:15	30		2		35		3		65		5	
11:30	22		2		31		2		53		4	
11:45	22		2		20		2		42		4	
Totals	458		653		666		826		1,124		1,479	
Split%	40.7		44.2		59.3		55.8					
Day Totals		1,111				1,492				2,603		
Day Splits		42.7				57.3						
Peak Hour	10:30		04:15		10:45		02:15		10:45		02:45	
Volume	104		122		126		140		230		239	
Factor	0.87		0.74		0.90		0.88		0.88		0.91	

Data File : D0711790

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
19 ST	[COMMERCIAL ST - IMPERIAL AV]	00001 - 00100	2094	NORTH :	3834	1/16/2008	0543-07
19 ST	[K ST - SD 005 R-B]	00300 - 00320	2095	NORTH 1-WY :	11190	11/16/2005	0689-05
25 ST	[COMMERCIAL ST - IMPERIAL AV]	00001 - 00100	2172	NORTH :	3718	1/16/2008	0545-07
				SOUTH :	3340	1/16/2008	0545-07
				*TOTAL :	7060		
25 ST	[K ST - J ST]	00300 - 00400	2171	NORTH :	4960	11/10/2005	0690-05
				SOUTH :	5110	11/10/2005	0690-05
				*TOTAL :	10070		
25 ST	[MARKET ST - G ST]	00600 - 00700	2175	NORTH :	6920	10/17/2006	0427-6
				SOUTH :	6130	10/17/2006	0427-06
				*TOTAL :	13040		
25 ST	[E ST - BROADWAY]	00900 - 01000	2170	NORTH :	5570	10/17/2006	0426-06
				SOUTH :	7090	10/17/2006	0426-06
				*TOTAL :	12660		
25 ST	[BROADWAY - C ST]	01000 - 01100	2173	NORTH :	5100	11/16/2005	0691-05
				SOUTH :	5460	11/16/2005	0691-05
				*TOTAL :	10560		
26 ST	[NEWTON AV (N) - NATIONAL AV]	01100S - 01000S	NONE	BOTH :	2380	2/4/2003	0163-03
26 ST	[B ST - A ST]	01200 - 01300	2811	NORTH :	2640	10/25/2006	0438-06
				SOUTH :	3160	10/25/2006	0438-06
				*TOTAL :	5800		
26 ST RD	[GOLF COURSE DR - CMTO CTRO]	01400 - 01650	2810	BOTH :	11870	3/10/2004	0213-04
				NORTH :	6660	3/13/2007	0146-07
				SOUTH :	4990	3/13/2007	0146-07
				*TOTAL :	11650		
27 SB ST	[CORONADO SB AV - CMTO SECOYA]	01100 - 01250	4341	NORTH :	2120	12/7/2005	0651-05

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION		WK-DAY VOLUME	STARTING DATE	FILE NUMBER
28 ST	[C ST - B ST]	01100 - 01200	2182	*TOTAL	:	8930		
28 ST	[MAIN ST - BOSTON AV]	01300S - 01200S	2020	NORTH	:	12380	11/8/2005	0679-05
				SOUTH	:	13640	11/8/2005	0679-05
				*TOTAL	:	26020		
28 ST	[HARBOR DR - MAIN ST]	01399S - 01300S	2021	NORTH	:	9710	11/8/2005	0677-05
				SOUTH	:	9690	11/8/2005	0677-05
				*TOTAL	:	18400		
28 ST	[ASH ST - BEECH ST]	01400 - 01500	2183	BOTH	:	3870	4/23/2003	0484-03
				NORTH	:	2170	3/9/2006	0158-06
				SOUTH	:	1760	3/9/2006	0158-06
				*TOTAL	:	3930		
30 ST	[K ST (W) - J ST]	00300 - 00400	2197	NORTH	:	1130	1/16/2008	0549-07
				SOUTH	:	1530	1/16/2008	0549-07
				*TOTAL	:	2660		
30 ST	[CLAY AV - WEBSTER AV]	00300S - 00200S	2195	NORTH	:	1630	1/16/2008	0548-07
				SOUTH	:	1320	1/16/2008	0548-07
				*TOTAL	:	2940		
30 ST	[E ST - BROADWAY]	00900 - 01000	2190	NORTH	:	2170	1/16/2008	0547-07
				SOUTH	:	2290	1/16/2008	0547-07
				*TOTAL	:	4460		
30 ST	[BROADWAY - C ST]	01000 - 01100	2191	NORTH	:	8190	10/17/2006	0429-06
				SOUTH	:	7820	10/17/2006	0429-06
				*TOTAL	:	16010		
30 ST	[C ST - B ST]	01100 - 01200	2192	NORTH	:	7550	11/17/2005	0693-05
				SOUTH	:	5830	11/17/2005	0693-05
				*TOTAL	:	13380		
30 ST	[FIR ST - GRAPE ST]	01900 - 02000	2312	BOTH	:	3340	3/30/2004	0288-04
				NORTH	:	1600	4/4/2007	0203-07

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
32 ST	[G ST - F ST]	00700 - 00800	2005	SOUTH	4270	10/17/2006	0413-06
				*TOTAL	7030		
32 ST	[GREELY AV - MARTIN AV (S)]	00800S - 00710S	2002	NORTH	2050	1/16/2008	0538-07
				SOUTH	2300	1/16/2008	0538-07
				*TOTAL	4350		
32 ST	[NEWTON AV - NATIONAL AV]	01100S - 01000S	2000	NORTH	2670	11/8/2005	0676-05
				SOUTH	2680	11/8/2005	0676-05
				*TOTAL	5350		
32 ST	[WABASH BL - UNNAMED 4 RD]	01700S - 01600S	2001	NORTH	6430	10/17/2006	0411-06
				SOUTH	7590	10/17/2006	0411-06
				*TOTAL	14020		
32 ST	[MCCANDLESS BL - WABASH BL]	01800S - 01700S	2006	NORTH	10540	1/16/2008	0540-07
				SOUTH	9810	1/16/2008	0540-07
				*TOTAL	20350		
32 ST	[THORN ST - UPAS ST]	03300 - 03400	2330	BOTH	3960	4/6/2004	0338-04
				NORTH	2380	4/4/2007	0207-07
				SOUTH	1580	4/4/2007	02/07/07
				*TOTAL	3960		
32 ST	[DWIGHT ST - LANDIS ST]	03600 - 03700	2333	NORTH	3070	4/27/2005	0202-05
				SOUTH	1970	4/27/2005	0202-05
				*TOTAL	5040		
32 ST	[N PK WY - UNIVERSITY AV]	03800 - 03900	2334	BOTH	7440	4/6/2004	0342-04
				NORTH	4810	4/4/2007	0208-07
				SOUTH	1930	4/4/2007	0208-07
				*TOTAL	6740		
32 ST	[UNIVERSITY AV - LINCOLN AV]	03900 - 04000	2335	NORTH	1530	5/4/2006	0212-06
				SOUTH	1720	5/4/2006	0212-06
				*TOTAL	3250		

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
LK MURRAY BL	[BLUE LK DR - JACKSON DR]	08330 - 08380	3514	NORTH	6100	5/26/2005	0262-05
				SOUTH	6070	5/26/2005	0262-05
				*TOTAL	12170		
LK MURRAY BL	[BEAVER LK DR - SN CARLOS DR]	08550 - 08600	3513	NORTH	7510	5/26/2005	0261-05
				SOUTH	7250	5/26/2005	0261-05
				*TOTAL	14760		
LOGAN AV	[16 ST - 17 ST]	01600 - 01650	NONE	EAST	1080	3/12/2003	0210-03
				WEST	1650	3/12/2003	0209-03
				*TOTAL	2730		
				EAST	1340	2/25/2004	0163-04
				WEST	2190	2/25/2004	0164-04
				*TOTAL	3530		
LOGAN AV	[SIGSBEE ST - BEARDSLEY ST]	01700 - 01800	2981	EAST	1780	1/17/2008	0558-07
				WEST	1240	1/17/2008	0558-07
				*TOTAL	3010		
LOGAN AV	[C CHAVEZ PY - SD 005 R-C]	01900 - 02000	2980	EAST	7730	10/19/2006	0439-06
				WEST	1150	10/19/2006	0439-06
				*TOTAL	8880		
LOGAN AV	[44 ST - ELIZABETH ST]	04400 - 04450	3031	EAST	3680	1/6/2004	0009-04
				WEST	4290	1/6/2004	0010-04
				*TOTAL	7970		
LOGAN AV	[49 ST - EUCLID AV]	04900 - 05100	3030	EAST	5410	1/14/2003	0077-03
				WEST	4430	1/14/2003	0078-03
				*TOTAL	9840		
				EAST	5750	1/17/2006	0005-06
				WEST	5410	1/17/2006	0005-06
				*TOTAL	11160		
LOMALAND DR	[CATALINA BL - TEMPLE ST]	03800 - 03850	1075	EAST	2340	6/24/2004	0481-04

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
MAIN SB ST	[ALAMITOS AV - HOLLISTER ST]	02200 - 02300	4311	EAST	11260	12/12/2006	0577-06
				WEST	12270	12/12/2006	0577-06
				*TOTAL	23530		
MAIN ST	[27 ST - 28 ST]	02700 - 02800	2052	EAST	3780	10/17/2006	0419-06
				WEST	3660	10/17/2006	0419-06
				*TOTAL	7440		
MAIN ST	[29 ST - 30 ST]	02900 - 03000	2053	EAST	7460	11/16/2005	0681-05
				WEST	6870	11/16/2005	0681-05
				*TOTAL	14330		
MAIN ST	[RIGEL ST - SIVA ST]	03350 - 03400	3551	WEST	7940	1/7/2003	0056-03
				EAST	9010	1/9/2003	0055-03
				EAST	7990	1/24/2006	0029-06
				WEST	7960	1/24/2006	0029-06
				*TOTAL	15950		
MAIN ST	[VESTA ST - WODEN ST]	03700 - 03740	3550	EAST	7490	1/6/2004	0005-04
				WEST	8620	1/6/2004	0006-04
				*TOTAL	16110		
				EAST	8100	1/18/2007	0027-07
				WEST	7070	1/18/2007	0027-07
				*TOTAL	15170		
MALLARD ST	[ORIOLE ST - SWAN ST]	06300 - 06400	3727	EAST	3620	2/3/2005	0105-05
				WEST	4180	2/3/2005	0105-05
				*TOTAL	7800		
				EAST	3900	2/21/2008	0028-08
				WEST	3690	2/21/2008	0028-08
				*TOTAL	7590		
MANGO DR	[CALAIS DR - D M HTS RD]	13600 - 13800	5057	NORTH	1720	8/26/2004	0603-04
				SOUTH	1550	8/26/2004	0603-04

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION		WK-DAY VOLUME	STARTING DATE	FILE NUMBER
NARRAGANSETT AV	[STA BARBARA ST - GUIZOT ST]	04400 - 04500	1090	EAST	:	1620	6/24/2004	0492-04
				WEST	:	1750	6/24/2004	0492-04
				*TOTAL	:	3370		
				EAST	:	1540	6/28/2007	0323-07
				WEST	:	1930	6/28/2007	0323-07
				*TOTAL	:	3470		
NATIONAL AV	[COMMERCIAL ST - 16 ST]	01400 - 01600	NONE	EAST	:	1090	3/12/2003	0211-03
				WEST	:	1280	3/12/2003	0212-03
				*TOTAL	:	2370		
				EAST	:	940	2/25/2004	0161-04
				WEST	:	1520	2/25/2004	0162-04
				*TOTAL	:	2460		
NATIONAL AV	[BEARDSLEY ST - C CHAVEZ PY]	01800 - 01900	2721	EAST	:	2810	11/10/2005	0698-05
				WEST	:	2490	11/10/2005	0698-05
				*TOTAL	:	5300		
NATIONAL AV	[EVANS ST - SAMPSON ST]	02100 - 02200	2060	EAST	:	1780	11/10/2005	0683-05
				WEST	:	1920	11/10/2005	0683-05
				*TOTAL	:	3700		
NATIONAL AV	[26 ST - 27 ST]	02600 - 02700	2062	EAST	:	3510	1/16/2008	0541-07
				WEST	:	4280	1/16/2008	0541-07
				*TOTAL	:	7790		
NATIONAL AV	[28 ST - 29 ST]	02800 - 02900	2059	BOTH	:	13440	10/17/2006	0420-06
NATIONAL AV	[30 ST - 31 ST]	03000 - 03100	2065	EAST	:	7530	11/3/2005	0684-05
				WEST	:	6880	11/3/2005	0684-05
				*TOTAL	:	14410		
NATIONAL AV	[33 ST - 35 ST]	03300 - 03500	3001	EAST	:	6730	1/7/2003	0060-03
				WEST	:	6740	1/7/2003	0061-03
				*TOTAL	:	13470		
				EAST	:	5930	1/17/2006	0002-06

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
SAIPAN DR	[ALLEGHANY ST - POTOMAC ST]	02100 - 02300	NONE	SOUTH	1200	2/2/2005	0038-05
				*TOTAL	2210		
			3542	NORTH	1360	2/10/2005	0104-05
				SOUTH	1620	2/10/2005	0104-05
				*TOTAL	2990		
				NORTH	1350	2/21/2008	0042-08
				SOUTH	1400	2/21/2008	0042-08
				*TOTAL	2740		
SALMON RIVER RD	[CAL ROSAS - ADOLPHIA ST]	12800 - 12900	5270	NORTH	1410	3/1/2005	0137-05
				SOUTH	1550	3/1/2005	0137-05
				*TOTAL	2960		
				NORTH	1280	2/26/2008	0098-08
				SOUTH	1410	2/26/2008	0098-08
				*TOTAL	2690		
SALMON RIVER RD	[FAIRGROVE LN - PSO MONTALBAN]	13300 - 13400	5269	BOTH	4770	2/19/2003	0125-03
SAMPSON ST	[NATIONAL AV - NEWTON AV]	01000 - 01100	2033	NORTH	1570	11/15/2005	0680-05
				SOUTH	2230	11/15/2005	0680-05
				*TOTAL	3800		
SANDROCK RD	[GREYLING DR - MURRAY RDG RD]	03300 - 03380	6171	NORTH	4520	9/26/2006	0357-06
				SOUTH	5210	9/26/2006	0357-06
				*TOTAL	9730		
SANDROCK RD	[GLENHAVEN ST - HAVETEUR WY]	03450 - 03490	6170	NORTH	6090	11/3/2005	0583-05
				SOUTH	5790	11/3/2005	0583-05
				*TOTAL	11880		
SANTO RD	[FRIARS RD - ADM BAKER RD]	02350 - 02400	8024	SOUTH	4790	4/17/2003	0468-03
				NORTH	4860	4/19/2003	0467-03
				NORTH	4730	5/20/2003	0509-03
				SOUTH	5340	5/20/2003	0510-03

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION		WK-DAY VOLUME	STARTING DATE	FILE NUMBER
VALLEY RD	[CAL ABAJO - REO DR]	05700 - 05900	3094	EAST	:	3260	3/21/2007	0160-07
				WEST	:	3650	3/21/2007	0160-07
				*TOTAL	:	6910		
VALLEY RD	[REO DR - TONAWANDA DR]	05900 - 05999	3093	EAST	:	6490	2/1/2005	0029-05
				WEST	:	6240	2/1/2005	0029-05
				*TOTAL	:	12730		
				EAST	:	3070	2/19/2008	0047-08
				WEST	:	2940	2/19/2008	0047-08
				*TOTAL	:	6010		
VAN DYKE AV	[ADAMS AV - ALDINE DR]	04700 - 04729	3381	NORTH	:	3460	5/4/2006	0226-06
				SOUTH	:	3360	5/4/2006	0226-06
				*TOTAL	:	6820		
VANDEVER AV	[RIVERDALE ST - MSS GORGE RD]	04400 - 04500	9231	EAST	:	4190	5/27/2005	0367-05
				WEST	:	2530	5/27/2005	0367-05
				*TOTAL	:	7050		
VANDEVER AV	[MSS GORGE RD - DECENA DR]	04500 - 04550	NONE	EAST	:	940	5/17/2005	0368-05
				WEST	:	770	5/17/2005	0368-05
				*TOTAL	:	1710		
VESTA ST	[ACACIA ST - BIRCH ST]	01700 - 01800	3356	BOTH	:	5050	1/7/2003	0057-03
				NORTH	:	2640	1/24/2006	0024-06
VESTA ST	[DALBERGIA ST - MAIN ST]	02000 - 02100	3355	BOTH	:	4650	2/5/2003	0109-03
				NORTH	:	2610	1/24/2006	0023-06
				SOUTH	:	2290	1/24/2006	0023-06
				*TOTAL	:	4900		
VETERANS HOSP DR	[L J VILGE DR - N/O]	00001 - 00009	NONE	NORTH	:	10020	11/30/2006	0592-06
				SOUTH	:	9560	11/30/2006	0592-06
				*TOTAL	:	19580		

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-015

Location: National Ave btwn Beardsley St & Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			2		0			12:00			41		48		
00:15			0		0			12:15			34		37		
00:30			0		1			12:30			27		32		
00:45			1	3	1	2	5	12:45			22	124	25	142	266
01:00			0		0			13:00			33		39		
01:15			0		1			13:15			48		49		
01:30			1		2			13:30			24		32		
01:45			0	1	0	3	4	13:45			41	146	42	162	308
02:00			0		0			14:00			24		28		
02:15			0		1			14:15			26		32		
02:30			0		0			14:30			29		36		
02:45			0	0	1	2	2	14:45			35	114	39	135	249
03:00			2		1			15:00			36		39		
03:15			0		0			15:15			43		45		
03:30			0		5			15:30			26		29		
03:45			0	2	4	10	12	15:45			26	131	32	145	276
04:00			0		2			16:00			31		19		
04:15			0		3			16:15			34		27		
04:30			2		4			16:30			47		26		
04:45			10	12	9	18	30	16:45			31	143	33	105	248
05:00			6		5			17:00			69		28		
05:15			10		13			17:15			31		19		
05:30			17		17			17:30			25		28		
05:45			13	46	18	53	99	17:45			22	147	27	102	249
06:00			11		14			18:00			28		28		
06:15			17		14			18:15			26		22		
06:30			20		23			18:30			34		29		
06:45			14	62	20	71	133	18:45			24	112	23	102	214
07:00			12		19			19:00			20		17		
07:15			15		25			19:15			15		14		
07:30			27		33			19:30			5		6		
07:45			19	73	35	112	185	19:45			3	43	13	50	93
08:00			12		44			20:00			2		7		
08:15			12		37			20:15			0		9		
08:30			31		38			20:30			3		7		
08:45			15	70	34	153	223	20:45			2	7	10	33	40
09:00			24		33			21:00			2		5		
09:15			27		32			21:15			1		14		
09:30			26		32			21:30			4		8		
09:45			36	113	37	134	247	21:45			5	12	11	38	50
10:00			21		28			22:00			7		3		
10:15			14		21			22:15			9		7		
10:30			29		32			22:30			5		3		
10:45			33	97	32	113	210	22:45			3	24	4	17	41
11:00			28		35			23:00			1		3		
11:15			20		26			23:15			3		6		
11:30			23		23			23:30			1		1		
11:45			42	113	45	129	242	23:45			0	5	3	13	18
Total Vol.				592		800	1392					1008		1044	2052

Daily Totals

	NB	SB		EB	WB
			Combined	1600	1844
			3444		

	AM			PM		
Split %	42.5%	57.5%	40.4%	49.1%	50.9%	59.6%
Peak Hour	11:45	11:45	11:45	16:15	13:00	13:00
Volume	144	162	306	181	162	308
P.H.F.	0.86	0.84	0.86	0.66	0.83	0.79

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-015

Location: National Ave btwn Beardsley St & Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			3		0			12:00			45		55		
00:15			2		0			12:15			29		36		
00:30			0		2			12:30			26		35		
00:45			1	6	1	3	9	12:45			25	125	17	143	268
01:00			0		1			13:00			37		37		
01:15			2		2			13:15			51		49		
01:30			1		2			13:30			21		36		
01:45			0	3	2	7	10	13:45			40	149	45	167	316
02:00			0		0			14:00			19		28		
02:15			0		2			14:15			28		36		
02:30			0		1			14:30			36		35		
02:45			1	1	0	3	4	14:45			32	115	40	139	254
03:00			1		1			15:00			38		39		
03:15			2		0			15:15			42		47		
03:30			0		6			15:30			28		39		
03:45			0	3	2	9	12	15:45			23	131	29	154	285
04:00			2		1			16:00			28		17		
04:15			1		2			16:15			37		25		
04:30			1		6			16:30			43		30		
04:45			12	16	7	16	32	16:45			33	141	37	109	250
05:00			4		9			17:00			72		34		
05:15			7		16			17:15			33		19		
05:30			22		17			17:30			20		28		
05:45			9	42	19	61	103	17:45			30	155	28	109	264
06:00			13		9			18:00			30		30		
06:15			17		17			18:15			29		24		
06:30			13		23			18:30			39		30		
06:45			18	61	26	75	136	18:45			23	121	30	114	235
07:00			8		24			19:00			27		17		
07:15			19		28			19:15			17		18		
07:30			18		33			19:30			6		8		
07:45			25	70	34	119	189	19:45			5	55	13	56	111
08:00			8		46			20:00			1		7		
08:15			11		37			20:15			1		8		
08:30			35		36			20:30			3		9		
08:45			16	70	31	150	220	20:45			2	7	13	37	44
09:00			32		29			21:00			1		9		
09:15			24		31			21:15			0		16		
09:30			27		36			21:30			6		11		
09:45			31	114	38	134	248	21:45			5	12	7	43	55
10:00			25		28			22:00			9		1		
10:15			15		15			22:15			7		6		
10:30			30		30			22:30			9		5		
10:45			31	101	31	104	205	22:45			5	30	7	19	49
11:00			35		36			23:00			0		4		
11:15			27		22			23:15			1		8		
11:30			30		25			23:30			1		1		
11:45			44	136	40	123	259	23:45			0	2	4	17	19
Total Vol.				623		804	1427					1043		1107	2150

Daily Totals

	NB	SB		EB	WB
			Combined	1666	1911
			3577		

	AM			PM		
Split %	43.7%	56.3%	39.9%	48.5%	51.5%	60.1%
Peak Hour	11:30	11:45	11:45	16:15	13:00	13:00
Volume	148	166	310	185	167	316
P.H.F.	0.82	0.75	0.78	0.64	0.85	0.79

Volumes for: Wednesday, May 25, 2005 City: San Diego Project #: 05-4126-001

Location: National Ave. E/o Cesar Chavez Pkwy.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			8		24			12:00			15		24		
00:15			21		22			12:15			20		21		
00:30			21		23			12:30			18		17		
00:45			22	72	22	91	163	12:45			16	69	32	94	163
01:00			20		17			13:00			17		26		
01:15			20		16			13:15			14		38		
01:30			19		15			13:30			23		32		
01:45			18	77	16	64	141	13:45			12	66	29	125	191
02:00			14		16			14:00			29		28		
02:15			16		18			14:15			30		24		
02:30			18		14			14:30			31		31		
02:45			21	69	16	64	133	14:45			34	124	30	113	237
03:00			17		18			15:00			42		16		
03:15			14		15			15:15			40		18		
03:30			20		11			15:30			23		21		
03:45			13	64	15	59	123	15:45			41	146	20	75	221
04:00			31		15			16:00			47		21		
04:15			33		21			16:15			47		32		
04:30			33		20			16:30			50		39		
04:45			38	135	17	73	208	16:45			51	195	40	132	327
05:00			30		24			17:00			42		45		
05:15			33		16			17:15			38		30		
05:30			26		24			17:30			31		37		
05:45			45	134	19	83	217	17:45			47	158	36	148	306
06:00			24		20			18:00			30		20		
06:15			28		14			18:15			31		21		
06:30			39		11			18:30			20		19		
06:45			33	124	19	64	188	18:45			18	99	20	80	179
07:00			34		19			19:00			17		15		
07:15			40		22			19:15			19		17		
07:30			39		22			19:30			20		20		
07:45			51	164	18	81	245	19:45			22	78	19	71	149
08:00			50		18			20:00			31		12		
08:15			45		20			20:15			20		16		
08:30			43		15			20:30			21		15		
08:45			43	181	13	66	247	20:45			18	90	8	51	141
09:00			57		26			21:00			15		10		
09:15			44		13			21:15			17		12		
09:30			50		15			21:30			15		18		
09:45			39	190	17	71	261	21:45			20	67	13	53	120
10:00			32		12			22:00			13		7		
10:15			48		10			22:15			17		16		
10:30			42		14			22:30			6		24		
10:45			34	156	13	49	205	22:45			12	48	23	70	118
11:00			24		10			23:00			16		29		
11:15			17		13			23:15			11		43		
11:30			16		10			23:30			12		59		
11:45			22	79	13	46	125	23:45			25	64	41	172	236
Total Vol.				1445		811	**2256**					1204		1184	**2388**

	AM			**PM**		
Split %	64.1%	35.9%	**48.6%**	50.4%	49.6%	**51.4%**
Peak Hour	08:45		**07:30**	16:00	23:00	**16:15**
Volume	194	91	**263**	195	172	**346**
P.H.F.	0.85	0.95	**0.95**	0.96	0.73	**0.95**

Daily Totals

NB	SB	EB	WB	Combined
		2649	1995	**4644**

A-58

Volumes for: Thursday, November 10, 2005 City: San Diego FILE#: 0683-05

Location: NATIONAL AV (EVANS ST - SAMPSON ST) [2060] ADT: 3700

AM Period	EB		WB			PM Period	EB		WB		
00:00	2		6			12:00	18		39		
00:15	0		0			12:15	22		44		
00:30	2		1			12:30	24		29		
00:45	2	6	5	12	18	12:45	20	84	39	151	235
01:00	4		1			13:00	22		31		
01:15	0		1			13:15	32		47		
01:30	2		5			13:30	24		39		
01:45	1	7	0	7	14	13:45	25	103	30	147	250
02:00	2		3			14:00	31		38		
02:15	0		0			14:15	32		39		
02:30	1		3			14:30	37		36		
02:45	1	4	0	6	10	14:45	31	131	47	160	291
03:00	0		0			15:00	46		39		
03:15	0		0			15:15	37		26		
03:30	4		0			15:30	34		29		
03:45	1	5	1	1	6	15:45	31	148	29	123	271
04:00	1		0			16:00	29		34		
04:15	2		1			16:15	36		32		
04:30	5		0			16:30	46		34		
04:45	6	14	6	7	21	16:45	32	143	29	129	272
05:00	8		1			17:00	35		39		
05:15	8		5			17:15	29		25		
05:30	17		18			17:30	41		26		
05:45	14	47	14	38	85	17:45	34	139	31	121	260
06:00	14		13			18:00	24		18		
06:15	11		8			18:15	28		26		
06:30	29		34			18:30	19		23		
06:45	19	73	21	76	149	18:45	24	95	29	96	191
07:00	19		13			19:00	17		16		
07:15	16		23			19:15	25		17		
07:30	18		23			19:30	11		9		
07:45	17	70	32	91	161	19:45	13	66	14	56	122
08:00	34		32			20:00	10		9		
08:15	24		52			20:15	23		14		
08:30	32		25			20:30	14		18		
08:45	29	119	22	131	250	20:45	14	61	17	58	119
09:00	41		46			21:00	14		17		
09:15	30		42			21:15	11		3		
09:30	31		26			21:30	10		13		
09:45	48	150	36	150	300	21:45	6	41	13	46	87
10:00	38		42			22:00	17		17		
10:15	34		36			22:15	8		8		
10:30	13		23			22:30	4		6		
10:45	25	110	23	124	234	22:45	5	34	6	37	71
11:00	26		39			23:00	8		5		
11:15	22		22			23:15	7		6		
11:30	24		31			23:30	6		1		
11:45	32	104	40	132	236	23:45	2	23	5	17	40
Total Vol.		709		775	1484			1068		1141	2209

Daily Totals

	EB	WB	Combined
	1777	1916	3693

	AM			PM		
Split %	47.8%	52.2%	40.2%	48.3%	51.7%	59.8%
Peak Hour	09:30	11:30	09:00	14:30	14:15	14:15
Volume	151	154	300	151	161	307
P.H.F.	0.79	0.88	0.86	0.82	0.86	0.90

0683-05

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-016

Location: National Ave btwn Sampson St & 27th St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			4		5			12:00			78		88		
00:15			2		6			12:15			72		70		
00:30			22		6			12:30			73		80		
00:45			11	39	2	19	58	12:45			57	280	81	319	599
01:00			4		4			13:00			78		83		
01:15			0		3			13:15			69		87		
01:30			3		4			13:30			83		117		
01:45			2	9	0	11	20	13:45			73	303	96	383	686
02:00			1		2			14:00			90		96		
02:15			3		4			14:15			79		84		
02:30			8		9			14:30			155		105		
02:45			2	14	7	22	36	14:45			143	467	96	381	848
03:00			2		4			15:00			107		89		
03:15			1		9			15:15			111		105		
03:30			2		12			15:30			99		83		
03:45			1	6	14	39	45	15:45			86	403	74	351	754
04:00			0		19			16:00			84		63		
04:15			3		49			16:15			72		59		
04:30			1		58			16:30			64		59		
04:45			3	7	91	217	224	16:45			56	276	53	234	510
05:00			8		135			17:00			65		47		
05:15			16		136			17:15			59		40		
05:30			25		135			17:30			75		55		
05:45			30	79	98	504	583	17:45			52	251	58	200	451
06:00			25		113			18:00			45		69		
06:15			21		78			18:15			43		37		
06:30			36		69			18:30			60		42		
06:45			28	110	58	318	428	18:45			40	188	41	189	377
07:00			18		47			19:00			23		44		
07:15			24		45			19:15			26		33		
07:30			18		46			19:30			37		29		
07:45			31	91	70	208	299	19:45			29	115	25	131	246
08:00			27		63			20:00			26		29		
08:15			29		57			20:15			32		24		
08:30			33		69			20:30			27		24		
08:45			42	131	58	247	378	20:45			36	121	31	108	229
09:00			40		60			21:00			23		24		
09:15			51		79			21:15			21		18		
09:30			60		66			21:30			24		30		
09:45			56	207	64	269	476	21:45			22	90	32	104	194
10:00			46		69			22:00			18		15		
10:15			64		65			22:15			23		20		
10:30			55		72			22:30			29		15		
10:45			70	235	72	278	513	22:45			5	75	4	54	129
11:00			65		74			23:00			11		10		
11:15			51		84			23:15			14		12		
11:30			72		73			23:30			11		6		
11:45			65	253	65	296	549	23:45			5	41	12	40	81
Total Vol.			1181		2428		3609				2610		2494		5104

Daily Totals

	NB	SB		EB	WB
			Combined	3791	4922
			8713		

	AM			PM		
Split %	32.7%	67.3%	41.4%	51.1%	48.9%	58.6%
Peak Hour	11:45	05:00	11:45	14:30	13:15	14:30
Volume	288	504	591	516	396	911
P.H.F.	0.92	0.93	0.89	0.83	0.85	0.88

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-016

Location: National Ave btwn Sampson St & 27th St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			3		6			12:00			74		69		
00:15			4		7			12:15			71		69		
00:30			20		9			12:30			71		56		
00:45			14	41	8	30	71	12:45			68	284	90	284	568
01:00			6		6			13:00			79		91		
01:15			0		1			13:15			52		98		
01:30			3		4			13:30			74		91		
01:45			1	10	4	15	25	13:45			54	259	104	384	643
02:00			1		2			14:00			70		93		
02:15			4		4			14:15			72		80		
02:30			4		7			14:30			134		102		
02:45			3	12	8	21	33	14:45			113	389	95	370	759
03:00			2		2			15:00			153		87		
03:15			0		12			15:15			124		70		
03:30			1		11			15:30			99		90		
03:45			1	4	18	43	47	15:45			92	468	69	316	784
04:00			2		23			16:00			76		61		
04:15			4		50			16:15			71		59		
04:30			2		65			16:30			65		55		
04:45			5	13	92	230	243	16:45			75	287	72	247	534
05:00			8		136			17:00			75		61		
05:15			13		128			17:15			56		58		
05:30			19		135			17:30			61		59		
05:45			26	66	108	507	573	17:45			44	236	63	241	477
06:00			15		94			18:00			38		48		
06:15			32		82			18:15			43		56		
06:30			22		68			18:30			53		43		
06:45			12	81	75	319	400	18:45			34	168	41	188	356
07:00			22		36			19:00			42		43		
07:15			24		27			19:15			29		37		
07:30			10		52			19:30			48		39		
07:45			31	87	66	181	268	19:45			44	163	24	143	306
08:00			29		59			20:00			37		28		
08:15			24		55			20:15			35		32		
08:30			28		52			20:30			17		29		
08:45			33	114	66	232	346	20:45			36	125	24	113	238
09:00			30		61			21:00			35		26		
09:15			31		47			21:15			20		28		
09:30			32		49			21:30			20		34		
09:45			24	117	54	211	328	21:45			24	99	23	111	210
10:00			33		46			22:00			13		20		
10:15			48		47			22:15			11		15		
10:30			35		53			22:30			25		16		
10:45			43	159	60	206	365	22:45			6	55	7	58	113
11:00			48		60			23:00			15		10		
11:15			41		52			23:15			7		8		
11:30			41		67			23:30			7		5		
11:45			47	177	61	240	417	23:45			6	35	14	37	72
Total Vol.				881		2235	3116					2568		2492	5060

Daily Totals

	NB	SB		EB	WB
			Combined	3449	4727
			8176		

	AM			PM		
Split %	28.3%	71.7%	38.1%	50.8%	49.2%	61.9%
Peak Hour	11:45	05:00	05:00	14:30	13:15	14:30
Volume	263	507	573	524	386	878
P.H.F.	0.89	0.93	0.93	0.86	0.93	0.91

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-017

Location: Boston Ave btwn 29th St & 30th St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		5			12:00			17		16		
00:15			2		6			12:15			12		19		
00:30			7		4			12:30			10		17		
00:45			2	12	2	17	29	12:45			15	54	22	74	128
01:00			3		1			13:00			12		28		
01:15			3		0			13:15			15		20		
01:30			0		1			13:30			12		26		
01:45			3	9	2	4	13	13:45			10	49	16	90	139
02:00			2		0			14:00			16		22		
02:15			0		3			14:15			9		39		
02:30			1		3			14:30			12		43		
02:45			0	3	1	7	10	14:45			16	53	37	141	194
03:00			0		1			15:00			22		53		
03:15			0		2			15:15			31		42		
03:30			0		1			15:30			18		37		
03:45			0	0	1	5	5	15:45			20	91	32	164	255
04:00			0		4			16:00			18		26		
04:15			1		0			16:15			17		14		
04:30			0		5			16:30			20		17		
04:45			4	5	7	16	21	16:45			15	70	18	75	145
05:00			3		12			17:00			12		28		
05:15			6		15			17:15			19		32		
05:30			11		20			17:30			17		19		
05:45			20	40	14	61	101	17:45			8	56	12	91	147
06:00			10		26			18:00			14		20		
06:15			11		19			18:15			7		11		
06:30			15		24			18:30			11		17		
06:45			9	45	21	90	135	18:45			18	50	24	72	122
07:00			4		20			19:00			10		18		
07:15			7		11			19:15			15		10		
07:30			9		20			19:30			10		7		
07:45			11	31	29	80	111	19:45			8	43	7	42	85
08:00			15		27			20:00			9		10		
08:15			11		24			20:15			4		13		
08:30			9		13			20:30			10		8		
08:45			2	37	19	83	120	20:45			8	31	11	42	73
09:00			8		16			21:00			7		4		
09:15			15		19			21:15			11		9		
09:30			13		11			21:30			21		4		
09:45			15	51	21	67	118	21:45			11	50	6	23	73
10:00			9		24			22:00			8		7		
10:15			13		19			22:15			5		5		
10:30			15		14			22:30			12		7		
10:45			9	46	21	78	124	22:45			7	32	4	23	55
11:00			13		19			23:00			1		11		
11:15			15		25			23:15			3		4		
11:30			15		25			23:30			9		1		
11:45			20	63	20	89	152	23:45			3	16	2	18	34
Total Vol.				342		597	939					595		855	1450

Daily Totals

	NB	SB		EB	WB
			Combined	937	1452
			2389		

	AM			PM		
Split %	36.4%	63.6%	39.3%	41.0%	59.0%	60.7%
Peak Hour	11:15	07:30	11:15	15:00	14:30	14:30
Volume	67	100	153	91	175	256
P.H.F.	0.84	0.86	0.96	0.73	0.83	0.85

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-017

Location: Boston Ave btwn 29th St & 30th St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			4		3			12:00			22		11		
00:15			2		1			12:15			24		12		
00:30			1		1			12:30			24		23		
00:45			2	9	4	9	18	12:45			15	85	19	65	150
01:00			0		0			13:00			12		13		
01:15			3		2			13:15			23		15		
01:30			0		4			13:30			13		20		
01:45			0	3	2	8	11	13:45			9	57	13	61	118
02:00			0		0			14:00			10		20		
02:15			3		0			14:15			9		18		
02:30			0		0			14:30			8		35		
02:45			0	3	3	3	6	14:45			13	40	51	124	164
03:00			0		0			15:00			17		82		
03:15			5		2			15:15			24		65		
03:30			3		3			15:30			25		36		
03:45			1	9	1	6	15	15:45			17	83	27	210	293
04:00			0		5			16:00			13		45		
04:15			2		2			16:15			15		29		
04:30			3		3			16:30			19		27		
04:45			3	8	5	15	23	16:45			16	63	24	125	188
05:00			2		9			17:00			14		29		
05:15			6		14			17:15			13		20		
05:30			14		16			17:30			15		29		
05:45			20	42	11	50	92	17:45			10	52	16	94	146
06:00			28		13			18:00			13		24		
06:15			23		17			18:15			10		24		
06:30			11		26			18:30			6		19		
06:45			5	67	31	87	154	18:45			3	32	13	80	112
07:00			5		14			19:00			11		15		
07:15			8		16			19:15			10		20		
07:30			10		26			19:30			5		20		
07:45			14	37	20	76	113	19:45			15	41	12	67	108
08:00			9		20			20:00			11		8		
08:15			10		13			20:15			13		10		
08:30			13		21			20:30			14		16		
08:45			18	50	14	68	118	20:45			11	49	12	46	95
09:00			13		10			21:00			9		7		
09:15			6		21			21:15			6		9		
09:30			8		18			21:30			5		11		
09:45			3	30	24	73	103	21:45			5	25	15	42	67
10:00			7		23			22:00			9		10		
10:15			8		15			22:15			6		10		
10:30			13		17			22:30			3		5		
10:45			8	36	21	76	112	22:45			3	21	5	30	51
11:00			15		34			23:00			0		3		
11:15			27		26			23:15			6		4		
11:30			17		17			23:30			2		6		
11:45			23	82	9	86	168	23:45			3	11	2	15	26
Total Vol.				376		557	933					559		959	1518

Daily Totals

	NB	SB		EB	WB
			Combined	935	1516
			2451		

	AM			PM		
Split %	40.3%	59.7%	38.1%	36.8%	63.2%	61.9%
Peak Hour	11:45	10:30	11:00	12:00	14:45	14:45
Volume	93	98	168	85	234	313
P.H.F.	0.97	0.72	0.79	0.89	0.71	0.79

Volumes for: Tuesday, February 21, 2006 City: San Diego Project #: 06-4059-009

Location: Main St. w/o Cesar Chavez Blvd.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			3		0			12:00			20		16		
00:15			0		0			12:15			15		13		
00:30			2		0			12:30			10		10		
00:45			0	5	3	3	8	12:45			13	58	15	54	112
01:00			0		0			13:00			21		10		
01:15			0		0			13:15			8		9		
01:30			1		4			13:30			16		9		
01:45			0	1	3	7	8	13:45			13	58	15	43	101
02:00			0		0			14:00			17		22		
02:15			0		0			14:15			10		24		
02:30			0		2			14:30			13		24		
02:45			0	0	0	2	2	14:45			14	54	16	86	140
03:00			2		0			15:00			26		16		
03:15			0		1			15:15			28		30		
03:30			1		0			15:30			24		13		
03:45			2	5	0	1	6	15:45			13	91	8	67	158
04:00			2		1			16:00			26		17		
04:15			2		3			16:15			20		22		
04:30			0		1			16:30			25		1		
04:45			1	5	0	5	10	16:45			27	98	9	49	147
05:00			0		4			17:00			22		8		
05:15			1		3			17:15			22		10		
05:30			0		4			17:30			26		2		
05:45			5	6	6	17	23	17:45			26	96	2	22	118
06:00			2		1			18:00			19		6		
06:15			2		7			18:15			9		8		
06:30			6		7			18:30			1		3		
06:45			4	14	8	23	37	18:45			4	33	7	24	57
07:00			3		10			19:00			6		8		
07:15			13		16			19:15			5		6		
07:30			18		26			19:30			4		4		
07:45			9	43	22	74	117	19:45			4	19	2	20	39
08:00			18		16			20:00			2		7		
08:15			17		32			20:15			0		0		
08:30			19		46			20:30			5		2		
08:45			16	70	21	115	185	20:45			0	7	0	9	16
09:00			11		9			21:00			4		1		
09:15			16		11			21:15			0		0		
09:30			13		11			21:30			2		1		
09:45			19	59	6	37	96	21:45			1	7	3	5	12
10:00			16		9			22:00			3		1		
10:15			18		3			22:15			5		2		
10:30			4		19			22:30			3		0		
10:45			16	54	9	40	94	22:45			0	11	2	5	16
11:00			21		8			23:00			1		2		
11:15			12		22			23:15			4		4		
11:30			12		10			23:30			12		2		
11:45			19	64	7	47	111	23:45			1	18	2	10	28
Total Vol.				326		371	**697**					550		394	**944**

Daily Totals

NB	SB	EB	WB	Combined
		876	765	**1641**

	AM			PM		
Split %	46.8%	53.2%	**42.5%**	58.3%	41.7%	**57.5%**
Peak Hour	08:00	07:45	**08:00**	16:00	14:00	**14:30**
Volume	70	116	**185**	98	86	**167**
P.H.F.	0.92	0.63	**0.71**	0.91	0.90	**0.72**

A-52

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-018

Location: Main St btwn Cesar Chavez Pkwy & Sampson St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		3			12:00			25		24		
00:15			0		1			12:15			14		40		
00:30			2		4			12:30			20		23		
00:45			3	6	0	8	14	12:45			33	92	23	110	202
01:00			0		4			13:00			22		16		
01:15			2		0			13:15			26		23		
01:30			0		2			13:30			18		17		
01:45			2	4	2	8	12	13:45			18	84	24	80	164
02:00			0		0			14:00			22		21		
02:15			0		0			14:15			27		38		
02:30			2		0			14:30			20		33		
02:45			0	2	0	0	2	14:45			29	98	39	131	229
03:00			0		1			15:00			20		25		
03:15			0		0			15:15			16		26		
03:30			0		1			15:30			30		28		
03:45			2	2	0	2	4	15:45			15	81	18	97	178
04:00			0		0			16:00			20		16		
04:15			5		1			16:15			26		25		
04:30			6		5			16:30			37		14		
04:45			12	23	3	9	32	16:45			21	104	13	68	172
05:00			14		11			17:00			18		24		
05:15			26		5			17:15			17		21		
05:30			27		21			17:30			18		15		
05:45			26	93	27	64	157	17:45			11	64	18	78	142
06:00			22		33			18:00			9		10		
06:15			25		26			18:15			8		9		
06:30			17		38			18:30			6		5		
06:45			23	87	38	135	222	18:45			6	29	4	28	57
07:00			17		22			19:00			5		11		
07:15			13		32			19:15			3		3		
07:30			14		28			19:30			4		8		
07:45			14	58	32	114	172	19:45			7	19	8	30	49
08:00			13		34			20:00			3		4		
08:15			11		26			20:15			6		4		
08:30			16		36			20:30			5		7		
08:45			18	58	25	121	179	20:45			6	20	2	17	37
09:00			14		24			21:00			1		4		
09:15			18		25			21:15			3		5		
09:30			18		22			21:30			3		2		
09:45			20	70	19	90	160	21:45			4	11	3	14	25
10:00			16		25			22:00			2		6		
10:15			14		17			22:15			5		4		
10:30			18		26			22:30			4		3		
10:45			14	62	15	83	145	22:45			3	14	2	15	29
11:00			19		25			23:00			3		3		
11:15			12		22			23:15			4		1		
11:30			21		32			23:30			2		2		
11:45			18	70	25	104	174	23:45			2	11	0	6	17
Total Vol.				535		738	1273					627		674	1301

Daily Totals

	NB	SB		EB	WB
			Combined	1162	1412
			2574		

	AM			PM		
Split %	42.0%	58.0%	49.5%	48.2%	51.8%	50.5%
Peak Hour	05:15	06:00	06:00	16:00	14:15	14:15
Volume	101	135	222	104	135	231
P.H.F.	0.94	0.89	0.91	0.70	0.87	0.85

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-018

Location: Main St btwn Cesar Chavez Pkwy & Sampson St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			2		3			12:00			21		27		
00:15			2		1			12:15			19		26		
00:30			1		1			12:30			17		24		
00:45			1	6	0	5	11	12:45			16	73	26	103	176
01:00			2		1			13:00			25		22		
01:15			0		1			13:15			17		23		
01:30			2		0			13:30			20		27		
01:45			1	5	1	3	8	13:45			20	82	24	96	178
02:00			1		0			14:00			14		22		
02:15			0		0			14:15			18		38		
02:30			0		0			14:30			27		45		
02:45			1	2	0	0	2	14:45			26	85	33	138	223
03:00			0		0			15:00			15		33		
03:15			0		1			15:15			20		23		
03:30			4		0			15:30			24		30		
03:45			1	5	0	1	6	15:45			22	81	25	111	192
04:00			1		2			16:00			22		19		
04:15			6		1			16:15			18		24		
04:30			7		3			16:30			22		18		
04:45			12	26	7	13	39	16:45			21	83	26	87	170
05:00			16		11			17:00			21		18		
05:15			23		14			17:15			17		15		
05:30			32		21			17:30			19		15		
05:45			27	98	28	74	172	17:45			13	70	16	64	134
06:00			17		25			18:00			9		10		
06:15			29		33			18:15			7		12		
06:30			34		46			18:30			8		11		
06:45			23	103	31	135	238	18:45			6	30	7	40	70
07:00			17		22			19:00			3		5		
07:15			13		32			19:15			9		3		
07:30			14		28			19:30			4		6		
07:45			15	59	31	113	172	19:45			9	25	10	24	49
08:00			13		30			20:00			3		9		
08:15			11		28			20:15			6		7		
08:30			16		32			20:30			8		3		
08:45			18	58	21	111	169	20:45			5	22	5	24	46
09:00			12		13			21:00			4		2		
09:15			13		27			21:15			2		6		
09:30			17		14			21:30			4		5		
09:45			22	64	27	81	145	21:45			2	12	7	20	32
10:00			13		25			22:00			3		4		
10:15			14		22			22:15			2		1		
10:30			14		21			22:30			6		8		
10:45			21	62	21	89	151	22:45			1	12	2	15	27
11:00			23		30			23:00			2		1		
11:15			21		27			23:15			2		2		
11:30			26		27			23:30			4		1		
11:45			18	88	26	110	198	23:45			2	10	0	4	14
Total Vol.				576		735	1311					585		726	1311

Daily Totals

	NB	SB		EB	WB
			Combined	1161	1461
			2622		

	AM			PM		
Split %	43.9%	56.1%	50.0%	44.6%	55.4%	50.0%
Peak Hour	05:45	06:00	05:45	14:30	14:15	14:15
Volume	107	135	239	88	149	235
P.H.F.	0.79	0.73	0.75	0.81	0.83	0.82

COUNTS UNLIMITED INC
25424 JACLYN AVENUE
MORENO VALLEY CA 92557
951-247-6716

CITY OF SAN DIEGO
MAIN STREET
B/ 27TH STREET - 28TH STREET
24 HOUR DIRECTIONAL VOLUME COUNT

FILE#	: 0419-06
STATION#	: 2052
DATE	: 10/17/06
ADT	: 7440

Start Time	17-Oct-06 Tue	EASTBOUND Morning	EASTBOUND Afternoon	Hour Totals Morning	Hour Totals Afternoon	WESTBOUND Morning	WESTBOUND Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		8	67			7	72				
12:15		10	58			6	52				
12:30		26	54			18	52				
12:45		19	43	63	222	14	43	45	219	108	441
01:00		13	64			2	57				
01:15		9	44			7	63				
01:30		8	54			8	37				
01:45		7	49	37	211	7	44	24	201	61	412
02:00		6	67			6	43				
02:15		7	68			8	46				
02:30		7	**149**			7	**57**				
02:45		8	**136**	28	420	14	**65**	35	211	63	631
03:00		4	**214**			0	**76**				
03:15		3	**215**			7	**64**				
03:30		0	121			8	47				
03:45		5	95	12	645	12	41	27	228	39	873
04:00		5	106			10	41				
04:15		10	103			23	29				
04:30		11	123			29	51				
04:45		12	81	38	413	31	32	93	153	131	566
05:00		9	86			59	23				
05:15		18	71			**111**	29				
05:30		24	48			**130**	24				
05:45		28	30	79	235	**128**	19	428	95	507	330
06:00		29	34			**113**	18				
06:15		30	25			96	18				
06:30		28	26			92	21				
06:45		20	21	107	106	62	18	363	75	470	181
07:00		38	18			72	19				
07:15		28	18			68	12				
07:30		25	15			106	16				
07:45		17	12	108	63	119	17	365	64	473	127
08:00		37	18			66	20				
08:15		31	15			80	18				
08:30		32	13			50	15				
08:45		41	11	141	57	34	15	230	68	371	125
09:00		51	14			36	13				
09:15		41	17			34	15				
09:30		33	20			30	15				
09:45		46	10	171	61	47	23	147	66	318	127
10:00		58	7			44	24				
10:15		35	7			49	16				
10:30		42	35			44	24				
10:45		**59**	3	194	52	55	13	192	77	386	129
11:00		**72**	15			45	9				
11:15		**60**	17			48	7				
11:30		**70**	20			62	9				
11:45		58	9	260	61	56	9	211	34	471	95
Total		1238	2546	1238	2546	2160	1491	2160	1491	3398	4037
Combined Total		3784		3784		3651		3651		7435	
AM Peak		10:45				05:15					
Vol.		261				482					
P.H.F.		0.906				0.927					
PM Peak			02:30				02:30				
Vol.			714				262				
P.H.F.			0.830				0.862				
Percentage		32.7%	67.3%			59.2%	40.8%				
ADT/AADT		ADT 7,435		AADT 7,435							

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-019

Location: Main St btwn 28th St & 32nd St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			19		16			12:00			69		104		
00:15			11		13			12:15			81		114		
00:30			26		10			12:30			86		71		
00:45			17	73	12	51	124	12:45			82	318	85	374	692
01:00			9		10			13:00			80		103		
01:15			2		5			13:15			77		98		
01:30			5		3			13:30			83		79		
01:45			6	22	6	24	46	13:45			78	318	97	377	695
02:00			4		5			14:00			98		109		
02:15			5		3			14:15			101		76		
02:30			7		11			14:30			142		103		
02:45			4	20	3	22	42	14:45			157	498	108	396	894
03:00			6		5			15:00			141		94		
03:15			3		4			15:15			149		106		
03:30			1		9			15:30			134		89		
03:45			1	11	14	32	43	15:45			131	555	73	362	917
04:00			7		20			16:00			140		94		
04:15			11		32			16:15			141		68		
04:30			12		53			16:30			117		66		
04:45			16	46	72	177	223	16:45			117	515	71	299	814
05:00			28		108			17:00			113		73		
05:15			37		147			17:15			118		69		
05:30			30		125			17:30			90		60		
05:45			40	135	154	534	669	17:45			75	396	58	260	656
06:00			55		114			18:00			53		51		
06:15			66		142			18:15			57		42		
06:30			67		144			18:30			44		40		
06:45			79	267	98	498	765	18:45			49	203	48	181	384
07:00			92		117			19:00			46		49		
07:15			74		103			19:15			52		33		
07:30			61		96			19:30			36		56		
07:45			82	309	124	440	749	19:45			39	173	45	183	356
08:00			60		74			20:00			30		30		
08:15			59		84			20:15			33		32		
08:30			44		65			20:30			25		32		
08:45			66	229	63	286	515	20:45			16	104	30	124	228
09:00			47		68			21:00			27		34		
09:15			56		67			21:15			40		48		
09:30			38		72			21:30			28		36		
09:45			55	196	78	285	481	21:45			27	122	24	142	264
10:00			56		64			22:00			33		32		
10:15			51		67			22:15			33		21		
10:30			69		85			22:30			35		23		
10:45			70	246	79	295	541	22:45			20	121	20	96	217
11:00			81		86			23:00			15		18		
11:15			78		84			23:15			15		10		
11:30			88		104			23:30			25		13		
11:45			81	328	97	371	699	23:45			16	71	9	50	121
Total Vol.			1882		3015		4897				3394		2844		6238

Daily Totals

	NB	SB		EB	WB
			Combined	5276	5859
			11135		

	AM			PM		
Split %	38.4%	61.6%	44.0%	54.4%	45.6%	56.0%
Peak Hour	11:00	05:45	06:15	14:30	14:30	14:30
Volume	328	554	805	589	411	1000
P.H.F.	0.93	0.90	0.95	0.94	0.95	0.94

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-019

Location: Main St btwn 28th St & 32nd St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			12		10			12:00			86		91		
00:15			9		9			12:15			85		126		
00:30			16		10			12:30			84		99		
00:45			18	55	16	45	100	12:45			97	352	80	396	748
01:00			10		13			13:00			60		76		
01:15			5		10			13:15			54		85		
01:30			7		7			13:30			82		97		
01:45			5	27	3	33	60	13:45			67	263	100	358	621
02:00			3		3			14:00			94		94		
02:15			2		6			14:15			95		95		
02:30			1		5			14:30			124		92		
02:45			8	14	8	22	36	14:45			145	458	87	368	826
03:00			8		3			15:00			169		113		
03:15			7		4			15:15			172		118		
03:30			5		9			15:30			176		112		
03:45			3	23	14	30	53	15:45			158	675	86	429	1104
04:00			8		20			16:00			159		100		
04:15			14		29			16:15			133		68		
04:30			12		38			16:30			123		70		
04:45			18	52	59	146	198	16:45			106	521	55	293	814
05:00			21		96			17:00			135		64		
05:15			29		145			17:15			90		78		
05:30			40		139			17:30			77		51		
05:45			51	141	134	514	655	17:45			76	378	71	264	642
06:00			57		121			18:00			57		43		
06:15			82		119			18:15			59		57		
06:30			97		133			18:30			52		51		
06:45			79	315	106	479	794	18:45			53	221	44	195	416
07:00			79		102			19:00			48		43		
07:15			70		111			19:15			52		37		
07:30			59		111			19:30			46		40		
07:45			73	281	105	429	710	19:45			34	180	42	162	342
08:00			55		84			20:00			25		52		
08:15			52		90			20:15			33		36		
08:30			97		81			20:30			32		44		
08:45			90	294	73	328	622	20:45			36	126	48	180	306
09:00			56		58			21:00			24		28		
09:15			49		87			21:15			29		26		
09:30			53		71			21:30			39		30		
09:45			48	206	71	287	493	21:45			32	124	25	109	233
10:00			48		68			22:00			26		29		
10:15			53		78			22:15			22		26		
10:30			64		95			22:30			33		17		
10:45			72	237	89	330	567	22:45			27	108	15	87	195
11:00			87		119			23:00			13		13		
11:15			100		92			23:15			14		17		
11:30			84		79			23:30			22		13		
11:45			76	347	111	401	748	23:45			10	59	12	55	114
Total Vol.			1992		3044		5036				3465		2896		6361

Daily Totals

	NB	SB		EB	WB
			Combined	5457	5940
			11397		

	AM			PM		
Split %	39.6%	60.4%	44.2%	54.5%	45.5%	55.8%
Peak Hour	11:00	05:15	06:15	15:00	14:45	15:00
Volume	347	539	797	675	430	1104
P.H.F.	0.87	0.93	0.87	0.96	0.91	0.95

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
MAIN SB ST	[ALAMITOS AV - HOLLISTER ST]	02200 - 02300	4311	EAST	11260	12/12/2006	0577-06
				WEST	12270	12/12/2006	0577-06
				*TOTAL	23530		
MAIN ST	[27 ST - 28 ST]	02700 - 02800	2052	EAST	3780	10/17/2006	0419-06
				WEST	3660	10/17/2006	0419-06
				*TOTAL	7440		
MAIN ST	[29 ST - 30 ST]	02900 - 03000	2053	EAST	7460	11/16/2005	0681-05
				WEST	6870	11/16/2005	0681-05
				*TOTAL	14330		
MAIN ST	[RIGEL ST - SIVA ST]	03350 - 03400	3551	WEST	7940	1/7/2003	0056-03
				EAST	9010	1/9/2003	0055-03
				EAST	7990	1/24/2006	0029-06
				WEST	7960	1/24/2006	0029-06
				*TOTAL	15950		
MAIN ST	[VESTA ST - WODEN ST]	03700 - 03740	3550	EAST	7490	1/6/2004	0005-04
				WEST	8620	1/6/2004	0006-04
				*TOTAL	16110		
				EAST	8100	1/18/2007	0027-07
				WEST	7070	1/18/2007	0027-07
				*TOTAL	15170		
MALLARD ST	[ORIOLE ST - SWAN ST]	06300 - 06400	3727	EAST	3620	2/3/2005	0105-05
				WEST	4180	2/3/2005	0105-05
				*TOTAL	7800		
				EAST	3900	2/21/2008	0028-08
				WEST	3690	2/21/2008	0028-08
				*TOTAL	7590		
MANGO DR	[CALAIS DR - D M HTS RD]	13600 - 13800	5057	NORTH	1720	8/26/2004	0603-04
				SOUTH	1550	8/26/2004	0603-04

Volumes for: Tuesday, January 24, 2006 City: San Diego FILE#: 0029-06

Location: MAIN ST (RIGEL ST - SIVA ST) [3551] ADT: 15950

AM Period	WB		EB			PM Period	WB		EB		
00:00	17		12			12:00	94		121		
00:15	11		16			12:15	126		125		
00:30	30		16			12:30	131		151		
00:45	14	72	16	60	132	12:45	107	458	134	531	989
01:00	7		8			13:00	109		139		
01:15	7		11			13:15	104		109		
01:30	12		6			13:30	105		134		
01:45	11	37	8	33	70	13:45	120	438	101	483	921
02:00	10		5			14:00	106		134		
02:15	7		2			14:15	109		139		
02:30	7		6			14:30	168		142		
02:45	10	34	10	23	57	14:45	163	546	146	561	1107
03:00	1		6			15:00	196		132		
03:15	5		5			15:15	207		120		
03:30	7		8			15:30	194		152		
03:45	13	26	22	41	67	15:45	240	837	131	535	1372
04:00	6		21			16:00	263		142		
04:15	8		22			16:15	265		116		
04:30	4		39			16:30	263		112		
04:45	11	29	54	136	165	16:45	286	1077	106	476	1553
05:00	13		82			17:00	266		85		
05:15	26		70			17:15	257		100		
05:30	47		106			17:30	247		76		
05:45	58	144	140	398	542	17:45	220	990	81	342	1332
06:00	61		122			18:00	183		110		
06:15	74		118			18:15	136		81		
06:30	89		109			18:30	92		82		
06:45	87	311	128	477	788	18:45	82	493	105	378	871
07:00	92		138			19:00	87		60		
07:15	79		169			19:15	61		58		
07:30	59		186			19:30	64		61		
07:45	58	288	154	647	935	19:45	61	273	62	241	514
08:00	59		134			20:00	74		65		
08:15	59		106			20:15	54		62		
08:30	55		112			20:30	40		54		
08:45	62	235	120	472	707	20:45	52	220	51	232	452
09:00	60		111			21:00	64		49		
09:15	67		129			21:15	64		39		
09:30	84		115			21:30	34		29		
09:45	98	309	108	463	772	21:45	32	194	49	166	360
10:00	86		134			22:00	36		39		
10:15	85		126			22:15	40		36		
10:30	74		115			22:30	36		32		
10:45	95	340	120	495	835	22:45	20	132	28	135	267
11:00	95		121			23:00	27		35		
11:15	104		136			23:15	30		18		
11:30	102		144			23:30	23		18		
11:45	106	407	134	535	942	23:45	19	99	24	95	194
Total Vol.		2232		3780	6012			5757		4175	9932

Daily Totals

WB	EB	Combined
7989	7955	15944

	AM			PM		
Split %	37.1%	62.9%	37.7%	58.0%	42.0%	62.3%
Peak Hour	11:45	07:00	11:45	16:15	14:00	16:00
Volume	457	647	988	1080	561	1553
P.H.F.	0.87	0.87	0.88	0.96	0.96	0.96

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
19 ST	[COMMERCIAL ST - IMPERIAL AV]	00001 - 00100	2094	NORTH :	3834	1/16/2008	0543-07
19 ST	[K ST - SD 005 R-B]	00300 - 00320	2095	NORTH 1-WY :	11190	11/16/2005	0689-05
25 ST	[COMMERCIAL ST - IMPERIAL AV]	00001 - 00100	2172	NORTH :	3718	1/16/2008	0545-07
				SOUTH :	3340	1/16/2008	0545-07
				*TOTAL :	7060		
25 ST	[K ST - J ST]	00300 - 00400	2171	NORTH :	4960	11/10/2005	0690-05
				SOUTH :	5110	11/10/2005	0690-05
				*TOTAL :	10070		
25 ST	[MARKET ST - G ST]	00600 - 00700	2175	NORTH :	6920	10/17/2006	0427-6
				SOUTH :	6130	10/17/2006	0427-06
				*TOTAL :	13040		
25 ST	[E ST - BROADWAY]	00900 - 01000	2170	NORTH :	5570	10/17/2006	0426-06
				SOUTH :	7090	10/17/2006	0426-06
				*TOTAL :	12660		
25 ST	[BROADWAY - C ST]	01000 - 01100	2173	NORTH :	5100	11/16/2005	0691-05
				SOUTH :	5460	11/16/2005	0691-05
				*TOTAL :	10560		
26 ST	[NEWTON AV (N) - NATIONAL AV]	01100S - 01000S	NONE	BOTH :	2380	2/4/2003	0163-03
26 ST	[B ST - A ST]	01200 - 01300	2811	NORTH :	2640	10/25/2006	0438-06
				SOUTH :	3160	10/25/2006	0438-06
				*TOTAL :	5800		
26 ST RD	[GOLF COURSE DR - CMTO CTRO]	01400 - 01650	2810	BOTH :	11870	3/10/2004	0213-04
				NORTH :	6660	3/13/2007	0146-07
				SOUTH :	4990	3/13/2007	0146-07
				*TOTAL :	11650		
27 SB ST	[CORONADO SB AV - CMTO SECOYA]	01100 - 01250	4341	NORTH :	2120	12/7/2005	0651-05

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION		WK-DAY VOLUME	STARTING DATE	FILE NUMBER
28 ST	[C ST - B ST]	01100 - 01200	2182	*TOTAL	:	8930		
28 ST	[MAIN ST - BOSTON AV]	01300S - 01200S	2020	NORTH	:	12380	11/8/2005	0679-05
				SOUTH	:	13640	11/8/2005	0679-05
				*TOTAL	:	26020		
28 ST	[HARBOR DR - MAIN ST]	01399S - 01300S	2021	NORTH	:	9710	11/8/2005	0677-05
				SOUTH	:	9690	11/8/2005	0677-05
				*TOTAL	:	18400		
28 ST	[ASH ST - BEECH ST]	01400 - 01500	2183	BOTH	:	3870	4/23/2003	0484-03
				NORTH	:	2170	3/9/2006	0158-06
				SOUTH	:	1760	3/9/2006	0158-06
				*TOTAL	:	3930		
30 ST	[K ST (W) - J ST]	00300 - 00400	2197	NORTH	:	1130	1/16/2008	0549-07
				SOUTH	:	1530	1/16/2008	0549-07
				*TOTAL	:	2660		
30 ST	[CLAY AV - WEBSTER AV]	00300S - 00200S	2195	NORTH	:	1630	1/16/2008	0548-07
				SOUTH	:	1320	1/16/2008	0548-07
				*TOTAL	:	2940		
30 ST	[E ST - BROADWAY]	00900 - 01000	2190	NORTH	:	2170	1/16/2008	0547-07
				SOUTH	:	2290	1/16/2008	0547-07
				*TOTAL	:	4460		
30 ST	[BROADWAY - C ST]	01000 - 01100	2191	NORTH	:	8190	10/17/2006	0429-06
				SOUTH	:	7820	10/17/2006	0429-06
				*TOTAL	:	16010		
30 ST	[C ST - B ST]	01100 - 01200	2192	NORTH	:	7550	11/17/2005	0693-05
				SOUTH	:	5830	11/17/2005	0693-05
				*TOTAL	:	13380		
30 ST	[FIR ST - GRAPE ST]	01900 - 02000	2312	BOTH	:	3340	3/30/2004	0288-04
				NORTH	:	1600	4/4/2007	0203-07

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
32 ST	[G ST - F ST]	00700 - 00800	2005	SOUTH	4270	10/17/2006	0413-06
				*TOTAL	7030		
32 ST	[GREELY AV - MARTIN AV (S)]	00800S - 00710S	2002	NORTH	2050	1/16/2008	0538-07
				SOUTH	2300	1/16/2008	0538-07
				*TOTAL	4350		
32 ST	[NEWTON AV - NATIONAL AV]	01100S - 01000S	2000	NORTH	2670	11/8/2005	0676-05
				SOUTH	2680	11/8/2005	0676-05
				*TOTAL	5350		
32 ST	[WABASH BL - UNNAMED 4 RD]	01700S - 01600S	2001	NORTH	6430	10/17/2006	0411-06
				SOUTH	7590	10/17/2006	0411-06
				*TOTAL	14020		
32 ST	[MCCANDLESS BL - WABASH BL]	01800S - 01700S	2006	NORTH	10540	1/16/2008	0540-07
				SOUTH	9810	1/16/2008	0540-07
				*TOTAL	20350		
32 ST	[THORN ST - UPAS ST]	03300 - 03400	2330	BOTH	3960	4/6/2004	0338-04
				NORTH	2380	4/4/2007	0207-07
				SOUTH	1580	4/4/2007	02/07/07
				*TOTAL	3960		
32 ST	[DWIGHT ST - LANDIS ST]	03600 - 03700	2333	NORTH	3070	4/27/2005	0202-05
				SOUTH	1970	4/27/2005	0202-05
				*TOTAL	5040		
32 ST	[N PK WY - UNIVERSITY AV]	03800 - 03900	2334	BOTH	7440	4/6/2004	0342-04
				NORTH	4810	4/4/2007	0208-07
				SOUTH	1930	4/4/2007	0208-07
				*TOTAL	6740		
32 ST	[UNIVERSITY AV - LINCOLN AV]	03900 - 04000	2335	NORTH	1530	5/4/2006	0212-06
				SOUTH	1720	5/4/2006	0212-06
				*TOTAL	3250		

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
LK MURRAY BL	[BLUE LK DR - JACKSON DR]	08330 - 08380	3514	NORTH	6100	5/26/2005	0262-05
				SOUTH	6070	5/26/2005	0262-05
				*TOTAL	12170		
LK MURRAY BL	[BEAVER LK DR - SN CARLOS DR]	08550 - 08600	3513	NORTH	7510	5/26/2005	0261-05
				SOUTH	7250	5/26/2005	0261-05
				*TOTAL	14760		
LOGAN AV	[16 ST - 17 ST]	01600 - 01650	NONE	EAST	1080	3/12/2003	0210-03
				WEST	1650	3/12/2003	0209-03
				*TOTAL	2730		
				EAST	1340	2/25/2004	0163-04
				WEST	2190	2/25/2004	0164-04
				*TOTAL	3530		
LOGAN AV	[SIGSBEE ST - BEARDSLEY ST]	01700 - 01800	2981	EAST	1780	1/17/2008	0558-07
				WEST	1240	1/17/2008	0558-07
				*TOTAL	3010		
LOGAN AV	[C CHAVEZ PY - SD 005 R-C]	01900 - 02000	2980	EAST	7730	10/19/2006	0439-06
				WEST	1150	10/19/2006	0439-06
				*TOTAL	8880		
LOGAN AV	[44 ST - ELIZABETH ST]	04400 - 04450	3031	EAST	3680	1/6/2004	0009-04
				WEST	4290	1/6/2004	0010-04
				*TOTAL	7970		
LOGAN AV	[49 ST - EUCLID AV]	04900 - 05100	3030	EAST	5410	1/14/2003	0077-03
				WEST	4430	1/14/2003	0078-03
				*TOTAL	9840		
				EAST	5750	1/17/2006	0005-06
				WEST	5410	1/17/2006	0005-06
				*TOTAL	11160		
LOMALAND DR	[CATALINA BL - TEMPLE ST]	03800 - 03850	1075	EAST	2340	6/24/2004	0481-04

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
MAIN SB ST	[ALAMITOS AV - HOLLISTER ST]	02200 - 02300	4311	EAST	11260	12/12/2006	0577-06
				WEST	12270	12/12/2006	0577-06
				*TOTAL	23530		
MAIN ST	[27 ST - 28 ST]	02700 - 02800	2052	EAST	3780	10/17/2006	0419-06
				WEST	3660	10/17/2006	0419-06
				*TOTAL	7440		
MAIN ST	[29 ST - 30 ST]	02900 - 03000	2053	EAST	7460	11/16/2005	0681-05
				WEST	6870	11/16/2005	0681-05
				*TOTAL	14330		
MAIN ST	[RIGEL ST - SIVA ST]	03350 - 03400	3551	WEST	7940	1/7/2003	0056-03
				EAST	9010	1/9/2003	0055-03
				EAST	7990	1/24/2006	0029-06
				WEST	7960	1/24/2006	0029-06
				*TOTAL	15950		
MAIN ST	[VESTA ST - WODEN ST]	03700 - 03740	3550	EAST	7490	1/6/2004	0005-04
				WEST	8620	1/6/2004	0006-04
				*TOTAL	16110		
				EAST	8100	1/18/2007	0027-07
				WEST	7070	1/18/2007	0027-07
				*TOTAL	15170		
MALLARD ST	[ORIOLE ST - SWAN ST]	06300 - 06400	3727	EAST	3620	2/3/2005	0105-05
				WEST	4180	2/3/2005	0105-05
				*TOTAL	7800		
				EAST	3900	2/21/2008	0028-08
				WEST	3690	2/21/2008	0028-08
				*TOTAL	7590		
MANGO DR	[CALAIS DR - D M HTS RD]	13600 - 13800	5057	NORTH	1720	8/26/2004	0603-04
				SOUTH	1550	8/26/2004	0603-04

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION		WK-DAY VOLUME	STARTING DATE	FILE NUMBER
NARRAGANSETT AV	[STA BARBARA ST - GUIZOT ST]	04400 - 04500	1090	EAST	:	1620	6/24/2004	0492-04
				WEST	:	1750	6/24/2004	0492-04
				*TOTAL	:	3370		
				EAST	:	1540	6/28/2007	0323-07
				WEST	:	1930	6/28/2007	0323-07
				*TOTAL	:	3470		
NATIONAL AV	[COMMERCIAL ST - 16 ST]	01400 - 01600	NONE	EAST	:	1090	3/12/2003	0211-03
				WEST	:	1280	3/12/2003	0212-03
				*TOTAL	:	2370		
				EAST	:	940	2/25/2004	0161-04
				WEST	:	1520	2/25/2004	0162-04
				*TOTAL	:	2460		
NATIONAL AV	[BEARDSLEY ST - C CHAVEZ PY]	01800 - 01900	2721	EAST	:	2810	11/10/2005	0698-05
				WEST	:	2490	11/10/2005	0698-05
				*TOTAL	:	5300		
NATIONAL AV	[EVANS ST - SAMPSON ST]	02100 - 02200	2060	EAST	:	1780	11/10/2005	0683-05
				WEST	:	1920	11/10/2005	0683-05
				*TOTAL	:	3700		
NATIONAL AV	[26 ST - 27 ST]	02600 - 02700	2062	EAST	:	3510	1/16/2008	0541-07
				WEST	:	4280	1/16/2008	0541-07
				*TOTAL	:	7790		
NATIONAL AV	[28 ST - 29 ST]	02800 - 02900	2059	BOTH	:	13440	10/17/2006	0420-06
NATIONAL AV	[30 ST - 31 ST]	03000 - 03100	2065	EAST	:	7530	11/3/2005	0684-05
				WEST	:	6880	11/3/2005	0684-05
				*TOTAL	:	14410		
NATIONAL AV	[33 ST - 35 ST]	03300 - 03500	3001	EAST	:	6730	1/7/2003	0060-03
				WEST	:	6740	1/7/2003	0061-03
				*TOTAL	:	13470		
				EAST	:	5930	1/17/2006	0002-06

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION	WK-DAY VOLUME	STARTING DATE	FILE NUMBER
SAIPAN DR	[ALLEGHANY ST - POTOMAC ST]	02100 - 02300	NONE	SOUTH	1200	2/2/2005	0038-05
				*TOTAL	2210		
			3542	NORTH	1360	2/10/2005	0104-05
				SOUTH	1620	2/10/2005	0104-05
				*TOTAL	2990		
				NORTH	1350	2/21/2008	0042-08
				SOUTH	1400	2/21/2008	0042-08
				*TOTAL	2740		
SALMON RIVER RD	[CAL ROSAS - ADOLPHIA ST]	12800 - 12900	5270	NORTH	1410	3/1/2005	0137-05
				SOUTH	1550	3/1/2005	0137-05
				*TOTAL	2960		
				NORTH	1280	2/26/2008	0098-08
				SOUTH	1410	2/26/2008	0098-08
				*TOTAL	2690		
SALMON RIVER RD	[FAIRGROVE LN - PSO MONTALBAN]	13300 - 13400	5269	BOTH	4770	2/19/2003	0125-03
SAMPSON ST	[NATIONAL AV - NEWTON AV]	01000 - 01100	2033	NORTH	1570	11/15/2005	0680-05
				SOUTH	2230	11/15/2005	0680-05
				*TOTAL	3800		
SANDROCK RD	[GREYLING DR - MURRAY RDG RD]	03300 - 03380	6171	NORTH	4520	9/26/2006	0357-06
				SOUTH	5210	9/26/2006	0357-06
				*TOTAL	9730		
SANDROCK RD	[GLENHAVEN ST - HAVETEUR WY]	03450 - 03490	6170	NORTH	6090	11/3/2005	0583-05
				SOUTH	5790	11/3/2005	0583-05
				*TOTAL	11880		
SANTO RD	[FRIARS RD - ADM BAKER RD]	02350 - 02400	8024	SOUTH	4790	4/17/2003	0468-03
				NORTH	4860	4/19/2003	0467-03
				NORTH	4730	5/20/2003	0509-03
				SOUTH	5340	5/20/2003	0510-03

CITY OF SAN DIEGO - TRAFFIC ENGINEERING

Machine Count Traffic Volumes - City Streets

All From Dates 1/1/2003 to 3/5/2008

STREET NAME	LIMITS	BLOCK NOS.	STATION NUMBER	DIRECTION		WK-DAY VOLUME	STARTING DATE	FILE NUMBER
VALLEY RD	[CAL ABAJO - REO DR]	05700 - 05900	3094	EAST	:	3260	3/21/2007	0160-07
				WEST	:	3650	3/21/2007	0160-07
				*TOTAL	:	6910		
VALLEY RD	[REO DR - TONAWANDA DR]	05900 - 05999	3093	EAST	:	6490	2/1/2005	0029-05
				WEST	:	6240	2/1/2005	0029-05
				*TOTAL	:	12730		
				EAST	:	3070	2/19/2008	0047-08
				WEST	:	2940	2/19/2008	0047-08
				*TOTAL	:	6010		
VAN DYKE AV	[ADAMS AV - ALDINE DR]	04700 - 04729	3381	NORTH	:	3460	5/4/2006	0226-06
				SOUTH	:	3360	5/4/2006	0226-06
				*TOTAL	:	6820		
VANDEVER AV	[RIVERDALE ST - MSS GORGE RD]	04400 - 04500	9231	EAST	:	4190	5/27/2005	0367-05
				WEST	:	2530	5/27/2005	0367-05
				*TOTAL	:	7050		
VANDEVER AV	[MSS GORGE RD - DECENA DR]	04500 - 04550	NONE	EAST	:	940	5/17/2005	0368-05
				WEST	:	770	5/17/2005	0368-05
				*TOTAL	:	1710		
VESTA ST	[ACACIA ST - BIRCH ST]	01700 - 01800	3356	BOTH	:	5050	1/7/2003	0057-03
				NORTH	:	2640	1/24/2006	0024-06
VESTA ST	[DALBERGIA ST - MAIN ST]	02000 - 02100	3355	BOTH	:	4650	2/5/2003	0109-03
				NORTH	:	2610	1/24/2006	0023-06
				SOUTH	:	2290	1/24/2006	0023-06
				*TOTAL	:	4900		
VETERANS HOSP DR	[L J VILGE DR - N/O]	00001 - 00009	NONE	NORTH	:	10020	11/30/2006	0592-06
				SOUTH	:	9560	11/30/2006	0592-06
				*TOTAL	:	19580		

Prepared by NDS/ATD

Volumes for: Tuesday, June 10, 2008 | City: San Diego | Project #: 08-4149-020

Location: Harbor Dr btwn Beardsley St & Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			28		3			12:00			84		62		
00:15			17		8			12:15			46		82		
00:30			13		7			12:30			52		74		
00:45			9	67	3	21	88	12:45			63	245	80	298	543
01:00			7		10			13:00			58		92		
01:15			6		1			13:15			64		74		
01:30			13		5			13:30			64		91		
01:45			6	32	7	23	55	13:45			93	279	90	347	626
02:00			8		5			14:00			90		109		
02:15			5		2			14:15			99		113		
02:30			5		2			14:30			101		112		
02:45			2	20	6	15	35	14:45			122	412	103	437	849
03:00			0		1			15:00			179		99		
03:15			3		11			15:15			179		79		
03:30			1		7			15:30			186		107		
03:45			1	5	6	25	30	15:45			244	788	122	407	1195
04:00			5		11			16:00			162		82		
04:15			3		25			16:15			227		114		
04:30			7		22			16:30			255		122		
04:45			4	19	29	87	106	16:45			196	840	101	419	1259
05:00			7		29			17:00			224		91		
05:15			15		35			17:15			241		108		
05:30			35		80			17:30			220		69		
05:45			28	85	96	240	325	17:45			110	795	82	350	1145
06:00			52		103			18:00			90		109		
06:15			60		113			18:15			114		98		
06:30			65		140			18:30			107		79		
06:45			67	244	155	511	755	18:45			79	390	92	378	768
07:00			85		124			19:00			46		72		
07:15			85		166			19:15			20		41		
07:30			80		200			19:30			23		34		
07:45			53	303	175	665	968	19:45			16	105	33	180	285
08:00			62		203			20:00			13		34		
08:15			77		129			20:15			9		36		
08:30			57		123			20:30			14		19		
08:45			75	271	91	546	817	20:45			13	49	24	113	162
09:00			55		78			21:00			22		16		
09:15			42		88			21:15			25		31		
09:30			57		88			21:30			16		20		
09:45			51	205	87	341	546	21:45			21	84	38	105	189
10:00			77		56			22:00			32		20		
10:15			56		62			22:15			29		24		
10:30			56		70			22:30			21		37		
10:45			53	242	70	258	500	22:45			16	98	22	103	201
11:00			72		69			23:00			16		11		
11:15			74		82			23:15			15		14		
11:30			71		94			23:30			14		13		
11:45			79	296	95	340	636	23:45			8	53	15	53	106
Total Vol.				1789		3072	4861					4138		3190	7328

Daily Totals

	NB	SB		EB	WB
			Combined	5927	6262
			12189		

	AM			PM		
Split %	36.8%	63.2%	39.9%	56.5%	43.5%	60.1%
Peak Hour	06:45	07:15	07:15	16:30	15:45	16:30
Volume	317	744	1024	916	440	1338
P.H.F.	0.93	0.92	0.91	0.90	0.90	0.89

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-020

Location: Harbor Dr btwn Beardsley St & Cesar Chavez Pkwy

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			13		12			12:00			91		93		
00:15			16		4			12:15			51		73		
00:30			15		6			12:30			46		78		
00:45			9	53	7	29	82	12:45			64	252	84	328	580
01:00			5		4			13:00			59		77		
01:15			5		6			13:15			64		78		
01:30			12		8			13:30			66		81		
01:45			4	26	7	25	51	13:45			99	288	69	305	593
02:00			10		5			14:00			102		81		
02:15			7		4			14:15			102		67		
02:30			3		6			14:30			108		99		
02:45			1	21	5	20	41	14:45			136	448	84	331	779
03:00			0		4			15:00			198		63		
03:15			3		11			15:15			158		98		
03:30			1		3			15:30			191		109		
03:45			1	5	10	28	33	15:45			234	781	103	373	1154
04:00			3		13			16:00			182		86		
04:15			5		20			16:15			237		102		
04:30			5		22			16:30			284		90		
04:45			1	14	34	89	103	16:45			221	924	101	379	1303
05:00			7		35			17:00			218		95		
05:15			20		34			17:15			214		70		
05:30			35		63			17:30			233		91		
05:45			19	81	103	235	316	17:45			121	786	73	329	1115
06:00			58		89			18:00			92		96		
06:15			56		118			18:15			104		108		
06:30			68		142			18:30			121		92		
06:45			77	259	150	499	758	18:45			77	394	87	383	777
07:00			83		148			19:00			44		53		
07:15			77		159			19:15			27		44		
07:30			75		177			19:30			19		47		
07:45			47	282	195	679	961	19:45			11	101	35	179	280
08:00			56		104			20:00			18		34		
08:15			67		127			20:15			10		34		
08:30			62		109			20:30			14		25		
08:45			66	251	93	433	684	20:45			16	58	33	126	184
09:00			61		65			21:00			20		27		
09:15			41		74			21:15			32		25		
09:30			49		79			21:30			15		33		
09:45			52	203	83	301	504	21:45			27	94	49	134	228
10:00			76		63			22:00			36		27		
10:15			61		71			22:15			39		20		
10:30			64		64			22:30			15		25		
10:45			58	259	80	278	537	22:45			20	110	22	94	204
11:00			63		80			23:00			20		22		
11:15			83		79			23:15			19		21		
11:30			72		78			23:30			16		12		
11:45			69	287	73	310	597	23:45			7	62	17	72	134
Total Vol.			1741		2926		4667				4298		3033		7331

Daily Totals

	NB	SB		EB	WB
			Combined	6039	5959
			11998		

	AM			PM		
Split %	37.3%	62.7%	38.9%	58.6%	41.4%	61.1%
Peak Hour	11:15	07:00	07:00	16:15	15:30	16:15
Volume	315	679	961	960	400	1348
P.H.F.	0.87	0.87	0.95	0.85	0.92	0.90

Volumes for: Thursday, November 03, 2005 City: San Diego FILE#: 0695-05

Location: HARBOR DR (C CHAVEZ WY - SAMPSON ST) [2705] ADT: 11020

AM Period	EB		WB			PM Period	EB		WB		
00:00	16		24			12:00	140		86		
00:15	14		12			12:15	104		82		
00:30	14		12			12:30	140		98		
00:45	4	48	6	54	102	12:45	94	478	126	392	870
01:00	8		12			13:00	52		102		
01:15	8		6			13:15	56		96		
01:30	12		4			13:30	66		112		
01:45	4	32	14	36	68	13:45	56	230	128	438	668
02:00	2		8			14:00	84		82		
02:15	4		0			14:15	118		78		
02:30	6		4			14:30	140		96		
02:45	2	14	0	12	26	14:45	132	474	66	322	796
03:00	2		2			15:00	146		92		
03:15	4		6			15:15	98		74		
03:30	12		6			15:30	114		80		
03:45	16	34	14	28	62	15:45	132	490	72	318	808
04:00	20		10			16:00	134		74		
04:15	18		26			16:15	144		84		
04:30	18		28			16:30	156		74		
04:45	14	70	30	94	164	16:45	160	594	64	296	890
05:00	14		26			17:00	124		62		
05:15	16		26			17:15	118		58		
05:30	20		24			17:30	84		62		
05:45	30	80	44	120	200	17:45	82	408	56	238	646
06:00	36		50			18:00	86		46		
06:15	44		48			18:15	74		48		
06:30	46		80			18:30	70		26		
06:45	68	194	90	268	462	18:45	56	286	44	164	450
07:00	74		104			19:00	54		34		
07:15	76		126			19:15	64		28		
07:30	64		156			19:30	66		36		
07:45	54	268	150	536	804	19:45	84	268	28	126	394
08:00	36		104			20:00	58		38		
08:15	56		96			20:15	56		26		
08:30	48		86			20:30	60		36		
08:45	78	218	52	338	556	20:45	36	210	30	130	340
09:00	66		60			21:00	30		24		
09:15	54		86			21:15	32		36		
09:30	56		76			21:30	22		28		
09:45	72	248	84	306	554	21:45	36	120	36	124	244
10:00	84		82			22:00	28		22		
10:15	114		78			22:15	30		30		
10:30	122		80			22:30	24		18		
10:45	118	438	84	324	762	22:45	22	104	24	94	198
11:00	86		80			23:00	20		20		
11:15	118		142			23:15	16		16		
11:30	68		82			23:30	14		12		
11:45	138	410	120	424	834	23:45	18	68	10	58	126
Total Vol.		2054		2540	4594			3730		2700	6430

Daily Totals	EB	WB	Combined
	5784	5240	11024

	AM			PM		
Split %	44.7%	55.3%	41.7%	58.0%	42.0%	58.3%
Peak Hour	11:45	07:00	11:45	16:00	13:00	16:00
Volume	522	536	908	594	438	890
P.H.F.	0.93	0.86	0.88	0.93	0.86	0.97

0695-05

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-021

Location: Harbor Dr btwn Sampson St & Schley St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			23		6			12:00			89		55		
00:15			16		8			12:15			68		72		
00:30			11		11			12:30			72		74		
00:45			11	61	5	30	91	12:45			67	296	59	260	556
01:00			8		4			13:00			71		67		
01:15			10		3			13:15			64		53		
01:30			9		5			13:30			75		60		
01:45			5	32	4	16	48	13:45			75	285	66	246	531
02:00			5		5			14:00			100		71		
02:15			5		4			14:15			91		64		
02:30			3		3			14:30			122		68		
02:45			10	23	7	19	42	14:45			101	414	47	250	664
03:00			3		2			15:00			88		70		
03:15			5		7			15:15			89		66		
03:30			3		5			15:30			107		70		
03:45			1	12	7	21	33	15:45			122	406	69	275	681
04:00			9		9			16:00			121		53		
04:15			6		17			16:15			129		49		
04:30			10		17			16:30			165		40		
04:45			16	41	23	66	107	16:45			141	556	44	186	742
05:00			23		32			17:00			143		42		
05:15			29		48			17:15			149		43		
05:30			42		61			17:30			106		32		
05:45			47	141	60	201	342	17:45			79	477	43	160	637
06:00			34		42			18:00			63		44		
06:15			52		78			18:15			44		33		
06:30			56		87			18:30			32		36		
06:45			44	186	88	295	481	18:45			49	188	31	144	332
07:00			61		71			19:00			41		21		
07:15			61		70			19:15			39		30		
07:30			52		103			19:30			28		15		
07:45			51	225	111	355	580	19:45			33	141	29	95	236
08:00			40		73			20:00			30		21		
08:15			66		69			20:15			23		14		
08:30			52		76			20:30			29		15		
08:45			47	205	49	267	472	20:45			23	105	25	75	180
09:00			52		64			21:00			24		12		
09:15			53		55			21:15			37		11		
09:30			54		47			21:30			95		36		
09:45			58	217	46	212	429	21:45			48	204	22	81	285
10:00			68		45			22:00			49		23		
10:15			63		47			22:15			32		17		
10:30			50		50			22:30			61		8		
10:45			58	239	88	230	469	22:45			24	166	9	57	223
11:00			77		56			23:00			19		18		
11:15			75		59			23:15			23		14		
11:30			79		47			23:30			19		11		
11:45			70	301	64	226	527	23:45			13	74	11	54	128
Total Vol.				1683		1938	3621					3312		1883	5195

Daily Totals

	NB	SB		EB	WB
			Combined	4995	3821
			8816		

	AM			PM		
Split %	46.5%	53.5%	41.1%	63.8%	36.2%	58.9%
Peak Hour	11:15	07:15	07:00	16:30	15:00	16:30
Volume	313	357	580	598	275	767
P.H.F.	0.88	0.80	0.90	0.91	0.98	0.94

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-021

Location: Harbor Dr btwn Sampson St & Schley St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			28		8			12:00			68		72		
00:15			6		9			12:15			71		72		
00:30			12		5			12:30			60		71		
00:45			6	52	6	28	80	12:45			57	256	64	279	535
01:00			10		6			13:00			65		54		
01:15			7		7			13:15			93		87		
01:30			16		4			13:30			86		61		
01:45			15	48	5	22	70	13:45			81	325	82	284	609
02:00			10		4			14:00			111		60		
02:15			6		2			14:15			105		68		
02:30			10		3			14:30			112		52		
02:45			7	33	4	13	46	14:45			135	463	65	245	708
03:00			6		7			15:00			125		67		
03:15			3		6			15:15			120		71		
03:30			3		10			15:30			170		42		
03:45			5	17	8	31	48	15:45			172	587	45	225	812
04:00			9		9			16:00			194		60		
04:15			10		19			16:15			157		46		
04:30			12		18			16:30			192		37		
04:45			19	50	22	68	118	16:45			177	720	38	181	901
05:00			22		21			17:00			163		38		
05:15			24		41			17:15			175		45		
05:30			38		67			17:30			113		41		
05:45			52	136	75	204	340	17:45			96	547	34	158	705
06:00			39		59			18:00			73		37		
06:15			48		76			18:15			63		24		
06:30			53		74			18:30			46		42		
06:45			51	191	97	306	497	18:45			51	233	22	125	358
07:00			45		77			19:00			26		23		
07:15			67		84			19:15			35		30		
07:30			48		98			19:30			28		20		
07:45			54	214	81	340	554	19:45			33	122	21	94	216
08:00			48		57			20:00			34		22		
08:15			54		69			20:15			31		15		
08:30			54		58			20:30			34		27		
08:45			54	210	54	238	448	20:45			33	132	24	88	220
09:00			47		62			21:00			27		19		
09:15			54		53			21:15			35		18		
09:30			52		52			21:30			36		21		
09:45			68	221	58	225	446	21:45			25	123	27	85	208
10:00			53		53			22:00			24		25		
10:15			68		58			22:15			26		23		
10:30			62		66			22:30			58		17		
10:45			64	247	78	255	502	22:45			36	144	12	77	221
11:00			86		75			23:00			20		18		
11:15			59		70			23:15			27		10		
11:30			63		66			23:30			15		18		
11:45			63	271	93	304	575	23:45			10	72	8	54	126
Total Vol.			1690		2034	3724					3724		1895	5619	

Daily Totals

	NB	SB		EB	WB
			Combined	5414	3929
			9343		

	AM			PM		
Split %	45.4%	54.6%	39.9%	66.3%	33.7%	60.1%
Peak Hour	10:15	06:45	11:00	16:00	13:15	15:45
Volume	280	356	575	720	290	903
P.H.F.	0.81	0.91	0.89	0.93	0.83	0.89

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 City: San Diego Project #: 08-4149-022

Location: Harbor Dr btwn Schley St & 28th St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		1			12:00			76		35		
00:15			3		1			12:15			89		40		
00:30			9		1			12:30			80		36		
00:45			0	13	0	3	16	12:45			41	286	51	162	448
01:00			3		4			13:00			84		55		
01:15			0		0			13:15			66		41		
01:30			6		8			13:30			78		46		
01:45			5	14	2	14	28	13:45			77	305	38	180	485
02:00			0		2			14:00			85		40		
02:15			1		1			14:15			87		47		
02:30			0		0			14:30			107		52		
02:45			9	10	8	11	21	14:45			134	413	44	183	596
03:00			2		1			15:00			162		51		
03:15			0		0			15:15			162		39		
03:30			0		0			15:30			173		78		
03:45			0	2	0	1	3	15:45			185	682	57	225	907
04:00			1		2			16:00			189		54		
04:15			2		1			16:15			224		56		
04:30			7		12			16:30			214		33		
04:45			5	15	14	29	44	16:45			252	879	36	179	1058
05:00			6		17			17:00			226		32		
05:15			8		22			17:15			269		30		
05:30			13		34			17:30			173		33		
05:45			34	61	46	119	180	17:45			131	799	30	125	924
06:00			43		50			18:00			112		20		
06:15			55		47			18:15			103		27		
06:30			68		24			18:30			78		27		
06:45			78	244	82	203	447	18:45			39	332	33	107	439
07:00			75		68			19:00			39		20		
07:15			60		105			19:15			69		18		
07:30			84		74			19:30			31		14		
07:45			73	292	78	325	617	19:45			31	170	16	68	238
08:00			61		119			20:00			33		7		
08:15			57		97			20:15			37		19		
08:30			37		63			20:30			17		14		
08:45			53	208	62	341	549	20:45			23	110	4	44	154
09:00			50		67			21:00			26		7		
09:15			45		33			21:15			24		13		
09:30			50		42			21:30			32		7		
09:45			51	196	43	185	381	21:45			25	107	3	30	137
10:00			47		34			22:00			36		12		
10:15			47		41			22:15			24		14		
10:30			61		40			22:30			43		18		
10:45			53	208	39	154	362	22:45			20	123	9	53	176
11:00			47		45			23:00			25		7		
11:15			53		59			23:15			28		4		
11:30			72		43			23:30			39		8		
11:45			61	233	47	194	427	23:45			16	108	7	26	134
Total Vol.			1496		1579	3075					4314		1382	5696	

Daily Totals

	NB	SB		EB	WB
			Combined	5810	2961
			8771		

	AM			PM		
Split %	48.7%	51.3%	35.1%	75.7%	24.3%	64.9%
Peak Hour	11:45	07:15	07:15	16:30	15:30	16:30
Volume	306	376	654	961	245	1092
P.H.F.	0.86	0.79	0.91	0.89	0.79	0.91

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-022

Location: Harbor Dr btwn Schley St & 28th St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			10		2			12:00			82		36		
00:15			3		2			12:15			93		40		
00:30			9		2			12:30			73		35		
00:45			0	22	0	6	28	12:45			35	283	45	156	439
01:00			4		7			13:00			85		61		
01:15			1		0			13:15			67		44		
01:30			6		6			13:30			88		49		
01:45			6	17	1	14	31	13:45			67	307	40	194	501
02:00			1		3			14:00			87		38		
02:15			1		2			14:15			78		50		
02:30			2		0			14:30			123		55		
02:45			6	10	8	13	23	14:45			115	403	47	190	593
03:00			1		2			15:00			165		57		
03:15			0		1			15:15			184		42		
03:30			2		0			15:30			178		72		
03:45			0	3	1	4	7	15:45			160	687	58	229	916
04:00			1		2			16:00			180		48		
04:15			2		1			16:15			253		57		
04:30			7		14			16:30			243		37		
04:45			7	17	11	28	45	16:45			244	920	34	176	1096
05:00			5		15			17:00			231		28		
05:15			10		15			17:15			256		39		
05:30			10		34			17:30			166		30		
05:45			34	59	41	105	164	17:45			139	792	20	117	909
06:00			42		45			18:00			97		25		
06:15			56		53			18:15			116		28		
06:30			71		22			18:30			67		20		
06:45			80	249	70	190	439	18:45			35	315	36	109	424
07:00			80		67			19:00			36		23		
07:15			64		114			19:15			76		23		
07:30			77		72			19:30			33		11		
07:45			74	295	87	340	635	19:45			29	174	22	79	253
08:00			53		121			20:00			32		5		
08:15			54		99			20:15			41		15		
08:30			42		61			20:30			11		19		
08:45			58	207	66	347	554	20:45			24	108	5	44	152
09:00			56		68			21:00			34		6		
09:15			46		32			21:15			20		16		
09:30			54		37			21:30			31		5		
09:45			46	202	37	174	376	21:45			26	111	3	30	141
10:00			48		35			22:00			32		9		
10:15			46		40			22:15			31		12		
10:30			65		45			22:30			39		24		
10:45			61	220	43	163	383	22:45			14	116	11	56	172
11:00			48		46			23:00			26		7		
11:15			60		64			23:15			30		6		
11:30			72		44			23:30			38		6		
11:45			53	233	53	207	440	23:45			18	112	8	27	139
Total Vol.			1534		1591	3125					4328		1407	5735	

Daily Totals

	NB	SB		EB	WB
			Combined	5862	2998
			8860		

	AM			PM		
Split %	49.1%	50.9%	35.3%	75.5%	24.5%	64.7%
Peak Hour	06:45	07:15	07:15	16:30	15:30	16:15
Volume	301	394	662	974	235	1127
P.H.F.	0.94	0.81	0.93	0.95	0.82	0.91

Prepared by NDS/ATD

Volumes for: Wednesday, June 11, 2008 | City: San Diego | Project #: 08-4149-023

Location: Harbor Dr btwn 32nd St & Vesta St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			18		7			12:00			107		135		
00:15			10		3			12:15			108		122		
00:30			9		5			12:30			108		116		
00:45			7	44	4	19	63	12:45			111	434	111	484	918
01:00			11		3			13:00			116		101		
01:15			3		3			13:15			128		124		
01:30			3		3			13:30			165		134		
01:45			5	22	5	14	36	13:45			166	575	155	514	1089
02:00			5		8			14:00			183		130		
02:15			3		8			14:15			321		141		
02:30			7		12			14:30			256		154		
02:45			0	15	15	43	58	14:45			248	1008	152	577	1585
03:00			3		10			15:00			333		163		
03:15			3		22			15:15			298		128		
03:30			5		31			15:30			302		107		
03:45			11	22	61	124	146	15:45			295	1228	113	511	1739
04:00			17		101			16:00			308		128		
04:15			20		122			16:15			276		99		
04:30			37		118			16:30			315		98		
04:45			40	114	167	508	622	16:45			254	1153	98	423	1576
05:00			73		134			17:00			200		88		
05:15			68		117			17:15			156		79		
05:30			68		131			17:30			127		86		
05:45			79	288	165	547	835	17:45			104	587	61	314	901
06:00			89		197			18:00			78		51		
06:15			57		170			18:15			78		43		
06:30			77		215			18:30			68		37		
06:45			61	284	177	759	1043	18:45			62	286	34	165	451
07:00			68		197			19:00			42		41		
07:15			75		138			19:15			55		23		
07:30			68		138			19:30			76		29		
07:45			73	284	121	594	878	19:45			46	219	22	115	334
08:00			80		125			20:00			39		22		
08:15			79		105			20:15			50		27		
08:30			73		127			20:30			54		21		
08:45			81	313	108	465	778	20:45			61	204	25	95	299
09:00			94		114			21:00			67		24		
09:15			96		110			21:15			41		15		
09:30			92		107			21:30			37		19		
09:45			93	375	116	447	822	21:45			27	172	9	67	239
10:00			99		123			22:00			22		13		
10:15			132		107			22:15			16		13		
10:30			122		141			22:30			28		17		
10:45			122	475	115	486	961	22:45			21	87	11	54	141
11:00			114		126			23:00			12		8		
11:15			93		130			23:15			7		5		
11:30			115		147			23:30			16		10		
11:45			96	418	153	556	974	23:45			7	42	3	26	68
Total Vol.				2654		4562	7216					5995		3345	9340

Daily Totals

	NB	SB		EB	WB
			Combined	8649	7907
			16556		

	AM			PM		
Split %	36.8%	63.2%	43.6%	64.2%	35.8%	56.4%
Peak Hour	10:15	06:00	05:45	15:00	14:15	14:15
Volume	490	759	1049	1228	610	1768
P.H.F.	0.93	0.88	0.90	0.92	0.94	0.89

Prepared by NDS/ATD

Volumes for: Thursday, June 12, 2008 | City: San Diego | Project #: 08-4149-023

Location: Harbor Dr btwn 32nd St & Vesta St

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			31		4			12:00			106		129		
00:15			23		4			12:15			95		117		
00:30			13		1			12:30			117		128		
00:45			7	74	3	12	86	12:45			139	457	122	496	953
01:00			12		3			13:00			141		128		
01:15			3		3			13:15			127		139		
01:30			5		6			13:30			161		136		
01:45			4	24	6	18	42	13:45			146	575	123	526	1101
02:00			5		7			14:00			183		135		
02:15			5		8			14:15			223		143		
02:30			4		14			14:30			256		143		
02:45			4	18	11	40	58	14:45			248	910	152	573	1483
03:00			2		19			15:00			270		159		
03:15			3		25			15:15			343		127		
03:30			4		40			15:30			326		105		
03:45			9	18	60	144	162	15:45			245	1184	106	497	1681
04:00			16		100			16:00			314		97		
04:15			17		115			16:15			277		94		
04:30			29		144			16:30			291		91		
04:45			48	110	137	496	606	16:45			280	1162	117	399	1561
05:00			69		128			17:00			194		93		
05:15			83		132			17:15			133		90		
05:30			102		132			17:30			104		48		
05:45			94	348	137	529	877	17:45			69	500	60	291	791
06:00			55		187			18:00			51		51		
06:15			55		176			18:15			55		40		
06:30			62		192			18:30			54		38		
06:45			77	249	198	753	1002	18:45			69	229	35	164	393
07:00			71		175			19:00			53		38		
07:15			71		111			19:15			64		34		
07:30			65		114			19:30			67		30		
07:45			95	302	103	503	805	19:45			44	228	34	136	364
08:00			70		112			20:00			47		31		
08:15			72		91			20:15			40		20		
08:30			82		94			20:30			35		30		
08:45			80	304	84	381	685	20:45			33	155	19	100	255
09:00			95		105			21:00			35		36		
09:15			77		104			21:15			37		20		
09:30			102		105			21:30			25		12		
09:45			104	378	115	429	807	21:45			24	121	14	82	203
10:00			94		120			22:00			19		22		
10:15			125		124			22:15			17		19		
10:30			129		121			22:30			23		11		
10:45			115	463	114	479	942	22:45			26	85	12	64	149
11:00			138		131			23:00			25		5		
11:15			114		129			23:15			19		8		
11:30			118		102			23:30			18		6		
11:45			107	477	133	495	972	23:45			14	76	10	29	105
Total Vol.				2765		4279	7044					5682		3357	9039

Daily Totals

	NB	SB		EB	WB
			Combined	8447	7636
			16083		

	AM			PM		
Split %	39.3%	60.7%	43.8%	62.9%	37.1%	56.2%
Peak Hour	10:15	06:00	06:15	15:15	14:15	14:45
Volume	507	753	1006	1228	597	1730
P.H.F.	0.92	0.95	0.91	0.90	0.94	0.92

Traffic Data Service Southwest
Vehicle Counts

Eastbound

VehicleCount-1214

DATASETS:

Site: **[28001E] Harbor Dr E/o 32nd St**
Direction: 8 - East bound A>B, West bound B>A., **Lane:** 0
Survey Duration: 08:06 Mon 13 Oct 2003 to 08:30 Fri 17 Oct 2003
File: Z:\mcdata\San Diego\2003\280\28001E17OCT2003.EC0 (Plus)
Identifier: A027V8X1 MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm: Factory default

PROFILE:

Filter time: **00:00 Tue 14 Oct 2003 to 00:00 Fri 17 Oct 2003**
Included classes: 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 100 mph.
Direction: East (bound)
Headway: All
Scheme: Scheme F99
Name: Factory default profile
Method: Vehicle classification
Units: Non-Metric (ft, mi, f/s, mph, lb, ton)
In profile: 1943 Vehicles

*** Tue 14 Oct 2003 - Total=603, 15 minute drops,**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
5	**3**	**5**	**10**	**8**	**23**	**21**	**34**	**44**	**46**	**46**	**22**	**41**	**55**	**59**	**37**	**44**	**33**	**21**	**13**	**8**	**8**	**11**	**6**	
1	0	2	1	3	4	8	7	13	10	**13**	5	5	16	**15**	11	19	11	12	2	0	1	3	1	3
3	0	1	3	0	2	4	3	8	**12**	12	1	18	14	**18**	5	9	6	5	4	4	0	4	1	0
1	0	1	2	4	3	5	11	14	**8**	8	4	10	12	**16**	11	10	9	2	3	1	3	2	3	0
0	3	1	4	1	14	4	13	9	**16**	13	12	8	**13**	10	10	6	7	2	4	3	4	2	1	0

AM PkHr 09:15 to 10:15 (n=49), AM PHF=0.77 PM PkHr 13:45 to 14:45 (n=62), PM PHF=0.86

*** Wed 15 Oct 2003 - Total=643, 15 minute drops,**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
3	**6**	**3**	**3**	**6**	**24**	**22**	**28**	**44**	**54**	**43**	**48**	**33**	**51**	**58**	**60**	**50**	**42**	**13**	**14**	**14**	**9**	**11**	**4**	
3	1	0	1	1	3	7	2	13	**19**	10	14	10	11	10	11	**13**	11	3	3	2	0	3	1	2
0	2	1	1	1	1	5	9	9	**11**	8	7	6	12	19	**14**	7	10	4	4	6	1	3	1	4
0	2	1	1	0	4	7	7	9	**16**	11	19	7	8	10	**15**	17	8	3	2	4	4	4	0	2
0	1	1	0	4	16	3	10	**13**	8	14	8	10	20	19	**20**	13	13	3	5	2	4	1	2	2

AM PkHr 08:45 to 09:45 (n=59), AM PHF=0.78 PM PkHr 15:15 to 16:15 (n=62), PM PHF=0.78

*** Thu 16 Oct 2003 - Total=697, 15 minute drops,**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
10	**4**	**3**	**2**	**7**	**26**	**24**	**35**	**36**	**58**	**36**	**44**	**46**	**45**	**57**	**66**	**56**	**55**	**33**	**23**	**8**	**10**	**6**	**7**	
2	2	3	0	1	3	10	6	7	12	**14**	15	11	7	14	17	11	13	9	4	3	2	1	2	-
4	0	0	1	0	2	3	6	11	**11**	10	11	12	8	14	9	17	20	11	11	0	2	2	1	-
2	0	0	0	0	8	7	11	11	**16**	8	6	11	13	15	22	10	7	5	6	4	2	1	3	-
2	2	0	1	6	13	4	12	7	**19**	4	12	12	17	14	18	18	15	8	2	1	4	2	1	-

AM PkHr 09:15 to 10:15 (n=60), AM PHF=0.79

Traffic Data Service Southwest
Vehicle Counts

Westbound

VehicleCount-1214

DATASETS:

Site: **[28001W] Harbor Dr E/o 32nd St**
Direction: 6 - West bound A>B, East bound B>A., **Lane:** 0
Survey Duration: 08:06 Mon 13 Oct 2003 to 08:25 Fri 17 Oct 2003
File: Z:\mcdata\San Diego\2003\280\28001W17OCT2003.EC0 (Plus)
Identifier: B102GC7E MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm: Factory default

PROFILE:

Filter time: **00:00 Tue 14 Oct 2003 to 00:00 Fri 17 Oct 2003**
Included classes: 1, 2, 3, 4
Speed range: 0 - 100 mph.
Direction: West (bound)
Headway: All
Scheme: Scheme F99
Name: Factory default profile
Method: Vehicle classification
Units: Non-Metric (ft, mi, f/s, mph, lb, ton)
In profile: 29538 Vehicles

*** Tue 14 Oct 2003 - Total=9980, 15 minute drops,**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
50	**32**	**34**	**110**	**445**	**577**	**938**	**1040**	**769**	**440**	**440**	**519**	**596**	**654**	**627**	**676**	**648**	**451**	**315**	**212**	**136**	**109**	**98**	**64**	
14	6	7	10	73	101	192	**240**	217	111	121	115	143	161	150	**158**	149	120	80	58	42	21	29	22	12
14	6	8	26	121	136	208	**292**	220	105	93	123	136	156	139	**170**	171	135	87	58	33	27	32	13	17
7	9	11	30	140	161	**266**	251	174	103	111	136	162	178	187	**175**	177	102	83	57	35	28	16	13	9
15	11	8	44	111	179	**272**	257	158	121	115	145	155	159	151	**173**	151	94	65	39	26	33	21	16	16

AM PkHr 06:30 to 07:30 (n=1070), AM PHF=0.92 PM PkHr 15:00 to 16:00 (n=676), PM PHF=0.97

*** Wed 15 Oct 2003 - Total=9750, 15 minute drops,**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
54	**29**	**24**	**33**	**232**	**563**	**991**	**968**	**525**	**434**	**506**	**584**	**612**	**659**	**642**	**663**	**603**	**525**	**357**	**235**	**180**	**138**	**120**	**73**	
12	8	6	4	32	92	221	**232**	195	109	132	125	139	150	159	**187**	150	126	102	68	39	45	26	26	17
17	10	5	7	55	145	228	**252**	121	117	118	157	166	178	155	**185**	166	158	88	58	47	33	38	9	7
9	3	4	9	74	146	268	**277**	99	107	122	159	151	179	**169**	158	156	118	87	44	53	29	29	25	17
16	8	9	13	71	180	**274**	207	110	101	134	143	156	152	**159**	133	131	123	80	65	41	31	27	13	12

AM PkHr 06:45 to 07:45 (n=1035), AM PHF=0.93 PM PkHr 14:30 to 15:30 (n=700), PM PHF=0.94

*** Thu 16 Oct 2003 - Total=9808, 15 minute drops,**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
53	**47**	**33**	**41**	**227**	**605**	**983**	**1001**	**614**	**395**	**422**	**549**	**578**	**700**	**617**	**682**	**641**	**470**	**377**	**244**	**196**	**133**	**127**	**73**	
17	12	14	7	37	80	197	**288**	191	107	97	125	123	174	155	179	161	148	111	55	55	47	29	15	-
7	5	8	9	53	156	**237**	221	180	103	103	152	147	154	146	174	174	128	97	58	52	33	34	18	-
17	14	6	11	64	170	**295**	280	134	92	113	148	163	201	177	174	159	89	91	63	43	24	33	20	-
12	16	5	14	73	199	**254**	212	109	93	109	124	145	171	139	155	147	105	78	68	46	29	31	20	-

AM PkHr 06:15 to 07:15 (n=1074), AM PHF=0.91

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-001
LOCATION: 16th St & Commercial St
DATE: 6/3/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	5	1	3	3
7:15 AM	9	1	6	10
7:30 AM	9	0	0	4
7:45 AM	4	3	3	7
8:00 AM	1	1	4	10
8:15 AM	2	4	3	4
8:30 AM	9	7	2	15
8:45 AM	2	2	1	4
TOTALS	41	19	22	57

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	0	1	0
7:15 AM	0	0	0	0
7:30 AM	0	0	1	0
7:45 AM	0	0	2	0
8:00 AM	0	0	1	0
8:15 AM	1	0	0	0
8:30 AM	0	0	3	0
8:45 AM	2	0	0	0
TOTALS	4	0	8	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	3	2	0	8
4:15 PM	2	2	1	8
4:30 PM	1	3	4	5
4:45 PM	5	2	2	7
5:00 PM	12	5	3	8
5:15 PM	2	3	8	8
5:30 PM	4	2	1	16
5:45 PM	3	2	2	1
TOTALS	32	21	21	61

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	1	0
4:30 PM	1	1	1	0
4:45 PM	1	0	1	0
5:00 PM	3	1	1	1
5:15 PM	2	1	0	1
5:30 PM	2	1	2	0
5:45 PM	0	0	3	0
TOTALS	9	4	9	2

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-002
LOCATION: 16th St & National Ave
DATE: 6/3/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	2	5	2	0
7:15 AM	3	8	5	2
7:30 AM	4	4	3	0
7:45 AM	8	5	1	2
8:00 AM	7	4	7	5
8:15 AM	0	3	3	0
8:30 AM	0	4	2	0
8:45 AM	1	1	2	0
TOTALS	25	34	25	9

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	1	0
7:30 AM	0	1	0	0
7:45 AM	1	1	0	0
8:00 AM	0	1	0	0
8:15 AM	0	1	1	0
8:30 AM	0	0	0	0
8:45 AM	0	0	1	0
TOTALS	1	4	3	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	6	8	6	4
4:15 PM	12	15	2	8
4:30 PM	5	6	1	0
4:45 PM	4	8	1	2
5:00 PM	3	8	5	2
5:15 PM	2	11	2	2
5:30 PM	5	4	2	2
5:45 PM	3	7	4	4
TOTALS	40	67	23	24

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	2	1	0	1
4:15 PM	0	0	0	0
4:30 PM	0	0	2	0
4:45 PM	1	0	1	0
5:00 PM	1	0	0	2
5:15 PM	1	0	0	0
5:30 PM	0	1	1	2
5:45 PM	0	1	1	0
TOTALS	5	3	5	5

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-003
LOCATION: Sigsbee St & National Ave
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	13	5	4	14
7:15 AM	6	5	5	5
7:30 AM	9	7	10	6
7:45 AM	11	10	9	10
8:00 AM	4	7	3	6
8:15 AM	1	2	0	4
8:30 AM	5	6	2	17
8:45 AM	9	5	2	9
TOTALS	58	47	35	71

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	1	0
7:15 AM	0	0	0	1
7:30 AM	1	1	1	0
7:45 AM	3	0	2	1
8:00 AM	0	0	1	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	4	1	5	2

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	7	3	1	5
4:15 PM	9	6	3	11
4:30 PM	3	2	0	0
4:45 PM	3	3	0	8
5:00 PM	6	5	6	9
5:15 PM	2	2	0	7
5:30 PM	7	2	0	3
5:45 PM	9	8	1	1
TOTALS	46	31	11	44

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	2
4:15 PM	0	1	1	3
4:30 PM	0	1	0	0
4:45 PM	0	2	2	1
5:00 PM	0	0	0	2
5:15 PM	0	1	1	0
5:30 PM	0	0	1	0
5:45 PM	0	0	0	1
TOTALS	0	5	5	9

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-004
LOCATION: Sigsbee St & Newton Ave
DATE: 6/4/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	0	1
7:30 AM	2	1	1	0
7:45 AM	0	0	2	0
8:00 AM	3	5	4	0
8:15 AM	2	2	2	2
8:30 AM	11	0	20	0
8:45 AM	2	1	2	2
TOTALS	20	9	31	5

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	1	0	0	0
7:45 AM	0	0	1	0
8:00 AM	0	0	0	0
8:15 AM	1	0	0	0
8:30 AM	0	0	0	0
8:45 AM	1	0	0	0
TOTALS	3	0	1	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	4	2	1	1
4:15 PM	1	2	0	0
4:30 PM	0	1	3	2
4:45 PM	2	0	2	0
5:00 PM	6	1	1	0
5:15 PM	2	3	1	0
5:30 PM	1	0	0	0
5:45 PM	2	2	0	0
TOTALS	18	11	8	3

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	1	2	0
4:15 PM	0	1	0	1
4:30 PM	0	0	0	1
4:45 PM	0	0	0	3
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	0	2	2	5

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-005
LOCATION: Sigsbee St & Main St
DATE: 6/4/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	1	0	1	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	1	0	1	0

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	1	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	0	0	1	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	2	0	0
4:15 PM	2	2	0	0
4:30 PM	4	1	0	0
4:45 PM	0	0	0	0
5:00 PM	0	1	0	0
5:15 PM	0	1	0	2
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	6	7	0	2

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	1	0	0
4:15 PM	0	0	0	0
4:30 PM	1	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	1	0
5:45 PM	0	0	0	0
TOTALS	1	1	1	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-008
LOCATION: Beardsley St & National Ave
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	8	6	2	7
7:15 AM	7	5	2	8
7:30 AM	2	9	0	5
7:45 AM	6	1	4	6
8:00 AM	12	2	5	10
8:15 AM	8	32	34	27
8:30 AM	4	11	3	5
8:45 AM	19	21	4	9
TOTALS	66	87	54	77

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	0	0	0	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	9	2	3	13
4:15 PM	6	6	0	11
4:30 PM	3	7	7	9
4:45 PM	1	1	2	4
5:00 PM	5	2	2	14
5:15 PM	1	0	2	6
5:30 PM	4	1	3	14
5:45 PM	2	3	4	9
TOTALS	31	22	23	80

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	0	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-009
LOCATION: Beardsley St & Newton Ave
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	10	2	3	1
7:15 AM	3	1	2	3
7:30 AM	6	5	3	5
7:45 AM	5	10	6	4
8:00 AM	5	5	2	3
8:15 AM	5	20	5	45
8:30 AM	6	20	5	45
8:45 AM	45	5	46	5
TOTALS	85	68	72	111

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	1
7:15 AM	0	2	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	2	0	0
8:15 AM	0	0	0	2
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	0	4	0	3

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	1	7	3	3
4:15 PM	5	2	3	7
4:30 PM	5	3	4	5
4:45 PM	1	2	3	5
5:00 PM	3	4	8	2
5:15 PM	2	2	3	3
5:30 PM	2	1	3	3
5:45 PM	3	2	2	7
TOTALS	22	23	29	35

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	1	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	0	0	1	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-010
LOCATION: Beardsley St & Main St
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	7	2	6	2
7:15 AM	8	1	11	4
7:30 AM	1	5	9	3
7:45 AM	4	10	7	8
8:00 AM	2	8	6	2
8:15 AM	7	7	4	8
8:30 AM	3	6	3	5
8:45 AM	1	2	2	4
TOTALS	33	41	48	36

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	0	0	0
7:15 AM	0	0	1	0
7:30 AM	0	0	0	0
7:45 AM	0	1	0	0
8:00 AM	0	0	0	0
8:15 AM	1	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	1	0	0
TOTALS	2	2	1	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	3	2	1
4:30 PM	0	0	0	0
4:45 PM	3	0	0	0
5:00 PM	0	0	0	1
5:15 PM	1	11	0	0
5:30 PM	0	0	1	0
5:45 PM	0	0	2	4
TOTALS	4	14	5	6

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	1	0	0
4:15 PM	1	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	1	1	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-013
LOCATION: Cesar Chavez Pkwy & Logan Ave
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	6	3	7
7:15 AM	0	4	4	9
7:30 AM	1	3	6	5
7:45 AM	4	3	5	3
8:00 AM	1	4	4	16
8:15 AM	9	3	2	15
8:30 AM	4	4	4	10
8:45 AM	7	8	3	13
TOTALS	27	35	31	78

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	1	0	0
7:15 AM	1	0	0	0
7:30 AM	0	2	0	1
7:45 AM	0	1	0	0
8:00 AM	0	1	0	0
8:15 AM	0	0	0	1
8:30 AM	1	0	1	1
8:45 AM	0	0	0	1
TOTALS	2	5	1	4

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	3	2	8	5
4:15 PM	5	3	11	9
4:30 PM	0	3	8	7
4:45 PM	2	5	0	6
5:00 PM	3	2	14	7
5:15 PM	6	1	4	10
5:30 PM	2	2	4	7
5:45 PM	5	1	6	11
TOTALS	26	19	55	62

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	2	2	0
4:15 PM	2	0	0	1
4:30 PM	0	2	1	1
4:45 PM	0	0	0	0
5:00 PM	0	0	0	1
5:15 PM	0	0	0	0
5:30 PM	0	0	0	3
5:45 PM	0	0	2	0
TOTALS	2	4	5	6

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-016
LOCATION: Cesar Chavez Pkwy & Main St
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	2
7:15 AM	8	5	5	2
7:30 AM	9	2	1	4
7:45 AM	10	8	0	5
8:00 AM	10	4	4	7
8:15 AM	9	4	0	10
8:30 AM	4	1	1	9
8:45 AM	4	1	0	11
TOTALS	54	25	11	50

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	1	0
7:30 AM	0	0	0	1
7:45 AM	0	1	1	0
8:00 AM	1	1	0	1
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	1	2	2	2

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	1	3	2	2
4:15 PM	3	6	8	4
4:30 PM	10	6	7	7
4:45 PM	5	9	3	3
5:00 PM	7	9	3	0
5:15 PM	2	3	1	0
5:30 PM	4	4	3	4
5:45 PM	3	4	8	2
TOTALS	35	44	35	22

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	1	0	0	0
4:30 PM	0	1	0	0
4:45 PM	1	0	0	0
5:00 PM	1	0	1	1
5:15 PM	0	0	0	0
5:30 PM	0	0	0	2
5:45 PM	0	0	0	0
TOTALS	3	1	1	3

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-017
LOCATION: Cesar Chavez Pkwy & Harbor Dr
DATE: 6/4/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	0	0	0	0
6:15 AM	1	0	7	1
6:30 AM	2	0	7	1
6:45 AM	2	0	0	1
7:00 AM	5	7	0	1
7:15 AM	0	2	0	1
7:30 AM	2	3	1	1
7:45 AM	2	1	0	0
8:00 AM	2	5	0	2
8:15 AM	0	2	0	0
8:30 AM	0	1	2	0
8:45 AM	3	1	0	0
TOTALS	19	22	17	8

BIKES

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	0	1	0	0
6:15 AM	6	1	1	0
6:30 AM	7	2	1	0
6:45 AM	1	4	0	0
7:00 AM	1	2	2	0
7:15 AM	6	1	1	0
7:30 AM	2	2	1	0
7:45 AM	3	2	0	0
8:00 AM	0	0	0	0
8:15 AM	1	0	0	0
8:30 AM	0	0	0	0
8:45 AM	2	2	0	0
TOTALS	29	17	6	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	3	0	0
3:15 PM	2	0	2	1
3:30 PM	1	3	3	0
3:45 PM	0	3	1	0
4:00 PM	3	6	5	0
4:15 PM	4	4	2	1
4:30 PM	0	0	2	0
4:45 PM	0	7	0	1
5:00 PM	1	2	1	2
5:15 PM	0	4	0	1
5:30 PM	0	3	3	2
5:45 PM	1	1	3	0
TOTALS	12	36	22	8

BIKES

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	4	0	0
3:15 PM	1	1	0	1
3:30 PM	2	3	0	0
3:45 PM	3	2	2	1
4:00 PM	2	4	0	0
4:15 PM	0	1	1	1
4:30 PM	4	2	0	0
4:45 PM	3	6	3	0
5:00 PM	2	0	0	0
5:15 PM	5	1	0	0
5:30 PM	3	0	0	3
5:45 PM	3	1	0	0
TOTALS	28	25	6	6

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-024
LOCATION: Sampson St & National Ave
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	1	2
7:15 AM	1	1	0	3
7:30 AM	6	0	5	1
7:45 AM	2	0	5	3
8:00 AM	4	2	5	6
8:15 AM	3	0	1	3
8:30 AM	5	0	5	0
8:45 AM	5	1	3	4
TOTALS	26	4	25	22

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	1	0	1
7:15 AM	0	0	1	0
7:30 AM	0	0	1	1
7:45 AM	0	0	1	0
8:00 AM	0	0	0	0
8:15 AM	1	0	1	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	1	1	4	2

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	1	0
4:15 PM	2	4	5	7
4:30 PM	3	3	9	14
4:45 PM	2	4	6	4
5:00 PM	5	3	5	10
5:15 PM	6	8	15	14
5:30 PM	1	0	11	2
5:45 PM	0	2	7	12
TOTALS	19	24	59	63

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	2	0	1	0
4:15 PM	1	0	1	0
4:30 PM	0	2	0	1
4:45 PM	0	1	4	1
5:00 PM	0	0	0	0
5:15 PM	1	0	0	0
5:30 PM	1	1	0	0
5:45 PM	0	0	2	0
TOTALS	5	4	8	2

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-025
LOCATION: Sampson St & Newton Ave
DATE: 6/5/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	1	1	0
7:15 AM	2	0	0	0
7:30 AM	4	1	0	1
7:45 AM	2	4	1	2
8:00 AM	3	6	2	1
8:15 AM	2	1	2	1
8:30 AM	0	2	1	1
8:45 AM	3	0	2	0
TOTALS	16	15	9	6

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	1	0
7:30 AM	1	0	0	0
7:45 AM	0	0	0	0
8:00 AM	1	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	2	0	1	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	2	0	1	1
4:15 PM	1	1	1	1
4:30 PM	2	2	4	0
4:45 PM	0	1	0	0
5:00 PM	2	6	0	3
5:15 PM	1	10	0	8
5:30 PM	4	4	0	2
5:45 PM	8	4	0	8
TOTALS	20	28	6	23

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	1	0
4:15 PM	0	0	0	0
4:30 PM	0	1	1	1
4:45 PM	0	0	0	1
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	1	0	0
TOTALS	0	2	2	2

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-026
LOCATION: Sampson St & Main St
DATE: 6/10/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	7	1	1	0
7:15 AM	3	2	5	0
7:30 AM	8	1	5	0
7:45 AM	6	1	6	2
8:00 AM	3	1	3	0
8:15 AM	10	0	2	3
8:30 AM	1	1	2	2
8:45 AM	7	0	4	2
TOTALS	45	7	28	9

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	3	1	3	0
7:30 AM	1	0	2	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	1	0
8:30 AM	0	0	1	0
8:45 AM	0	0	0	0
TOTALS	4	1	7	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	3	3	4	0
4:15 PM	1	7	10	3
4:30 PM	2	6	7	1
4:45 PM	6	1	4	6
5:00 PM	4	1	5	2
5:15 PM	0	0	0	0
5:30 PM	0	4	0	0
5:45 PM	0	0	1	0
TOTALS	16	22	31	12

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	1
5:15 PM	0	0	1	1
5:30 PM	0	0	1	1
5:45 PM	0	0	1	0
TOTALS	0	0	3	3

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-027
LOCATION: Sampson St & Harbor Dr
DATE: 6/11/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	8	4	1	2
7:15 AM	6	5	1	2
7:30 AM	7	3	1	3
7:45 AM	8	3	1	0
8:00 AM	9	4	1	0
8:15 AM	10	10	2	1
8:30 AM	3	8	2	1
8:45 AM	6	6	0	2
TOTALS	57	43	9	11

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	0	1	2
7:15 AM	2	1	2	6
7:30 AM	2	1	1	2
7:45 AM	0	0	2	4
8:00 AM	0	1	0	0
8:15 AM	0	1	1	1
8:30 AM	1	0	0	0
8:45 AM	0	0	1	1
TOTALS	6	4	8	16

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	3	8	0	1
4:15 PM	1	14	2	1
4:30 PM	3	10	2	1
4:45 PM	1	10	4	2
5:00 PM	3	8	2	1
5:15 PM	0	7	1	3
5:30 PM	0	7	2	1
5:45 PM	1	1	1	0
TOTALS	12	65	14	10

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	1	2
4:15 PM	0	0	0	0
4:30 PM	0	1	3	3
4:45 PM	0	0	3	2
5:00 PM	0	1	0	2
5:15 PM	0	1	0	5
5:30 PM	0	0	0	1
5:45 PM	0	1	1	1
TOTALS	0	4	8	16

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-028
LOCATION: Sicard St & National Ave
DATE: 6/10/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	0	6	1
7:15 AM	0	2	2	3
7:30 AM	0	0	6	2
7:45 AM	0	1	3	5
8:00 AM	0	0	2	3
8:15 AM	0	1	1	2
8:30 AM	0	2	2	2
8:45 AM	1	0	6	0
TOTALS	2	6	28	18

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	1	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	2	2
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	1	0
TOTALS	1	1	3	2

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	0	0	0	0

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTALS	0	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-029
LOCATION: 26th St & National Ave
DATE: 6/10/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	1	2	2	7
7:15 AM	1	1	1	2
7:30 AM	0	7	1	5
7:45 AM	0	1	1	5
8:00 AM	2	3	3	0
8:15 AM	3	0	0	1
8:30 AM	1	0	0	1
8:45 AM	2	0	1	0
TOTALS	10	14	9	21

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	1
7:15 AM	1	0	0	0
7:30 AM	0	0	0	0
7:45 AM	1	2	1	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	1	0	0	0
TOTALS	3	2	1	1

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	2	1	5
4:15 PM	7	0	6	5
4:30 PM	1	3	10	4
4:45 PM	2	2	1	2
5:00 PM	3	3	3	9
5:15 PM	0	3	3	0
5:30 PM	1	3	4	3
5:45 PM	2	1	2	3
TOTALS	16	17	30	31

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	1	0	1	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	1	1	0	0
5:15 PM	1	2	1	0
5:30 PM	0	0	1	2
5:45 PM	1	1	0	0
TOTALS	4	4	3	2

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-030
LOCATION: I-5 SB Off-Ramp & National Ave
DATE: 6/11/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	7	0	0
7:15 AM	3	11	0	4
7:30 AM	0	10	0	0
7:45 AM	0	3	0	1
8:00 AM	0	5	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	1
TOTALS	3	36	0	6

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	1	2
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	1	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	0	0	2	2

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	9	0	0
4:15 PM	0	9	0	0
4:30 PM	0	11	0	0
4:45 PM	0	7	0	0
5:00 PM	0	12	1	4
5:15 PM	0	6	0	1
5:30 PM	0	12	0	0
5:45 PM	0	4	0	0
TOTALS	0	70	1	5

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	3
4:15 PM	0	2	1	2
4:30 PM	0	0	0	0
4:45 PM	0	1	1	3
5:00 PM	0	0	0	0
5:15 PM	0	0	1	0
5:30 PM	0	0	0	1
5:45 PM	0	0	0	1
TOTALS	0	3	3	10

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-031
LOCATION: 26th St & Main St
DATE: 6/10/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	1	0	2
7:45 AM	0	2	0	3
8:00 AM	0	0	1	0
8:15 AM	0	0	0	0
8:30 AM	1	0	0	1
8:45 AM	2	1	1	0
TOTALS	3	4	2	6

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	1	0	0
7:15 AM	0	4	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	2	1	0	0
8:30 AM	0	0	1	0
8:45 AM	0	0	0	0
TOTALS	2	6	1	0

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	2
4:15 PM	0	2	0	1
4:30 PM	4	1	0	1
4:45 PM	0	1	0	0
5:00 PM	0	0	0	2
5:15 PM	0	4	0	0
5:30 PM	0	1	0	0
5:45 PM	0	1	0	0
TOTALS	4	10	0	6

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	1	1	0
4:45 PM	0	0	0	0
5:00 PM	1	1	0	0
5:15 PM	1	0	0	2
5:30 PM	1	0	0	0
5:45 PM	0	0	0	0
TOTALS	3	2	1	2

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-032
LOCATION: Schley St & Harbor Dr
DATE: 6/10/08 DAY: Tuesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	2	0
7:15 AM	0	1	1	0
7:30 AM	0	3	0	0
7:45 AM	0	4	0	0
8:00 AM	0	0	1	0
8:15 AM	0	1	1	0
8:30 AM	0	0	0	0
8:45 AM	0	6	1	0
TOTALS	0	15	6	0

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	1	0
7:15 AM	0	0	2	4
7:30 AM	0	0	1	3
7:45 AM	0	0	2	3
8:00 AM	0	0	0	1
8:15 AM	0	0	1	2
8:30 AM	1	0	0	0
8:45 AM	0	0	1	1
TOTALS	1	0	8	14

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	0	0
4:15 PM	7	0	0	0
4:30 PM	1	0	0	0
4:45 PM	2	0	0	0
5:00 PM	3	0	0	0
5:15 PM	0	0	0	0
5:30 PM	1	0	0	0
5:45 PM	2	0	0	0
TOTALS	16	0	0	0

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	1	0
4:15 PM	0	0	2	4
4:30 PM	0	0	1	3
4:45 PM	0	0	2	3
5:00 PM	0	0	0	1
5:15 PM	0	0	1	2
5:30 PM	1	0	0	0
5:45 PM	0	0	1	0
TOTALS	1	0	8	13

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-035
LOCATION: 28th St & Main St
DATE: 6/11/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	3	1	30	32
6:15 AM	2	2	21	20
6:30 AM	1	1	20	11
6:45 AM	1	3	14	2
7:00 AM	8	6	19	5
7:15 AM	0	2	19	9
7:30 AM	0	2	8	2
7:45 AM	4	1	14	10
8:00 AM	2	2	21	10
8:15 AM	6	3	5	6
8:30 AM	3	0	2	7
8:45 AM	1	1	0	4
TOTALS	31	24	173	118

BIKES

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	3	0	2	1
6:15 AM	3	1	2	2
6:30 AM	1	1	3	1
6:45 AM	2	1	0	0
7:00 AM	1	0	2	0
7:15 AM	0	0	1	0
7:30 AM	1	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	11	3	10	4

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	6	9	58	92
3:15 PM	6	0	12	64
3:30 PM	10	3	12	26
3:45 PM	5	0	6	18
4:00 PM	8	4	5	26
4:15 PM	7	1	3	43
4:30 PM	6	1	7	21
4:45 PM	1	0	7	14
5:00 PM	13	2	3	24
5:15 PM	3	2	7	22
5:30 PM	7	4	0	20
5:45 PM	0	1	4	10
TOTALS	72	27	124	380

BIKES

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	1	4	0	0
3:15 PM	2	2	0	5
3:30 PM	0	1	0	0
3:45 PM	0	1	0	1
4:00 PM	0	1	1	1
4:15 PM	0	2	0	0
4:30 PM	0	0	0	0
4:45 PM	0	1	0	1
5:00 PM	1	0	0	1
5:15 PM	0	0	1	0
5:30 PM	0	2	0	1
5:45 PM	1	14	1	0
TOTALS	5	28	3	10

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-036
LOCATION: 28th St & Harbor Dr
DATE: 6/11/08 DAY: Wednesday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	209	2	0	0
6:15 AM	176	3	0	0
6:30 AM	81	5	0	0
6:45 AM	32	6	0	0
7:00 AM	41	42	0	0
7:15 AM	14	11	0	0
7:30 AM	21	7	0	0
7:45 AM	4	9	0	0
8:00 AM	1	8	0	0
8:15 AM	14	6	0	0
8:30 AM	8	10	0	0
8:45 AM	15	7	0	0
TOTALS	616	116	0	0

BIKES

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	0	0	1	0
6:15 AM	1	0	2	1
6:30 AM	2	0	1	5
6:45 AM	0	0	1	2
7:00 AM	2	0	1	2
7:15 AM	0	0	2	4
7:30 AM	1	0	2	1
7:45 AM	0	0	1	0
8:00 AM	0	0	3	1
8:15 AM	0	0	1	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTALS	6	0	15	16

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	340	1	0
3:15 PM	69	111	2	0
3:30 PM	34	54	0	0
3:45 PM	26	30	0	0
4:00 PM	9	49	0	0
4:15 PM	1	33	0	0
4:30 PM	3	34	0	0
4:45 PM	1	27	0	0
5:00 PM	5	17	0	0
5:15 PM	1	18	0	0
5:30 PM	2	10	0	0
5:45 PM	4	19	0	0
TOTALS	155	742	3	0

BIKES

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	0	0	0
3:15 PM	0	1	0	1
3:30 PM	0	0	1	0
3:45 PM	0	1	3	1
4:00 PM	0	3	3	1
4:15 PM	0	0	3	0
4:30 PM	0	0	1	3
4:45 PM	1	0	3	2
5:00 PM	0	0	0	5
5:15 PM	0	0	0	1
5:30 PM	0	0	7	2
5:45 PM	0	1	0	4
TOTALS	1	6	21	20

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-038
LOCATION: 32nd St & Main St
DATE: 6/12/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	1	0	2	2
6:15 AM	2	0	0	0
6:30 AM	0	2	0	3
6:45 AM	1	1	0	4
7:00 AM	1	0	1	2
7:15 AM	3	0	0	6
7:30 AM	1	0	3	4
7:45 AM	2	2	0	1
8:00 AM	0	1	0	3
8:15 AM	0	0	0	1
8:30 AM	3	1	0	7
8:45 AM	0	0	0	1
TOTALS	14	7	6	34

BIKES

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	2	0	0	0
6:15 AM	4	1	2	0
6:30 AM	0	0	1	1
6:45 AM	1	0	0	3
7:00 AM	0	1	2	2
7:15 AM	1	0	0	0
7:30 AM	2	1	0	0
7:45 AM	1	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	1	0	0	1
8:45 AM	0	0	1	0
TOTALS	12	3	6	7

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	1	0	4
3:15 PM	0	0	0	3
3:30 PM	1	0	1	5
3:45 PM	1	0	0	5
4:00 PM	1	2	1	4
4:15 PM	0	0	0	3
4:30 PM	5	2	2	0
4:45 PM	1	0	1	2
5:00 PM	0	0	0	2
5:15 PM	0	0	0	0
5:30 PM	1	0	1	2
5:45 PM	0	0	1	1
TOTALS	10	5	7	31

BIKES

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	1	2	2
3:15 PM	0	0	0	1
3:30 PM	0	0	4	1
3:45 PM	1	3	1	1
4:00 PM	1	0	2	0
4:15 PM	0	1	0	0
4:30 PM	0	2	0	0
4:45 PM	0	0	0	1
5:00 PM	1	0	1	2
5:15 PM	1	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	1
TOTALS	4	7	10	9

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-040
LOCATION: 32nd St & Harbor Dr
DATE: 6/12/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	3	0	0	3
6:15 AM	5	0	0	2
6:30 AM	6	0	0	5
6:45 AM	15	0	0	14
7:00 AM	4	0	0	6
7:15 AM	4	0	0	9
7:30 AM	7	0	0	7
7:45 AM	4	0	0	5
8:00 AM	1	0	0	1
8:15 AM	11	0	0	6
8:30 AM	10	0	0	17
8:45 AM	0	0	0	6
TOTALS	70	0	0	81

BIKES

TIME	NORTH	SOUTH	EAST	WEST
6:00 AM	0	0	1	3
6:15 AM	0	0	6	0
6:30 AM	0	2	7	0
6:45 AM	0	1	5	0
7:00 AM	0	2	5	0
7:15 AM	0	0	3	0
7:30 AM	0	0	3	0
7:45 AM	0	1	1	0
8:00 AM	0	0	1	0
8:15 AM	0	0	4	0
8:30 AM	0	0	1	0
8:45 AM	0	1	1	0
TOTALS	0	7	38	3

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	4	0	0	0
3:15 PM	23	0	0	9
3:30 PM	16	0	0	18
3:45 PM	23	0	0	31
4:00 PM	23	0	0	19
4:15 PM	19	0	0	18
4:30 PM	25	0	0	19
4:45 PM	14	0	0	20
5:00 PM	20	0	0	25
5:15 PM	20	0	0	24
5:30 PM	14	0	0	14
5:45 PM	2	0	0	4
TOTALS	203	0	0	201

BIKES

TIME	NORTH	SOUTH	EAST	WEST
3:00 PM	0	0	3	1
3:15 PM	2	0	7	1
3:30 PM	1	0	0	2
3:45 PM	4	0	2	6
4:00 PM	0	0	0	1
4:15 PM	2	0	1	1
4:30 PM	2	0	1	2
4:45 PM	0	0	2	4
5:00 PM	0	0	4	3
5:15 PM	0	0	1	3
5:30 PM	1	0	0	0
5:45 PM	0	0	3	4
TOTALS	12	0	24	28

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT #: 08-4148-041
LOCATION: I-15 Ramp & Main St
DATE: 6/12/08 DAY: Thursday
CITY: Barrio Logan

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	0	1
7:15 AM	0	0	1	0
7:30 AM	0	0	0	1
7:45 AM	0	0	1	0
8:00 AM	0	0	0	2
8:15 AM	0	0	1	1
8:30 AM	0	0	0	0
8:45 AM	0	0	2	3
TOTALS	0	0	5	8

BIKES

TIME	NORTH	SOUTH	EAST	WEST
7:00 AM	0	0	2	0
7:15 AM	0	0	0	1
7:30 AM	0	0	1	0
7:45 AM	0	0	0	1
8:00 AM	0	0	0	0
8:15 AM	0	0	1	0
8:30 AM	0	0	0	1
8:45 AM	0	0	1	0
TOTALS	0	0	5	3

PEDESTRIANS

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	3	1
4:15 PM	0	0	2	2
4:30 PM	0	0	5	1
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	1
5:45 PM	0	0	0	0
TOTALS	0	0	10	5

BIKES

TIME	NORTH	SOUTH	EAST	WEST
4:00 PM	0	0	2	0
4:15 PM	0	0	2	0
4:30 PM	0	0	0	0
4:45 PM	0	0	1	1
5:00 PM	0	0	2	2
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	1
TOTALS	0	0	7	4

APPENDIX D

- Intersection Level of Service Worksheets

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.98			0.98			0.96			0.95	
Flt Protected		1.00			1.00			0.99			1.00	
Satd. Flow (prot)		1803			1813			3312			3273	
Flt Permitted		0.99			0.97			0.92			0.94	
Satd. Flow (perm)		1791			1767			3093			3104	
Volume (vph)	3	83	19	13	125	22	9	20	9	7	49	29
Peak-hour factor, PHF	0.92	0.82	0.82	0.91	0.91	0.91	0.95	0.95	0.92	0.76	0.76	0.76
Adj. Flow (vph)	3	101	23	14	137	24	9	21	10	9	64	38
RTOR Reduction (vph)	0	11	0	0	0	0	0	4	0	0	15	0
Lane Group Flow (vph)	0	116	0	0	175	0	0	36	0	0	96	0
Confl. Peds. (#/hr)	16		15	15		16	36		12	12		36
Confl. Bikes (#/hr)						1			6			
Heavy Vehicles (%)	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.8			10.8			36.1			36.1	
Effective Green, g (s)		10.8			10.8			36.1			36.1	
Actuated g/C Ratio		0.18			0.18			0.60			0.60	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		321			317			1855			1861	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.10			0.01			c0.03	
v/c Ratio		0.36			0.55			0.02			0.05	
Uniform Delay, d1		21.7			22.5			4.9			5.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			2.1			0.0			0.1	
Delay (s)		22.4			24.6			4.9			5.0	
Level of Service		C			C			A			A	
Approach Delay (s)		22.4			24.6			4.9			5.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR
Lane Configurations	
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Volume (vph)	20
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	22
RTOR Reduction (vph)	0
Lane Group Flow (vph)	22
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	2%
Turn Type	custom
Protected Phases	9
Permitted Phases	
Actuated Green, G (s)	1.3
Effective Green, g (s)	1.3
Actuated g/C Ratio	0.02
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	35
v/s Ratio Prot	c0.01
v/s Ratio Perm	
v/c Ratio	0.63
Uniform Delay, d1	29.2
Progression Factor	1.00
Incremental Delay, d2	30.3
Delay (s)	59.6
Level of Service	E
Approach Delay (s)	
Approach LOS	

Intersection Summary

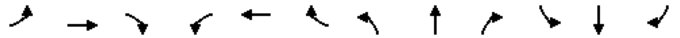
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	30	14	3	101	25	11	34	12	24	36	13
Peak Hour Factor	0.92	0.92	0.92	0.70	0.70	0.70	0.75	0.75	0.75	0.76	0.76	0.76
Hourly flow rate (vph)	4	33	15	4	144	36	15	45	16	32	47	17
Pedestrians		7			14			16			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					668							
pX, platoon unblocked												
vC, conflicting volume	199			64			266	272	54	267	262	188
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	199			64			266	272	54	267	262	188
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	93	98	95	92	98
cM capacity (veh/h)	1349			1516			586	611	977	583	619	804

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	21	32	4	180	76	96
Volume Left	4	0	4	0	15	32
Volume Right	0	15	0	36	16	17
cSH	1349	1700	1516	1700	657	632
Volume to Capacity	0.00	0.02	0.00	0.11	0.12	0.15
Queue Length 95th (ft)	0	0	0	0	10	13
Control Delay (s)	1.6	0.0	7.4	0.0	11.2	11.7
Lane LOS	A		A		B	B
Approach Delay (s)	0.6		0.2		11.2	11.7
Approach LOS					B	B

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	25.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.99			0.99			0.99	
Flpb, ped/bikes	0.98	1.00		0.97	1.00			0.99			1.00	
Frt	1.00	0.92		1.00	0.98			0.95			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1731	1666		1720	1804			1717			1766	
Flt Permitted	0.68	1.00		0.72	1.00			0.90			0.99	
Satd. Flow (perm)	1246	1666		1299	1804			1570			1754	
Volume (vph)	2	22	26	11	79	15	38	26	33	4	40	18
Peak-hour factor, PHF	0.78	0.78	0.78	0.82	0.82	0.82	0.73	0.73	0.73	0.74	0.74	0.74
Adj. Flow (vph)	3	28	33	13	96	18	52	36	45	5	54	24
RTOR Reduction (vph)	0	26	0	0	14	0	0	16	0	0	9	0
Lane Group Flow (vph)	3	35	0	13	100	0	0	117	0	0	74	0
Confl. Peds. (#/hr)	21		25	25		21	37		14	14		37
Confl. Bikes (#/hr)						3			3			1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.8	9.8		9.8	9.8			30.8			30.8	
Effective Green, g (s)	9.8	9.8		9.8	9.8			30.8			30.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20			0.63			0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	251	336		262	364			995			1112	
v/s Ratio Prot		0.02			c0.06							
v/s Ratio Perm	0.00			0.01				c0.07			0.04	
v/c Ratio	0.01	0.10		0.05	0.27			0.12			0.07	
Uniform Delay, d1	15.5	15.8		15.6	16.4			3.5			3.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.1		0.1	0.4			0.1			0.0	
Delay (s)	15.5	16.0		15.7	16.8			3.6			3.4	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		15.9			16.7			3.6			3.4	
Approach LOS		B			B			A			A	

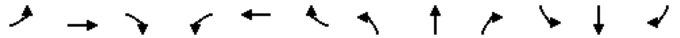
Intersection Summary				
HCM Average Control Delay	9.6	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.15			
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	33.7%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	22	12	3	34	20	14	75	9	13	50	15
Peak Hour Factor	0.61	0.61	0.61	0.84	0.84	0.84	0.79	0.79	0.79	0.81	0.81	0.81
Hourly flow rate (vph)	8	36	20	4	40	24	18	95	11	16	62	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	64	68	124	96
Volume Left (vph)	8	4	18	16
Volume Right (vph)	20	24	11	19
Hadj (s)	-0.12	-0.17	0.01	-0.05
Departure Headway (s)	4.3	4.3	4.3	4.3
Degree Utilization, x	0.08	0.08	0.15	0.11
Capacity (veh/h)	782	781	801	798
Control Delay (s)	7.7	7.7	8.1	7.8
Approach Delay (s)	7.7	7.7	8.1	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay			7.9	
HCM Level of Service			A	
Intersection Capacity Utilization		25.8%	ICU Level of Service	A
Analysis Period (min)			15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	5	1	6	4	61	1	39	5	31	42	2
Peak Hour Factor	0.58	0.58	0.58	0.84	0.84	0.84	0.80	0.80	0.80	0.85	0.85	0.85
Hourly flow rate (vph)	2	9	2	7	5	73	1	49	6	36	49	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	12	85	56	88
Volume Left (vph)	2	7	1	36
Volume Right (vph)	2	73	6	2
Hadj (s)	-0.02	-0.46	-0.03	0.10
Departure Headway (s)	4.3	3.8	4.2	4.3
Degree Utilization, x	0.01	0.09	0.06	0.10
Capacity (veh/h)	804	917	834	823
Control Delay (s)	7.3	7.1	7.4	7.7
Approach Delay (s)	7.3	7.1	7.4	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay			7.4	
HCM Level of Service			A	
Intersection Capacity Utilization		22.5%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	22	247	831	20	12	24
Peak Hour Factor	0.77	0.77	0.89	0.89	0.72	0.72
Hourly flow rate (vph)	29	321	934	22	17	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			1319			
pX, platoon unblocked						
vC, conflicting volume	956				1162	478
vC1, stage 1 conf vol					945	
vC2, stage 2 conf vol					218	
vCu, unblocked vol	956				1162	478
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	96				92	94
cM capacity (veh/h)	715				207	533

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	29	160	160	622	334	50
Volume Left	29	0	0	0	0	17
Volume Right	0	0	0	0	22	33
cSH	715	1700	1700	1700	1700	350
Volume to Capacity	0.04	0.09	0.09	0.37	0.20	0.14
Queue Length 95th (ft)	3	0	0	0	0	12
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	17.0
Lane LOS	B					C
Approach Delay (s)	0.8			0.0		17.0
Approach LOS						C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	68	11	45	86	0	16	0	38	137	151	21
Peak Hour Factor	0.93	0.93	0.93	0.94	0.94	0.94	0.78	0.78	0.78	0.76	0.76	0.76
Hourly flow rate (vph)	0	73	12	48	91	0	21	0	49	180	199	28

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	85	48	91	69	407
Volume Left (vph)	0	48	0	21	180
Volume Right (vph)	12	0	0	49	28
Hadj (s)	-0.05	0.53	0.03	-0.33	0.08
Departure Headway (s)	5.4	6.3	5.8	4.7	4.7
Degree Utilization, x	0.13	0.08	0.15	0.09	0.53
Capacity (veh/h)	605	524	569	701	738
Control Delay (s)	9.1	8.7	8.6	8.2	12.9
Approach Delay (s)	9.1	8.7		8.2	12.9
Approach LOS	A	A		A	B

Intersection Summary			
Delay	11.1		
HCM Level of Service	B		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	41	8	68	71	18	4	30	13	20	138	23
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.65	0.65	0.65	0.89	0.89	0.89
Hourly flow rate (vph)	10	49	10	85	89	22	6	46	20	22	155	26

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	10	58	85	111	72	203
Volume Left (vph)	10	0	85	0	6	22
Volume Right (vph)	0	10	0	23	20	26
Hadj (s)	0.53	-0.08	0.53	-0.11	-0.11	-0.02
Departure Headway (s)	6.0	5.3	5.8	5.2	4.7	4.6
Degree Utilization, x	0.02	0.09	0.14	0.16	0.09	0.26
Capacity (veh/h)	565	632	589	663	715	735
Control Delay (s)	7.8	7.6	8.5	7.9	8.2	9.3
Approach Delay (s)	7.7		8.2		8.2	9.3
Approach LOS	A		A		A	A

Intersection Summary				
Delay	8.5			
HCM Level of Service	A			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	31	3	16	39	15	5	23	11	52	137	28
Peak Hour Factor	0.84	0.84	0.84	0.88	0.88	0.88	0.65	0.65	0.65	0.92	0.92	0.92
Hourly flow rate (vph)	15	37	4	18	44	17	8	35	17	57	149	30

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	56	80	60	236
Volume Left (vph)	15	18	8	57
Volume Right (vph)	4	17	17	30
Hadj (s)	0.05	-0.05	-0.11	0.00
Departure Headway (s)	4.7	4.6	4.4	4.3
Degree Utilization, x	0.07	0.10	0.07	0.28
Capacity (veh/h)	704	726	780	804
Control Delay (s)	8.1	8.1	7.7	9.0
Approach Delay (s)	8.1	8.1	7.7	9.0
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.5			
HCM Level of Service	A			
Intersection Capacity Utilization	37.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	15	62	4	35	90	20	2	8	16	20	57	52
Peak Hour Factor	0.78	0.78	0.78	0.77	0.77	0.77	0.65	0.65	0.65	0.87	0.87	0.87
Hourly flow rate (vph)	19	79	5	45	117	26	3	12	25	23	66	60

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	104	188	40	148
Volume Left (vph)	19	45	3	23
Volume Right (vph)	5	26	25	60
Hadj (s)	0.04	0.00	-0.32	-0.18
Departure Headway (s)	4.6	4.5	4.4	4.5
Degree Utilization, x	0.13	0.23	0.05	0.18
Capacity (veh/h)	743	765	743	752
Control Delay (s)	8.3	8.8	7.7	8.5
Approach Delay (s)	8.3	8.8	7.7	8.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.5	
HCM Level of Service			A	
Intersection Capacity Utilization		32.2%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	13	209	907	16	30	54
Peak Hour Factor	0.84	0.84	0.88	0.88	0.78	0.78
Hourly flow rate (vph)	15	249	1031	18	38	69
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			658			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	1049				1195	524
vC1, stage 1 conf vol					1040	
vC2, stage 2 conf vol					155	
vCu, unblocked vol	931				1095	341
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	97				80	88
cM capacity (veh/h)	608				196	582

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	15	124	124	687	362	108
Volume Left	15	0	0	0	0	38
Volume Right	0	0	0	0	18	69
cSH	608	1700	1700	1700	1700	342
Volume to Capacity	0.03	0.07	0.07	0.40	0.21	0.31
Queue Length 95th (ft)	2	0	0	0	0	33
Control Delay (s)	11.1	0.0	0.0	0.0	0.0	20.3
Lane LOS	B					C
Approach Delay (s)	0.6			0.0		20.3
Approach LOS						C

Intersection Summary					
Average Delay			1.7		
Intersection Capacity Utilization		37.2%	ICU Level of Service		A
Analysis Period (min)			15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95		1.00	1.00			0.95	
Frt				1.00	0.97		1.00	1.00			0.99	
Flt Protected				0.95	0.98		0.95	1.00			1.00	
Satd. Flow (prot)				1478	1483		1626	1712			3219	
Flt Permitted				0.95	0.98		0.95	1.00			1.00	
Satd. Flow (perm)				1478	1483		1626	1712			3219	
Volume (vph)	0	0	0	516	134	60	109	106	0	0	192	14
Peak-hour factor, PHF	0.25	0.25	0.25	0.81	0.81	0.81	0.93	0.93	0.93	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	637	165	74	117	114	0	0	221	16
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	433	436	0	117	114	0	0	230	0
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	11%	11%	11%	11%	11%	11%
Turn Type				Split			Split					
Protected Phases				8	8		6	6			2	
Permitted Phases												
Actuated Green, G (s)				23.5	23.5		12.6	12.6			12.8	
Effective Green, g (s)				23.5	23.5		12.6	12.6			12.8	
Actuated g/C Ratio				0.39	0.39		0.21	0.21			0.21	
Clearance Time (s)				4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				570	572		336	354			677	
v/s Ratio Prot				0.29	c0.29		c0.07	0.07			c0.07	
v/s Ratio Perm												
v/c Ratio				0.76	0.76		0.35	0.32			0.34	
Uniform Delay, d1				16.2	16.3		20.6	20.5			20.5	
Progression Factor				1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2				5.8	5.9		0.6	0.5			0.3	
Delay (s)				22.0	22.2		21.3	21.1			20.8	
Level of Service				C	C		C	C			C	
Approach Delay (s)		0.0			22.1			21.2			20.8	
Approach LOS		A			C			C			C	

Intersection Summary				
HCM Average Control Delay	21.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	41.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1747	1735		1757	1863	1544	1530	3059	1328	1530	2996	
Flt Permitted	0.74	1.00		0.44	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1365	1735		821	1863	1544	1530	3059	1328	1530	2996	
Volume (vph)	54	109	69	14	19	34	11	140	145	70	528	61
Peak-hour factor, PHF	0.89	0.89	0.89	0.84	0.84	0.84	0.91	0.91	0.91	0.87	0.87	0.87
Adj. Flow (vph)	61	122	78	17	23	40	12	154	159	80	607	70
RTOR Reduction (vph)	0	39	0	0	0	33	0	0	69	0	6	0
Lane Group Flow (vph)	61	161	0	17	23	7	12	154	90	80	671	0
Confl. Peds. (#/hr)	15		13	13		15			17			39
Confl. Bikes (#/hr)			4									2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)	14.2	14.2		14.2	14.2	14.2	1.3	45.5	45.5	8.3	52.5	
Effective Green, g (s)	14.2	14.2		14.2	14.2	14.2	1.3	45.5	45.5	8.3	52.5	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.18	0.02	0.57	0.57	0.10	0.66	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	242	308		146	331	274	25	1740	755	159	1966	
v/s Ratio Prot		c0.09			0.01		c0.01	0.05		c0.05	c0.22	
v/s Ratio Perm	0.04			0.02		0.00			0.07			
v/c Ratio	0.25	0.52		0.12	0.07	0.03	0.48	0.09	0.12	0.50	0.34	
Uniform Delay, d1	28.3	29.8		27.6	27.4	27.2	39.0	7.8	8.0	33.9	6.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.80	0.71	0.70	1.00	1.00	
Incremental Delay, d2	0.6	1.6		0.4	0.1	0.0	13.6	0.1	0.3	2.5	0.5	
Delay (s)	28.9	31.4		28.0	27.5	27.2	45.0	5.7	5.9	36.4	6.6	
Level of Service	C	C		C	C	C	D	A	A	D	A	
Approach Delay (s)		30.8			27.5			7.2			9.7	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM Average Control Delay	14.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	49.0%	ICU Level of Service	A	
Analysis Period (min)	15			

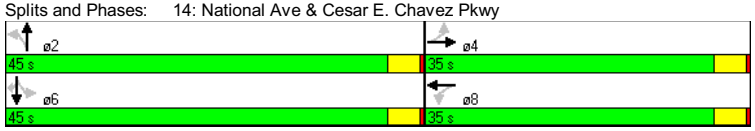
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	42	29	90	72	14	291	39	461	117
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phases	4	4	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	35.0	35.0	35.0	35.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	56.3%	56.3%	56.3%	56.3%	56.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1756		1770	1743		1612	3211		1530	1610	1369
Flt Permitted	0.56	1.00		0.72	1.00		0.43	1.00		0.54	1.00	1.00
Satd. Flow (perm)	1036	1756		1334	1743		733	3211		875	1610	1369
Volume (vph)	42	29	18	90	72	54	14	291	8	39	461	117
Peak-hour factor, PHF	0.74	0.74	0.74	0.91	0.91	0.91	0.86	0.86	0.86	0.85	0.85	0.85
Adj. Flow (vph)	57	39	24	99	79	59	16	338	9	46	542	138
RTOR Reduction (vph)	0	21	0	0	48	0	0	1	0	0	0	32
Lane Group Flow (vph)	57	42	0	99	90	0	16	346	0	46	542	106
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	10.5	10.5		10.5	10.5		61.5	61.5		61.5	61.5	61.5
Effective Green, g (s)	10.5	10.5		10.5	10.5		61.5	61.5		61.5	61.5	61.5
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.77	0.77		0.77	0.77	0.77
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	136	230		175	229		563	2468		673	1238	1052
v/s Ratio Prot		0.02			0.05			0.11			c0.34	
v/s Ratio Perm	0.06			c0.07			0.02			0.05		0.08
v/c Ratio	0.42	0.18		0.57	0.39		0.03	0.14		0.07	0.44	0.10
Uniform Delay, d1	31.9	30.9		32.6	31.8		2.2	2.4		2.3	3.2	2.3
Progression Factor	1.00	1.00		1.00	1.00		0.59	0.63		0.81	1.11	1.69
Incremental Delay, d2	2.1	0.4		4.1	1.1		0.1	0.1		0.2	1.1	0.2
Delay (s)	34.0	31.3		36.8	33.0		1.4	1.6		2.0	4.7	4.1
Level of Service	C	C		D	C		A	A		A	A	A
Approach Delay (s)		32.6			34.5			1.6			4.4	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

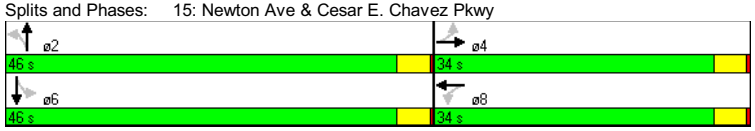
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	28	19	20	28	9	217	27	406
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.93		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1734		1770	1729		1612	3206		1612	1664	
Flt Permitted	0.71	1.00		0.72	1.00		0.43	1.00		0.58	1.00	
Satd. Flow (perm)	1319	1734		1349	1729		729	3206		979	1664	
Volume (vph)	28	19	16	20	28	26	9	217	8	27	406	58
Peak-hour factor, PHF	0.70	0.70	0.70	0.72	0.72	0.72	0.79	0.79	0.79	0.81	0.81	0.81
Adj. Flow (vph)	40	27	23	28	39	36	11	275	10	33	501	72
RTOR Reduction (vph)	0	21	0	0	33	0	0	1	0	0	3	0
Lane Group Flow (vph)	40	29	0	28	42	0	11	284	0	33	570	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	6.5	6.5		6.5	6.5		65.5	65.5		65.5	65.5	
Effective Green, g (s)	6.5	6.5		6.5	6.5		65.5	65.5		65.5	65.5	
Actuated g/C Ratio	0.08	0.08		0.08	0.08		0.82	0.82		0.82	0.82	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	107	141		110	140		597	2625		802	1362	
v/s Ratio Prot		0.02			0.02			0.09			c0.34	
v/s Ratio Perm	c0.03			0.02			0.02			0.03		
v/c Ratio	0.37	0.20		0.25	0.30		0.02	0.11		0.04	0.42	
Uniform Delay, d1	34.8	34.3		34.5	34.6		1.3	1.4		1.4	2.0	
Progression Factor	1.00	1.00		1.00	1.00		0.38	0.47		0.65	1.02	
Incremental Delay, d2	2.2	0.7		1.2	1.2		0.1	0.1		0.1	0.9	
Delay (s)	37.0	35.1		35.7	35.8		0.6	0.8		1.0	2.9	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		35.9			35.8			0.8			2.8	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

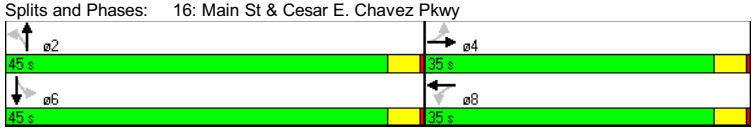
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	56	43	25	47	7	155	25	361
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	35.0	35.0	35.0	35.0	45.0	45.0	45.0	45.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	56.3%	56.3%	56.3%	56.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.97	1.00		0.99	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.93		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1718	1856		1743	1689		1525	3097		1546	1573	
Flt Permitted	0.69	1.00		0.72	1.00		0.43	1.00		0.63	1.00	
Satd. Flow (perm)	1251	1856		1328	1689		689	3097		1031	1573	
Volume (vph)	56	43	1	25	47	45	7	155	4	25	361	82
Peak-hour factor, PHF	0.86	0.86	0.86	0.91	0.91	0.91	0.85	0.85	0.85	0.89	0.89	0.89
Adj. Flow (vph)	65	50	1	27	52	49	8	182	5	28	406	92
RTOR Reduction (vph)	0	1	0	0	38	0	0	2	0	0	7	0
Lane Group Flow (vph)	65	50	0	27	63	0	8	185	0	28	491	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.7	17.7		17.7	17.7		54.3	54.3		54.3	54.3	
Effective Green, g (s)	17.7	17.7		17.7	17.7		54.3	54.3		54.3	54.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.68	0.68		0.68	0.68	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	277	411		294	374		468	2102		700	1068	
v/s Ratio Prot		0.03			0.04			0.06			c0.31	
v/s Ratio Perm	c0.05			0.02			0.01			0.03		
v/c Ratio	0.23	0.12		0.09	0.17		0.02	0.09		0.04	0.46	
Uniform Delay, d1	25.6	24.9		24.8	25.2		4.2	4.4		4.2	6.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.55	0.48	
Incremental Delay, d2	0.4	0.1		0.1	0.2		0.1	0.1		0.1	1.3	
Delay (s)	26.0	25.1		24.9	25.4		4.2	4.5		2.4	4.2	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.6			25.3			4.5			4.1	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.90			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)	1641	3223		1421	3194		1364	1219			1607	1370
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00			0.89	1.00
Satd. Flow (perm)	1641	3223		1421	3194		910	1219			1453	1370
Volume (vph)	107	153	16	55	422	76	4	14	27	50	83	330
Peak-hour factor, PHF	0.84	0.84	0.84	0.81	0.81	0.81	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	127	182	19	68	521	94	5	18	34	54	90	359
RTOR Reduction (vph)	0	7	0	0	14	0	0	29	0	0	0	203
Lane Group Flow (vph)	127	194	0	68	601	0	5	23	0	0	144	156
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			5			11			2			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	
Permitted Phases							12			1 5 16		1 5 16
Actuated Green, G (s)	7.7	21.7		6.6	20.6		11.6	11.6			24.4	24.4
Effective Green, g (s)	7.7	21.7		6.6	20.6		11.6	11.6			24.4	24.4
Actuated g/C Ratio	0.10	0.28		0.09	0.27		0.15	0.15			0.32	0.32
Clearance Time (s)	4.0			4.0			4.0	4.0				
Vehicle Extension (s)	3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)	165	912		122	858		138	184			462	436
v/s Ratio Prot	c0.08	0.06		0.05	c0.19			0.02				
v/s Ratio Perm							0.01				0.10	c0.11
v/c Ratio	0.77	0.21		0.56	0.70		0.04	0.13			0.31	0.36
Uniform Delay, d1	33.6	21.0		33.6	25.3		27.8	28.2			19.8	20.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	2.32
Incremental Delay, d2	19.2	0.1		5.4	2.6		0.1	0.3			0.4	0.5
Delay (s)	52.8	21.1		39.1	27.9		27.9	28.5			20.1	47.1
Level of Service	D	C		D	C		C	C			C	D
Approach Delay (s)		33.4			29.0			28.4			39.4	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM Average Control Delay	33.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	50.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	251	93	1	0	60	53	0	0	2	0	0	0
Peak Hour Factor	0.90	0.90	0.90	0.74	0.74	0.74	0.50	0.50	0.50	0.25	0.25	0.25
Hourly flow rate (vph)	279	103	1	0	81	72	0	0	4	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)		667										
pX, platoon unblocked												
vC, conflicting volume	153			104			743	814	104	782	779	117
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	153			104			743	814	104	782	779	117
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 %	80			100			100	100	100	100	100	100
cM capacity (veh/h)	1428			1487			281	251	951	264	263	935

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	279	104	0	153	4
Volume Left	279	0	0	0	0
Volume Right	0	1	0	72	4
cSH	1428	1700	1700	1700	951
Volume to Capacity	0.20	0.06	0.00	0.09	0.00
Queue Length 95th (ft)	18	0	0	0	0
Control Delay (s)	8.1	0.0	0.0	0.0	8.8
Lane LOS	A				A
Approach Delay (s)	5.9		0.0		8.8
Approach LOS					A

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	67	142	0	16	156
Peak Hour Factor	0.84	0.84	0.87	0.87	0.86	0.86
Hourly flow rate (vph)	0	80	163	0	19	181
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)		1100	875			
pX, platoon unblocked						
vC, conflicting volume	163				243	163
vC1, stage 1 conf vol					163	
vC2, stage 2 conf vol					80	
vCu, unblocked vol	163				243	163
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	79
cM capacity (veh/h)	1415				749	881

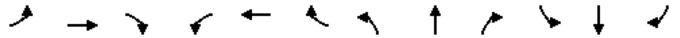
Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	80	163	19	181
Volume Left	0	0	19	0
Volume Right	0	0	0	181
cSH	1700	1700	749	881
Volume to Capacity	0.05	0.10	0.02	0.21
Queue Length 95th (ft)	0	0	2	19
Control Delay (s)	0.0	0.0	9.9	10.1
Lane LOS			A	B
Approach Delay (s)	0.0	0.0	10.1	
Approach LOS			B	

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	65	9	18	123	16	10	26	10	5	8	16
Peak Hour Factor	0.78	0.78	0.78	0.80	0.80	0.80	0.82	0.82	0.82	0.81	0.81	0.81
Hourly flow rate (vph)	9	83	12	22	154	20	12	32	12	6	10	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		1314			661							
pX, platoon unblocked												
vC, conflicting volume	174			95			330	326	89	338	322	164
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	174			95			330	326	89	338	322	164
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 %	99			98			98	95	99	99	98	98
cM capacity (veh/h)	1403			1499			591	580	969	573	583	881

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	9	95	22	174	56	36
Volume Left	9	0	22	0	12	6
Volume Right	0	12	0	20	12	20
cSH	1403	1700	1499	1700	638	714
Volume to Capacity	0.01	0.06	0.02	0.10	0.09	0.05
Queue Length 95th (ft)	0	0	1	0	7	4
Control Delay (s)	7.6	0.0	7.4	0.0	11.2	10.3
Lane LOS	A		A		B	B
Approach Delay (s)	0.7		0.9		11.2	10.3
Approach LOS					B	B

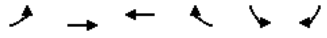
Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	33	9	3	24	8	10	19	6	1	8	17
Peak Hour Factor	0.96	0.96	0.96	0.58	0.58	0.58	0.67	0.67	0.67	0.72	0.72	0.72
Hourly flow rate (vph)	12	34	9	5	41	14	15	28	9	1	11	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	55			44			152	130	39	146	127	48
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	55			44			152	130	39	146	127	48
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 %	99			100			98	96	99	100	99	98
cM capacity (veh/h)	1550			1565			781	752	1033	785	754	1021

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	56	60	52	36
Volume Left	12	5	15	1
Volume Right	9	14	9	24
cSH	1550	1565	798	911
Volume to Capacity	0.01	0.00	0.07	0.04
Queue Length 95th (ft)	1	0	5	3
Control Delay (s)	1.7	0.6	9.8	9.1
Lane LOS	A	A	A	A
Approach Delay (s)	1.7	0.6	9.8	9.1
Approach LOS			A	A

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	18.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	11	52	114	7	5	14
Peak Hour Factor	0.74	0.74	0.83	0.83	0.75	0.75
Hourly flow rate (vph)	15	70	137	8	7	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1318				
pX, platoon unblocked						
vC, conflicting volume	146				242	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146				242	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1436				739	906

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	85	146	25
Volume Left	15	0	7
Volume Right	0	8	19
cSH	1436	1700	855
Volume to Capacity	0.01	0.09	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	1.4	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	1.4	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	90	125	28	17	62	50	62	112	33	62	82	14
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	142	32	20	71	57	67	122	36	67	89	15

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	102	174	20	129	225	172
Volume Left (vph)	102	0	20	0	67	67
Volume Right (vph)	0	32	0	57	36	15
Hadj (s)	0.53	-0.09	0.53	-0.28	0.00	0.06
Departure Headway (s)	6.4	5.7	6.6	5.7	5.3	5.5
Degree Utilization, x	0.18	0.28	0.04	0.21	0.33	0.26
Capacity (veh/h)	530	591	505	577	634	609
Control Delay (s)	9.6	9.7	8.6	9.0	10.9	10.4
Approach Delay (s)	9.7		9.0		10.9	10.4
Approach LOS	A		A		B	B

Intersection Summary				
Delay	10.0			
HCM Level of Service	B			
Intersection Capacity Utilization	34.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.97			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1742	1801		1764	1790			1780			1750	
Flt Permitted	0.68	1.00		0.70	1.00			0.98			0.95	
Satd. Flow (perm)	1240	1801		1306	1790			1758			1681	
Volume (vph)	13	50	12	48	94	24	7	41	16	19	36	25
Peak-hour factor, PHF	0.75	0.75	0.75	0.94	0.94	0.94	0.84	0.84	0.84	0.80	0.80	0.80
Adj. Flow (vph)	17	67	16	51	100	26	8	49	19	24	45	31
RTOR Reduction (vph)	0	13	0	0	18	0	0	8	0	0	12	0
Lane Group Flow (vph)	17	70	0	51	108	0	0	68	0	0	88	0
Confl. Peds. (#/hr)	17		3	3		17	13		14	14		13
Confl. Bikes (#/hr)						1			1			
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.5	9.5		9.5	9.5			26.4			26.4	
Effective Green, g (s)	9.5	9.5		9.5	9.5			26.4			26.4	
Actuated g/C Ratio	0.22	0.22		0.22	0.22			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	268	390		283	387			1057			1011	
v/s Ratio Prot		0.04			c0.06							
v/s Ratio Perm	0.01			0.04				0.04			c0.05	
v/c Ratio	0.06	0.18		0.18	0.28			0.06			0.09	
Uniform Delay, d1	13.7	14.0		14.0	14.3			3.6			3.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.2		0.3	0.4			0.0			0.0	
Delay (s)	13.8	14.3		14.3	14.7			3.7			3.7	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		14.2			14.6			3.7			3.7	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM Average Control Delay	10.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.14			
Actuated Cycle Length (s)	43.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	15	20	10	2	17	8	4	35	7	3	66	22
Peak Hour Factor	0.86	0.86	0.86	0.68	0.68	0.68	0.82	0.82	0.82	0.84	0.84	0.84
Hourly flow rate (vph)	17	23	12	3	25	12	5	43	9	4	79	26

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	52	40	56	108
Volume Left (vph)	17	3	5	4
Volume Right (vph)	12	12	9	26
Hadj (s)	-0.03	-0.13	-0.04	-0.10
Departure Headway (s)	4.3	4.2	4.2	4.1
Degree Utilization, x	0.06	0.05	0.06	0.12
Capacity (veh/h)	807	822	831	863
Control Delay (s)	7.5	7.4	7.5	7.6
Approach Delay (s)	7.5	7.4	7.5	7.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay			7.5	
HCM Level of Service			A	
Intersection Capacity Utilization			21.7%	ICU Level of Service
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	33	12	53	115	16	14	31	35	10	59	15
Peak Hour Factor	0.89	0.89	0.89	0.85	0.85	0.85	0.80	0.80	0.80	0.88	0.88	0.88
Hourly flow rate (vph)	6	37	13	62	135	19	18	39	44	11	67	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	56	216	100	95
Volume Left (vph)	6	62	18	11
Volume Right (vph)	13	19	44	17
Hadj (s)	-0.09	0.04	-0.19	-0.05
Departure Headway (s)	4.5	4.5	4.5	4.6
Degree Utilization, x	0.07	0.27	0.12	0.12
Capacity (veh/h)	748	766	752	725
Control Delay (s)	7.9	9.1	8.1	8.3
Approach Delay (s)	7.9	9.1	8.1	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.6	
HCM Level of Service			A	
Intersection Capacity Utilization			33.8%	ICU Level of Service
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3403		1770	3520			1752			1772	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			1.00	
Satd. Flow (perm)	1770	3403		1770	3520			1686			1766	
Volume (vph)	10	234	28	75	517	12	14	61	38	3	75	32
Peak-hour factor, PHF	0.87	0.87	0.87	0.88	0.88	0.88	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	11	269	32	85	588	14	15	65	40	3	79	34
RTOR Reduction (vph)	0	7	0	0	1	0	0	16	0	0	12	0
Lane Group Flow (vph)	11	294	0	85	601	0	0	104	0	0	104	0
Confl. Peds. (#/hr)			15			29	7		4	4		7
Confl. Bikes (#/hr)			2			5			6			14
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	3	14 2 6		13	18 2 6			12			16 1 5	
Permitted Phases							12			16 1 5		
Actuated Green, G (s)	1.1	33.9		6.3	39.1			12.2			24.6	
Effective Green, g (s)	1.1	33.9		6.3	39.1			12.2			24.6	
Actuated g/C Ratio	0.01	0.38		0.07	0.44			0.14			0.28	
Clearance Time (s)	4.0			4.0				4.0				
Vehicle Extension (s)	3.0			3.0				3.0				
Lane Grp Cap (vph)	22	1299		126	1550			232			489	
v/s Ratio Prot	0.01	0.09		c0.05	c0.17							
v/s Ratio Perm								c0.06			c0.06	
v/c Ratio	0.50	0.23		0.67	0.39			0.45			0.21	
Uniform Delay, d1	43.6	18.6		40.2	16.8			35.2			24.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.06	
Incremental Delay, d2	16.8	0.1		13.4	0.2			1.4			0.2	
Delay (s)	60.3	18.7		53.6	16.9			36.6			26.3	
Level of Service	E	B		D	B			D			C	
Approach Delay (s)		20.1			21.5			36.6			26.3	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM Average Control Delay	23.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	79	7	27	155	3	13	25	12	4	18	11
Peak Hour Factor	0.73	0.73	0.73	0.83	0.83	0.83	0.69	0.69	0.69	0.82	0.82	0.82
Hourly flow rate (vph)	5	108	10	33	187	4	19	36	17	5	22	13
Pedestrians		7			11			3			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		641										
pX, platoon unblocked												
vC, conflicting volume	191			121			412	383	127	420	386	197
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	191			121			412	383	127	420	386	197
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 %	100			98			96	93	98	99	96	98
cM capacity (veh/h)	1381			1463			509	534	912	489	532	839

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	5	118	223	72	40
Volume Left	5	0	33	19	5
Volume Right	0	10	4	17	13
cSH	1381	1700	1463	584	599
Volume to Capacity	0.00	0.07	0.02	0.12	0.07
Queue Length 95th (ft)	0	0	2	11	5
Control Delay (s)	7.6	0.0	1.3	12.0	11.4
Lane LOS	A		A	B	B
Approach Delay (s)	0.3		1.3	12.0	11.4
Approach LOS				B	B

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	31.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	66	10	36	191	48	7	18	15	43	8	1
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	3	70	11	42	225	56	9	23	19	56	10	1

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	3	81	42	281	52	68
Volume Left (vph)	3	0	42	0	9	56
Volume Right (vph)	0	11	0	56	19	1
Hadj (s)	0.53	-0.06	0.53	-0.11	-0.16	0.19
Departure Headway (s)	5.6	5.0	5.4	4.8	4.8	5.1
Degree Utilization, x	0.00	0.11	0.06	0.37	0.07	0.10
Capacity (veh/h)	617	685	642	735	692	650
Control Delay (s)	7.5	7.5	7.6	9.4	8.1	8.6
Approach Delay (s)	7.5		9.2		8.1	8.6
Approach LOS	A		A		A	A

Intersection Summary				
Delay		8.7		
HCM Level of Service		A		
Intersection Capacity Utilization	30.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	110	4	42	224	28	149
Peak Hour Factor	0.92	0.92	0.88	0.88	0.76	0.76
Hourly flow rate (vph)	120	4	48	255	37	196
Pedestrians	1				8	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				670		
pX, platoon unblocked						
vC, conflicting volume			132		353	130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		353	130
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		94	78
cM capacity (veh/h)			1441		593	890

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	124	133	170	37	196
Volume Left	0	48	0	37	0
Volume Right	4	0	0	0	196
cSH	1700	1441	1700	593	890
Volume to Capacity	0.07	0.03	0.10	0.06	0.22
Queue Length 95th (ft)	0	3	0	5	21
Control Delay (s)	0.0	2.9	0.0	11.5	10.2
Lane LOS		A		B	B
Approach Delay (s)	0.0	1.3		10.4	
Approach LOS				B	

Intersection Summary				
Average Delay		4.3		
Intersection Capacity Utilization	23.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	50	7	59	148	26	11	17	39	16	11	13
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.60	0.60	0.60	0.67	0.67	0.67
Hourly flow rate (vph)	11	57	8	68	170	30	18	28	65	24	16	19

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total (vph)	76	68	170	30	47	65	60
Volume Left (vph)	11	68	0	0	18	0	24
Volume Right (vph)	8	0	0	30	0	65	19
Hadj (s)	0.00	0.94	0.03	-0.67	0.11	0.05	-0.08
Departure Headway (s)	4.5	5.8	4.9	3.2	4.8	3.2	4.6
Degree Utilization, x	0.10	0.11	0.23	0.03	0.06	0.06	0.08
Capacity (veh/h)	766	605	721	1121	696	1121	727
Control Delay (s)	8.0	8.3	8.1	5.1	8.2	6.4	8.0
Approach Delay (s)	8.0	7.8			7.1		8.0
Approach LOS	A	A			A		A

Intersection Summary				
Delay	7.7			
HCM Level of Service	A			
Intersection Capacity Utilization	28.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.98	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			1.00						0.90	
Flt Protected	0.95	1.00			1.00						0.99	
Satd. Flow (prot)	1543	3539			3522						1510	
Flt Permitted	0.95	1.00			1.00						0.99	
Satd. Flow (perm)	1543	3539			3522						1510	
Volume (vph)	58	200	0	0	531	17	0	0	0	12	12	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.25	0.25	0.25	0.78	0.78	0.78
Adj. Flow (vph)	63	217	0	0	584	19	0	0	0	15	15	90
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	69	0
Lane Group Flow (vph)	63	217	0	0	601	0	0	0	0	0	51	0
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									5			11
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot									Perm		
Protected Phases	13	18 2 6			14 2 6						11 1 5	
Permitted Phases										11 1 5		
Actuated Green, G (s)	5.5	45.4			31.9						18.9	
Effective Green, g (s)	5.5	45.4			31.9						18.9	
Actuated g/C Ratio	0.07	0.57			0.40						0.24	
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	106	2001			1399						355	
v/s Ratio Prot	c0.04	0.06			c0.17							
v/s Ratio Perm											0.03	
v/c Ratio	0.59	0.11			0.43						0.14	
Uniform Delay, d1	36.3	8.1			17.6						24.3	
Progression Factor	1.00	1.00			1.00						1.49	
Incremental Delay, d2	8.6	0.0			0.2						0.2	
Delay (s)	45.0	8.1			17.8						36.5	
Level of Service	D	A			B						D	
Approach Delay (s)		16.4			17.8			0.0			36.5	
Approach LOS		B			B			A			D	

Intersection Summary					
HCM Average Control Delay	19.6	HCM Level of Service	B		
HCM Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	24.0		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A		
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1770	3539	1583	1299	1834			1751	1509		1625	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.77	1.00		0.97	
Satd. Flow (perm)	1770	3539	1583	1299	1834			1365	1509		1588	
Volume (vph)	106	184	18	71	422	49	33	83	25	34	166	307
Peak-hour factor, PHF	0.80	0.80	0.80	0.77	0.77	0.77	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	132	230	22	92	548	64	39	99	30	37	180	334
RTOR Reduction (vph)	0	0	13	0	3	0	0	0	19	0	38	0
Lane Group Flow (vph)	132	230	9	92	609	0	0	138	11	0	513	0
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.7	38.7	38.7	10.1	39.1			37.4	37.4		37.4	
Effective Green, g (s)	9.7	38.7	38.7	10.1	39.1			37.4	37.4		37.4	
Actuated g/C Ratio	0.10	0.39	0.39	0.10	0.40			0.38	0.38		0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	175	1395	624	134	730			520	575		605	
v/s Ratio Prot	c0.07	0.06		0.07	c0.33							
v/s Ratio Perm			0.01					0.10	0.01		c0.32	
v/c Ratio	0.75	0.16	0.01	0.69	0.83			0.27	0.02		0.85	
Uniform Delay, d1	43.1	19.3	18.1	42.5	26.6			20.9	19.0		27.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	16.7	0.1	0.0	13.6	8.1			0.3	0.0		10.6	
Delay (s)	59.8	19.3	18.1	56.2	34.8			21.2	19.0		38.4	
Level of Service	E	B	B	E	C			C	B		D	
Approach Delay (s)		33.2			37.6			20.8			38.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	98.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		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)	1687	1731		1687	1565		1770	3471	1583	1770	3482	
Flt Permitted	0.71	1.00		0.71	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1268	1731		1268	1565		1770	3471	1583	1770	3482	
Volume (vph)	22	50	10	8	17	64	9	377	90	122	623	31
Peak-hour factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76	0.89	0.89	0.89	0.88	0.88	0.88
Adj. Flow (vph)	28	64	13	11	22	84	10	424	101	139	708	35
RTOR Reduction (vph)	0	12	0	0	76	0	0	0	41	0	3	0
Lane Group Flow (vph)	28	65	0	11	30	0	10	424	60	139	740	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	5.6	5.6		5.6	5.6		0.9	34.9	34.9	6.4	40.4	
Effective Green, g (s)	5.6	5.6		5.6	5.6		0.9	34.9	34.9	6.4	40.4	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.02	0.59	0.59	0.11	0.69	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	121	165		121	149		27	2057	938	192	2388	
v/s Ratio Prot		c0.04			0.02		0.01	0.12		c0.08	c0.21	
v/s Ratio Perm	0.02			0.01					0.04			
v/c Ratio	0.23	0.40		0.09	0.20		0.37	0.21	0.06	0.72	0.31	
Uniform Delay, d1	24.7	25.1		24.3	24.6		28.7	5.6	5.1	25.4	3.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	1.6		0.3	0.7		8.4	0.2	0.1	12.7	0.3	
Delay (s)	25.6	26.6		24.7	25.3		37.1	5.8	5.2	38.1	4.0	
Level of Service	C	C		C	C		D	A	A	D	A	
Approach Delay (s)		26.4			25.2			6.3			9.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1539	3190		1761	3314		1736	3335		1736	3332	
Flt Permitted	0.39	1.00		0.67	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	637	3190		1235	3314		1736	3335		1736	3332	
Volume (vph)	58	88	24	49	245	147	19	163	37	211	565	58
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.76	0.76	0.76	0.87	0.87	0.87
Adj. Flow (vph)	70	106	29	59	295	177	25	214	49	243	649	67
RTOR Reduction (vph)	0	22	0	0	126	0	0	24	0	0	7	0
Lane Group Flow (vph)	70	113	0	59	346	0	25	239	0	243	709	0
Confl. Peds. (#/hr)	10		12	12		10			72			27
Confl. Bikes (#/hr)			2			4			6			1
Heavy Vehicles (%)	17%	11%	2%	2%	2%	2%	4%	4%	4%	4%	4%	31%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.6	12.6		12.6	12.6		1.1	20.5		6.9	26.3	
Effective Green, g (s)	12.6	12.6		12.6	12.6		1.1	20.5		6.9	26.3	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.02	0.39		0.13	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	773		299	803		37	1315		230	1685	
v/s Ratio Prot		0.04			0.10		0.01	0.07		c0.14	c0.21	
v/s Ratio Perm	c0.11			0.05								
v/c Ratio	0.45	0.15		0.20	0.43		0.68	0.18		1.06	0.42	
Uniform Delay, d1	16.8	15.5		15.7	16.7		25.3	10.3		22.5	8.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.1		0.3	0.4		39.3	0.1		75.0	0.2	
Delay (s)	18.9	15.6		16.0	17.0		64.6	10.3		97.6	8.2	
Level of Service	B	B		B	B		E	B		F	A	
Approach Delay (s)		16.7			16.9			15.0			30.9	
Approach LOS		B			B			B			C	

Intersection Summary				
HCM Average Control Delay	23.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	0.94		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1703	3406	1315	1719	3438	1445		1791		1649	1659	1525
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1703	3406	1315	1719	3438	1445		1791		1649	1659	1525
Volume (vph)	56	225	2	13	372	115	0	5	1	333	15	22
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.75	0.75	0.75	0.86	0.86	0.86
Adj. Flow (vph)	64	259	2	15	433	134	0	7	1	387	17	26
RTOR Reduction (vph)	0	0	1	0	0	83	0	1	0	0	0	19
Lane Group Flow (vph)	64	259	1	15	433	51	0	7	0	197	207	7
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	9.2	39.1	33.3	1.5	31.4	44.1		13.6		29.1	29.1	29.1
Effective Green, g (s)	9.2	39.1	33.3	1.5	31.4	44.1		13.6		29.1	29.1	29.1
Actuated g/C Ratio	0.08	0.34	0.29	0.01	0.27	0.38		0.12		0.25	0.25	0.25
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	136	1155	380	22	936	553		211		416	419	385
v/s Ratio Prot	c0.04	0.08		0.01	c0.13	0.01		c0.00		0.12	c0.12	
v/s Ratio Perm			0.00			0.02						0.00
v/c Ratio	0.47	0.22	0.00	0.68	0.46	0.09		0.03		0.47	0.49	0.02
Uniform Delay, d1	50.7	27.3	29.2	56.7	34.9	22.8		45.0		36.6	36.8	32.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.91	0.91	1.43
Incremental Delay, d2	2.6	0.1	0.0	62.1	0.4	0.1		0.1		0.9	0.9	0.0
Delay (s)	53.3	27.4	29.2	118.8	35.3	22.9		45.1		34.1	34.5	46.3
Level of Service	D	C	C	F	D	C		D		C	C	D
Approach Delay (s)		32.5			34.6			45.1			35.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	34.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	115.3	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	224	40	7	6	57	40	4	20	5	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.78	0.78	0.78	0.25	0.25	0.25
Hourly flow rate (vph)	243	43	8	7	64	45	5	26	6	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)		657										
pX, platoon unblocked												
vC, conflicting volume	109			51			634	657	47	653	638	87
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	109			51			634	657	47	653	638	87
tC, single (s)	4.2			4.2			7.1	6.9	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.4	3.3	3.5	4.0	3.3
p0 queue free %	83			100			98	91	99	100	100	100
cM capacity (veh/h)	1451			1524			340	282	1022	306	327	972

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	295	116	37
Volume Left	243	7	5
Volume Right	8	45	6
cSH	1451	1524	331
Volume to Capacity	0.17	0.00	0.11
Queue Length 95th (ft)	15	0	9
Control Delay (s)	6.8	0.5	17.3
Lane LOS	A	A	C
Approach Delay (s)	6.8	0.5	17.3
Approach LOS			C

Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3067		1703	3289		1770	1863	1557	1770	1821	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3067		1703	3289		1770	1863	1557	1770	1821	
Volume (vph)	9	103	158	314	317	74	110	50	26	39	83	12
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.89	0.89	0.89	0.84	0.84	0.84
Adj. Flow (vph)	10	117	180	345	348	81	124	56	29	46	99	14
RTOR Reduction (vph)	0	152	0	0	22	0	0	0	22	0	6	0
Lane Group Flow (vph)	10	145	0	345	407	0	124	56	7	46	107	0
Confl. Peds. (#/hr)			1			6			4			16
Confl. Bikes (#/hr)			2			4			2			5
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	0.5	9.5		17.6	26.6		5.8	14.7	14.7	3.0	11.9	
Effective Green, g (s)	0.5	9.5		17.6	26.6		5.8	14.7	14.7	3.0	11.9	
Actuated g/C Ratio	0.01	0.16		0.29	0.44		0.10	0.24	0.24	0.05	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	14	479		493	1439		169	450	376	87	356	
v/s Ratio Prot	0.01	0.05		c0.20	c0.12		c0.07	c0.03		0.03	c0.06	
v/s Ratio Perm									0.00			
v/c Ratio	0.71	0.30		0.70	0.28		0.73	0.12	0.02	0.53	0.30	
Uniform Delay, d1	30.1	22.7		19.2	11.0		26.7	18.0	17.6	28.2	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	100.1	0.4		4.3	0.1		15.2	0.1	0.0	5.7	0.5	
Delay (s)	130.2	23.1		23.6	11.1		41.9	18.1	17.6	33.9	21.4	
Level of Service	F	C		C	B		D	B	B	C	C	
Approach Delay (s)		26.6			16.6			32.2			25.0	
Approach LOS		C			B			C			C	

Intersection Summary						
HCM Average Control Delay	21.9	HCM Level of Service	C			
HCM Volume to Capacity ratio	0.50					
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	16.0			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A			
Analysis Period (min)	15					

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.93			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1755	1735			1782	1579		1719	1810	2707	
Flt Permitted		0.58	1.00			0.70	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		1076	1735			1308	1579		1719	1810	2707	
Volume (vph)	36	26	29	24	112	11	244	47	78	164	156	216
Peak-hour factor, PHF	0.92	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.73	0.73	0.73	0.92
Adj. Flow (vph)	39	29	32	27	144	14	313	51	107	225	214	235
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	68	39	0	0	158	364	0	107	225	449	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		27.8	27.8			27.8	27.8		11.7	18.9	43.1	
Effective Green, g (s)		27.8	27.8			27.8	27.8		11.7	18.9	43.1	
Actuated g/C Ratio		0.27	0.27			0.27	0.27		0.11	0.19	0.42	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		293	473			356	430		197	335	1144	
v/s Ratio Prot			0.02						0.06	c0.12		
v/s Ratio Perm		0.06				0.12	c0.23				0.17	
v/c Ratio		0.23	0.08			0.44	0.85		0.54	0.67	0.39	
Uniform Delay, d1		28.8	27.6			30.7	35.1		42.6	38.7	20.4	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.4	0.1			0.9	14.2		3.0	5.2	0.2	
Delay (s)		29.2	27.7			31.6	49.3		45.7	43.9	20.6	
Level of Service		C	C			C	D		D	D	C	
Approach Delay (s)			28.5			44.0				30.7		
Approach LOS			C			D				C		

Intersection Summary				
HCM Average Control Delay	38.5	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	60.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.99			0.99		
Flt Protected		0.95	1.00			0.95		
Satd. Flow (prot)		1765	3410			3357		
Flt Permitted		0.95	1.00			0.94		
Satd. Flow (perm)		1765	3410			3292		
Volume (vph)	30	191	161	12	12	424	23	2
Peak-hour factor, PHF	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	230	194	14	13	461	25	2
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	263	208	0	0	501	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		19.1	26.3			20.2		
Effective Green, g (s)		19.1	26.3			20.2		
Actuated g/C Ratio		0.19	0.26			0.20		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		331	879			652		
v/s Ratio Prot		c0.15	0.06					
v/s Ratio Perm						c0.15		
v/c Ratio		0.79	0.24			0.77		
Uniform Delay, d1		39.6	29.9			38.7		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		12.4	0.1			5.4		
Delay (s)		51.9	30.1			44.1		
Level of Service		D	C			D		
Approach Delay (s)			42.3			44.1		
Approach LOS			D			D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1719	3438	1518	1687	3374	1509	1719	3438	1483	1719	3438	1538
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)	1719	3438	1518	1687	3374	1509	1719	3438	1483	1719	3438	1538
Volume (vph)	94	141	99	207	316	276	20	105	19	89	739	136
Peak-hour factor, PHF	0.79	0.79	0.79	0.86	0.86	0.86	0.88	0.88	0.88	0.81	0.81	0.81
Adj. Flow (vph)	119	178	125	241	367	321	23	119	22	110	912	168
RTOR Reduction (vph)	0	0	115	0	0	275	0	0	19	0	0	104
Lane Group Flow (vph)	119	178	10	241	367	46	23	119	3	110	912	64
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6		15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	8.3	8.5	6.6	15.5	15.7	11.5	2.3	12.2	12.2	12.9	26.8	31.1
Effective Green, g (s)	8.3	8.5	6.6	15.5	15.7	11.5	2.3	12.2	12.2	12.9	26.8	31.1
Actuated g/C Ratio	0.10	0.10	0.08	0.19	0.19	0.14	0.03	0.15	0.15	0.16	0.33	0.38
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	176	360	124	322	653	214	49	517	223	273	1136	666
v/s Ratio Prot	0.07	0.05	0.00	c0.14	c0.11		0.01	0.03		c0.06	c0.27	0.02
v/s Ratio Perm			0.00			0.03			0.00			0.02
v/c Ratio	0.68	0.49	0.08	0.75	0.56	0.21	0.47	0.23	0.01	0.40	0.80	0.10
Uniform Delay, d1	35.1	34.3	34.4	31.0	29.6	30.8	38.8	30.3	29.3	30.6	24.7	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	0.85	2.48
Incremental Delay, d2	9.8	1.1	0.3	9.2	1.1	0.5	6.9	0.2	0.0	0.9	4.0	0.1
Delay (s)	44.9	35.3	34.7	40.1	30.7	31.3	45.7	30.5	29.4	34.9	25.1	39.7
Level of Service	D	D	C	D	C	C	D	C	C	C	C	D
Approach Delay (s)		37.9			33.4			32.5			28.1	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM Average Control Delay	31.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	48.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.90	
Flt Protected	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (prot)	1770	3539	3539	1583	1643	
Flt Permitted	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (perm)	1770	3539	3539	1583	1643	
Volume (vph)	36	139	390	107	108	268
Peak-hour factor, PHF	0.86	0.86	0.93	0.93	0.82	0.82
Adj. Flow (vph)	42	162	419	115	132	327
RTOR Reduction (vph)	0	0	0	83	141	0
Lane Group Flow (vph)	42	162	419	32	318	0
Confl. Peds. (#/hr)					2	2
Confl. Bikes (#/hr)						2
Turn Type	Prot			Perm		
Protected Phases	5	2	6		4	
Permitted Phases				6		
Actuated Green, G (s)	1.9	16.4	10.5	10.5	13.4	
Effective Green, g (s)	1.9	16.4	10.5	10.5	13.4	
Actuated g/C Ratio	0.05	0.43	0.28	0.28	0.35	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	89	1535	983	440	582	
v/s Ratio Prot	c0.02	0.05	c0.12		c0.19	
v/s Ratio Perm				0.02		
v/c Ratio	0.47	0.11	0.43	0.07	0.55	
Uniform Delay, d1	17.5	6.3	11.2	10.1	9.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.9	0.0	0.3	0.1	1.1	
Delay (s)	21.4	6.4	11.5	10.1	10.8	
Level of Service	C	A	B	B	B	
Approach Delay (s)		9.5	11.2		10.8	
Approach LOS		A	B		B	

Intersection Summary				
HCM Average Control Delay	10.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	37.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL2	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0			4.0		4.0
Lane Util. Factor		1.00		1.00			0.95			0.95		1.00
Frpb, ped/bikes		1.00		1.00			0.99			0.98		1.00
Flpb, ped/bikes		1.00		1.00			0.99			1.00		1.00
Frt		0.99		0.98			0.97			0.93		0.86
Flt Protected		1.00		1.00			0.98			0.99		1.00
Satd. Flow (prot)		1832		1830			3318			3193		1611
Flt Permitted		0.96		1.00			0.91			0.94		1.00
Satd. Flow (perm)		1762		1830			3056			3013		1611
Volume (vph)	18	131	11	192	24	14	21	12	6	16	19	20
Peak-hour factor, PHF	0.92	0.69	0.69	0.87	0.87	0.78	0.78	0.92	0.73	0.73	0.73	0.92
Adj. Flow (vph)	20	190	16	221	28	18	27	13	8	22	26	22
RTOR Reduction (vph)	0	5	0	0	0	0	6	0	0	12	0	0
Lane Group Flow (vph)	0	221	0	249	0	0	52	0	0	44	0	22
Confl. Peds. (#/hr)	11		9		11	28		7	7		28	
Confl. Bikes (#/hr)			1		2			3				
Turn Type	Perm					Perm			Perm			custom
Protected Phases		4		8			2			6		9
Permitted Phases	4					2			6			
Actuated Green, G (s)		12.8		12.8			30.5			30.5		0.8
Effective Green, g (s)		12.8		12.8			30.5			30.5		0.8
Actuated g/C Ratio		0.23		0.23			0.54			0.54		0.01
Clearance Time (s)		4.0		4.0			4.0			4.0		4.0
Vehicle Extension (s)		3.0		3.0			3.0			3.0		3.0
Lane Grp Cap (vph)		402		418			1661			1638		23
v/s Ratio Prot				c0.14								c0.01
v/s Ratio Perm		0.13					c0.02			0.01		
v/c Ratio		0.55		0.60			0.03			0.03		0.96
Uniform Delay, d1		19.1		19.3			5.9			5.9		27.6
Progression Factor		1.00		1.00			1.00			1.00		1.00
Incremental Delay, d2		1.6		2.3			0.0			0.0		166.5
Delay (s)		20.7		21.6			6.0			6.0		194.2
Level of Service		C		C			A			A		F
Approach Delay (s)		20.7		21.6			6.0			6.0		
Approach LOS		C		C			A			A		

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	8	74	8	3	90	25	15	41	7	16	25	7
Peak Hour Factor	0.86	0.86	0.86	0.76	0.76	0.76	0.69	0.69	0.69	0.67	0.67	0.67
Hourly flow rate (vph)	9	86	9	4	118	33	22	59	10	24	37	10
Pedestrians		14			10			37			27	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			3			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					668							
pX, platoon unblocked												
vC, conflicting volume	178			132			316	333	95	281	321	176
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			132			316	333	95	281	321	176
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			96	89	99	96	93	99
cM capacity (veh/h)	1364			1406			525	550	907	544	558	809

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	52	52	4	151	91	72
Volume Left	9	0	4	0	22	24
Volume Right	0	9	0	33	10	10
cSH	1364	1700	1406	1700	568	579
Volume to Capacity	0.01	0.03	0.00	0.09	0.16	0.12
Queue Length 95th (ft)	1	0	0	0	14	11
Control Delay (s)	1.4	0.0	7.6	0.0	12.5	12.1
Lane LOS	A		A		B	B
Approach Delay (s)	0.7		0.2		12.5	12.1
Approach LOS					B	B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00			0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.96		1.00	0.97			0.98			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1738	1758		1748	1802			1789			1785	
Flt Permitted	0.70	1.00		0.65	1.00			0.93			0.99	
Satd. Flow (perm)	1281	1758		1201	1802			1685			1768	
Volume (vph)	5	73	31	7	54	11	34	55	13	3	23	8
Peak-hour factor, PHF	0.63	0.63	0.63	0.75	0.75	0.75	0.85	0.85	0.85	0.77	0.77	0.77
Adj. Flow (vph)	8	116	49	9	72	15	40	65	15	4	30	10
RTOR Reduction (vph)	0	30	0	0	12	0	0	6	0	0	4	0
Lane Group Flow (vph)	8	135	0	9	75	0	0	114	0	0	40	0
Confl. Peds. (#/hr)	21		16	16		21	28		9	9		28
Confl. Bikes (#/hr)			4						3			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.2	8.2		8.2	8.2			22.5			22.5	
Effective Green, g (s)	8.2	8.2		8.2	8.2			22.5			22.5	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.58			0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	271	372		254	382			980			1028	
v/s Ratio Prot		c0.08			0.04							
v/s Ratio Perm	0.01			0.01				c0.07			0.02	
v/c Ratio	0.03	0.36		0.04	0.20			0.12			0.04	
Uniform Delay, d1	12.1	13.0		12.1	12.5			3.6			3.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.6		0.1	0.3			0.1			0.0	
Delay (s)	12.1	13.6		12.2	12.8			3.7			3.5	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		13.6			12.7			3.7			3.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	22	17	1	23	8	11	58	2	6	25	7
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.81	0.81	0.81	0.56	0.56	0.56
Hourly flow rate (vph)	11	30	23	1	32	11	14	72	2	11	45	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	64	44	88	68
Volume Left (vph)	11	1	14	11
Volume Right (vph)	23	11	2	13
Hadj (s)	-0.15	-0.11	0.05	-0.04
Departure Headway (s)	4.1	4.2	4.3	4.2
Degree Utilization, x	0.07	0.05	0.10	0.08
Capacity (veh/h)	832	819	815	833
Control Delay (s)	7.5	7.4	7.7	7.5
Approach Delay (s)	7.5	7.4	7.7	7.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.6		
HCM Level of Service	A		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	1	3	10	0	31	0	39	1	20	27	1
Peak Hour Factor	0.50	0.50	0.50	0.79	0.79	0.79	0.62	0.62	0.62	0.67	0.67	0.67
Hourly flow rate (vph)	8	2	6	13	0	39	0	63	2	30	40	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	16	52	65	72
Volume Left (vph)	8	13	0	30
Volume Right (vph)	6	39	2	1
Hadj (s)	-0.09	-0.37	0.02	0.10
Departure Headway (s)	4.2	3.8	4.1	4.2
Degree Utilization, x	0.02	0.06	0.07	0.08
Capacity (veh/h)	830	901	845	836
Control Delay (s)	7.2	7.1	7.5	7.6
Approach Delay (s)	7.2	7.1	7.5	7.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay			7.4	
HCM Level of Service			A	
Intersection Capacity Utilization			21.1%	ICU Level of Service
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	82	1163	314	13	23	18
Peak Hour Factor	0.96	0.96	0.92	0.92	0.76	0.76
Hourly flow rate (vph)	85	1211	341	14	30	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			1319			
pX, platoon unblocked						
vC, conflicting volume	355				1125	178
vC1, stage 1 conf vol					348	
vC2, stage 2 conf vol					777	
vCu, unblocked vol	355				1125	178
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				86	97
cM capacity (veh/h)	1200				223	835

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	85	606	606	228	128	54
Volume Left	85	0	0	0	0	30
Volume Right	0	0	0	0	14	24
cSH	1200	1700	1700	1700	1700	329
Volume to Capacity	0.07	0.36	0.36	0.13	0.08	0.16
Queue Length 95th (ft)	6	0	0	0	0	14
Control Delay (s)	8.2	0.0	0.0	0.0	0.0	18.1
Lane LOS	A					C
Approach Delay (s)	0.5			0.0		18.1
Approach LOS						C

Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			42.1%		ICU Level of Service	A
Analysis Period (min)			15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	210	32	24	65	0	27	0	73	154	73	16
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.86	0.86	0.86	0.81	0.81	0.81
Hourly flow rate (vph)	0	280	43	28	76	0	31	0	85	190	90	20

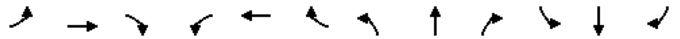
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	323	28	76	116	300
Volume Left (vph)	0	28	0	31	190
Volume Right (vph)	43	0	0	85	20
Hadj (s)	-0.05	0.53	0.03	-0.35	0.12
Departure Headway (s)	5.3	6.7	6.2	5.3	5.4
Degree Utilization, x	0.48	0.05	0.13	0.17	0.45
Capacity (veh/h)	640	490	527	605	627
Control Delay (s)	13.1	8.8	8.9	9.3	12.7
Approach Delay (s)	13.1	8.9		9.3	12.7
Approach LOS	B	A		A	B

Intersection Summary				
Delay	11.9			
HCM Level of Service	B			
Intersection Capacity Utilization	46.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	96	2	33	77	12	9	43	43	29	83	11
Peak Hour Factor	0.75	0.75	0.75	0.78	0.78	0.78	0.68	0.68	0.68	0.77	0.77	0.77
Hourly flow rate (vph)	25	128	3	42	99	15	13	63	63	38	108	14

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	25	131	42	114	140	160
Volume Left (vph)	25	0	42	0	13	38
Volume Right (vph)	0	3	0	15	63	14
Hadj (s)	0.53	0.02	0.53	-0.06	-0.22	0.03
Departure Headway (s)	6.0	5.5	6.0	5.4	4.7	4.9
Degree Utilization, x	0.04	0.20	0.07	0.17	0.18	0.22
Capacity (veh/h)	563	620	565	628	712	682
Control Delay (s)	8.1	8.6	8.2	8.3	8.8	9.3
Approach Delay (s)	8.5		8.3		8.8	9.3
Approach LOS	A		A		A	A

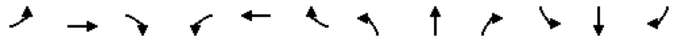
Intersection Summary				
Delay	8.7			
HCM Level of Service	A			
Intersection Capacity Utilization	30.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	28	1	6	47	19	1	66	16	44	81	9
Peak Hour Factor	0.65	0.65	0.65	0.82	0.82	0.82	0.80	0.80	0.80	0.78	0.78	0.78
Hourly flow rate (vph)	8	43	2	7	57	23	1	82	20	56	104	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	52	88	104	172
Volume Left (vph)	8	7	1	56
Volume Right (vph)	2	23	20	12
Hadj (s)	0.05	-0.11	-0.08	0.06
Departure Headway (s)	4.7	4.5	4.3	4.4
Degree Utilization, x	0.07	0.11	0.13	0.21
Capacity (veh/h)	710	745	789	779
Control Delay (s)	8.0	8.0	8.0	8.6
Approach Delay (s)	8.0	8.0	8.0	8.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.2	
HCM Level of Service			A	
Intersection Capacity Utilization			28.4%	ICU Level of Service
Analysis Period (min)			15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	49	4	15	33	9	0	25	31	15	39	17
Peak Hour Factor	0.85	0.85	0.85	0.79	0.79	0.79	0.74	0.74	0.74	0.68	0.68	0.68
Hourly flow rate (vph)	26	58	5	19	42	11	0	34	42	22	57	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	88	72	76	104
Volume Left (vph)	26	19	0	22
Volume Right (vph)	5	11	42	25
Hadj (s)	0.06	-0.01	-0.30	-0.07
Departure Headway (s)	4.4	4.4	4.1	4.3
Degree Utilization, x	0.11	0.09	0.09	0.12
Capacity (veh/h)	774	772	835	796
Control Delay (s)	8.0	7.8	7.5	7.9
Approach Delay (s)	8.0	7.8	7.5	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay			7.8	
HCM Level of Service			A	
Intersection Capacity Utilization			23.7%	ICU Level of Service
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	60	1167	329	16	26	16
Peak Hour Factor	0.96	0.96	0.93	0.93	0.81	0.81
Hourly flow rate (vph)	62	1216	354	17	32	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			658			
pX, platoon unblocked						
vC, conflicting volume	371				1095	185
vC1, stage 1 conf vol					362	
vC2, stage 2 conf vol					733	
vCu, unblocked vol	371				1095	185
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	94				86	98
cM capacity (veh/h)	1129				235	825

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	62	608	608	236	135	52
Volume Left	62	0	0	0	0	32
Volume Right	0	0	0	0	17	20
cSH	1129	1700	1700	1700	1700	323
Volume to Capacity	0.06	0.36	0.36	0.14	0.08	0.16
Queue Length 95th (ft)	4	0	0	0	0	14
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	18.3
Lane LOS	A					C
Approach Delay (s)	0.4			0.0		18.3
Approach LOS						C

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	42.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95		1.00	1.00			0.95	
Frt				1.00	0.94		1.00	1.00			0.99	
Flt Protected				0.95	0.98		0.95	1.00			1.00	
Satd. Flow (prot)				1478	1435		1626	1712			3225	
Flt Permitted				0.95	0.98		0.95	1.00			1.00	
Satd. Flow (perm)				1478	1435		1626	1712			3225	
Volume (vph)	0	0	0	415	54	113	189	262	0	0	250	15
Peak-hour factor, PHF	0.25	0.25	0.25	0.82	0.82	0.82	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	506	66	138	205	285	0	0	325	19
RTOR Reduction (vph)	0	0	0	0	26	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	354	330	0	205	285	0	0	338	0
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	11%	11%	11%	11%	11%	11%
Turn Type				Split			Split					
Protected Phases				8	8		6	6			2	
Permitted Phases												
Actuated Green, G (s)				18.7	18.7		14.5	14.5			11.5	
Effective Green, g (s)				18.7	18.7		14.5	14.5			11.5	
Actuated g/C Ratio				0.33	0.33		0.26	0.26			0.20	
Clearance Time (s)				4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				487	473		416	438			654	
v/s Ratio Prot				c0.24	0.23		0.13	c0.17			c0.10	
v/s Ratio Perm												
v/c Ratio				0.73	0.70		0.49	0.65			0.52	
Uniform Delay, d1				16.7	16.5		18.0	18.8			20.1	
Progression Factor				1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2				5.4	4.4		0.9	3.4			0.7	
Delay (s)				22.1	21.0		18.9	22.3			20.8	
Level of Service				C	C		B	C			C	
Approach Delay (s)		0.0			21.5			20.9			20.8	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1761	1806		1763	1863	1553	1530	3059	1328	1530	3010	
Flt Permitted	0.74	1.00		0.43	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1376	1806		795	1863	1553	1530	3059	1328	1530	3010	
Volume (vph)	97	205	44	9	19	28	9	254	339	114	394	39
Peak-hour factor, PHF	0.86	0.86	0.86	0.82	0.82	0.82	0.88	0.88	0.88	0.95	0.95	0.95
Adj. Flow (vph)	113	238	51	11	23	34	10	289	385	120	415	41
RTOR Reduction (vph)	0	15	0	0	0	26	0	0	231	0	8	0
Lane Group Flow (vph)	113	274	0	11	23	8	10	289	154	120	448	0
Confl. Peds. (#/hr)	10		13	13		10			27			27
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)	11.2	11.2		11.2	11.2	11.2	0.7	19.0	19.0	5.4	23.7	
Effective Green, g (s)	11.2	11.2		11.2	11.2	11.2	0.7	19.0	19.0	5.4	23.7	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	0.24	0.01	0.40	0.40	0.11	0.50	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	324	425		187	438	365	23	1221	530	174	1499	
v/s Ratio Prot		c0.15			0.01		0.01	0.09		c0.08	c0.15	
v/s Ratio Perm	0.08			0.01		0.01			0.12			
v/c Ratio	0.35	0.65		0.06	0.05	0.02	0.43	0.24	0.29	0.69	0.30	
Uniform Delay, d1	15.2	16.4		14.1	14.1	14.0	23.3	9.5	9.7	20.3	7.1	
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	0.7	3.4		0.1	0.1	0.0	12.6	0.1	0.3	10.8	0.1	
Delay (s)	15.8	19.8		14.2	14.1	14.0	35.9	9.6	10.0	31.1	7.2	
Level of Service	B	B		B	B	B	D	A	B	C	A	
Approach Delay (s)		18.7			14.1			10.2			12.2	
Approach LOS		B			B			B			B	

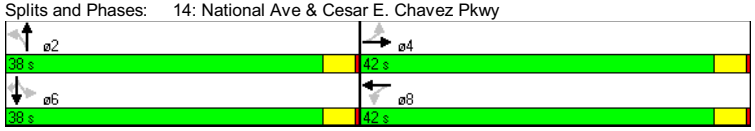
Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	88	75	51	57	16	476	77	330	65
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phases	4	4	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	42.0	42.0	42.0	42.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	47.5%	47.5%	47.5%	47.5%	47.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1771		1770	1704		1612	3194		1530	1610	1369
Flt Permitted	0.51	1.00		0.60	1.00		0.55	1.00		0.44	1.00	1.00
Satd. Flow (perm)	957	1771		1112	1704		927	3194		706	1610	1369
Volume (vph)	88	75	36	51	57	75	16	476	30	77	330	65
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.89	0.89	0.89	0.93	0.93	0.93
Adj. Flow (vph)	97	82	40	55	62	82	18	535	34	83	355	70
RTOR Reduction (vph)	0	35	0	0	72	0	0	2	0	0	0	15
Lane Group Flow (vph)	97	87	0	55	72	0	18	567	0	83	355	55
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.4	9.4		9.4	9.4		62.6	62.6		62.6	62.6	62.6
Effective Green, g (s)	9.4	9.4		9.4	9.4		62.6	62.6		62.6	62.6	62.6
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.78		0.78	0.78	0.78
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	112	208		131	200		725	2499		552	1260	1071
v/s Ratio Prot		0.05			0.04			0.18			c0.22	
v/s Ratio Perm	c0.10			0.05			0.02			0.12		0.04
v/c Ratio	0.87	0.42		0.42	0.36		0.02	0.23		0.15	0.28	0.05
Uniform Delay, d1	34.7	32.8		32.8	32.5		1.9	2.3		2.1	2.4	2.0
Progression Factor	1.00	1.00		1.00	1.00		0.69	0.68		1.00	1.00	1.00
Incremental Delay, d2	45.8	1.4		2.2	1.1		0.1	0.2		0.6	0.6	0.1
Delay (s)	80.5	34.1		34.9	33.6		1.4	1.8		2.7	3.0	2.1
Level of Service	F	C		C	C		A	A		A	A	A
Approach Delay (s)		54.7			34.0			1.8			2.8	
Approach LOS		D			C			A			A	

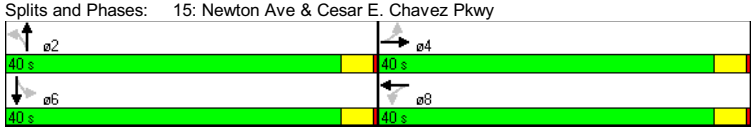
Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	52	55	13	21	8	459	44	316
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 18 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.96		1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1786		1770	1675		1612	3201		1612	1680	
Flt Permitted	0.70	1.00		0.66	1.00		0.53	1.00		0.44	1.00	
Satd. Flow (perm)	1311	1786		1232	1675		902	3201		754	1680	
Volume (vph)	52	55	21	13	21	42	8	459	23	44	316	22
Peak-hour factor, PHF	0.74	0.74	0.74	0.77	0.77	0.77	0.87	0.87	0.87	0.88	0.88	0.88
Adj. Flow (vph)	70	74	28	17	27	55	9	528	26	50	359	25
RTOR Reduction (vph)	0	25	0	0	50	0	0	2	0	0	1	0
Lane Group Flow (vph)	70	77	0	17	32	0	9	552	0	50	383	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	7.8	7.8		7.8	7.8		64.2	64.2		64.2	64.2	
Effective Green, g (s)	7.8	7.8		7.8	7.8		64.2	64.2		64.2	64.2	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.80	0.80		0.80	0.80	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	128	174		120	163		724	2569		605	1348	
v/s Ratio Prot		0.04			0.02			0.17			c0.23	
v/s Ratio Perm	c0.05			0.01			0.01			0.07		
v/c Ratio	0.55	0.44		0.14	0.20		0.01	0.22		0.08	0.28	
Uniform Delay, d1	34.4	34.0		33.0	33.2		1.6	1.9		1.7	2.0	
Progression Factor	1.00	1.00		1.00	1.00		0.32	0.49		0.92	1.08	
Incremental Delay, d2	4.7	1.8		0.5	0.6		0.0	0.2		0.3	0.5	
Delay (s)	39.1	35.8		33.6	33.8		0.5	1.1		1.8	2.7	
Level of Service	D	D		C	C		A	A		A	A	
Approach Delay (s)		37.2			33.8			1.1			2.6	
Approach LOS		D			C			A			A	

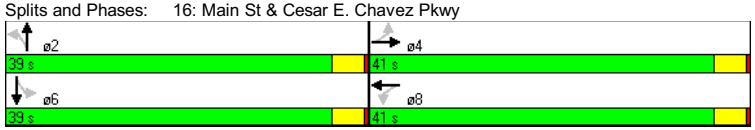
Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	53	34	18	22	4	455	26	269
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	41.0	41.0	41.0	41.0	39.0	39.0	39.0	39.0
Total Split (%)	51.3%	51.3%	51.3%	51.3%	48.8%	48.8%	48.8%	48.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 3 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.98	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.89		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1744	1807		1734	1621		1529	3087		1530	1602	
Flt Permitted	0.68	1.00		0.73	1.00		0.55	1.00		0.46	1.00	
Satd. Flow (perm)	1240	1807		1331	1621		887	3087		739	1602	
Volume (vph)	53	34	7	18	22	60	4	455	19	26	269	34
Peak-hour factor, PHF	0.94	0.94	0.94	0.76	0.76	0.76	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	56	36	7	24	29	79	4	500	21	29	296	37
RTOR Reduction (vph)	0	6	0	0	65	0	0	2	0	0	3	0
Lane Group Flow (vph)	56	37	0	24	43	0	4	519	0	29	330	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.7	13.7		13.7	13.7		58.3	58.3		58.3	58.3	
Effective Green, g (s)	13.7	13.7		13.7	13.7		58.3	58.3		58.3	58.3	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.73	0.73		0.73	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	309		228	278		646	2250		539	1167	
v/s Ratio Prot		0.02			0.03			0.17			c0.21	
v/s Ratio Perm	c0.05			0.02			0.00			0.04		
v/c Ratio	0.26	0.12		0.11	0.15		0.01	0.23		0.05	0.28	
Uniform Delay, d1	28.8	28.1		28.0	28.2		3.0	3.5		3.1	3.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.73	0.66	
Incremental Delay, d2	0.7	0.2		0.2	0.3		0.0	0.2		0.2	0.6	
Delay (s)	29.4	28.2		28.2	28.5		3.0	3.8		2.4	3.0	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		28.9			28.4			3.8			3.0	
Approach LOS		C			C			A			A	

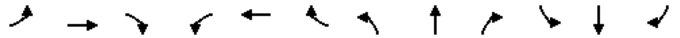
Intersection Summary				
HCM Average Control Delay	8.7	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	45.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	0.95			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)	1641	3272		1421	3159		1363	1315			1596	1368
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.83	1.00
Satd. Flow (perm)	1641	3272		1421	3159		1024	1315			1364	1368
Volume (vph)	375	713	12	19	166	43	11	63	35	33	30	247
Peak-hour factor, PHF	0.96	0.96	0.96	0.91	0.91	0.91	0.85	0.85	0.85	0.93	0.93	0.93
Adj. Flow (vph)	391	743	12	21	182	47	13	74	41	35	32	266
RTOR Reduction (vph)	0	1	0	0	19	0	0	14	0	0	0	205
Lane Group Flow (vph)	391	754	0	21	210	0	13	101	0	0	67	61
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			9			14			3			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	
Permitted Phases							12			1 5 16		1 5 16
Actuated Green, G (s)	27.9	44.1		2.8	19.0		13.6	13.6			22.2	22.2
Effective Green, g (s)	27.9	44.1		2.8	19.0		13.6	13.6			22.2	22.2
Actuated g/C Ratio	0.29	0.45		0.03	0.20		0.14	0.14			0.23	0.23
Clearance Time (s)	4.0			4.0			4.0	4.0				
Vehicle Extension (s)	3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)	472	1486		41	618		143	184			312	313
v/s Ratio Prot	c0.24	c0.23		0.01	0.07			c0.08				
v/s Ratio Perm							0.01				c0.05	0.04
v/c Ratio	0.83	0.51		0.51	0.34		0.09	0.55			0.21	0.19
Uniform Delay, d1	32.4	18.8		46.5	33.6		36.4	38.9			30.4	30.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.28	4.02
Incremental Delay, d2	11.4	0.3		10.4	0.3		0.3	3.5			0.3	0.3
Delay (s)	43.8	19.1		56.9	34.0		36.6	42.4			39.2	121.9
Level of Service	D	B		E	C		D	D			D	F
Approach Delay (s)		27.5			35.9			41.8			105.2	
Approach LOS		C			D			D			F	

Intersection Summary				
HCM Average Control Delay	43.6	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	50.3%	ICU Level of Service	A	
Analysis Period (min)	15			

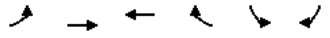
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	473	267	5	0	73	51	0	0	10	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.72	0.72	0.72	0.56	0.56	0.56	0.25	0.25	0.25
Hourly flow rate (vph)	509	287	5	0	101	71	0	0	18	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)		667										
pX, platoon unblocked												
vC, conflicting volume	172			292			1408	1479	290	1459	1446	137
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172			292			1408	1479	290	1459	1446	137
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 %	64			100			100	100	98	100	100	100
cM capacity (veh/h)	1405			1269			84	80	749	75	84	912

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	509	292	0	172	18
Volume Left	509	0	0	0	0
Volume Right	0	5	0	71	18
cSH	1405	1700	1700	1700	749
Volume to Capacity	0.36	0.17	0.00	0.10	0.02
Queue Length 95th (ft)	42	0	0	0	2
Control Delay (s)	9.0	0.0	0.0	0.0	9.9
Lane LOS	A				A
Approach Delay (s)	5.7		0.0		9.9
Approach LOS					A

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	39.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	160	134	0	72	133
Peak Hour Factor	0.87	0.87	0.86	0.86	0.83	0.83
Hourly flow rate (vph)	0	184	156	0	87	160
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)		1100	875			
pX, platoon unblocked						
vC, conflicting volume	156				340	156
vC1, stage 1 conf vol					156	
vC2, stage 2 conf vol					184	
vCu, unblocked vol	156				340	156
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	82
cM capacity (veh/h)	1424				692	890

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	184	156	87	160
Volume Left	0	0	87	0
Volume Right	0	0	0	160
cSH	1700	1700	692	890
Volume to Capacity	0.11	0.09	0.13	0.18
Queue Length 95th (ft)	0	0	11	16
Control Delay (s)	0.0	0.0	11.0	9.9
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.3	
Approach LOS			B	

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	18	212	14	17	103	15	5	8	29	27	10	37
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.81	0.81	0.81	0.93	0.93	0.93
Hourly flow rate (vph)	21	247	16	20	123	18	6	10	36	29	11	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		1314			661							
pX, platoon unblocked												
vC, conflicting volume	140			263			505	477	255	501	477	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140			263			505	477	255	501	477	132
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 %	99			98			99	98	95	93	98	96
cM capacity (veh/h)	1443			1301			439	472	784	441	473	918

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	21	263	20	140	52	80
Volume Left	21	0	20	0	6	29
Volume Right	0	16	0	18	36	40
cSH	1443	1700	1301	1700	643	603
Volume to Capacity	0.01	0.15	0.02	0.08	0.08	0.13
Queue Length 95th (ft)	1	0	1	0	7	11
Control Delay (s)	7.5	0.0	7.8	0.0	11.1	11.9
Lane LOS	A		A		B	B
Approach Delay (s)	0.6		1.0		11.1	11.9
Approach LOS					B	B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	30.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	46	16	5	27	7	3	15	6	8	8	11
Peak Hour Factor	0.78	0.78	0.78	0.89	0.89	0.89	0.68	0.68	0.68	0.75	0.75	0.75
Hourly flow rate (vph)	17	59	21	6	30	8	4	22	9	11	11	15
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	38			79			168	152	69	168	158	34
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			79			168	152	69	168	158	34
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 %	99			100			99	97	99	99	99	99
cM capacity (veh/h)	1572			1519			767	729	994	762	723	1039

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	96	44	35	36
Volume Left	17	6	4	11
Volume Right	21	8	9	15
cSH	1572	1519	786	840
Volume to Capacity	0.01	0.00	0.04	0.04
Queue Length 95th (ft)	1	0	4	3
Control Delay (s)	1.3	1.0	9.8	9.5
Lane LOS	A	A	A	A
Approach Delay (s)	1.3	1.0	9.8	9.5
Approach LOS			A	A

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	87	78	9	10	7
Peak Hour Factor	0.80	0.80	0.77	0.77	0.44	0.44
Hourly flow rate (vph)	6	109	101	12	23	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1318				
pX, platoon unblocked						
vC, conflicting volume	113				228	107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	113				228	107
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1476				757	947

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	115	113	39
Volume Left	6	0	23
Volume Right	0	12	16
cSH	1476	1700	825
Volume to Capacity	0.00	0.07	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.4	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	0.4	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	101	135	36	29	75	54	63	134	18	66	100	13
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	111	148	40	32	82	59	69	147	20	73	110	14

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	111	188	32	140	236	197
Volume Left (vph)	111	0	32	0	69	73
Volume Right (vph)	0	40	0	59	20	14
Hadj (s)	0.53	-0.11	0.53	-0.26	0.04	0.06
Departure Headway (s)	6.6	5.9	6.8	6.0	5.6	5.7
Degree Utilization, x	0.20	0.31	0.06	0.23	0.37	0.31
Capacity (veh/h)	513	571	487	553	595	587
Control Delay (s)	10.1	10.4	9.0	9.6	11.8	11.2
Approach Delay (s)	10.2		9.5		11.8	11.2
Approach LOS	B		A		B	B

Intersection Summary			
Delay	10.7		
HCM Level of Service	B		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.96			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1759	1830		1753	1766			1777			1757	
Flt Permitted	0.68	1.00		0.67	1.00			0.98			0.89	
Satd. Flow (perm)	1264	1830		1237	1766			1748			1593	
Volume (vph)	25	111	12	21	70	28	13	77	30	36	33	18
Peak-hour factor, PHF	0.90	0.90	0.90	0.85	0.85	0.85	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	28	123	13	25	82	33	14	85	33	40	36	20
RTOR Reduction (vph)	0	8	0	0	26	0	0	13	0	0	8	0
Lane Group Flow (vph)	28	128	0	25	89	0	0	119	0	0	88	0
Confl. Peds. (#/hr)	7		11	11		7	25		21	21		25
Confl. Bikes (#/hr)			3			3			6			2
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.7	8.7		8.7	8.7			24.0			24.0	
Effective Green, g (s)	8.7	8.7		8.7	8.7			24.0			24.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.59			0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	270	391		264	377			1031			939	
v/s Ratio Prot		c0.07			0.05							
v/s Ratio Perm	0.02			0.02				c0.07			0.06	
v/c Ratio	0.10	0.33		0.09	0.24			0.12			0.09	
Uniform Delay, d1	12.9	13.5		12.8	13.2			3.7			3.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.5		0.2	0.3			0.1			0.0	
Delay (s)	13.0	14.0		13.0	13.6			3.7			3.7	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		13.9			13.5			3.7			3.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	40.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	23	25	12	0	16	6	6	63	3	5	42	15
Peak Hour Factor	0.88	0.88	0.88	0.79	0.79	0.79	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	26	28	14	0	20	8	7	73	3	6	49	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	68	28	84	72
Volume Left (vph)	26	0	7	6
Volume Right (vph)	14	8	3	17
Hadj (s)	-0.01	-0.13	0.03	-0.10
Departure Headway (s)	4.3	4.2	4.2	4.1
Degree Utilization, x	0.08	0.03	0.10	0.08
Capacity (veh/h)	811	822	825	851
Control Delay (s)	7.6	7.3	7.7	7.5
Approach Delay (s)	7.6	7.3	7.7	7.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.6		
HCM Level of Service	A		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	82	8	27	44	8	5	46	49	8	27	10
Peak Hour Factor	0.74	0.74	0.74	0.73	0.73	0.73	0.81	0.81	0.81	0.80	0.80	0.80
Hourly flow rate (vph)	18	111	11	37	60	11	6	57	60	10	34	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	139	108	123	56
Volume Left (vph)	18	37	6	10
Volume Right (vph)	11	11	60	13
Hadj (s)	0.01	0.04	-0.25	-0.06
Departure Headway (s)	4.5	4.5	4.3	4.6
Degree Utilization, x	0.17	0.14	0.15	0.07
Capacity (veh/h)	773	752	788	732
Control Delay (s)	8.4	8.2	8.0	7.9
Approach Delay (s)	8.4	8.2	8.0	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.2	
HCM Level of Service			A	
Intersection Capacity Utilization		28.0%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3467		1770	3508			1781			1779	
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.95	
Satd. Flow (perm)	1770	3467		1770	3508			1710			1703	
Volume (vph)	56	748	5	19	198	8	23	111	41	14	66	26
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.71	0.71	0.71	0.85	0.85	0.85
Adj. Flow (vph)	64	860	6	23	244	10	32	156	58	16	78	31
RTOR Reduction (vph)	0	1	0	0	3	0	0	10	0	0	11	0
Lane Group Flow (vph)	64	865	0	23	251	0	0	236	0	0	114	0
Confl. Peds. (#/hr)			15			29	7		4	4		7
Confl. Bikes (#/hr)			12						7			7
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	3	14 2 6		13	18 2 6			12			16 1 5	
Permitted Phases							12			16 1 5		
Actuated Green, G (s)	5.9	30.7		2.1	26.9			13.2			23.6	
Effective Green, g (s)	5.9	30.7		2.1	26.9			13.2			23.6	
Actuated g/C Ratio	0.07	0.38		0.03	0.33			0.16			0.29	
Clearance Time (s)	4.0			4.0				4.0				
Vehicle Extension (s)	3.0			3.0				3.0				
Lane Grp Cap (vph)	130	1324		46	1174			281			500	
v/s Ratio Prot	c0.04	c0.25		0.01	0.07							
v/s Ratio Perm								c0.14			c0.07	
v/c Ratio	0.49	0.65		0.50	0.21			0.84			0.23	
Uniform Delay, d1	35.8	20.5		38.6	19.2			32.6			21.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.02	
Incremental Delay, d2	2.9	1.2		8.3	0.1			19.3			0.2	
Delay (s)	38.7	21.6		46.9	19.3			51.9			22.2	
Level of Service	D	C		D	B			D			C	
Approach Delay (s)		22.8			21.6			51.9			22.2	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM Average Control Delay	27.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	48.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	162	8	8	124	1	3	25	17	4	14	9
Peak Hour Factor	0.90	0.90	0.90	0.81	0.81	0.81	0.66	0.66	0.66	0.68	0.68	0.68
Hourly flow rate (vph)	11	180	9	10	153	1	5	38	26	6	21	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		641										
pX, platoon unblocked												
vC, conflicting volume	154			189			404	381	184	420	385	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	154			189			404	381	184	420	385	154
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 %	99			99			99	93	97	99	96	99
cM capacity (veh/h)	1426			1385			527	544	858	493	541	892

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	11	189	164	68	40
Volume Left	11	0	10	5	6
Volume Right	0	9	1	26	13
cSH	1426	1700	1385	629	613
Volume to Capacity	0.01	0.11	0.01	0.11	0.06
Queue Length 95th (ft)	1	0	1	9	5
Control Delay (s)	7.5	0.0	0.5	11.4	11.3
Lane LOS	A		A	B	B
Approach Delay (s)	0.4		0.5	11.4	11.3
Approach LOS				B	B

Intersection Summary					
Average Delay			3.0		
Intersection Capacity Utilization			23.2%	ICU Level of Service	A
Analysis Period (min)			15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	155	23	35	117	54	14	19	34	77	21	2
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.73	0.73	0.73	0.89	0.89	0.89
Hourly flow rate (vph)	5	167	25	38	127	59	19	26	47	87	24	2

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	5	191	38	186	92	112
Volume Left (vph)	5	0	38	0	19	87
Volume Right (vph)	0	25	0	59	47	2
Hadj (s)	0.53	-0.06	0.53	-0.19	-0.23	0.18
Departure Headway (s)	5.8	5.2	5.8	5.1	4.9	5.2
Degree Utilization, x	0.01	0.28	0.06	0.26	0.12	0.16
Capacity (veh/h)	584	659	592	680	672	630
Control Delay (s)	7.7	9.0	8.0	8.6	8.6	9.3
Approach Delay (s)	9.0		8.5		8.6	9.3
Approach LOS	A		A		A	A

Intersection Summary					
Delay			8.8		
HCM Level of Service			A		
Intersection Capacity Utilization			36.8%	ICU Level of Service	A
Analysis Period (min)			15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	275	10	31	194	32	296
Peak Hour Factor	0.95	0.95	0.88	0.88	0.80	0.80
Hourly flow rate (vph)	289	11	35	220	40	370
Pedestrians					36	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				670		
pX, platoon unblocked						
vC, conflicting volume			336		511	331
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		511	331
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		91	43
cM capacity (veh/h)			1183		463	645

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	300	109	147	40	370
Volume Left	0	35	0	40	0
Volume Right	11	0	0	0	370
cSH	1700	1183	1700	463	645
Volume to Capacity	0.18	0.03	0.09	0.09	0.57
Queue Length 95th (ft)	0	2	0	7	91
Control Delay (s)	0.0	2.8	0.0	13.5	17.8
Lane LOS		A		B	C
Approach Delay (s)	0.0	1.2		17.4	
Approach LOS				C	

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	14	167	7	19	45	28	2	38	80	26	6	8
Peak Hour Factor	0.82	0.82	0.82	0.72	0.72	0.72	0.88	0.88	0.88	0.67	0.67	0.67
Hourly flow rate (vph)	17	204	9	26	62	39	2	43	91	39	9	12

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total (vph)	229	26	63	39	45	91	60
Volume Left (vph)	17	26	0	0	2	0	39
Volume Right (vph)	9	0	0	39	0	91	12
Hadj (s)	0.03	1.10	0.03	-0.67	0.04	-0.41	0.04
Departure Headway (s)	4.4	6.0	5.0	3.2	4.8	3.2	4.7
Degree Utilization, x	0.28	0.04	0.09	0.03	0.06	0.08	0.08
Capacity (veh/h)	798	573	696	1121	701	1121	705
Control Delay (s)	9.1	8.1	7.2	5.1	8.1	6.5	8.2
Approach Delay (s)	9.1	6.8			7.0		8.2
Approach LOS	A	A			A		A

Intersection Summary			
Delay	8.0		
HCM Level of Service	A		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.99	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			0.97						0.92	
Flt Protected	0.95	1.00			1.00						0.98	
Satd. Flow (prot)	1543	3539			3446						1569	
Flt Permitted	0.95	1.00			1.00						0.98	
Satd. Flow (perm)	1543	3539			3446						1569	
Volume (vph)	75	712	0	0	182	39	0	0	0	16	4	27
Peak-hour factor, PHF	0.95	0.95	0.95	0.81	0.81	0.81	0.25	0.25	0.25	0.69	0.69	0.69
Adj. Flow (vph)	79	749	0	0	225	48	0	0	0	23	6	39
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	30	0
Lane Group Flow (vph)	79	749	0	0	259	0	0	0	0	0	38	0
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									4			9
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot									Perm		
Protected Phases	13	18 2 6			14 2 6						11 1 5	
Permitted Phases										11 1 5		
Actuated Green, G (s)	8.6	47.6			31.0						18.2	
Effective Green, g (s)	8.6	47.6			31.0						18.2	
Actuated g/C Ratio	0.11	0.58			0.38						0.22	
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	162	2059			1306						349	
v/s Ratio Prot	0.05	c0.21			0.08							
v/s Ratio Perm											0.02	
v/c Ratio	0.49	0.36			0.20						0.11	
Uniform Delay, d1	34.5	9.1			17.1						25.3	
Progression Factor	1.00	1.00			1.00						1.14	
Incremental Delay, d2	2.3	0.1			0.1						0.1	
Delay (s)	36.8	9.2			17.1						28.9	
Level of Service	D	A			B						C	
Approach Delay (s)		11.8			17.1			0.0			28.9	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM Average Control Delay	14.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.96			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1597	1784			1762	1509		1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.93	1.00		0.92	
Satd. Flow (perm)	1770	3539	1583	1597	1784			1647	1509		1573	
Volume (vph)	94	434	85	162	327	128	18	98	46	70	210	102
Peak-hour factor, PHF	0.87	0.87	0.87	0.71	0.71	0.71	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	499	98	228	461	180	20	107	50	76	228	111
RTOR Reduction (vph)	0	0	63	0	10	0	0	0	33	0	9	0
Lane Group Flow (vph)	108	499	35	228	631	0	0	127	17	0	406	0
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	8.5	30.0	30.0	14.7	36.2			28.3	28.3		28.3	
Effective Green, g (s)	8.5	30.0	30.0	14.7	36.2			28.3	28.3		28.3	
Actuated g/C Ratio	0.10	0.35	0.35	0.17	0.43			0.33	0.33		0.33	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	177	1249	559	276	760			548	502		524	
v/s Ratio Prot	0.06	0.14		c0.14	c0.35							
v/s Ratio Perm			0.02					0.08	0.01		c0.26	
v/c Ratio	0.61	0.40	0.06	0.83	0.83			0.23	0.03		0.77	
Uniform Delay, d1	36.7	20.7	18.2	33.9	21.7			20.5	19.1		25.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	6.1	0.2	0.0	17.9	7.7			0.2	0.0		7.0	
Delay (s)	42.8	20.9	18.2	51.9	29.4			20.7	19.1		32.5	
Level of Service	D	C	B	D	C			C	B		C	
Approach Delay (s)		23.9			35.3			20.3			32.5	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
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	0.88		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)	1687	1748		1687	1567		1770	3539	1583	1770	3519	
Flt Permitted	0.71	1.00		0.55	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1253	1748		982	1567		1770	3539	1583	1770	3519	
Volume (vph)	42	131	15	7	12	43	7	516	203	245	693	28
Peak-hour factor, PHF	0.84	0.84	0.84	0.69	0.69	0.69	0.89	0.89	0.89	0.93	0.93	0.93
Adj. Flow (vph)	50	156	18	10	17	62	8	580	228	263	745	30
RTOR Reduction (vph)	0	8	0	0	52	0	0	0	117	0	2	0
Lane Group Flow (vph)	50	166	0	10	27	0	8	580	111	263	773	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	9.0	9.0		9.0	9.0		0.7	28.6	28.6	9.0	36.9	
Effective Green, g (s)	9.0	9.0		9.0	9.0		0.7	28.6	28.6	9.0	36.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.01	0.49	0.49	0.15	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	192	268		151	241		21	1727	773	272	2216	
v/s Ratio Prot		c0.10			0.02		0.00	0.16		c0.15	c0.22	
v/s Ratio Perm	0.04			0.01					0.07			
v/c Ratio	0.26	0.62		0.07	0.11		0.38	0.34	0.14	0.97	0.35	
Uniform Delay, d1	21.9	23.2		21.2	21.4		28.7	9.2	8.3	24.7	5.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	4.4		0.2	0.2		11.2	0.5	0.4	45.0	0.4	
Delay (s)	22.6	27.6		21.4	21.6		39.9	9.7	8.7	69.7	5.6	
Level of Service	C	C		C	C		D	A	A	E	A	
Approach Delay (s)		26.5			21.5			9.7			21.8	
Approach LOS		C			C			A			C	

Intersection Summary				
HCM Average Control Delay	17.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
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)	1733	3508		1762	3113		1736	3307		1736	3261	
Flt Permitted	0.42	1.00		0.38	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	758	3508		708	3113		1736	3307		1736	3261	
Volume (vph)	174	360	19	78	121	238	23	607	140	294	487	79
Peak-hour factor, PHF	0.80	0.80	0.80	0.83	0.83	0.83	0.84	0.84	0.84	0.86	0.86	0.86
Adj. Flow (vph)	218	450	24	94	146	287	27	723	167	342	566	92
RTOR Reduction (vph)	0	5	0	0	199	0	0	22	0	0	13	0
Lane Group Flow (vph)	218	469	0	94	234	0	27	868	0	342	645	0
Confl. Peds. (#/hr)	27		12	12		27			88			200
Confl. Bikes (#/hr)			8			3						6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	25.3	25.3		25.3	25.3		2.5	26.9		18.3	42.7	
Effective Green, g (s)	25.3	25.3		25.3	25.3		2.5	26.9		18.3	42.7	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.03	0.33		0.22	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	1076		217	955		53	1078		385	1688	
v/s Ratio Prot		0.13			0.08		0.02	c0.26		c0.20	0.20	
v/s Ratio Perm	c0.29			0.13								
v/c Ratio	0.94	0.44		0.43	0.25		0.51	0.81		0.89	0.38	
Uniform Delay, d1	27.9	22.9		22.9	21.4		39.4	25.4		31.1	12.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	42.1	0.3		1.4	0.1		7.5	4.5		21.1	0.1	
Delay (s)	69.9	23.2		24.3	21.6		46.9	29.9		52.3	12.1	
Level of Service	E	C		C	C		D	C		D	B	
Approach Delay (s)		37.9			22.1			30.4			25.8	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM Average Control Delay	29.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	82.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	0.94		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1703	3406	1309	1719	3438	1445		1826		1649	1657	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1703	3406	1309	1719	3438	1445		1826		1649	1657	1531
Volume (vph)	156	543	1	8	202	221	1	133	0	480	12	13
Peak-hour factor, PHF	0.96	0.96	0.96	0.81	0.81	0.81	0.64	0.64	0.64	0.85	0.85	0.85
Adj. Flow (vph)	162	566	1	10	249	273	2	208	0	565	14	15
RTOR Reduction (vph)	0	0	1	0	0	181	0	0	0	0	0	10
Lane Group Flow (vph)	162	566	0	10	249	92	0	210	0	283	296	5
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	14.0	42.2	36.0	1.2	29.4	42.6		21.9		28.8	28.8	28.8
Effective Green, g (s)	14.0	42.2	36.0	1.2	29.4	42.6		21.9		28.8	28.8	28.8
Actuated g/C Ratio	0.11	0.33	0.29	0.01	0.23	0.34		0.17		0.23	0.23	0.23
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	189	1140	374	16	802	488		317		377	378	350
v/s Ratio Prot	c0.10	c0.17		0.01	0.07	0.03		c0.12		0.17	c0.18	
v/s Ratio Perm			0.00			0.03						0.00
v/c Ratio	0.86	0.50	0.00	0.62	0.31	0.19		0.66		0.75	0.78	0.01
Uniform Delay, d1	55.1	33.5	32.2	62.2	40.0	29.5		48.6		45.3	45.7	37.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.93	0.93	1.20
Incremental Delay, d2	29.7	0.3	0.0	57.6	0.2	0.2		5.1		8.1	10.1	0.0
Delay (s)	84.8	33.8	32.2	119.8	40.2	29.7		53.8		50.4	52.8	45.2
Level of Service	F	C	C	F	D	C		D		D	D	D
Approach Delay (s)		45.1			36.3			53.8			51.5	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM Average Control Delay	45.6	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	126.1	Sum of lost time (s)	28.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	495	59	14	5	46	58	6	49	13	0	0	0
Peak Hour Factor	0.83	0.83	0.83	0.61	0.61	0.61	0.66	0.66	0.66	0.25	0.25	0.25
Hourly flow rate (vph)	596	71	17	8	75	95	9	74	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)		657										
pX, platoon unblocked												
vC, conflicting volume	170			88			1412	1459	80	1468	1420	123
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	170			88			1412	1459	80	1468	1420	123
tC, single (s)	4.2			4.2			7.1	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.1	3.3	3.5	4.0	3.3
p0 queue free %	57			99			88	0	98	0	100	100
cM capacity (veh/h)	1377			1477			76	68	981	0	77	928

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	684	179	103
Volume Left	596	8	9
Volume Right	17	95	20
cSH	1377	1477	84
Volume to Capacity	0.43	0.01	1.23
Queue Length 95th (ft)	56	0	188
Control Delay (s)	8.9	0.4	260.7
Lane LOS	A	A	F
Approach Delay (s)	8.9	0.4	260.7
Approach LOS			F

Intersection Summary				
Average Delay	34.2			
Intersection Capacity Utilization	48.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3277		1703	3235		1770	1863	1552	1770	1759	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3277		1703	3235		1770	1863	1552	1770	1759	
Volume (vph)	24	462	136	207	241	98	183	112	307	123	61	27
Peak-hour factor, PHF	0.85	0.85	0.85	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	544	160	233	271	110	206	126	345	138	69	30
RTOR Reduction (vph)	0	29	0	0	42	0	0	0	268	0	20	0
Lane Group Flow (vph)	28	675	0	233	339	0	206	126	77	138	79	0
Confl. Peds. (#/hr)			1			2			1			17
Confl. Bikes (#/hr)			4			1			7			5
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	1.7	21.5		13.4	33.2		11.9	17.0	17.0	8.4	13.5	
Effective Green, g (s)	1.7	21.5		13.4	33.2		11.9	17.0	17.0	8.4	13.5	
Actuated g/C Ratio	0.02	0.28		0.18	0.44		0.16	0.22	0.22	0.11	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	38	923		299	1408		276	415	346	195	311	
v/s Ratio Prot	0.02	c0.21		c0.14	0.10		c0.12	c0.07		0.08	0.05	
v/s Ratio Perm									0.05			
v/c Ratio	0.74	0.73		0.78	0.24		0.75	0.30	0.22	0.71	0.25	
Uniform Delay, d1	37.1	24.8		30.0	13.6		30.8	24.7	24.2	32.8	27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	53.2	3.0		12.1	0.1		10.5	0.4	0.3	11.1	0.4	
Delay (s)	90.3	27.8		42.1	13.7		41.2	25.1	24.6	43.9	27.5	
Level of Service	F	C		D	B		D	C	C	D	C	
Approach Delay (s)		30.2			24.5			29.7			37.0	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM Average Control Delay	29.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	55.5%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.90			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1751	1679			1793	1566		1719	1810	2707	
Flt Permitted		0.62	1.00			0.70	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		1151	1679			1313	1566		1719	1810	2707	
Volume (vph)	70	79	37	71	90	26	134	186	98	264	385	98
Peak-hour factor, PHF	0.92	0.87	0.87	0.87	0.82	0.82	0.82	0.92	0.93	0.93	0.93	0.92
Adj. Flow (vph)	76	91	43	82	110	32	163	202	105	284	414	107
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	167	67	0	0	142	365	0	105	284	521	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		25.2	25.2			25.2	25.2		11.0	22.0	40.6	
Effective Green, g (s)		25.2	25.2			25.2	25.2		11.0	22.0	40.6	
Actuated g/C Ratio		0.28	0.28			0.28	0.28		0.12	0.24	0.45	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		321	468			366	437		209	440	1216	
v/s Ratio Prot			0.04						0.06	c0.16		
v/s Ratio Perm		0.15				0.11	c0.23				0.19	
v/c Ratio		0.52	0.14			0.39	0.84		0.50	0.65	0.43	
Uniform Delay, d1		27.5	24.5			26.4	30.6		37.1	30.7	17.0	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		1.5	0.1			0.7	12.9		1.9	3.2	0.2	
Delay (s)		29.0	24.6			27.0	43.6		39.0	33.9	17.2	
Level of Service		C	C			C	D		D	C	B	
Approach Delay (s)			27.1			39.0				25.0		
Approach LOS			C			D				C		

Intersection Summary				
HCM Average Control Delay	32.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	67.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.99			0.93		
Flt Protected		0.95	1.00			0.98		
Satd. Flow (prot)		1766	3405			3201		
Flt Permitted		0.95	1.00			0.87		
Satd. Flow (perm)		1766	3405			2861		
Volume (vph)	17	147	237	20	21	97	40	75
Peak-hour factor, PHF	0.92	0.81	0.81	0.81	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	181	293	25	23	105	43	82
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	199	318	0	0	253	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		12.6	23.6			14.6		
Effective Green, g (s)		12.6	23.6			14.6		
Actuated g/C Ratio		0.14	0.26			0.16		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		246	889			462		
v/s Ratio Prot		c0.11	0.09					
v/s Ratio Perm						c0.09		
v/c Ratio		0.81	0.36			0.55		
Uniform Delay, d1		37.7	27.2			34.9		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		17.5	0.2			1.3		
Delay (s)		55.2	27.5			36.2		
Level of Service		E	C			D		
Approach Delay (s)			38.2			36.2		
Approach LOS			D			D		

Intersection Summary			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1473	1719	3438	1500	1719	3438	1526
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)	1719	3438	1538	1687	3374	1473	1719	3438	1500	1719	3438	1526
Volume (vph)	239	796	64	26	267	321	48	487	97	219	200	180
Peak-hour factor, PHF	0.80	0.80	0.80	0.70	0.70	0.70	0.80	0.80	0.80	0.81	0.81	0.81
Adj. Flow (vph)	299	995	80	37	381	459	60	609	121	270	247	222
RTOR Reduction (vph)	0	0	29	0	0	400	0	0	95	0	0	109
Lane Group Flow (vph)	299	995	51	37	381	59	60	609	26	270	247	113
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6	15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	24.2	39.9	42.1	4.9	20.6	15.6	7.2	25.1	25.1	20.1	42.0	62.2
Effective Green, g (s)	24.2	39.9	42.1	4.9	20.6	15.6	7.2	25.1	25.1	20.1	42.0	62.2
Actuated g/C Ratio	0.20	0.33	0.35	0.04	0.17	0.13	0.06	0.21	0.21	0.16	0.34	0.51
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	341	1124	531	68	570	188	101	707	309	283	1184	828
v/s Ratio Prot	c0.17	c0.29	0.01	0.02	0.11		0.03	c0.18		c0.16	0.07	0.04
v/s Ratio Perm			0.03			0.04			0.02			0.04
v/c Ratio	0.88	0.89	0.10	0.54	0.67	0.31	0.59	0.86	0.08	0.95	0.21	0.14
Uniform Delay, d1	47.5	38.9	27.1	57.5	47.5	48.3	56.0	46.8	39.2	50.5	28.3	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	1.53
Incremental Delay, d2	21.5	8.6	0.1	8.6	3.0	1.0	9.0	10.5	0.1	40.7	0.1	0.1
Delay (s)	68.9	47.4	27.1	66.1	50.5	49.3	65.0	57.3	39.3	87.3	26.0	24.2
Level of Service	E	D	C	E	D	D	E	E	D	F	C	C
Approach Delay (s)		50.9			50.5			55.1			47.9	
Approach LOS		D			D			E			D	

Intersection Summary					
HCM Average Control Delay	51.1	HCM Level of Service	D		
HCM Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	122.0	Sum of lost time (s)	28.0		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.93	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1770	3539	3539	1583	1680	
Flt Permitted	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	1770	3539	3539	1583	1680	
Volume (vph)	254	579	275	154	120	126
Peak-hour factor, PHF	0.91	0.91	0.89	0.89	0.94	0.94
Adj. Flow (vph)	279	636	309	173	128	134
RTOR Reduction (vph)	0	0	0	135	61	0
Lane Group Flow (vph)	279	636	309	38	201	0
Confl. Peds. (#/hr)					10	4
Confl. Bikes (#/hr)						1
Turn Type	Prot			Perm		
Protected Phases	5	2	6		4	
Permitted Phases				6		
Actuated Green, G (s)	11.9	25.8	9.9	9.9	11.3	
Effective Green, g (s)	11.9	25.8	9.9	9.9	11.3	
Actuated g/C Ratio	0.26	0.57	0.22	0.22	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	467	2025	777	347	421	
v/s Ratio Prot	c0.16	0.18	c0.09		c0.12	
v/s Ratio Perm				0.02		
v/c Ratio	0.60	0.31	0.40	0.11	0.48	
Uniform Delay, d1	14.5	5.0	15.1	14.1	14.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	0.1	0.3	0.1	0.9	
Delay (s)	16.6	5.1	15.4	14.2	15.2	
Level of Service	B	A	B	B	B	
Approach Delay (s)		8.6	15.0		15.2	
Approach LOS		A	B		B	

Intersection Summary				
HCM Average Control Delay	11.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	45.1	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	46.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		0.95	0.95			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	0.99			1.00			0.98	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.99		1.00	0.96			0.99			0.95	
Flt Protected		1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)		1827		1664	1685			3508			3293	
Flt Permitted		0.97		0.52	1.00			0.94			0.88	
Satd. Flow (perm)		1769		914	1685			3296			2924	
Volume (vph)	16	225	26	24	295	114	13	340	16	47	250	136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	245	28	26	321	124	14	370	17	51	272	148
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	46	0
Lane Group Flow (vph)	0	285	0	26	445	0	0	401	0	0	425	0
Confl. Peds. (#/hr)			15	15		16	36			12		36
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		19.4		19.4	19.4			27.4			27.4	
Effective Green, g (s)		19.4		19.4	19.4			27.4			27.4	
Actuated g/C Ratio		0.35		0.35	0.35			0.50			0.50	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		626		324	597			1648			1462	
v/s Ratio Prot												
v/s Ratio Perm		0.16		0.03	0.26			0.12			c0.15	
v/c Ratio		0.46		0.08	0.75			0.24			0.29	
Uniform Delay, d1		13.6		11.8	15.5			7.8			8.0	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.5		0.1	5.0			0.4			0.5	
Delay (s)		14.2		11.9	20.6			8.1			8.5	
Level of Service		B		B	C			A			A	
Approach Delay (s)		14.2			20.1			8.1			8.5	
Approach LOS		B			C			A			A	

Intersection Summary				
HCM Average Control Delay	12.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	81.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	SWR
Lane Configurations	
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	0
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	2%
Turn Type	custom
Protected Phases	9
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	40	194	40	3	495	34	40	34	12	56	36	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	211	43	3	538	37	43	37	13	61	39	99
Pedestrians		7			14			16			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					668							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	594			270			1006	936	157	820	939	583
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	563			270			1006	931	157	806	935	551
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			61	84	98	70	83	77
cM capacity (veh/h)	919			1273			112	228	839	201	226	435

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	149	149	3	575	93	199
Volume Left	43	0	3	0	43	61
Volume Right	0	43	0	37	13	99
cSH	919	1700	1273	1700	166	283
Volume to Capacity	0.05	0.09	0.00	0.34	0.56	0.70
Queue Length 95th (ft)	4	0	0	0	73	122
Control Delay (s)	3.0	0.0	7.8	0.0	51.7	43.2
Lane LOS	A		A		F	E
Approach Delay (s)	1.5		0.0		51.7	43.2
Approach LOS					F	E

Intersection Summary					
Average Delay	11.9				
Intersection Capacity Utilization	57.0%	ICU Level of Service		B	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00			0.99			1.00	
Frt	1.00	0.96		1.00	0.99			0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1753	1769		1741	1831			1702			1695	
Flt Permitted	0.41	1.00		0.63	1.00			0.84			0.96	
Satd. Flow (perm)	765	1769		1151	1831			1467			1634	
Volume (vph)	10	140	51	16	367	36	63	26	58	15	40	58
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	152	55	17	399	39	68	28	63	16	43	63
RTOR Reduction (vph)	0	21	0	0	6	0	0	37	0	0	40	0
Lane Group Flow (vph)	11	186	0	17	432	0	0	122	0	0	82	0
Confl. Peds. (#/hr)	21		25	25		21	37		14	14		37
Confl. Bikes (#/hr)						3			3			1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.9	13.9		13.9	13.9			12.4			12.4	
Effective Green, g (s)	13.9	13.9		13.9	13.9			12.4			12.4	
Actuated g/C Ratio	0.41	0.41		0.41	0.41			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	310	717		466	742			530			591	
v/s Ratio Prot		0.11			c0.24							
v/s Ratio Perm	0.01			0.01				c0.08			0.05	
v/c Ratio	0.04	0.26		0.04	0.58			0.23			0.14	
Uniform Delay, d1	6.2	6.8		6.2	7.9			7.6			7.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.2		0.0	1.2			0.2			0.1	
Delay (s)	6.2	7.0		6.2	9.1			7.8			7.5	
Level of Service	A	A		A	A			A			A	
Approach Delay (s)		6.9			9.0			7.8			7.5	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	34.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	48	19	15	80	51	24	111	34	33	79	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	52	21	16	87	55	26	121	37	36	86	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	79	159	184	140
Volume Left (vph)	7	16	26	36
Volume Right (vph)	21	55	37	18
Hadj (s)	-0.11	-0.16	-0.06	0.01
Departure Headway (s)	4.8	4.6	4.6	4.7
Degree Utilization, x	0.11	0.20	0.23	0.18
Capacity (veh/h)	687	721	739	714
Control Delay (s)	8.3	8.8	9.0	8.8
Approach Delay (s)	8.3	8.8	9.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.8		
HCM Level of Service	A		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	8	6	31	8	61	5	97	24	31	96	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	9	7	34	9	66	5	105	26	34	104	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	18	109	137	141
Volume Left (vph)	3	34	5	34
Volume Right (vph)	7	66	26	3
Hadj (s)	-0.14	-0.27	-0.07	0.07
Departure Headway (s)	4.5	4.3	4.3	4.4
Degree Utilization, x	0.02	0.13	0.16	0.17
Capacity (veh/h)	731	782	808	780
Control Delay (s)	7.6	7.9	8.1	8.3
Approach Delay (s)	7.6	7.9	8.1	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.1	
HCM Level of Service			A	
Intersection Capacity Utilization		33.8%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	60	480	1670	20	110	110
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	522	1815	22	120	120
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			1319			
pX, platoon unblocked	0.71				0.71	0.71
vC, conflicting volume	1837				2217	918
vC1, stage 1 conf vol					1826	
vC2, stage 2 conf vol					391	
vCu, unblocked vol	1770				2306	476
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	74				0	69
cM capacity (veh/h)	247				53	380

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	65	261	261	1210	627	239
Volume Left	65	0	0	0	0	120
Volume Right	0	0	0	0	22	120
cSH	247	1700	1700	1700	1700	94
Volume to Capacity	0.26	0.15	0.15	0.71	0.37	2.55
Queue Length 95th (ft)	26	0	0	0	0	555
Control Delay (s)	24.7	0.0	0.0	0.0	0.0	800.0
Lane LOS	C					F
Approach Delay (s)	2.7			0.0		800.0
Approach LOS						F

Intersection Summary					
Average Delay		72.4			
Intersection Capacity Utilization		69.4%	ICU Level of Service		C
Analysis Period (min)		15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	170	24	87	202	0	31	0	68	259	236	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	185	26	95	220	0	34	0	74	282	257	51

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	211	95	220	108	589
Volume Left (vph)	0	95	0	34	282
Volume Right (vph)	26	0	0	74	51
Hadj (s)	-0.04	0.53	0.03	-0.32	0.08
Departure Headway (s)	7.0	7.8	7.3	6.7	5.9
Degree Utilization, x	0.41	0.20	0.44	0.20	0.97
Capacity (veh/h)	508	454	489	507	601
Control Delay (s)	14.7	11.6	14.7	11.3	54.1
Approach Delay (s)	14.7	13.7		11.3	54.1
Approach LOS	B	B		B	F

Intersection Summary				
Delay	33.1			
HCM Level of Service	D			
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	238	8	241	421	67	4	30	50	216	138	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	259	9	262	458	73	4	33	54	235	150	25

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	9	267	262	530	91	410
Volume Left (vph)	9	0	262	0	4	235
Volume Right (vph)	0	9	0	73	54	25
Hadj (s)	0.53	0.01	0.53	-0.06	-0.31	0.11
Departure Headway (s)	8.2	7.7	7.6	7.0	7.6	6.9
Degree Utilization, x	0.02	0.57	0.55	1.03	0.19	0.78
Capacity (veh/h)	419	446	466	517	419	410
Control Delay (s)	10.2	19.1	18.5	73.5	12.5	30.6
Approach Delay (s)	18.9		55.3		12.5	30.6
Approach LOS	C		F		B	D

Intersection Summary				
Delay	39.9			
HCM Level of Service	E			
Intersection Capacity Utilization	67.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	74	9	29	82	15	13	23	19	56	156	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	80	10	32	89	16	14	25	21	61	170	45

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	110	137	60	275
Volume Left (vph)	20	32	14	61
Volume Right (vph)	10	16	21	45
Hadj (s)	0.02	0.01	-0.13	-0.02
Departure Headway (s)	4.9	4.9	4.7	4.6
Degree Utilization, x	0.15	0.19	0.08	0.35
Capacity (veh/h)	675	684	699	745
Control Delay (s)	8.8	9.0	8.2	10.0
Approach Delay (s)	8.8	9.0	8.2	10.0
Approach LOS	A	A	A	B

Intersection Summary				
Delay			9.4	
HCM Level of Service			A	
Intersection Capacity Utilization		38.0%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	15	74	4	163	109	76	2	8	52	275	57	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	80	4	177	118	83	2	9	57	299	62	57

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	101	378	67	417
Volume Left (vph)	16	177	2	299
Volume Right (vph)	4	83	57	57
Hadj (s)	0.04	0.00	-0.46	0.10
Departure Headway (s)	6.0	5.5	5.6	5.5
Degree Utilization, x	0.17	0.58	0.10	0.64
Capacity (veh/h)	528	623	545	626
Control Delay (s)	10.2	15.7	9.2	17.6
Approach Delay (s)	10.2	15.7	9.2	17.6
Approach LOS	B	C	A	C

Intersection Summary				
Delay			15.5	
HCM Level of Service			C	
Intersection Capacity Utilization		61.3%	ICU Level of Service	B
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	22	580	1610	30	48	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	630	1750	33	52	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			658			
pX, platoon unblocked	0.69				0.69	0.69
vC, conflicting volume	1783				2129	891
vC1, stage 1 conf vol					1766	
vC2, stage 2 conf vol					363	
vCu, unblocked vol	1683				2189	383
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	90				13	76
cM capacity (veh/h)	235				60	422

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	24	315	315	1167	616	155
Volume Left	24	0	0	0	0	52
Volume Right	0	0	0	0	33	103
cSH	235	1700	1700	1700	1700	139
Volume to Capacity	0.10	0.19	0.19	0.69	0.36	1.12
Queue Length 95th (ft)	8	0	0	0	0	218
Control Delay (s)	22.1	0.0	0.0	0.0	0.0	173.7
Lane LOS	C					F
Approach Delay (s)	0.8			0.0		173.7
Approach LOS						F

Intersection Summary				
Average Delay	10.6			
Intersection Capacity Utilization	60.6%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95		1.00	1.00			0.95	
Frt				1.00	0.95		1.00	1.00			0.99	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1478	1461		1626	1712			3212	
Flt Permitted				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (perm)				1478	1461		1626	1712			3212	
Volume (vph)	0	0	0	613	259	192	257	262	0	0	350	31
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	666	282	209	279	285	0	0	380	34
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	568	568	0	279	285	0	0	405	0
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	11%	11%	11%	11%	11%	11%
Turn Type				Split			Split					
Protected Phases				8	8		6	6			2	
Permitted Phases												
Actuated Green, G (s)				27.7	27.7		16.7	16.7			15.5	
Effective Green, g (s)				27.7	27.7		16.7	16.7			15.5	
Actuated g/C Ratio				0.39	0.39		0.23	0.23			0.22	
Clearance Time (s)				4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				569	563		378	398			692	
v/s Ratio Prot				0.38	c0.39		c0.17	0.17			c0.13	
v/s Ratio Perm												
v/c Ratio				1.00	1.01		0.74	0.72			0.59	
Uniform Delay, d1				22.1	22.1		25.6	25.4			25.3	
Progression Factor				1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2				37.0	40.2		7.4	6.0			1.3	
Delay (s)				59.1	62.3		32.9	31.5			26.6	
Level of Service				E	E		C	C			C	
Approach Delay (s)		0.0			60.7			32.2			26.6	
Approach LOS		A			E			C			C	

Intersection Summary				
HCM Average Control Delay	46.6	HCM Level of Service		D
HCM Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	71.9	Sum of lost time (s)		12.0
Intersection Capacity Utilization	64.5%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1758	1766		1762	1863	1544	1530	3059	1328	1530	3008	
Flt Permitted	0.30	1.00		0.19	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	564	1766		346	1863	1544	1530	3059	1328	1530	3008	
Volume (vph)	140	280	120	100	325	76	100	300	280	70	909	82
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	304	130	109	353	83	109	326	304	76	988	89
RTOR Reduction (vph)	0	22	0	0	0	60	0	0	178	0	7	0
Lane Group Flow (vph)	152	412	0	109	353	23	109	326	126	76	1070	0
Confl. Peds. (#/hr)	15		13	13		15			17			39
Confl. Bikes (#/hr)			4									2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)	22.5	22.5		22.5	22.5	22.5	8.0	33.2	33.2	12.3	37.5	
Effective Green, g (s)	22.5	22.5		22.5	22.5	22.5	8.0	33.2	33.2	12.3	37.5	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.10	0.42	0.42	0.15	0.47	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	159	497		97	524	434	153	1269	551	235	1410	
v/s Ratio Prot		0.23			0.19		c0.07	0.11		0.05	c0.36	
v/s Ratio Perm	0.27			c0.31		0.02			0.09			
v/c Ratio	0.96	0.83		1.12	0.67	0.05	0.71	0.26	0.23	0.32	0.76	
Uniform Delay, d1	28.3	26.9		28.8	25.5	21.0	34.9	15.3	15.1	30.1	17.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.02	0.66	0.25	1.00	1.00	
Incremental Delay, d2	57.8	10.9		128.6	3.4	0.1	11.3	0.4	0.7	0.8	3.9	
Delay (s)	86.0	37.8		157.4	28.9	21.0	46.8	10.4	4.5	30.9	21.4	
Level of Service	F	D		F	C	C	D	B	A	C	C	
Approach Delay (s)		50.3			53.4			13.4			22.0	
Approach LOS		D			D			B			C	

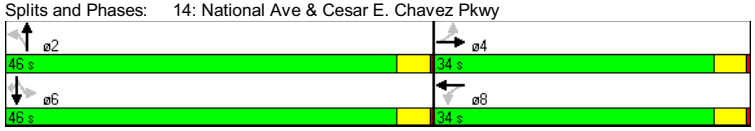
Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	190	250	120	350	90	580	70	745	310
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phases	4	4	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 76 (95%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1746		1770	1792		1612	3185		1530	1610	1369
Flt Permitted	0.23	1.00		0.28	1.00		0.12	1.00		0.34	1.00	1.00
Satd. Flow (perm)	436	1746		519	1792		204	3185		544	1610	1369
Volume (vph)	190	250	180	120	350	120	90	580	50	70	745	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	272	196	130	380	130	98	630	54	76	810	337
RTOR Reduction (vph)	0	32	0	0	15	0	0	8	0	0	0	141
Lane Group Flow (vph)	207	436	0	130	495	0	98	676	0	76	810	196
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	30.6	30.6		30.6	30.6		41.4	41.4		41.4	41.4	41.4
Effective Green, g (s)	30.6	30.6		30.6	30.6		41.4	41.4		41.4	41.4	41.4
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.52	0.52		0.52	0.52	0.52
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	167	668		199	685		106	1648		282	833	708
v/s Ratio Prot		0.25			0.28			0.21			c0.50	
v/s Ratio Perm	c0.47			0.25			0.48			0.14		0.14
v/c Ratio	1.24	0.65		0.65	0.72		0.92	0.41		0.27	0.97	0.28
Uniform Delay, d1	24.7	20.3		20.3	21.1		17.9	11.8		10.8	18.7	10.9
Progression Factor	1.00	1.00		1.00	1.00		0.86	0.84		0.26	0.43	0.05
Incremental Delay, d2	148.3	2.3		7.5	3.8		68.3	0.7		1.5	19.2	0.6
Delay (s)	173.0	22.6		27.8	24.8		83.7	10.6		4.4	27.4	1.2
Level of Service	F	C		C	C		F	B		A	C	A
Approach Delay (s)		68.7			25.4			19.8			18.7	
Approach LOS		E			C			B			B	

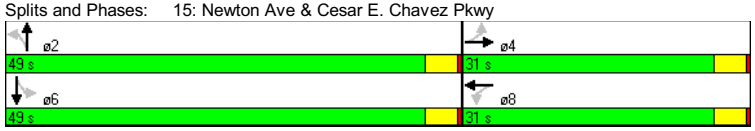
Intersection Summary			
HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	75	40	40	50	40	410	95	810
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1704		1612	3190		1612	1659	
Flt Permitted	0.58	1.00		0.65	1.00		0.21	1.00		0.48	1.00	
Satd. Flow (perm)	1076	1695		1203	1704		349	3190		811	1659	
Volume (vph)	75	40	60	40	50	65	40	410	30	95	810	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	43	65	43	54	71	43	446	33	103	880	152
RTOR Reduction (vph)	0	58	0	0	63	0	0	3	0	0	4	0
Lane Group Flow (vph)	82	50	0	43	62	0	43	476	0	103	1028	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.9	8.9		8.9	8.9		63.1	63.1		63.1	63.1	
Effective Green, g (s)	8.9	8.9		8.9	8.9		63.1	63.1		63.1	63.1	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	189		134	190		275	2516		640	1309	
v/s Ratio Prot		0.03			0.04			0.15			c0.62	
v/s Ratio Perm	c0.08			0.04			0.12			0.13		
v/c Ratio	0.68	0.27		0.32	0.33		0.16	0.19		0.16	0.79	
Uniform Delay, d1	34.2	32.6		32.8	32.8		2.0	2.1		2.0	4.7	
Progression Factor	1.00	1.00		1.00	1.00		0.57	0.45		0.58	0.42	
Incremental Delay, d2	14.9	0.8		1.4	1.0		1.0	0.1		0.2	2.2	
Delay (s)	49.1	33.3		34.2	33.8		2.1	1.1		1.4	4.1	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		40.1			33.9			1.2			3.9	
Approach LOS		D			C			A			A	

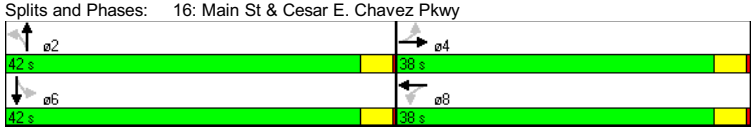
Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	150	190	70	330	70	340	150	580
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	42.0	42.0	42.0	42.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	52.5%	52.5%	52.5%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 14 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1751	1839		1750	1731		1556	2996		1549	1555	
Flt Permitted	0.20	1.00		0.57	1.00		0.10	1.00		0.45	1.00	
Satd. Flow (perm)	374	1839		1044	1731		165	2996		741	1555	
Volume (vph)	150	190	15	70	330	190	70	340	90	150	580	180
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	16	76	359	207	76	370	98	163	630	196
RTOR Reduction (vph)	0	4	0	0	27	0	0	29	0	0	14	0
Lane Group Flow (vph)	163	219	0	76	539	0	76	439	0	163	812	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.4	32.4		32.4	32.4		39.6	39.6		39.6	39.6	
Effective Green, g (s)	32.4	32.4		32.4	32.4		39.6	39.6		39.6	39.6	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.50	0.50		0.50	0.50	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	745		423	701		82	1483		367	770	
v/s Ratio Prot		0.12			0.31			0.15			c0.52	
v/s Ratio Perm	c0.44			0.07			0.46			0.22		
v/c Ratio	1.08	0.29		0.18	0.77		0.93	0.30		0.44	1.06	
Uniform Delay, d1	23.8	16.1		15.3	20.6		18.8	12.0		13.1	20.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.66	0.69	
Incremental Delay, d2	96.0	0.2		0.2	5.1		80.6	0.5		2.6	42.5	
Delay (s)	119.8	16.3		15.5	25.7		99.5	12.5		11.3	56.4	
Level of Service	F	B		B	C		F	B		B	E	
Approach Delay (s)		60.0			24.5			24.6			49.0	
Approach LOS		E			C			C			D	

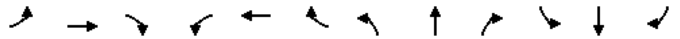
Intersection Summary				
HCM Average Control Delay	39.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	97.7%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.90			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)	1641	3224		1421	3234		1364	1218			1600	1371
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00			0.85	1.00
Satd. Flow (perm)	1641	3224		1421	3234		825	1218			1397	1371
Volume (vph)	118	398	40	80	1047	95	10	14	27	72	83	403
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	433	43	87	1138	103	11	15	29	78	90	438
RTOR Reduction (vph)	0	7	0	0	6	0	0	23	0	0	0	74
Lane Group Flow (vph)	128	469	0	87	1235	0	11	21	0	0	168	364
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			5			11			2			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	
Permitted Phases							12			1 5 16		1 5 16
Actuated Green, G (s)	6.3	33.6		5.3	32.6		21.1	21.1			33.5	33.5
Effective Green, g (s)	6.3	33.6		5.3	32.6		21.1	21.1			33.5	33.5
Actuated g/C Ratio	0.07	0.35		0.05	0.34		0.22	0.22			0.35	0.35
Clearance Time (s)	4.0			4.0			4.0	4.0				
Vehicle Extension (s)	3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)	107	1124		78	1094		181	267			485	476
v/s Ratio Prot	c0.08	0.15		0.06	c0.38			0.02				
v/s Ratio Perm							0.01				0.12	c0.27
v/c Ratio	1.20	0.42		1.12	1.13		0.06	0.08			0.35	0.76
Uniform Delay, d1	45.1	23.9		45.6	31.9		29.8	29.9			23.3	27.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.02	1.10
Incremental Delay, d2	149.1	0.3		136.7	70.0		0.1	0.1			0.4	7.1
Delay (s)	194.1	24.2		182.2	101.9		29.9	30.1			24.3	37.8
Level of Service	F	C		F	F		C	C			C	D
Approach Delay (s)		60.2			107.1			30.0			34.1	
Approach LOS		E			F			C			C	

Intersection Summary				
HCM Average Control Delay	77.5	HCM Level of Service	E	
HCM Volume to Capacity ratio	0.97			
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	71.6%	ICU Level of Service	C	
Analysis Period (min)	15			

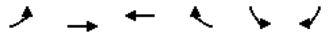
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	497	182	2	0	127	84	0	0	4	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	540	198	2	0	138	91	0	0	4	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)		667										
pX, platoon unblocked												
vC, conflicting volume	229			200			1417	1509	199	1466	1464	184
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	229			200			1417	1509	199	1466	1464	184
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 %	60			100			100	100	99	100	100	100
cM capacity (veh/h)	1339			1372			79	72	842	72	77	859

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	540	200	0	229	4
Volume Left	540	0	0	0	0
Volume Right	0	2	0	91	4
cSH	1339	1700	1700	1700	842
Volume to Capacity	0.40	0.12	0.00	0.13	0.01
Queue Length 95th (ft)	50	0	0	0	0
Control Delay (s)	9.5	0.0	0.0	0.0	9.3
Lane LOS	A				A
Approach Delay (s)	6.9		0.0		9.3
Approach LOS					A

Intersection Summary				
Average Delay	5.3			
Intersection Capacity Utilization	46.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	128	276	0	27	280
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	300	0	29	304
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)		1100	875			
pX, platoon unblocked						
vC, conflicting volume	300				439	300
vC1, stage 1 conf vol					300	
vC2, stage 2 conf vol					139	
vCu, unblocked vol	300				439	300
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	59
cM capacity (veh/h)	1261				628	740

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	139	300	29	304
Volume Left	0	0	29	0
Volume Right	0	0	0	304
cSH	1700	1700	628	740
Volume to Capacity	0.08	0.18	0.05	0.41
Queue Length 95th (ft)	0	0	4	51
Control Delay (s)	0.0	0.0	11.0	13.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	13.0	
Approach LOS			B	

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	17	115	22	37	226	26	28	49	24	9	18	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	125	24	40	246	28	30	53	26	10	20	33
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		1314			661							
pX, platoon unblocked												
vC, conflicting volume	274			149			542	528	137	555	526	260
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	274			149			542	528	137	555	526	260
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 %	99			97			92	88	97	97	96	96
cM capacity (veh/h)	1289			1433			404	436	912	377	438	779

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	18	149	40	274	110	62
Volume Left	18	0	40	0	30	10
Volume Right	0	24	0	28	26	33
cSH	1289	1700	1433	1700	486	551
Volume to Capacity	0.01	0.09	0.03	0.16	0.23	0.11
Queue Length 95th (ft)	1	0	2	0	22	9
Control Delay (s)	7.8	0.0	7.6	0.0	14.6	12.4
Lane LOS	A		A		B	B
Approach Delay (s)	0.9		1.0		14.6	12.4
Approach LOS					B	B

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	87	22	16	63	30	27	58	31	7	30	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	95	24	17	68	33	29	63	34	8	33	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	101			118			333	292	107	341	288	85
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	101			118			333	292	107	341	288	85
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 %	98			99			95	90	96	99	95	96
cM capacity (veh/h)	1491			1470			558	601	948	532	604	974

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	143	118	126	80
Volume Left	25	17	29	8
Volume Right	24	33	34	40
cSH	1491	1470	653	734
Volume to Capacity	0.02	0.01	0.19	0.11
Queue Length 95th (ft)	1	1	18	9
Control Delay (s)	1.4	1.2	11.8	10.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.4	1.2	11.8	10.5
Approach LOS			B	B

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	29.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	33	153	350	65	56	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	166	380	71	61	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1318				
pX, platoon unblocked						
vC, conflicting volume	451				654	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	451				654	416
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				85	92
cM capacity (veh/h)	1109				418	637

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	202	451	110
Volume Left	36	0	61
Volume Right	0	71	49
cSH	1109	1700	493
Volume to Capacity	0.03	0.27	0.22
Queue Length 95th (ft)	3	0	21
Control Delay (s)	1.7	0.0	14.4
Lane LOS	A		B
Approach Delay (s)	1.7	0.0	14.4
Approach LOS			B

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	110	224	163	91	79	56	219	332	147	62	218	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	243	177	99	86	61	238	361	160	67	237	15

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	120	421	99	147	759	320
Volume Left (vph)	120	0	99	0	238	67
Volume Right (vph)	0	177	0	61	160	15
Hadj (s)	0.53	-0.26	0.53	-0.26	-0.03	0.05
Departure Headway (s)	8.7	7.9	9.5	8.7	7.6	8.1
Degree Utilization, x	0.29	0.92	0.26	0.35	1.61	0.72
Capacity (veh/h)	407	445	363	395	474	431
Control Delay (s)	14.0	52.4	14.6	15.2	304.1	29.3
Approach Delay (s)	43.9		14.9		304.1	29.3
Approach LOS	E		B		F	D

Intersection Summary				
Delay	143.5			
HCM Level of Service	F			
Intersection Capacity Utilization	94.4%	ICU Level of Service	F	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.93			0.98			0.94	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1749	1790		1765	1695			1819			1726	
Flt Permitted	0.62	1.00		0.71	1.00			0.98			0.93	
Satd. Flow (perm)	1141	1790		1322	1695			1788			1616	
Volume (vph)	75	50	15	48	104	100	7	95	16	59	109	118
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	54	16	52	113	109	8	103	17	64	118	128
RTOR Reduction (vph)	0	12	0	0	64	0	0	7	0	0	32	0
Lane Group Flow (vph)	82	58	0	52	158	0	0	121	0	0	278	0
Confl. Peds. (#/hr)	17		3	3		17	13		14	14		13
Confl. Bikes (#/hr)						1			1			
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.6	9.6		9.6	9.6			19.0			19.0	
Effective Green, g (s)	9.6	9.6		9.6	9.6			19.0			19.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	299	470		347	445			928			839	
v/s Ratio Prot		0.03			c0.09							
v/s Ratio Perm	0.07			0.04				0.07			c0.17	
v/c Ratio	0.27	0.12		0.15	0.35			0.13			0.33	
Uniform Delay, d1	10.7	10.3		10.4	11.0			4.5			5.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.1		0.2	0.5			0.1			0.2	
Delay (s)	11.2	10.4		10.6	11.5			4.6			5.3	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		10.9			11.3			4.6			5.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	36.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	21	95	16	15	81	35	7	40	31	18	99	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	103	17	16	88	38	8	43	34	20	108	40

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	143	142	85	167
Volume Left (vph)	23	16	8	20
Volume Right (vph)	17	38	34	40
Hadj (s)	-0.01	-0.10	-0.19	-0.09
Departure Headway (s)	4.7	4.6	4.6	4.6
Degree Utilization, x	0.19	0.18	0.11	0.21
Capacity (veh/h)	717	733	721	729
Control Delay (s)	8.7	8.6	8.2	8.9
Approach Delay (s)	8.7	8.6	8.2	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.7		
HCM Level of Service	A		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	70	62	51	53	218	16	50	31	35	10	59	172
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	67	55	58	237	17	54	34	38	11	64	187

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	199	312	126	262
Volume Left (vph)	76	58	54	11
Volume Right (vph)	55	17	38	187
Hadj (s)	-0.06	0.04	-0.06	-0.39
Departure Headway (s)	5.4	5.3	5.7	5.1
Degree Utilization, x	0.30	0.46	0.20	0.37
Capacity (veh/h)	605	633	551	640
Control Delay (s)	10.7	12.8	10.1	11.2
Approach Delay (s)	10.7	12.8	10.1	11.2
Approach LOS	B	B	B	B

Intersection Summary				
Delay			11.5	
HCM Level of Service			B	
Intersection Capacity Utilization			53.8%	ICU Level of Service
Analysis Period (min)			15	
				A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3447		1770	3511			1751			1771	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.85	
Satd. Flow (perm)	1770	3447		1770	3511			1658			1538	
Volume (vph)	10	716	28	75	1284	44	14	61	38	64	75	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	778	30	82	1396	48	15	66	41	70	82	35
RTOR Reduction (vph)	0	2	0	0	2	0	0	16	0	0	7	0
Lane Group Flow (vph)	11	806	0	82	1442	0	0	106	0	0	180	0
Confl. Peds. (#/hr)			15			29	7		4	4		7
Confl. Bikes (#/hr)			2			5			6			14
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	3	14 2 6		13	18 2 6			12			16 1 5	
Permitted Phases							12			16 1 5		
Actuated Green, G (s)	1.1	35.3		5.9	40.1			11.0			23.6	
Effective Green, g (s)	1.1	35.3		5.9	40.1			11.0			23.6	
Actuated g/C Ratio	0.01	0.40		0.07	0.45			0.12			0.27	
Clearance Time (s)	4.0			4.0				4.0				
Vehicle Extension (s)	3.0			3.0				3.0				
Lane Grp Cap (vph)	22	1370		118	1585			205			409	
v/s Ratio Prot	0.01	0.23		c0.05	c0.41							
v/s Ratio Perm								c0.06			c0.12	
v/c Ratio	0.50	0.59		0.69	0.91			0.52			0.44	
Uniform Delay, d1	43.6	21.0		40.6	22.7			36.4			27.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.03	
Incremental Delay, d2	16.8	0.7		16.3	8.2			2.2			0.8	
Delay (s)	60.3	21.7		56.8	30.8			38.6			28.7	
Level of Service	E	C		E	C			D			C	
Approach Delay (s)		22.2			32.2			38.6			28.7	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM Average Control Delay	29.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	68.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	21	79	36	27	163	3	48	48	12	4	41	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	86	39	29	177	3	52	52	13	4	45	39
Pedestrians		7			11			3			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		641										
pX, platoon unblocked												
vC, conflicting volume	181			128			460	394	119	420	412	187
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	181			128			460	394	119	420	412	187
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 %	98			98			88	90	99	99	91	95
cM capacity (veh/h)	1393			1454			438	521	921	475	509	850

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	23	125	210	117	88
Volume Left	23	0	29	52	4
Volume Right	0	39	3	13	39
cSH	1393	1700	1454	503	617
Volume to Capacity	0.02	0.07	0.02	0.23	0.14
Queue Length 95th (ft)	1	0	2	22	12
Control Delay (s)	7.6	0.0	1.2	14.3	11.8
Lane LOS	A		A	B	B
Approach Delay (s)	1.2		1.2	14.3	11.8
Approach LOS				B	B

Intersection Summary					
Average Delay	5.6				
Intersection Capacity Utilization	36.5%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	28	66	36	36	223	48	27	47	15	51	38	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	72	39	39	242	52	29	51	16	55	41	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	30	111	39	295	97	113
Volume Left (vph)	30	0	39	0	29	55
Volume Right (vph)	0	39	0	52	16	16
Hadj (s)	0.53	-0.21	0.53	-0.09	-0.01	0.05
Departure Headway (s)	6.0	5.2	5.8	5.1	5.2	5.2
Degree Utilization, x	0.05	0.16	0.06	0.42	0.14	0.16
Capacity (veh/h)	566	652	597	676	628	625
Control Delay (s)	8.1	8.0	8.0	10.6	9.1	9.3
Approach Delay (s)	8.0		10.3		9.1	9.3
Approach LOS	A		B		A	A

Intersection Summary					
Delay	9.5				
HCM Level of Service	A				
Intersection Capacity Utilization	38.4%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	146	18	42	269	72	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	159	20	46	292	78	162
Pedestrians	1				8	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				670		
pX, platoon unblocked						
vC, conflicting volume			186		415	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			186		415	176
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		86	81
cM capacity (veh/h)			1376		543	831

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	178	143	195	78	162
Volume Left	0	46	0	78	0
Volume Right	20	0	0	0	162
cSH	1700	1376	1700	543	831
Volume to Capacity	0.10	0.03	0.11	0.14	0.19
Queue Length 95th (ft)	0	3	0	13	18
Control Delay (s)	0.0	2.6	0.0	12.7	10.4
Lane LOS		A		B	B
Approach Delay (s)	0.0	1.1		11.2	
Approach LOS				B	

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	50	17	143	161	26	28	33	91	16	22	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	54	18	155	175	28	30	36	99	17	24	14

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total (vph)	84	155	175	28	66	99	55
Volume Left (vph)	11	155	0	0	30	0	17
Volume Right (vph)	18	0	0	28	0	99	14
Hadj (s)	-0.07	0.94	0.03	-0.67	0.13	0.05	-0.06
Departure Headway (s)	4.6	5.8	4.9	3.2	5.1	3.2	4.9
Degree Utilization, x	0.11	0.25	0.24	0.03	0.09	0.09	0.08
Capacity (veh/h)	747	599	712	1121	659	1121	678
Control Delay (s)	8.2	9.6	8.3	5.1	8.6	6.5	8.3
Approach Delay (s)	8.2	8.6			7.4		8.3
Approach LOS	A	A			A		A

Intersection Summary			
Delay	8.2		
HCM Level of Service	A		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.98	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			1.00						0.89	
Flt Protected	0.95	1.00			1.00						1.00	
Satd. Flow (prot)	1543	3539			3533						1487	
Flt Permitted	0.95	1.00			1.00						1.00	
Satd. Flow (perm)	1543	3539			3533						1487	
Volume (vph)	124	454	0	0	1422	17	0	0	0	12	25	164
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	493	0	0	1546	18	0	0	0	13	27	178
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	114	0
Lane Group Flow (vph)	135	493	0	0	1563	0	0	0	0	0	104	0
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									5			11
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot									Perm		
Protected Phases	13	18 2 6			14 2 6						11 1 5	
Permitted Phases										11 1 5		
Actuated Green, G (s)	9.2	50.3			33.1						20.0	
Effective Green, g (s)	9.2	50.3			33.1						20.0	
Actuated g/C Ratio	0.11	0.58			0.38						0.23	
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	164	2063			1355						345	
v/s Ratio Prot	c0.09	0.14			c0.44							
v/s Ratio Perm											0.07	
v/c Ratio	0.82	0.24			1.15						0.30	
Uniform Delay, d1	37.8	8.7			26.6						27.4	
Progression Factor	1.00	1.00			1.00						1.13	
Incremental Delay, d2	27.1	0.1			78.0						0.5	
Delay (s)	64.9	8.8			104.6						31.3	
Level of Service	E	A			F						C	
Approach Delay (s)		20.8			104.6			0.0			31.3	
Approach LOS		C			F			A			C	

Intersection Summary				
HCM Average Control Delay	76.2	HCM Level of Service	E	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	75.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1299	1817			1754	1509		1643	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.75	1.00		0.88	
Satd. Flow (perm)	1770	3539	1583	1299	1817			1340	1509		1466	
Volume (vph)	106	258	18	192	628	123	33	98	86	115	205	307
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	280	20	209	683	134	36	107	93	125	223	334
RTOR Reduction (vph)	0	0	14	0	5	0	0	0	52	0	23	0
Lane Group Flow (vph)	115	280	6	209	812	0	0	143	41	0	659	0
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.0	44.5	44.5	27.5	63.0			66.0	66.0		66.0	
Effective Green, g (s)	9.0	44.5	44.5	27.5	63.0			66.0	66.0		66.0	
Actuated g/C Ratio	0.06	0.30	0.30	0.18	0.42			0.44	0.44		0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	106	1050	470	238	763			590	664		645	
v/s Ratio Prot	c0.06	0.08		0.16	c0.45							
v/s Ratio Perm			0.00					0.11	0.03		c0.45	
v/c Ratio	1.08	0.27	0.01	0.88	1.06			0.24	0.06		1.02	
Uniform Delay, d1	70.5	40.3	37.2	59.6	43.5			26.3	24.2		42.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	112.1	0.1	0.0	28.4	51.2			0.2	0.0		41.1	
Delay (s)	182.6	40.4	37.3	88.0	94.7			26.5	24.2		83.1	
Level of Service	F	D	D	F	F			C	C		F	
Approach Delay (s)		79.7			93.3			25.6			83.1	
Approach LOS		E			F			C			F	

Intersection Summary				
HCM Average Control Delay	81.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.05			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	99.0%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.91		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1687		1687	1608		1770	3471	1583	1770	3374	
Flt Permitted	0.58	1.00		0.25	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1038	1687		440	1608		1770	3471	1583	1770	3374	
Volume (vph)	230	280	140	45	70	120	90	700	90	160	860	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	304	152	49	76	130	98	761	98	174	935	337
RTOR Reduction (vph)	0	31	0	0	88	0	0	0	57	0	44	0
Lane Group Flow (vph)	250	425	0	49	118	0	98	761	41	174	1228	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	20.3	20.3		20.3	20.3		4.6	25.9	25.9	4.1	25.4	
Effective Green, g (s)	20.3	20.3		20.3	20.3		4.6	25.9	25.9	4.1	25.4	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.07	0.42	0.42	0.07	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	338	550		143	524		131	1443	658	116	1376	
v/s Ratio Prot		c0.25			0.07		0.06	0.22		c0.10	c0.36	
v/s Ratio Perm	0.24			0.11					0.03			
v/c Ratio	0.74	0.77		0.34	0.23		0.75	0.53	0.06	1.50	0.89	
Uniform Delay, d1	18.7	18.9		15.9	15.3		28.3	13.6	10.9	29.1	17.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.2	6.7		1.4	0.2		20.6	1.4	0.2	264.6	9.1	
Delay (s)	26.9	25.6		17.4	15.5		48.9	15.0	11.1	293.7	26.3	
Level of Service	C	C		B	B		D	B	B	F	C	
Approach Delay (s)		26.0			15.9			18.1			58.5	
Approach LOS		C			B			B			E	

Intersection Summary				
HCM Average Control Delay	36.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	78.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1539	3210		1760	3377		1736	3272		1736	3105	
Flt Permitted	0.28	1.00		0.50	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	459	3210		925	3377		1736	3272		1736	3105	
Volume (vph)	190	300	50	90	490	180	45	220	70	180	750	250
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	326	54	98	533	196	49	239	76	196	815	272
RTOR Reduction (vph)	0	14	0	0	39	0	0	37	0	0	38	0
Lane Group Flow (vph)	207	366	0	98	690	0	49	278	0	196	1049	0
Confl. Peds. (#/hr)	10		12	12		10			72			27
Confl. Bikes (#/hr)			2			4			6			1
Heavy Vehicles (%)	17%	11%	2%	2%	2%	2%	4%	4%	4%	4%	4%	31%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	35.4	35.4		35.4	35.4		4.0	22.6		12.0	30.6	
Effective Green, g (s)	35.4	35.4		35.4	35.4		4.0	22.6		12.0	30.6	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.05	0.28		0.15	0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	1386		399	1458		85	902		254	1159	
v/s Ratio Prot		0.11			0.20		0.03	0.08		c0.11	c0.34	
v/s Ratio Perm	c0.45			0.11								
v/c Ratio	1.05	0.26		0.25	0.47		0.58	0.31		0.77	0.91	
Uniform Delay, d1	23.3	14.9		14.8	16.6		38.2	23.5		33.7	24.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	76.4	0.1		0.3	0.2		9.1	0.2		13.5	10.1	
Delay (s)	99.7	15.0		15.1	16.9		47.3	23.7		47.2	34.4	
Level of Service	F	B		B	B		D	C		D	C	
Approach Delay (s)		44.9			16.7			26.9			36.4	
Approach LOS		D			B			C			D	

Intersection Summary				
HCM Average Control Delay	31.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00	0.93		0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1703	3406	1323	1719	3438	1436		1763		1649	1659	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1703	3406	1323	1719	3438	1436		1763		1649	1659	1524
Volume (vph)	110	560	4	17	822	116	0	6	2	375	15	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	609	4	18	893	126	0	7	2	408	16	27
RTOR Reduction (vph)	0	0	3	0	0	57	0	2	0	0	0	21
Lane Group Flow (vph)	120	609	1	18	893	69	0	7	0	207	217	6
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	8.7	42.1	36.1	2.7	36.1	48.5		14.0		28.2	28.2	28.2
Effective Green, g (s)	8.7	42.1	36.1	2.7	36.1	48.5		14.0		28.2	28.2	28.2
Actuated g/C Ratio	0.07	0.35	0.30	0.02	0.30	0.41		0.12		0.24	0.24	0.24
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	125	1205	401	39	1043	585		207		391	393	361
v/s Ratio Prot	c0.07	0.18		0.01	c0.26	0.02		c0.00		0.13	c0.13	
v/s Ratio Perm			0.00			0.03						0.00
v/c Ratio	0.96	0.51	0.00	0.46	0.86	0.12		0.03		0.53	0.55	0.02
Uniform Delay, d1	55.0	30.3	28.9	57.4	39.0	21.9		46.5		39.6	39.9	34.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.92	0.93	1.41
Incremental Delay, d2	67.8	0.3	0.0	8.4	7.0	0.1		0.1		1.3	1.7	0.0
Delay (s)	122.8	30.6	28.9	65.8	46.0	22.0		46.6		37.8	38.6	48.9
Level of Service	F	C	C	E	D	C		D		D	D	D
Approach Delay (s)		45.7			43.5			46.6			38.9	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM Average Control Delay	43.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	58.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	234	104	15	18	102	88	5	30	19	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	254	113	16	20	111	96	5	33	21	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)		657										
pX, platoon unblocked												
vC, conflicting volume	207			129			828	876	121	865	836	159
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	207			129			828	876	121	865	836	159
tC, single (s)	4.2			4.2			7.1	6.9	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.4	3.3	3.5	4.0	3.3
p0 queue free %	81			99			98	84	98	100	100	100
cM capacity (veh/h)	1335			1426			245	200	930	199	242	887

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	384	226	59
Volume Left	254	20	5
Volume Right	16	96	21
cSH	1335	1426	283
Volume to Capacity	0.19	0.01	0.21
Queue Length 95th (ft)	18	1	19
Control Delay (s)	6.1	0.8	21.0
Lane LOS	A	A	C
Approach Delay (s)	6.1	0.8	21.0
Approach LOS			C

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	44.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3056		1703	3320		1770	1863	1556	1770	1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3056		1703	3320		1770	1863	1556	1770	1750	
Volume (vph)	38	130	218	314	494	79	110	50	26	39	83	42
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	141	237	341	537	86	120	54	28	42	90	46
RTOR Reduction (vph)	0	189	0	0	13	0	0	0	21	0	22	0
Lane Group Flow (vph)	41	189	0	341	610	0	120	54	7	42	114	0
Confl. Peds. (#/hr)			1			6			4			16
Confl. Bikes (#/hr)			2			4			2			5
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	2.6	13.1		17.0	27.5		6.4	16.3	16.3	2.6	12.5	
Effective Green, g (s)	2.6	13.1		17.0	27.5		6.4	16.3	16.3	2.6	12.5	
Actuated g/C Ratio	0.04	0.20		0.26	0.42		0.10	0.25	0.25	0.04	0.19	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	68	616		445	1405		174	467	390	71	337	
v/s Ratio Prot	0.02	0.06		c0.20	c0.18		c0.07	c0.03		0.02	c0.07	
v/s Ratio Perm									0.00			
v/c Ratio	0.60	0.31		0.77	0.43		0.69	0.12	0.02	0.59	0.34	
Uniform Delay, d1	30.7	22.1		22.2	13.3		28.3	18.8	18.3	30.7	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.2	0.3		7.7	0.2		10.8	0.1	0.0	12.5	0.6	
Delay (s)	44.8	22.4		29.9	13.5		39.2	18.9	18.3	43.2	23.3	
Level of Service	D	C		C	B		D	B	B	D	C	
Approach Delay (s)		24.6			19.3			30.9			28.0	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM Average Control Delay	22.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	60.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.95			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1760	1773			1787	1574		1719	1810	2707	
Flt Permitted		0.36	1.00			0.42	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		669	1773			787	1574		1719	1810	2707	
Volume (vph)	65	25	170	80	250	45	120	50	70	215	125	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	27	185	87	272	49	130	54	76	234	136	315
RTOR Reduction (vph)	0	0	11	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	261	0	0	321	184	0	76	234	451	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		45.2	45.2			45.2	45.2		11.4	23.3	60.5	
Effective Green, g (s)		45.2	45.2			45.2	45.2		11.4	23.3	60.5	
Actuated g/C Ratio		0.33	0.33			0.33	0.33		0.08	0.17	0.44	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		218	577			256	512		141	303	1178	
v/s Ratio Prot			0.15						0.04	c0.13		
v/s Ratio Perm		0.15				c0.41	0.12				0.17	
v/c Ratio		0.45	0.45			1.25	0.36		0.54	0.77	0.38	
Uniform Delay, d1		37.1	37.1			46.9	35.8		61.3	55.3	26.6	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		1.5	0.6			142.2	0.4		3.9	11.6	0.2	
Delay (s)		38.5	37.7			189.1	36.3		65.2	66.9	26.8	
Level of Service		D	D			F	D		E	E	C	
Approach Delay (s)			37.9			133.4				43.0		
Approach LOS			D			F				D		

Intersection Summary				
HCM Average Control Delay	112.7	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.12			
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	95.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.98			0.99		
Flt Protected		0.95	1.00			0.96		
Satd. Flow (prot)		1765	3384			3347		
Flt Permitted		0.95	1.00			0.87		
Satd. Flow (perm)		1765	3384			3030		
Volume (vph)	30	180	445	65	60	775	65	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	196	484	71	65	842	71	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	229	555	0	0	989	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		21.3	33.2			33.2		
Effective Green, g (s)		21.3	33.2			33.2		
Actuated g/C Ratio		0.15	0.24			0.24		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		270	808			724		
v/s Ratio Prot		c0.13	0.16					
v/s Ratio Perm						c0.33		
v/c Ratio		0.85	0.69			1.37		
Uniform Delay, d1		57.3	48.2			52.9		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		21.2	2.4			173.5		
Delay (s)		78.4	50.6			226.4		
Level of Service		E	D			F		
Approach Delay (s)			58.7			226.4		
Approach LOS			E			F		

Intersection Summary			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1719	3438	1519	1687	3374	1509	1719	3438	1481	1719	3438	1538
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)	1719	3438	1519	1687	3374	1509	1719	3438	1481	1719	3438	1538
Volume (vph)	140	657	140	300	735	390	30	160	30	130	1040	190
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	714	152	326	799	424	33	174	33	141	1130	207
RTOR Reduction (vph)	0	0	123	0	0	284	0	0	28	0	0	87
Lane Group Flow (vph)	152	714	29	326	799	140	33	174	5	141	1130	120
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6	15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	10.3	8.6	6.9	16.5	14.8	10.5	2.6	11.5	11.5	12.7	25.6	31.9
Effective Green, g (s)	10.3	8.6	6.9	16.5	14.8	10.5	2.6	11.5	11.5	12.7	25.6	31.9
Actuated g/C Ratio	0.13	0.11	0.08	0.20	0.18	0.13	0.03	0.14	0.14	0.16	0.31	0.39
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	218	364	129	342	614	195	55	486	209	269	1083	679
v/s Ratio Prot	0.09	c0.21	0.01	c0.19	c0.24		0.02	0.05		c0.08	c0.33	0.04
v/s Ratio Perm			0.01			0.09			0.00			0.04
v/c Ratio	0.70	1.96	0.23	0.95	1.30	0.72	0.60	0.36	0.02	0.52	1.04	0.18
Uniform Delay, d1	34.0	36.4	34.7	32.0	33.2	34.0	38.8	31.6	30.1	31.5	27.8	16.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.17	0.89	1.01
Incremental Delay, d2	9.3	442.6	0.9	36.2	147.2	11.9	17.0	0.5	0.0	1.8	39.1	0.1
Delay (s)	43.3	478.9	35.6	68.3	180.5	45.9	55.9	32.0	30.1	38.7	63.7	16.4
Level of Service	D	F	D	E	F	D	E	C	C	D	E	B
Approach Delay (s)		347.7			120.0			35.0			54.7	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	146.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.90	
Flt Protected	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (prot)	1770	3539	3539	1583	1637	
Flt Permitted	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (perm)	1770	3539	3539	1583	1637	
Volume (vph)	47	181	497	107	108	309
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	197	540	116	117	336
RTOR Reduction (vph)	0	0	0	79	165	0
Lane Group Flow (vph)	51	197	540	37	288	0
Confl. Peds. (#/hr)					2	2
Confl. Bikes (#/hr)						2
Turn Type	Prot			Perm		
Protected Phases	5	2	6		4	
Permitted Phases				6		
Actuated Green, G (s)	1.6	17.6	12.0	12.0	11.7	
Effective Green, g (s)	1.6	17.6	12.0	12.0	11.7	
Actuated g/C Ratio	0.04	0.47	0.32	0.32	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	76	1670	1139	509	513	
v/s Ratio Prot	c0.03	0.06	c0.15		c0.18	
v/s Ratio Perm				0.02		
v/c Ratio	0.67	0.12	0.47	0.07	0.56	
Uniform Delay, d1	17.6	5.5	10.1	8.8	10.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.8	0.0	0.3	0.1	1.4	
Delay (s)	38.4	5.5	10.4	8.8	12.1	
Level of Service	D	A	B	A	B	
Approach Delay (s)		12.3	10.2		12.1	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	37.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0			4.0		
Lane Util. Factor		1.00		1.00			0.95			0.95		
Frpb, ped/bikes		1.00		1.00			1.00			0.99		
Flpb, ped/bikes		1.00		1.00			1.00			1.00		
Frt		1.00		0.97			0.99			0.98		
Flt Protected		0.99		1.00			1.00			1.00		
Satd. Flow (prot)		1838		1805			3514			3437		
Flt Permitted		0.54		1.00			0.93			0.87		
Satd. Flow (perm)		1008		1805			3267			3008		
Volume (vph)	64	348	15	488	122	21	670	26	40	490	77	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	378	16	530	133	23	728	28	43	533	84	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	15	0	0
Lane Group Flow (vph)	0	462	0	663	0	0	779	0	0	645	0	0
Confl. Peds. (#/hr)			9		11	28			7		28	
Confl. Bikes (#/hr)			1		2							
Turn Type	Perm					Perm			Perm			custom
Protected Phases		4		8			2			6		9
Permitted Phases	4					2			6			
Actuated Green, G (s)		27.0		27.0			27.0			27.0		
Effective Green, g (s)		27.0		27.0			27.0			27.0		
Actuated g/C Ratio		0.44		0.44			0.44			0.44		
Clearance Time (s)		4.0		4.0			4.0			4.0		
Vehicle Extension (s)		3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		439		786			1423			1310		
v/s Ratio Prot				0.37								
v/s Ratio Perm		c0.46					c0.24			0.21		
v/c Ratio		1.05		0.84			0.55			0.49		
Uniform Delay, d1		17.5		15.6			13.0			12.6		
Progression Factor		1.00		1.00			1.00			1.00		
Incremental Delay, d2		57.6		8.2			1.5			1.3		
Delay (s)		75.1		23.8			14.5			13.9		
Level of Service		E		C			B			B		
Approach Delay (s)		75.1		23.8			14.5			13.9		
Approach LOS		E		C			B			B		

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

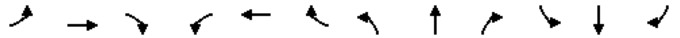
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	91	347	31	3	458	25	61	41	7	127	25	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	99	377	34	3	498	27	66	45	8	138	27	76
Pedestrians		14			10			37			27	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			3			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					668							
pX, platoon unblocked												
vC, conflicting volume	552			448			1237	1187	252	971	1191	552
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			448			1237	1187	252	971	1191	552
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			19	72	99	0	83	83
cM capacity (veh/h)	991			1075			82	159	718	139	158	461

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	288	222	3	525	118	241
Volume Left	99	0	3	0	66	138
Volume Right	0	34	0	27	8	76
cSH	991	1700	1075	1700	107	181
Volume to Capacity	0.10	0.13	0.00	0.31	1.10	1.33
Queue Length 95th (ft)	8	0	0	0	185	350
Control Delay (s)	3.8	0.0	8.4	0.0	193.2	232.1
Lane LOS	A		A		F	F
Approach Delay (s)	2.1		0.1		193.2	232.1
Approach LOS					F	F

Intersection Summary				
Average Delay	57.2			
Intersection Capacity Utilization	65.2%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	0.99			0.99			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1751	1806		1758	1829			1784			1685	
Flt Permitted	0.58	1.00		0.47	1.00			0.82			0.97	
Satd. Flow (perm)	1067	1806		862	1829			1506			1643	
Volume (vph)	34	315	62	9	246	27	75	61	13	6	23	39
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	342	67	10	267	29	82	66	14	7	25	42
RTOR Reduction (vph)	0	11	0	0	7	0	0	5	0	0	28	0
Lane Group Flow (vph)	37	398	0	10	289	0	0	157	0	0	46	0
Confl. Peds. (#/hr)	21		16	16		21	28		9	9		28
Confl. Bikes (#/hr)			4						3			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.3	12.3		12.3	12.3			10.1			10.1	
Effective Green, g (s)	12.3	12.3		12.3	12.3			10.1			10.1	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	432	731		349	740			500			546	
v/s Ratio Prot		c0.22			0.16							
v/s Ratio Perm	0.03			0.01				c0.10			0.03	
v/c Ratio	0.09	0.54		0.03	0.39			0.31			0.08	
Uniform Delay, d1	5.6	6.9		5.5	6.4			7.6			7.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.8		0.0	0.3			0.4			0.1	
Delay (s)	5.7	7.7		5.5	6.7			7.9			7.0	
Level of Service	A	A		A	A			A			A	
Approach Delay (s)		7.6			6.7			7.9			7.0	
Approach LOS		A			A			A			A	

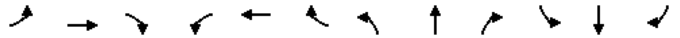
Intersection Summary				
HCM Average Control Delay	7.3	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	30.4	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	50	29	9	50	23	20	91	12	16	38	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	54	32	10	54	25	22	99	13	17	41	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	96	89	134	67
Volume Left (vph)	10	10	22	17
Volume Right (vph)	32	25	13	9
Hadj (s)	-0.14	-0.11	0.01	0.01
Departure Headway (s)	4.3	4.4	4.4	4.5
Degree Utilization, x	0.11	0.11	0.16	0.08
Capacity (veh/h)	790	774	778	754
Control Delay (s)	7.9	7.9	8.3	7.9
Approach Delay (s)	7.9	7.9	8.3	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.0	
HCM Level of Service			A	
Intersection Capacity Utilization		23.3%	ICU Level of Service	A
Analysis Period (min)			15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	2	13	38	0	31	0	98	12	20	60	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	2	14	41	0	34	0	107	13	22	65	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	21	75	120	89
Volume Left (vph)	4	41	0	22
Volume Right (vph)	14	34	13	2
Hadj (s)	-0.33	-0.13	-0.03	0.07
Departure Headway (s)	4.1	4.3	4.2	4.3
Degree Utilization, x	0.02	0.09	0.14	0.11
Capacity (veh/h)	824	803	833	812
Control Delay (s)	7.2	7.7	7.8	7.8
Approach Delay (s)	7.2	7.7	7.8	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay			7.8	
HCM Level of Service			A	
Intersection Capacity Utilization		27.7%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	160	1945	780	100	100	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	174	2114	848	109	109	87
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			1319			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	957				2307	478
vC1, stage 1 conf vol					902	
vC2, stage 2 conf vol					1405	
vCu, unblocked vol	888				2327	378
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	76				0	85
cM capacity (veh/h)	712				77	581

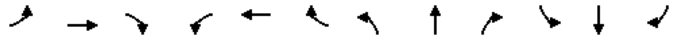
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	174	1057	1057	565	391	196
Volume Left	174	0	0	0	0	109
Volume Right	0	0	0	0	109	87
cSH	712	1700	1700	1700	1700	125
Volume to Capacity	0.24	0.62	0.62	0.33	0.23	1.57
Queue Length 95th (ft)	24	0	0	0	0	352
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	352.4
Lane LOS	B					F
Approach Delay (s)	0.9			0.0		352.4
Approach LOS						F

Intersection Summary				
Average Delay	20.6			
Intersection Capacity Utilization	70.9%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	515	69	41	154	0	56	0	122	272	110	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	560	75	45	167	0	61	0	133	296	120	41

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	635	45	167	193	457
Volume Left (vph)	0	45	0	61	296
Volume Right (vph)	75	0	0	133	41
Hadj (s)	-0.04	0.53	0.03	-0.31	0.11
Departure Headway (s)	7.1	8.8	8.3	7.6	7.1
Degree Utilization, x	1.25	0.11	0.38	0.41	0.91
Capacity (veh/h)	513	390	413	441	499
Control Delay (s)	149.8	11.6	15.1	15.8	46.9
Approach Delay (s)	149.8	14.4		15.8	46.9
Approach LOS	F	B		C	E

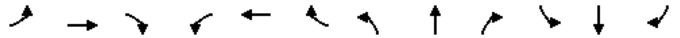
Intersection Summary				
Delay	81.9			
HCM Level of Service	F			
Intersection Capacity Utilization	77.8%	ICU Level of Service		D
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	625	2	113	347	77	9	43	134	189	83	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	679	2	123	377	84	10	47	146	205	90	12

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	21	682	123	461	202	308
Volume Left (vph)	21	0	123	0	10	205
Volume Right (vph)	0	2	0	84	146	12
Hadj (s)	0.53	0.03	0.53	-0.09	-0.39	0.14
Departure Headway (s)	8.6	8.1	8.4	7.8	8.3	8.2
Degree Utilization, x	0.05	1.54	0.29	1.00	0.46	0.70
Capacity (veh/h)	415	446	422	461	410	427
Control Delay (s)	10.9	273.1	13.6	67.8	18.2	28.2
Approach Delay (s)	265.4		56.4		18.2	28.2
Approach LOS	F		F		C	D

Intersection Summary					
Delay	129.0				
HCM Level of Service	F				
Intersection Capacity Utilization	80.5%	ICU Level of Service	D		
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	7	60	4	13	93	19	5	71	37	46	94	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	65	4	14	101	21	5	77	40	50	102	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	77	136	123	165
Volume Left (vph)	8	14	5	50
Volume Right (vph)	4	21	40	13
Hadj (s)	0.02	-0.04	-0.15	0.05
Departure Headway (s)	4.8	4.6	4.5	4.6
Degree Utilization, x	0.10	0.18	0.15	0.21
Capacity (veh/h)	694	721	758	735
Control Delay (s)	8.3	8.6	8.3	8.9
Approach Delay (s)	8.3	8.6	8.3	8.9
Approach LOS	A	A	A	A

Intersection Summary					
Delay	8.6				
HCM Level of Service	A				
Intersection Capacity Utilization	32.3%	ICU Level of Service	A		
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	64	4	78	33	79	0	25	109	144	39	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	70	4	85	36	86	0	27	118	157	42	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	98	207	146	217
Volume Left (vph)	24	85	0	157
Volume Right (vph)	4	86	118	18
Hadj (s)	0.06	-0.13	-0.45	0.13
Departure Headway (s)	5.1	4.8	4.5	5.0
Degree Utilization, x	0.14	0.28	0.18	0.30
Capacity (veh/h)	634	694	731	676
Control Delay (s)	9.0	9.6	8.5	10.1
Approach Delay (s)	9.0	9.6	8.5	10.1
Approach LOS	A	A	A	B

Intersection Summary				
Delay			9.5	
HCM Level of Service			A	
Intersection Capacity Utilization		47.4%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	95	1950	860	20	40	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	2120	935	22	43	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			658			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	957				2212	478
vC1, stage 1 conf vol					946	
vC2, stage 2 conf vol					1266	
vCu, unblocked vol	820				2240	280
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	85				53	94
cM capacity (veh/h)	668				93	635

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	103	1060	1060	623	333	82
Volume Left	103	0	0	0	0	43
Volume Right	0	0	0	0	22	38
cSH	668	1700	1700	1700	1700	155
Volume to Capacity	0.15	0.62	0.62	0.37	0.20	0.53
Queue Length 95th (ft)	14	0	0	0	0	65
Control Delay (s)	11.4	0.0	0.0	0.0	0.0	51.6
Lane LOS	B					F
Approach Delay (s)	0.5			0.0		51.6
Approach LOS						F

Intersection Summary					
Average Delay			1.7		
Intersection Capacity Utilization		64.9%	ICU Level of Service		C
Analysis Period (min)			15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95		1.00	1.00			0.95	
Frt				1.00	0.95		1.00	1.00			0.98	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1478	1452		1626	1712			3200	
Flt Permitted				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (perm)				1478	1452		1626	1712			3200	
Volume (vph)	0	0	0	517	157	154	382	345	0	0	330	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	562	171	167	415	375	0	0	359	43
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	444	432	0	415	375	0	0	390	0
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	11%	11%	11%	11%	11%	11%
Turn Type				Split			Split					
Protected Phases				8	8		6	6			2	
Permitted Phases												
Actuated Green, G (s)				25.3	25.3		21.7	21.7			14.0	
Effective Green, g (s)				25.3	25.3		21.7	21.7			14.0	
Actuated g/C Ratio				0.35	0.35		0.30	0.30			0.19	
Clearance Time (s)				4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				512	503		483	509			614	
v/s Ratio Prot				c0.30	0.30		c0.26	0.22			c0.12	
v/s Ratio Perm												
v/c Ratio				0.87	0.86		0.86	0.74			0.63	
Uniform Delay, d1				22.3	22.2		24.2	23.1			27.1	
Progression Factor				1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2				14.4	13.7		14.1	5.5			2.2	
Delay (s)				36.6	35.9		38.3	28.6			29.3	
Level of Service				D	D		D	C			C	
Approach Delay (s)		0.0			36.3			33.7			29.3	
Approach LOS		A			D			C			C	

Intersection Summary				
HCM Average Control Delay	34.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	73.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	64.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1760	1749		1766	1863	1549	1530	3059	1312	1530	3018	
Flt Permitted	0.48	1.00		0.12	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	898	1749		219	1863	1549	1530	3059	1312	1530	3018	
Volume (vph)	130	420	230	120	280	90	140	506	670	114	694	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	457	250	130	304	98	152	550	728	124	754	57
RTOR Reduction (vph)	0	25	0	0	0	56	0	0	144	0	7	0
Lane Group Flow (vph)	141	682	0	130	304	42	152	550	584	124	804	0
Confl. Peds. (#/hr)	10		13	13		10			27			27
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)	34.0	34.0		34.0	34.0	34.0	9.6	29.0	29.0	5.0	24.4	
Effective Green, g (s)	34.0	34.0		34.0	34.0	34.0	9.6	29.0	29.0	5.0	24.4	
Actuated g/C Ratio	0.42	0.42		0.42	0.42	0.42	0.12	0.36	0.36	0.06	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	382	743		93	792	658	184	1109	476	96	920	
v/s Ratio Prot		0.39			0.16		0.10	0.18		c0.08	0.27	
v/s Ratio Perm	0.16			c0.59		0.03			c0.45			
v/c Ratio	0.37	0.92		1.40	0.38	0.06	0.83	0.50	1.23	1.29	0.87	
Uniform Delay, d1	15.7	21.7		23.0	15.8	13.6	34.4	19.8	25.5	37.5	26.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.80	0.82	0.66	1.00	1.00	
Incremental Delay, d2	0.6	16.2		231.6	0.3	0.0	8.8	0.5	107.8	188.9	11.3	
Delay (s)	16.3	37.9		254.6	16.1	13.6	36.2	16.7	124.6	226.4	37.7	
Level of Service	B	D		F	B	B	D	B	F	F	D	
Approach Delay (s)		34.3			73.9			73.7			62.7	
Approach LOS		C			E			E			E	

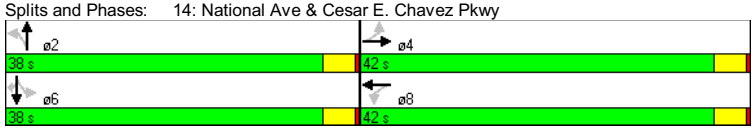
Intersection Summary				
HCM Average Control Delay	62.1	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.32			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	96.9%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	300	400	110	270	120	1000	120	550	410
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phases	4	4	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	42.0	42.0	42.0	42.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	47.5%	47.5%	47.5%	47.5%	47.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	38.0	38.0	38.0	38.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.42	0.42	0.42	0.42	0.42
v/c Ratio	1.48	0.87	1.13	0.71	0.92	0.88	1.60	0.87	0.53
Control Delay	262.8	30.4	155.1	21.3	79.7	25.8	313.5	16.6	1.1
Queue Delay	0.0	0.3	4.1	0.0	0.0	1.3	0.0	1.0	0.6
Total Delay	262.8	30.8	159.2	21.3	79.7	27.2	313.5	17.6	1.7
LOS	F	C	F	C	E	C	F	B	A
Approach Delay		101.1		44.5		32.3		44.3	
Approach LOS		F		D		C		D	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.60			
Intersection Signal Delay: 54.9		Intersection LOS: D	
Intersection Capacity Utilization 98.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
14: National Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 1 without Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.92		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1745		1770	1722		1612	3179		1530	1610	1369
Flt Permitted	0.25	1.00		0.12	1.00		0.19	1.00		0.12	1.00	1.00
Satd. Flow (perm)	463	1745		224	1722		331	3179		189	1610	1369
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	33	0	0	18	0	0	9	0	0	0	256
Lane Group Flow (vph)	326	717	0	120	574	0	130	1187	0	130	598	190
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		34.0	34.0		34.0	34.0	34.0
Effective Green, g (s)	38.0	38.0		38.0	38.0		34.0	34.0		34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.42	0.42		0.42	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	220	829		106	818		141	1351		80	684	582
v/s Ratio Prot		0.41			0.33			0.37			0.37	
v/s Ratio Perm	c0.70			0.54			0.39			c0.69		0.14
v/c Ratio	1.48	0.87		1.13	0.70		0.92	0.88		1.62	0.87	0.33
Uniform Delay, d1	21.0	18.7		21.0	16.5		21.7	21.1		23.0	21.0	15.3
Progression Factor	1.00	1.00		1.00	1.00		0.79	0.81		0.40	0.38	0.08
Incremental Delay, d2	239.6	9.4		127.4	2.7		55.0	7.9		302.5	6.4	0.6
Delay (s)	260.6	28.1		148.4	19.3		72.2	25.0		311.6	14.4	1.9
Level of Service	F	C		F	B		E	C		F	B	A
Approach Delay (s)		98.5			41.0			29.7			42.5	
Approach LOS		F			D			C			D	

Intersection Summary				
HCM Average Control Delay	52.4	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.55			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	98.5%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

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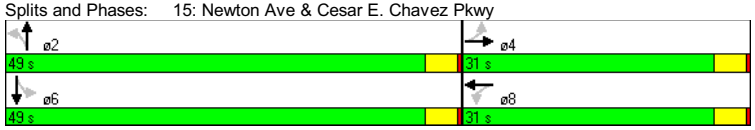
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	135	130	90	70	40	795	165	890
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	15.6	15.6	15.6	15.6	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.70	0.70	0.70	0.70
v/c Ratio	0.72	0.58	0.49	0.49	0.41	0.41	0.61	0.87
Control Delay	48.7	29.3	35.6	15.9	16.9	4.5	14.1	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.6
Total Delay	48.7	29.3	35.6	15.9	16.9	4.6	14.1	16.6
LOS	D	C	D	B	B	A	B	B
Approach Delay		37.1		22.3		5.1		16.2
Approach LOS		D		C		A		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
15: Newton Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 1 without Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.95		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1686		1612	3189		1612	1682	
Flt Permitted	0.45	1.00		0.43	1.00		0.15	1.00		0.28	1.00	
Satd. Flow (perm)	847	1765		801	1686		257	3189		477	1682	
Volume (vph)	135	130	70	90	70	120	40	795	60	165	890	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	141	76	98	76	130	43	864	65	179	967	60
RTOR Reduction (vph)	0	30	0	0	93	0	0	5	0	0	2	0
Lane Group Flow (vph)	147	187	0	98	113	0	43	924	0	179	1025	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Effective Green, g (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70		0.70	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	344		156	329		181	2248		336	1186	
v/s Ratio Prot		0.11			0.07			0.29			c0.61	
v/s Ratio Perm	c0.17			0.12			0.17			0.38		
v/c Ratio	0.89	0.54		0.63	0.34		0.24	0.41		0.53	0.86	
Uniform Delay, d1	31.4	29.0		29.5	27.8		4.2	4.9		5.6	8.9	
Progression Factor	1.00	1.00		1.00	1.00		0.70	0.71		0.67	0.67	
Incremental Delay, d2	40.3	1.8		7.7	0.6		2.3	0.4		3.7	5.4	
Delay (s)	71.7	30.8		37.2	28.4		5.2	3.9		7.4	11.4	
Level of Service	E	C		D	C		A	A		A	B	
Approach Delay (s)		47.3			31.2			4.0			10.8	
Approach LOS		D			C			A			B	

Intersection Summary					
HCM Average Control Delay	15.3	HCM Level of Service	B		
HCM Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E		
Analysis Period (min)	15				

c Critical Lane Group

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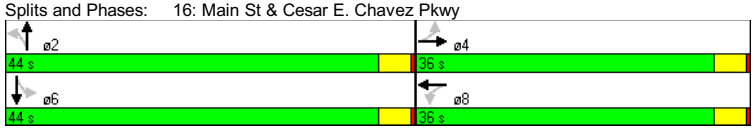
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	290	70	230	70	640	250	540
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	27.9	27.9	27.9	27.9	44.1	44.1	44.1	44.1
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.55	0.55	0.55	0.55
v/c Ratio	0.92	0.53	0.28	0.84	0.84	0.53	1.27	1.01
Control Delay	82.8	22.7	19.7	32.3	86.5	13.0	164.1	42.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	19.5
Total Delay	82.8	22.7	19.7	32.3	86.5	14.2	164.1	62.2
LOS	F	C	B	C	F	B	F	E
Approach Delay		39.3		30.7		19.9		86.5
Approach LOS		D		C		B		F

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 48.6		Intersection LOS: D	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU
16: Main St & Cesar E. Chavez Pkwy
Horizon Year Alt 1 without Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	1836		1750	1684		1556	2974		1543	1534	
Flt Permitted	0.16	1.00		0.39	1.00		0.11	1.00		0.26	1.00	
Satd. Flow (perm)	288	1836		721	1684		183	2974		416	1534	
Volume (vph)	120	290	25	70	230	270	70	640	180	250	540	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	315	27	76	250	293	76	696	196	272	587	283
RTOR Reduction (vph)	0	4	0	0	57	0	0	29	0	0	19	0
Lane Group Flow (vph)	130	338	0	76	486	0	76	863	0	272	851	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.9	27.9		27.9	27.9		44.1	44.1		44.1	44.1	
Effective Green, g (s)	27.9	27.9		27.9	27.9		44.1	44.1		44.1	44.1	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.55	0.55		0.55	0.55	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	100	640		251	587		101	1639		229	846	
v/s Ratio Prot		0.18			0.29			0.29			0.55	
v/s Ratio Perm	c0.45			0.11			0.41			c0.65		
v/c Ratio	1.30	0.53		0.30	0.83		0.75	0.53		1.19	1.01	
Uniform Delay, d1	26.1	20.8		19.0	23.8		13.8	11.3		18.0	18.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.78	0.76	
Incremental Delay, d2	190.3	0.8		0.7	9.3		39.9	1.2		106.3	24.4	
Delay (s)	216.4	21.6		19.7	33.2		53.7	12.6		120.3	38.1	
Level of Service	F	C		B	C		D	B		F	D	
Approach Delay (s)		75.2			31.5			15.8			57.6	
Approach LOS		E			C			B			E	

Intersection Summary					
HCM Average Control Delay	42.5	HCM Level of Service	D		
HCM Volume to Capacity ratio	1.23				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	98.3%	ICU Level of Service	F		
Analysis Period (min)	15				

c Critical Lane Group

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Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.95			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)	1641	3265		1421	3232		1363	1314			1596	1368
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.83	1.00
Satd. Flow (perm)	1641	3265		1421	3232		1021	1314			1358	1368
Volume (vph)	468	1500	40	50	465	43	50	63	35	33	30	324
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	1630	43	54	505	47	54	68	38	36	33	352
RTOR Reduction (vph)	0	1	0	0	5	0	0	15	0	0	0	280
Lane Group Flow (vph)	509	1672	0	54	547	0	54	91	0	0	69	72
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			9			14			3			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	
Permitted Phases							12			1 5 16		1 5 16
Actuated Green, G (s)	26.8	53.2		6.2	32.6		14.3	14.3			22.5	22.5
Effective Green, g (s)	26.8	53.2		6.2	32.6		14.3	14.3			22.5	22.5
Actuated g/C Ratio	0.24	0.48		0.06	0.30		0.13	0.13			0.20	0.20
Clearance Time (s)	4.0			4.0			4.0	4.0				
Vehicle Extension (s)	3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)	400	1581		80	959		133	171			278	280
v/s Ratio Prot	c0.31	c0.51		0.04	0.17			c0.07				
v/s Ratio Perm							0.05				0.05	c0.05
v/c Ratio	1.27	1.06		0.68	0.57		0.41	0.53			0.25	0.26
Uniform Delay, d1	41.6	28.4		50.9	32.7		43.9	44.7			36.6	36.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.21	3.67
Incremental Delay, d2	140.9	39.6		20.2	0.8		2.0	3.2			0.5	0.5
Delay (s)	182.5	67.9		71.1	33.5		45.9	47.9			44.6	135.2
Level of Service	F	E		E	C		D	D			D	F
Approach Delay (s)		94.6			36.9			47.2			120.3	
Approach LOS		F			D			D			F	

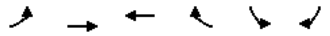
Intersection Summary				
HCM Average Control Delay	85.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	933	527	8	0	158	73	0	0	16	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1014	573	9	0	172	79	0	0	17	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)		667										
pX, platoon unblocked												
vC, conflicting volume	251			582			2777	2857	577	2830	2821	211
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	251			582			2777	2857	577	2830	2821	211
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 %	23			100			100	100	97	100	100	100
cM capacity (veh/h)	1314			993			4	4	516	4	4	829

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1014	582	0	251	17
Volume Left	1014	0	0	0	0
Volume Right	0	9	0	79	17
cSH	1314	1700	1700	1700	516
Volume to Capacity	0.77	0.34	0.00	0.15	0.03
Queue Length 95th (ft)	207	0	0	0	3
Control Delay (s)	16.3	0.0	0.0	0.0	12.2
Lane LOS	C				B
Approach Delay (s)	10.3		0.0		12.2
Approach LOS					B

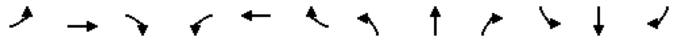
Intersection Summary				
Average Delay	9.0			
Intersection Capacity Utilization	71.1%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	308	260	0	126	238
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	335	283	0	137	259
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)		1100	875			
pX, platoon unblocked						
vC, conflicting volume	283				617	283
vC1, stage 1 conf vol					283	
vC2, stage 2 conf vol					335	
vCu, unblocked vol	283				617	283
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				75	66
cM capacity (veh/h)	1280				546	756

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	335	283	137	259
Volume Left	0	0	137	0
Volume Right	0	0	0	259
cSH	1700	1700	546	756
Volume to Capacity	0.20	0.17	0.25	0.34
Queue Length 95th (ft)	0	0	25	38
Control Delay (s)	0.0	0.0	13.8	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	12.8	
Approach LOS			B	

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	390	36	32	192	23	13	18	62	45	22	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	424	39	35	209	25	14	20	67	49	24	78
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		1314			661							
pX, platoon unblocked												
vC, conflicting volume	234			463			892	827	443	872	834	221
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	234			463			892	827	443	872	834	221
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 %	97			97			93	93	89	78	92	90
cM capacity (veh/h)	1334			1098			212	288	614	218	285	818

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	40	463	35	234	101	151
Volume Left	40	0	35	0	14	49
Volume Right	0	39	0	25	67	78
cSH	1334	1700	1098	1700	414	374
Volume to Capacity	0.03	0.27	0.03	0.14	0.24	0.40
Queue Length 95th (ft)	2	0	2	0	24	48
Control Delay (s)	7.8	0.0	8.4	0.0	16.5	21.0
Lane LOS	A		A		C	C
Approach Delay (s)	0.6		1.1		16.5	21.0
Approach LOS					C	C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	124	41	27	70	27	7	47	28	30	28	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	135	45	29	76	29	8	51	30	33	30	23
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	105			179			397	373	157	415	381	91
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	105			179			397	373	157	415	381	91
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 %	98			98			99	90	97	93	94	98
cM capacity (veh/h)	1486			1396			511	536	888	477	531	967

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	205	135	89	86
Volume Left	26	29	8	33
Volume Right	45	29	30	23
cSH	1486	1396	617	575
Volume to Capacity	0.02	0.02	0.14	0.15
Queue Length 95th (ft)	1	2	13	13
Control Delay (s)	1.1	1.8	11.8	12.4
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	1.8	11.8	12.4
Approach LOS			B	B

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	12	270	239	62	75	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	293	260	67	82	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1318				
pX, platoon unblocked						
vC, conflicting volume	327				613	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	327				613	293
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				82	98
cM capacity (veh/h)	1232				451	746

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	307	327	99
Volume Left	13	0	82
Volume Right	0	67	17
cSH	1232	1700	485
Volume to Capacity	0.01	0.19	0.20
Queue Length 95th (ft)	1	0	19
Control Delay (s)	0.4	0.0	14.3
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	14.3
Approach LOS			B

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			

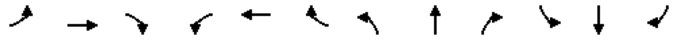
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	108	255	203	143	87	54	235	400	101	66	256	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	277	221	155	95	59	255	435	110	72	278	14

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	117	498	155	153	800	364
Volume Left (vph)	117	0	155	0	255	72
Volume Right (vph)	0	221	0	59	110	14
Hadj (s)	0.53	-0.28	0.53	-0.23	0.02	0.05
Departure Headway (s)	9.2	8.4	9.9	9.1	8.3	8.6
Degree Utilization, x	0.30	1.16	0.43	0.39	1.84	0.87
Capacity (veh/h)	387	433	347	384	440	405
Control Delay (s)	14.9	121.7	18.9	16.6	408.1	47.1
Approach Delay (s)	101.3		17.8		408.1	47.1
Approach LOS	F		C		F	E

Intersection Summary				
Delay	197.1			
HCM Level of Service	F			
Intersection Capacity Utilization	105.2%	ICU Level of Service	G	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98			1.00			0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.91			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1760	1829		1753	1667			1817			1723	
Flt Permitted	0.64	1.00		0.67	1.00			0.98			0.80	
Satd. Flow (perm)	1187	1829		1238	1667			1782			1402	
Volume (vph)	162	111	12	21	70	100	13	185	30	123	86	107
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	176	121	13	23	76	109	14	201	33	134	93	116
RTOR Reduction (vph)	0	6	0	0	78	0	0	7	0	0	24	0
Lane Group Flow (vph)	176	128	0	23	107	0	0	241	0	0	319	0
Confl. Peds. (#/hr)	7		11	11		7	25		21	21		25
Confl. Bikes (#/hr)			3			3			6			2
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.9	11.9		11.9	11.9			22.0			22.0	
Effective Green, g (s)	11.9	11.9		11.9	11.9			22.0			22.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28			0.53			0.53	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	337	519		352	473			936			736	
v/s Ratio Prot		0.07			0.06							
v/s Ratio Perm	c0.15			0.02				0.14			c0.23	
v/c Ratio	0.52	0.25		0.07	0.23			0.26			0.43	
Uniform Delay, d1	12.6	11.5		10.9	11.5			5.5			6.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.5	0.2		0.1	0.2			0.1			0.4	
Delay (s)	14.1	11.8		11.0	11.7			5.6			6.5	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		13.1			11.6			5.6			6.5	
Approach LOS		B			B			A			A	

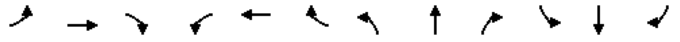
Intersection Summary					
HCM Average Control Delay	9.1	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.46				
Actuated Cycle Length (s)	41.9	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	68.7%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	34	119	24	0	76	31	13	90	20	19	66	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	129	26	0	83	34	14	98	22	21	72	21

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	192	116	134	113
Volume Left (vph)	37	0	14	21
Volume Right (vph)	26	34	22	21
Hadj (s)	-0.01	-0.14	-0.04	-0.04
Departure Headway (s)	4.6	4.6	4.8	4.8
Degree Utilization, x	0.25	0.15	0.18	0.15
Capacity (veh/h)	726	724	706	695
Control Delay (s)	9.2	8.4	8.8	8.6
Approach Delay (s)	9.2	8.4	8.8	8.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.8	
HCM Level of Service			A	
Intersection Capacity Utilization			32.5%	ICU Level of Service
Analysis Period (min)			15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	118	142	33	27	83	8	60	46	49	8	27	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	128	154	36	29	90	9	65	50	53	9	29	92

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	318	128	168	130
Volume Left (vph)	128	29	65	9
Volume Right (vph)	36	9	53	92
Hadj (s)	0.05	0.04	-0.08	-0.38
Departure Headway (s)	4.9	5.2	5.2	4.9
Degree Utilization, x	0.43	0.18	0.24	0.18
Capacity (veh/h)	693	638	627	654
Control Delay (s)	11.6	9.3	9.8	9.0
Approach Delay (s)	11.6	9.3	9.8	9.0
Approach LOS	B	A	A	A

Intersection Summary				
Delay			10.4	
HCM Level of Service			B	
Intersection Capacity Utilization			45.7%	ICU Level of Service
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3469		1770	3443			1780			1776	
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.77	
Satd. Flow (perm)	1770	3469		1770	3443			1697			1396	
Volume (vph)	56	1500	5	19	488	62	23	111	41	58	66	26
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	1630	5	21	530	67	25	121	45	63	72	28
RTOR Reduction (vph)	0	0	0	0	7	0	0	8	0	0	5	0
Lane Group Flow (vph)	61	1635	0	21	590	0	0	183	0	0	158	0
Confl. Peds. (#/hr)			15			29	7		4	4		7
Confl. Bikes (#/hr)			12						7			7
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	3	14 2 6		13	18 2 6			12			16 1 5	
Permitted Phases							12			16 1 5		
Actuated Green, G (s)	5.1	49.5		1.2	45.6			16.2			29.0	
Effective Green, g (s)	5.1	49.5		1.2	45.6			16.2			29.0	
Actuated g/C Ratio	0.05	0.48		0.01	0.44			0.16			0.28	
Clearance Time (s)	4.0			4.0				4.0				
Vehicle Extension (s)	3.0			3.0				3.0				
Lane Grp Cap (vph)	87	1656		20	1514			265			390	
v/s Ratio Prot	c0.03	c0.47		0.01	0.17							
v/s Ratio Perm								c0.11			c0.11	
v/c Ratio	0.70	0.99		1.05	0.39			0.69			0.41	
Uniform Delay, d1	48.5	26.8		51.2	19.6			41.4			30.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.05	
Incremental Delay, d2	22.5	19.0		217.8	0.2			7.6			0.7	
Delay (s)	71.0	45.7		269.0	19.8			49.0			32.5	
Level of Service	E	D		F	B			D			C	
Approach Delay (s)		46.7			28.3			49.0			32.5	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM Average Control Delay	41.7	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	73.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	40	169	38	8	125	1	33	46	17	4	18	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	184	41	9	136	1	36	50	18	4	20	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		641										
pX, platoon unblocked												
vC, conflicting volume	137			225			501	446	204	468	466	136
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	137			225			501	446	204	468	466	136
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 %	97			99			92	90	98	99	96	95
cM capacity (veh/h)	1447			1344			430	489	836	443	476	912

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	43	225	146	104	70
Volume Left	43	0	9	36	4
Volume Right	0	41	1	18	46
cSH	1447	1700	1344	502	689
Volume to Capacity	0.03	0.13	0.01	0.21	0.10
Queue Length 95th (ft)	2	0	0	19	8
Control Delay (s)	7.6	0.0	0.5	14.0	10.8
Lane LOS	A		A	B	B
Approach Delay (s)	1.2		0.5	14.0	10.8
Approach LOS				B	B

Intersection Summary				
Average Delay	4.5			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	33	156	65	35	124	55	46	60	34	90	68	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	170	71	38	135	60	50	65	37	98	74	25

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	36	240	38	195	152	197
Volume Left (vph)	36	0	38	0	50	98
Volume Right (vph)	0	71	0	60	37	25
Hadj (s)	0.53	-0.17	0.53	-0.18	-0.05	0.06
Departure Headway (s)	6.4	5.7	6.5	5.7	5.6	5.6
Degree Utilization, x	0.06	0.38	0.07	0.31	0.24	0.30
Capacity (veh/h)	529	599	521	589	580	592
Control Delay (s)	8.6	10.9	8.7	10.1	10.3	11.0
Approach Delay (s)	10.6		9.9		10.3	11.0
Approach LOS	B		A		B	B

Intersection Summary				
Delay	10.4			
HCM Level of Service	B			
Intersection Capacity Utilization	41.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	368	23	31	234	94	296
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	400	25	34	254	102	322
Pedestrians					36	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				670		
pX, platoon unblocked						
vC, conflicting volume			461		643	448
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			461		643	448
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		73	41
cM capacity (veh/h)			1064		381	541

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	425	118	170	102	322
Volume Left	0	34	0	102	0
Volume Right	25	0	0	0	322
cSH	1700	1064	1700	381	541
Volume to Capacity	0.25	0.03	0.10	0.27	0.59
Queue Length 95th (ft)	0	2	0	27	96
Control Delay (s)	0.0	2.6	0.0	17.9	20.9
Lane LOS		A		C	C
Approach Delay (s)	0.0	1.1		20.2	
Approach LOS				C	

Intersection Summary				
Average Delay	7.8			
Intersection Capacity Utilization	45.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	14	180	16	49	50	29	7	61	200	28	12	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	196	17	53	54	32	8	66	217	30	13	9

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total (vph)	228	53	54	32	74	217	52
Volume Left (vph)	15	53	0	0	8	0	30
Volume Right (vph)	17	0	0	32	0	217	9
Hadj (s)	0.00	1.10	0.03	-0.67	0.05	-0.41	0.05
Departure Headway (s)	4.5	6.1	5.0	3.2	4.8	3.2	4.9
Degree Utilization, x	0.28	0.09	0.08	0.03	0.10	0.19	0.07
Capacity (veh/h)	783	566	684	1121	693	1121	686
Control Delay (s)	9.2	8.5	7.3	5.1	8.4	7.0	8.2
Approach Delay (s)	9.2	7.2			7.3		8.2
Approach LOS	A	A			A		A

Intersection Summary				
Delay	8.0			
HCM Level of Service	A			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.98	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			0.99						0.90	
Flt Protected	0.95	1.00			1.00						0.99	
Satd. Flow (prot)	1543	3539			3504						1510	
Flt Permitted	0.95	1.00			1.00						0.99	
Satd. Flow (perm)	1543	3539			3504						1510	
Volume (vph)	203	1400	0	0	538	39	0	0	0	16	10	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	1522	0	0	585	42	0	0	0	17	11	82
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	67	0
Lane Group Flow (vph)	221	1522	0	0	623	0	0	0	0	0	43	0
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									4			9
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot									Perm		
Protected Phases	13	18 2 6			14 2 6						11 1 5	
Permitted Phases										11 1 5		
Actuated Green, G (s)	9.4	49.4			32.0						15.2	
Effective Green, g (s)	9.4	49.4			32.0						15.2	
Actuated g/C Ratio	0.12	0.61			0.40						0.19	
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	180	2169			1391						285	
v/s Ratio Prot	c0.14	c0.43			0.18							
v/s Ratio Perm											0.03	
v/c Ratio	1.23	0.70			0.45						0.15	
Uniform Delay, d1	35.6	10.6			17.8						27.3	
Progression Factor	1.00	1.00			1.00						1.10	
Incremental Delay, d2	141.5	1.0			0.2						0.2	
Delay (s)	177.1	11.6			18.1						30.3	
Level of Service	F	B			B						C	
Approach Delay (s)		32.6			18.1			0.0			30.3	
Approach LOS		C			B			A			C	

Intersection Summary						
HCM Average Control Delay	28.8	HCM Level of Service	C			
HCM Volume to Capacity ratio	0.65					
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	20.0			
Intersection Capacity Utilization	58.1%	ICU Level of Service	B			
Analysis Period (min)	15					

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.95			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1597	1762			1762	1509		1695	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.90	1.00		0.78	
Satd. Flow (perm)	1770	3539	1583	1597	1762			1591	1509		1350	
Volume (vph)	94	612	85	463	427	240	18	98	168	199	210	102
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	665	92	503	464	261	20	107	183	216	228	111
RTOR Reduction (vph)	0	0	69	0	14	0	0	0	108	0	6	0
Lane Group Flow (vph)	102	665	23	503	711	0	0	127	75	0	549	0
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.0	30.2	30.2	46.0	67.2			61.0	61.0		61.0	
Effective Green, g (s)	9.0	30.2	30.2	46.0	67.2			61.0	61.0		61.0	
Actuated g/C Ratio	0.06	0.20	0.20	0.31	0.45			0.41	0.41		0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	107	716	320	492	794			650	617		552	
v/s Ratio Prot	0.06	0.19		c0.31	c0.40							
v/s Ratio Perm			0.01					0.08	0.05		c0.41	
v/c Ratio	0.95	0.93	0.07	1.02	0.90			0.20	0.12		0.99	
Uniform Delay, d1	69.9	58.4	48.1	51.6	37.8			28.3	27.4		43.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	71.6	18.2	0.1	46.4	12.6			0.1	0.1		36.7	
Delay (s)	141.5	76.7	48.2	98.0	50.4			28.5	27.5		80.7	
Level of Service	F	E	D	F	D			C	C		F	
Approach Delay (s)		81.3			69.9			27.9			80.7	
Approach LOS		F			E			C			F	

Intersection Summary			
HCM Average Control Delay	70.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	149.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.93		1.00	0.92		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1650		1687	1643		1770	3539	1583	1770	3425	
Flt Permitted	0.65	1.00		0.36	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1152	1650		634	1643		1770	3539	1583	1770	3425	
Volume (vph)	320	180	160	60	70	70	50	1050	200	330	980	270
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	196	174	65	76	76	54	1141	217	359	1065	293
RTOR Reduction (vph)	0	46	0	0	50	0	0	0	143	0	28	0
Lane Group Flow (vph)	348	324	0	65	102	0	54	1141	74	359	1330	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	24.8	24.8		24.8	24.8		3.4	25.0	25.0	11.1	32.7	
Effective Green, g (s)	24.8	24.8		24.8	24.8		3.4	25.0	25.0	11.1	32.7	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.05	0.34	0.34	0.15	0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	392	561		216	559		83	1214	543	270	1536	
v/s Ratio Prot		0.20			0.06		0.03	0.32		c0.20	c0.39	
v/s Ratio Perm	c0.30			0.10					0.05			
v/c Ratio	0.89	0.58		0.30	0.18		0.65	0.94	0.14	1.33	0.87	
Uniform Delay, d1	22.7	19.8		17.7	16.9		34.2	23.2	16.5	30.9	18.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.8	1.5		0.8	0.2		16.8	14.9	0.5	171.6	6.8	
Delay (s)	43.5	21.2		18.5	17.1		51.0	38.2	17.0	202.5	24.9	
Level of Service	D	C		B	B		D	D	B	F	C	
Approach Delay (s)		32.0			17.5			35.4			62.0	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.97		1.00	0.87	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.96		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1737	3501		1764	3220		1736	3234		1736	2700	
Flt Permitted	0.34	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	627	3501		560	3220		1736	3234		1736	2700	
Volume (vph)	270	600	40	150	290	280	65	500	180	280	500	550
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	652	43	163	315	304	71	543	196	304	543	598
RTOR Reduction (vph)	0	5	0	0	170	0	0	41	0	0	212	0
Lane Group Flow (vph)	293	690	0	163	449	0	71	698	0	304	929	0
Confl. Peds. (#/hr)	27		12	12		27			88			200
Confl. Bikes (#/hr)			8			3						6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	39.0	39.0		39.0	39.0		4.0	22.6		15.0	33.6	
Effective Green, g (s)	39.0	39.0		39.0	39.0		4.0	22.6		15.0	33.6	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.05	0.26		0.17	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	276	1541		247	1417		78	825		294	1024	
v/s Ratio Prot		0.20			0.14		0.04	0.22		c0.18	c0.34	
v/s Ratio Perm	c0.47			0.29								
v/c Ratio	1.06	0.45		0.66	0.32		0.91	0.85		1.03	0.95dr	
Uniform Delay, d1	24.8	17.3		19.6	16.1		42.1	31.3		36.8	26.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	71.4	0.2		6.2	0.1		72.0	8.0		61.6	11.4	
Delay (s)	96.2	17.5		25.8	16.3		114.1	39.3		98.4	37.4	
Level of Service	F	B		C	B		F	D		F	D	
Approach Delay (s)		40.8			18.3			45.9			50.2	
Approach LOS		D			B			D			D	

Intersection Summary				
HCM Average Control Delay	40.8	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.99			
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	90.2%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00	0.93		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1703	3406	1322	1719	3438	1437		1821		1649	1657	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1703	3406	1322	1719	3438	1437		1821		1649	1657	1531
Volume (vph)	290	1120	2	14	474	278	10	134	0	505	12	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	1217	2	15	515	302	11	146	0	549	13	14
RTOR Reduction (vph)	0	0	1	0	0	193	0	0	0	0	0	9
Lane Group Flow (vph)	315	1217	1	15	515	109	0	157	0	275	287	5
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	13.7	45.7	39.4	1.3	33.3	46.5		20.9		28.7	28.7	28.7
Effective Green, g (s)	13.7	45.7	39.4	1.3	33.3	46.5		20.9		28.7	28.7	28.7
Actuated g/C Ratio	0.11	0.36	0.31	0.01	0.26	0.36		0.16		0.22	0.22	0.22
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	181	1210	405	17	890	520		296		368	370	342
v/s Ratio Prot	c0.18	c0.36		0.01	0.15	0.03		c0.09		0.17	c0.17	
v/s Ratio Perm			0.00			0.04						0.00
v/c Ratio	1.74	1.01	0.00	0.88	0.58	0.21		0.53		0.75	0.78	0.01
Uniform Delay, d1	57.4	41.4	31.0	63.6	41.5	28.4		49.4		46.6	46.9	38.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.93	0.93	1.21
Incremental Delay, d2	355.1	27.3	0.0	159.7	0.9	0.2		1.8		8.0	9.7	0.0
Delay (s)	412.5	68.7	31.0	223.3	42.5	28.6		51.2		51.5	53.6	47.2
Level of Service	F	E	C	F	D	C		D		D	D	D
Approach Delay (s)		139.3			40.7			51.2			52.4	
Approach LOS		F			D			D			D	

Intersection Summary				
HCM Average Control Delay	92.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	128.6	Sum of lost time (s)	28.0	
Intersection Capacity Utilization	75.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	559	153	27	20	83	118	9	72	45	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	608	166	29	22	90	128	10	78	49	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)		657										
pX, platoon unblocked												
vC, conflicting volume	218			196			1594	1658	181	1682	1609	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	218			196			1594	1658	181	1682	1609	154
tC, single (s)	4.2			4.2			7.1	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.1	3.3	3.5	4.0	3.3
p0 queue free %	54			98			82	0	94	0	100	100
cM capacity (veh/h)	1322			1348			55	48	862	0	56	892

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	803	240	137
Volume Left	608	22	10
Volume Right	29	128	49
cSH	1322	1348	74
Volume to Capacity	0.46	0.02	1.85
Queue Length 95th (ft)	62	1	303
Control Delay (s)	8.8	0.8	523.6
Lane LOS	A	A	F
Approach Delay (s)	8.8	0.8	523.6
Approach LOS			F

Intersection Summary				
Average Delay	66.9			
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3292		1703	3273		1770	1863	1552	1770	1677	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3292		1703	3273		1770	1863	1552	1770	1677	
Volume (vph)	70	653	166	207	353	102	226	112	307	123	61	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	710	180	225	384	111	246	122	334	134	66	79
RTOR Reduction (vph)	0	23	0	0	26	0	0	0	249	0	55	0
Lane Group Flow (vph)	76	867	0	225	469	0	246	122	85	134	90	0
Confl. Peds. (#/hr)			1			2			1			17
Confl. Bikes (#/hr)			4			1			7			5
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	6.6	25.0		12.1	30.5		13.1	18.0	18.0	8.8	13.7	
Effective Green, g (s)	6.6	25.0		12.1	30.5		13.1	18.0	18.0	8.8	13.7	
Actuated g/C Ratio	0.08	0.31		0.15	0.38		0.16	0.23	0.23	0.11	0.17	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	141	1030		258	1249		290	420	350	195	288	
v/s Ratio Prot	0.04	c0.26		c0.13	0.14		c0.14	c0.07		0.08	0.05	
v/s Ratio Perm									0.05			
v/c Ratio	0.54	0.84		0.87	0.38		0.85	0.29	0.24	0.69	0.31	
Uniform Delay, d1	35.2	25.6		33.1	17.8		32.4	25.7	25.4	34.2	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.9	6.3		26.0	0.2		20.0	0.4	0.4	9.6	0.6	
Delay (s)	39.1	31.9		59.1	18.0		52.4	26.0	25.7	43.9	29.6	
Level of Service	D	C		E	B		D	C	C	D	C	
Approach Delay (s)		32.5			30.9			35.1			36.5	
Approach LOS		C			C			D			D	

Intersection Summary					
HCM Average Control Delay	33.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	79.9	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	73.9%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.91			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1752	1690			1796	1568		1719	1810	2707	
Flt Permitted		0.48	1.00			0.47	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		893	1690			872	1568		1719	1810	2707	
Volume (vph)	115	115	80	130	140	50	210	205	140	360	760	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	87	141	152	54	228	223	152	391	826	261
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	180	0	0	206	451	0	152	391	1087	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		32.0	32.0			32.0	32.0		15.3	24.0	51.0	
Effective Green, g (s)		32.0	32.0			32.0	32.0		15.3	24.0	51.0	
Actuated g/C Ratio		0.27	0.27			0.27	0.27		0.13	0.20	0.42	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		238	451			233	418		219	362	1150	
v/s Ratio Prot			0.11						0.09	c0.22		
v/s Ratio Perm		0.28				0.24	c0.29				c0.40	
v/c Ratio		1.05	0.40			0.88	1.08		0.69	1.08	0.95	
Uniform Delay, d1		44.0	36.1			42.2	44.0		50.1	48.0	33.2	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		72.2	0.6			30.2	66.8		9.2	70.4	15.1	
Delay (s)		116.2	36.7			72.4	110.8		59.3	118.4	48.3	
Level of Service		F	D			E	F		E	F	D	
Approach Delay (s)			78.3			98.8				66.1		
Approach LOS			E			F				E		

Intersection Summary			
HCM Average Control Delay	85.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 1 without Improvements
Timing Plan: PM Peak

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.99			0.98		
Flt Protected		0.95	1.00			0.96		
Satd. Flow (prot)		1767	3407			3321		
Flt Permitted		0.95	1.00			0.91		
Satd. Flow (perm)		1767	3407			3151		
Volume (vph)	35	415	380	30	10	340	55	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	451	413	33	11	370	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	489	446	0	0	452	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		25.0	33.7			23.0		
Effective Green, g (s)		25.0	33.7			23.0		
Actuated g/C Ratio		0.21	0.28			0.19		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		368	957			604		
v/s Ratio Prot		c0.28	0.13					
v/s Ratio Perm						0.14		
v/c Ratio		1.33	0.47			0.75		
Uniform Delay, d1		47.5	35.7			45.8		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		165.6	0.4			5.1		
Delay (s)		213.1	36.1			50.8		
Level of Service		F	D			D		
Approach Delay (s)			128.7			50.8		
Approach LOS			F			D		

Intersection Summary

K:\SND_TPTO\095707000\Synchro\HY AI1 PM no Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1467	1719	3438	1500	1719	3438	1526
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)	1719	3438	1538	1687	3374	1467	1719	3438	1500	1719	3438	1526
Volume (vph)	340	1185	100	40	436	460	70	690	140	310	280	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	1288	109	43	474	500	76	750	152	337	304	283
RTOR Reduction (vph)	0	0	33	0	0	424	0	0	61	0	0	89
Lane Group Flow (vph)	370	1288	76	43	474	76	76	750	91	337	304	194
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6		15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	25.2	38.3	42.0	4.0	17.1	12.1	8.7	26.1	26.1	22.1	43.5	64.7
Effective Green, g (s)	25.2	38.3	42.0	4.0	17.1	12.1	8.7	26.1	26.1	22.1	43.5	64.7
Actuated g/C Ratio	0.21	0.31	0.34	0.03	0.14	0.10	0.07	0.21	0.21	0.18	0.36	0.53
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	354	1075	527	55	471	145	122	733	320	310	1221	856
v/s Ratio Prot	c0.22	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	0.06
v/s Ratio Perm			0.04			0.05			0.06			0.07
v/c Ratio	1.05	1.20	0.14	0.78	1.01	0.52	0.62	1.02	0.29	1.09	0.25	0.23
Uniform Delay, d1	48.6	42.1	27.8	58.8	52.7	52.4	55.3	48.2	40.4	50.2	27.9	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.88
Incremental Delay, d2	60.1	98.3	0.1	50.5	43.1	3.3	9.5	39.2	0.5	76.3	0.1	0.1
Delay (s)	108.8	140.4	28.0	109.3	95.8	55.8	64.8	87.4	40.9	123.6	26.4	13.7
Level of Service	F	F	C	F	F	E	E	F	D	F	C	B
Approach Delay (s)		126.9			76.7			78.5			58.0	
Approach LOS		F			E			E			E	

Intersection Summary				
HCM Average Control Delay	92.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.13			
Actuated Cycle Length (s)	122.5	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	85.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.92	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1770	3539	3539	1583	1670	
Flt Permitted	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	1770	3539	3539	1583	1670	
Volume (vph)	303	727	361	154	120	153
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	329	790	392	167	130	166
RTOR Reduction (vph)	0	0	0	128	76	0
Lane Group Flow (vph)	329	790	392	39	220	0
Confl. Peds. (#/hr)					10	4
Confl. Bikes (#/hr)						1
Turn Type	Prot			Perm		
Protected Phases	5	2	6		4	
Permitted Phases				6		
Actuated Green, G (s)	13.7	29.0	11.3	11.3	11.9	
Effective Green, g (s)	13.7	29.0	11.3	11.3	11.9	
Actuated g/C Ratio	0.28	0.59	0.23	0.23	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	496	2099	818	366	406	
v/s Ratio Prot	c0.19	0.22	c0.11		c0.13	
v/s Ratio Perm				0.02		
v/c Ratio	0.66	0.38	0.48	0.11	0.54	
Uniform Delay, d1	15.6	5.2	16.3	14.8	16.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	0.1	0.4	0.1	1.5	
Delay (s)	18.9	5.3	16.7	14.9	17.6	
Level of Service	B	A	B	B	B	
Approach Delay (s)		9.3	16.2		17.6	
Approach LOS		A	B		B	

Intersection Summary				
HCM Average Control Delay	12.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	0.99	1.00		0.98	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.98			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1759	1800		1737	1841			1773			1678	
Flt Permitted	0.22	1.00		0.57	1.00			0.84			0.90	
Satd. Flow (perm)	412	1800		1046	1841			1529			1535	
Volume (vph)	40	194	40	3	495	34	40	34	12	56	36	91
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	211	43	3	538	37	43	37	13	61	39	99
RTOR Reduction (vph)	0	14	0	0	5	0	0	7	0	0	41	0
Lane Group Flow (vph)	43	240	0	3	570	0	0	86	0	0	158	0
Confl. Peds. (#/hr)	19		16	16		19	7		14	14		7
Confl. Bikes (#/hr)			4			1			1			
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.5	20.5		20.5	20.5			22.5			22.5	
Effective Green, g (s)	20.5	20.5		20.5	20.5			22.5			22.5	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.44			0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	166	724		420	740			675			677	
v/s Ratio Prot		0.13			c0.31							
v/s Ratio Perm	0.10			0.00				0.06			c0.10	
v/c Ratio	0.26	0.33		0.01	0.77			0.13			0.23	
Uniform Delay, d1	10.2	10.5		9.1	13.2			8.4			8.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	0.3		0.0	5.0			0.4			0.8	
Delay (s)	11.0	10.8		9.2	18.2			8.8			9.7	
Level of Service	B	B		A	B			A			A	
Approach Delay (s)		10.8			18.1			8.8			9.7	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM Average Control Delay	14.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	51.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	52.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3533		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3533		1770	1583
Volume (vph)	38	480	1670	20	110	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	522	1815	22	120	120
RTOR Reduction (vph)	0	0	1	0	0	101
Lane Group Flow (vph)	41	522	1836	0	120	19
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	1.7	41.6	35.9		9.1	9.1
Effective Green, g (s)	1.7	41.6	35.9		9.1	9.1
Actuated g/C Ratio	0.03	0.71	0.61		0.16	0.16
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	51	2508	2161		274	245
v/s Ratio Prot	c0.02	0.15	c0.52		c0.07	
v/s Ratio Perm						0.01
v/c Ratio	0.80	0.21	0.85		0.44	0.08
Uniform Delay, d1	28.3	2.9	9.2		22.5	21.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	59.0	0.0	3.3		1.1	0.1
Delay (s)	87.3	3.0	12.6		23.6	21.3
Level of Service	F	A	B		C	C
Approach Delay (s)		9.1	12.6		22.5	
Approach LOS		A	B		C	

Intersection Summary				
HCM Average Control Delay	12.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	60.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	1.00			0.91			0.99	
Flt Protected		1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)		1832		1770	1863			1664			1798	
Flt Permitted		1.00		0.95	1.00			0.98			0.98	
Satd. Flow (perm)		1832		1770	1863			1664			1798	
Volume (vph)	0	170	24	87	202	0	31	0	68	259	236	47
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	185	26	95	220	0	34	0	74	282	257	51
RTOR Reduction (vph)	0	7	0	0	0	0	0	65	0	0	4	0
Lane Group Flow (vph)	0	204	0	95	220	0	0	43	0	0	586	0
Turn Type				Prot			Split			Split		
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)		9.7		5.7	19.4			7.6			25.6	
Effective Green, g (s)		9.7		5.7	19.4			7.6			25.6	
Actuated g/C Ratio		0.15		0.09	0.30			0.12			0.40	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		275		156	559			196			713	
v/s Ratio Prot		c0.11		c0.05	0.12			c0.03			c0.33	
v/s Ratio Perm												
v/c Ratio		0.74		0.61	0.39			0.22			0.82	
Uniform Delay, d1		26.3		28.4	17.9			25.8			17.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		10.3		6.6	0.5			0.6			7.6	
Delay (s)		36.6		35.0	18.4			26.4			25.1	
Level of Service		D		C	B			C			C	
Approach Delay (s)		36.6			23.4			26.4			25.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.97			1.00	
Flpb, ped/bikes	0.98	1.00		0.95	1.00			1.00			0.98	
Frt	1.00	0.99		1.00	0.98			0.92			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)	1740	1848		1687	1808			1655			1753	
Flt Permitted	0.29	1.00		0.58	1.00			0.98			0.77	
Satd. Flow (perm)	535	1848		1022	1808			1633			1392	
Volume (vph)	8	238	8	241	421	67	4	30	50	216	138	23
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	259	9	262	458	73	4	33	54	235	150	25
RTOR Reduction (vph)	0	2	0	0	9	0	0	32	0	0	4	0
Lane Group Flow (vph)	9	266	0	262	522	0	0	59	0	0	406	0
Confl. Peds. (#/hr)	30		46	46		30	48		46	46		48
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.6	18.6		18.6	18.6			18.2			18.2	
Effective Green, g (s)	18.6	18.6		18.6	18.6			18.2			18.2	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.41			0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	222	767		424	751			663			566	
v/s Ratio Prot		0.14			c0.29							
v/s Ratio Perm	0.02			0.26				0.04			c0.29	
v/c Ratio	0.04	0.35		0.62	0.70			0.09			0.72	
Uniform Delay, d1	7.8	9.0		10.3	10.8			8.2			11.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.3		2.7	2.8			0.1			4.3	
Delay (s)	7.9	9.2		13.0	13.6			8.3			15.5	
Level of Service	A	A		B	B			A			B	
Approach Delay (s)		9.2			13.4			8.3			15.5	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	580	1610	30	0	143
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	630	1750	33	0	155
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)		661	658			
pX, platoon unblocked	0.66				0.66	0.66
vC, conflicting volume	1783				2082	891
vC1, stage 1 conf vol					1766	
vC2, stage 2 conf vol					315	
vCu, unblocked vol	1673				2123	330
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	100				100	65
cM capacity (veh/h)	229				60	442

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	315	315	1167	616	155
Volume Left	0	0	0	0	0
Volume Right	0	0	0	33	155
cSH	1700	1700	1700	1700	442
Volume to Capacity	0.19	0.19	0.69	0.36	0.35
Queue Length 95th (ft)	0	0	0	0	39
Control Delay (s)	0.0	0.0	0.0	0.0	17.5
Lane LOS					C
Approach Delay (s)	0.0		0.0		17.5
Approach LOS					C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1863	1542	1761	1863	1544	1530	3059	1333	1530	3008	
Flt Permitted	0.52	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	961	1863	1542	409	1863	1544	1530	3059	1333	1530	3008	
Volume (vph)	140	280	120	100	325	76	100	300	280	70	909	82
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	304	130	109	353	83	109	326	304	76	988	89
RTOR Reduction (vph)	0	0	100	0	0	55	0	0	160	0	7	0
Lane Group Flow (vph)	152	304	30	109	353	28	109	326	144	76	1070	0
Confl. Peds. (#/hr)	15		13	13		15			17			39
Confl. Bikes (#/hr)			4									2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Prot		custom	Prot		
Protected Phases		4			8		5	2	3	1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)	18.7	18.7	18.7	26.7	26.7	26.7	5.9	33.9	37.9	7.4	35.4	
Effective Green, g (s)	18.7	18.7	18.7	26.7	26.7	26.7	5.9	33.9	37.9	7.4	35.4	
Actuated g/C Ratio	0.23	0.23	0.23	0.33	0.33	0.33	0.07	0.42	0.47	0.09	0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	225	435	360	137	622	515	113	1296	698	142	1331	
v/s Ratio Prot		0.16			0.19		c0.07	0.11	0.01	0.05	c0.36	
v/s Ratio Perm	0.16		0.02	c0.27		0.02			0.10			
v/c Ratio	0.68	0.70	0.08	0.80	0.57	0.05	0.96	0.25	0.21	0.54	0.80	
Uniform Delay, d1	27.9	28.1	24.0	24.2	21.9	18.1	36.9	14.9	12.3	34.7	19.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.81	0.75	1.00	1.00	
Incremental Delay, d2	7.8	4.9	0.1	26.5	1.2	0.0	68.7	0.4	0.1	3.8	5.2	
Delay (s)	35.7	32.9	24.1	50.6	23.1	18.1	103.2	12.5	9.4	38.5	24.5	
Level of Service	D	C	C	D	C	B	F	B	A	D	C	
Approach Delay (s)		31.7			27.8			24.6			25.5	
Approach LOS		C			C			C			C	

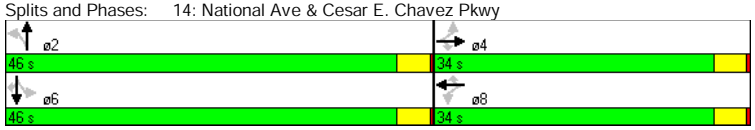
Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	190	250	180	120	350	120	90	580	70	745	310
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm		Perm
Protected Phases		4			8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phases	4	4	4	8	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	26.5	26.5	26.5	26.5	26.5	26.5	45.5	45.5	45.5	45.5	45.5
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57	0.57	0.57	0.57
v/c Ratio	0.91	0.44	0.32	0.43	0.62	0.21	0.80	0.38	0.24	0.88	0.37
Control Delay	67.3	22.5	7.2	24.4	26.5	4.3	62.4	9.8	3.9	19.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Total Delay	67.3	22.5	7.2	24.4	26.5	4.3	62.4	9.8	3.9	19.9	1.1
LOS	E	C	A	C	C	A	E	A	A	B	A
Approach Delay		31.8			21.6			16.4		13.7	
Approach LOS		C			C			B		B	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 86.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
14: National Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 1 with Improvements
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3185		1530	1610	1369
Flt Permitted	0.33	1.00	1.00	0.47	1.00	1.00	0.17	1.00		0.35	1.00	1.00
Satd. Flow (perm)	610	1863	1583	873	1863	1583	286	3185		566	1610	1369
Volume (vph)	190	250	180	120	350	120	90	580	50	70	745	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	272	196	130	380	130	98	630	54	76	810	337
RTOR Reduction (vph)	0	0	96	0	0	87	0	7	0	0	0	126
Lane Group Flow (vph)	207	272	100	130	380	43	98	677	0	76	810	211
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	26.5	26.5	26.5	26.5	26.5	26.5	45.5	45.5		45.5	45.5	45.5
Effective Green, g (s)	26.5	26.5	26.5	26.5	26.5	26.5	45.5	45.5		45.5	45.5	45.5
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57		0.57	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	202	617	524	289	617	524	163	1811		322	916	779
v/s Ratio Prot		0.15			0.20			0.21			c0.50	
v/s Ratio Perm	c0.34		0.06	0.15		0.03	0.34			0.13		0.15
v/c Ratio	1.02	0.44	0.19	0.45	0.62	0.08	0.60	0.37		0.24	0.88	0.27
Uniform Delay, d1	26.8	20.9	19.1	21.0	22.5	18.4	11.3	9.4		8.6	15.0	8.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.91		0.24	0.46	0.02
Incremental Delay, d2	69.9	0.5	0.2	1.1	1.8	0.1	15.2	0.6		1.2	8.9	0.6
Delay (s)	96.7	21.5	19.3	22.1	24.3	18.5	25.7	9.1		3.2	15.7	0.8
Level of Service	F	C	B	C	C	B	C	A		A	B	A
Approach Delay (s)		43.9			22.7			11.2			10.8	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM Average Control Delay	19.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	86.5%	ICU Level of Service	E	
Analysis Period (min)	15			

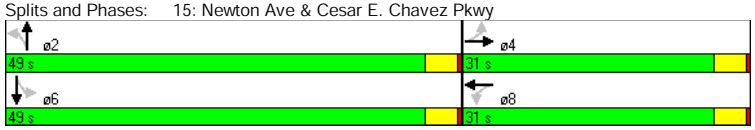
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	75	40	40	50	40	410	95	810
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	10.0	10.0	10.0	10.0	64.7	64.7	64.7	64.7
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.81	0.81	0.81	0.81
v/c Ratio	0.52	0.40	0.27	0.46	0.35	0.19	0.16	0.77
Control Delay	43.7	19.0	34.4	20.6	11.8	1.9	2.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	43.7	19.0	34.4	20.6	11.8	1.9	2.5	7.3
LOS	D	B	C	C	B	A	A	A
Approach Delay		29.6		24.1		2.7		6.8
Approach LOS		C		C		A		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
15: Newton Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 1 with Improvements
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1704		1612	3190		1612	1659	
Flt Permitted	0.58	1.00		0.65	1.00		0.21	1.00		0.48	1.00	
Satd. Flow (perm)	1076	1695		1203	1704		349	3190		811	1659	
Volume (vph)	75	40	60	40	50	65	40	410	30	95	810	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	43	65	43	54	71	43	446	33	103	880	152
RTOR Reduction (vph)	0	58	0	0	63	0	0	3	0	0	4	0
Lane Group Flow (vph)	82	50	0	43	62	0	43	476	0	103	1028	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.9	8.9		8.9	8.9		63.1	63.1		63.1	63.1	
Effective Green, g (s)	8.9	8.9		8.9	8.9		63.1	63.1		63.1	63.1	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	189		134	190		275	2516		640	1309	
v/s Ratio Prot		0.03			0.04			0.15			c0.62	
v/s Ratio Perm	c0.08			0.04			0.12			0.13		
v/c Ratio	0.68	0.27		0.32	0.33		0.16	0.19		0.16	0.79	
Uniform Delay, d1	34.2	32.6		32.8	32.8		2.0	2.1		2.0	4.7	
Progression Factor	1.00	1.00		1.00	1.00		0.76	0.68		0.70	0.44	
Incremental Delay, d2	14.9	0.8		1.4	1.0		1.1	0.2		0.4	3.2	
Delay (s)	49.1	33.3		34.2	33.8		2.7	1.6		1.8	5.3	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		40.1			33.9			1.7			5.0	
Approach LOS		D			C			A			A	

Intersection Summary					
HCM Average Control Delay	9.8	HCM Level of Service	A		
HCM Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	75.3%	ICU Level of Service	D		
Analysis Period (min)	15				

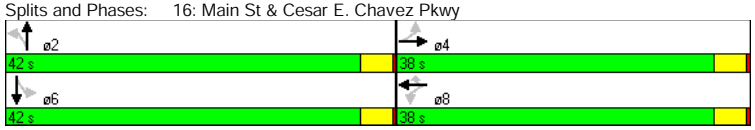
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	150	190	70	330	190	70	340	150	580
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0	42.0	42.0	42.0	42.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	52.5%	52.5%	52.5%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.1	23.1	23.1	23.1	23.1	48.9	48.9	48.9	48.9
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.61	0.61	0.61	0.61
v/c Ratio	0.72	0.42	0.25	0.67	0.36	0.72	0.25	0.36	0.86
Control Delay	42.4	23.1	21.0	30.3	4.5	59.0	7.9	8.1	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.8
Total Delay	42.4	23.1	21.0	30.3	4.5	59.0	8.2	8.1	21.7
LOS	D	C	C	C	A	E	A	A	C
Approach Delay		31.2		20.8			15.3		19.4
Approach LOS		C		C			B		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 20 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 88.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU
16: Main St & Cesar E. Chavez Pkwy
Horizon Year Alt 1 with Improvements
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1740	1839		1750	1863	1511	1545	2996		1549	1555	
Flt Permitted	0.31	1.00		0.51	1.00	1.00	0.19	1.00		0.47	1.00	
Satd. Flow (perm)	560	1839		941	1863	1511	313	2996		773	1555	
Volume (vph)	150	190	15	70	330	190	70	340	90	150	580	180
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	16	76	359	207	76	370	98	163	630	196
RTOR Reduction (vph)	0	4	0	0	0	147	0	22	0	0	10	0
Lane Group Flow (vph)	163	219	0	76	359	60	76	446	0	163	816	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.1	23.1		23.1	23.1	23.1	48.9	48.9		48.9	48.9	
Effective Green, g (s)	23.1	23.1		23.1	23.1	23.1	48.9	48.9		48.9	48.9	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.61	0.61		0.61	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	531		272	538	436	191	1831		472	950	
v/s Ratio Prot		0.12			0.19			0.15			c0.52	
v/s Ratio Perm	c0.29			0.08		0.04	0.24			0.21		
v/c Ratio	1.01	0.41		0.28	0.67	0.14	0.40	0.24		0.35	0.86	
Uniform Delay, d1	28.4	23.0		22.0	25.1	21.1	8.0	7.1		7.7	12.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.59	0.58	
Incremental Delay, d2	72.3	0.5		0.6	3.1	0.1	6.1	0.3		1.4	7.0	
Delay (s)	100.8	23.5		22.6	28.2	21.2	14.1	7.4		5.9	14.4	
Level of Service	F	C		C	C	C	B	A		A	B	
Approach Delay (s)		56.1			25.3			8.3			13.0	
Approach LOS		E			C			A			B	

Intersection Summary					
HCM Average Control Delay	21.6	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.91				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	88.6%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.94		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1745		1770	1747		1770	1777		1770	1846	
Flt Permitted	0.66	1.00		0.37	1.00		0.60	1.00		0.34	1.00	
Satd. Flow (perm)	1236	1745		691	1747		1123	1777		634	1846	
Volume (vph)	110	224	163	91	79	56	219	332	147	62	218	14
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	243	177	99	86	61	238	361	160	67	237	15
RTOR Reduction (vph)	0	41	0	0	39	0	0	24	0	0	3	0
Lane Group Flow (vph)	120	379	0	99	108	0	238	497	0	67	249	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.5	14.5		14.5	14.5		18.6	18.6		18.6	18.6	
Effective Green, g (s)	14.5	14.5		14.5	14.5		18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.45	0.45		0.45	0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	436	616		244	616		508	804		287	835	
v/s Ratio Prot		c0.22			0.06			c0.28			0.13	
v/s Ratio Perm	0.10			0.14			0.21			0.11		
v/c Ratio	0.28	0.61		0.41	0.17		0.47	0.62		0.23	0.30	
Uniform Delay, d1	9.5	11.0		10.0	9.2		7.8	8.6		6.9	7.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.8		1.1	0.1		0.7	1.4		0.4	0.2	
Delay (s)	9.9	12.8		11.1	9.3		8.5	10.0		7.3	7.3	
Level of Service	A	B		B	A		A	A		A	A	
Approach Delay (s)		12.2			10.0			9.5			7.3	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM Average Control Delay	10.0	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	41.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	60	17	143	187	0	28	0	124	16	22	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	65	18	155	203	0	30	0	135	17	24	14

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	84	155	203	30	135	55
Volume Left (vph)	0	155	0	30	0	17
Volume Right (vph)	18	0	0	0	135	14
Hadj (s)	-0.10	0.94	0.03	0.23	0.05	-0.06
Departure Headway (s)	4.5	5.7	4.8	5.2	3.2	4.9
Degree Utilization, x	0.11	0.25	0.27	0.04	0.12	0.08
Capacity (veh/h)	772	612	730	638	1121	682
Control Delay (s)	8.0	9.4	8.4	8.5	6.6	8.3
Approach Delay (s)	8.0	8.9		7.0		8.3
Approach LOS	A	A		A		A

Intersection Summary					
Delay	8.2				
HCM Level of Service	A				
Intersection Capacity Utilization	31.5%	ICU Level of Service	A		
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0							4.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							1.00
Flpb, ped/bikes	1.00	1.00			1.00							1.00
Frt	1.00	1.00			1.00							0.86
Flt Protected	0.95	1.00			1.00							1.00
Satd. Flow (prot)	1543	3539			3534							1454
Flt Permitted	0.95	1.00			1.00							1.00
Satd. Flow (perm)	1543	3539			3534							1454
Volume (vph)	74	504	0	0	1542	17	0	0	0	0	0	81
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	548	0	0	1676	18	0	0	0	0	0	88
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	81
Lane Group Flow (vph)	80	548	0	0	1693	0	0	0	0	0	0	7
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									5			11
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot											Over
Protected Phases	13	18 2 6			14 2 6							13
Permitted Phases												
Actuated Green, G (s)	7.2	59.3			44.1							7.2
Effective Green, g (s)	7.2	59.3			44.1							7.2
Actuated g/C Ratio	0.08	0.66			0.49							0.08
Clearance Time (s)	4.0											4.0
Vehicle Extension (s)	3.0											3.0
Lane Grp Cap (vph)	123	2321			1724							116
v/s Ratio Prot	c0.05	0.15			c0.48							0.00
v/s Ratio Perm												
v/c Ratio	0.65	0.24			0.98							0.06
Uniform Delay, d1	40.4	6.3			22.8							38.5
Progression Factor	1.00	1.00			1.00							1.00
Incremental Delay, d2	11.7	0.1			17.5							0.2
Delay (s)	52.0	6.4			40.2							38.7
Level of Service	D	A			D							D
Approach Delay (s)		12.2			40.2			0.0			38.7	
Approach LOS		B			D			A			D	

Intersection Summary				
HCM Average Control Delay	32.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	39.1	
Intersection Capacity Utilization	54.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1299	1817			1754	1509		1744	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.76	1.00		0.78	1.00
Satd. Flow (perm)	1770	3539	1583	1299	1817			1351	1509		1392	1509
Volume (vph)	106	258	18	192	628	123	33	98	86	115	205	307
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	280	20	209	683	134	36	107	93	125	223	334
RTOR Reduction (vph)	0	0	12	0	5	0	0	0	64	0	0	223
Lane Group Flow (vph)	115	280	8	209	812	0	0	143	29	0	348	111
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.5	43.6	43.6	18.8	53.9			33.8	33.8		33.8	33.8
Effective Green, g (s)	8.5	43.6	43.6	18.8	53.9			33.8	33.8		33.8	33.8
Actuated g/C Ratio	0.08	0.40	0.40	0.17	0.50			0.31	0.31		0.31	0.31
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	139	1426	638	226	905			422	471		435	471
v/s Ratio Prot	0.06	0.08		c0.16	c0.45							
v/s Ratio Perm			0.01					0.11	0.02		c0.25	0.07
v/c Ratio	0.83	0.20	0.01	0.92	0.90			0.34	0.06		0.80	0.23
Uniform Delay, d1	49.1	20.9	19.4	44.0	24.6			28.6	26.1		34.1	27.6
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	31.4	0.1	0.0	39.4	11.5			0.5	0.1		10.1	0.3
Delay (s)	80.6	21.0	19.4	83.4	36.1			29.1	26.1		44.2	27.9
Level of Service	F	C	B	F	D			C	C		D	C
Approach Delay (s)		37.4			45.7			27.9			36.2	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM Average Control Delay	39.7	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	108.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	83.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	0.93		1.00	0.91		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1659		1687	1608		1770	3447		1770	4848	
Flt Permitted	0.58	1.00		0.37	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1029	1659		659	1608		1770	3447		1770	4848	
Volume (vph)	230	180	140	45	70	120	90	700	40	160	860	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	196	152	49	76	130	98	761	43	174	935	337
RTOR Reduction (vph)	0	47	0	0	90	0	0	5	0	0	76	0
Lane Group Flow (vph)	250	301	0	49	116	0	98	799	0	174	1196	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	18.8	18.8		18.8	18.8		4.6	24.3		6.1	25.8	
Effective Green, g (s)	18.8	18.8		18.8	18.8		4.6	24.3		6.1	25.8	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.08	0.40		0.10	0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	316	510		202	494		133	1369		176	2044	
v/s Ratio Prot		0.18			0.07		0.06	0.23		c0.10	c0.25	
v/s Ratio Perm	c0.24			0.07								
v/c Ratio	0.79	0.59		0.24	0.23		0.74	0.58		0.99	0.58	
Uniform Delay, d1	19.4	17.9		15.9	15.8		27.7	14.5		27.5	13.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.7	1.8		0.6	0.2		19.0	1.8		63.9	1.2	
Delay (s)	32.1	19.7		16.5	16.1		46.7	16.3		91.4	14.8	
Level of Service	C	B		B	B		D	B		F	B	
Approach Delay (s)		24.9			16.2			19.6			24.0	
Approach LOS		C			B			B			C	

Intersection Summary				
HCM Average Control Delay	22.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.85	1.00	1.00	0.94		0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1299	1719	3438	1443		1763		3367	1827	1525
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1299	1719	3438	1443		1763		3367	1827	1525
Volume (vph)	50	670	4	17	942	116	0	6	2	375	15	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	728	4	18	1024	126	0	7	2	408	16	27
RTOR Reduction (vph)	0	0	2	0	0	47	0	2	0	0	0	20
Lane Group Flow (vph)	54	728	2	18	1024	79	0	7	0	408	16	7
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	3.9	35.8	30.1	2.6	34.5	47.5		13.4		29.7	29.7	29.7
Effective Green, g (s)	3.9	35.8	30.1	2.6	34.5	47.5		13.4		29.7	29.7	29.7
Actuated g/C Ratio	0.03	0.32	0.27	0.02	0.30	0.42		0.12		0.26	0.26	0.26
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	113	1074	344	39	1045	604		208		881	478	399
v/s Ratio Prot	c0.02	0.21		0.01	c0.30	0.02		c0.00		c0.12	0.01	
v/s Ratio Perm			0.00			0.03						0.00
v/c Ratio	0.48	0.68	0.01	0.46	0.98	0.13		0.03		0.46	0.03	0.02
Uniform Delay, d1	53.8	33.8	30.7	54.8	39.2	20.3		44.3		35.2	31.2	31.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.92	0.94	1.41
Incremental Delay, d2	3.2	1.7	0.0	8.4	22.7	0.1		0.1		0.4	0.0	0.0
Delay (s)	57.0	35.5	30.7	63.2	61.9	20.4		44.4		32.6	29.2	43.9
Level of Service	E	D	C	E	E	C		D		C	C	D
Approach Delay (s)		37.0			57.4			44.4			33.2	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM Average Control Delay	46.2	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	113.5	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	50.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.99			0.94			0.99				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1723			1667			1382				
Flt Permitted		0.98			1.00			1.00				
Satd. Flow (perm)		1723			1667			1382				
Volume (vph)	84	104	15	18	102	88	5	180	19	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	113	16	20	111	96	5	196	21	0	0	0
RTOR Reduction (vph)	0	4	0	0	30	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	216	0	0	197	0	0	219	0	0	0	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	40%	2%	2%	2%	2%
Turn Type	Split			Split			Perm					
Protected Phases	4	4		8	8			2				
Permitted Phases							2					
Actuated Green, G (s)		9.7			9.4			20.1				
Effective Green, g (s)		9.7			9.4			20.1				
Actuated g/C Ratio		0.19			0.18			0.39				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		326			306			543				
v/s Ratio Prot		c0.13			c0.12							
v/s Ratio Perm								0.16				
v/c Ratio		0.66			0.64			0.40				
Uniform Delay, d1		19.2			19.3			11.2				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		5.0			4.6			0.5				
Delay (s)		24.2			23.9			11.7				
Level of Service		C			C			B				
Approach Delay (s)		24.2			23.9			11.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM Average Control Delay	20.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	43.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.95			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1760	1773			1787	1574		1719	1810	2707	
Flt Permitted		0.36	1.00			0.42	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		670	1773			788	1574		1719	1810	2707	
Volume (vph)	65	25	170	80	250	45	120	50	70	215	55	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	27	185	87	272	49	130	54	76	234	60	315
RTOR Reduction (vph)	0	0	11	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	261	0	0	321	184	0	76	234	375	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		45.2	45.2			45.2	45.2		11.4	23.1	60.3	
Effective Green, g (s)		45.2	45.2			45.2	45.2		11.4	23.1	60.3	
Actuated g/C Ratio		0.33	0.33			0.33	0.33		0.08	0.17	0.43	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		218	577			257	513		141	301	1176	
v/s Ratio Prot			0.15						0.04	c0.13		
v/s Ratio Perm		0.15				c0.41	0.12				0.14	
v/c Ratio		0.45	0.45			1.25	0.36		0.54	0.78	0.32	
Uniform Delay, d1		37.0	37.0			46.8	35.7		61.2	55.4	25.8	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		1.5	0.6			140.2	0.4		3.9	11.9	0.2	
Delay (s)		38.4	37.6			187.0	36.2		65.1	67.3	25.9	
Level of Service		D	D			F	D		E	E	C	
Approach Delay (s)			37.8			132.0				44.4		
Approach LOS			D			F				D		

Intersection Summary				
HCM Average Control Delay	103.4	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.10			
Actuated Cycle Length (s)	138.8	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	94.7%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.98			0.99		
Flt Protected		0.95	1.00			0.96		
Satd. Flow (prot)		1765	3384			3345		
Flt Permitted		0.95	1.00			0.88		
Satd. Flow (perm)		1765	3384			3064		
Volume (vph)	30	180	445	65	60	735	65	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	196	484	71	65	799	71	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	229	555	0	0	946	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		21.3	33.0			33.2		
Effective Green, g (s)		21.3	33.0			33.2		
Actuated g/C Ratio		0.15	0.24			0.24		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		271	805			733		
v/s Ratio Prot		c0.13	0.16					
v/s Ratio Perm						c0.31		
v/c Ratio		0.85	0.69			1.29		
Uniform Delay, d1		57.1	48.2			52.8		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		20.8	2.5			140.9		
Delay (s)		77.9	50.7			193.7		
Level of Service		E	D			F		
Approach Delay (s)			58.7			193.7		
Approach LOS			E			F		

Intersection Summary				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1719	3438	1519	1687	3374	1509	1719	3438	1481	1719	3438	1538
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)	1719	3438	1519	1687	3374	1509	1719	3438	1481	1719	3438	1538
Volume (vph)	70	657	140	300	735	390	30	160	30	130	1040	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	714	152	326	799	424	33	174	33	141	1130	43
RTOR Reduction (vph)	0	0	123	0	0	277	0	0	28	0	0	23
Lane Group Flow (vph)	76	714	29	326	799	147	33	174	5	141	1130	20
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6	15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	5.2	8.6	6.9	16.5	19.9	15.6	2.6	11.5	11.5	12.7	25.6	26.8
Effective Green, g (s)	5.2	8.6	6.9	16.5	19.9	15.6	2.6	11.5	11.5	12.7	25.6	26.8
Actuated g/C Ratio	0.06	0.11	0.08	0.20	0.24	0.19	0.03	0.14	0.14	0.16	0.31	0.33
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	110	364	129	342	826	290	55	486	209	269	1083	583
v/s Ratio Prot	0.04	c0.21	0.01	c0.19	0.24		0.02	0.05		c0.08	c0.33	0.01
v/s Ratio Perm			0.01			0.10			0.00			0.01
v/c Ratio	0.69	1.96	0.23	0.95	0.97	0.51	0.60	0.36	0.02	0.52	1.04	0.03
Uniform Delay, d1	37.3	36.4	34.7	32.0	30.4	29.4	38.8	31.6	30.1	31.5	27.8	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.22	0.87	1.36
Incremental Delay, d2	17.1	442.6	0.9	36.2	23.3	1.4	17.0	0.5	0.0	1.8	39.0	0.0
Delay (s)	54.3	478.9	35.6	68.3	53.7	30.8	55.9	32.0	30.1	40.1	63.3	25.1
Level of Service	D	F	D	E	D	C	E	C	C	D	E	C
Approach Delay (s)		373.1			50.5			35.0			59.5	
Approach LOS		F			D			D			E	

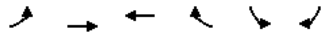
Intersection Summary			
HCM Average Control Delay	127.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.91	
Frt		0.86		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		1611		3539	5085	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		1611		3539	5085	
Volume (vph)	0	915	0	1050	415	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	995	0	1141	451	0
RTOR Reduction (vph)	0	36	0	0	0	0
Lane Group Flow (vph)	0	959	0	1141	451	0
Turn Type		custom				
Protected Phases				2 4 6	6	
Permitted Phases		4				
Actuated Green, G (s)		40.2		64.2	16.0	
Effective Green, g (s)		40.2		64.2	16.0	
Actuated g/C Ratio		0.63		1.00	0.25	
Clearance Time (s)		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1009		3539	1267	
v/s Ratio Prot				c0.32	0.09	
v/s Ratio Perm		c0.60				
v/c Ratio		0.95		0.32	0.36	
Uniform Delay, d1		11.1		0.0	19.9	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		17.6		0.1	0.8	
Delay (s)		28.7		0.1	20.6	
Level of Service		C		A	C	
Approach Delay (s)	28.7			0.1	20.6	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	4.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

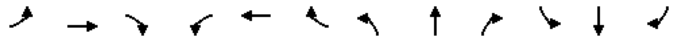
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00			0.99			1.00	
Frt	1.00	0.99		1.00	0.99			0.99			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.97	
Satd. Flow (prot)	1756	1830		1730	1845			1783			1708	
Flt Permitted	0.35	1.00		0.47	1.00			0.79			0.76	
Satd. Flow (perm)	653	1830		850	1845			1441			1330	
Volume (vph)	91	347	31	3	458	25	61	41	7	127	25	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	377	34	3	498	27	66	45	8	138	27	76
RTOR Reduction (vph)	0	6	0	0	3	0	0	4	0	0	24	0
Lane Group Flow (vph)	99	405	0	3	522	0	0	115	0	0	217	0
Confl. Peds. (#/hr)	27		37	37		27	14		10	10		14
Confl. Bikes (#/hr)			1			3			3			1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.3	15.3		15.3	15.3			10.9			10.9	
Effective Green, g (s)	15.3	15.3		15.3	15.3			10.9			10.9	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	292	819		380	825			459			424	
v/s Ratio Prot		0.22			c0.28							
v/s Ratio Perm	0.15			0.00				0.08			c0.16	
v/c Ratio	0.34	0.50		0.01	0.63			0.25			0.51	
Uniform Delay, d1	6.2	6.7		5.2	7.3			8.6			9.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.5		0.0	1.6			0.3			1.0	
Delay (s)	6.9	7.2		5.2	8.9			8.9			10.5	
Level of Service	A	A		A	A			A			B	
Approach Delay (s)		7.1			8.9			8.9			10.5	
Approach LOS		A			A			A			B	

Intersection Summary					
HCM Average Control Delay	8.5	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	34.2	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	56.8%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3479		1770	1583
Flt Permitted	0.28	1.00	1.00		0.95	1.00
Satd. Flow (perm)	524	3539	3479		1770	1583
Volume (vph)	65	1945	780	100	100	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	2114	848	109	109	87
RTOR Reduction (vph)	0	0	11	0	0	74
Lane Group Flow (vph)	71	2114	946	0	109	13
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	48.7	48.7	48.7		9.8	9.8
Effective Green, g (s)	48.7	48.7	48.7		9.8	9.8
Actuated g/C Ratio	0.73	0.73	0.73		0.15	0.15
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	384	2592	2548		261	233
v/s Ratio Prot		c0.60	0.27		c0.06	
v/s Ratio Perm	0.14					0.01
v/c Ratio	0.18	0.82	0.37		0.42	0.06
Uniform Delay, d1	2.8	5.9	3.3		25.8	24.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	2.1	0.1		1.1	0.1
Delay (s)	3.0	8.0	3.4		26.8	24.5
Level of Service	A	A	A		C	C
Approach Delay (s)		7.8	3.4		25.8	
Approach LOS		A	A		C	

Intersection Summary				
HCM Average Control Delay	7.6	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	66.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	1.00			0.91			0.99	
Flt Protected		1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)		1833		1770	1863			1664			1782	
Flt Permitted		1.00		0.95	1.00			0.98			0.97	
Satd. Flow (perm)		1833		1770	1863			1664			1782	
Volume (vph)	0	515	69	41	154	0	56	0	122	272	110	38
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	560	75	45	167	0	61	0	133	296	120	41
RTOR Reduction (vph)	0	5	0	0	0	0	0	93	0	0	4	0
Lane Group Flow (vph)	0	630	0	45	167	0	0	101	0	0	453	0
Turn Type				Prot			Split			Split		
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)		30.9		3.8	38.7			9.9			20.3	
Effective Green, g (s)		30.9		3.8	38.7			9.9			20.3	
Actuated g/C Ratio		0.38		0.05	0.48			0.12			0.25	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		700		83	891			204			447	
v/s Ratio Prot		c0.34		c0.03	0.09			c0.06			c0.25	
v/s Ratio Perm												
v/c Ratio		0.90		0.54	0.19			0.49			1.01	
Uniform Delay, d1		23.5		37.7	12.1			33.2			30.3	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		14.7		7.1	0.1			1.9			46.1	
Delay (s)		38.2		44.8	12.2			35.1			76.4	
Level of Service		D		D	B			D			E	
Approach Delay (s)		38.2			19.1			35.1			76.4	
Approach LOS		D			B			D			E	

Intersection Summary				
HCM Average Control Delay	46.8	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	77.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.98			1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.90			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)	1751	1862		1759	1797			1649			1781	
Flt Permitted	0.40	1.00		0.21	1.00			0.98			0.70	
Satd. Flow (perm)	731	1862		380	1797			1622			1296	
Volume (vph)	19	625	2	113	347	77	9	43	134	189	83	11
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	679	2	123	377	84	10	47	146	205	90	12
RTOR Reduction (vph)	0	0	0	0	13	0	0	94	0	0	2	0
Lane Group Flow (vph)	21	681	0	123	448	0	0	109	0	0	305	0
Confl. Peds. (#/hr)	15		16	16		15	38		11	11		38
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.8	22.8		22.8	22.8			17.1			17.1	
Effective Green, g (s)	22.8	22.8		22.8	22.8			17.1			17.1	
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	348	886		181	855			579			463	
v/s Ratio Prot		c0.37			0.25							
v/s Ratio Perm	0.03			0.32				0.07			c0.24	
v/c Ratio	0.06	0.77		0.68	0.52			0.19			0.66	
Uniform Delay, d1	6.8	10.4		9.7	8.8			10.6			12.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	4.1		9.7	0.6			0.2			3.4	
Delay (s)	6.8	14.4		19.4	9.3			10.8			16.3	
Level of Service	A	B		B	A			B			B	
Approach Delay (s)		14.2			11.5			10.8			16.3	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM Average Control Delay	13.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	80.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1950	860	20	0	75
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2120	935	22	0	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)		661	658			
pX, platoon unblocked	0.89				0.39	0.89
vC, conflicting volume	957				2005	478
vC1, stage 1 conf vol					946	
vC2, stage 2 conf vol					1060	
vCu, unblocked vol	829				1168	293
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	100				100	87
cM capacity (veh/h)	667				142	627

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1060	1060	623	333	82
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	82
cSH	1700	1700	1700	1700	627
Volume to Capacity	0.62	0.62	0.37	0.20	0.13
Queue Length 95th (ft)	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	11.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.6
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1759	1863	1544	1764	1863	1549	1530	3059	1323	1530	3018	
Flt Permitted	0.57	1.00	1.00	0.14	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1065	1863	1544	259	1863	1549	1530	3059	1323	1530	3018	
Volume (vph)	130	420	230	120	280	90	140	506	670	114	694	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	457	250	130	304	98	152	550	728	124	754	57
RTOR Reduction (vph)	0	0	173	0	0	56	0	0	158	0	7	0
Lane Group Flow (vph)	141	457	77	130	304	42	152	550	571	124	804	0
Confl. Peds. (#/hr)	10		13	13		10			27			27
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Prot		custom	Prot		
Protected Phases		4			8		5	2	3	1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)	24.5	24.5	24.5	34.4	34.4	34.4	11.9	24.1	30.0	9.5	21.7	
Effective Green, g (s)	24.5	24.5	24.5	34.4	34.4	34.4	11.9	24.1	30.0	9.5	21.7	
Actuated g/C Ratio	0.31	0.31	0.31	0.43	0.43	0.43	0.15	0.30	0.38	0.12	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	326	571	473	111	801	666	228	922	496	182	819	
v/s Ratio Prot		0.25			0.16		c0.10	0.18	c0.08	0.08	0.27	
v/s Ratio Perm	0.13		0.05	c0.50		0.03			0.35			
v/c Ratio	0.43	0.80	0.16	1.17	0.38	0.06	0.67	0.60	1.15	0.68	0.98	
Uniform Delay, d1	22.2	25.5	20.3	22.8	15.5	13.4	32.2	23.8	25.0	33.8	29.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.96	0.89	1.00	1.00	
Incremental Delay, d2	0.9	7.9	0.2	138.7	0.3	0.0	4.9	1.9	82.9	10.0	27.4	
Delay (s)	23.1	33.4	20.4	161.5	15.8	13.4	31.8	24.8	105.0	43.8	56.4	
Level of Service	C	C	C	F	B	B	C	C	F	D	E	
Approach Delay (s)		27.9			51.0			66.4			54.7	
Approach LOS		C			D			E			D	

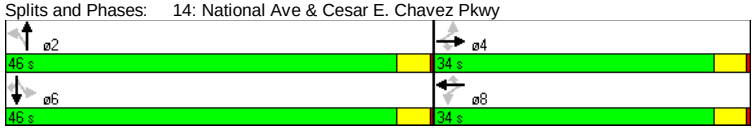
Intersection Summary			
HCM Average Control Delay	52.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	300	400	290	110	270	275	120	1000	120	550	410
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm		Perm
Protected Phases		4			8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phases	4	4	4	8	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.52	0.71	1.07	0.71	0.49
Control Delay	76.7	25.2	6.6	31.8	20.9	17.2	16.5	13.4	106.2	10.1	2.3
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	4.8	0.9
Total Delay	79.8	25.2	6.6	31.8	20.9	17.2	16.5	13.7	106.2	14.9	3.2
LOS	E	C	A	C	C	B	B	B	F	B	A
Approach Delay		36.3			21.2			14.0		20.6	
Approach LOS		D			C			B		C	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 79 (99%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 22.6		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3179		1530	1610	1369
Flt Permitted	0.47	1.00	1.00	0.31	1.00	1.00	0.28	1.00		0.14	1.00	1.00
Satd. Flow (perm)	875	1863	1583	572	1863	1583	480	3179		231	1610	1369
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	0	154	0	0	43	0	10	0	0	0	189
Lane Group Flow (vph)	326	435	161	120	293	256	130	1187	0	130	598	257
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	42.0
Effective Green, g (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52		0.52	0.52	0.52
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	328	699	594	215	699	594	252	1669		121	845	719
v/s Ratio Prot		0.23			0.16			0.37			0.37	
v/s Ratio Perm	c0.37		0.10	0.21		0.16	0.27			c0.56		0.19
v/c Ratio	0.99	0.62	0.27	0.56	0.42	0.43	0.52	0.71		1.07	0.71	0.36
Uniform Delay, d1	24.9	20.4	17.4	19.8	18.5	18.6	12.4	14.4		19.0	14.4	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.75		0.57	0.47	0.59
Incremental Delay, d2	47.8	1.7	0.2	3.1	0.4	0.5	6.9	2.4		85.0	3.1	0.8
Delay (s)	72.7	22.1	17.6	22.9	18.9	19.1	15.3	13.2		95.8	9.7	7.5
Level of Service	E	C	B	C	B	B	B	B		F	A	A
Approach Delay (s)		36.1			19.7			13.4			18.4	
Approach LOS		D			B			B			B	

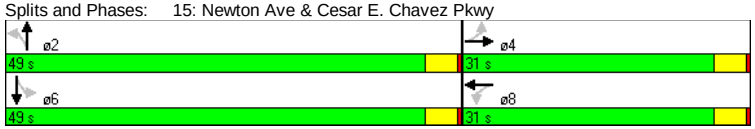
Intersection Summary				
HCM Average Control Delay	21.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	81.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	135	130	90	70	40	795	165	890
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	15.6	15.6	15.6	15.6	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.70	0.70	0.70	0.70
v/c Ratio	0.72	0.58	0.49	0.49	0.41	0.41	0.61	0.87
Control Delay	48.7	29.3	35.6	15.9	20.4	5.6	16.7	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Total Delay	48.7	29.3	35.6	15.9	20.4	5.7	16.7	17.1
LOS	D	C	D	B	C	A	B	B
Approach Delay		37.1		22.3		6.4		17.0
Approach LOS		D		C		A		B

Intersection Summary		
Cycle Length: 80		
Actuated Cycle Length: 80		
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 16.5	Intersection LOS: B	
Intersection Capacity Utilization 85.4%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.95		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1686		1612	3189		1612	1682	
Flt Permitted	0.45	1.00		0.43	1.00		0.15	1.00		0.28	1.00	
Satd. Flow (perm)	847	1765		801	1686		257	3189		477	1682	
Volume (vph)	135	130	70	90	70	120	40	795	60	165	890	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	141	76	98	76	130	43	864	65	179	967	60
RTOR Reduction (vph)	0	30	0	0	93	0	0	5	0	0	2	0
Lane Group Flow (vph)	147	187	0	98	113	0	43	924	0	179	1025	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Effective Green, g (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70		0.70	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	344		156	329		181	2248		336	1186	
v/s Ratio Prot		0.11			0.07			0.29			c0.61	
v/s Ratio Perm	c0.17			0.12			0.17			0.38		
v/c Ratio	0.89	0.54		0.63	0.34		0.24	0.41		0.53	0.86	
Uniform Delay, d1	31.4	29.0		29.5	27.8		4.2	4.9		5.6	8.9	
Progression Factor	1.00	1.00		1.00	1.00		0.91	0.89		0.71	0.66	
Incremental Delay, d2	40.3	1.8		7.7	0.6		2.7	0.5		5.2	7.5	
Delay (s)	71.7	30.8		37.2	28.4		6.5	4.9		9.1	13.4	
Level of Service	E	C		D	C		A	A		A	B	
Approach Delay (s)		47.3			31.2			4.9			12.7	
Approach LOS		D			C			A			B	

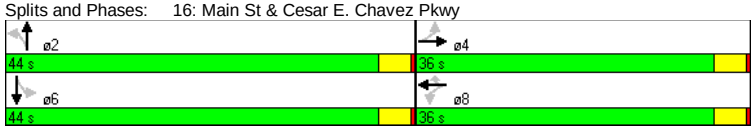
Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	120	290	70	230	270	70	640	250	540
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	20.1	20.1	20.1	20.1	20.1	51.9	51.9	51.9	51.9
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.65	0.65	0.65	0.65
v/c Ratio	0.53	0.74	0.38	0.54	0.58	0.72	0.46	1.08	0.86
Control Delay	32.3	35.9	28.4	29.0	15.6	55.9	8.4	85.0	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	4.3
Total Delay	32.3	35.9	28.4	29.0	15.6	55.9	9.6	85.0	21.3
LOS	C	D	C	C	B	E	A	F	C
Approach Delay		34.9		22.6			13.3		36.4
Approach LOS		C		C			B		D

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



16: Main St & Cesar E. Chavez Pkwy

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1751	1836		1751	1863	1535	1549	2974		1542	1534	
Flt Permitted	0.43	1.00		0.28	1.00	1.00	0.19	1.00		0.28	1.00	
Satd. Flow (perm)	800	1836		512	1863	1535	317	2974		459	1534	
Volume (vph)	120	290	25	70	230	270	70	640	180	250	540	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	315	27	76	250	293	76	696	196	272	587	283
RTOR Reduction (vph)	0	4	0	0	0	118	0	23	0	0	15	0
Lane Group Flow (vph)	130	338	0	76	250	175	76	869	0	272	855	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.1	20.1		20.1	20.1	20.1	51.9	51.9		51.9	51.9	
Effective Green, g (s)	20.1	20.1		20.1	20.1	20.1	51.9	51.9		51.9	51.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.65	0.65		0.65	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	461		129	468	386	206	1929		298	995	
v/s Ratio Prot		c0.18			0.13			0.29			0.56	
v/s Ratio Perm	0.16			0.15		0.11	0.24			c0.59		
v/c Ratio	0.65	0.73		0.59	0.53	0.45	0.37	0.45		0.91	0.86	
Uniform Delay, d1	26.8	27.5		26.3	25.9	25.3	6.5	7.0		12.1	11.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.65	0.66	
Incremental Delay, d2	7.0	5.9		6.7	1.2	0.8	5.0	0.8		22.3	5.6	
Delay (s)	33.8	33.4		33.0	27.1	26.1	11.5	7.7		30.1	12.9	
Level of Service	C	C		C	C	C	B	A		C	B	
Approach Delay (s)		33.5			27.4			8.0			17.0	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM Average Control Delay	18.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	85.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

17: Harbor Dr & Cesar E. Chavez Pkwy

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98		1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.99		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)	3183	3265		1421	3232		1363	1439	1109		1596	1382
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00	1.00		0.84	1.00
Satd. Flow (perm)	3183	3265		1421	3232		1021	1439	1109		1381	1382
Volume (vph)	468	1500	40	50	465	43	50	63	35	33	30	324
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	1630	43	54	505	47	54	68	38	36	33	352
RTOR Reduction (vph)	0	1	0	0	5	0	0	0	33	0	0	111
Lane Group Flow (vph)	509	1672	0	54	547	0	54	68	5	0	69	241
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			9			14			3			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm		Perm	Perm		pm+ov
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	3
Permitted Phases							12		12	1 5 16		1 5 16
Actuated Green, G (s)	23.9	53.3		6.2	35.6		13.3	13.3	13.3		21.5	45.4
Effective Green, g (s)	23.9	53.3		6.2	35.6		13.3	13.3	13.3		21.5	45.4
Actuated g/C Ratio	0.22	0.49		0.06	0.33		0.12	0.12	0.12		0.20	0.42
Clearance Time (s)	4.0			4.0			4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0			3.0			3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	698	1597		81	1056		125	176	135		272	626
v/s Ratio Prot	c0.16	c0.51		0.04	0.17			0.05				c0.08
v/s Ratio Perm							c0.05		0.00		0.05	0.09
v/c Ratio	0.73	1.05		0.67	0.52		0.43	0.39	0.03		0.25	0.39
Uniform Delay, d1	39.5	27.8		50.4	29.7		44.3	44.1	42.2		37.0	22.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.21	0.80
Incremental Delay, d2	3.8	35.9		18.8	0.4		2.4	1.4	0.1		0.5	0.4
Delay (s)	43.4	63.8		69.2	30.2		46.7	45.5	42.3		45.0	18.0
Level of Service	D	E		E	C		D	D	D		D	B
Approach Delay (s)		59.0			33.7			45.2			22.5	
Approach LOS		E			C			D			C	

Intersection Summary				
HCM Average Control Delay	49.2	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	28.0	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1739		1770	1756		1770	1806		1770	1849	
Flt Permitted	0.64	1.00		0.20	1.00		0.55	1.00		0.34	1.00	
Satd. Flow (perm)	1197	1739		367	1756		1019	1806		642	1849	
Volume (vph)	108	255	203	143	87	54	235	400	101	66	256	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	277	221	155	95	59	255	435	110	72	278	14
RTOR Reduction (vph)	0	39	0	0	30	0	0	8	0	0	2	0
Lane Group Flow (vph)	117	459	0	155	124	0	255	537	0	72	290	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.4	25.4		25.4	25.4		41.7	41.7		41.7	41.7	
Effective Green, g (s)	25.4	25.4		25.4	25.4		41.7	41.7		41.7	41.7	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.56	0.56		0.56	0.56	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	405	588		124	594		566	1003		356	1027	
v/s Ratio Prot		0.26			0.07			c0.30			0.16	
v/s Ratio Perm	0.10			c0.42			0.25			0.11		
v/c Ratio	0.29	0.78		1.25	0.21		0.45	0.53		0.20	0.28	
Uniform Delay, d1	18.2	22.3		24.8	17.7		9.9	10.6		8.4	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	6.7		162.7	0.2		2.6	2.0		1.3	0.7	
Delay (s)	18.6	29.0		187.5	17.9		12.5	12.6		9.6	9.5	
Level of Service	B	C		F	B		B	B		A	A	
Approach Delay (s)		27.0			103.0			12.6			9.5	
Approach LOS		C			F			B			A	

Intersection Summary				
HCM Average Control Delay	29.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	194	16	49	79	0	7	0	261	28	12	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	211	17	53	86	0	8	0	284	30	13	9

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	228	53	86	8	284	52
Volume Left (vph)	0	53	0	8	0	30
Volume Right (vph)	17	0	0	0	284	9
Hadj (s)	-0.01	1.10	0.03	0.23	-0.41	0.05
Departure Headway (s)	4.3	5.9	4.8	5.1	3.2	4.8
Degree Utilization, x	0.27	0.09	0.12	0.01	0.25	0.07
Capacity (veh/h)	821	591	722	656	1112	695
Control Delay (s)	8.9	8.3	7.3	8.1	7.3	8.2
Approach Delay (s)	8.9	7.7		7.3		8.2
Approach LOS	A	A		A		A

Intersection Summary				
Delay	8.0			
HCM Level of Service	A			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0							4.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							1.00
Flpb, ped/bikes	1.00	1.00			1.00							1.00
Frt	1.00	1.00			0.99							0.86
Flt Protected	0.95	1.00			1.00							1.00
Satd. Flow (prot)	1543	3539			3506							1454
Flt Permitted	0.95	1.00			1.00							1.00
Satd. Flow (perm)	1543	3539			3506							1454
Volume (vph)	83	1520	0	0	588	39	0	0	0	0	0	51
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	1652	0	0	639	42	0	0	0	0	0	55
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	50
Lane Group Flow (vph)	90	1652	0	0	677	0	0	0	0	0	0	5
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									4			9
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot											Over
Protected Phases	13	18 2 6			14 2 6							13
Permitted Phases												
Actuated Green, G (s)	9.8	67.5			49.7							9.8
Effective Green, g (s)	9.8	67.5			49.7							9.8
Actuated g/C Ratio	0.09	0.65			0.48							0.09
Clearance Time (s)	4.0											4.0
Vehicle Extension (s)	3.0											3.0
Lane Grp Cap (vph)	147	2315			1688							138
v/s Ratio Prot	0.06	c0.47			0.19							0.00
v/s Ratio Perm												
v/c Ratio	0.61	0.71			0.40							0.04
Uniform Delay, d1	44.9	11.6			17.2							42.4
Progression Factor	1.00	1.00			1.00							1.00
Incremental Delay, d2	7.3	1.1			0.2							0.1
Delay (s)	52.2	12.6			17.3							42.5
Level of Service	D	B			B							D
Approach Delay (s)		14.7			17.3			0.0			42.5	
Approach LOS		B			B			A			D	

Intersection Summary				
HCM Average Control Delay	16.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	35.7	
Intersection Capacity Utilization	45.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1597	1762			1762	1509		1734	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.82	1.00		0.75	1.00
Satd. Flow (perm)	1770	3539	1583	1597	1762			1461	1509		1338	1509
Volume (vph)	94	612	85	463	427	240	18	98	168	199	210	102
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	665	92	503	464	261	20	107	183	216	228	111
RTOR Reduction (vph)	0	0	70	0	19	0	0	0	122	0	0	74
Lane Group Flow (vph)	102	665	22	503	706	0	0	127	61	0	444	37
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.6	25.3	25.3	32.1	48.8			35.1	35.1		35.1	35.1
Effective Green, g (s)	8.6	25.3	25.3	32.1	48.8			35.1	35.1		35.1	35.1
Actuated g/C Ratio	0.08	0.24	0.24	0.31	0.47			0.34	0.34		0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	146	857	383	491	823			491	507		449	507
v/s Ratio Prot	0.06	0.19		c0.31	c0.40							
v/s Ratio Perm			0.01					0.09	0.04		c0.33	0.02
v/c Ratio	0.70	0.78	0.06	1.02	0.86			0.26	0.12		0.99	0.07
Uniform Delay, d1	46.7	37.0	30.4	36.2	24.8			25.2	24.0		34.5	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	13.6	4.4	0.1	47.0	8.8			0.3	0.1		39.1	0.1
Delay (s)	60.3	41.4	30.5	83.2	33.6			25.5	24.1		73.6	23.7
Level of Service	E	D	C	F	C			C	C		E	C
Approach Delay (s)		42.5			53.9			24.7			63.6	
Approach LOS		D			D			C			E	

Intersection Summary				
HCM Average Control Delay	49.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	104.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	81.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	0.91		1.00	0.92		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1612		1687	1643		1770	3493		1770	4931	
Flt Permitted	0.62	1.00		0.43	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1095	1612		771	1643		1770	3493		1770	4931	
Volume (vph)	320	100	160	60	70	70	50	1050	100	250	1060	270
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	109	174	65	76	76	54	1141	109	272	1152	293
RTOR Reduction (vph)	0	58	0	0	37	0	0	7	0	0	42	0
Lane Group Flow (vph)	348	225	0	65	115	0	54	1243	0	272	1403	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	32.7	32.7		32.7	32.7		6.1	38.8		16.0	48.7	
Effective Green, g (s)	32.7	32.7		32.7	32.7		6.1	38.8		16.0	48.7	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.06	0.39		0.16	0.49	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	360	530		253	540		109	1362		285	2413	
v/s Ratio Prot		0.14			0.07		0.03	c0.36		c0.15	0.28	
v/s Ratio Perm	c0.32			0.08								
v/c Ratio	0.97	0.42		0.26	0.21		0.50	0.91		0.95	0.58	
Uniform Delay, d1	32.9	26.1		24.5	24.1		45.2	28.7		41.4	18.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.2	0.5		0.5	0.2		3.5	10.8		40.7	1.0	
Delay (s)	71.1	26.6		25.0	24.3		48.7	39.5		82.1	19.2	
Level of Service	E	C		C	C		D	D		F	B	
Approach Delay (s)		51.1			24.5			39.9			29.1	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM Average Control Delay	36.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	85.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.95	1.00			0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.92		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1341	1719	3438	1419		1821		3367	1827	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1341	1719	3438	1419		1821		3367	1827	1531
Volume (vph)	140	1390	2	14	524	278	10	134	0	505	12	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	1511	2	15	570	302	11	146	0	549	13	14
RTOR Reduction (vph)	0	0	1	0	0	175	0	0	0	0	0	11
Lane Group Flow (vph)	152	1511	1	15	570	127	0	157	0	549	13	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	11.2	53.7	47.2	1.3	43.8	57.5		21.3		28.8	28.8	28.8
Effective Green, g (s)	11.2	53.7	47.2	1.3	43.8	57.5		21.3		28.8	28.8	28.8
Actuated g/C Ratio	0.08	0.39	0.34	0.01	0.32	0.42		0.16		0.21	0.21	0.21
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	270	1334	462	16	1098	595		283		707	384	322
v/s Ratio Prot	c0.05	c0.44		0.01	0.17	0.03		c0.09		c0.16	0.01	
v/s Ratio Perm			0.00			0.06						0.00
v/c Ratio	0.56	1.13	0.00	0.94	0.52	0.21		0.55		0.78	0.03	0.01
Uniform Delay, d1	60.6	41.7	29.5	67.9	38.1	25.4		53.5		51.1	43.1	42.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.94	0.95	1.33
Incremental Delay, d2	2.7	69.6	0.0	191.7	0.4	0.2		2.4		5.3	0.0	0.0
Delay (s)	63.3	111.3	29.5	259.6	38.5	25.6		55.9		53.5	41.0	57.0
Level of Service	E	F	C	F	D	C		E		D	D	E
Approach Delay (s)		106.8			37.8			55.9			53.3	
Approach LOS		F			D			E			D	

Intersection Summary				
HCM Average Control Delay	76.4	HCM Level of Service	E	
HCM Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	137.1	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.99			0.93			0.98				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1709			1640			1650				
Flt Permitted		0.97			1.00			1.00				
Satd. Flow (perm)		1709			1640			1650				
Volume (vph)	299	153	27	20	83	118	9	332	45	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	325	166	29	22	90	128	10	361	49	0	0	0
RTOR Reduction (vph)	0	3	0	0	55	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	517	0	0	185	0	0	414	0	0	0	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	15%	2%	2%	2%	2%
Turn Type	Split			Split			Perm					
Protected Phases	4	4		8	8			2				
Permitted Phases							2					
Actuated Green, G (s)		23.8			9.7			20.4				
Effective Green, g (s)		23.8			9.7			20.4				
Actuated g/C Ratio		0.36			0.15			0.31				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		617			241			511				
v/s Ratio Prot		c0.30			c0.11							
v/s Ratio Perm								0.25				
v/c Ratio		0.84			0.77			0.81				
Uniform Delay, d1		19.3			27.0			21.0				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		9.7			13.7			9.5				
Delay (s)		29.0			40.8			30.4				
Level of Service		C			D			C				
Approach Delay (s)		29.0			40.8			30.4			0.0	
Approach LOS		C			D			C			A	

Intersection Summary			
HCM Average Control Delay	31.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.91			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1752	1690			1796	1568		1719	1810	2707	
Flt Permitted		0.50	1.00			0.48	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		916	1690			899	1568		1719	1810	2707	
Volume (vph)	115	115	80	130	140	50	210	205	140	360	560	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	87	141	152	54	228	223	152	391	609	261
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	180	0	0	206	451	0	152	391	870	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		32.1	32.1			32.1	32.1		14.8	24.1	46.1	
Effective Green, g (s)		32.1	32.1			32.1	32.1		14.8	24.1	46.1	
Actuated g/C Ratio		0.28	0.28			0.28	0.28		0.13	0.21	0.40	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		255	471			251	437		221	379	1083	
v/s Ratio Prot			0.11						0.09	c0.22		
v/s Ratio Perm		0.27				0.23	c0.29				c0.32	
v/c Ratio		0.98	0.38			0.82	1.03		0.69	1.03	0.80	
Uniform Delay, d1		41.2	33.6			38.9	41.6		48.0	45.6	30.5	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		50.7	0.5			18.9	51.5		8.6	54.6	4.4	
Delay (s)		91.9	34.1			57.8	93.1		56.6	100.2	34.9	
Level of Service		F	C			E	F		E	F	C	
Approach Delay (s)			64.3			82.0				55.3		
Approach LOS			E			F				E		

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.99			0.95		
Flt Protected		0.95	1.00			0.97		
Satd. Flow (prot)		1767	3407			3269		
Flt Permitted		0.95	1.00			0.89		
Satd. Flow (perm)		1767	3407			3022		
Volume (vph)	35	415	380	30	10	140	55	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	451	413	33	11	152	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	489	446	0	0	234	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		25.0	34.3			18.0		
Effective Green, g (s)		25.0	34.3			18.0		
Actuated g/C Ratio		0.22	0.30			0.16		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		383	1014			472		
v/s Ratio Prot		c0.28	0.13					
v/s Ratio Perm						0.08		
v/c Ratio		1.28	0.44			0.50		
Uniform Delay, d1		45.1	32.7			44.4		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		143.4	0.3			0.8		
Delay (s)		188.5	33.0			45.3		
Level of Service		F	C			D		
Approach Delay (s)			114.3			45.3		
Approach LOS			F			D		

Intersection Summary						
HCM Average Control Delay	90.2	HCM Level of Service	F			
HCM Volume to Capacity ratio	1.11					
Actuated Cycle Length (s)	122.5	Sum of lost time (s)	32.0			
Intersection Capacity Utilization	85.7%	ICU Level of Service	E			
Analysis Period (min)	15					
c Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1478	1719	3438	1498	1719	3438	1523
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)	1719	3438	1538	1687	3374	1478	1719	3438	1498	1719	3438	1523
Volume (vph)	140	1185	100	40	436	460	70	690	140	310	280	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	1288	109	43	474	500	76	750	152	337	304	217
RTOR Reduction (vph)	0	0	33	0	0	386	0	0	67	0	0	104
Lane Group Flow (vph)	152	1288	76	43	474	114	76	750	85	337	304	113
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6	15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	15.2	38.3	42.0	4.0	27.1	22.1	8.7	23.1	23.1	25.1	43.5	54.7
Effective Green, g (s)	15.2	38.3	42.0	4.0	27.1	22.1	8.7	23.1	23.1	25.1	43.5	54.7
Actuated g/C Ratio	0.12	0.31	0.34	0.03	0.22	0.18	0.07	0.19	0.19	0.20	0.36	0.45
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	213	1075	527	55	746	267	122	648	282	352	1221	730
v/s Ratio Prot	c0.09	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	0.03
v/s Ratio Perm			0.04			0.08			0.06			0.04
v/c Ratio	0.71	1.20	0.14	0.78	0.64	0.43	0.62	1.16	0.30	0.96	0.25	0.15
Uniform Delay, d1	51.6	42.1	27.8	58.8	43.2	44.6	55.3	49.7	42.7	48.2	27.9	20.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	1.11
Incremental Delay, d2	10.8	98.3	0.1	50.5	1.8	1.1	9.5	87.4	0.6	36.4	0.1	0.1
Delay (s)	62.3	140.4	28.0	109.3	45.0	45.7	64.8	137.1	43.3	81.4	26.3	22.4
Level of Service	E	F	C	F	D	D	E	F	D	F	C	C
Approach Delay (s)		124.9			48.1			116.9			47.0	
Approach LOS		F			D			F			D	

Intersection Summary						
HCM Average Control Delay	90.2	HCM Level of Service	F			
HCM Volume to Capacity ratio	1.11					
Actuated Cycle Length (s)	122.5	Sum of lost time (s)	32.0			
Intersection Capacity Utilization	85.7%	ICU Level of Service	E			
Analysis Period (min)	15					
c Critical Lane Group						

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.91	
Frt		0.86		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		1611		3539	5085	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		1611		3539	5085	
Volume (vph)	0	822	0	1440	758	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	893	0	1565	824	0
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	0	887	0	1565	824	0
Turn Type		custom				
Protected Phases				2 4 6	6	
Permitted Phases		4				
Actuated Green, G (s)		35.7		59.7	16.0	
Effective Green, g (s)		35.7		59.7	16.0	
Actuated g/C Ratio		0.60		1.00	0.27	
Clearance Time (s)		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		963		3539	1363	
v/s Ratio Prot				0.44	c0.16	
v/s Ratio Perm		c0.55				
v/c Ratio		0.92		0.44	0.60	
Uniform Delay, d1		10.7		0.0	19.1	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		13.7		0.1	0.8	
Delay (s)		24.4		0.1	19.9	
Level of Service		C		A	B	
Approach Delay (s)	24.4			0.1	19.9	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		0.95	0.95			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	0.99			1.00			0.98	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.98		1.00	0.96			0.99			0.95	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1821		1664	1686			3505			3301	
Flt Permitted		0.96		0.51	1.00			0.94			0.89	
Satd. Flow (perm)		1760		900	1686			3284			2949	
Volume (vph)	17	226	31	23	299	112	15	360	18	43	270	138
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	246	34	25	325	122	16	391	20	47	293	150
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	293	0	25	447	0	0	427	0	0	447	0
Confl. Peds. (#/hr)			15	15		16	36			12		36
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		19.5		19.5	19.5			27.4			27.4	
Effective Green, g (s)		19.5		19.5	19.5			27.4			27.4	
Actuated g/C Ratio		0.36		0.36	0.36			0.50			0.50	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		625		320	599			1639			1472	
v/s Ratio Prot												
v/s Ratio Perm		0.17		0.03	0.27			0.13			c0.15	
v/c Ratio		0.47		0.08	0.75			0.26			0.30	
Uniform Delay, d1		13.7		11.7	15.5			7.9			8.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.6		0.1	5.0			0.4			0.5	
Delay (s)		14.2		11.8	20.6			8.3			8.6	
Level of Service		B		B	C			A			A	
Approach Delay (s)		14.2			20.1			8.3			8.6	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SWR
Lane Configurations	
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	0
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	2%
Turn Type	custom
Protected Phases	9
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	40	194	40	3	495	34	40	34	12	65	36	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	211	43	3	538	37	43	37	13	71	39	99
Pedestrians		7			14			16			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					668							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	594			270			1006	936	157	820	939	583
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			270			1006	930	157	804	934	545
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			61	84	98	64	83	77
cM capacity (veh/h)	912			1273			111	225	839	198	224	433

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	149	149	3	575	93	209
Volume Left	43	0	3	0	43	71
Volume Right	0	43	0	37	13	99
cSH	912	1700	1273	1700	163	275
Volume to Capacity	0.05	0.09	0.00	0.34	0.57	0.76
Queue Length 95th (ft)	4	0	0	0	75	141
Control Delay (s)	3.0	0.0	7.8	0.0	53.1	50.0
Lane LOS	A		A		F	E
Approach Delay (s)	1.5		0.0		53.1	50.0
Approach LOS					F	E

Intersection Summary					
Average Delay	13.5				
Intersection Capacity Utilization	57.7%	ICU Level of Service		B	
Analysis Period (min)	15				

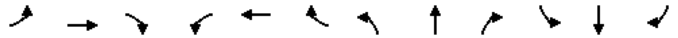
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	0.99	1.00		0.98	1.00			0.99			1.00	
Frt	1.00	0.96		1.00	0.99			0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1754	1774		1741	1832			1703			1693	
Flt Permitted	0.40	1.00		0.63	1.00			0.84			0.96	
Satd. Flow (perm)	747	1774		1146	1832			1457			1629	
Volume (vph)	11	146	49	19	377	36	65	26	58	16	40	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	159	53	21	410	39	71	28	63	17	43	65
RTOR Reduction (vph)	0	19	0	0	5	0	0	36	0	0	42	0
Lane Group Flow (vph)	12	193	0	21	444	0	0	126	0	0	83	0
Confl. Peds. (#/hr)	21		25	25		21	37		14	14		37
Confl. Bikes (#/hr)						3			3			1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.2	14.2		14.2	14.2			12.4			12.4	
Effective Green, g (s)	14.2	14.2		14.2	14.2			12.4			12.4	
Actuated g/C Ratio	0.41	0.41		0.41	0.41			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	307	728		470	752			522			584	
v/s Ratio Prot		0.11			c0.24							
v/s Ratio Perm	0.02			0.02				c0.09			0.05	
v/c Ratio	0.04	0.27		0.04	0.59			0.24			0.14	
Uniform Delay, d1	6.1	6.7		6.1	7.9			7.8			7.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.2		0.0	1.2			0.2			0.1	
Delay (s)	6.2	6.9		6.2	9.2			8.0			7.6	
Level of Service	A	A		A	A			A			A	
Approach Delay (s)		6.9			9.0			8.0			7.6	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	34.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	48	19	15	80	51	24	111	34	33	79	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	52	21	16	87	55	26	121	37	36	86	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	79	159	184	140
Volume Left (vph)	7	16	26	36
Volume Right (vph)	21	55	37	18
Hadj (s)	-0.11	-0.16	-0.06	0.01
Departure Headway (s)	4.8	4.6	4.6	4.7
Degree Utilization, x	0.11	0.20	0.23	0.18
Capacity (veh/h)	687	721	739	714
Control Delay (s)	8.3	8.8	9.0	8.8
Approach Delay (s)	8.3	8.8	9.0	8.8
Approach LOS	A	A	A	A

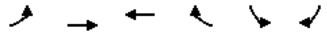
Intersection Summary			
Delay	8.8		
HCM Level of Service	A		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	8	6	31	8	61	5	97	24	31	96	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	9	7	34	9	66	5	105	26	34	104	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	18	109	137	141
Volume Left (vph)	3	34	5	34
Volume Right (vph)	7	66	26	3
Hadj (s)	-0.14	-0.27	-0.07	0.07
Departure Headway (s)	4.5	4.3	4.3	4.4
Degree Utilization, x	0.02	0.13	0.16	0.17
Capacity (veh/h)	731	782	808	780
Control Delay (s)	7.6	7.9	8.1	8.3
Approach Delay (s)	7.6	7.9	8.1	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.1	
HCM Level of Service			A	
Intersection Capacity Utilization		33.8%	ICU Level of Service	A
Analysis Period (min)			15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	60	460	1650	20	100	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	500	1793	22	109	109
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			1319			
pX, platoon unblocked	0.75				0.75	0.75
vC, conflicting volume	1815				2185	908
vC1, stage 1 conf vol					1804	
vC2, stage 2 conf vol					380	
vCu, unblocked vol	1753				2247	538
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	75				0	70
cM capacity (veh/h)	264				58	364

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	65	250	250	1196	620	217
Volume Left	65	0	0	0	0	109
Volume Right	0	0	0	0	22	109
cSH	264	1700	1700	1700	1700	99
Volume to Capacity	0.25	0.15	0.15	0.70	0.36	2.19
Queue Length 95th (ft)	24	0	0	0	0	476
Control Delay (s)	23.0	0.0	0.0	0.0	0.0	635.7
Lane LOS	C					F
Approach Delay (s)	2.7			0.0		635.7
Approach LOS						F

Intersection Summary					
Average Delay			53.8		
Intersection Capacity Utilization		68.2%	ICU Level of Service		C
Analysis Period (min)			15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	175	24	88	209	0	30	0	69	264	233	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	190	26	96	227	0	33	0	75	287	253	51

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	216	96	227	108	591
Volume Left (vph)	0	96	0	33	287
Volume Right (vph)	26	0	0	75	51
Hadj (s)	-0.04	0.53	0.03	-0.32	0.08
Departure Headway (s)	7.0	7.8	7.3	6.8	6.0
Degree Utilization, x	0.42	0.21	0.46	0.20	0.99
Capacity (veh/h)	506	453	488	501	596
Control Delay (s)	15.0	11.7	15.2	11.5	57.4
Approach Delay (s)	15.0	14.2		11.5	57.4
Approach LOS	C	B		B	F

Intersection Summary				
Delay	34.8			
HCM Level of Service	D			
Intersection Capacity Utilization	61.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	243	8	239	432	66	4	30	50	213	138	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	264	9	260	470	72	4	33	54	232	150	25

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	9	273	260	541	91	407
Volume Left (vph)	9	0	260	0	4	232
Volume Right (vph)	0	9	0	72	54	25
Hadj (s)	0.53	0.01	0.53	-0.06	-0.31	0.11
Departure Headway (s)	8.2	7.7	7.6	7.0	7.6	6.9
Degree Utilization, x	0.02	0.58	0.55	1.05	0.19	0.78
Capacity (veh/h)	419	448	466	519	418	407
Control Delay (s)	10.2	19.5	18.3	80.0	12.5	30.3
Approach Delay (s)	19.2		60.0		12.5	30.3
Approach LOS	C		F		B	D

Intersection Summary				
Delay	42.4			
HCM Level of Service	E			
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	74	9	29	82	15	13	23	19	56	156	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	80	10	32	89	16	14	25	21	61	170	45

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	110	137	60	275
Volume Left (vph)	20	32	14	61
Volume Right (vph)	10	16	21	45
Hadj (s)	0.02	0.01	-0.13	-0.02
Departure Headway (s)	4.9	4.9	4.7	4.6
Degree Utilization, x	0.15	0.19	0.08	0.35
Capacity (veh/h)	675	684	699	745
Control Delay (s)	8.8	9.0	8.2	10.0
Approach Delay (s)	8.8	9.0	8.2	10.0
Approach LOS	A	A	A	B

Intersection Summary				
Delay			9.4	
HCM Level of Service			A	
Intersection Capacity Utilization		38.0%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	15	74	4	163	109	76	2	8	52	275	57	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	80	4	177	118	83	2	9	57	299	62	57

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	101	378	67	417
Volume Left (vph)	16	177	2	299
Volume Right (vph)	4	83	57	57
Hadj (s)	0.04	0.00	-0.46	0.10
Departure Headway (s)	6.0	5.5	5.6	5.5
Degree Utilization, x	0.17	0.58	0.10	0.64
Capacity (veh/h)	528	623	545	626
Control Delay (s)	10.2	15.7	9.2	17.6
Approach Delay (s)	10.2	15.7	9.2	17.6
Approach LOS	B	C	A	C

Intersection Summary				
Delay			15.5	
HCM Level of Service			C	
Intersection Capacity Utilization		61.3%	ICU Level of Service	B
Analysis Period (min)			15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	22	560	1580	30	48	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	609	1717	33	52	98
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			658			
pX, platoon unblocked	0.73				0.73	0.73
vC, conflicting volume	1750				2086	875
vC1, stage 1 conf vol					1734	
vC2, stage 2 conf vol					352	
vCu, unblocked vol	1655				2118	449
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	91				20	76
cM capacity (veh/h)	255				65	404

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	24	304	304	1145	605	150
Volume Left	24	0	0	0	0	52
Volume Right	0	0	0	0	33	98
cSH	255	1700	1700	1700	1700	144
Volume to Capacity	0.09	0.18	0.18	0.67	0.36	1.04
Queue Length 95th (ft)	8	0	0	0	0	197
Control Delay (s)	20.6	0.0	0.0	0.0	0.0	147.1
Lane LOS	C					F
Approach Delay (s)	0.8			0.0		147.1
Approach LOS						F

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95		1.00	1.00			0.95	
Frt				1.00	0.94		1.00	1.00			0.99	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1478	1460		1626	1712			3209	
Flt Permitted				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (perm)				1478	1460		1626	1712			3209	
Volume (vph)	0	0	0	615	278	205	257	259	0	0	353	34
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	668	302	223	279	282	0	0	384	37
RTOR Reduction (vph)	0	0	0	0	22	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	585	586	0	279	282	0	0	412	0
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	11%	11%	11%	11%	11%	11%
Turn Type				Split			Split					
Protected Phases				8	8		6	6			2	
Permitted Phases												
Actuated Green, G (s)				27.7	27.7		16.7	16.7			15.6	
Effective Green, g (s)				27.7	27.7		16.7	16.7			15.6	
Actuated g/C Ratio				0.38	0.38		0.23	0.23			0.22	
Clearance Time (s)				4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				569	562		377	397			695	
v/s Ratio Prot				0.40	c0.40		c0.17	0.16			c0.13	
v/s Ratio Perm												
v/c Ratio				1.03	1.04		0.74	0.71			0.59	
Uniform Delay, d1				22.2	22.2		25.6	25.4			25.3	
Progression Factor				1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2				45.1	49.5		7.6	5.9			1.4	
Delay (s)				67.3	71.6		33.2	31.3			26.7	
Level of Service				E	E		C	C			C	
Approach Delay (s)		0.0			69.5			32.3			26.7	
Approach LOS		A			E			C			C	

Intersection Summary			
HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1759	1770		1762	1863	1544	1530	3059	1328	1530	3004	
Flt Permitted	0.28	1.00		0.18	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	526	1770		333	1863	1544	1530	3059	1328	1530	3004	
Volume (vph)	140	300	120	100	350	76	100	300	300	70	818	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	326	130	109	380	83	109	326	326	76	889	87
RTOR Reduction (vph)	0	20	0	0	0	59	0	0	197	0	8	0
Lane Group Flow (vph)	152	436	0	109	380	24	109	326	129	76	968	0
Confl. Peds. (#/hr)	15		13	13		15			17			39
Confl. Bikes (#/hr)			4									2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)	23.6	23.6		23.6	23.6	23.6	6.5	31.7	31.7	12.7	37.9	
Effective Green, g (s)	23.6	23.6		23.6	23.6	23.6	6.5	31.7	31.7	12.7	37.9	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.08	0.40	0.40	0.16	0.47	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	155	522		98	550	455	124	1212	526	243	1423	
v/s Ratio Prot		0.25			0.20		c0.07	0.11		0.05	c0.32	
v/s Ratio Perm	0.29			c0.33		0.02			0.10			
v/c Ratio	0.98	0.83		1.11	0.69	0.05	0.88	0.27	0.25	0.31	0.68	
Uniform Delay, d1	28.0	26.4		28.2	25.0	20.2	36.4	16.3	16.2	29.8	16.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.67	0.28	1.00	1.00	
Incremental Delay, d2	66.2	11.0		124.4	3.7	0.0	38.1	0.4	0.9	0.7	2.6	
Delay (s)	94.2	37.4		152.6	28.7	20.3	74.5	11.4	5.4	30.5	19.0	
Level of Service	F	D		F	C	C	E	B	A	C	B	
Approach Delay (s)		51.6			51.1			17.9			19.8	
Approach LOS		D			D			B			B	

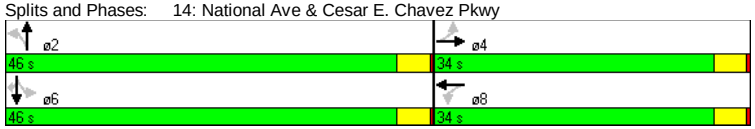
Intersection Summary			
HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	190	250	120	350	100	570	60	765	310
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phases	4	4	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	42.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.52	0.52	0.52	0.52	0.52
v/c Ratio	1.25	0.70	0.72	0.73	1.09	0.40	0.22	0.98	0.39
Control Delay	182.0	25.0	47.0	27.8	141.0	9.9	4.8	36.6	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	182.0	25.0	47.0	27.8	141.0	9.9	4.8	36.6	1.5
LOS	F	C	D	C	F	A	A	D	A
Approach Delay		72.4		31.8		28.1		25.3	
Approach LOS		E		C		C		C	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 36.9		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1742		1770	1796		1612	3184		1530	1610	1369
Flt Permitted	0.24	1.00		0.26	1.00		0.11	1.00		0.35	1.00	1.00
Satd. Flow (perm)	440	1742		482	1796		190	3184		556	1610	1369
Volume (vph)	190	250	190	120	350	110	100	570	50	60	765	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	272	207	130	380	120	109	620	54	65	832	337
RTOR Reduction (vph)	0	34	0	0	14	0	0	8	0	0	0	139
Lane Group Flow (vph)	207	445	0	130	486	0	109	666	0	65	832	198
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	30.0	30.0		30.0	30.0		42.0	42.0		42.0	42.0	42.0
Effective Green, g (s)	30.0	30.0		30.0	30.0		42.0	42.0		42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.52	0.52		0.52	0.52	0.52
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	653		181	674		100	1672		292	845	719
v/s Ratio Prot		0.26			0.27			0.21			0.52	
v/s Ratio Perm	c0.47			0.27			c0.57			0.12		0.14
v/c Ratio	1.25	0.68		0.72	0.72		1.09	0.40		0.22	0.98	0.28
Uniform Delay, d1	25.0	21.0		21.4	21.4		19.0	11.4		10.2	18.7	10.5
Progression Factor	1.00	1.00		1.00	1.00		0.84	0.81		0.32	0.50	0.11
Incremental Delay, d2	154.4	2.9		12.8	3.8		115.8	0.7		1.4	23.8	0.7
Delay (s)	179.4	23.9		34.1	25.2		131.7	10.0		4.6	33.1	1.9
Level of Service	F	C		C	C		F	A		A	C	A
Approach Delay (s)		70.8			27.1			26.9			23.1	
Approach LOS		E			C			C			C	

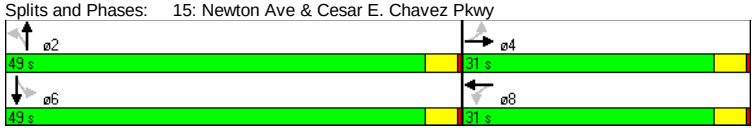
Intersection Summary				
HCM Average Control Delay	34.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	1.16			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	94.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	80	40	40	50	40	420	100	825
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	10.3	10.3	10.3	10.3	64.4	64.4	64.4	64.4
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.80	0.80	0.80	0.80
v/c Ratio	0.54	0.39	0.26	0.46	0.35	0.19	0.18	0.79
Control Delay	44.1	18.5	33.8	19.7	9.9	1.3	2.1	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9
Total Delay	44.1	18.5	33.8	19.7	9.9	1.3	2.1	8.3
LOS	D	B	C	B	A	A	A	A
Approach Delay		29.9		23.2		2.0		7.7
Approach LOS		C		C		A		A

Intersection Summary		
Cycle Length: 80		
Actuated Cycle Length: 80		
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.79		
Intersection Signal Delay: 9.6	Intersection LOS: A	
Intersection Capacity Utilization 77.0%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1699		1612	3191		1612	1657	
Flt Permitted	0.56	1.00		0.65	1.00		0.19	1.00		0.47	1.00	
Satd. Flow (perm)	1049	1695		1208	1699		324	3191		803	1657	
Volume (vph)	80	40	60	40	50	70	40	420	30	100	825	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	43	65	43	54	76	43	457	33	109	897	163
RTOR Reduction (vph)	0	58	0	0	67	0	0	3	0	0	4	0
Lane Group Flow (vph)	87	50	0	43	63	0	43	487	0	109	1056	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.2	9.2		9.2	9.2		62.8	62.8		62.8	62.8	
Effective Green, g (s)	9.2	9.2		9.2	9.2		62.8	62.8		62.8	62.8	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.78		0.78	0.78	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	121	195		139	195		254	2505		630	1301	
v/s Ratio Prot		0.03			0.04			0.15			c0.64	
v/s Ratio Perm	c0.08			0.04			0.13			0.14		
v/c Ratio	0.72	0.26		0.31	0.32		0.17	0.19		0.17	0.81	
Uniform Delay, d1	34.2	32.3		32.5	32.5		2.1	2.2		2.1	5.1	
Progression Factor	1.00	1.00		1.00	1.00		0.57	0.45		0.57	0.41	
Incremental Delay, d2	18.4	0.7		1.3	1.0		1.2	0.1		0.2	2.4	
Delay (s)	52.6	33.0		33.8	33.5		2.4	1.1		1.5	4.5	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		41.7			33.6			1.2			4.2	
Approach LOS		D			C			A			A	

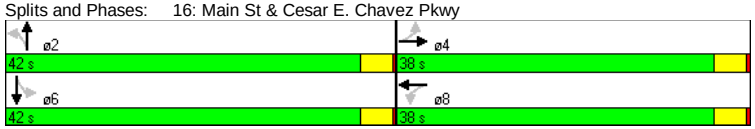
Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	150	190	70	350	85	340	150	580
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	42.0	42.0	42.0	42.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	52.5%	52.5%	52.5%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	34.0	34.0	34.0	34.0	38.0	38.0	38.0	38.0
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.48	0.48	0.48	0.48
v/c Ratio	1.01	0.28	0.17	0.77	1.12	0.32	0.47	1.12
Control Delay	103.1	15.9	15.6	26.5	165.3	12.0	13.2	84.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	29.2
Total Delay	103.1	15.9	15.6	26.5	165.3	12.6	13.2	114.0
LOS	F	B	B	C	F	B	B	F
Approach Delay		52.7		25.2		37.7		97.7
Approach LOS		D		C		D		F

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 13 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 59.8		Intersection LOS: E	
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1839		1750	1736		1556	2996		1549	1550	
Flt Permitted	0.21	1.00		0.57	1.00		0.11	1.00		0.45	1.00	
Satd. Flow (perm)	378	1839		1056	1736		172	2996		733	1550	
Volume (vph)	150	190	15	70	350	190	85	340	90	150	580	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	16	76	380	207	92	370	98	163	630	212
RTOR Reduction (vph)	0	3	0	0	25	0	0	30	0	0	15	0
Lane Group Flow (vph)	163	220	0	76	562	0	92	438	0	163	827	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	34.0	34.0		34.0	34.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.48	0.48		0.48	0.48	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	782		449	738		82	1423		348	736	
v/s Ratio Prot		0.12			0.32			0.15			0.53	
v/s Ratio Perm	c0.43			0.07			c0.53			0.22		
v/c Ratio	1.01	0.28		0.17	0.76		1.12	0.31		0.47	1.12	
Uniform Delay, d1	23.0	15.0		14.3	19.6		21.0	12.9		14.2	21.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.68	0.71	
Incremental Delay, d2	74.2	0.2		0.2	4.7		136.2	0.6		2.9	67.4	
Delay (s)	97.2	15.2		14.4	24.2		157.2	13.5		12.5	82.3	
Level of Service	F	B		B	C		F	B		B	F	
Approach Delay (s)		49.8			23.1			37.1			71.0	
Approach LOS		D			C			D			E	

Intersection Summary				
HCM Average Control Delay	48.5	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	100.5%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.90			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)	1641	3224		1421	3232		1363	1218			1599	1372
Flt Permitted	0.95	1.00		0.95	1.00		0.60	1.00			0.85	1.00
Satd. Flow (perm)	1641	3224		1421	3232		857	1218			1386	1372
Volume (vph)	109	404	40	80	1056	99	10	14	27	77	83	510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	439	43	87	1148	108	11	15	29	84	90	554
RTOR Reduction (vph)	0	7	0	0	6	0	0	20	0	0	0	65
Lane Group Flow (vph)	118	475	0	87	1250	0	11	24	0	0	174	489
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			5			11			2			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	
Permitted Phases							12			1 5 16		1 5 16
Actuated Green, G (s)	6.1	33.1		5.1	32.1		34.3	34.3			46.3	46.3
Effective Green, g (s)	6.1	33.1		5.1	32.1		34.3	34.3			46.3	46.3
Actuated g/C Ratio	0.06	0.31		0.05	0.30		0.32	0.32			0.43	0.43
Clearance Time (s)	4.0			4.0			4.0	4.0				
Vehicle Extension (s)	3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)	92	984		67	956		271	385			591	585
v/s Ratio Prot	c0.07	0.15		0.06	c0.39			0.02				
v/s Ratio Perm							0.01				0.13	c0.36
v/c Ratio	1.28	0.48		1.30	1.31		0.04	0.06			0.29	0.84
Uniform Delay, d1	51.2	30.7		51.7	38.2		25.7	25.9			20.4	27.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.01	1.05
Incremental Delay, d2	187.4	0.4		209.3	145.8		0.1	0.1			0.3	10.0
Delay (s)	238.6	31.1		261.0	184.0		25.8	26.0			21.0	39.3
Level of Service	F	C		F	F		C	C			C	D
Approach Delay (s)		71.9			189.0			25.9			34.9	
Approach LOS		E			F			C			C	

Intersection Summary				
HCM Average Control Delay	118.8	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.05			
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	78.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	475	182	2	0	125	80	0	0	4	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	516	198	2	0	136	87	0	0	4	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)		667										
pX, platoon unblocked												
vC, conflicting volume	223			200			1367	1454	199	1414	1412	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	223			200			1367	1454	199	1414	1412	179
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 %	62			100			100	100	99	100	100	100
cM capacity (veh/h)	1346			1372			87	80	842	80	85	863

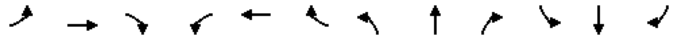
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	516	200	0	223	4
Volume Left	516	0	0	0	0
Volume Right	0	2	0	87	4
cSH	1346	1700	1700	1700	842
Volume to Capacity	0.38	0.12	0.00	0.13	0.01
Queue Length 95th (ft)	46	0	0	0	0
Control Delay (s)	9.3	0.0	0.0	0.0	9.3
Lane LOS	A				A
Approach Delay (s)	6.7		0.0		9.3
Approach LOS					A

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	44.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	126	269	0	29	281
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	137	292	0	32	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)		1100	875			
pX, platoon unblocked						
vC, conflicting volume	292				429	292
vC1, stage 1 conf vol					292	
vC2, stage 2 conf vol					137	
vCu, unblocked vol	292				429	292
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	59
cM capacity (veh/h)	1269				634	747

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	137	292	32	305
Volume Left	0	0	32	0
Volume Right	0	0	0	305
cSH	1700	1700	634	747
Volume to Capacity	0.08	0.17	0.05	0.41
Queue Length 95th (ft)	0	0	4	50
Control Delay (s)	0.0	0.0	11.0	13.1
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	12.9	
Approach LOS			B	

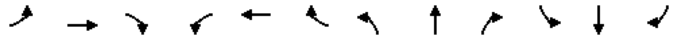
Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	16	114	22	38	225	28	27	48	25	9	18	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	124	24	41	245	30	29	52	27	10	20	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		1314			661							
pX, platoon unblocked												
vC, conflicting volume	275			148			538	528	136	554	525	260
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275			148			538	528	136	554	525	260
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 %	99			97			93	88	97	97	96	96
cM capacity (veh/h)	1288			1434			408	436	913	378	438	779

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	17	148	41	275	109	60
Volume Left	17	0	41	0	29	10
Volume Right	0	24	0	30	27	30
cSH	1288	1700	1434	1700	491	545
Volume to Capacity	0.01	0.09	0.03	0.16	0.22	0.11
Queue Length 95th (ft)	1	0	2	0	21	9
Control Delay (s)	7.8	0.0	7.6	0.0	14.4	12.4
Lane LOS	A		A		B	B
Approach Delay (s)	0.8		1.0		14.4	12.4
Approach LOS					B	B

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	87	22	16	63	30	27	58	31	7	30	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	95	24	17	68	33	29	63	34	8	33	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	101			118			333	292	107	341	288	85
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	101			118			333	292	107	341	288	85
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 %	98			99			95	90	96	99	95	96
cM capacity (veh/h)	1491			1470			558	601	948	532	604	974

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	143	118	126	80
Volume Left	25	17	29	8
Volume Right	24	33	34	40
cSH	1491	1470	653	734
Volume to Capacity	0.02	0.01	0.19	0.11
Queue Length 95th (ft)	1	1	18	9
Control Delay (s)	1.4	1.2	11.8	10.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.4	1.2	11.8	10.5
Approach LOS			B	B

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	29.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	24	191	427	75	66	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	208	464	82	72	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1318				
pX, platoon unblocked						
vC, conflicting volume	546				765	505
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	546				765	505
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				80	93
cM capacity (veh/h)	1024				362	567

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	234	546	109
Volume Left	26	0	72
Volume Right	0	82	37
cSH	1024	1700	413
Volume to Capacity	0.03	0.32	0.26
Queue Length 95th (ft)	2	0	26
Control Delay (s)	1.2	0.0	16.8
Lane LOS	A		C
Approach Delay (s)	1.2	0.0	16.8
Approach LOS			C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	101	220	161	106	77	60	212	366	174	62	237	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	110	239	175	115	84	65	230	398	189	67	258	15

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	110	414	115	149	817	340
Volume Left (vph)	110	0	115	0	230	67
Volume Right (vph)	0	175	0	65	189	15
Hadj (s)	0.53	-0.26	0.53	-0.27	-0.05	0.05
Departure Headway (s)	8.9	8.1	9.6	8.8	7.8	8.2
Degree Utilization, x	0.27	0.93	0.31	0.36	1.77	0.77
Capacity (veh/h)	399	437	350	391	465	429
Control Delay (s)	13.9	53.8	15.6	15.5	376.0	34.1
Approach Delay (s)	45.4		15.5		376.0	34.1
Approach LOS	E		C		F	D

Intersection Summary			
Delay	178.3		
HCM Level of Service	F		
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.92			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1749	1790		1765	1688			1823			1731	
Flt Permitted	0.62	1.00		0.71	1.00			0.98			0.93	
Satd. Flow (perm)	1138	1790		1322	1688			1793			1618	
Volume (vph)	78	50	15	48	101	106	7	107	16	62	124	121
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	54	16	52	110	115	8	116	17	67	135	132
RTOR Reduction (vph)	0	12	0	0	70	0	0	6	0	0	30	0
Lane Group Flow (vph)	85	58	0	52	155	0	0	135	0	0	304	0
Confl. Peds. (#/hr)	17		3	3		17	13		14	14		13
Confl. Bikes (#/hr)						1			1			
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.5	9.5		9.5	9.5			19.2			19.2	
Effective Green, g (s)	9.5	9.5		9.5	9.5			19.2			19.2	
Actuated g/C Ratio	0.26	0.26		0.26	0.26			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	295	463		342	437			938			846	
v/s Ratio Prot		0.03			c0.09							
v/s Ratio Perm	0.07			0.04				0.08			c0.19	
v/c Ratio	0.29	0.13		0.15	0.36			0.14			0.36	
Uniform Delay, d1	10.9	10.4		10.5	11.1			4.5			5.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.1		0.2	0.5			0.1			0.3	
Delay (s)	11.4	10.5		10.7	11.6			4.6			5.4	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		11.0			11.4			4.6			5.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	23	92	17	15	79	37	7	48	32	20	113	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	100	18	16	86	40	8	52	35	22	123	42

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	143	142	95	187
Volume Left (vph)	25	16	8	22
Volume Right (vph)	18	40	35	42
Hadj (s)	-0.01	-0.11	-0.17	-0.08
Departure Headway (s)	4.8	4.7	4.7	4.6
Degree Utilization, x	0.19	0.18	0.12	0.24
Capacity (veh/h)	703	718	713	725
Control Delay (s)	8.9	8.7	8.3	9.1
Approach Delay (s)	8.9	8.7	8.3	9.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.8		
HCM Level of Service	A		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	81	76	51	53	282	16	52	31	35	10	59	205
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	83	55	58	307	17	57	34	38	11	64	223

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	226	382	128	298
Volume Left (vph)	88	58	57	11
Volume Right (vph)	55	17	38	223
Hadj (s)	-0.04	0.04	-0.06	-0.41
Departure Headway (s)	5.8	5.6	6.2	5.5
Degree Utilization, x	0.36	0.59	0.22	0.45
Capacity (veh/h)	561	608	492	596
Control Delay (s)	12.1	16.5	10.9	13.0
Approach Delay (s)	12.1	16.5	10.9	13.0
Approach LOS	B	C	B	B

Intersection Summary				
Delay			13.8	
HCM Level of Service			B	
Intersection Capacity Utilization			61.2%	ICU Level of Service
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3448		1770	3513			1751			1770	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.84	
Satd. Flow (perm)	1770	3448		1770	3513			1642			1517	
Volume (vph)	10	750	28	75	1312	41	14	61	38	61	75	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	815	30	82	1426	45	15	66	41	66	82	35
RTOR Reduction (vph)	0	2	0	0	2	0	0	16	0	0	7	0
Lane Group Flow (vph)	11	843	0	82	1469	0	0	106	0	0	176	0
Confl. Peds. (#/hr)			15			29	7		4	4		7
Confl. Bikes (#/hr)			2			5			6			14
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	3	14 2 6		13	18 2 6			12			16 1 5	
Permitted Phases							12			16 1 5		
Actuated Green, G (s)	1.1	38.8		7.4	45.1			10.9			21.3	
Effective Green, g (s)	1.1	38.8		7.4	45.1			10.9			21.3	
Actuated g/C Ratio	0.01	0.42		0.08	0.49			0.12			0.23	
Clearance Time (s)	4.0			4.0				4.0				
Vehicle Extension (s)	3.0			3.0				3.0				
Lane Grp Cap (vph)	21	1462		143	1732			196			353	
v/s Ratio Prot	0.01	0.24		c0.05	c0.42							
v/s Ratio Perm								0.06			c0.12	
v/c Ratio	0.52	0.58		0.57	0.85			0.54			0.50	
Uniform Delay, d1	44.9	20.1		40.5	20.2			37.9			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.03	
Incremental Delay, d2	21.6	0.6		5.5	4.1			3.0			1.1	
Delay (s)	66.5	20.6		46.0	24.3			41.0			32.4	
Level of Service	E	C		D	C			D			C	
Approach Delay (s)		21.2			25.4			41.0			32.4	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM Average Control Delay	25.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	69.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	20	79	38	27	164	3	48	49	12	4	39	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	86	41	29	178	3	52	53	13	4	42	40
Pedestrians		7			11			3			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		641										
pX, platoon unblocked												
vC, conflicting volume	183			130			460	394	121	420	413	188
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	183			130			460	394	121	420	413	188
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 %	98			98			88	90	99	99	92	95
cM capacity (veh/h)	1391			1452			439	521	920	475	509	848

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	22	127	211	118	87
Volume Left	22	0	29	52	4
Volume Right	0	41	3	13	40
cSH	1391	1700	1452	504	622
Volume to Capacity	0.02	0.07	0.02	0.24	0.14
Queue Length 95th (ft)	1	0	2	23	12
Control Delay (s)	7.6	0.0	1.2	14.3	11.7
Lane LOS	A		A	B	B
Approach Delay (s)	1.1		1.2	14.3	11.7
Approach LOS				B	B

Intersection Summary					
Average Delay	5.5				
Intersection Capacity Utilization	36.6%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	26	66	43	36	222	48	31	55	15	50	45	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	72	47	39	241	52	34	60	16	54	49	17

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	28	118	39	293	110	121
Volume Left (vph)	28	0	39	0	34	54
Volume Right (vph)	0	47	0	52	16	17
Hadj (s)	0.53	-0.24	0.53	-0.09	0.01	0.04
Departure Headway (s)	6.0	5.3	5.8	5.2	5.3	5.3
Degree Utilization, x	0.05	0.17	0.06	0.43	0.16	0.18
Capacity (veh/h)	557	644	588	665	622	620
Control Delay (s)	8.1	8.2	8.0	10.8	9.3	9.4
Approach Delay (s)	8.2		10.5		9.3	9.4
Approach LOS	A		B		A	A

Intersection Summary					
Delay	9.6				
HCM Level of Service	A				
Intersection Capacity Utilization	38.5%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	151	7	42	279	28	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	164	8	46	303	30	162
Pedestrians	1				8	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				670		
pX, platoon unblocked						
vC, conflicting volume			180		420	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			180		420	176
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		94	81
cM capacity (veh/h)			1384		539	831

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	172	147	202	30	162
Volume Left	0	46	0	30	0
Volume Right	8	0	0	0	162
cSH	1700	1384	1700	539	831
Volume to Capacity	0.10	0.03	0.12	0.06	0.19
Queue Length 95th (ft)	0	3	0	4	18
Control Delay (s)	0.0	2.6	0.0	12.1	10.4
Lane LOS		A		B	B
Approach Delay (s)	0.0	1.1		10.6	
Approach LOS				B	

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	59	19	146	188	26	33	32	92	16	19	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	64	21	159	204	28	36	35	100	17	21	14

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total (vph)	97	159	204	28	71	100	52
Volume Left (vph)	12	159	0	0	36	0	17
Volume Right (vph)	21	0	0	28	0	100	14
Hadj (s)	-0.07	0.94	0.03	-0.67	0.14	0.05	-0.06
Departure Headway (s)	4.7	5.9	4.9	3.2	5.2	3.2	5.0
Degree Utilization, x	0.13	0.26	0.28	0.03	0.10	0.09	0.07
Capacity (veh/h)	740	598	709	1121	645	1121	662
Control Delay (s)	8.3	9.7	8.7	5.1	8.8	6.5	8.4
Approach Delay (s)	8.3	8.8			7.5		8.4
Approach LOS	A	A			A		A

Intersection Summary			
Delay	8.4		
HCM Level of Service	A		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.98	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			1.00						0.89	
Flt Protected	0.95	1.00			1.00						1.00	
Satd. Flow (prot)	1543	3539			3533						1486	
Flt Permitted	0.95	1.00			1.00						1.00	
Satd. Flow (perm)	1543	3539			3533						1486	
Volume (vph)	126	465	0	0	1473	17	0	0	0	12	25	169
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	137	505	0	0	1601	18	0	0	0	13	27	184
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	113	0
Lane Group Flow (vph)	137	505	0	0	1618	0	0	0	0	0	111	0
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									5			11
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot									Perm		
Protected Phases	13	18 2 6			14 2 6						11 1 5	
Permitted Phases										11 1 5		
Actuated Green, G (s)	9.2	50.3			33.1						20.2	
Effective Green, g (s)	9.2	50.3			33.1						20.2	
Actuated g/C Ratio	0.11	0.58			0.38						0.23	
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	164	2058			1352						347	
v/s Ratio Prot	c0.09	0.14			c0.46							
v/s Ratio Perm											0.07	
v/c Ratio	0.84	0.25			1.20						0.32	
Uniform Delay, d1	37.9	8.8			26.7						27.5	
Progression Factor	1.00	1.00			1.00						1.10	
Incremental Delay, d2	29.1	0.1			96.1						0.5	
Delay (s)	67.0	8.9			122.8						30.8	
Level of Service	E	A			F						C	
Approach Delay (s)		21.3			122.8			0.0			30.8	
Approach LOS		C			F			A			C	

Intersection Summary				
HCM Average Control Delay	88.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	77.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1299	1814			1754	1509		1645	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.75	1.00		0.88	
Satd. Flow (perm)	1770	3539	1583	1299	1814			1341	1509		1455	
Volume (vph)	106	245	18	186	599	126	33	102	82	118	213	307
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	266	20	202	651	137	36	111	89	128	232	334
RTOR Reduction (vph)	0	0	14	0	5	0	0	0	50	0	22	0
Lane Group Flow (vph)	115	266	6	202	783	0	0	147	39	0	672	0
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.0	45.1	45.1	26.9	63.0			66.0	66.0		66.0	
Effective Green, g (s)	9.0	45.1	45.1	26.9	63.0			66.0	66.0		66.0	
Actuated g/C Ratio	0.06	0.30	0.30	0.18	0.42			0.44	0.44		0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	106	1064	476	233	762			590	664		640	
v/s Ratio Prot	c0.06	0.08		0.16	c0.43							
v/s Ratio Perm			0.00					0.11	0.03		c0.46	
v/c Ratio	1.08	0.25	0.01	0.87	1.03			0.25	0.06		1.05	
Uniform Delay, d1	70.5	39.7	36.8	59.8	43.5			26.4	24.1		42.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	112.1	0.1	0.0	26.9	39.7			0.2	0.0		49.2	
Delay (s)	182.6	39.8	36.8	86.8	83.2			26.6	24.2		91.2	
Level of Service	F	D	D	F	F			C	C		F	
Approach Delay (s)		80.6			84.0			25.7			91.2	
Approach LOS		F			F			C			F	

Intersection Summary				
HCM Average Control Delay	79.6	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	98.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.91		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1687		1687	1611		1770	3471	1583	1770	3380	
Flt Permitted	0.54	1.00		0.20	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	954	1687		355	1611		1770	3471	1583	1770	3380	
Volume (vph)	250	300	150	50	80	130	90	720	90	170	880	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	326	163	54	87	141	98	783	98	185	957	326
RTOR Reduction (vph)	0	25	0	0	79	0	0	0	62	0	39	0
Lane Group Flow (vph)	272	464	0	54	149	0	98	783	36	185	1244	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	24.5	24.5		24.5	24.5		5.0	26.9	26.9	10.4	32.3	
Effective Green, g (s)	24.5	24.5		24.5	24.5		5.0	26.9	26.9	10.4	32.3	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.07	0.36	0.36	0.14	0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	317	560		118	535		120	1265	577	249	1479	
v/s Ratio Prot		0.28			0.09		0.06	0.23		c0.10	c0.37	
v/s Ratio Perm	c0.29			0.15					0.02			
v/c Ratio	0.86	0.83		0.46	0.28		0.82	0.62	0.06	0.74	0.84	
Uniform Delay, d1	23.0	22.7		19.4	18.1		33.9	19.2	15.2	30.4	18.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.9	9.8		2.8	0.3		33.2	2.3	0.2	11.3	5.9	
Delay (s)	42.9	32.6		22.2	18.4		67.1	21.5	15.5	41.8	24.4	
Level of Service	D	C		C	B		E	C	B	D	C	
Approach Delay (s)		36.3			19.1			25.5			26.6	
Approach LOS		D			B			C			C	

Intersection Summary				
HCM Average Control Delay	27.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	80.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1538	3209		1758	3371		1736	3261		1736	3091	
Flt Permitted	0.29	1.00		0.50	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	462	3209		925	3371		1736	3261		1736	3091	
Volume (vph)	190	300	50	90	500	190	40	220	70	190	750	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	326	54	98	543	207	43	239	76	207	815	283
RTOR Reduction (vph)	0	13	0	0	38	0	0	31	0	0	35	0
Lane Group Flow (vph)	207	367	0	98	712	0	43	284	0	207	1063	0
Confl. Peds. (#/hr)	10		12	12		10			72			27
Confl. Bikes (#/hr)			2			4			6			1
Heavy Vehicles (%)	17%	11%	2%	2%	2%	2%	4%	4%	4%	4%	4%	31%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	46.0	46.0		46.0	46.0		3.1	26.6		12.1	35.6	
Effective Green, g (s)	46.0	46.0		46.0	46.0		3.1	26.6		12.1	35.6	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.03	0.28		0.13	0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	1527		440	1604		56	897		217	1138	
v/s Ratio Prot		0.11			0.21		0.02	0.09		c0.12	c0.34	
v/s Ratio Perm	c0.45			0.11								
v/c Ratio	0.94	0.24		0.22	0.44		0.77	0.32		0.95	0.93	
Uniform Delay, d1	24.1	15.0		14.9	16.8		46.4	27.8		42.0	29.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	44.2	0.1		0.3	0.2		46.0	0.2		47.8	13.6	
Delay (s)	68.3	15.1		15.1	17.0		92.5	28.0		89.8	43.0	
Level of Service	E	B		B	B		F	C		F	D	
Approach Delay (s)		33.8			16.8			35.8			50.4	
Approach LOS		C			B			D			D	

Intersection Summary				
HCM Average Control Delay	36.4	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	96.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	78.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00	0.93		0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1703	3406	1325	1719	3438	1435		1763		1649	1659	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1703	3406	1325	1719	3438	1435		1763		1649	1659	1524
Volume (vph)	120	580	4	18	843	115	0	6	2	339	15	22
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	630	4	20	916	125	0	7	2	368	16	24
RTOR Reduction (vph)	0	0	2	0	0	55	0	2	0	0	0	18
Lane Group Flow (vph)	130	630	2	20	916	70	0	7	0	187	197	6
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	8.6	42.6	36.6	2.7	36.7	49.0		14.1		28.1	28.1	28.1
Effective Green, g (s)	8.6	42.6	36.6	2.7	36.7	49.0		14.1		28.1	28.1	28.1
Actuated g/C Ratio	0.07	0.36	0.31	0.02	0.31	0.41		0.12		0.24	0.24	0.24
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	123	1214	406	39	1056	588		208		388	390	358
v/s Ratio Prot	c0.08	0.18		0.01	c0.27	0.02		c0.00		0.11	c0.12	
v/s Ratio Perm			0.00			0.03						0.00
v/c Ratio	1.06	0.52	0.00	0.51	0.87	0.12		0.03		0.48	0.51	0.02
Uniform Delay, d1	55.4	30.4	28.8	57.7	39.1	21.9		46.7		39.4	39.7	35.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.91	0.91	1.46
Incremental Delay, d2	97.2	0.4	0.0	10.9	7.7	0.1		0.1		0.9	1.0	0.0
Delay (s)	152.7	30.7	28.8	68.7	46.8	22.0		46.7		36.8	37.2	51.1
Level of Service	F	C	C	E	D	C		D		D	D	D
Approach Delay (s)		51.5			44.3			46.7			37.9	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM Average Control Delay	45.6	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	119.5	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	282	104	14	20	107	96	6	36	19	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	307	113	15	22	116	104	7	39	21	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)		657										
pX, platoon unblocked												
vC, conflicting volume	221			128			946	998	121	986	953	168
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	221			128			946	998	121	986	953	168
tC, single (s)	4.2			4.2			7.1	6.9	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.4	3.3	3.5	4.0	3.3
p0 queue free %	77			98			97	75	98	100	100	100
cM capacity (veh/h)	1319			1427			196	159	931	147	196	876

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	435	242	66
Volume Left	307	22	7
Volume Right	15	104	21
cSH	1319	1427	220
Volume to Capacity	0.23	0.02	0.30
Queue Length 95th (ft)	23	1	30
Control Delay (s)	6.7	0.8	28.3
Lane LOS	A	A	D
Approach Delay (s)	6.7	0.8	28.3
Approach LOS			D

Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	47.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3090		1703	3310		1770	1863	1556	1770	1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3090		1703	3310		1770	1863	1556	1770	1751	
Volume (vph)	36	153	200	314	548	100	110	50	26	44	83	41
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	166	217	341	596	109	120	54	28	48	90	45
RTOR Reduction (vph)	0	172	0	0	15	0	0	0	22	0	22	0
Lane Group Flow (vph)	39	211	0	341	690	0	120	54	6	48	113	0
Confl. Peds. (#/hr)			1			6			4			16
Confl. Bikes (#/hr)			2			4			2			5
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	2.7	13.4		17.0	27.7		6.4	14.0	14.0	4.1	11.7	
Effective Green, g (s)	2.7	13.4		17.0	27.7		6.4	14.0	14.0	4.1	11.7	
Actuated g/C Ratio	0.04	0.21		0.26	0.43		0.10	0.22	0.22	0.06	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	71	642		449	1422		176	404	338	113	318	
v/s Ratio Prot	0.02	0.07		c0.20	c0.21		c0.07	0.03		0.03	c0.06	
v/s Ratio Perm									0.00			
v/c Ratio	0.55	0.33		0.76	0.49		0.68	0.13	0.02	0.42	0.36	
Uniform Delay, d1	30.3	21.7		21.9	13.3		28.1	20.4	19.8	29.1	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.4	0.3		7.2	0.3		10.4	0.2	0.0	2.6	0.7	
Delay (s)	38.7	22.0		29.1	13.5		38.4	20.5	19.9	31.6	23.8	
Level of Service	D	C		C	B		D	C	B	C	C	
Approach Delay (s)		23.6			18.6			31.1			25.8	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM Average Control Delay	21.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	60.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.95			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1760	1773			1787	1574		1719	1810	2707	
Flt Permitted		0.35	1.00			0.41	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		643	1773			770	1574		1719	1810	2707	
Volume (vph)	65	25	170	80	250	45	120	50	70	215	125	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	27	185	87	272	49	130	54	76	234	136	315
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	259	0	0	321	184	0	76	234	451	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		34.4	34.4			34.4	34.4		10.3	20.2	48.4	
Effective Green, g (s)		34.4	34.4			34.4	34.4		10.3	20.2	48.4	
Actuated g/C Ratio		0.30	0.30			0.30	0.30		0.09	0.18	0.42	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		194	534			232	474		155	320	1147	
v/s Ratio Prot			0.15						0.04	c0.13		
v/s Ratio Perm		0.15				c0.42	0.12				0.17	
v/c Ratio		0.51	0.49			1.38	0.39		0.49	0.73	0.39	
Uniform Delay, d1		32.9	32.7			39.9	31.6		49.5	44.4	22.7	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		2.1	0.7			197.1	0.5		2.4	8.3	0.2	
Delay (s)		34.9	33.4			237.0	32.1		51.9	52.8	23.0	
Level of Service		C	C			F	C		D	D	C	
Approach Delay (s)			33.8			162.4				35.0		
Approach LOS			C			F				D		

Intersection Summary				
HCM Average Control Delay	130.6	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.16			
Actuated Cycle Length (s)	114.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	95.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.98			0.99		
Flt Protected		0.95	1.00			0.96		
Satd. Flow (prot)		1765	3384			3347		
Flt Permitted		0.95	1.00			0.87		
Satd. Flow (perm)		1765	3384			3043		
Volume (vph)	30	180	445	65	60	775	65	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	196	484	71	65	842	71	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	229	555	0	0	989	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		19.4	29.3			24.2		
Effective Green, g (s)		19.4	29.3			24.2		
Actuated g/C Ratio		0.17	0.26			0.21		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		300	868			645		
v/s Ratio Prot		c0.13	0.16					
v/s Ratio Perm						c0.33		
v/c Ratio		0.76	0.64			1.53		
Uniform Delay, d1		45.2	37.8			45.0		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		10.9	1.6			247.8		
Delay (s)		56.2	39.3			292.8		
Level of Service		E	D			F		
Approach Delay (s)			44.2			292.8		
Approach LOS			D			F		

Intersection Summary				
HCM Average Control Delay	144.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	79.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1719	3438	1517	1687	3374	1509	1719	3438	1482	1719	3438	1538
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)	1719	3438	1517	1687	3374	1509	1719	3438	1482	1719	3438	1538
Volume (vph)	140	641	140	300	756	390	30	160	30	130	1040	190
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	697	152	326	822	424	33	174	33	141	1130	207
RTOR Reduction (vph)	0	0	122	0	0	277	0	0	28	0	0	54
Lane Group Flow (vph)	152	697	30	326	822	147	33	174	5	141	1130	153
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6	15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	10.3	8.7	6.5	16.4	14.8	10.4	2.2	12.0	12.0	12.8	26.6	32.9
Effective Green, g (s)	10.3	8.7	6.5	16.4	14.8	10.4	2.2	12.0	12.0	12.8	26.6	32.9
Actuated g/C Ratio	0.13	0.11	0.08	0.20	0.18	0.13	0.03	0.15	0.15	0.16	0.32	0.40
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	216	365	120	338	610	192	46	504	217	269	1117	693
v/s Ratio Prot	0.09	c0.20	0.01	c0.19	c0.24		0.02	0.05		c0.08	c0.33	0.05
v/s Ratio Perm			0.01			0.10			0.00			0.05
v/c Ratio	0.70	1.91	0.25	0.96	1.35	0.77	0.72	0.35	0.02	0.52	1.01	0.22
Uniform Delay, d1	34.3	36.6	35.4	32.5	33.6	34.6	39.5	31.4	29.9	31.8	27.6	16.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.17	0.89	0.93
Incremental Delay, d2	9.9	419.4	1.1	39.2	167.1	16.6	41.5	0.4	0.0	1.8	29.6	0.2
Delay (s)	44.3	456.0	36.5	71.7	200.7	51.2	81.0	31.8	30.0	39.0	54.2	15.2
Level of Service	D	F	D	E	F	D	F	C	C	D	D	B
Approach Delay (s)		329.8			133.6			38.3			47.3	
Approach LOS		F			F			D			D	

Intersection Summary				
HCM Average Control Delay	144.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	79.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.90	
Flt Protected	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (prot)	1770	3539	3539	1583	1643	
Flt Permitted	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (perm)	1770	3539	3539	1583	1643	
Volume (vph)	37	187	516	107	108	268
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	203	561	116	117	291
RTOR Reduction (vph)	0	0	0	78	144	0
Lane Group Flow (vph)	40	203	561	38	264	0
Confl. Peds. (#/hr)					2	2
Confl. Bikes (#/hr)						2
Turn Type	Prot			Perm		
Protected Phases	5	2	6		4	
Permitted Phases				6		
Actuated Green, G (s)	1.6	18.0	12.4	12.4	11.5	
Effective Green, g (s)	1.6	18.0	12.4	12.4	11.5	
Actuated g/C Ratio	0.04	0.48	0.33	0.33	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	76	1699	1170	523	504	
v/s Ratio Prot	c0.02	0.06	c0.16		c0.16	
v/s Ratio Perm				0.02		
v/c Ratio	0.53	0.12	0.48	0.07	0.52	
Uniform Delay, d1	17.6	5.4	10.0	8.6	10.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.4	0.0	0.3	0.1	1.0	
Delay (s)	24.0	5.4	10.3	8.7	11.7	
Level of Service	C	A	B	A	B	
Approach Delay (s)		8.5	10.0		11.7	
Approach LOS		A	B		B	

Intersection Summary				
HCM Average Control Delay	10.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0			4.0			4.0		
Lane Util. Factor		1.00		1.00			0.95			0.95		
Frpb, ped/bikes		1.00		1.00			1.00			0.99		
Flpb, ped/bikes		1.00		1.00			1.00			1.00		
Frt		0.99		0.97			0.99			0.98		
Flt Protected		0.99		1.00			1.00			1.00		
Satd. Flow (prot)		1836		1806			3513			3437		
Flt Permitted		0.53		1.00			0.92			0.88		
Satd. Flow (perm)		973		1806			3244			3033		
Volume (vph)	68	350	17	493	119	25	700	28	36	510	81	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	380	18	536	129	27	761	30	39	554	88	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	15	0	0
Lane Group Flow (vph)	0	470	0	665	0	0	818	0	0	666	0	0
Confl. Peds. (#/hr)			9		11	28			7		28	
Confl. Bikes (#/hr)			1		2							
Turn Type	Perm					Perm			Perm			custom
Protected Phases		4		8			2			6		9
Permitted Phases	4					2			6			
Actuated Green, G (s)		27.0		27.0			27.0			27.0		
Effective Green, g (s)		27.0		27.0			27.0			27.0		
Actuated g/C Ratio		0.44		0.44			0.44			0.44		
Clearance Time (s)		4.0		4.0			4.0			4.0		
Vehicle Extension (s)		3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		424		786			1413			1321		
v/s Ratio Prot				0.37								
v/s Ratio Perm		c0.48					c0.25			0.22		
v/c Ratio		1.11		0.85			0.58			0.50		
Uniform Delay, d1		17.5		15.6			13.2			12.7		
Progression Factor		1.00		1.00			1.00			1.00		
Incremental Delay, d2		76.8		8.4			1.7			1.4		
Delay (s)		94.3		24.0			14.9			14.0		
Level of Service		F		C			B			B		
Approach Delay (s)		94.3		24.0			14.9			14.0		
Approach LOS		F		C			B			B		

Intersection Summary				
HCM Average Control Delay	31.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	111.1%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	91	347	31	3	458	25	61	41	7	125	25	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	99	377	34	3	498	27	66	45	8	136	27	76
Pedestrians		14			10			37			27	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			3			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					668							
pX, platoon unblocked												
vC, conflicting volume	552			448			1237	1187	252	971	1191	552
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			448			1237	1187	252	971	1191	552
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			19	72	99	2	83	83
cM capacity (veh/h)	991			1075			82	159	718	139	158	461

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	288	222	3	525	118	239
Volume Left	99	0	3	0	66	136
Volume Right	0	34	0	27	8	76
cSH	991	1700	1075	1700	107	182
Volume to Capacity	0.10	0.13	0.00	0.31	1.10	1.32
Queue Length 95th (ft)	8	0	0	0	185	343
Control Delay (s)	3.8	0.0	8.4	0.0	193.2	225.9
Lane LOS	A		A		F	F
Approach Delay (s)	2.1		0.1		193.2	225.9
Approach LOS					F	F

Intersection Summary			
Average Delay	55.9		
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	0.99			0.99			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.97			1.00	
Satd. Flow (prot)	1751	1808		1758	1829			1782			1684	
Flt Permitted	0.57	1.00		0.46	1.00			0.81			0.97	
Satd. Flow (perm)	1058	1808		847	1829			1489			1641	
Volume (vph)	35	325	62	9	254	28	78	58	13	6	23	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	353	67	10	276	30	85	63	14	7	25	43
RTOR Reduction (vph)	0	11	0	0	6	0	0	5	0	0	29	0
Lane Group Flow (vph)	38	409	0	10	300	0	0	157	0	0	46	0
Confl. Peds. (#/hr)	21		16	16		21	28		9	9		28
Confl. Bikes (#/hr)			4						3			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.6	12.6		12.6	12.6			9.9			9.9	
Effective Green, g (s)	12.6	12.6		12.6	12.6			9.9			9.9	
Actuated g/C Ratio	0.41	0.41		0.41	0.41			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	437	747		350	756			483			533	
v/s Ratio Prot		c0.23			0.16							
v/s Ratio Perm	0.04			0.01				c0.11			0.03	
v/c Ratio	0.09	0.55		0.03	0.40			0.32			0.09	
Uniform Delay, d1	5.4	6.8		5.3	6.3			7.8			7.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.8		0.0	0.3			0.4			0.1	
Delay (s)	5.5	7.6		5.3	6.6			8.2			7.2	
Level of Service	A	A		A	A			A			A	
Approach Delay (s)		7.4			6.6			8.2			7.2	
Approach LOS		A			A			A			A	

Intersection Summary					
HCM Average Control Delay	7.3	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	30.5	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	50.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	50	29	9	50	23	20	91	12	16	38	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	54	32	10	54	25	22	99	13	17	41	9

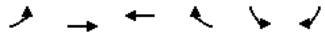
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	96	89	134	67
Volume Left (vph)	10	10	22	17
Volume Right (vph)	32	25	13	9
Hadj (s)	-0.14	-0.11	0.01	0.01
Departure Headway (s)	4.3	4.4	4.4	4.5
Degree Utilization, x	0.11	0.11	0.16	0.08
Capacity (veh/h)	790	774	778	754
Control Delay (s)	7.9	7.9	8.3	7.9
Approach Delay (s)	7.9	7.9	8.3	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.0	
HCM Level of Service			A	
Intersection Capacity Utilization		23.3%	ICU Level of Service	A
Analysis Period (min)			15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	2	13	38	0	31	0	98	12	20	60	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	2	14	41	0	34	0	107	13	22	65	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	21	75	120	89
Volume Left (vph)	4	41	0	22
Volume Right (vph)	14	34	13	2
Hadj (s)	-0.33	-0.13	-0.03	0.07
Departure Headway (s)	4.1	4.3	4.2	4.3
Degree Utilization, x	0.02	0.09	0.14	0.11
Capacity (veh/h)	824	803	833	812
Control Delay (s)	7.2	7.7	7.8	7.8
Approach Delay (s)	7.2	7.7	7.8	7.8
Approach LOS	A	A	A	A

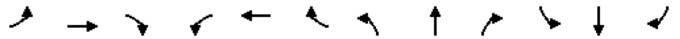
Intersection Summary				
Delay			7.8	
HCM Level of Service			A	
Intersection Capacity Utilization		27.7%	ICU Level of Service	A
Analysis Period (min)			15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	160	1945	750	100	90	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	174	2114	815	109	98	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			1319			
pX, platoon unblocked	0.93				0.93	0.93
vC, conflicting volume	924				2274	462
vC1, stage 1 conf vol					870	
vC2, stage 2 conf vol					1405	
vCu, unblocked vol	843				2295	346
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	76				0	87
cM capacity (veh/h)	734				78	605

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	174	1057	1057	543	380	174
Volume Left	174	0	0	0	0	98
Volume Right	0	0	0	0	109	76
cSH	734	1700	1700	1700	1700	127
Volume to Capacity	0.24	0.62	0.62	0.32	0.22	1.37
Queue Length 95th (ft)	23	0	0	0	0	289
Control Delay (s)	11.4	0.0	0.0	0.0	0.0	275.0
Lane LOS	B					F
Approach Delay (s)	0.9			0.0		275.0
Approach LOS						F

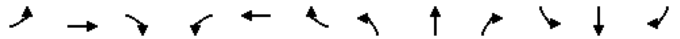
Intersection Summary				
Average Delay		14.7		
Intersection Capacity Utilization		69.7%	ICU Level of Service	C
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	532	70	40	160	0	56	0	123	272	109	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	578	76	43	174	0	61	0	134	296	118	42

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	654	43	174	195	457
Volume Left (vph)	0	43	0	61	296
Volume Right (vph)	76	0	0	134	42
Hadj (s)	-0.04	0.53	0.03	-0.32	0.11
Departure Headway (s)	7.1	8.8	8.3	7.7	7.2
Degree Utilization, x	1.29	0.11	0.40	0.41	0.91
Capacity (veh/h)	511	389	413	439	497
Control Delay (s)	168.2	11.6	15.5	15.9	47.7
Approach Delay (s)	168.2	14.7		15.9	47.7
Approach LOS	F	B		C	E

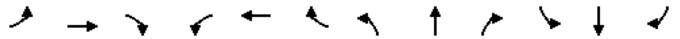
Intersection Summary				
Delay		90.7		
HCM Level of Service		F		
Intersection Capacity Utilization		77.1%	ICU Level of Service	D
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	635	2	113	358	77	9	43	132	188	83	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	690	2	123	389	84	10	47	143	204	90	12

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	21	692	123	473	200	307
Volume Left (vph)	21	0	123	0	10	204
Volume Right (vph)	0	2	0	84	143	12
Hadj (s)	0.53	0.03	0.53	-0.09	-0.39	0.14
Departure Headway (s)	8.5	8.0	8.4	7.8	8.3	8.2
Degree Utilization, x	0.05	1.54	0.29	1.02	0.46	0.70
Capacity (veh/h)	416	454	423	473	409	428
Control Delay (s)	10.7	272.7	13.6	75.4	18.3	28.5
Approach Delay (s)	265.1		62.6		18.3	28.5
Approach LOS	F		F		C	D

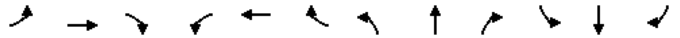
Intersection Summary				
Delay	131.5			
HCM Level of Service	F			
Intersection Capacity Utilization	80.9%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	7	60	4	13	93	19	5	71	37	46	94	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	65	4	14	101	21	5	77	40	50	102	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	77	136	123	165
Volume Left (vph)	8	14	5	50
Volume Right (vph)	4	21	40	13
Hadj (s)	0.02	-0.04	-0.15	0.05
Departure Headway (s)	4.8	4.6	4.5	4.6
Degree Utilization, x	0.10	0.18	0.15	0.21
Capacity (veh/h)	694	721	758	735
Control Delay (s)	8.3	8.6	8.3	8.9
Approach Delay (s)	8.3	8.6	8.3	8.9
Approach LOS	A	A	A	A

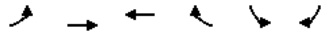
Intersection Summary				
Delay	8.6			
HCM Level of Service	A			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	64	4	78	33	79	0	25	109	144	39	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	70	4	85	36	86	0	27	118	157	42	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	98	207	146	217
Volume Left (vph)	24	85	0	157
Volume Right (vph)	4	86	118	18
Hadj (s)	0.06	-0.13	-0.45	0.13
Departure Headway (s)	5.1	4.8	4.5	5.0
Degree Utilization, x	0.14	0.28	0.18	0.30
Capacity (veh/h)	634	694	731	676
Control Delay (s)	9.0	9.6	8.5	10.1
Approach Delay (s)	9.0	9.6	8.5	10.1
Approach LOS	A	A	A	B

Intersection Summary				
Delay		9.5		
HCM Level of Service		A		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	95	1950	820	20	40	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	2120	891	22	43	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)			658			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	913				2168	457
vC1, stage 1 conf vol					902	
vC2, stage 2 conf vol					1266	
vCu, unblocked vol	765				2191	246
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	85				55	95
cM capacity (veh/h)	698				96	664

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	103	1060	1060	594	319	76
Volume Left	103	0	0	0	0	43
Volume Right	0	0	0	0	22	33
cSH	698	1700	1700	1700	1700	151
Volume to Capacity	0.15	0.62	0.62	0.35	0.19	0.50
Queue Length 95th (ft)	13	0	0	0	0	60
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	50.6
Lane LOS	B					F
Approach Delay (s)	0.5			0.0		50.6
Approach LOS						F

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization	64.6%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95		1.00	1.00			0.95	
Frt				1.00	0.94		1.00	1.00			0.98	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1478	1450		1626	1712			3195	
Flt Permitted				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (perm)				1478	1450		1626	1712			3195	
Volume (vph)	0	0	0	517	173	167	383	343	0	0	332	44
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	562	188	182	416	373	0	0	361	48
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	459	448	0	416	373	0	0	395	0
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	11%	11%	11%	11%	11%	11%
Turn Type				Split			Split					
Protected Phases				8	8		6	6			2	
Permitted Phases												
Actuated Green, G (s)				26.5	26.5		22.0	22.0			14.3	
Effective Green, g (s)				26.5	26.5		22.0	22.0			14.3	
Actuated g/C Ratio				0.35	0.35		0.29	0.29			0.19	
Clearance Time (s)				4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				524	514		478	504			611	
v/s Ratio Prot				c0.31	0.31		c0.26	0.22			c0.12	
v/s Ratio Perm												
v/c Ratio				0.88	0.87		0.87	0.74			0.65	
Uniform Delay, d1				22.6	22.6		25.0	23.8			27.9	
Progression Factor				1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2				15.1	14.9		15.8	5.8			2.4	
Delay (s)				37.7	37.5		40.8	29.6			30.3	
Level of Service				D	D		D	C			C	
Approach Delay (s)		0.0			37.6			35.5			30.3	
Approach LOS		A			D			D			C	

Intersection Summary				
HCM Average Control Delay	35.4	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1762	1754		1766	1863	1549	1530	3059	1312	1530	3019	
Flt Permitted	0.37	1.00		0.13	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	684	1754		248	1863	1549	1530	3059	1312	1530	3019	
Volume (vph)	130	450	230	100	350	90	140	506	700	114	684	51
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	489	250	109	380	98	152	550	761	124	743	55
RTOR Reduction (vph)	0	23	0	0	0	61	0	0	97	0	7	0
Lane Group Flow (vph)	141	716	0	109	380	37	152	550	664	124	791	0
Confl. Peds. (#/hr)	10		13	13		10			27			27
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)	30.0	30.0		30.0	30.0	30.0	13.5	33.0	33.0	5.0	24.5	
Effective Green, g (s)	30.0	30.0		30.0	30.0	30.0	13.5	33.0	33.0	5.0	24.5	
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.38	0.17	0.41	0.41	0.06	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	257	658		93	699	581	258	1262	541	96	925	
v/s Ratio Prot		0.41			0.20		0.10	0.18		c0.08	0.26	
v/s Ratio Perm	0.21			c0.44		0.02			c0.51			
v/c Ratio	0.55	1.09		1.17	0.54	0.06	0.59	0.44	1.23	1.29	0.86	
Uniform Delay, d1	19.7	25.0		25.0	19.6	16.0	30.7	16.8	23.5	37.5	26.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.79	0.78	0.64	1.00	1.00	
Incremental Delay, d2	2.4	61.4		146.9	0.9	0.0	1.0	0.3	107.4	188.9	10.0	
Delay (s)	22.1	86.4		171.9	20.5	16.1	25.4	13.4	122.4	226.4	36.1	
Level of Service	C	F		F	C	B	C	B	F	F	D	
Approach Delay (s)		76.1			47.9			71.3			61.7	
Approach LOS		E			D			E			E	

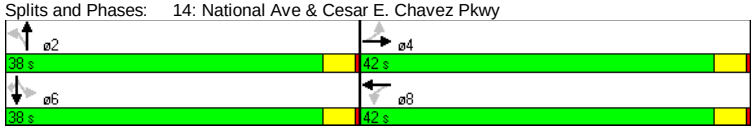
Intersection Summary				
HCM Average Control Delay	66.5	HCM Level of Service	E	
HCM Volume to Capacity ratio	1.21			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	100.3%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	300	400	110	270	120	1000	120	550	410
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phases	4	4	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	42.0	42.0	42.0	42.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	47.5%	47.5%	47.5%	47.5%	47.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	38.0	38.0	38.0	38.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.42	0.42	0.42	0.42	0.42
v/c Ratio	1.48	0.87	1.13	0.71	0.92	0.88	1.60	0.87	0.53
Control Delay	262.8	30.4	155.1	21.3	79.6	25.6	316.2	17.2	1.3
Queue Delay	0.0	0.6	8.3	0.0	0.0	1.4	0.0	0.8	0.6
Total Delay	262.8	31.1	163.5	21.3	79.6	27.0	316.2	18.1	2.0
LOS	F	C	F	C	E	C	F	B	A
Approach Delay		101.3		45.2		32.1		45.0	
Approach LOS		F		D		C		D	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.60			
Intersection Signal Delay: 55.2		Intersection LOS: E	
Intersection Capacity Utilization 98.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
14: National Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 2 without Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.92		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1745		1770	1722		1612	3179		1530	1610	1369
Flt Permitted	0.25	1.00		0.12	1.00		0.19	1.00		0.12	1.00	1.00
Satd. Flow (perm)	463	1745		224	1722		331	3179		189	1610	1369
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	33	0	0	18	0	0	9	0	0	0	256
Lane Group Flow (vph)	326	717	0	120	574	0	130	1187	0	130	598	190
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		34.0	34.0		34.0	34.0	34.0
Effective Green, g (s)	38.0	38.0		38.0	38.0		34.0	34.0		34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.42	0.42		0.42	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	220	829		106	818		141	1351		80	684	582
v/s Ratio Prot		0.41			0.33			0.37			0.37	
v/s Ratio Perm	c0.70			0.54			0.39			c0.69		0.14
v/c Ratio	1.48	0.87		1.13	0.70		0.92	0.88		1.62	0.87	0.33
Uniform Delay, d1	21.0	18.7		21.0	16.5		21.7	21.1		23.0	21.0	15.3
Progression Factor	1.00	1.00		1.00	1.00		0.79	0.80		0.40	0.37	0.13
Incremental Delay, d2	239.6	9.4		127.4	2.7		55.1	7.9		305.2	7.2	0.7
Delay (s)	260.6	28.1		148.4	19.3		72.3	24.7		314.4	15.0	2.6
Level of Service	F	C		F	B		E	C		F	B	A
Approach Delay (s)		98.5			41.0			29.4			43.4	
Approach LOS		F			D			C			D	

Intersection Summary					
HCM Average Control Delay	52.5	HCM Level of Service		D	
HCM Volume to Capacity ratio	1.55				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	98.5%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

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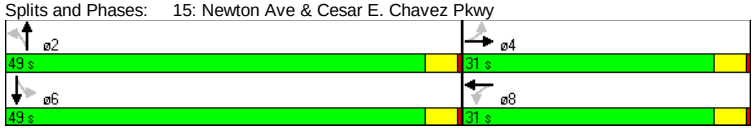
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	130	90	70	40	790	170	910
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	14.7	14.7	14.7	14.7	57.3	57.3	57.3	57.3
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.72	0.72	0.72	0.72
v/c Ratio	0.69	0.61	0.52	0.53	0.40	0.40	0.61	0.87
Control Delay	48.3	31.2	37.9	16.6	15.8	4.1	14.1	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.4
Total Delay	48.3	31.2	37.9	16.6	15.8	4.2	14.1	16.8
LOS	D	C	D	B	B	A	B	B
Approach Delay		37.6		23.2		4.7		16.4
Approach LOS		D		C		A		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 86.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
15: Newton Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 2 without Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.95		1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1681		1612	3189		1612	1681	
Flt Permitted	0.41	1.00		0.41	1.00		0.15	1.00		0.29	1.00	
Satd. Flow (perm)	769	1765		769	1681		248	3189		484	1681	
Volume (vph)	120	130	70	90	70	130	40	790	60	170	910	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	141	76	98	76	141	43	859	65	185	989	65
RTOR Reduction (vph)	0	30	0	0	103	0	0	5	0	0	2	0
Lane Group Flow (vph)	130	187	0	98	114	0	43	919	0	185	1052	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.7	14.7		14.7	14.7		57.3	57.3		57.3	57.3	
Effective Green, g (s)	14.7	14.7		14.7	14.7		57.3	57.3		57.3	57.3	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.72	0.72		0.72	0.72	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	141	324		141	309		178	2284		347	1204	
v/s Ratio Prot		0.11			0.07			0.29			c0.63	
v/s Ratio Perm	c0.17			0.13			0.17			0.38		
v/c Ratio	0.92	0.58		0.70	0.37		0.24	0.40		0.53	0.87	
Uniform Delay, d1	32.1	29.8		30.6	28.6		3.9	4.5		5.2	8.6	
Progression Factor	1.00	1.00		1.00	1.00		0.71	0.70		0.67	0.67	
Incremental Delay, d2	52.6	2.5		13.8	0.7		2.3	0.4		3.7	6.0	
Delay (s)	84.7	32.3		44.4	29.3		5.1	3.6		7.2	11.7	
Level of Service	F	C		D	C		A	A		A	B	
Approach Delay (s)		51.9			34.0			3.6			11.0	
Approach LOS		D			C			A			B	

Intersection Summary					
HCM Average Control Delay	16.0	HCM Level of Service	B		
HCM Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	86.5%	ICU Level of Service	E		
Analysis Period (min)	15				

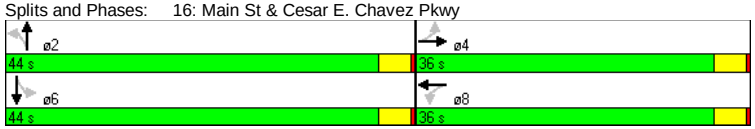
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 PM no Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	290	70	250	85	640	250	540
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	29.8	29.8	29.8	29.8	42.2	42.2	42.2	42.2
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.53	0.53	0.53	0.53
v/c Ratio	0.95	0.50	0.26	0.83	1.07	0.56	1.33	1.08
Control Delay	93.0	21.2	18.9	30.9	145.4	13.9	188.1	65.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.8	0.0	26.8
Total Delay	93.0	21.2	18.9	30.9	145.4	15.8	188.1	91.9
LOS	F	C	B	C	F	B	F	F
Approach Delay		41.0		29.5		27.9		114.4
Approach LOS		D		C		C		F

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.33			
Intersection Signal Delay: 61.0		Intersection LOS: E	
Intersection Capacity Utilization 101.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU
16: Main St & Cesar E. Chavez Pkwy
Horizon Year Alt 2 without Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	1836		1750	1691		1556	2974		1544	1529	
Flt Permitted	0.16	1.00		0.41	1.00		0.09	1.00		0.25	1.00	
Satd. Flow (perm)	305	1836		756	1691		155	2974		404	1529	
Volume (vph)	120	290	25	70	250	270	85	640	180	250	540	280
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	315	27	76	272	293	92	696	196	272	587	304
RTOR Reduction (vph)	0	4	0	0	51	0	0	31	0	0	22	0
Lane Group Flow (vph)	130	338	0	76	514	0	92	861	0	272	869	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.8	29.8		29.8	29.8		42.2	42.2		42.2	42.2	
Effective Green, g (s)	29.8	29.8		29.8	29.8		42.2	42.2		42.2	42.2	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.53	0.53		0.53	0.53	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	114	684		282	630		82	1569		213	807	
v/s Ratio Prot		0.18			0.30			0.29			0.57	
v/s Ratio Perm	c0.43			0.10			0.59			c0.67		
v/c Ratio	1.14	0.49		0.27	0.82		1.12	0.55		1.28	1.08	
Uniform Delay, d1	25.1	19.3		17.5	22.6		18.9	12.6		18.9	18.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.79	0.77	
Incremental Delay, d2	127.0	0.6		0.5	8.0		136.2	1.4		142.8	46.8	
Delay (s)	152.1	19.9		18.0	30.7		155.1	14.0		157.7	61.4	
Level of Service	F	B		B	C		F	B		F	E	
Approach Delay (s)		56.3			29.2			27.2			83.9	
Approach LOS		E			C			C			F	

Intersection Summary					
HCM Average Control Delay	52.0	HCM Level of Service	D		
HCM Volume to Capacity ratio	1.22				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	101.4%	ICU Level of Service	G		
Analysis Period (min)	15				

c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 PM no Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.95			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)	1641	3265		1421	3232		1363	1314			1596	1368
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00			0.83	1.00
Satd. Flow (perm)	1641	3265		1421	3232		1021	1314			1360	1368
Volume (vph)	590	1500	40	30	467	43	50	63	35	33	30	314
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	641	1630	43	33	508	47	54	68	38	36	33	341
RTOR Reduction (vph)	0	1	0	0	5	0	0	15	0	0	0	270
Lane Group Flow (vph)	641	1672	0	33	550	0	54	91	0	0	69	71
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			9			14			3			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	
Permitted Phases							12			1 5 16		1 5 16
Actuated Green, G (s)	27.3	53.8		3.2	29.7		14.0	14.0			22.4	22.4
Effective Green, g (s)	27.3	53.8		3.2	29.7		14.0	14.0			22.4	22.4
Actuated g/C Ratio	0.25	0.50		0.03	0.28		0.13	0.13			0.21	0.21
Clearance Time (s)	4.0			4.0			4.0	4.0				
Vehicle Extension (s)	3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)	417	1636		42	894		133	171			284	285
v/s Ratio Prot	c0.39	c0.51		0.02	0.17			c0.07				
v/s Ratio Perm							0.05				0.05	c0.05
v/c Ratio	1.54	1.02		0.79	0.62		0.41	0.53			0.24	0.25
Uniform Delay, d1	40.0	26.8		51.8	33.9		42.9	43.6			35.4	35.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.22	3.70
Incremental Delay, d2	253.5	28.0		62.3	1.3		2.0	3.2			0.4	0.5
Delay (s)	293.6	54.8		114.0	35.1		44.9	46.8			43.5	131.8
Level of Service	F	D		F	D		D	D			D	F
Approach Delay (s)		120.9			39.6			46.2			117.0	
Approach LOS		F			D			D			F	

Intersection Summary				
HCM Average Control Delay	103.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	107.4	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	69.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	891	523	8	0	156	69	0	0	16	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	968	568	9	0	170	75	0	0	17	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)		667										
pX, platoon unblocked												
vC, conflicting volume	245			577			2679	2754	573	2730	2721	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	245			577			2679	2754	573	2730	2721	207
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 %	27			100			100	100	97	100	100	100
cM capacity (veh/h)	1322			996			6	5	519	5	6	833

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	968	577	0	245	17
Volume Left	968	0	0	0	0
Volume Right	0	9	0	75	17
cSH	1322	1700	1700	1700	519
Volume to Capacity	0.73	0.34	0.00	0.14	0.03
Queue Length 95th (ft)	177	0	0	0	3
Control Delay (s)	14.8	0.0	0.0	0.0	12.2
Lane LOS	B				B
Approach Delay (s)	9.3		0.0		12.2
Approach LOS					B

Intersection Summary				
Average Delay	8.0			
Intersection Capacity Utilization	68.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	302	253	0	129	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	328	275	0	140	260
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)		1100	875			
pX, platoon unblocked						
vC, conflicting volume	275				603	275
vC1, stage 1 conf vol					275	
vC2, stage 2 conf vol					328	
vCu, unblocked vol	275				603	275
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				75	66
cM capacity (veh/h)	1288				553	764

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	328	275	140	260
Volume Left	0	0	140	0
Volume Right	0	0	0	260
cSH	1700	1700	553	764
Volume to Capacity	0.19	0.16	0.25	0.34
Queue Length 95th (ft)	0	0	25	38
Control Delay (s)	0.0	0.0	13.7	12.1
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	12.7	
Approach LOS			B	

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	35	389	34	34	191	24	12	18	62	45	23	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	423	37	37	208	26	13	20	67	49	25	76
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		1314			661							
pX, platoon unblocked												
vC, conflicting volume	234			460			888	825	441	871	830	221
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	234			460			888	825	441	871	830	221
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 %	97			97			94	93	89	78	91	91
cM capacity (veh/h)	1334			1101			214	289	616	219	287	819

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	38	460	37	234	100	150
Volume Left	38	0	37	0	13	49
Volume Right	0	37	0	26	67	76
cSH	1334	1700	1101	1700	420	372
Volume to Capacity	0.03	0.27	0.03	0.14	0.24	0.40
Queue Length 95th (ft)	2	0	3	0	23	48
Control Delay (s)	7.8	0.0	8.4	0.0	16.2	21.1
Lane LOS	A		A		C	C
Approach Delay (s)	0.6		1.1		16.2	21.1
Approach LOS					C	C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	124	41	27	70	27	7	47	28	30	28	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	135	45	29	76	29	8	51	30	33	30	23
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	105			179			397	373	157	415	381	91
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	105			179			397	373	157	415	381	91
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 %	98			98			99	90	97	93	94	98
cM capacity (veh/h)	1486			1396			511	536	888	477	531	967

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	205	135	89	86
Volume Left	26	29	8	33
Volume Right	45	29	30	23
cSH	1486	1396	617	575
Volume to Capacity	0.02	0.02	0.14	0.15
Queue Length 95th (ft)	1	2	13	13
Control Delay (s)	1.1	1.8	11.8	12.4
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	1.8	11.8	12.4
Approach LOS			B	B

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	337	284	68	85	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	366	309	74	92	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1318				
pX, platoon unblocked						
vC, conflicting volume	383				725	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				725	346
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				76	99
cM capacity (veh/h)	1176				390	697

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	373	383	102
Volume Left	7	0	92
Volume Right	0	74	10
cSH	1176	1700	407
Volume to Capacity	0.01	0.23	0.25
Queue Length 95th (ft)	0	0	25
Control Delay (s)	0.2	0.0	16.8
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	16.8
Approach LOS			C

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	34.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	101	251	200	167	81	54	230	443	124	66	275	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	110	273	217	182	88	59	250	482	135	72	299	14

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	110	490	182	147	866	385
Volume Left (vph)	110	0	182	0	250	72
Volume Right (vph)	0	217	0	59	135	14
Hadj (s)	0.53	-0.28	0.53	-0.25	0.00	0.05
Departure Headway (s)	9.4	8.6	10.0	9.2	8.5	8.7
Degree Utilization, x	0.29	1.17	0.51	0.38	2.05	0.93
Capacity (veh/h)	379	424	345	380	430	407
Control Delay (s)	14.9	125.3	21.6	16.5	498.3	58.1
Approach Delay (s)	105.1		19.3		498.3	58.1
Approach LOS	F		C		F	F

Intersection Summary				
Delay	240.2			
HCM Level of Service	F			
Intersection Capacity Utilization	110.5%	ICU Level of Service	H	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98			1.00			0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.91			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1760	1829		1753	1663			1821			1728	
Flt Permitted	0.64	1.00		0.67	1.00			0.98			0.79	
Satd. Flow (perm)	1182	1829		1238	1663			1788			1386	
Volume (vph)	166	111	12	21	70	105	13	208	30	132	98	109
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	180	121	13	23	76	114	14	226	33	143	107	118
RTOR Reduction (vph)	0	7	0	0	83	0	0	7	0	0	22	0
Lane Group Flow (vph)	180	127	0	23	107	0	0	266	0	0	346	0
Confl. Peds. (#/hr)	7		11	11		7	25		21	21		25
Confl. Bikes (#/hr)			3			3			6			2
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.6	11.6		11.6	11.6			22.4			22.4	
Effective Green, g (s)	11.6	11.6		11.6	11.6			22.4			22.4	
Actuated g/C Ratio	0.28	0.28		0.28	0.28			0.53			0.53	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	326	505		342	459			954			739	
v/s Ratio Prot		0.07			0.06							
v/s Ratio Perm	c0.15			0.02				0.15			c0.25	
v/c Ratio	0.55	0.25		0.07	0.23			0.28			0.47	
Uniform Delay, d1	13.0	11.8		11.2	11.8			5.4			6.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	0.3		0.1	0.3			0.2			0.5	
Delay (s)	15.0	12.1		11.3	12.0			5.5			6.6	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		13.8			11.9			5.5			6.6	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM Average Control Delay	9.2	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	42.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	70.7%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	35	117	24	0	73	33	13	103	20	21	76	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	127	26	0	79	36	14	112	22	23	83	23

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	191	115	148	128
Volume Left (vph)	38	0	14	23
Volume Right (vph)	26	36	22	23
Hadj (s)	-0.01	-0.15	-0.04	-0.04
Departure Headway (s)	4.7	4.7	4.8	4.8
Degree Utilization, x	0.25	0.15	0.20	0.17
Capacity (veh/h)	712	710	702	692
Control Delay (s)	9.3	8.5	9.0	8.8
Approach Delay (s)	9.3	8.5	9.0	8.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay			8.9	
HCM Level of Service			A	
Intersection Capacity Utilization			33.8%	ICU Level of Service
Analysis Period (min)			15	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	134	174	32	27	113	8	63	46	49	8	27	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	146	189	35	29	123	9	68	50	53	9	29	114

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	370	161	172	152
Volume Left (vph)	146	29	68	9
Volume Right (vph)	35	9	53	114
Hadj (s)	0.06	0.04	-0.07	-0.40
Departure Headway (s)	5.1	5.4	5.5	5.2
Degree Utilization, x	0.52	0.24	0.26	0.22
Capacity (veh/h)	671	610	585	611
Control Delay (s)	13.6	10.1	10.4	9.7
Approach Delay (s)	13.6	10.1	10.4	9.7
Approach LOS	B	B	B	A

Intersection Summary				
Delay			11.6	
HCM Level of Service			B	
Intersection Capacity Utilization			63.8%	ICU Level of Service
Analysis Period (min)			15	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3469		1770	3444			1780			1776	
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.78	
Satd. Flow (perm)	1770	3469		1770	3444			1698			1411	
Volume (vph)	56	1500	5	19	493	62	23	111	41	56	66	26
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	1630	5	21	536	67	25	121	45	61	72	28
RTOR Reduction (vph)	0	0	0	0	7	0	0	8	0	0	5	0
Lane Group Flow (vph)	61	1635	0	21	596	0	0	183	0	0	156	0
Confl. Peds. (#/hr)			15			29	7		4	4		7
Confl. Bikes (#/hr)			12						7			7
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	3	14 2 6		13	18 2 6			12			16 1 5	
Permitted Phases							12			16 1 5		
Actuated Green, G (s)	5.1	49.5		1.2	45.6			16.2			29.0	
Effective Green, g (s)	5.1	49.5		1.2	45.6			16.2			29.0	
Actuated g/C Ratio	0.05	0.48		0.01	0.44			0.16			0.28	
Clearance Time (s)	4.0			4.0				4.0				
Vehicle Extension (s)	3.0			3.0				3.0				
Lane Grp Cap (vph)	87	1656		20	1514			265			395	
v/s Ratio Prot	c0.03	c0.47		0.01	0.17							
v/s Ratio Perm								c0.11			c0.11	
v/c Ratio	0.70	0.99		1.05	0.39			0.69			0.39	
Uniform Delay, d1	48.5	26.8		51.2	19.7			41.4			30.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.05	
Incremental Delay, d2	22.5	19.0		217.8	0.2			7.6			0.7	
Delay (s)	71.0	45.7		269.0	19.9			49.0			32.4	
Level of Service	E	D		F	B			D			C	
Approach Delay (s)		46.7			28.2			49.0			32.4	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM Average Control Delay	41.7	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	73.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	41	170	39	8	125	1	34	45	17	4	17	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	185	42	9	136	1	37	49	18	4	18	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		641										
pX, platoon unblocked												
vC, conflicting volume	137			227			504	449	206	471	470	136
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	137			227			504	449	206	471	470	136
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 %	97			99			91	90	98	99	96	95
cM capacity (veh/h)	1447			1341			429	486	835	442	473	912

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	45	227	146	104	68
Volume Left	45	0	9	37	4
Volume Right	0	42	1	18	46
cSH	1447	1700	1341	499	692
Volume to Capacity	0.03	0.13	0.01	0.21	0.10
Queue Length 95th (ft)	2	0	0	20	8
Control Delay (s)	7.6	0.0	0.5	14.1	10.8
Lane LOS	A		A	B	B
Approach Delay (s)	1.2		0.5	14.1	10.8
Approach LOS				B	B

Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	35	155	74	35	123	54	54	68	34	91	80	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	168	80	38	134	59	59	74	37	99	87	22

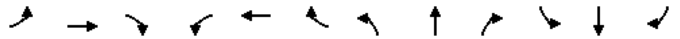
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	38	249	38	192	170	208
Volume Left (vph)	38	0	38	0	59	99
Volume Right (vph)	0	80	0	59	37	22
Hadj (s)	0.53	-0.19	0.53	-0.18	-0.03	0.07
Departure Headway (s)	6.5	5.8	6.6	5.9	5.7	5.7
Degree Utilization, x	0.07	0.40	0.07	0.31	0.27	0.33
Capacity (veh/h)	518	589	508	573	572	583
Control Delay (s)	8.8	11.3	8.9	10.3	10.7	11.4
Approach Delay (s)	11.0		10.1		10.7	11.4
Approach LOS	B		B		B	B

Intersection Summary				
Delay	10.8			
HCM Level of Service	B			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	373	14	31	239	37	296
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	405	15	34	260	40	322
Pedestrians					36	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				670		
pX, platoon unblocked						
vC, conflicting volume			457		646	449
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		646	449
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		89	40
cM capacity (veh/h)			1067		380	541

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	421	120	173	40	322
Volume Left	0	34	0	40	0
Volume Right	15	0	0	0	322
cSH	1700	1067	1700	380	541
Volume to Capacity	0.25	0.03	0.10	0.11	0.60
Queue Length 95th (ft)	0	2	0	9	97
Control Delay (s)	0.0	2.6	0.0	15.6	21.0
Lane LOS		A		C	C
Approach Delay (s)	0.0	1.1		20.4	
Approach LOS				C	

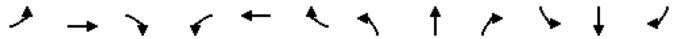
Intersection Summary				
Average Delay	7.1			
Intersection Capacity Utilization	45.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	14	212	17	50	59	28	9	58	204	26	11	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	230	18	54	64	30	10	63	222	28	12	9

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total (vph)	264	54	64	30	73	222	49
Volume Left (vph)	15	54	0	0	10	0	28
Volume Right (vph)	18	0	0	30	0	222	9
Hadj (s)	0.00	1.09	0.03	-0.67	0.06	-0.41	0.04
Departure Headway (s)	4.5	6.1	5.1	3.2	4.9	3.2	5.0
Degree Utilization, x	0.33	0.09	0.09	0.03	0.10	0.20	0.07
Capacity (veh/h)	782	564	681	1121	673	1121	667
Control Delay (s)	9.7	8.6	7.4	5.1	8.5	7.0	8.3
Approach Delay (s)	9.7	7.3			7.4		8.3
Approach LOS	A	A			A		A

Intersection Summary				
Delay	8.2			
HCM Level of Service	A			
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						0.98	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			0.99						0.90	
Flt Protected	0.95	1.00			1.00						0.99	
Satd. Flow (prot)	1543	3539			3505						1506	
Flt Permitted	0.95	1.00			1.00						0.99	
Satd. Flow (perm)	1543	3539			3505						1506	
Volume (vph)	208	1400	0	0	558	39	0	0	0	16	10	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	1522	0	0	607	42	0	0	0	17	11	87
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	71	0
Lane Group Flow (vph)	226	1522	0	0	645	0	0	0	0	0	44	0
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									4			9
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot									Perm		
Protected Phases	13	18 2 6			14 2 6						11 1 5	
Permitted Phases										11 1 5		
Actuated Green, G (s)	9.4	49.6			32.2						15.3	
Effective Green, g (s)	9.4	49.6			32.2						15.3	
Actuated g/C Ratio	0.12	0.61			0.40						0.19	
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	179	2170			1395						285	
v/s Ratio Prot	c0.15	c0.43			0.18							
v/s Ratio Perm											0.03	
v/c Ratio	1.26	0.70			0.46						0.16	
Uniform Delay, d1	35.8	10.6			18.0						27.4	
Progression Factor	1.00	1.00			1.00						1.09	
Incremental Delay, d2	155.0	1.0			0.2						0.3	
Delay (s)	190.8	11.7			18.2						30.1	
Level of Service	F	B			B						C	
Approach Delay (s)		34.8			18.2			0.0			30.1	
Approach LOS		C			B			A			C	

Intersection Summary						
HCM Average Control Delay	30.3	HCM Level of Service	C			
HCM Volume to Capacity ratio	0.65					
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	20.0			
Intersection Capacity Utilization	58.4%	ICU Level of Service	B			
Analysis Period (min)	15					

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.94			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1597	1759			1762	1509		1695	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.90	1.00		0.78	
Satd. Flow (perm)	1770	3539	1583	1597	1759			1592	1509		1353	
Volume (vph)	94	588	85	448	406	241	18	98	163	195	210	102
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	639	92	487	441	262	20	107	177	212	228	111
RTOR Reduction (vph)	0	0	73	0	14	0	0	0	104	0	6	0
Lane Group Flow (vph)	102	639	19	487	689	0	0	127	73	0	545	0
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)	9.0	29.8	29.8	46.0	66.8			61.0	61.0		61.0	
Effective Green, g (s)	9.0	29.8	29.8	46.0	66.8			61.0	61.0		61.0	
Actuated g/C Ratio	0.06	0.20	0.20	0.31	0.45			0.41	0.41		0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	107	709	317	494	790			653	619		555	
v/s Ratio Prot	0.06	0.18		c0.30	c0.39							
v/s Ratio Perm			0.01					0.08	0.05		c0.40	
v/c Ratio	0.95	0.90	0.06	0.99	0.87			0.19	0.12		0.98	
Uniform Delay, d1	69.7	58.1	48.2	51.1	37.1			28.1	27.2		43.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	71.6	14.6	0.1	36.5	10.4			0.1	0.1		33.5	
Delay (s)	141.3	72.7	48.2	87.6	47.5			28.3	27.3		76.8	
Level of Service	F	E	D	F	D			C	C		E	
Approach Delay (s)		78.4			63.9			27.7			76.8	
Approach LOS		E			E			C			E	

Intersection Summary			
HCM Average Control Delay	66.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	148.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1708		1687	1634		1770	3539	1583	1770	3321	
Flt Permitted	0.62	1.00		0.12	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1099	1708		215	1634		1770	3539	1583	1770	3321	
Volume (vph)	350	500	170	70	70	80	50	1100	200	350	500	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	543	185	76	76	87	54	1196	217	380	543	380
RTOR Reduction (vph)	0	14	0	0	46	0	0	0	88	0	136	0
Lane Group Flow (vph)	380	714	0	76	117	0	54	1196	129	380	787	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	33.0	33.0		33.0	33.0		5.6	29.8	29.8	16.0	40.2	
Effective Green, g (s)	33.0	33.0		33.0	33.0		5.6	29.8	29.8	16.0	40.2	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.06	0.33	0.33	0.18	0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	399	621		78	594		109	1161	520	312	1470	
v/s Ratio Prot		c0.42			0.07		0.03	c0.34		c0.21	0.24	
v/s Ratio Perm	0.35			0.35					0.08			
v/c Ratio	0.95	1.15		0.97	0.20		0.50	1.03	0.25	1.22	0.54	
Uniform Delay, d1	28.1	28.9		28.5	19.8		41.2	30.5	22.3	37.4	18.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.8	85.0		92.5	0.2		3.5	34.4	1.1	123.6	1.4	
Delay (s)	60.9	113.9		121.0	20.0		44.7	64.9	23.4	161.0	19.9	
Level of Service	E	F		F	B		D	E	C	F	B	
Approach Delay (s)		95.8			52.1			58.1			61.1	
Approach LOS		F			D			E			E	

Intersection Summary			
HCM Average Control Delay	68.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.97		1.00	0.87	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.96		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1738	3501		1764	3220		1736	3233		1736	2701	
Flt Permitted	0.33	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	599	3501		554	3220		1736	3233		1736	2701	
Volume (vph)	270	600	40	150	300	290	60	500	180	290	510	550
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	652	43	163	326	315	65	543	196	315	554	598
RTOR Reduction (vph)	0	5	0	0	178	0	0	41	0	0	209	0
Lane Group Flow (vph)	293	690	0	163	463	0	65	698	0	315	943	0
Confl. Peds. (#/hr)	27		12	12		27			88			200
Confl. Bikes (#/hr)			8			3						6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	39.0	39.0		39.0	39.0		6.7	22.8		16.0	32.1	
Effective Green, g (s)	39.0	39.0		39.0	39.0		6.7	22.8		16.0	32.1	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.07	0.25		0.18	0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	1520		241	1398		130	821		309	966	
v/s Ratio Prot		0.20			0.14		0.04	0.22		c0.18	c0.35	
v/s Ratio Perm	c0.49			0.29								
v/c Ratio	1.13	0.45		0.68	0.33		0.50	0.85		1.02	0.98	
Uniform Delay, d1	25.4	17.9		20.3	16.8		39.9	31.9		36.9	28.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	94.3	0.2		7.3	0.1		3.0	8.4		56.2	23.0	
Delay (s)	119.7	18.1		27.7	16.9		42.9	40.3		93.1	51.4	
Level of Service	F	B		C	B		D	D		F	D	
Approach Delay (s)		48.2			19.1			40.5			60.4	
Approach LOS		D			B			D			E	

Intersection Summary				
HCM Average Control Delay	45.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	90.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.95	1.00			0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	0.94		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1703	3406	1318	1719	3438	1438		1821		1649	1657	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1703	3406	1318	1719	3438	1438		1821		1649	1657	1531
Volume (vph)	300	1120	2	18	491	255	10	133	0	480	12	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	1217	2	20	534	277	11	145	0	522	13	14
RTOR Reduction (vph)	0	0	1	0	0	178	0	0	0	0	0	10
Lane Group Flow (vph)	326	1217	1	20	534	99	0	156	0	261	274	4
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	13.7	44.3	38.1	1.9	32.5	45.3		20.9		28.2	28.2	28.2
Effective Green, g (s)	13.7	44.3	38.1	1.9	32.5	45.3		20.9		28.2	28.2	28.2
Actuated g/C Ratio	0.11	0.35	0.30	0.01	0.26	0.36		0.16		0.22	0.22	0.22
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	183	1185	394	26	878	512		299		365	367	339
v/s Ratio Prot	c0.19	c0.36		0.01	0.16	0.03		c0.09		0.16	c0.17	
v/s Ratio Perm			0.00			0.04						0.00
v/c Ratio	1.78	1.03	0.00	0.77	0.61	0.19		0.52		0.72	0.75	0.01
Uniform Delay, d1	56.8	41.5	31.3	62.5	41.8	28.4		48.6		45.8	46.2	38.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.93	0.93	1.29
Incremental Delay, d2	372.8	33.3	0.0	80.9	1.2	0.2		1.6		6.5	8.0	0.0
Delay (s)	429.6	74.8	31.3	143.4	43.0	28.5		50.3		49.0	51.0	50.0
Level of Service	F	E	C	F	D	C		D		D	D	D
Approach Delay (s)		149.6			40.6			50.3			50.0	
Approach LOS		F			D			D			D	

Intersection Summary				
HCM Average Control Delay	97.4	HCM Level of Service	F	
HCM Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	127.3	Sum of lost time (s)	28.0	
Intersection Capacity Utilization	75.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	658	151	29	20	86	132	10	88	45	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	715	164	32	22	93	143	11	96	49	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)		657										
pX, platoon unblocked				0.74			0.74	0.74	0.74	0.74	0.74	
vC, conflicting volume	237			196			1819	1891	180	1916	1835	165
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237			0			2105	2202	0	2236	2126	165
tC, single (s)	4.2			4.2			7.1	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.1	3.3	3.5	4.0	3.3
p0 queue free %	45			98			30	0	94	0	100	100
cM capacity (veh/h)	1301			1179			16	13	804	0	16	879

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	911	259	155
Volume Left	715	22	11
Volume Right	32	143	49
cSH	1301	1179	20
Volume to Capacity	0.55	0.02	7.89
Queue Length 95th (ft)	87	1	Err
Control Delay (s)	10.2	0.8	Err
Lane LOS	B	A	F
Approach Delay (s)	10.2	0.8	Err
Approach LOS			F

Intersection Summary				
Average Delay	1180.1			
Intersection Capacity Utilization	77.8%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3316		1703	3261		1770	1863	1549	1770	1682	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3316		1703	3261		1770	1863	1549	1770	1682	
Volume (vph)	63	733	139	207	407	132	193	112	307	148	61	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	797	151	225	442	143	210	122	334	161	66	74
RTOR Reduction (vph)	0	16	0	0	29	0	0	0	242	0	52	0
Lane Group Flow (vph)	68	932	0	225	556	0	210	122	92	161	88	0
Confl. Peds. (#/hr)			1			2			1			17
Confl. Bikes (#/hr)			4			1			7			5
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	4.9	26.1		12.1	33.3		12.3	14.2	14.2	10.9	12.8	
Effective Green, g (s)	4.9	26.1		12.1	33.3		12.3	14.2	14.2	10.9	12.8	
Actuated g/C Ratio	0.06	0.33		0.15	0.42		0.16	0.18	0.18	0.14	0.16	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	105	1091		260	1369		275	334	277	243	271	
v/s Ratio Prot	0.04	c0.28		c0.13	0.17		c0.12	c0.07		0.09	0.05	
v/s Ratio Perm									0.06			
v/c Ratio	0.65	0.85		0.87	0.41		0.76	0.37	0.33	0.66	0.32	
Uniform Delay, d1	36.4	24.8		32.8	16.1		32.1	28.6	28.4	32.5	29.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.9	6.7		24.6	0.2		11.9	0.7	0.7	6.6	0.7	
Delay (s)	49.3	31.5		57.4	16.3		44.0	29.3	29.1	39.1	30.1	
Level of Service	D	C		E	B		D	C	C	D	C	
Approach Delay (s)		32.7			27.7			33.8			34.9	
Approach LOS		C			C			C			C	

Intersection Summary						
HCM Average Control Delay	31.8	HCM Level of Service		C		
HCM Volume to Capacity ratio	0.70					
Actuated Cycle Length (s)	79.3	Sum of lost time (s)		12.0		
Intersection Capacity Utilization	73.2%	ICU Level of Service		D		
Analysis Period (min)	15					

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.91			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1752	1690			1796	1568		1719	1810	2707	
Flt Permitted		0.48	1.00			0.47	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		893	1690			872	1568		1719	1810	2707	
Volume (vph)	115	115	80	130	140	50	210	205	140	360	760	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	87	141	152	54	228	223	152	391	826	261
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	180	0	0	206	451	0	152	391	1087	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		32.0	32.0			32.0	32.0		15.3	24.0	51.0	
Effective Green, g (s)		32.0	32.0			32.0	32.0		15.3	24.0	51.0	
Actuated g/C Ratio		0.27	0.27			0.27	0.27		0.13	0.20	0.42	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		238	451			233	418		219	362	1150	
v/s Ratio Prot			0.11						0.09	c0.22		
v/s Ratio Perm		0.28				0.24	c0.29				c0.40	
v/c Ratio		1.05	0.40			0.88	1.08		0.69	1.08	0.95	
Uniform Delay, d1		44.0	36.1			42.2	44.0		50.1	48.0	33.2	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		72.2	0.6			30.2	66.8		9.2	70.4	15.1	
Delay (s)		116.2	36.7			72.4	110.8		59.3	118.4	48.3	
Level of Service		F	D			E	F		E	F	D	
Approach Delay (s)			78.3			98.8				66.1		
Approach LOS			E			F				E		

Intersection Summary			
HCM Average Control Delay	85.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 without Improvements
Timing Plan: PM Peak

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.99			0.98		
Flt Protected		0.95	1.00			0.96		
Satd. Flow (prot)		1767	3407			3321		
Flt Permitted		0.95	1.00			0.91		
Satd. Flow (perm)		1767	3407			3151		
Volume (vph)	35	415	380	30	10	340	55	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	451	413	33	11	370	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	489	446	0	0	452	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		25.0	33.7			23.0		
Effective Green, g (s)		25.0	33.7			23.0		
Actuated g/C Ratio		0.21	0.28			0.19		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		368	957			604		
v/s Ratio Prot		c0.28	0.13					
v/s Ratio Perm						0.14		
v/c Ratio		1.33	0.47			0.75		
Uniform Delay, d1		47.5	35.7			45.8		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		165.6	0.4			5.1		
Delay (s)		213.1	36.1			50.8		
Level of Service		F	D			D		
Approach Delay (s)			128.7			50.8		
Approach LOS			F			D		

Intersection Summary

K:\SND_TPTO\095707000\Synchro\HY AI2 PM no Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1467	1719	3438	1500	1719	3438	1526
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)	1719	3438	1538	1687	3374	1467	1719	3438	1500	1719	3438	1526
Volume (vph)	340	1160	100	40	434	460	70	690	140	310	280	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	1261	109	43	472	500	76	750	152	337	304	283
RTOR Reduction (vph)	0	0	34	0	0	426	0	0	61	0	0	89
Lane Group Flow (vph)	370	1261	75	43	472	74	76	750	91	337	304	194
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6		15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	25.2	38.3	42.0	4.0	17.1	12.1	8.7	26.1	26.1	22.1	43.5	64.7
Effective Green, g (s)	25.2	38.3	42.0	4.0	17.1	12.1	8.7	26.1	26.1	22.1	43.5	64.7
Actuated g/C Ratio	0.21	0.31	0.34	0.03	0.14	0.10	0.07	0.21	0.21	0.18	0.36	0.53
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	354	1075	527	55	471	145	122	733	320	310	1221	856
v/s Ratio Prot	c0.22	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	0.06
v/s Ratio Perm			0.04			0.05			0.06			0.07
v/c Ratio	1.05	1.17	0.14	0.78	1.00	0.51	0.62	1.02	0.28	1.09	0.25	0.23
Uniform Delay, d1	48.6	42.1	27.8	58.8	52.7	52.4	55.3	48.2	40.4	50.2	27.9	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.88
Incremental Delay, d2	60.1	87.9	0.1	50.5	42.0	2.8	9.5	39.2	0.5	76.3	0.1	0.1
Delay (s)	108.8	130.0	27.9	109.3	94.7	55.2	64.8	87.4	40.9	123.6	26.4	13.8
Level of Service	F	F	C	F	F	E	E	F	D	F	C	B
Approach Delay (s)		119.1			75.8			78.4			58.0	
Approach LOS		F			E			E			E	

Intersection Summary				
HCM Average Control Delay	89.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.12			
Actuated Cycle Length (s)	122.5	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	85.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.93	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1770	3539	3539	1583	1678	
Flt Permitted	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	1770	3539	3539	1583	1678	
Volume (vph)	255	743	373	154	120	129
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	277	808	405	167	130	140
RTOR Reduction (vph)	0	0	0	126	63	0
Lane Group Flow (vph)	277	808	405	41	207	0
Confl. Peds. (#/hr)					10	4
Confl. Bikes (#/hr)						1
Turn Type	Prot			Perm		
Protected Phases	5	2	6		4	
Permitted Phases				6		
Actuated Green, G (s)	11.9	27.4	11.5	11.5	11.5	
Effective Green, g (s)	11.9	27.4	11.5	11.5	11.5	
Actuated g/C Ratio	0.25	0.58	0.25	0.25	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	449	2068	868	388	411	
v/s Ratio Prot	c0.16	c0.23	0.11		c0.12	
v/s Ratio Perm				0.03		
v/c Ratio	0.62	0.39	0.47	0.11	0.50	
Uniform Delay, d1	15.5	5.3	15.1	13.7	15.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.5	0.1	0.4	0.1	1.0	
Delay (s)	18.0	5.4	15.5	13.8	16.2	
Level of Service	B	A	B	B	B	
Approach Delay (s)		8.6	15.0		16.2	
Approach LOS		A	B		B	

Intersection Summary				
HCM Average Control Delay	11.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.98			0.94	
Flt Protected		0.99			1.00			0.98			0.98	
Satd. Flow (prot)		1800			1843			1775			1685	
Flt Permitted		0.90			1.00			0.83			0.88	
Satd. Flow (perm)		1640			1840			1515			1515	
Volume (vph)	40	194	40	3	495	34	40	34	12	65	36	91
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	211	43	3	538	37	43	37	13	71	39	99
RTOR Reduction (vph)	0	15	0	0	6	0	0	8	0	0	60	0
Lane Group Flow (vph)	0	282	0	0	572	0	0	85	0	0	149	0
Confl. Peds. (#/hr)	19		16	16		19	7		14	14		7
Confl. Bikes (#/hr)			4			1			1			
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.5			16.5			16.2			16.2	
Effective Green, g (s)		16.5			16.5			16.2			16.2	
Actuated g/C Ratio		0.41			0.41			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		665			746			603			603	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.31			0.06			c0.10	
v/c Ratio		0.42			0.77			0.14			0.25	
Uniform Delay, d1		8.7			10.4			7.8			8.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			4.7			0.5			1.0	
Delay (s)		9.1			15.2			8.3			9.2	
Level of Service		A			B			A			A	
Approach Delay (s)		9.1			15.2			8.3			9.2	
Approach LOS		A			B			A			A	

Intersection Summary				
HCM Average Control Delay	12.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	40.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	0.99	1.00		0.98	1.00			0.99			1.00	
Frt	1.00	0.96		1.00	0.99			0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1754	1775		1742	1832			1696			1676	
Flt Permitted	0.40	1.00		0.63	1.00			0.84			0.96	
Satd. Flow (perm)	746	1775		1146	1832			1451			1612	
Volume (vph)	11	146	49	19	377	36	65	26	58	16	40	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	159	53	21	410	39	71	28	63	17	43	65
RTOR Reduction (vph)	0	23	0	0	7	0	0	40	0	0	42	0
Lane Group Flow (vph)	12	189	0	21	442	0	0	122	0	0	83	0
Confl. Peds. (#/hr)	21		25	25		21	37		14	14		37
Confl. Bikes (#/hr)						3			3			1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.8	13.8		13.8	13.8			12.2			12.2	
Effective Green, g (s)	13.8	13.8		13.8	13.8			12.2			12.2	
Actuated g/C Ratio	0.41	0.41		0.41	0.41			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	303	720		465	744			521			578	
v/s Ratio Prot		0.11			c0.24							
v/s Ratio Perm	0.02			0.02				c0.08			0.05	
v/c Ratio	0.04	0.26		0.05	0.59			0.23			0.14	
Uniform Delay, d1	6.1	6.7		6.1	7.9			7.6			7.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.2		0.0	1.3			0.2			0.1	
Delay (s)	6.2	6.9		6.2	9.2			7.9			7.5	
Level of Service	A	A		A	A			A			A	
Approach Delay (s)		6.9			9.1			7.9			7.5	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	8.2	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	34.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	45.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	1.00			0.91			0.99	
Flt Protected		1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)		1832		1770	1863			1663			1797	
Flt Permitted		1.00		0.95	1.00			0.98			0.98	
Satd. Flow (perm)		1832		1770	1863			1663			1797	
Volume (vph)	0	175	24	88	209	0	30	0	69	264	233	47
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	190	26	96	227	0	33	0	75	287	253	51
RTOR Reduction (vph)	0	7	0	0	0	0	0	67	0	0	4	0
Lane Group Flow (vph)	0	209	0	96	227	0	0	41	0	0	587	0
Turn Type				Prot			Split			Split		
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)		12.0		5.9	21.9			7.4			24.6	
Effective Green, g (s)		12.0		5.9	21.9			7.4			24.6	
Actuated g/C Ratio		0.18		0.09	0.33			0.11			0.37	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		334		158	619			187			671	
v/s Ratio Prot		c0.11		c0.05	0.12			c0.02			c0.33	
v/s Ratio Perm												
v/c Ratio		0.63		0.61	0.37			0.22			0.88	
Uniform Delay, d1		24.9		28.9	16.7			26.6			19.2	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		3.7		6.5	0.4			0.6			12.2	
Delay (s)		28.5		35.4	17.1			27.2			31.5	
Level of Service		C		D	B			C			C	
Approach Delay (s)		28.5			22.5			27.2			31.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.97			1.00	
Flpb, ped/bikes	0.98	1.00		0.95	1.00			1.00			0.98	
Frt	1.00	1.00		1.00	0.98			0.92			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)	1741	1848		1688	1810			1655			1753	
Flt Permitted	0.29	1.00		0.57	1.00			0.98			0.77	
Satd. Flow (perm)	524	1848		1014	1810			1632			1393	
Volume (vph)	8	243	8	239	432	66	4	30	50	213	138	23
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	264	9	260	470	72	4	33	54	232	150	25
RTOR Reduction (vph)	0	2	0	0	8	0	0	32	0	0	4	0
Lane Group Flow (vph)	9	271	0	260	534	0	0	59	0	0	403	0
Confl. Peds. (#/hr)	30		46	46		30	48		46	46		48
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.0	19.0		19.0	19.0			18.1			18.1	
Effective Green, g (s)	19.0	19.0		19.0	19.0			18.1			18.1	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.40			0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	221	779		427	763			655			559	
v/s Ratio Prot		0.15			c0.29							
v/s Ratio Perm	0.02			0.26				0.04			c0.29	
v/c Ratio	0.04	0.35		0.61	0.70			0.09			0.72	
Uniform Delay, d1	7.7	8.9		10.2	10.7			8.4			11.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.3		2.5	2.8			0.1			4.6	
Delay (s)	7.8	9.1		12.6	13.5			8.4			16.0	
Level of Service	A	A		B	B			A			B	
Approach Delay (s)		9.1			13.2			8.4			16.0	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	45.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	560	1580	30	0	138
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	609	1717	33	0	150
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)		661	658			
pX, platoon unblocked	0.67				0.67	0.67
vC, conflicting volume	1750				2038	875
vC1, stage 1 conf vol					1734	
vC2, stage 2 conf vol					304	
vCu, unblocked vol	1627				2057	322
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	100				100	67
cM capacity (veh/h)	242				64	452

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	304	304	1145	605	150
Volume Left	0	0	0	0	0
Volume Right	0	0	0	33	150
cSH	1700	1700	1700	1700	452
Volume to Capacity	0.18	0.18	0.67	0.36	0.33
Queue Length 95th (ft)	0	0	0	0	36
Control Delay (s)	0.0	0.0	0.0	0.0	16.9
Lane LOS					C
Approach Delay (s)	0.0		0.0		16.9
Approach LOS					C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1756	1863	1543	1761	1863	1544	1530	3059	1333	1530	3004	
Flt Permitted	0.48	1.00	1.00	0.21	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	887	1863	1543	384	1863	1544	1530	3059	1333	1530	3004	
Volume (vph)	140	300	120	100	350	76	100	300	300	70	818	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	326	130	109	380	83	109	326	326	76	889	87
RTOR Reduction (vph)	0	0	98	0	0	54	0	0	166	0	7	0
Lane Group Flow (vph)	152	326	32	109	380	29	109	326	160	76	969	0
Confl. Peds. (#/hr)	15		13	13		15			17			39
Confl. Bikes (#/hr)			4									2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Prot		custom	Prot		
Protected Phases		4			8		5	2	3	1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)	19.5	19.5	19.5	27.5	27.5	27.5	5.8	33.1	37.1	7.4	34.7	
Effective Green, g (s)	19.5	19.5	19.5	27.5	27.5	27.5	5.8	33.1	37.1	7.4	34.7	
Actuated g/C Ratio	0.24	0.24	0.24	0.34	0.34	0.34	0.07	0.41	0.46	0.09	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	216	454	376	132	640	531	111	1266	685	142	1303	
v/s Ratio Prot		0.18			0.20		c0.07	0.11	0.01	0.05	c0.32	
v/s Ratio Perm	0.17		0.02	c0.28		0.02			0.11			
v/c Ratio	0.70	0.72	0.08	0.83	0.59	0.05	0.98	0.26	0.23	0.54	0.74	
Uniform Delay, d1	27.6	27.7	23.4	24.1	21.6	17.6	37.0	15.4	12.9	34.7	18.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.84	0.88	1.00	1.00	
Incremental Delay, d2	9.9	5.4	0.1	32.5	1.5	0.0	75.0	0.4	0.2	3.8	3.9	
Delay (s)	37.6	33.1	23.5	56.6	23.1	17.6	109.7	13.4	11.5	38.5	22.8	
Level of Service	D	C	C	E	C	B	F	B	B	D	C	
Approach Delay (s)		32.2			28.7			26.4			23.9	
Approach LOS		C			C			C			C	

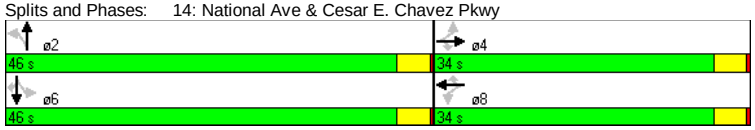
Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	190	250	190	120	350	110	100	570	60	765	310
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm		Perm
Protected Phases		4			8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phases	4	4	4	8	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	26.5	26.5	26.5	26.5	26.5	26.5	45.5	45.5	45.5	45.5	45.5
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57	0.57	0.57	0.57
v/c Ratio	0.91	0.44	0.34	0.43	0.62	0.20	1.01	0.37	0.21	0.91	0.37
Control Delay	67.3	22.5	8.5	24.4	26.5	4.4	114.5	8.9	4.9	23.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	67.3	22.5	8.5	24.4	26.5	4.4	114.5	8.9	4.9	23.6	1.2
LOS	E	C	A	C	C	A	F	A	A	C	A
Approach Delay		31.8			21.9			23.6		16.5	
Approach LOS		C			C			C		B	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
14: National Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 2 with Improvements
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3184		1530	1610	1369
Flt Permitted	0.33	1.00	1.00	0.47	1.00	1.00	0.15	1.00		0.36	1.00	1.00
Satd. Flow (perm)	610	1863	1583	873	1863	1583	261	3184		574	1610	1369
Volume (vph)	190	250	190	120	350	110	100	570	50	60	765	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	272	207	130	380	120	109	620	54	65	832	337
RTOR Reduction (vph)	0	0	90	0	0	80	0	7	0	0	0	126
Lane Group Flow (vph)	207	272	117	130	380	40	109	667	0	65	832	211
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	26.5	26.5	26.5	26.5	26.5	26.5	45.5	45.5		45.5	45.5	45.5
Effective Green, g (s)	26.5	26.5	26.5	26.5	26.5	26.5	45.5	45.5		45.5	45.5	45.5
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57		0.57	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	202	617	524	289	617	524	148	1811		326	916	779
v/s Ratio Prot		0.15			0.20			0.21			c0.52	
v/s Ratio Perm	c0.34		0.07	0.15		0.03	0.42			0.11		0.15
v/c Ratio	1.02	0.44	0.22	0.45	0.62	0.08	0.74	0.37		0.20	0.91	0.27
Uniform Delay, d1	26.8	20.9	19.3	21.0	22.5	18.4	12.8	9.4		8.4	15.4	8.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.82		0.34	0.47	0.04
Incremental Delay, d2	69.9	0.5	0.2	1.1	1.8	0.1	27.3	0.6		1.1	12.1	0.7
Delay (s)	96.7	21.5	19.5	22.1	24.3	18.4	38.3	8.3		4.0	19.4	1.0
Level of Service	F	C	B	C	C	B	D	A		A	B	A
Approach Delay (s)		43.6			22.7			12.5			13.5	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM Average Control Delay	21.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	88.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

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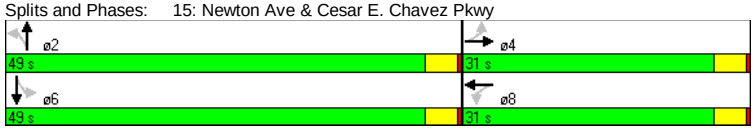
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	80	40	40	50	40	420	100	825
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	10.3	10.3	10.3	10.3	64.4	64.4	64.4	64.4
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.80	0.80	0.80	0.80
v/c Ratio	0.54	0.39	0.26	0.46	0.35	0.19	0.18	0.79
Control Delay	44.1	18.5	33.8	19.7	12.0	1.9	2.7	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Total Delay	44.1	18.5	33.8	19.7	12.0	1.9	2.7	8.3
LOS	D	B	C	B	B	A	A	A
Approach Delay		29.9		23.2		2.8		7.8
Approach LOS		C		C		A		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
15: Newton Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 2 with Improvements
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1699		1612	3191		1612	1657	
Flt Permitted	0.56	1.00		0.65	1.00		0.19	1.00		0.47	1.00	
Satd. Flow (perm)	1049	1695		1208	1699		324	3191		803	1657	
Volume (vph)	80	40	60	40	50	70	40	420	30	100	825	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	43	65	43	54	76	43	457	33	109	897	163
RTOR Reduction (vph)	0	58	0	0	67	0	0	3	0	0	4	0
Lane Group Flow (vph)	87	50	0	43	63	0	43	487	0	109	1056	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.2	9.2		9.2	9.2		62.8	62.8		62.8	62.8	
Effective Green, g (s)	9.2	9.2		9.2	9.2		62.8	62.8		62.8	62.8	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.78		0.78	0.78	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	121	195		139	195		254	2505		630	1301	
v/s Ratio Prot		0.03			0.04			0.15			c0.64	
v/s Ratio Perm	c0.08			0.04			0.13			0.14		
v/c Ratio	0.72	0.26		0.31	0.32		0.17	0.19		0.17	0.81	
Uniform Delay, d1	34.2	32.3		32.5	32.5		2.1	2.2		2.1	5.1	
Progression Factor	1.00	1.00		1.00	1.00		0.77	0.68		0.71	0.45	
Incremental Delay, d2	18.4	0.7		1.3	1.0		1.3	0.2		0.4	3.6	
Delay (s)	52.6	33.0		33.8	33.5		3.0	1.7		1.9	5.9	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		41.7			33.6			1.8			5.6	
Approach LOS		D			C			A			A	

Intersection Summary				
HCM Average Control Delay	10.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.0%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

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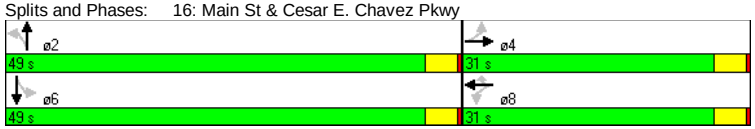
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	150	190	70	350	190	85	340	150	580
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.7	23.7	23.7	23.7	23.7	48.3	48.3	48.3	48.3
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30	0.60	0.60	0.60	0.60
v/c Ratio	0.90	0.41	0.26	0.69	0.35	0.65	0.25	0.35	0.89
Control Delay	73.3	23.4	22.3	31.3	4.8	40.1	7.3	6.7	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	5.7
Total Delay	73.3	23.4	22.3	31.3	4.8	40.1	7.7	6.7	24.9
LOS	E	C	C	C	A	D	A	A	C
Approach Delay		44.5		22.0			13.0		21.9
Approach LOS		D		C			B		C

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 14 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 23.4		Intersection LOS: C	
Intersection Capacity Utilization 90.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU
16: Main St & Cesar E. Chavez Pkwy
Horizon Year Alt 2 with Improvements
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1839		1750	1863	1511	1556	2996		1549	1550	
Flt Permitted	0.29	1.00		0.52	1.00	1.00	0.18	1.00		0.47	1.00	
Satd. Flow (perm)	524	1839		950	1863	1511	290	2996		772	1550	
Volume (vph)	150	190	15	70	350	190	85	340	90	150	580	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	16	76	380	207	92	370	98	163	630	212
RTOR Reduction (vph)	0	4	0	0	0	146	0	27	0	0	14	0
Lane Group Flow (vph)	163	219	0	76	380	61	92	441	0	163	828	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.7	23.7		23.7	23.7	23.7	48.3	48.3		48.3	48.3	
Effective Green, g (s)	23.7	23.7		23.7	23.7	23.7	48.3	48.3		48.3	48.3	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.60	0.60		0.60	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	545		281	552	448	175	1809		466	936	
v/s Ratio Prot		0.12			0.20			0.15			c0.53	
v/s Ratio Perm	c0.31			0.08		0.04	0.32			0.21		
v/c Ratio	1.05	0.40		0.27	0.69	0.14	0.53	0.24		0.35	0.88	
Uniform Delay, d1	28.2	22.5		21.5	24.9	20.6	9.2	7.4		8.0	13.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.54	0.57	
Incremental Delay, d2	86.6	0.5		0.5	3.6	0.1	10.8	0.3		1.3	8.3	
Delay (s)	114.8	23.0		22.1	28.5	20.8	20.1	7.7		5.6	15.9	
Level of Service	F	C		C	C	C	C	A		A	B	
Approach Delay (s)		61.8			25.3			9.7			14.2	
Approach LOS		E			C			A			B	

Intersection Summary					
HCM Average Control Delay	23.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.94				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	90.7%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

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Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98		1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	3183	3225		1421	3282	1433	1364	1439	1112		1599	1375
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.51	1.00	1.00		0.85	1.00
Satd. Flow (perm)	3183	3225		1421	3282	1433	725	1439	1112		1399	1375
Volume (vph)	109	404	40	80	1056	99	10	14	27	77	83	510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	439	43	87	1148	108	11	15	29	84	90	554
RTOR Reduction (vph)	0	6	0	0	0	57	0	0	25	0	0	19
Lane Group Flow (vph)	118	476	0	87	1148	51	11	15	4	0	174	535
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			5			11			2			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		pm+ov
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	3
Permitted Phases						18 2 6	12		12	1 5 16		1 5 16
Actuated Green, G (s)	6.3	35.4		6.3	35.4	35.4	13.8	13.8	13.8		26.2	32.5
Effective Green, g (s)	6.3	35.4		6.3	35.4	35.4	13.8	13.8	13.8		26.2	32.5
Actuated g/C Ratio	0.07	0.39		0.07	0.39	0.39	0.15	0.15	0.15		0.29	0.35
Clearance Time (s)	4.0			4.0			4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0			3.0			3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	218	1242		97	1264	552	109	216	167		399	486
v/s Ratio Prot	0.04	0.15		0.06	c0.35			0.01				c0.08
v/s Ratio Perm						0.04	0.02		0.00		0.12	0.31
v/c Ratio	0.54	0.38		0.90	0.91	0.09	0.10	0.07	0.03		0.44	1.10
Uniform Delay, d1	41.4	20.4		42.5	26.7	18.0	33.7	33.5	33.3		26.8	29.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		0.97	1.06
Incremental Delay, d2	2.7	0.2		58.7	9.6	0.1	0.4	0.1	0.1		0.8	70.7
Delay (s)	44.1	20.6		101.2	36.3	18.1	34.1	33.7	33.4		26.9	102.1
Level of Service	D	C		F	D	B	C	C	C		C	F
Approach Delay (s)		25.2			39.1			33.6			84.1	
Approach LOS		C			D			C			F	

Intersection Summary				
HCM Average Control Delay	47.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.00			
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	75.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.93		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1745		1770	1741		1770	1773		1770	1847	
Flt Permitted	0.66	1.00		0.36	1.00		0.59	1.00		0.29	1.00	
Satd. Flow (perm)	1234	1745		667	1741		1100	1773		547	1847	
Volume (vph)	101	220	161	106	77	60	212	366	174	62	237	14
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	239	175	115	84	65	230	398	189	67	258	15
RTOR Reduction (vph)	0	40	0	0	43	0	0	26	0	0	3	0
Lane Group Flow (vph)	110	374	0	115	106	0	230	561	0	67	270	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.6	14.6		14.6	14.6		20.6	20.6		20.6	20.6	
Effective Green, g (s)	14.6	14.6		14.6	14.6		20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.48	0.48		0.48	0.48	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	417	590		225	588		525	845		261	881	
v/s Ratio Prot		c0.21			0.06			c0.32			0.15	
v/s Ratio Perm	0.09			0.17			0.21			0.12		
v/c Ratio	0.26	0.63		0.51	0.18		0.44	0.66		0.26	0.31	
Uniform Delay, d1	10.4	12.0		11.4	10.1		7.5	8.7		6.7	6.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.2		2.0	0.1		0.6	2.0		0.5	0.2	
Delay (s)	10.7	14.3		13.4	10.2		8.1	10.6		7.3	7.1	
Level of Service	B	B		B	B		A	B		A	A	
Approach Delay (s)		13.5			11.6			9.9			7.1	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM Average Control Delay	10.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	73.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	70	19	146	214	0	33	0	124	16	19	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	76	21	159	233	0	36	0	135	17	21	14

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	97	159	233	36	135	52
Volume Left (vph)	0	159	0	36	0	17
Volume Right (vph)	21	0	0	0	135	14
Hadj (s)	-0.09	0.94	0.03	0.23	0.05	-0.06
Departure Headway (s)	4.6	5.8	4.9	5.3	3.2	5.0
Degree Utilization, x	0.12	0.25	0.31	0.05	0.12	0.07
Capacity (veh/h)	764	610	727	626	1121	666
Control Delay (s)	8.2	9.5	8.8	8.6	6.6	8.4
Approach Delay (s)	8.2	9.1		7.1		8.4
Approach LOS	A	A		A		A

Intersection Summary				
Delay	8.4			
HCM Level of Service	A			
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0							4.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							1.00
Flpb, ped/bikes	1.00	1.00			1.00							1.00
Frt	1.00	1.00			1.00							0.86
Flt Protected	0.95	1.00			1.00							1.00
Satd. Flow (prot)	1543	3539			3534							1454
Flt Permitted	0.95	1.00			1.00							1.00
Satd. Flow (perm)	1543	3539			3534							1454
Volume (vph)	86	505	0	0	1573	17	0	0	0	0	0	86
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	549	0	0	1710	18	0	0	0	0	0	93
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	84
Lane Group Flow (vph)	93	549	0	0	1727	0	0	0	0	0	0	9
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									5			11
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot											Over
Protected Phases	13	18 2 6			14 2 6							13
Permitted Phases												
Actuated Green, G (s)	8.7	58.0			41.3							8.7
Effective Green, g (s)	8.7	58.0			41.3							8.7
Actuated g/C Ratio	0.10	0.65			0.46							0.10
Clearance Time (s)	4.0											4.0
Vehicle Extension (s)	3.0											3.0
Lane Grp Cap (vph)	151	2304			1638							142
v/s Ratio Prot	c0.06	0.16			c0.49							0.01
v/s Ratio Perm												
v/c Ratio	0.62	0.24			1.05							0.06
Uniform Delay, d1	38.6	6.4			23.9							36.5
Progression Factor	1.00	1.00			1.00							1.00
Incremental Delay, d2	7.3	0.1			38.2							0.2
Delay (s)	45.9	6.5			62.1							36.7
Level of Service	D	A			E							D
Approach Delay (s)		12.2			62.1			0.0			36.7	
Approach LOS		B			E			A			D	

Intersection Summary						
HCM Average Control Delay	48.1	HCM Level of Service	D			
HCM Volume to Capacity ratio	0.98					
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	39.1			
Intersection Capacity Utilization	56.0%	ICU Level of Service	B			
Analysis Period (min)	15					

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1299	1814			1754	1509		1745	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.77	1.00		0.79	1.00
Satd. Flow (perm)	1770	3539	1583	1299	1814			1369	1509		1396	1509
Volume (vph)	106	245	18	186	599	126	33	102	82	118	213	307
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	266	20	202	651	137	36	111	89	128	232	334
RTOR Reduction (vph)	0	0	12	0	5	0	0	0	60	0	0	225
Lane Group Flow (vph)	115	266	8	202	783	0	0	147	29	0	360	109
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.5	42.1	42.1	18.3	51.9			34.9	34.9		34.9	34.9
Effective Green, g (s)	8.5	42.1	42.1	18.3	51.9			34.9	34.9		34.9	34.9
Actuated g/C Ratio	0.08	0.39	0.39	0.17	0.48			0.33	0.33		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	140	1389	621	222	877			445	491		454	491
v/s Ratio Prot	0.06	0.08		c0.16	c0.43							
v/s Ratio Perm			0.00					0.11	0.02		c0.26	0.07
v/c Ratio	0.82	0.19	0.01	0.91	0.89			0.33	0.06		0.79	0.22
Uniform Delay, d1	48.7	21.4	19.9	43.7	25.2			27.4	24.9		32.9	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	30.5	0.1	0.0	36.3	11.4			0.4	0.1		9.2	0.2
Delay (s)	79.2	21.5	19.9	80.0	36.5			27.8	25.0		42.1	26.5
Level of Service	E	C	B	E	D			C	C		D	C
Approach Delay (s)		38.0			45.4			26.7			34.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1776	1509	1687	1611		1770	3447		1770	4856	
Flt Permitted	0.54	1.00	1.00	0.56	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	965	1776	1509	993	1611		1770	3447		1770	4856	
Volume (vph)	250	200	150	50	80	130	90	720	40	170	880	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	217	163	54	87	141	98	783	43	185	957	326
RTOR Reduction (vph)	0	0	110	0	90	0	0	5	0	0	71	0
Lane Group Flow (vph)	272	217	53	54	138	0	98	821	0	185	1212	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	21.7	21.7	21.7	21.7	21.7		4.6	24.3		9.0	28.7	
Effective Green, g (s)	21.7	21.7	21.7	21.7	21.7		4.6	24.3		9.0	28.7	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.07	0.36		0.13	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	313	575	489	322	522		122	1250		238	2080	
v/s Ratio Prot		0.12			0.09		0.06	c0.24		c0.10	0.25	
v/s Ratio Perm	c0.28		0.03	0.05								
v/c Ratio	0.87	0.38	0.11	0.17	0.26		0.80	0.66		0.78	0.58	
Uniform Delay, d1	21.3	17.4	15.9	16.2	16.7		30.8	17.9		28.0	14.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.7	0.4	0.1	0.2	0.3		30.5	2.7		14.7	1.2	
Delay (s)	43.0	17.9	16.0	16.4	17.0		61.2	20.6		42.7	15.8	
Level of Service	D	B	B	B	B		E	C		D	B	
Approach Delay (s)		27.9			16.9			24.9			19.2	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	0.94		0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1306	1719	3438	1439		1763		3367	1827	1525
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1306	1719	3438	1439		1763		3367	1827	1525
Volume (vph)	70	670	4	18	943	115	0	6	2	339	15	22
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	728	4	20	1025	125	0	7	2	368	16	24
RTOR Reduction (vph)	0	0	2	0	0	48	0	2	0	0	0	18
Lane Group Flow (vph)	76	728	2	20	1025	77	0	7	0	368	16	6
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	4.0	37.5	31.7	2.7	36.2	49.0		13.8		29.0	29.0	29.0
Effective Green, g (s)	4.0	37.5	31.7	2.7	36.2	49.0		13.8		29.0	29.0	29.0
Actuated g/C Ratio	0.03	0.33	0.28	0.02	0.31	0.43		0.12		0.25	0.25	0.25
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	115	1111	360	40	1082	613		212		849	461	385
v/s Ratio Prot	c0.02	0.21		0.01	c0.30	0.02		c0.00		c0.11	0.01	
v/s Ratio Perm			0.00			0.03						0.00
v/c Ratio	0.66	0.66	0.01	0.50	0.95	0.13		0.03		0.43	0.03	0.02
Uniform Delay, d1	54.8	33.2	30.2	55.5	38.5	20.0		44.7		36.1	32.4	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.90	0.91	1.44
Incremental Delay, d2	13.4	1.4	0.0	9.5	16.1	0.1		0.1		0.4	0.0	0.0
Delay (s)	68.2	34.6	30.2	65.0	54.6	20.1		44.8		33.0	29.7	46.5
Level of Service	E	C	C	E	D	C		D		C	C	D
Approach Delay (s)		37.7			51.1			44.8			33.6	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM Average Control Delay	43.6	HCM Level of Service		D
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	115.0	Sum of lost time (s)		32.0
Intersection Capacity Utilization	53.0%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.99			0.94			0.99				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1717			1665			1384				
Flt Permitted		0.97			1.00			1.00				
Satd. Flow (perm)		1717			1665			1384				
Volume (vph)	132	104	14	20	107	96	6	186	19	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	113	15	22	116	104	7	202	21	0	0	0
RTOR Reduction (vph)	0	3	0	0	33	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	268	0	0	209	0	0	227	0	0	0	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	40%	2%	2%	2%	2%
Turn Type	Split			Split			Perm					
Protected Phases	4	4		8	8			2				
Permitted Phases							2					
Actuated Green, G (s)		10.8			9.7			19.8				
Effective Green, g (s)		10.8			9.7			19.8				
Actuated g/C Ratio		0.21			0.19			0.38				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		355			309			524				
v/s Ratio Prot		c0.16			c0.13							
v/s Ratio Perm								0.16				
v/c Ratio		0.75			0.68			0.43				
Uniform Delay, d1		19.5			19.8			12.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		8.8			5.8			0.6				
Delay (s)		28.3			25.6			12.7				
Level of Service		C			C			B				
Approach Delay (s)		28.3			25.6			12.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM Average Control Delay	22.6	HCM Level of Service		C
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	52.3	Sum of lost time (s)		12.0
Intersection Capacity Utilization	47.5%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.95			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1760	1773			1787	1574		1719	1810	2707	
Flt Permitted		0.35	1.00			0.41	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		644	1773			771	1574		1719	1810	2707	
Volume (vph)	65	25	170	80	250	45	120	50	70	215	55	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	27	185	87	272	49	130	54	76	234	60	315
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	259	0	0	321	184	0	76	234	375	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		34.4	34.4			34.4	34.4		10.3	20.0	48.3	
Effective Green, g (s)		34.4	34.4			34.4	34.4		10.3	20.0	48.3	
Actuated g/C Ratio		0.30	0.30			0.30	0.30		0.09	0.18	0.42	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		194	535			233	475		155	318	1147	
v/s Ratio Prot			0.15						0.04	c0.13		
v/s Ratio Perm		0.15				c0.42	0.12				0.14	
v/c Ratio		0.51	0.48			1.38	0.39		0.49	0.74	0.33	
Uniform Delay, d1		32.8	32.6			39.8	31.5		49.4	44.5	22.0	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		2.1	0.7			194.6	0.5		2.4	8.6	0.2	
Delay (s)		34.9	33.2			234.4	32.0		51.8	53.1	22.1	
Level of Service		C	C			F	C		D	D	C	
Approach Delay (s)			33.7			160.6				36.0		
Approach LOS			C			F				D		

Intersection Summary			
HCM Average Control Delay	119.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	114.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Improvements
Timing Plan: AM Peak

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.98			0.99		
Flt Protected		0.95	1.00			0.96		
Satd. Flow (prot)		1765	3384			3345		
Flt Permitted		0.95	1.00			0.88		
Satd. Flow (perm)		1765	3384			3075		
Volume (vph)	30	180	445	65	60	735	65	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	196	484	71	65	799	71	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	229	555	0	0	946	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		19.3	29.0			24.3		
Effective Green, g (s)		19.3	29.0			24.3		
Actuated g/C Ratio		0.17	0.25			0.21		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		299	861			655		
v/s Ratio Prot		c0.13	0.16					
v/s Ratio Perm						c0.31		
v/c Ratio		0.77	0.64			1.44		
Uniform Delay, d1		45.2	37.9			44.8		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		11.1	1.7			208.5		
Delay (s)		56.3	39.6			253.3		
Level of Service		E	D			F		
Approach Delay (s)			44.5			253.3		
Approach LOS			D			F		

Intersection Summary

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Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1719	3438	1517	1687	3374	1509	1719	3438	1482	1719	3438	1538
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)	1719	3438	1517	1687	3374	1509	1719	3438	1482	1719	3438	1538
Volume (vph)	90	641	140	300	756	390	30	160	30	130	1040	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	697	152	326	822	424	33	174	33	141	1130	65
RTOR Reduction (vph)	0	0	122	0	0	270	0	0	28	0	0	36
Lane Group Flow (vph)	98	697	30	326	822	154	33	174	5	141	1130	29
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6		15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	5.1	8.7	6.5	16.4	20.0	15.6	2.2	12.0	12.0	12.7	26.5	27.6
Effective Green, g (s)	5.1	8.7	6.5	16.4	20.0	15.6	2.2	12.0	12.0	12.7	26.5	27.6
Actuated g/C Ratio	0.06	0.11	0.08	0.20	0.24	0.19	0.03	0.15	0.15	0.16	0.32	0.34
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	107	366	121	338	825	288	46	504	217	267	1114	594
v/s Ratio Prot	0.06	c0.20	0.01	c0.19	0.24		0.02	0.05		c0.08	c0.33	0.01
v/s Ratio Perm			0.01			0.10			0.00			0.01
v/c Ratio	0.92	1.90	0.25	0.96	1.00	0.53	0.72	0.35	0.02	0.53	1.01	0.05
Uniform Delay, d1	38.1	36.6	35.4	32.4	30.9	29.8	39.5	31.4	29.9	31.8	27.6	18.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.88	1.58
Incremental Delay, d2	60.4	417.1	1.1	39.2	30.2	1.9	41.5	0.4	0.0	1.8	30.2	0.0
Delay (s)	98.5	453.6	36.5	71.6	61.1	31.7	81.0	31.8	29.9	40.3	54.5	28.9
Level of Service	F	F	D	E	E	C	F	C	C	D	D	C
Approach Delay (s)		349.9			55.3			38.3			51.8	
Approach LOS		F			E			D			D	

Intersection Summary				
HCM Average Control Delay	121.3	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	24.0	
Intersection Capacity Utilization	79.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.91	
Frt		0.86		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		1611		3539	5085	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		1611		3539	5085	
Volume (vph)	0	933	0	1100	417	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1014	0	1196	453	0
RTOR Reduction (vph)	0	27	0	0	0	0
Lane Group Flow (vph)	0	987	0	1196	453	0
Turn Type		custom				
Protected Phases				2 4 6	6	
Permitted Phases		4				
Actuated Green, G (s)		44.5		68.5	16.0	
Effective Green, g (s)		44.5		68.5	16.0	
Actuated g/C Ratio		0.65		1.00	0.23	
Clearance Time (s)		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1047		3539	1188	
v/s Ratio Prot				c0.34	0.09	
v/s Ratio Perm		c0.61				
v/c Ratio		0.94		0.34	0.38	
Uniform Delay, d1		10.8		0.0	22.1	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		15.8		0.1	0.9	
Delay (s)		26.6		0.1	23.0	
Level of Service		C		A	C	
Approach Delay (s)	26.6			0.1	23.0	
Approach LOS	C			A	C	

Intersection Summary				
HCM Average Control Delay	14.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	4.0	
Intersection Capacity Utilization	72.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.99			0.99			0.99			0.96	
Flt Protected		0.99			1.00			0.97			0.97	
Satd. Flow (prot)		1817			1846			1782			1706	
Flt Permitted		0.85			1.00			0.80			0.76	
Satd. Flow (perm)		1566			1842			1461			1330	
Volume (vph)	91	347	31	3	458	25	61	41	7	125	25	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	377	34	3	498	27	66	45	8	136	27	76
RTOR Reduction (vph)	0	4	0	0	3	0	0	4	0	0	25	0
Lane Group Flow (vph)	0	506	0	0	525	0	0	115	0	0	214	0
Confl. Peds. (#/hr)	27		37	37		27	14		10	10		14
Confl. Bikes (#/hr)			1			3			3			1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.1			18.1			11.6			11.6	
Effective Green, g (s)		18.1			18.1			11.6			11.6	
Actuated g/C Ratio		0.48			0.48			0.31			0.31	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		752			884			450			409	
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.28			0.08			c0.16	
v/c Ratio		0.67			0.59			0.26			0.52	
Uniform Delay, d1		7.5			7.1			9.8			10.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.4			1.1			0.3			1.2	
Delay (s)		9.9			8.2			10.1			12.0	
Level of Service		A			A			B			B	
Approach Delay (s)		9.9			8.2			10.1			12.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	37.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3477		1770	1583
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	547	3539	3477		1770	1583
Volume (vph)	65	1945	750	100	90	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	2114	815	109	98	76
RTOR Reduction (vph)	0	0	11	0	0	65
Lane Group Flow (vph)	71	2114	913	0	98	11
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	48.4	48.4	48.4		9.4	9.4
Effective Green, g (s)	48.4	48.4	48.4		9.4	9.4
Actuated g/C Ratio	0.74	0.74	0.74		0.14	0.14
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	402	2603	2558		253	226
v/s Ratio Prot		c0.60	0.26		c0.06	
v/s Ratio Perm	0.13					0.01
v/c Ratio	0.18	0.81	0.36		0.39	0.05
Uniform Delay, d1	2.6	5.7	3.1		25.6	24.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	2.0	0.1		1.0	0.1
Delay (s)	2.9	7.7	3.2		26.6	24.4
Level of Service	A	A	A		C	C
Approach Delay (s)		7.6	3.2		25.6	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	1.00			0.91			0.99	
Flt Protected		1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)		1834		1770	1863			1664			1782	
Flt Permitted		1.00		0.95	1.00			0.98			0.97	
Satd. Flow (perm)		1834		1770	1863			1664			1782	
Volume (vph)	0	532	70	40	160	0	56	0	123	272	109	39
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	578	76	43	174	0	61	0	134	296	118	42
RTOR Reduction (vph)	0	5	0	0	0	0	0	94	0	0	4	0
Lane Group Flow (vph)	0	649	0	43	174	0	0	101	0	0	452	0
Turn Type				Prot			Split			Split		
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)		30.7		3.7	38.4			9.9			18.5	
Effective Green, g (s)		30.7		3.7	38.4			9.9			18.5	
Actuated g/C Ratio		0.39		0.05	0.49			0.13			0.23	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		715		83	908			209			418	
v/s Ratio Prot		c0.35		c0.02	0.09			c0.06			c0.25	
v/s Ratio Perm												
v/c Ratio		0.91		0.52	0.19			0.49			1.08	
Uniform Delay, d1		22.7		36.7	11.4			32.1			30.2	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		15.2		5.4	0.1			1.8			67.7	
Delay (s)		38.0		42.0	11.5			33.9			97.9	
Level of Service		D		D	B			C			F	
Approach Delay (s)		38.0			17.6			33.9			97.9	
Approach LOS		D			B			C			F	

Intersection Summary			
HCM Average Control Delay	52.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	78.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.98			1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.90			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)	1751	1862		1759	1799			1650			1781	
Flt Permitted	0.39	1.00		0.20	1.00			0.98			0.71	
Satd. Flow (perm)	715	1862		370	1799			1623			1300	
Volume (vph)	19	635	2	113	358	77	9	43	132	188	83	11
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	690	2	123	389	84	10	47	143	204	90	12
RTOR Reduction (vph)	0	0	0	0	12	0	0	92	0	0	2	0
Lane Group Flow (vph)	21	692	0	123	461	0	0	108	0	0	304	0
Confl. Peds. (#/hr)	15		16	16		15	38		11	11		38
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.1	23.1		23.1	23.1			17.0			17.0	
Effective Green, g (s)	23.1	23.1		23.1	23.1			17.0			17.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.35			0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	343	894		178	864			574			459	
v/s Ratio Prot		c0.37			0.26							
v/s Ratio Perm	0.03			0.33				0.07			c0.23	
v/c Ratio	0.06	0.77		0.69	0.53			0.19			0.66	
Uniform Delay, d1	6.7	10.3		9.7	8.7			10.8			13.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	4.2		11.0	0.6			0.2			3.6	
Delay (s)	6.8	14.6		20.7	9.4			10.9			16.7	
Level of Service	A	B		C	A			B			B	
Approach Delay (s)		14.3			11.7			10.9			16.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1950	820	20	0	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2120	891	22	0	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					0	
Upstream signal (ft)		661	658			
pX, platoon unblocked	0.89				0.38	0.89
vC, conflicting volume	913				1962	457
vC1, stage 1 conf vol					902	
vC2, stage 2 conf vol					1060	
vCu, unblocked vol	781				1049	269
tC, single (s)	4.3				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	100				100	88
cM capacity (veh/h)	697				149	650

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1060	1060	594	319	76
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	76
cSH	1700	1700	1700	1700	650
Volume to Capacity	0.62	0.62	0.35	0.19	0.12
Queue Length 95th (ft)	0	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	11.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.3
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1758	1863	1539	1770	1863	1545	1530	3059	1315	1530	3018	
Flt Permitted	0.54	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	992	1863	1539	171	1863	1545	1530	3059	1315	1530	3018	
Volume (vph)	130	450	230	100	350	90	140	506	700	114	684	51
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	489	250	109	380	98	152	550	761	124	743	55
RTOR Reduction (vph)	0	0	158	0	0	56	0	0	96	0	5	0
Lane Group Flow (vph)	141	489	92	109	380	42	152	550	665	124	793	0
Confl. Peds. (#/hr)	10		13	13		10			27			27
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	18%	18%	18%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Prot		custom	Prot		
Protected Phases		4			8		5	2	3	1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)	30.5	30.5	30.5	43.6	43.6	43.6	14.0	36.1	45.2	11.0	33.1	
Effective Green, g (s)	30.5	30.5	30.5	43.6	43.6	43.6	14.0	36.1	45.2	11.0	33.1	
Actuated g/C Ratio	0.30	0.30	0.30	0.42	0.42	0.42	0.14	0.35	0.44	0.11	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	295	553	457	73	791	656	209	1075	630	164	973	
v/s Ratio Prot		0.26			0.20		c0.10	0.18	c0.09	0.08	0.26	
v/s Ratio Perm	0.14		0.06	c0.64		0.03			0.41			
v/c Ratio	0.48	0.88	0.20	1.49	0.48	0.06	0.73	0.51	1.06	0.76	0.81	
Uniform Delay, d1	29.6	34.4	27.0	29.6	21.4	17.5	42.5	26.3	28.8	44.5	32.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	15.5	0.2	280.9	0.5	0.0	11.9	0.4	51.3	17.9	5.3	
Delay (s)	30.8	49.9	27.2	310.4	21.8	17.5	54.4	26.7	80.0	62.4	37.3	
Level of Service	C	D	C	F	C	B	D	C	F	E	D	
Approach Delay (s)		40.4			74.7			57.3			40.7	
Approach LOS		D			E			E			D	

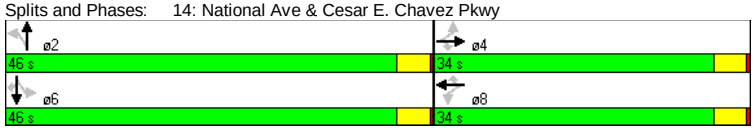
Intersection Summary			
HCM Average Control Delay	52.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	102.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	300	400	290	110	270	275	120	1000	120	550	410
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm		Perm
Protected Phases		4			8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phases	4	4	4	8	8	8	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.52	0.71	1.07	0.71	0.49
Control Delay	76.7	25.2	6.6	31.8	20.9	17.2	17.7	14.0	129.6	20.1	3.9
Queue Delay	16.8	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	7.5	0.4
Total Delay	93.5	25.2	6.6	31.8	20.9	17.3	17.7	14.4	129.6	27.6	4.3
LOS	F	C	A	C	C	B	B	B	F	C	A
Approach Delay		40.4			21.2			14.7		30.0	
Approach LOS		D			C			B		C	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 77 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
14: National Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 2 with Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3179		1530	1610	1369
Flt Permitted	0.47	1.00	1.00	0.31	1.00	1.00	0.28	1.00		0.14	1.00	1.00
Satd. Flow (perm)	875	1863	1583	572	1863	1583	480	3179		231	1610	1369
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	0	154	0	0	43	0	10	0	0	0	189
Lane Group Flow (vph)	326	435	161	120	293	256	130	1187	0	130	598	257
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	42.0
Effective Green, g (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52		0.52	0.52	0.52
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	328	699	594	215	699	594	252	1669		121	845	719
v/s Ratio Prot		0.23			0.16			0.37			0.37	
v/s Ratio Perm	c0.37		0.10	0.21		0.16	0.27			c0.56		0.19
v/c Ratio	0.99	0.62	0.27	0.56	0.42	0.43	0.52	0.71		1.07	0.71	0.36
Uniform Delay, d1	24.9	20.4	17.4	19.8	18.5	18.6	12.4	14.4		19.0	14.4	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.79		1.00	1.00	1.00
Incremental Delay, d2	47.8	1.7	0.2	3.1	0.4	0.5	6.9	2.4		103.2	5.0	1.4
Delay (s)	72.7	22.1	17.6	22.9	18.9	19.1	16.4	13.9		122.2	19.3	12.5
Level of Service	E	C	B	C	B	B	B	B		F	B	B
Approach Delay (s)		36.1			19.7			14.1			28.1	
Approach LOS		D			B			B			C	

Intersection Summary				
HCM Average Control Delay	24.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	81.6%	ICU Level of Service	D	
Analysis Period (min)	15			

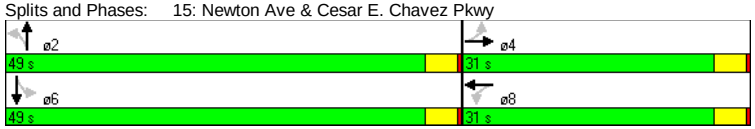
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	130	90	70	40	790	170	910
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	14.7	14.7	14.7	14.7	57.3	57.3	57.3	57.3
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.72	0.72	0.72	0.72
v/c Ratio	0.69	0.61	0.52	0.53	0.40	0.40	0.61	0.87
Control Delay	48.3	31.2	37.9	16.6	17.7	4.3	16.7	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	48.3	31.2	37.9	16.6	17.7	4.4	16.7	17.9
LOS	D	C	D	B	B	A	B	B
Approach Delay		37.6		23.2		5.0		17.7
Approach LOS		D		C		A		B

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 2 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 86.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU
15: Newton Ave & Cesar E. Chavez Pkwy
Horizon Year Alt 2 with Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frt	1.00	0.95		1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1681		1612	3189		1612	1681	
Flt Permitted	0.41	1.00		0.41	1.00		0.15	1.00		0.29	1.00	
Satd. Flow (perm)	769	1765		769	1681		248	3189		484	1681	
Volume (vph)	120	130	70	90	70	130	40	790	60	170	910	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	141	76	98	76	141	43	859	65	185	989	65
RTOR Reduction (vph)	0	30	0	0	103	0	0	5	0	0	2	0
Lane Group Flow (vph)	130	187	0	98	114	0	43	919	0	185	1052	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.7	14.7		14.7	14.7		57.3	57.3		57.3	57.3	
Effective Green, g (s)	14.7	14.7		14.7	14.7		57.3	57.3		57.3	57.3	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.72	0.72		0.72	0.72	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	141	324		141	309		178	2284		347	1204	
v/s Ratio Prot		0.11			0.07			0.29			c0.63	
v/s Ratio Perm	c0.17			0.13			0.17			0.38		
v/c Ratio	0.92	0.58		0.70	0.37		0.24	0.40		0.53	0.87	
Uniform Delay, d1	32.1	29.8		30.6	28.6		3.9	4.5		5.2	8.6	
Progression Factor	1.00	1.00		1.00	1.00		0.67	0.71		0.73	0.73	
Incremental Delay, d2	52.6	2.5		13.8	0.7		3.0	0.5		5.1	8.0	
Delay (s)	84.7	32.3		44.4	29.3		5.7	3.7		8.9	14.2	
Level of Service	F	C		D	C		A	A		A	B	
Approach Delay (s)		51.9			34.0			3.8			13.4	
Approach LOS		D			C			A			B	

Intersection Summary					
HCM Average Control Delay	17.1	HCM Level of Service	B		
HCM Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	86.5%	ICU Level of Service	E		
Analysis Period (min)	15				

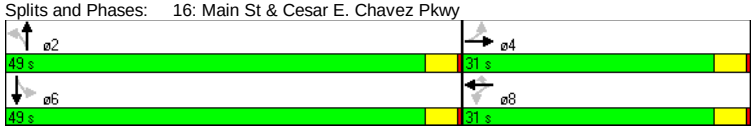
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	290	70	250	85	640	250	540
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	20.3	20.3	20.3	20.3	51.7	51.7	51.7	51.7
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.65	0.65	0.65	0.65
v/c Ratio	0.59	0.73	0.43	0.58	0.79	0.46	1.00	0.88
Control Delay	35.9	35.4	30.5	30.0	64.3	8.4	57.9	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	6.4
Total Delay	35.9	35.4	30.5	30.0	64.3	9.6	57.9	24.6
LOS	D	D	C	C	E	A	E	C
Approach Delay		35.5		30.1		14.7		32.4
Approach LOS		D		C		B		C

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 3 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU
16: Main St & Cesar E. Chavez Pkwy
Horizon Year Alt 2 with Improvements
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1836		1750	1863		1556	2974		1542	1529	
Flt Permitted	0.40	1.00		0.28	1.00		0.18	1.00		0.28	1.00	
Satd. Flow (perm)	735	1836		519	1863		296	2974		458	1529	
Volume (vph)	120	290	25	70	250	270	85	640	180	250	540	280
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	315	27	76	272	293	92	696	196	272	587	304
RTOR Reduction (vph)	0	4	0	0	0	0	0	26	0	0	19	0
Lane Group Flow (vph)	130	338	0	76	272	0	92	866	0	272	872	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.3	20.3		20.3	20.3		51.7	51.7		51.7	51.7	
Effective Green, g (s)	20.3	20.3		20.3	20.3		51.7	51.7		51.7	51.7	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.65	0.65		0.65	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	187	466		132	473		191	1922		296	988	
v/s Ratio Prot		c0.18			0.15			0.29			0.57	
v/s Ratio Perm	0.18			0.15			0.31			c0.59		
v/c Ratio	0.70	0.72		0.58	0.58		0.48	0.45		0.92	0.88	
Uniform Delay, d1	27.0	27.3		26.1	26.1		7.3	7.1		12.3	11.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.68	0.65	
Incremental Delay, d2	10.7	5.5		6.0	1.7		8.5	0.8		22.7	6.5	
Delay (s)	37.7	32.8		32.0	27.8		15.7	7.8		31.1	14.1	
Level of Service	D	C		C	C		B	A		C	B	
Approach Delay (s)		34.2			28.7			8.6			18.1	
Approach LOS		C			C			A			B	

Intersection Summary					
HCM Average Control Delay	18.7	HCM Level of Service	B		
HCM Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	88.3%	ICU Level of Service	E		
Analysis Period (min)	15				

c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98		1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	3183	3265		1421	3282	1426	1363	1439	1109		1596	1383
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.71	1.00	1.00		0.84	1.00
Satd. Flow (perm)	3183	3265		1421	3282	1426	1021	1439	1109		1381	1383
Volume (vph)	590	1500	40	30	467	43	50	63	35	33	30	314
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	641	1630	43	33	508	47	54	68	38	36	33	341
RTOR Reduction (vph)	0	1	0	0	0	32	0	0	33	0	0	106
Lane Group Flow (vph)	641	1672	0	33	508	15	54	68	5	0	69	235
Confl. Peds. (#/hr)			11			6	4		1	1		4
Confl. Bikes (#/hr)			9			14			3			
Heavy Vehicles (%)	10%	10%	10%	27%	10%	10%	32%	32%	43%	16%	16%	16%
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		pm+ov
Protected Phases	3	14 2 6		13	18 2 6			12			1 5 16	3
Permitted Phases						18 2 6	12		12	1 5 16		1 5 16
Actuated Green, G (s)	26.0	58.3		3.2	35.5	35.5	13.7	13.7	13.7		22.1	48.1
Effective Green, g (s)	26.0	58.3		3.2	35.5	35.5	13.7	13.7	13.7		22.1	48.1
Actuated g/C Ratio	0.23	0.52		0.03	0.32	0.32	0.12	0.12	0.12		0.20	0.43
Clearance Time (s)	4.0			4.0			4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0			3.0			3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	742	1706		41	1044	454	125	177	136		273	646
v/s Ratio Prot	c0.20	c0.51		0.02	0.15			0.05				c0.08
v/s Ratio Perm						0.01	c0.05		0.00		0.05	0.08
v/c Ratio	0.86	0.98		0.80	0.49	0.03	0.43	0.38	0.03		0.25	0.36
Uniform Delay, d1	41.1	26.1		53.9	30.7	26.2	45.3	45.1	43.1		37.8	21.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.26	0.73
Incremental Delay, d2	10.2	17.2		69.0	0.4	0.0	2.4	1.4	0.1		0.5	0.3
Delay (s)	51.3	43.3		122.9	31.1	26.3	47.7	46.5	43.2		48.0	15.9
Level of Service	D	D		F	C	C	D	D	D		D	B
Approach Delay (s)		45.5			35.8			46.1			21.3	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM Average Control Delay	41.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	28.0	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1739		1770	1751		1770	1802		1770	1850	
Flt Permitted	0.66	1.00		0.25	1.00		0.52	1.00		0.27	1.00	
Satd. Flow (perm)	1236	1739		461	1751		978	1802		504	1850	
Volume (vph)	101	251	200	167	81	54	230	443	124	66	275	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	273	217	182	88	59	250	482	135	72	299	14
RTOR Reduction (vph)	0	45	0	0	38	0	0	12	0	0	2	0
Lane Group Flow (vph)	110	445	0	182	109	0	250	605	0	72	311	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.7	23.7		23.7	23.7		33.7	33.7		33.7	33.7	
Effective Green, g (s)	23.7	23.7		23.7	23.7		33.7	33.7		33.7	33.7	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.52	0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	448	630		167	635		504	929		260	953	
v/s Ratio Prot		0.26			0.06			c0.34			0.17	
v/s Ratio Perm	0.09			c0.39			0.26			0.14		
v/c Ratio	0.25	0.71		1.09	0.17		0.50	0.65		0.28	0.33	
Uniform Delay, d1	14.6	17.9		20.9	14.2		10.3	11.6		9.0	9.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	3.6		95.7	0.1		3.5	3.5		2.6	0.9	
Delay (s)	14.9	21.5		116.5	14.3		13.8	15.1		11.6	10.1	
Level of Service	B	C		F	B		B	B		B	B	
Approach Delay (s)		20.3			70.9			14.7			10.4	
Approach LOS		C			E			B			B	

Intersection Summary				
HCM Average Control Delay	24.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	82.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	226	17	50	87	0	9	0	262	26	11	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	246	18	54	95	0	10	0	285	28	12	9

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	264	54	95	10	285	49
Volume Left (vph)	0	54	0	10	0	28
Volume Right (vph)	18	0	0	0	285	9
Hadj (s)	-0.01	1.09	0.03	0.23	-0.41	0.04
Departure Headway (s)	4.3	5.9	4.9	5.2	3.2	4.9
Degree Utilization, x	0.32	0.09	0.13	0.01	0.25	0.07
Capacity (veh/h)	819	589	718	638	1112	677
Control Delay (s)	9.3	8.3	7.4	8.2	7.3	8.3
Approach Delay (s)	9.3	7.7		7.3		8.3
Approach LOS	A	A		A		A

Intersection Summary				
Delay	8.2			
HCM Level of Service	A			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0							4.0
Lane Util. Factor	1.00	0.95			0.95							1.00
Frpb, ped/bikes	1.00	1.00			1.00							1.00
Flpb, ped/bikes	1.00	1.00			1.00							1.00
Frt	1.00	1.00			0.99							0.86
Flt Protected	0.95	1.00			1.00							1.00
Satd. Flow (prot)	1543	3539			3507							1454
Flt Permitted	0.95	1.00			1.00							1.00
Satd. Flow (perm)	1543	3539			3507							1454
Volume (vph)	108	1500	0	0	598	39	0	0	0	0	0	56
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	1630	0	0	650	42	0	0	0	0	0	61
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	54
Lane Group Flow (vph)	117	1630	0	0	688	0	0	0	0	0	0	7
Confl. Peds. (#/hr)			8	8					2	2		
Confl. Bikes (#/hr)									4			9
Heavy Vehicles (%)	17%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	13%
Turn Type	Prot											Over
Protected Phases	13	18 2 6			14 2 6							13
Permitted Phases												
Actuated Green, G (s)	10.9	64.9			46.0							10.9
Effective Green, g (s)	10.9	64.9			46.0							10.9
Actuated g/C Ratio	0.11	0.65			0.46							0.11
Clearance Time (s)	4.0											4.0
Vehicle Extension (s)	3.0											3.0
Lane Grp Cap (vph)	168	2297			1613							158
v/s Ratio Prot	0.08	c0.46			0.20							0.00
v/s Ratio Perm												
v/c Ratio	0.70	0.71			0.43							0.04
Uniform Delay, d1	43.0	11.4			18.1							39.9
Progression Factor	1.00	1.00			1.00							1.00
Incremental Delay, d2	11.9	1.0			0.2							0.1
Delay (s)	54.8	12.4			18.3							40.0
Level of Service	D	B			B							D
Approach Delay (s)		15.3			18.3			0.0			40.0	
Approach LOS		B			B			A			D	

Intersection Summary						
HCM Average Control Delay	16.7	HCM Level of Service	B			
HCM Volume to Capacity ratio	0.71					
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	35.1			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A			
Analysis Period (min)	15					

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1597	1759			1762	1509		1734	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.84	1.00		0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1597	1759			1489	1509		1343	1509
Volume (vph)	94	588	85	448	406	241	18	98	163	195	210	102
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	639	92	487	441	262	20	107	177	212	228	111
RTOR Reduction (vph)	0	0	70	0	20	0	0	0	117	0	0	73
Lane Group Flow (vph)	102	639	22	487	683	0	0	127	60	0	440	38
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.6	24.4	24.4	32.1	47.9			35.1	35.1		35.1	35.1
Effective Green, g (s)	8.6	24.4	24.4	32.1	47.9			35.1	35.1		35.1	35.1
Actuated g/C Ratio	0.08	0.24	0.24	0.31	0.46			0.34	0.34		0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	147	834	373	495	813			504	511		455	511
v/s Ratio Prot	0.06	0.18		c0.30	c0.39							
v/s Ratio Perm			0.01					0.09	0.04		c0.33	0.02
v/c Ratio	0.69	0.77	0.06	0.98	0.84			0.25	0.12		0.97	0.07
Uniform Delay, d1	46.2	36.9	30.7	35.5	24.5			24.8	23.6		33.7	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	13.3	4.2	0.1	36.0	7.6			0.3	0.1		33.4	0.1
Delay (s)	59.5	41.2	30.8	71.5	32.1			25.0	23.7		67.1	23.3
Level of Service	E	D	C	E	C			C	C		E	C
Approach Delay (s)		42.3			48.2			24.2			58.3	
Approach LOS		D			D			C			E	

Intersection Summary				
HCM Average Control Delay	45.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	79.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		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)	1687	1776	1509	1687	1634		1770	3495		1770	4798	
Flt Permitted	0.61	1.00	1.00	0.24	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1088	1776	1509	419	1634		1770	3495		1770	4798	
Volume (vph)	350	420	170	70	70	80	50	1100	100	270	580	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	457	185	76	76	87	54	1196	109	293	630	380
RTOR Reduction (vph)	0	0	122	0	46	0	0	8	0	0	116	0
Lane Group Flow (vph)	380	457	63	76	117	0	54	1297	0	293	894	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	31.0	31.0	31.0	31.0	31.0		5.6	33.8		14.0	42.2	
Effective Green, g (s)	31.0	31.0	31.0	31.0	31.0		5.6	33.8		14.0	42.2	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34		0.06	0.37		0.15	0.46	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	371	606	515	143	558		109	1301		273	2230	
v/s Ratio Prot		0.26			0.07		0.03	c0.37		c0.17	0.19	
v/s Ratio Perm	c0.35		0.04	0.18								
v/c Ratio	1.02	0.75	0.12	0.53	0.21		0.50	1.00		1.07	0.40	
Uniform Delay, d1	29.9	26.5	20.6	24.1	21.2		41.2	28.5		38.4	16.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.1	5.3	0.1	3.8	0.2		3.5	24.3		75.3	0.5	
Delay (s)	83.0	31.8	20.7	27.8	21.4		44.7	52.8		113.7	16.5	
Level of Service	F	C	C	C	C		D	D		F	B	
Approach Delay (s)		48.8			23.4			52.4			38.4	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM Average Control Delay	45.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	89.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00	0.92		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1329	1719	3438	1422		1821		3367	1827	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1329	1719	3438	1422		1821		3367	1827	1531
Volume (vph)	170	1350	2	18	531	255	10	133	0	480	12	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	1467	2	20	577	277	11	145	0	522	13	14
RTOR Reduction (vph)	0	0	1	0	0	165	0	0	0	0	0	11
Lane Group Flow (vph)	185	1467	1	20	577	112	0	156	0	522	13	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		custom	Prot		custom	Split			Split		Perm
Protected Phases	11	16 2 6		15	12 2 6	13	14	14		1 13 5	13 1 5	
Permitted Phases			16			12						1 5 13
Actuated Green, G (s)	11.8	49.6	43.1	3.8	41.6	54.7		21.1		28.4	28.4	28.4
Effective Green, g (s)	11.8	49.6	43.1	3.8	41.6	54.7		21.1		28.4	28.4	28.4
Actuated g/C Ratio	0.09	0.37	0.32	0.03	0.31	0.41		0.16		0.21	0.21	0.21
Clearance Time (s)	4.0		4.0	4.0		4.0		4.0				
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				
Lane Grp Cap (vph)	289	1252	425	48	1060	577		285		709	385	322
v/s Ratio Prot	c0.06	c0.43		0.01	0.17	0.03		c0.09		c0.16	0.01	
v/s Ratio Perm			0.00			0.05						0.00
v/c Ratio	0.64	1.17	0.00	0.42	0.54	0.19		0.55		0.74	0.03	0.01
Uniform Delay, d1	59.5	42.7	31.3	64.5	38.8	25.9		52.5		49.8	42.3	42.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.94	0.95	1.37
Incremental Delay, d2	4.8	86.1	0.0	5.8	0.6	0.2		2.1		4.0	0.0	0.0
Delay (s)	64.3	128.7	31.3	70.2	39.3	26.0		54.6		50.6	40.1	57.8
Level of Service	E	F	C	E	D	C		D		D	D	E
Approach Delay (s)		121.4			35.8			54.6			50.6	
Approach LOS		F			D			D			D	

Intersection Summary				
HCM Average Control Delay	83.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	134.9	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	75.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.99			0.93			0.98				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1705			1636			1651				
Flt Permitted		0.97			1.00			1.00				
Satd. Flow (perm)		1705			1636			1651				
Volume (vph)	398	151	29	20	86	132	10	348	45	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	433	164	32	22	93	143	11	378	49	0	0	0
RTOR Reduction (vph)	0	2	0	0	50	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	627	0	0	208	0	0	433	0	0	0	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	15%	2%	2%	2%	2%
Turn Type	Split			Split			Perm					
Protected Phases	4	4		8	8			2				
Permitted Phases							2					
Actuated Green, G (s)		32.5			13.6			23.8				
Effective Green, g (s)		32.5			13.6			23.8				
Actuated g/C Ratio		0.40			0.17			0.29				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		677			272			480				
v/s Ratio Prot		c0.37			c0.13							
v/s Ratio Perm								0.26				
v/c Ratio		0.93			0.76			0.90				
Uniform Delay, d1		23.5			32.6			27.9				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		18.5			12.0			20.0				
Delay (s)		42.1			44.7			47.9				
Level of Service		D			D			D				
Approach Delay (s)		42.1			44.7			47.9			0.0	
Approach LOS		D			D			D			A	

Intersection Summary				
HCM Average Control Delay	44.5	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0		4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00			1.00	1.00		1.00	1.00	0.88	
Frt		1.00	0.91			1.00	0.85		1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.96	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1752	1690			1796	1568		1719	1810	2707	
Flt Permitted		0.50	1.00			0.48	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		916	1690			899	1568		1719	1810	2707	
Volume (vph)	115	115	80	130	140	50	210	205	140	360	560	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	87	141	152	54	228	223	152	391	609	261
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	180	0	0	206	451	0	152	391	870	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Turn Type	Perm	Perm			Perm		Perm		Prot		custom	
Protected Phases			4			4			5	2		
Permitted Phases	4	4			4		4				2 3	
Actuated Green, G (s)		32.1	32.1			32.1	32.1		14.8	24.1	46.1	
Effective Green, g (s)		32.1	32.1			32.1	32.1		14.8	24.1	46.1	
Actuated g/C Ratio		0.28	0.28			0.28	0.28		0.13	0.21	0.40	
Clearance Time (s)		4.0	4.0			4.0	4.0		4.0	4.0		
Vehicle Extension (s)		3.0	3.0			3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		255	471			251	437		221	379	1083	
v/s Ratio Prot			0.11						0.09	c0.22		
v/s Ratio Perm		0.27				0.23	c0.29				c0.32	
v/c Ratio		0.98	0.38			0.82	1.03		0.69	1.03	0.80	
Uniform Delay, d1		41.2	33.6			38.9	41.6		48.0	45.6	30.5	
Progression Factor		1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		50.7	0.5			18.9	51.5		8.6	54.6	4.4	
Delay (s)		91.9	34.1			57.8	93.1		56.6	100.2	34.9	
Level of Service		F	C			E	F		E	F	C	
Approach Delay (s)			64.3			82.0				55.3		
Approach LOS			E			F				E		

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Improvements
Timing Plan: PM Peak

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			0.97		
Frt		1.00	0.99			0.95		
Flt Protected		0.95	1.00			0.97		
Satd. Flow (prot)		1767	3407			3269		
Flt Permitted		0.95	1.00			0.89		
Satd. Flow (perm)		1767	3407			3022		
Volume (vph)	35	415	380	30	10	140	55	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	451	413	33	11	152	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	489	446	0	0	234	0	0
Heavy Vehicles (%)	4%	2%	5%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			3		
Permitted Phases					3			
Actuated Green, G (s)		25.0	34.3			18.0		
Effective Green, g (s)		25.0	34.3			18.0		
Actuated g/C Ratio		0.22	0.30			0.16		
Clearance Time (s)		4.0	4.0			4.0		
Vehicle Extension (s)		3.0	3.0			3.0		
Lane Grp Cap (vph)		383	1014			472		
v/s Ratio Prot		c0.28	0.13					
v/s Ratio Perm						0.08		
v/c Ratio		1.28	0.44			0.50		
Uniform Delay, d1		45.1	32.7			44.4		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		143.4	0.3			0.8		
Delay (s)		188.5	33.0			45.3		
Level of Service		F	C			D		
Approach Delay (s)			114.3			45.3		
Approach LOS			F			D		

Intersection Summary

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1477	1719	3438	1500	1719	3438	1524
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)	1719	3438	1538	1687	3374	1477	1719	3438	1500	1719	3438	1524
Volume (vph)	160	1160	100	40	434	460	70	690	140	310	280	210
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	1261	109	43	472	500	76	750	152	337	304	228
RTOR Reduction (vph)	0	0	34	0	0	393	0	0	61	0	0	102
Lane Group Flow (vph)	174	1261	75	43	472	107	76	750	91	337	304	126
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Prot		custom	Prot		Perm	Prot		custom
Protected Phases	3	14 2 6		15	13	18 2 6		15	12		11 1 5	16 1 5	3 1 5
Permitted Phases			14			18			12			16
Actuated Green, G (s)	16.7	38.3	42.0	4.0	25.6	20.6	8.7	26.1	26.1	22.1	43.5	56.2
Effective Green, g (s)	16.7	38.3	42.0	4.0	25.6	20.6	8.7	26.1	26.1	22.1	43.5	56.2
Actuated g/C Ratio	0.14	0.31	0.34	0.03	0.21	0.17	0.07	0.21	0.21	0.18	0.36	0.46
Clearance Time (s)	4.0		4.0	4.0		4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	234	1075	527	55	705	248	122	733	320	310	1221	749
v/s Ratio Prot	c0.10	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	0.03
v/s Ratio Perm			0.04			0.07			0.06			0.05
v/c Ratio	0.74	1.17	0.14	0.78	0.67	0.43	0.62	1.02	0.28	1.09	0.25	0.17
Uniform Delay, d1	50.8	42.1	27.8	58.8	44.6	45.7	55.3	48.2	40.4	50.2	27.9	19.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	1.06
Incremental Delay, d2	12.0	87.9	0.1	50.5	2.4	1.2	9.5	39.2	0.5	76.3	0.1	0.1
Delay (s)	62.9	130.0	27.9	109.3	47.0	46.9	64.8	87.4	40.9	123.4	26.3	20.7
Level of Service	E	F	C	F	D	D	E	F	D	F	C	C
Approach Delay (s)		115.2			49.6			78.4			62.5	
Approach LOS		F			D			E			E	

Intersection Summary				
HCM Average Control Delay	81.5	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.10			
Actuated Cycle Length (s)	122.5	Sum of lost time (s)	32.0	
Intersection Capacity Utilization	85.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.91	
Frt		0.86		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		1611		3539	5085	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		1611		3539	5085	
Volume (vph)	0	457	0	1530	743	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	497	0	1663	808	0
RTOR Reduction (vph)	0	45	0	0	0	0
Lane Group Flow (vph)	0	452	0	1663	808	0
Turn Type		custom				
Protected Phases				2 4 6	6	
Permitted Phases		4				
Actuated Green, G (s)		15.6		40.0	16.4	
Effective Green, g (s)		15.6		40.0	16.4	
Actuated g/C Ratio		0.39		1.00	0.41	
Clearance Time (s)		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		628		3539	2085	
v/s Ratio Prot				c0.47	0.16	
v/s Ratio Perm		c0.28				
v/c Ratio		0.72		0.47	0.39	
Uniform Delay, d1		10.3		0.0	8.3	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		3.9		0.1	0.5	
Delay (s)		14.3		0.1	8.8	
Level of Service		B		A	A	
Approach Delay (s)	14.3			0.1	8.8	
Approach LOS	B			A	A	

Intersection Summary				
HCM Average Control Delay	4.9	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	4.0	
Intersection Capacity Utilization	49.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

APPENDIX E

- Parking Occupancy Data

Zone 1

							Parking Demand		
Segment	**From**	**To**	**Side**	**Available Curb Length (ft)**	**Total Parking Spaces**	**Notes**	**9:00 AM**	**12:00 PM**	**7:00 PM**
Sigsbee	Logan	National	East		3	Construction	3	3	2
Sigsbee	Logan	National	West		11	(2) 15 min Loading	10	9	7
Sigsbee	National	Newton	East		9		8	6	2
Sigsbee	National	Newton	West		8		8	8	1
Sigsbee	Newton	Main	East		0		0	0	0
Sigsbee	Newton	Main	West		10		3	10	3
Beardsley	Newton	National	East	166	13		13	11	0
Beardsley	Newton	National	West	201	10	15 min. (1)	9	9	3
Beardsley	National	Logan	East	174	10		10	10	10
Beardsley	National	Logan	West	174	4	Construction	4	3	3
Beardsley	Harbor	Main	East		7		5	7	0
Beardsley	Harbor	Main	West		6		6	6	0
Beardsley	Main	Newton	East		12		8	5	1
Beardsley	Main	Newton	West						
Cesar Chav	Main	Newton	East	267	8	2 hr. (All) 15 min. (3)	5	4	0
Cesar Chav	Main	Newton	West	255	10		9	2	1
Cesar Chav	Newton	National	East	270	0		0	0	0
Cesar Chav	Newton	National	West	217	8		6	8	4
Harbor	Sigsbee	Beardsley	North	599	0		0	0	0
Harbor	Sigsbee	Beardsley	South	610	0		0	0	0
Harbor	Beardsley	Cesar Chav	North	576	0		0	0	0
Harbor	Beardsley	Cesar Chav	South	579	0		0	0	0
Harbor	Cesar Chav	Dewey	North	539	0		0	0	0
Harbor	Cesar Chav	Dewey	South	518	0		0	0	0
Main	Sigsbee	Beardsley	North	562	29	Commercial (2) / Diagnal	13	29	4
Main	Sigsbee	Beardsley	South	530	23	Diagnol	7	23	4
Main	Beardsley	Cesar Chav	North	452	18	15 min. (2) Commercial (3) Handicap (1)	17	16	4
Main	Beardsley	Cesar Chav	South	438	14	Commercial (2)	12	13	6
Main	Cesar Chav	Dewey	North	506	31	Diagnal	29	29	2
Main	Cesar Chav	Dewey	South	312	18		12	16	2
Newton	16th	Sigsbee	North	440	25	20 min. loading (3)/ Diagnol	23	23	24
Newton	16th	Sigsbee	South	482	20	Handicap (1)	19	19	19
Newton	Sigsbee	Beardsley	North	541	42	(3) 30 min. /diagnol	32	26	11
Newton	Sigsbee	Beardsley	South	553	40	Diagnol	20	27	10
Newton	Beardsley	Cesar Chav	North	520	22	Handicap (1) Some Diagnal	20	22	10
Newton	Beardsley	Cesar Chav	South	544	29	Commercial (1)	28	26	19
Newton	Cesar Chav	Dewey	North	416	30	Diagnal	25	17	0
Newton	Cesar Chav	Dewey	South	406	31	Diagnal	16	17	2
National	16th	Sigsbee	North	431	17	30 min. (3)	12	23	7
National	16th	Sigsbee	South	483	12	Commercial (5)	7	28	7
National	Sigsbee	Beardsley	North	531	16	(1) 15 min./construction	15	16	14
National	Sigsbee	Beardsley	South	427	18	Handicap (1)	12	14	14
National	Beardsley	Cesar Chav	North	426	15		15	12	5
National	Beardsley	Cesar Chav	South	494	25	30 min. (1) Commercial (3) Diagnol	24	23	14
National	Cesar Chav	Dewey	North	381	31		21	9	12
National	Cesar Chav	Dewey	South	428	18	Diagnol	16	14	18
Logan	17th	18th	North		4		0	2	4
Logan	17th	18th	South		10		5	5	7
Logan	Sigsbee	Beardsley	North		15		6	10	9

Logan	Sigsbee	Beardsley	South		4	Construction on South side	3	3	2
Logan	Beardsley	Cesar Chav	North		23	Handicapped (2)	13	16	22
Logan	Beardsley	Cesar Chav	South		16		10	13	16
Logan	Cesar Chav	Dewey	North		19		1	1	6
Logan	Cesar Chav	Dewey	South		18		3	3	9
Commercia	16th	17th	North	188	9		8	6	9
Commercia	16th	17th	South	144	9		1	8	7
Commercia	17th	18th	North	213	0	Red Curb	0	0	0
Commercia	17th	18th	South	214	3	Lots of Red Curb	2	1	1
Logan	16th	17th	North	207	5		4	5	2
Logan	16th	17th	South	178	12		5	12	9
					800		563	628	348
							70.4%	78.5%	43.5%

Handicap	6
Loading	21
15 min.	7
30 min	7
2 hr.	5

Diagnol	Newton between Cesar Chavez and Dewey
	Newton between Beardsley and Cesar Chavez (partial)
	Newton between Sigsbee and Beardsley
	Newton between 16th and Sigsbee (North)
	Main between Dewey and Cesar Chavez (North)
	Main between Sigsbee and Beardsley
	National between Cesar Chavez and Dewey (South)
	National between Beardsley and Cesar Chavez (South)
	320
Construction	The block between Logan and National and between Sigsbee and Beardsley is under constuction and most of the parking surrounding this block was not available during the study

Zone 2

Segment	From	To	Side	Available Curb Length (ft)	Total Parking Spaces	Notes	Parking Demand		
							9:00 AM	12:00 PM	7:00 PM
Evans	Main	Newton	East	246	12	D Permit (1/2)	10	12	4
Evans	Main	Newton	West	263	13		13	10	4
Evans	Newton	National	East	286	10	D Permit Handicap (1)	2	2	3
Evans	Newton	National	West	289	12	D Permit Loading (1)	3	4	6
Evans	National	Logan	East	288	9	30 min. (1)	6	9	8
Evans	National	Logan	West	282	14		9	11	6
Sampson	E. Harbor	Main	East	316	0		0	0	0
Sampson	E. Harbor	Main	West	285	3	Loading (3)	0	1	0
Sampson	Main	Newton	East	266	11		11	11	0
Sampson	Main	Newton	West	288	11		11	9	3
Sampson	Newton	National	East	262	10	Handicap (1)	10	8	5
Sampson	Newton	National	West	267	12		12	11	1
Sampson	National	Logan	East	262	12		12	11	10
Sampson	National	Logan	West	267	13		10	12	13
Logan	Dewey	Evans	North		12	30 min. prkg. Northside (2)	10	7	8
Logan	Dewey	Evans	South		20	D Permit (2)	4	7	7
Logan	Evans	Sampson	North		19	15 min. (2) 20 min. loading (1) Handicap (1)	10	8	19
Logan	Evans	Sampson	South		25	(1) 30 min (1) 20 min loading (most) 2 hr	18	13	24
Logan	Sampson	Sicard	North		20	15 min. (2)	6	20	17
Logan	Sampson	Sicard	South		16	30 min. (2) Handicap (1)	10	16	15
National	Dewey	Evans	North	384	20	D Permit (All)	11	11	8
National	Dewey	Evans	South	530	21	D Permit (Most) 15 min. (2)	10	8	12
National	Evans	Sampson	North	489	22	15 min. (3) D Permit (Rest)	15	10	13
National	Evans	Sampson	South	468	19	30 min. (1) D Permit (Rest)	14	10	11
National	Sampson	Sicard	North	452	22	30 min. (1)	22	17	18
National	Sampson	Sicard	South	444	16	2 hour (2)	14	16	11
National	Sicard	26th	North	32	2		2	2	2
National	Sicard	26th	South	79	3	2 hour (1)	2	2	2
Newton	Dewey	Evans	North	489	28	Diagnal (1) handicap	10	14	21
Newton	Dewey	Evans	South	555	25		21	21	25
Newton	Evans	Sampson	North	485	33	Diagnol/ D Permit	9	14	16
Newton	Evans	Sampson	South	528	16	D Permit (rest) (4) loading (2) 15 min	14	13	6
Newton	Sampson	Sicard	North	480	21	30 min. (2) Handicap (1)	16	12	13
Newton	Sampson	Sicard	South	458	22	Commercial (2)	18	17	10

Newton	Sicard	26th	North	305	13		11	13	6
Newton	Sicard	26th	South	358	15		14	14	4
Harbor	Dewey	Sampson	North	1213	0		0	0	0
Harbor	Dewey	Sampson	South	1150	0		0	0	0
Harbor	Sampson	Shley	North	1114	36		34	36	7
Harbor	Sampson	Shley	South	1110	39		36	39	13
Main	Dewey	Evans	North	592	42	Diagnal (All)	42	42	27
Main	Dewey	Evans	South	382	12	(5) loading	9	11	3
Main	Evans	Sampson	North	305	13	(4) commercial (1) handicap	11	8	2
Main	Evans	Sampson	South	592	25		25	21	5
Main	Sampson	Sicard	North	498	16	Commercial (5) 2 hr. (Rest)	12	12	3
Main	Sampson	Sicard	South	596	21		21	18	9
Main	Sicard	26th	North	496	17		17	16	1
Main	Sicard	26th	South	569	24		23	24	6
					797		600	603	407
							75.3%	75.7%	51.1%

Meter	0
Handicap	7
Loading	26
15 min.	11
30 min	10
2 hr.	37
"D" Permit	146

Diagnol Main between Dewey and Evans (North)
Newton between Dewey and Sampson (North)
103

Zone 3

							Parking Demand		
Segment	**From**	**To**	**Side**	**Available Curb Length (ft)**	**Total Parking Spaces**	**Notes**	**9:00 AM**	**12:00 PM**	**7:00 PM**
26th	Boston	Newton	East	264	8		6	5	0
26th	Boston	Newton	West	176	5		5	4	0
26th	Newton	National	East	212	5	D Permit (8-6)	4	3	1
26th	Newton	National	West	230	12	D Permit (8-6)	6	7	7
26th	National	Logan	East	274	13		10	5	7
26th	National	Logan	West	268	11		8	11	6
27th	Main	Boston	East	176	9	(2) loading (2) 15 min	5	6	3
27th	Main	Boston	West	211	9	(1) handicap (3) 2 hr	8	9	0
27th	Boston	Newton	East	234	9	Loading (2) 15 min (3)	4	9	4
27th	Boston	Newton	West	195	9	(1) handicap	8	7	8
Main	26th	27th	North	397	7	Commercial (2)	5	6	2
Main	26th	27th	South	577	0	Red Curb	0	0	0
Main	27th	28th	North	467	13	30 min. (1)	12	11	9
Main	27th	28th	South	232	11	Commercial (1)	11	11	5
Newton	26th	27th	North	483	20	D Permit (All)	3	4	10
Newton	26th	27th	South	356	18	D Permit (All) Handicap (1)	2	6	13
Newton	26th	27th	Mid		17	D Permit (All)	10	8	7
Newton	27th	28th	North	479	17	(13) 2 hr	15	14	5
Newton	27th	28th	South	458	16		16	15	8
Boston	26th	27th	North	417	24		23	23	7
Boston	26th	27th	South	489	21	(3) commercial (1) 30 min	17	17	2
Boston	27th	28th	North	487	17	(10) commercial	14	9	4
Boston	27th	28th	South	443	14		12	13	5
Harbor	Shley	28th	North	1507	20		20	19	9
Harbor	Shley	28th	South	1723	17	Metered 2 hr.	16	17	14
National	26th	27th	North	420	13	30 min. (2) Commercial (2)	8	13	5
National	26th	27th	South	482	21	30 min. (3)	17	20	8
					356		265	272	149
							74.4%	76.4%	41.9%

Meter (2hr)	17
Handicap	3
Loading	22
15 min.	5
30 min	7
2 hr.	16
"D" Permit	71

Diagnol

Zone 4

							Parking Demand		
Segment	**From**	**To**	**Side**	**Available Curb Length (ft)**	**Total Parking Spaces**	**Notes**	**9:00 AM**	**12:00 PM**	**7:00 PM**
28th	Main	Boston	East		0		0	0	0
28th	Main	Boston	West		0		0	0	0
29th	Main	Boston	East	257	13	(1) handicap	11	13	11
29th	Main	Boston	West	257	14		14	14	11
30th	Main	Boston	East	260	7		4	4	2
30th	Main	Boston	West	262	13	"D"permit	0	0	0
31st	Main	Boston	East	248	13	(2) commercial	7	8	7
31st	Main	Boston	West	254	10	(2) handicap (2) 30 min	7	6	7
32nd	Main	Boston	East	365	14		13	12	4
32nd	Main	Boston	West	283	8	(1) handicap	7	5	7
Boston	28th	29th	North	454	18	D Permit (10)	12	7	5
Boston	28th	29th	South	434	18	D Permit (All)	5	6	8
Boston	29th	30th	North	696	29		23	28	19
Boston	29th	30th	South	314	20		10	8	18
Boston	30th	31st	North	595	28		22	23	8
Boston	30th	31st	South	496	24		17	17	18
Boston	31st	32nd	North	564	27		12	14	10
Boston	31st	32nd	South	365	18	Handicap (1)	14	13	12
Main	28th	29th	North	425	10	Metered	4	7	1
Main	28th	29th	South	581	0		0	0	0
Main	29th	30th	North	316	11	Commercial (2)	9	8	5
Main	29th	30th	South	604	9		9	9	3
Main	30th	31st	North	471	17	30 min. (2)	15	16	14
Main	30th	31st	South	554	15		14	15	5
Main	31st	32nd	North	323	13	Loading (6)	5	9	3
Main	31st	32nd	South	542	0		0	0	0
					349		234	242	178
							67.0%	69.3%	51.0%
					Meter	10			
					Handicap	5			
					Loading	10			
					15 min.				
					30 min	4			
					2 hr.				
					"D" Permit	41			
					Diagnol				

Zone 5

							Parking Demand		
Segment	**From**	**To**	**Side**	**Available Curb Length (ft)**	**Total Parking Spaces**	**Notes**	**9:00 AM**	**12:00 PM**	**7:00 PM**
Main	32nd	Rigel	North	958	6		6	5	2
Main	32nd	Rigel	South	1153	46		0	0	0
Main	Rigel	Siva	North	389	18		1	2	0
Main	Rigel	Siva	South	604	16		7	5	0
Main	Siva	Thor	North	362	18	Loading (1)	15	15	0
Main	Siva	Thor	South	624	19		14	12	2
Main	Thor	Una	North	460	16	Loading (2) Handicap (1)	4	12	6
Main	Thor	Una	South	565	20		11	13	6
Main	Una	Vesta	North	347	15	(2) 15 min (3) commercial	8	10	9
Main	Una	Vesta	South	598	23		16	17	11
Main	Vesta	Woden	North	390	9	30 min. (3)	9	9	4
Main	Vesta	Yama	South	595	35		33	27	7
Dalbergia	Thor	Woden	North		120	Loading (3)	110	83	21
Dalbergia	Thor	Woden	South		83	(1) 15 min. (2) 30min (2)Loading	73	79	23
Rigel	Main	I-5	East		8		5	5	1
Rigel	Main	I-5	West		8		6	7	1
Una	Main	Dalbergia	East		15	Handicap (1)	13	15	6
Una	Main	Dalbergia	West		16	Loading (3)	15	16	4
Vesta	Main	Dalbergia	East		16		7	10	4
Vesta	Main	Dalbergia	West		11		9	7	4
Woden	Main	Dalbergia	East		10		10	9	0
Woden	Main	Dalbergia	West		12		12	9	0
					540		384	367	111
							71.1%	68.0%	20.6%

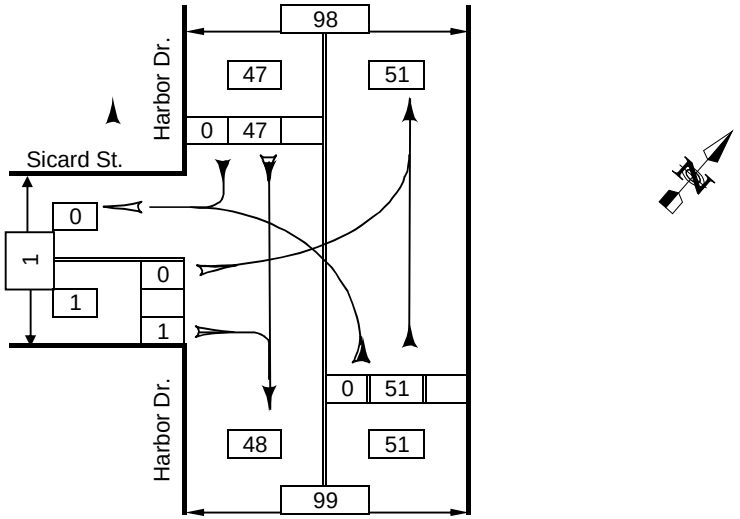
Handicap	2
Loading	14
15 min.	3
30 min	5
2 hr.	0

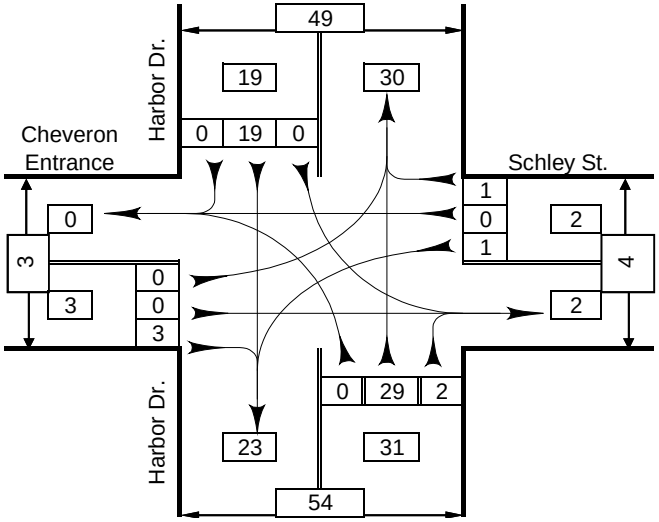
Diagnol Both sides, the length of Dalbergia
203

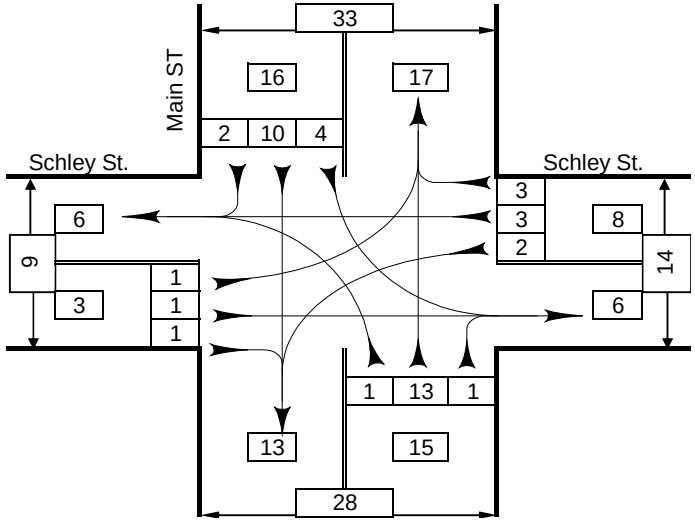
APPENDIX F

- Truck Counts Data

2-Axle Trucks Total Count





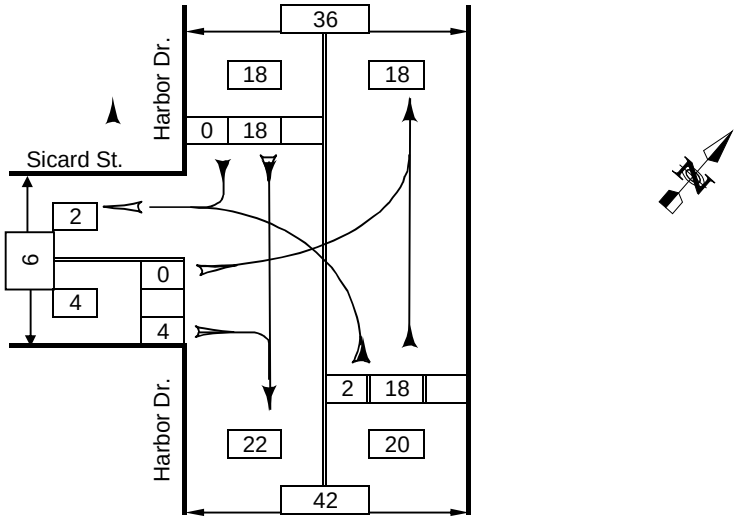


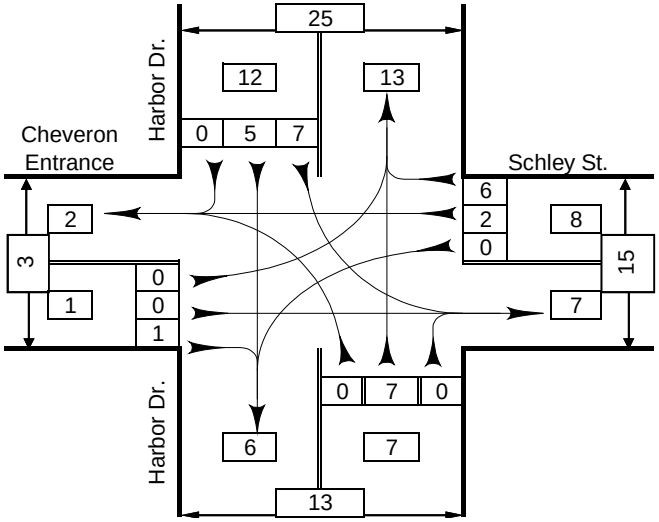
	NB				SB				EB				WB				
	Main St.				Main St.				Schley St.				Schley St.				INTERVAL TOTALS
	Left	Thru	Right	HV	Left	Thru	Right	HV	Left	Thru	Right	HV	Left	Thru	Right	HV	
06:00 AM		1													1		
06:15 AM														1			
06:30 AM						1											
06:45 AM																	
07:00 AM		1									1						
07:15 AM		1															
07:30 AM		1			1				1					1			
07:45 AM			1			1											
08:00 AM		1				1											
08:15 AM		2															
08:30 AM		1											1	1			
08:45 AM																	
09:00 AM		2															
09:15 AM																	
09:30 AM					1		1										
09:45 AM	1	1				2	1								1		
Sum	1	11	1	0	2	5	2	0	1	0	1	0	1	3	2	0	0
02:00 PM																	
02:15 PM						3											
02:30 PM						1											
02:45 PM																	
03:00 PM		1															
03:15 PM															1		
03:30 PM		1															
03:45 PM																	
04:00 PM					1	1				1							
04:15 PM					1												
04:30 PM													1				
04:45 PM																	
05:00 PM																	
05:15 PM																	
05:30 PM																	
05:45 PM																	
Sum	0	2	0	0	2	5	0	0	0	1	0	0	1	0	1	0	0
	1	13	1	0	4	10	2	0	1	1	1	0	2	3	3	0	
	15				16				3				8				

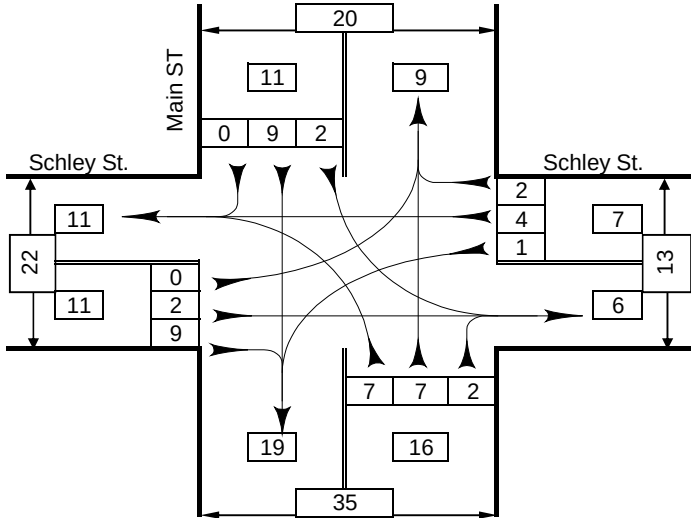
	NB				SB				EB				WB				
	Harbor Dr				Harbor Dr				Schley St.				Schley St.				INTERVAL TOTALS
	Left	Thru	Right	HV	Left	Thru	Right	HV	Left	Thru	Right	HV	Left	Thru	Right	HV	
06:00 AM						1											
06:15 AM											1						
06:30 AM		1				2											
06:45 AM		3				1											
07:00 AM		2															
07:15 AM		2				1											
07:30 AM		3	1			1									1		
07:45 AM		1				1											
08:00 AM		3				2											
08:15 AM						5											
08:30 AM		3				2											
08:45 AM			1														
09:00 AM		2				2											
09:15 AM		3															
09:30 AM		3											1				
09:45 AM		3				1					2						
Sum	0	29	2	0	0	19	0	0	0	0	3	0	1	0	1	0	0
02:00 PM		1				1											
02:15 PM						1											
02:30 PM						1											
02:45 PM																	
03:00 PM						2											
03:15 PM																	
03:30 PM																	
03:45 PM						2											
04:00 PM			1			2											
04:15 PM																	
04:30 PM																	
04:45 PM							1										
05:00 PM																	
05:15 PM																	
05:30 PM																	
05:45 PM																	
Sum																	0
	0	29	2	0	0	19	0	0	0	0	3	0	1	0	1	0	
	31				19				3				2				

	NB				SB				EB				WB				
	Harbor Dr				Harbor Dr				Sicard St.				None				INTERVAL TOTALS
	Left	Thru	Right	HV	Left	Thru	Right	HV	Left	Thru	Right	HV	Left	Thru	Right	HV	
06:00 AM																	
06:15 AM		1															
06:30 AM		3				1											
06:45 AM		2				3											
07:00 AM		4															
07:15 AM		1				2											
07:30 AM		2				1											
07:45 AM		2				4											
08:00 AM		3				5											
08:15 AM		1				3											
08:30 AM		8				2											
08:45 AM		2				2											
09:00 AM		4				3											
09:15 AM		2															
09:30 AM		5				2											
09:45 AM		4				2											
Sum	0	44	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0
02:00 PM		4				2					1						
02:15 PM						2											
02:30 PM		2				1											
02:45 PM																	
03:00 PM																	
03:15 PM		1				2											
03:30 PM						2											
03:45 PM						1											
04:00 PM						1											
04:15 PM						2											
04:30 PM						1											
04:45 PM						2											
05:00 PM						1											
05:15 PM																	
05:30 PM																	
05:45 PM																	
Sum	0	7	0	0	0	17	0	0	0	0	1	0	0	0	0	0	0
	0	51	0	0	0	47	0	0	0	0	1	0	0	0	0	0	
		51				47				1				0			

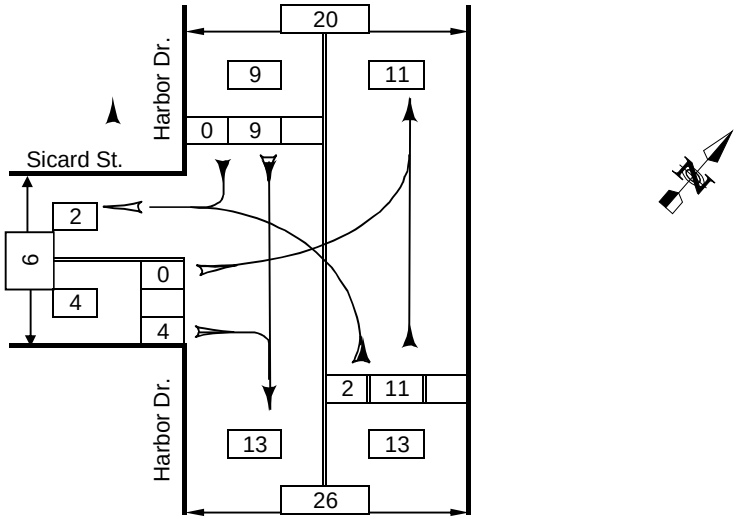
3-Axle Trucks Total Count

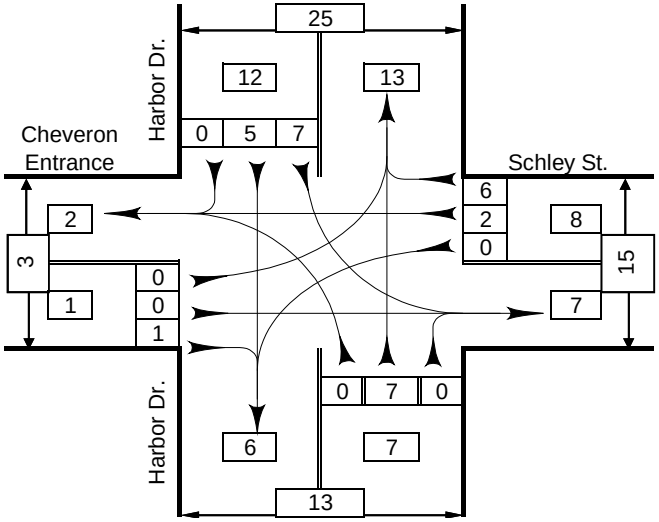


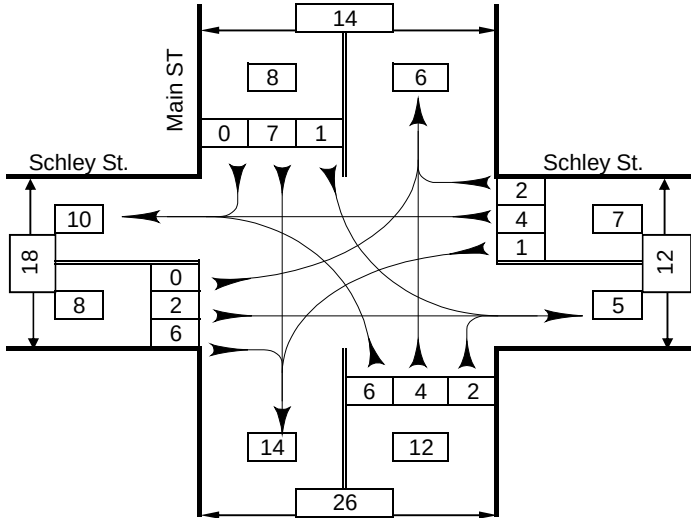




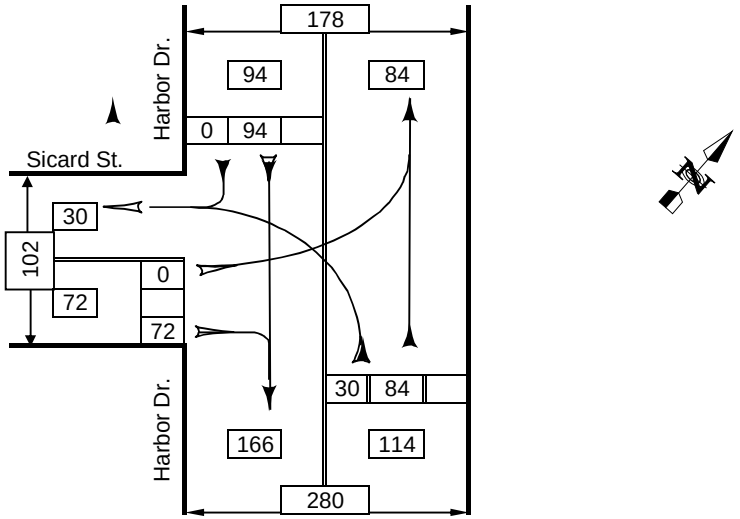
3-Axle Trucks AM Count

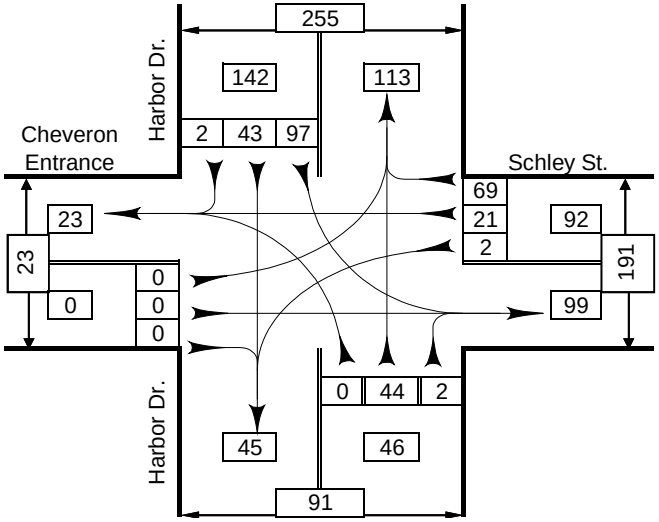


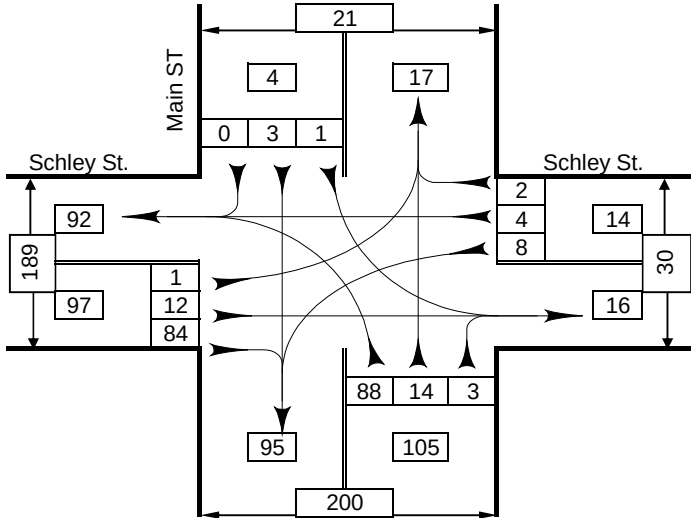




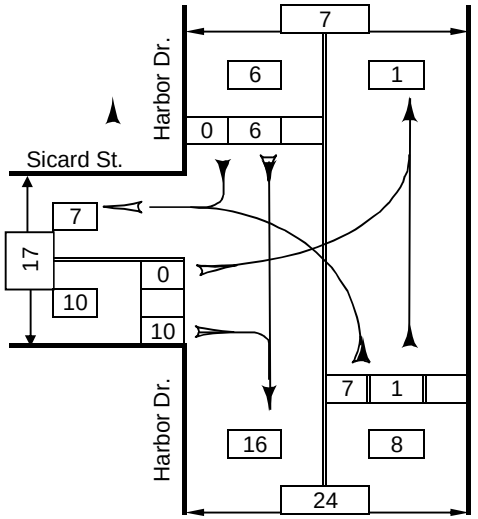
4-Axle Trucks Total Count

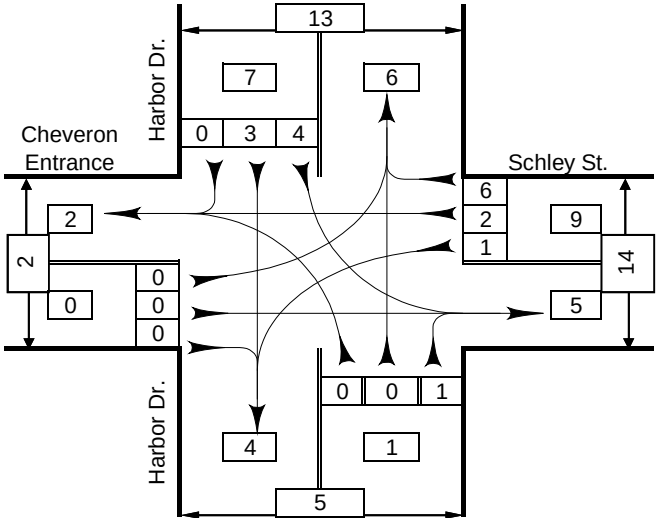


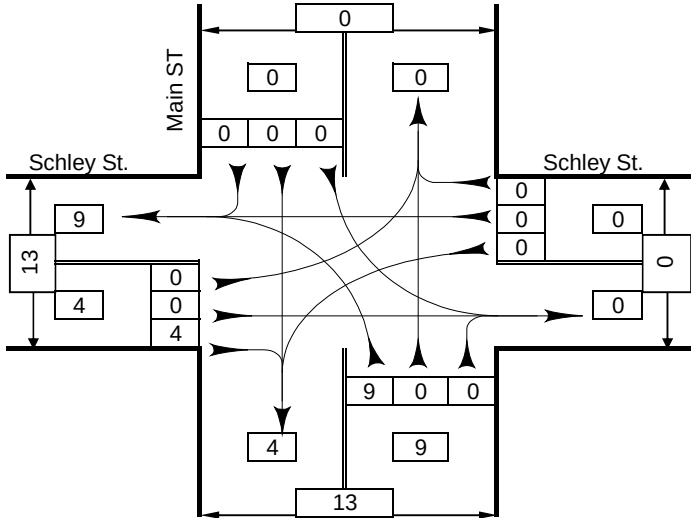




4-Axle Trucks PM Count
PM Peak 4:30

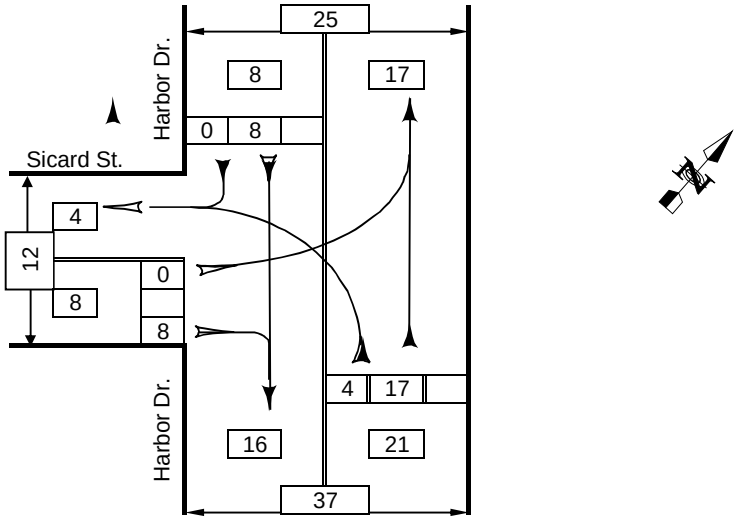


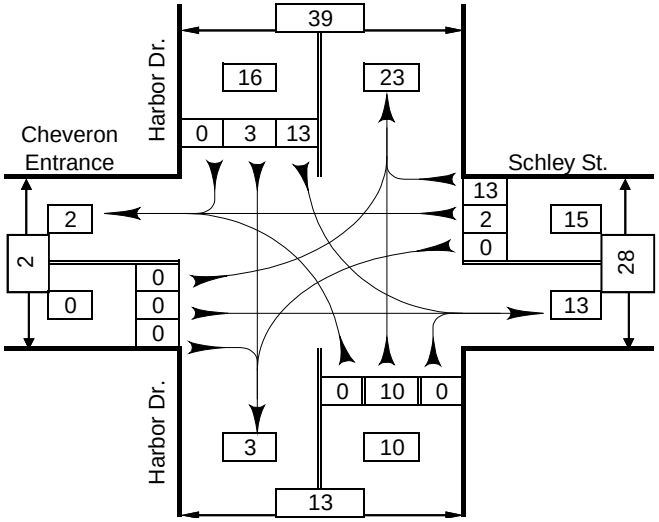


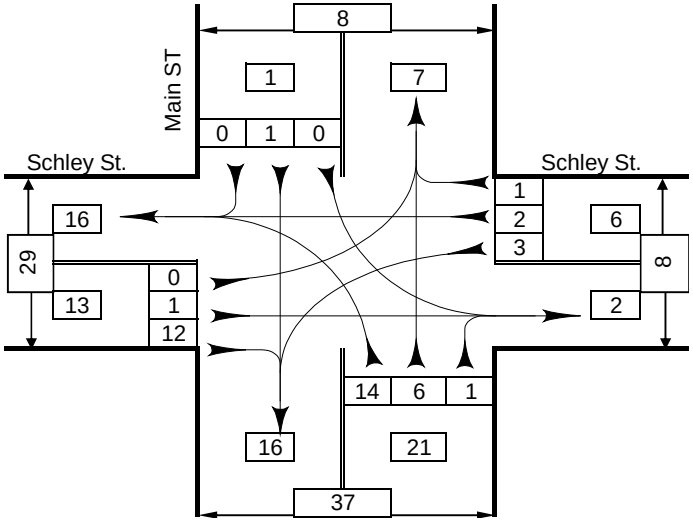


4-Axle Trucks AM Peak Count

AM Peak 7:15:00 AM







APPENDIX G

- Forecast Model Plots

REVISED - BARRIO LOGAN 2030-ADOPTED COMM. ADT PLOT (KSF)

BARRIO LOGAN

SANDAG Series 11

2030 NETWORK

Legend

- Freeway
- Prime
- Major
- Collector
- Local Collector
- Rural Collector
- Rural Light Collector
- Local
- Ramp

Unadjusted Volumes (1000s)

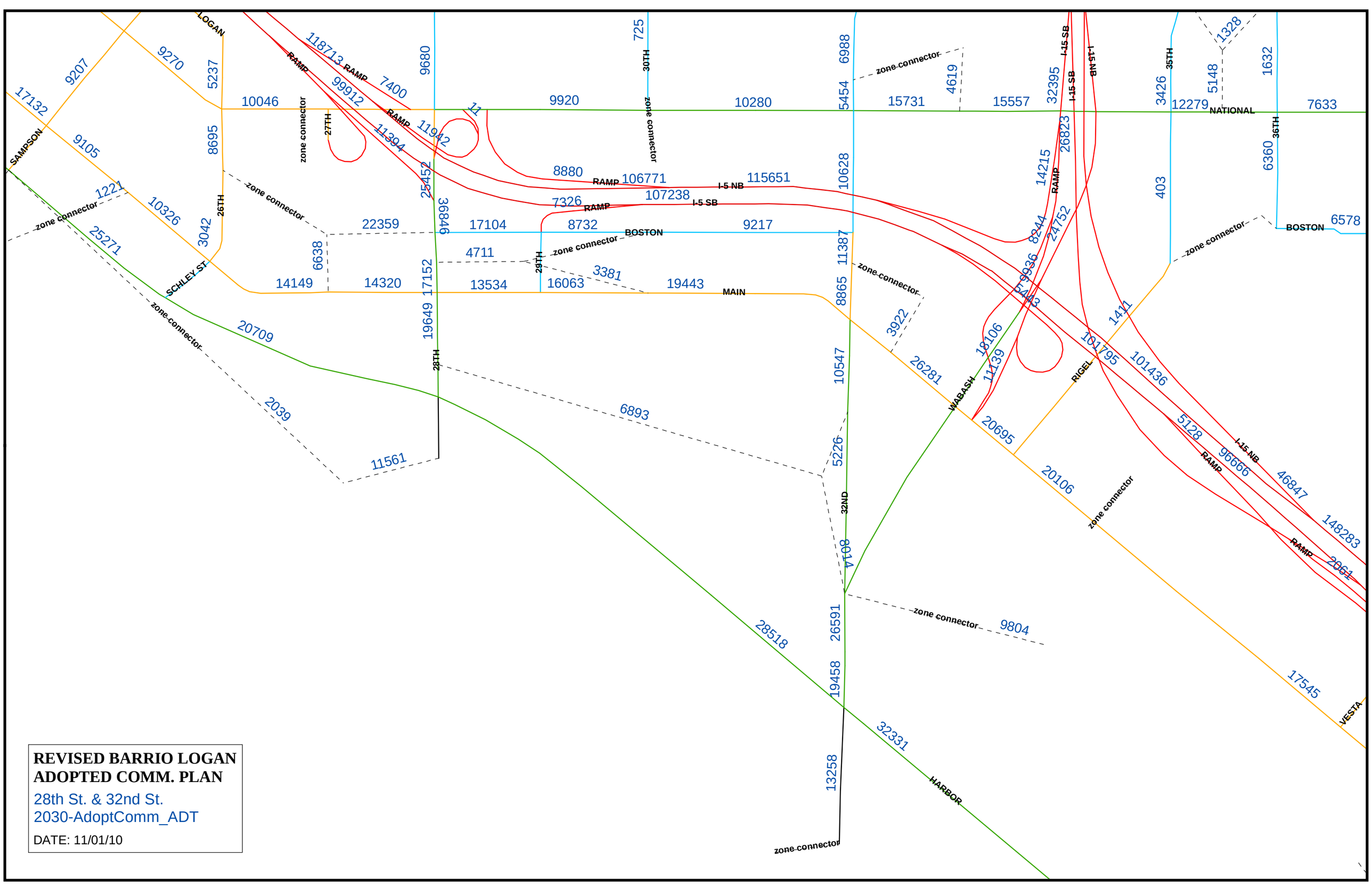
#

Feet
0 500 1,000

0 60 180 300
Meters

N

November 1, 2010

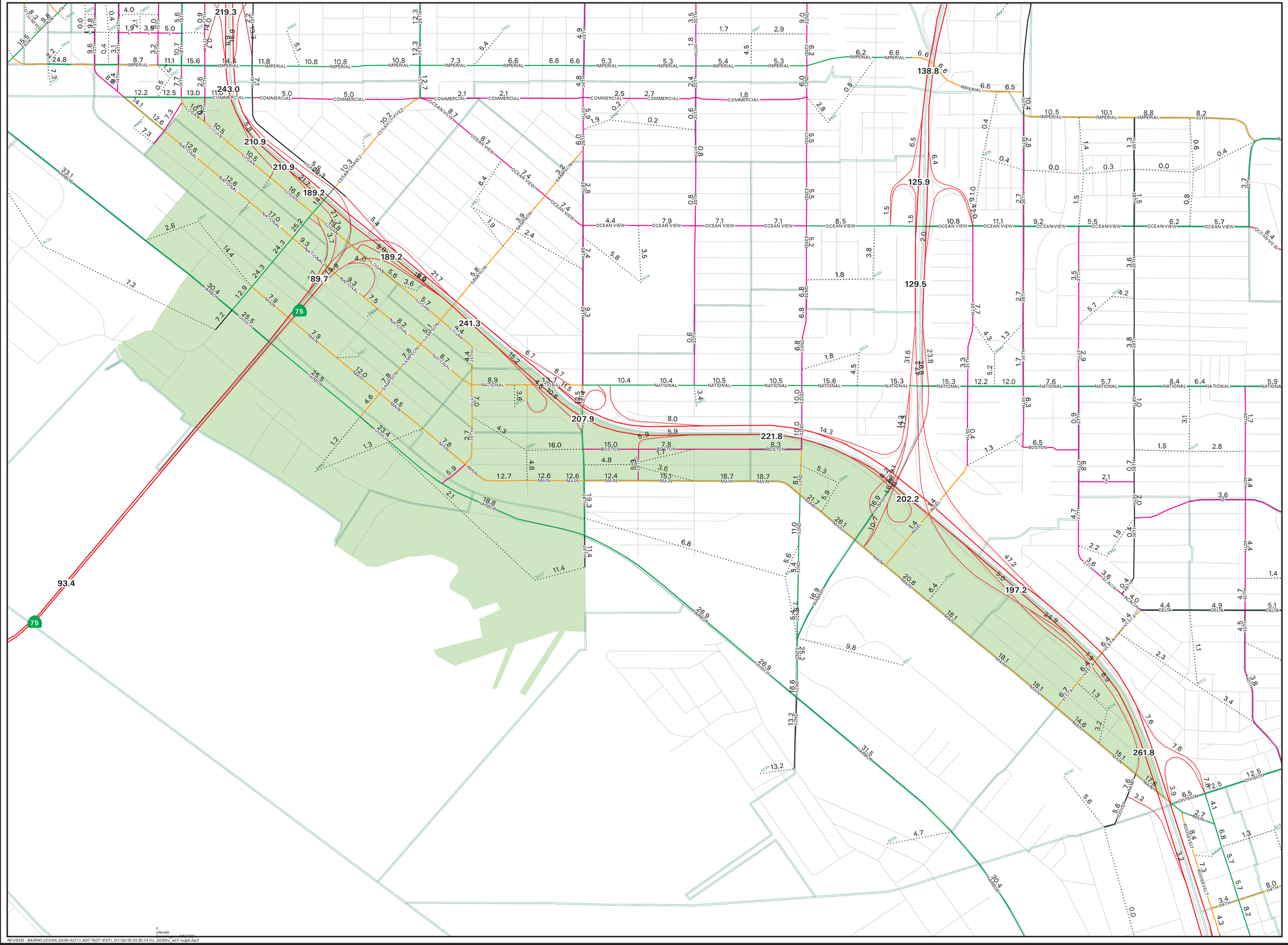


REVISED BARRIO LOGAN ADOPTED COMM. PLAN

28th St. & 32nd St.
2030-AdoptComm_ADT

DATE: 11/01/10

REVISED - BARRIO LOGAN 2030-ALT(1) ADT PLOT (KSF)



BARRIO LOGAN

SANDAG Series 11

2030 NETWORK

Legend

- Freeway
- Prime
- Major
- Collector
- Local Collector
- Rural Collector
- Rural Light Collector
- Local
- Ramp

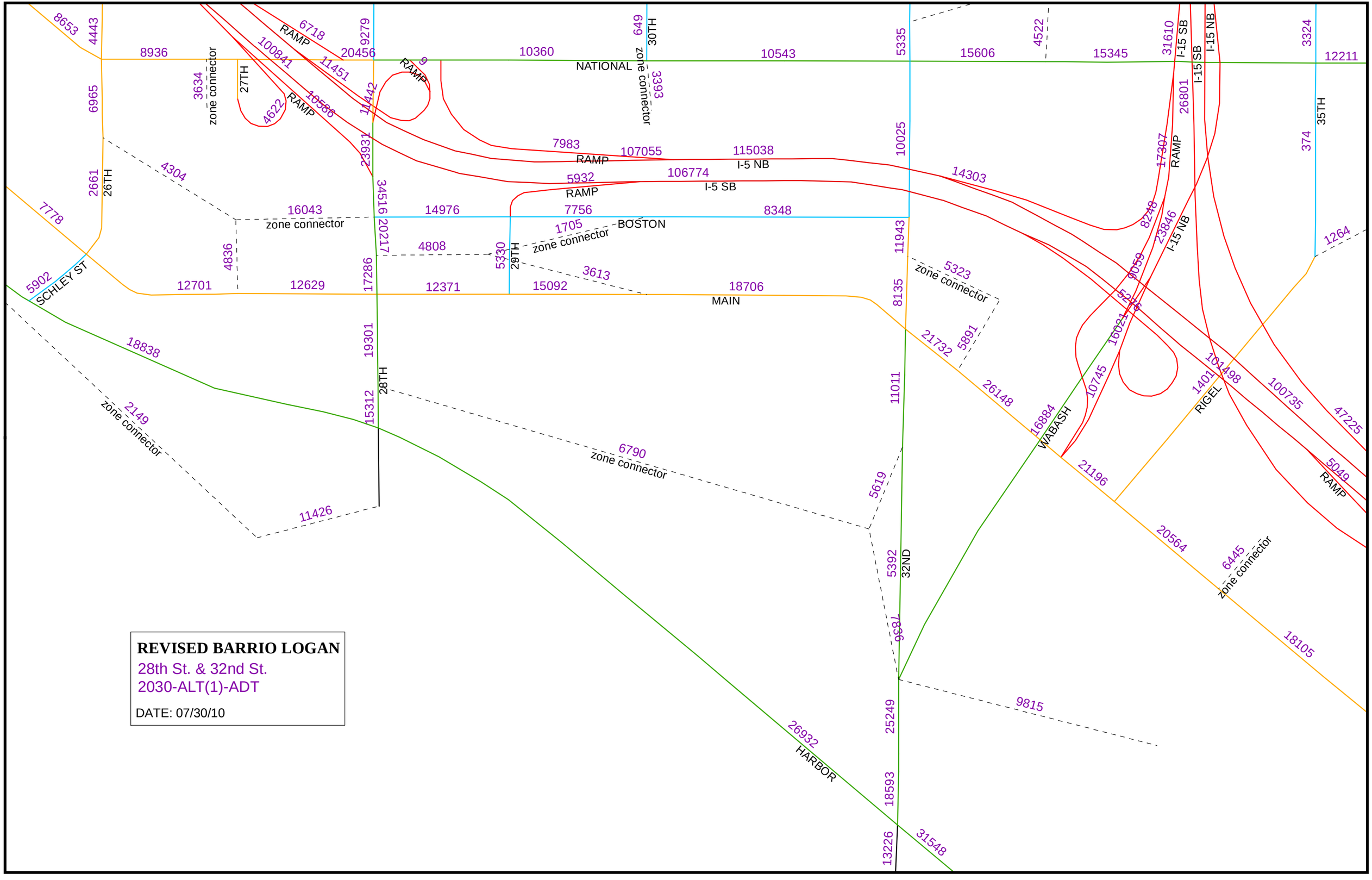
Unadjusted Volumes (1000s)

#

Feet
0 500 1,000
0 60 180 300
Meters

N

July 30, 2010



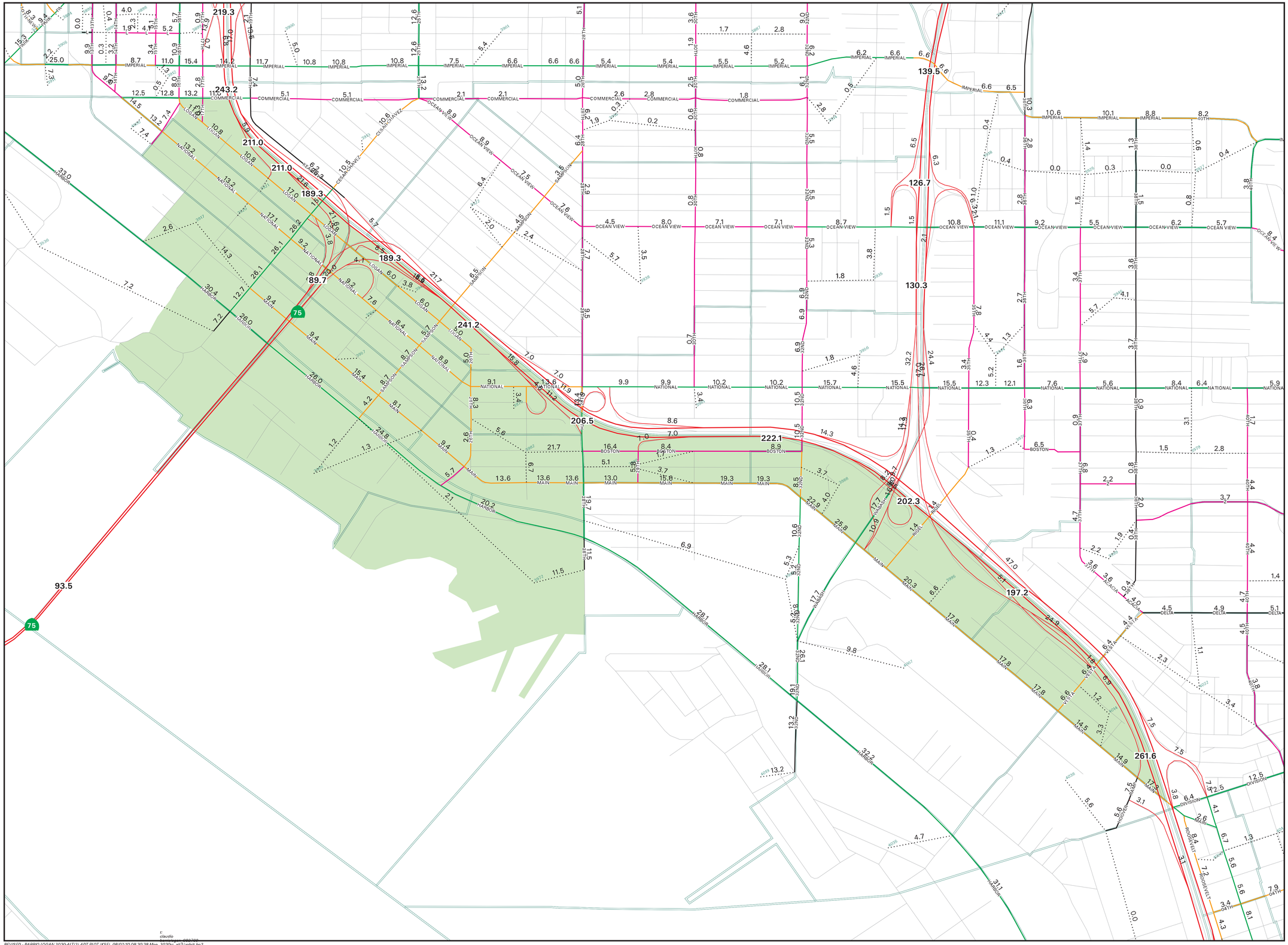
REVISED BARRIO LOGAN

28th St. & 32nd St.

2030-ALT(1)-ADT

DATE: 07/30/10

REVISED - BARRIO LOGAN 2030-ALT(2) ADT PLOT (KSF)



BARRIO LOGAN

SANDAG Series 11

2030 NETWORK

Legend

- Freeway
- Prime
- Major
- Collector
- Local Collector
- Rural Collector
- Rural Light Collector
- Local
- Ramp

Unadjusted Volumes (1000s)

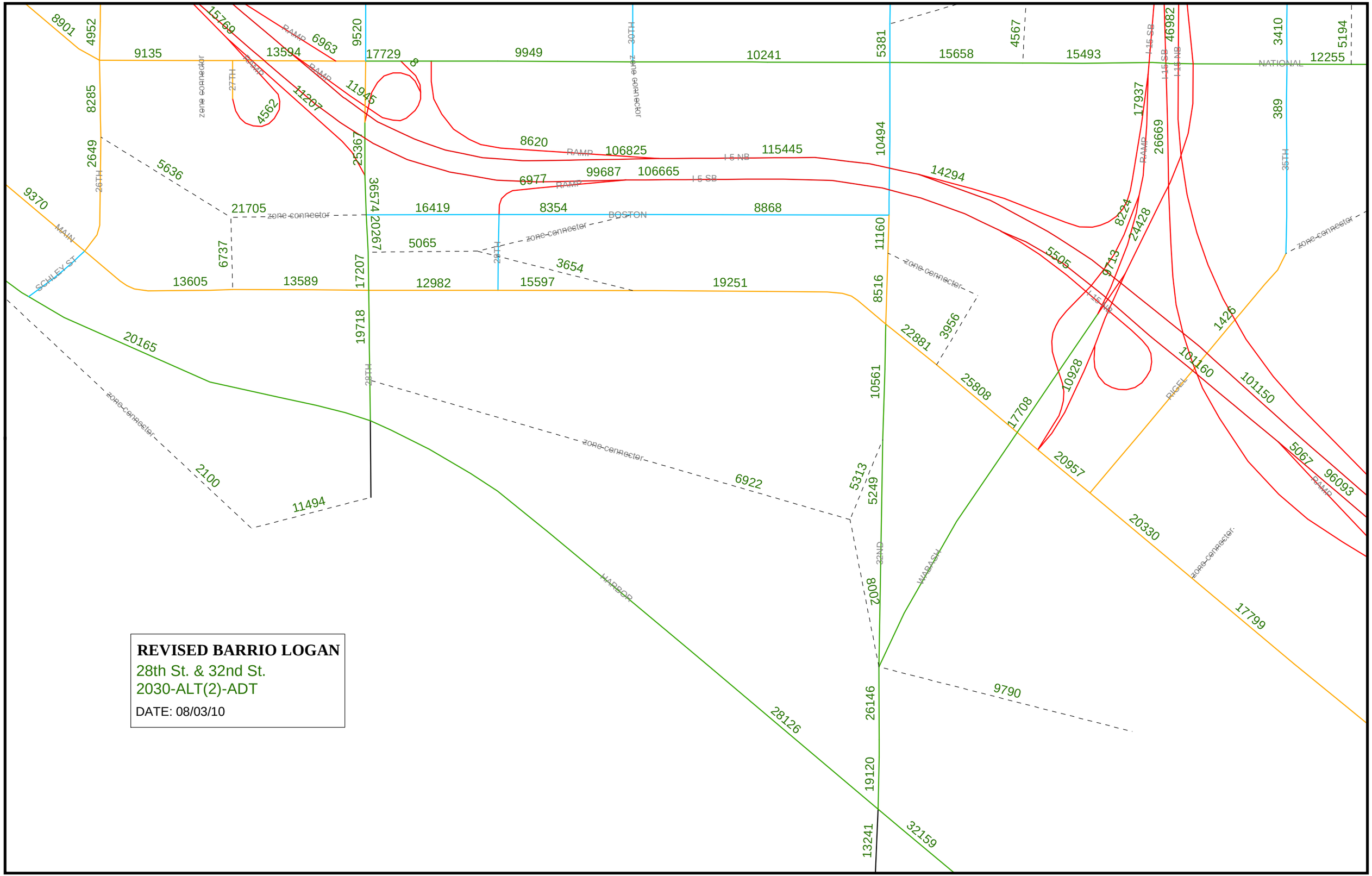
#

Feet
0 500 1,000

0 60 180 300
Meters

N

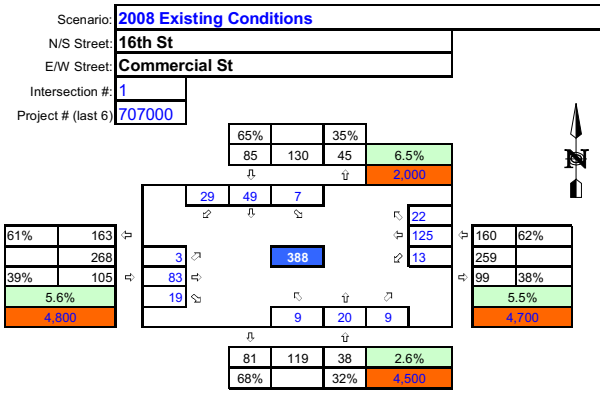
August 2, 2010


REVISED BARRIO LOGAN
28th St. & 32nd St.
2030-ALT(2)-ADT
DATE: 08/03/10
8901
4952
9135
15769
13594
RAMP
6963
9520
17729
8
9949
30TH
10241
5381
15658
4567
15493
46982
I-15 SB
I-15 NB
3410
5194
NATIONAL
12255
zone connector
27TH
4562
11207
11945
8285
2649
26TH
5636
25367
8620
RAMP
106825
I-5 NB
115445
10494
14294
6977
99687
106665
I-5 SB
RAMP
17937
26669
RAMP
389
35TH
9370
MAIN
21705
zone connector
36574
20267
16419
8354
BOSTON
8868
zone connector
8224
24428
6737
5065
29TH
zone connector
11160
5505
9713
I-15 NB
SCHLEY ST
13605
13589
17207
12982
3654
15597
19251
8516
zone connector
1429
3956
22881
20165
19718
28TH
10928
181160
101150
25808
17708
RIGEL
zone connector
zone connector
5067
96093
RAMP
20957
2100
11494
6922
5313
5249
20330
zone connector
32ND
WABASH
2008
17799
HARBOR
9790
28126
26146
19120
13241
32159

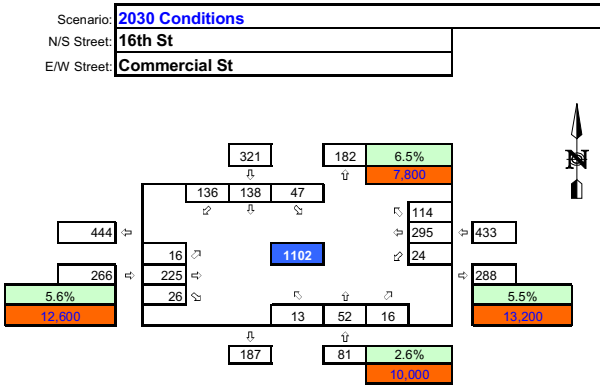
APPENDIX H

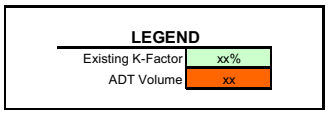
- NCHRP 255 Report and Turning Movement Forecast Worksheets

Int 1 AM Peak Volumes

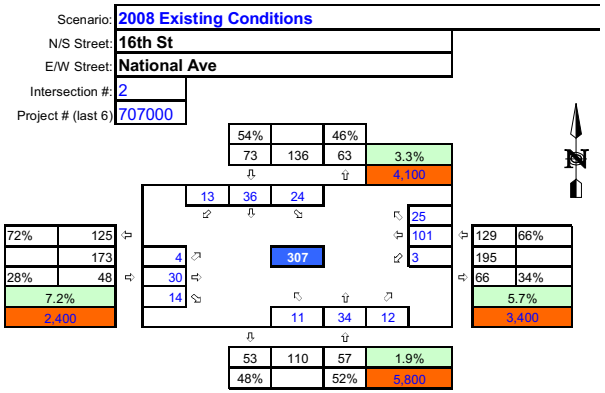


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

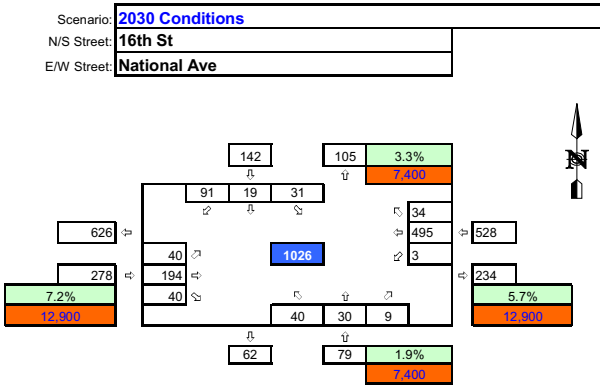


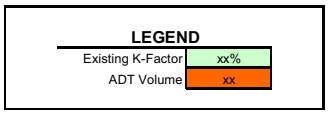


Int 2 AM Peak Volumes



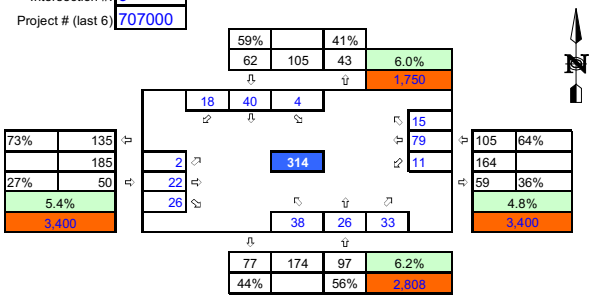
Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.





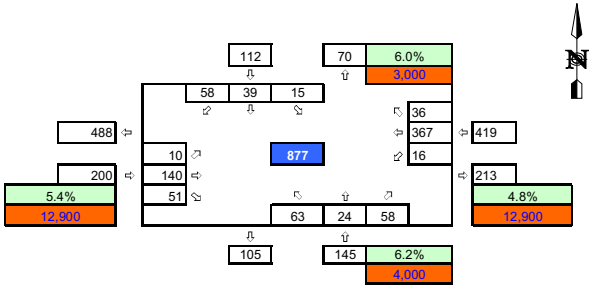
Int 3 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sigsbee St**
E/W Street: **National Ave**
Intersection #: 3
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sigsbee St**
E/W Street: **National Ave**

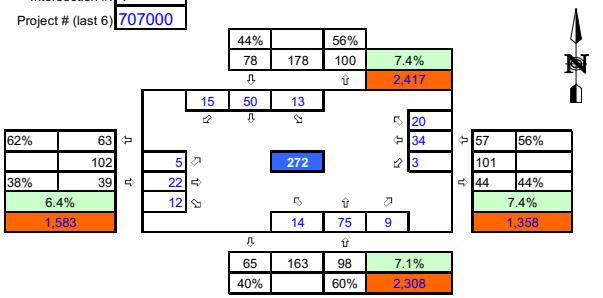


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

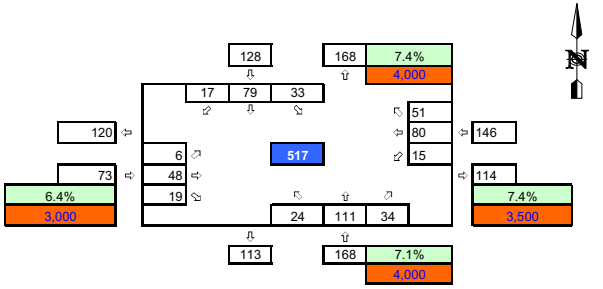
Int 4 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Newton Ave**
Intersection #: 4
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Newton Ave**

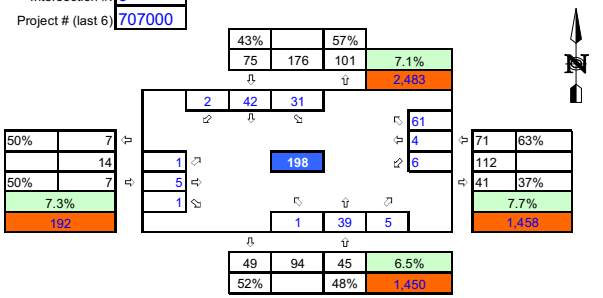


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

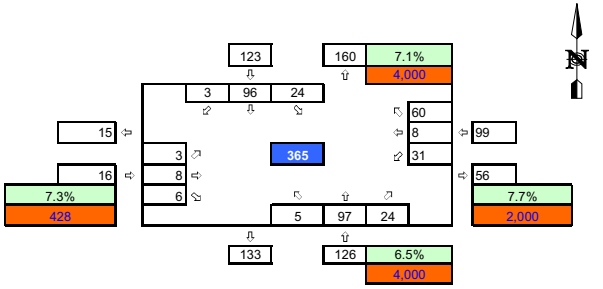
Int 5 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Main St**
Intersection #: 5
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Main St**

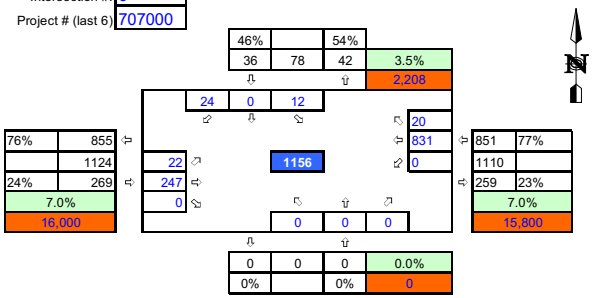


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

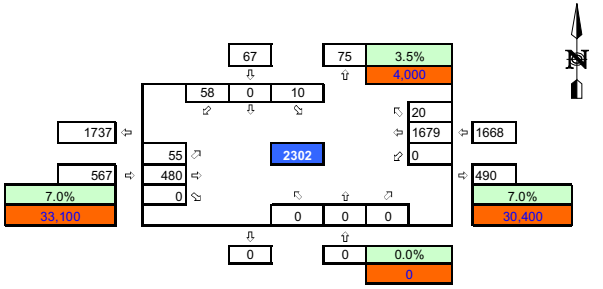
Int 6 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Harbor Dr**
Intersection #: 6
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Harbor Dr**

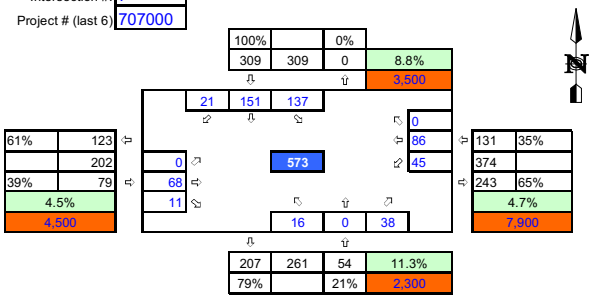


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

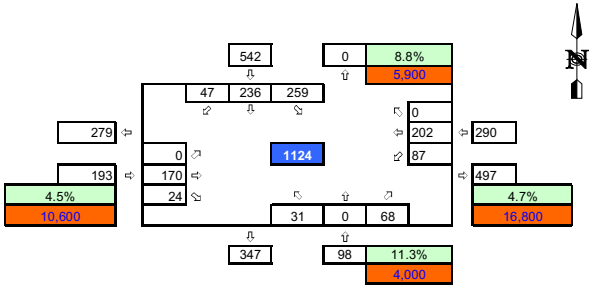
Int 7 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **I-5 SB Off-Ramp / Beardsley St**
E/W Street: **Logan Ave**
Intersection #: 7
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

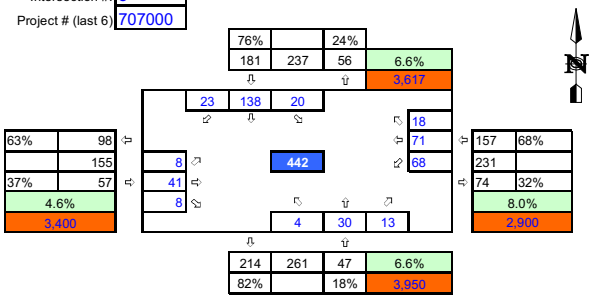
Scenario: **2030 Conditions**
N/S Street: **I-5 SB Off-Ramp / Beardsley St**
E/W Street: **Logan Ave**



LEGEND
Existing K-Factor xx%
ADT Volume xx

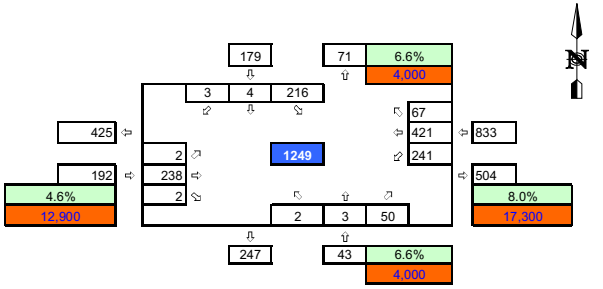
Int 8 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Beardsley St**
E/W Street: **National Ave**
Intersection #: 8
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

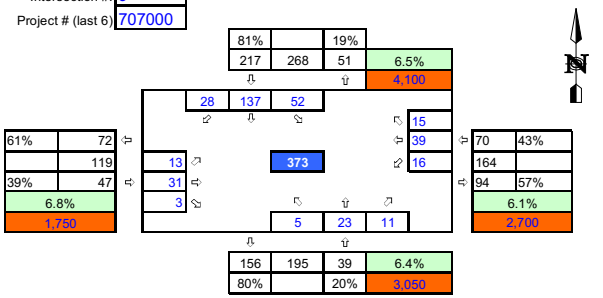
Scenario: **2030 Conditions**
N/S Street: **Beardsley St**
E/W Street: **National Ave**



LEGEND
Existing K-Factor xx%
ADT Volume xx

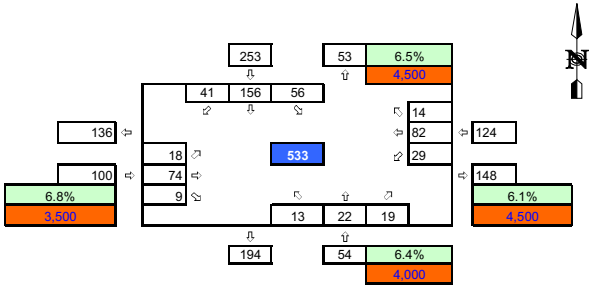
Int 9 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Beardsley St**
E/W Street: **Newton Ave**
Intersection #: 9
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Beardsley St**
E/W Street: **Newton Ave**

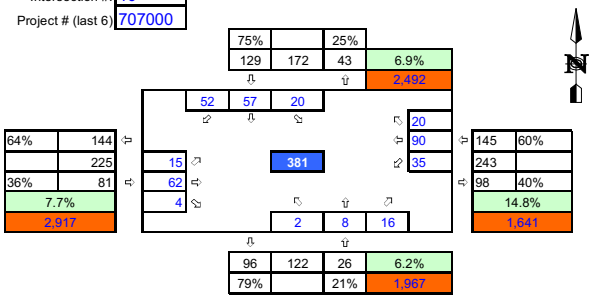


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

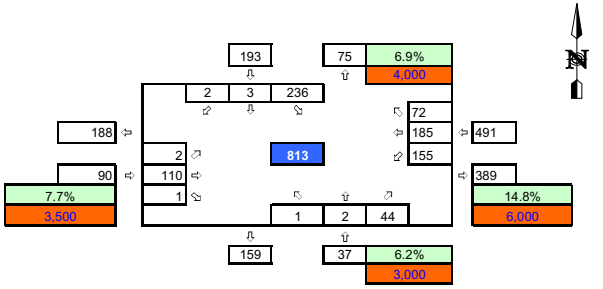
Int 10 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Beardsley St**
E/W Street: **Main St**
Intersection #: 10
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Beardsley St**
E/W Street: **Main St**

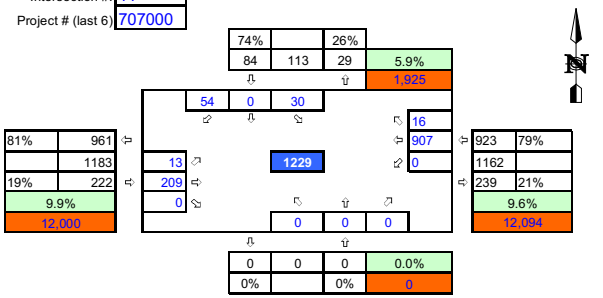


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

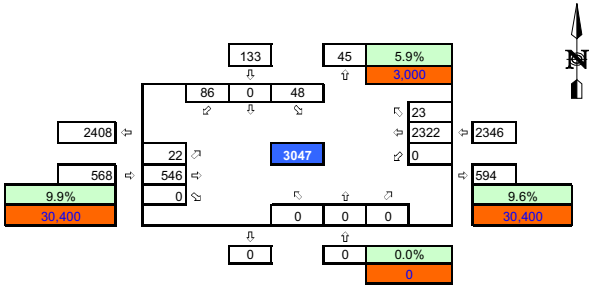
Int 11 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Beardsley St**
E/W Street: **Harbor Dr**
Intersection #: 11
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Beardsley St**
E/W Street: **Harbor Dr**

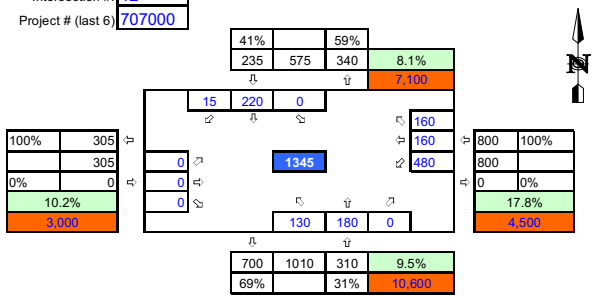


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

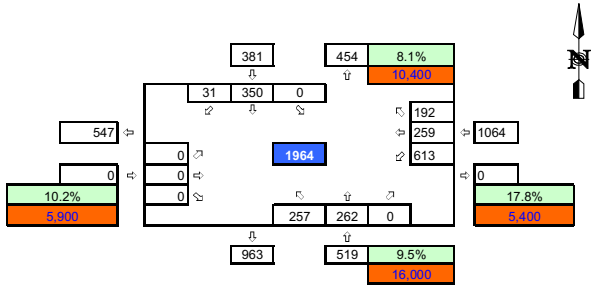
Int 12 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Kearney Ave**
Intersection #: 12
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Kearney Ave**



LEGEND

Existing K-Factor	xx%
ADT Volume	xx

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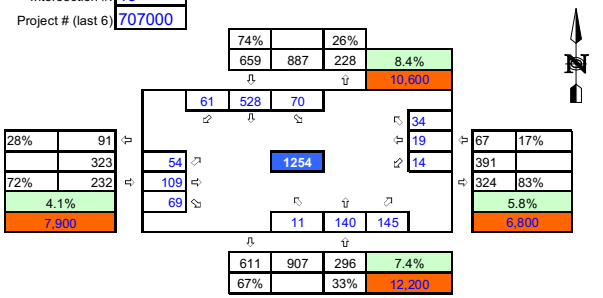
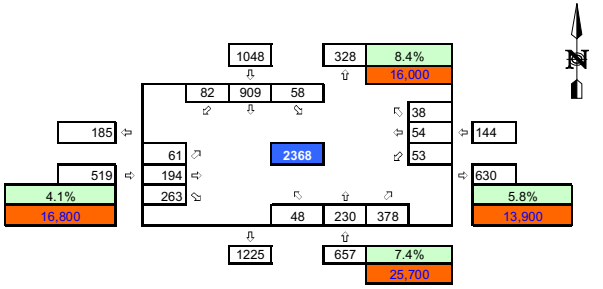
Int 13 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Cesar Chavez Pkwy-SR-75 On-ramp**
E/W Street: **Logan Ave**
Intersection #: 13
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Cesar Chavez Pkwy-SR-75 On-ramp**
E/W Street: **Logan Ave**

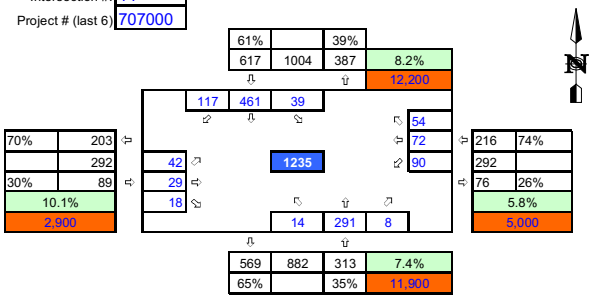


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

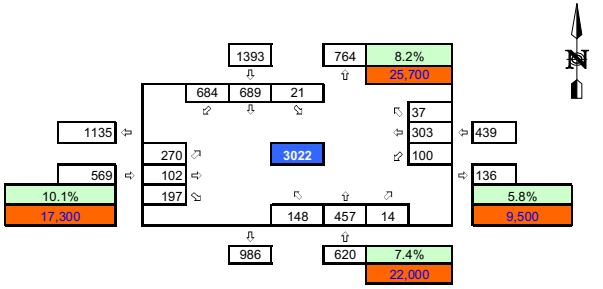
Int 14 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **National Ave**
Intersection #: 14
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **National Ave**

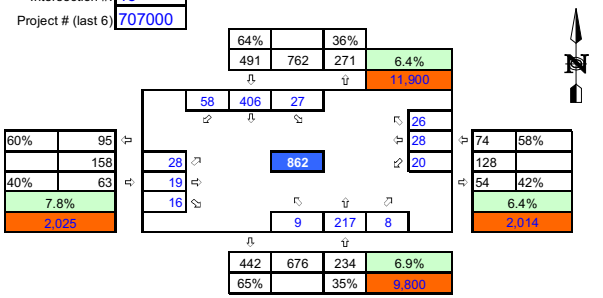


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

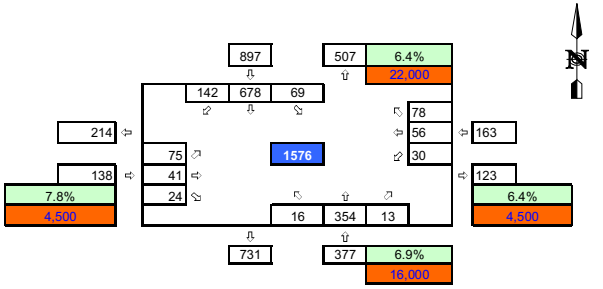
Int 15 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Newton Ave**
Intersection #: 15
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Newton Ave**



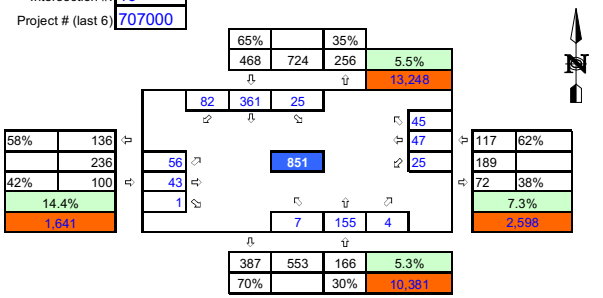
LEGEND

Existing K-Factor	xx%
ADT Volume	xx

K:\SND_TPTO\095707000\Excel\Turn32-Alt1.xlsx

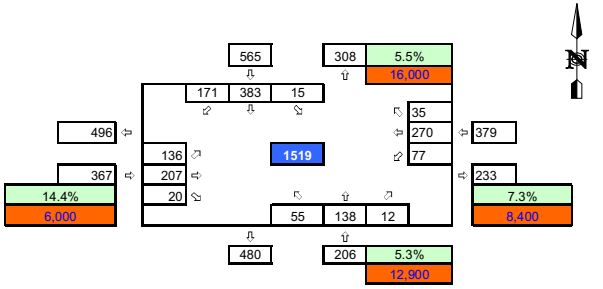
Int 16 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Main St**
Intersection #: 16
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Main St**



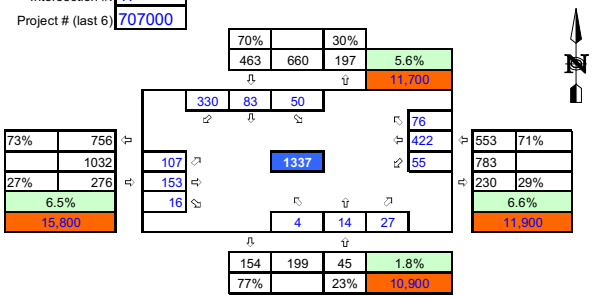
LEGEND

Existing K-Factor	xx%
ADT Volume	xx

K:\SND_TPTO\095707000\Excel\Turn32-Alt1.xlsx

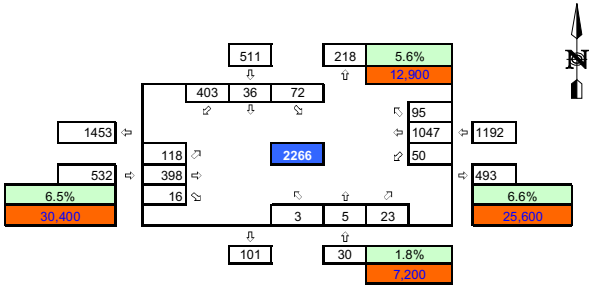
Int 17 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Harbor Dr**
Intersection #: 17
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Cesar Chavez Pkwy**
E/W Street: **Harbor Dr**

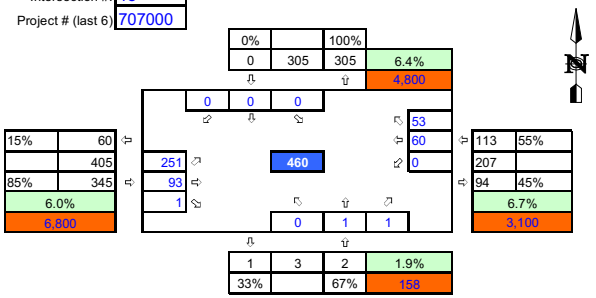


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

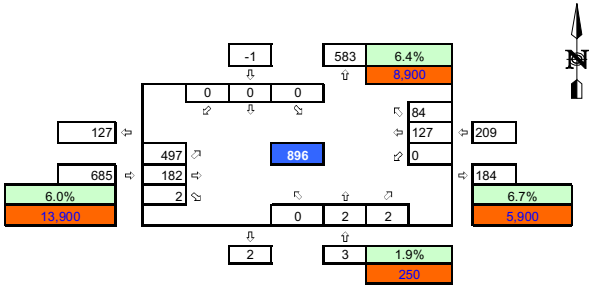
Int 18 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **I-5 SB On-Ramp / Park Dwy**
E/W Street: **Logan Ave**
Intersection #: 18
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **I-5 SB On-Ramp / Park Dwy**
E/W Street: **Logan Ave**

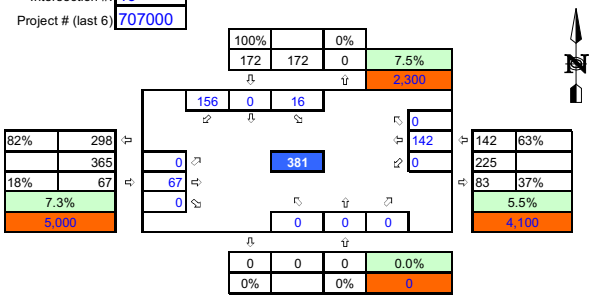


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

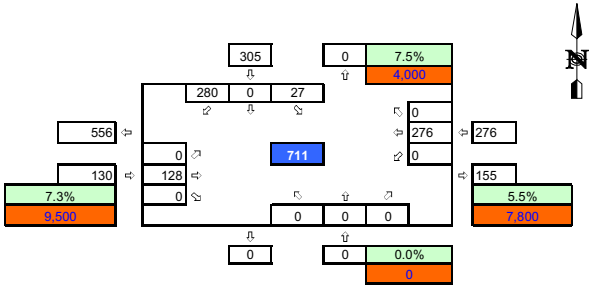
Int 19 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **SR-75 Off-Ramp / Dwy**
E/W Street: **National Ave**
Intersection #: 19
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **SR-75 Off-Ramp / Dwy**
E/W Street: **National Ave**

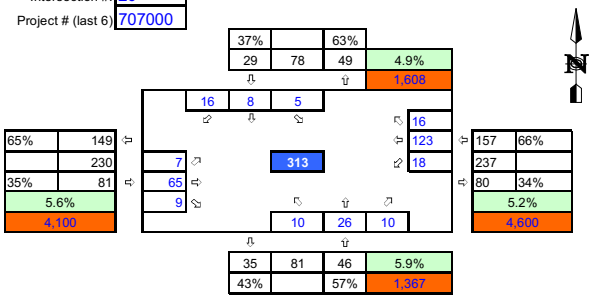


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

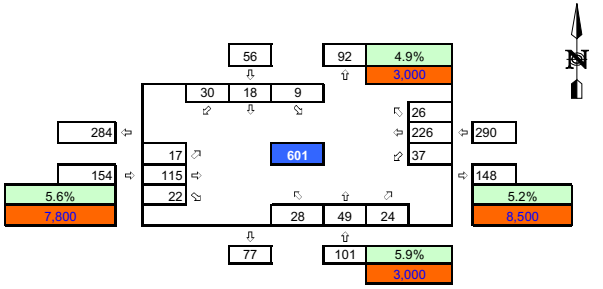
Int 20 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Evans St**
E/W Street: **National Ave**
Intersection #: 20
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Evans St**
E/W Street: **National Ave**

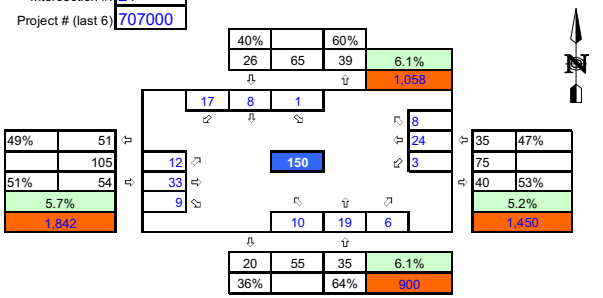


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

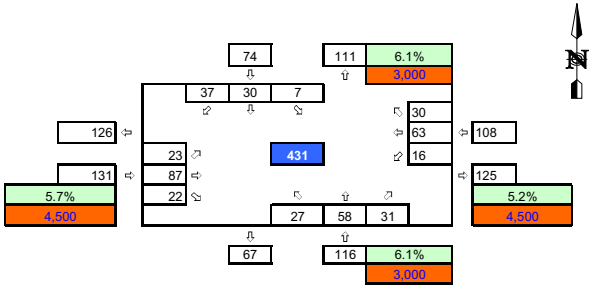
Int 21 AM Peak Volumes

Scenario: 2008 Existing Conditions
N/S Street: Evans St
E/W Street: Newton Ave
Intersection #: 21
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: 2030 Conditions
N/S Street: Evans St
E/W Street: Newton Ave

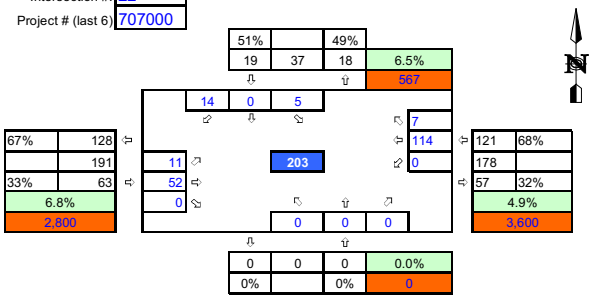


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

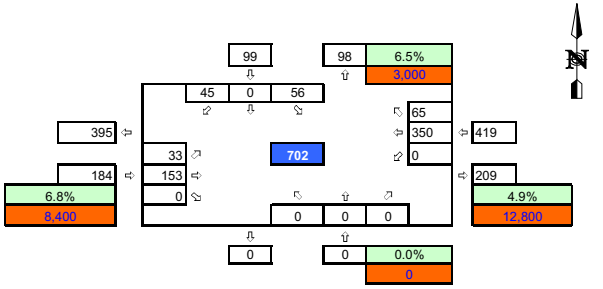
Int 22 AM Peak Volumes

Scenario: 2008 Existing Conditions
N/S Street: Evans St
E/W Street: Main St
Intersection #: 22
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: 2030 Conditions
N/S Street: Evans St
E/W Street: Main St

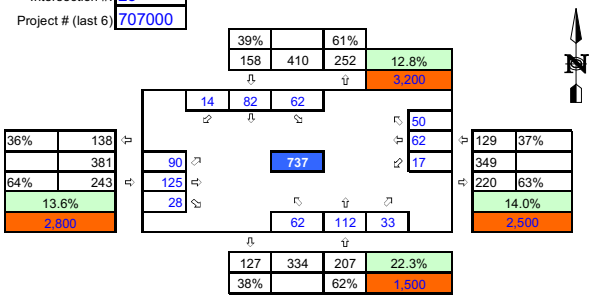


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

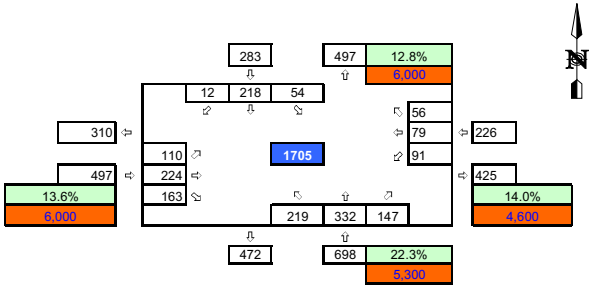
Int 23 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sampson St**
E/W Street: **Logan Ave**
Intersection #: 23
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sampson St**
E/W Street: **Logan Ave**

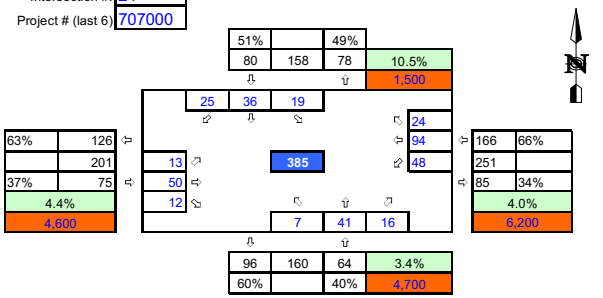


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

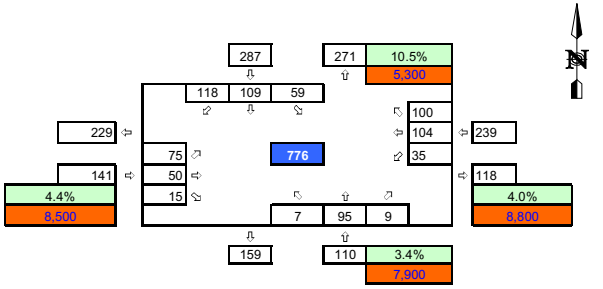
Int 24 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sampson St**
E/W Street: **National Ave**
Intersection #: 24
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

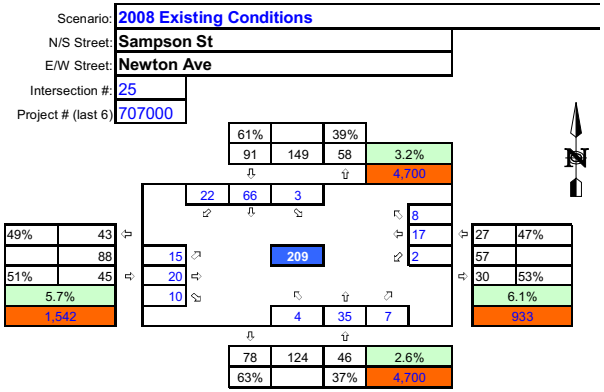
Scenario: **2030 Conditions**
N/S Street: **Sampson St**
E/W Street: **National Ave**



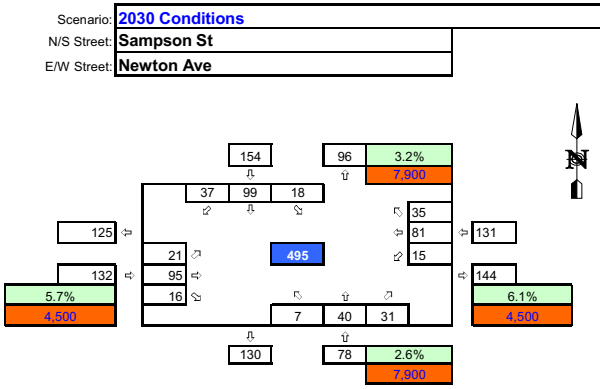
LEGEND

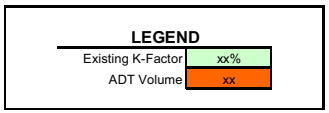
Existing K-Factor	xx%
ADT Volume	xx

Int 25 AM Peak Volumes

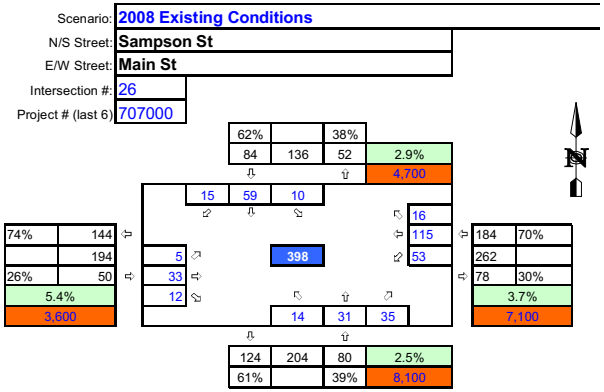


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

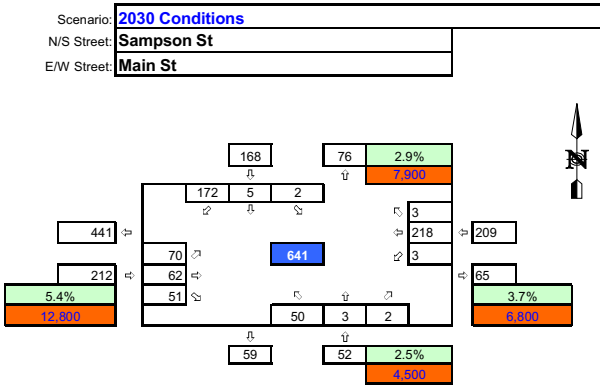


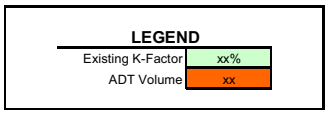


Int 26 AM Peak Volumes



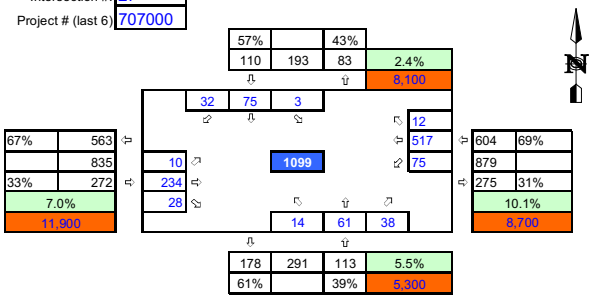
Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.





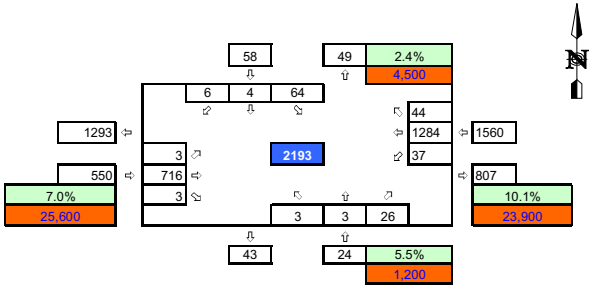
Int 27 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sampson St**
E/W Street: **Harbor Dr**
Intersection #: 27
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

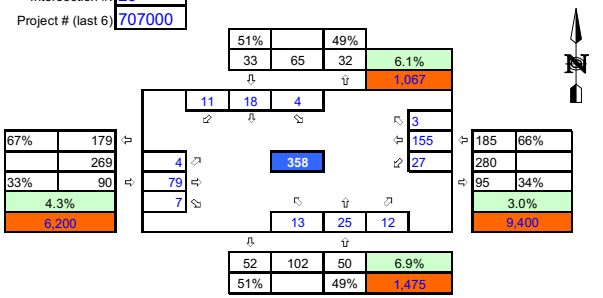
Scenario: **2030 Conditions**
N/S Street: **Sampson St**
E/W Street: **Harbor Dr**



LEGEND
Existing K-Factor: xx%
ADT Volume: xx

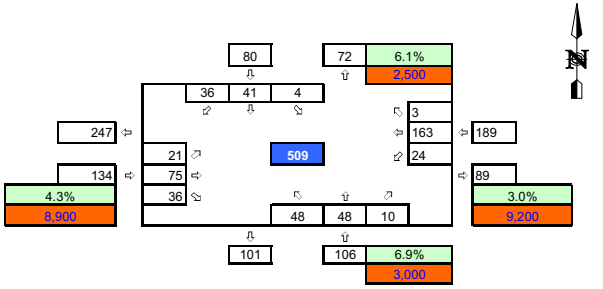
Int 28 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sicard St**
E/W Street: **National Ave**
Intersection #: 28
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

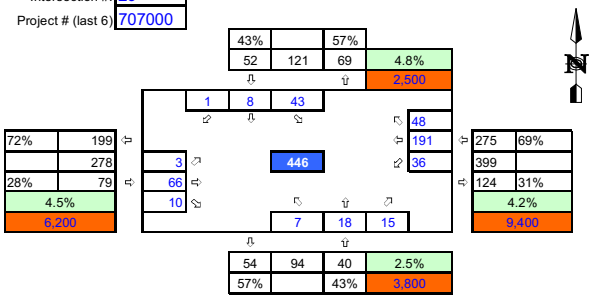
Scenario: **2030 Conditions**
N/S Street: **Sicard St**
E/W Street: **National Ave**



LEGEND
Existing K-Factor: xx%
ADT Volume: xx

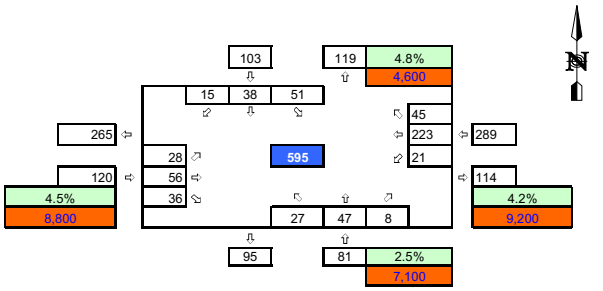
Int 29 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **26th St**
E/W Street: **National Ave**
Intersection #: 29
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

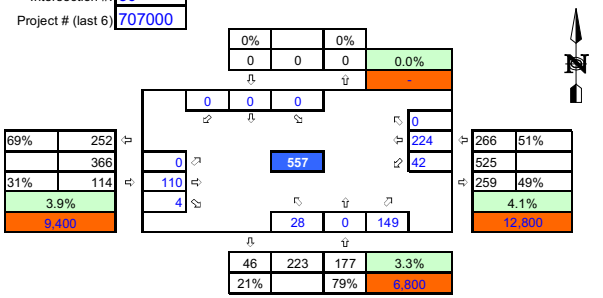
Scenario: **2030 Conditions**
N/S Street: **26th St**
E/W Street: **National Ave**



LEGEND
Existing K-Factor: xx%
ADT Volume: xx

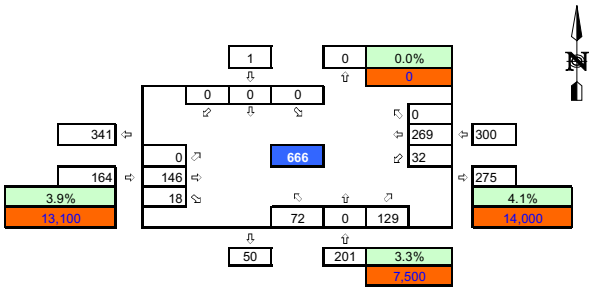
Int 30 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **I-5 SB Off-ramp**
E/W Street: **National Ave**
Intersection #: 30
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

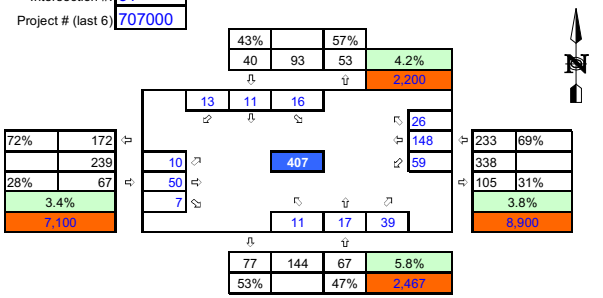
Scenario: **2030 Conditions**
N/S Street: **I-5 SB Off-ramp**
E/W Street: **National Ave**



LEGEND
Existing K-Factor: xx%
ADT Volume: xx

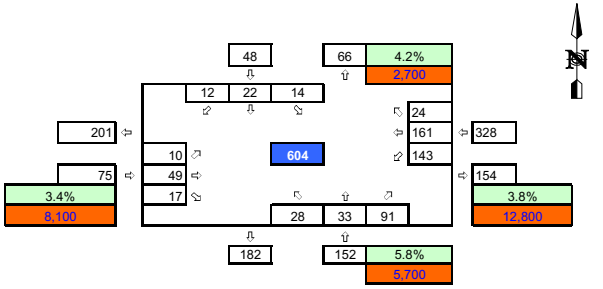
Int 31 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **26th St**
E/W Street: **Main St**
Intersection #: 31
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **26th St**
E/W Street: **Main St**

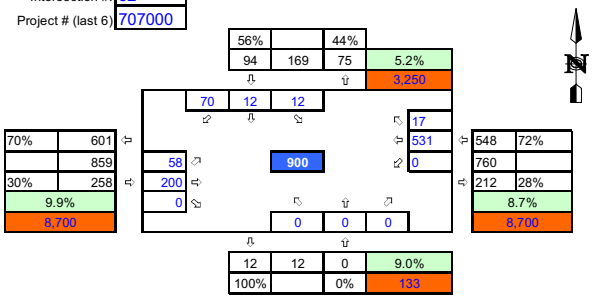


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

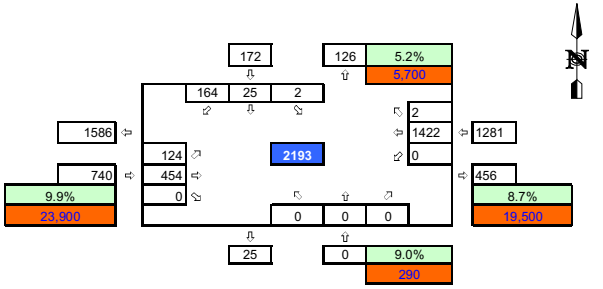
Int 32 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Schley St**
E/W Street: **Harbor Dr**
Intersection #: 32
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

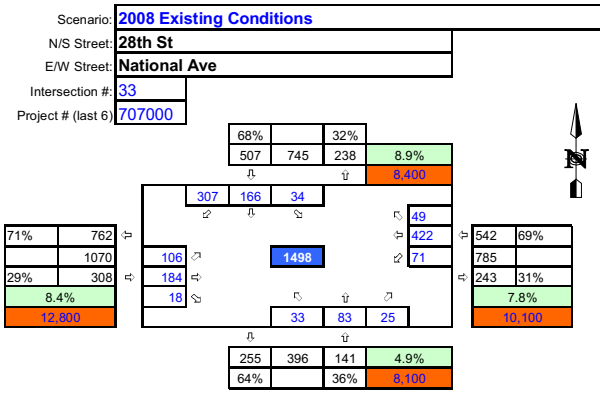
Scenario: **2030 Conditions**
N/S Street: **Schley St**
E/W Street: **Harbor Dr**



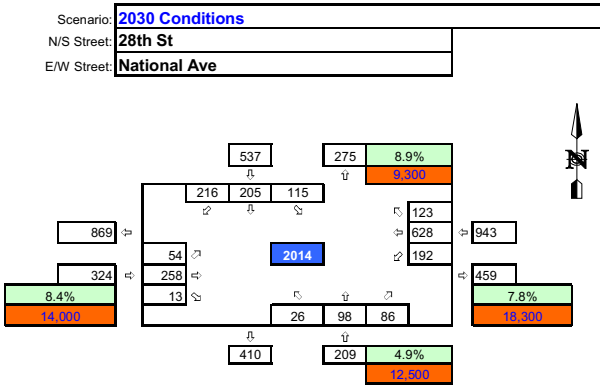
LEGEND

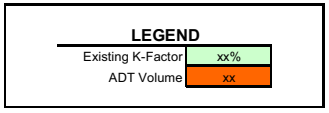
Existing K-Factor	xx%
ADT Volume	xx

Int 33 AM Peak Volumes

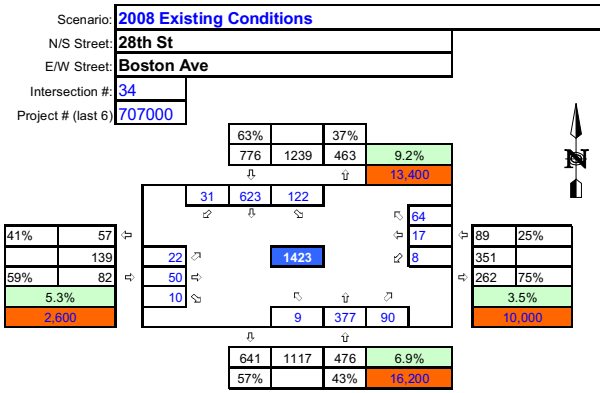


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

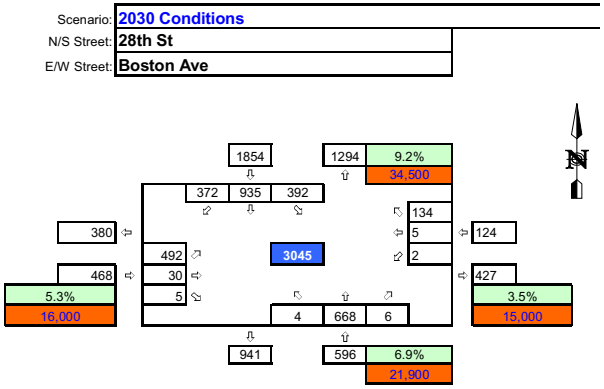


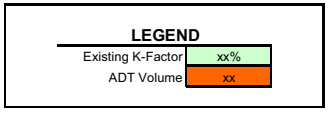


Int 34 AM Peak Volumes



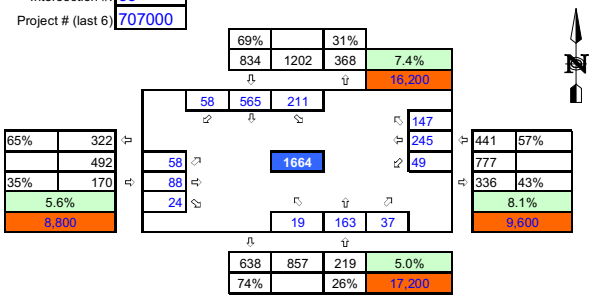
Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.





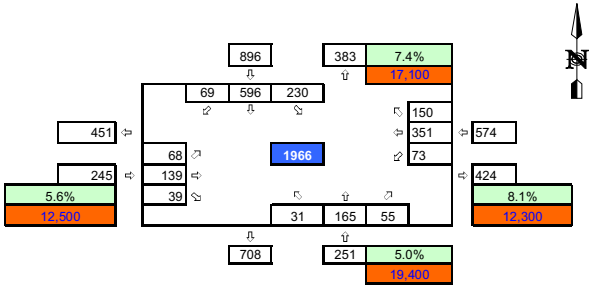
Int 35 AM Peak Volumes

Scenario: 2008 Existing Conditions
N/S Street: 28th St
E/W Street: Main St
Intersection #: 35
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: 2030 Conditions
N/S Street: 28th St
E/W Street: Main St

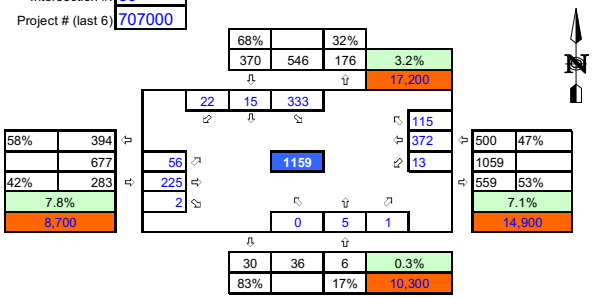


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

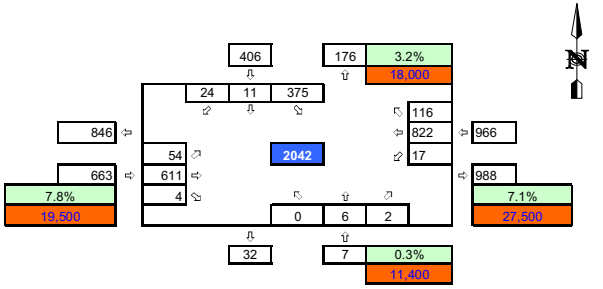
Int 36 AM Peak Volumes

Scenario: 2008 Existing Conditions
N/S Street: 28th St
E/W Street: Harbor Dr
Intersection #: 36
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: 2030 Conditions
N/S Street: 28th St
E/W Street: Harbor Dr

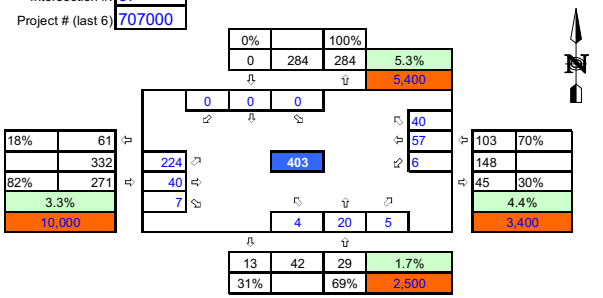


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

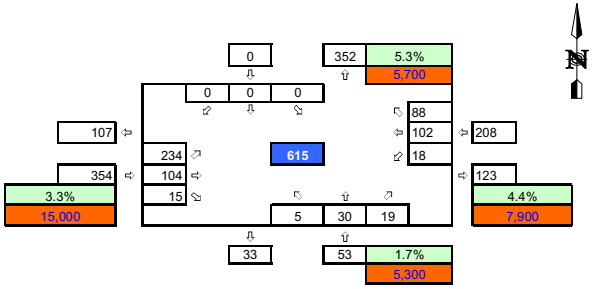
Int 37 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **29th St**
E/W Street: **Boston Ave**
Intersection #: 37
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **29th St**
E/W Street: **Boston Ave**

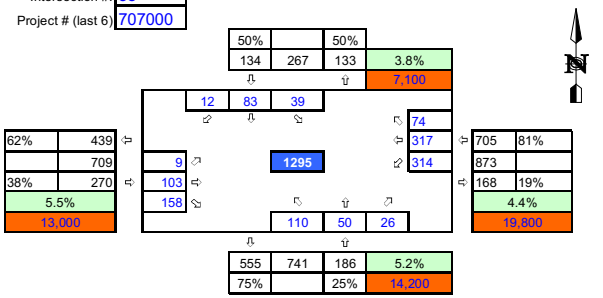


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

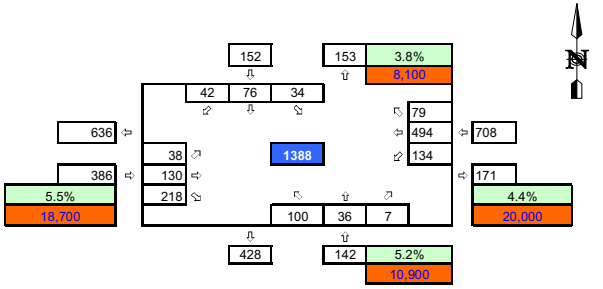
Int 38 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **32nd St**
E/W Street: **Main St**
Intersection #: 38
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **32nd St**
E/W Street: **Main St**



LEGEND

Existing K-Factor	xx%
ADT Volume	xx

Int 39 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **32nd St**
E/W Street: **Wabash Blvd**
Intersection #: 39
Project # (last 6) 707000

Approach	Values
North leg (top)	0% / — / 0%
North leg volumes	0 / 0 / 0 / 0.0% / 8,900
Southbound movements	0 / 0 / 0
Westbound movements (R / T / L)	0 / 0 / 0
East leg	0 0% / 0 / 0 0% / 0.0% / 8,900
West leg	0% 0 / 0 / 0% 0 / 0.0% / 6,033
Eastbound movements (L / T / R)	0 / 0 / 0
Intersection total	0
Northbound movements	0 / 0 / 0
South leg volumes	0 / 0 / 0 / 0.0%
South leg (bottom)	0% / — / 0% / 15,400

Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **32nd St**
E/W Street: **Wabash Blvd**

Approach	Values
North leg	0 / 0 / 0.0% / 13,200
Southbound movements	0 / 0 / 0
Westbound movements (R / T / L)	0 / 0 / 0
East leg	0 / 0 / 0.0% / 17,000
West leg	0 / 0 / 0.0% / 9,100
Eastbound movements (L / T / R)	0 / 0 / 0
Intersection total	0
Northbound movements	0 / 0 / 0
South leg	0 / 0 / 0.0% / 25,500

LEGEND

Existing K-Factor	xx%
ADT Volume	xx

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Int 40 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **32nd St**
E/W Street: **Harbor Dr**
Intersection #: 40
Project # (last 6) 707000

Approach	Values
North leg (top)	67% / — / 33%
North leg volumes	964 / 1439 / 475 / 10.0% / 14,400
Southbound movements	136 / 739 / 89
Westbound movements (R / T / L)	276 / 316 / 207
East leg	799 76% / 1048 / 249 24% / 5.7% / 18,500
West leg	59% 472 / 806 / 41% 334 / 5.4% / 14,900
Eastbound movements (L / T / R)	94 / 141 / 99
Intersection total	2241
Northbound movements	20 / 105 / 19
South leg volumes	1045 / 1189 / 144 / 6.1%
South leg (bottom)	88% / — / 12% / 19,500

Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **32nd St**
E/W Street: **Harbor Dr**

Approach	Values
North leg	1118 / 701 / 10.0% / 18,700
Southbound movements	340 / 588 / 190
Westbound movements (R / T / L)	455 / 636 / 139
East leg	1230 / 488 / 5.7% / 31,900
West leg	991 / 550 / 5.4% / 27,500
Eastbound movements (L / T / R)	186 / 285 / 79
Intersection total	2986
Northbound movements	15 / 60 / 13
South leg	805 / 87 / 6.1% / 13,200

LEGEND

Existing K-Factor	xx%
ADT Volume	xx

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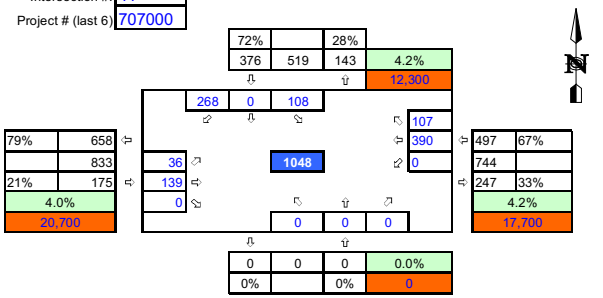
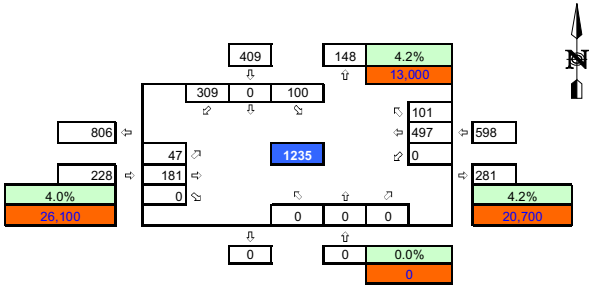
Int 41 AM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **I-15 Ramps**
E/W Street: **Main St**
Intersection #: 41
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **I-15 Ramps**
E/W Street: **Main St**

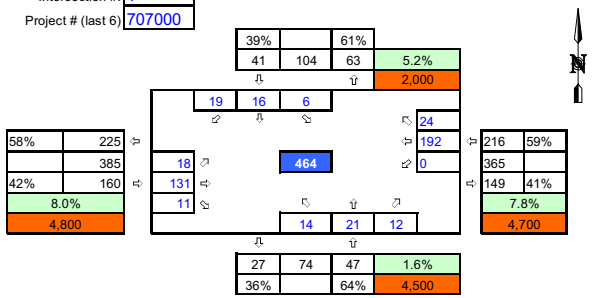


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

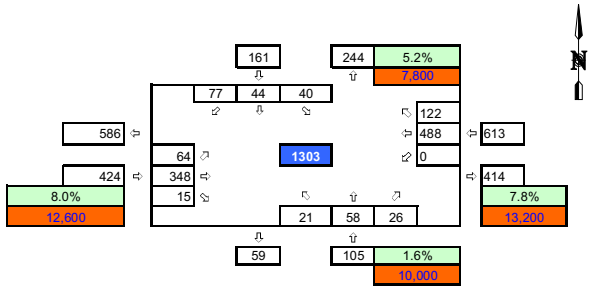
Int 1 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **16th St**
E/W Street: **Commercial St**
Intersection #: 1
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

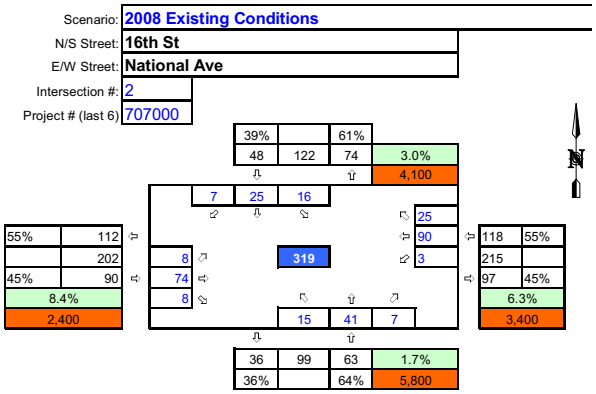
Scenario: **2030 Conditions**
N/S Street: **16th St**
E/W Street: **Commercial St**



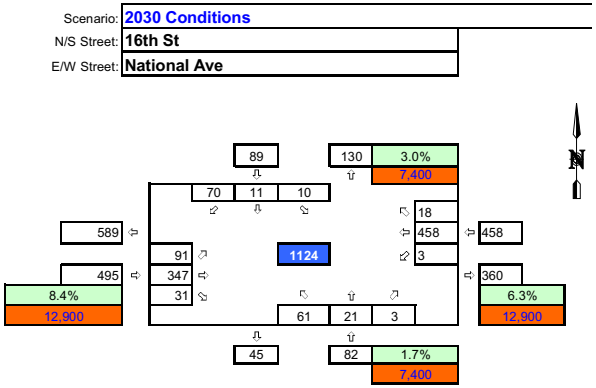
LEGEND

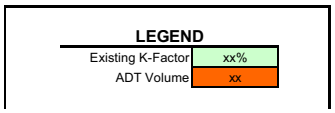
Existing K-Factor	xx%
ADT Volume	xx

Int 2 PM Peak Volumes

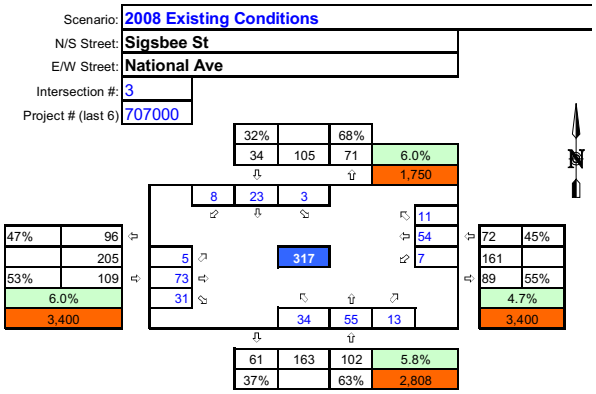


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

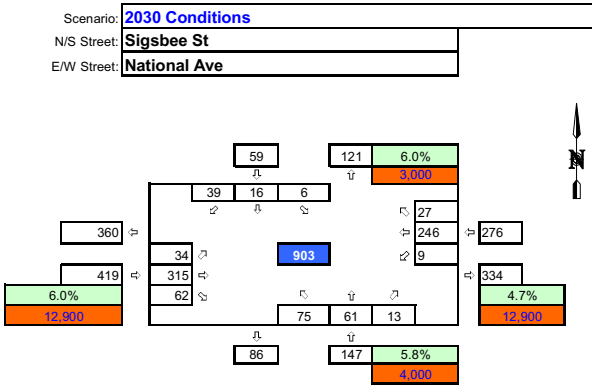


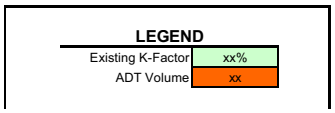


Int 3 PM Peak Volumes

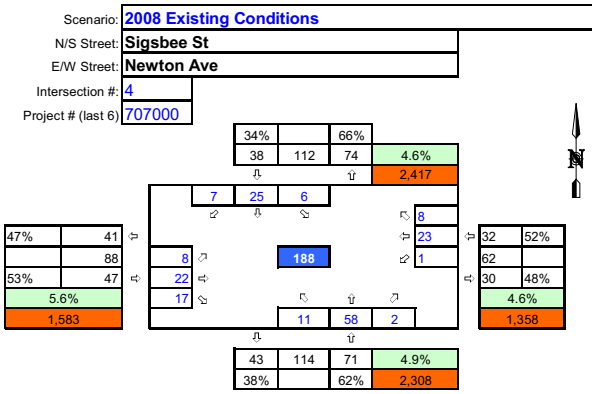


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

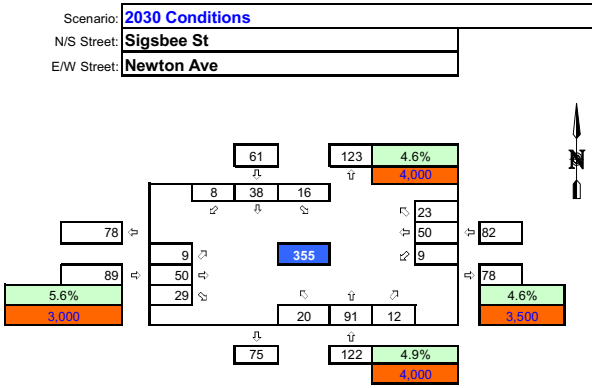


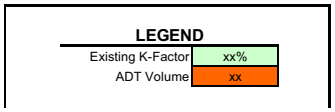


Int 4 PM Peak Volumes

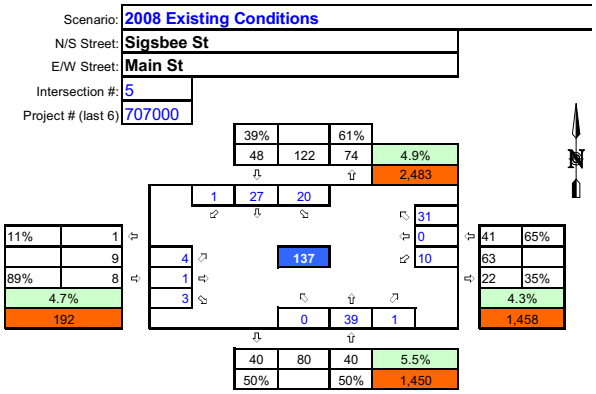


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

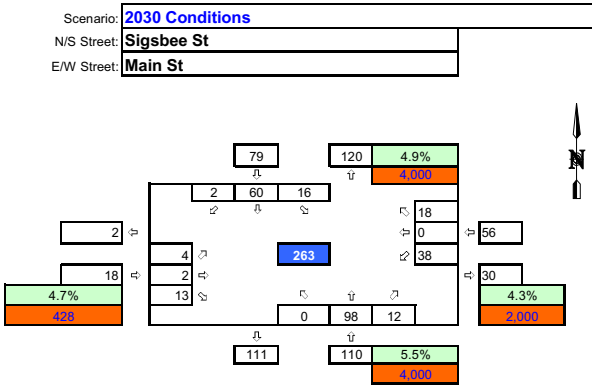


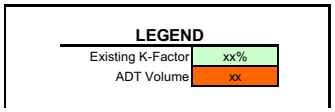


Int 5 PM Peak Volumes



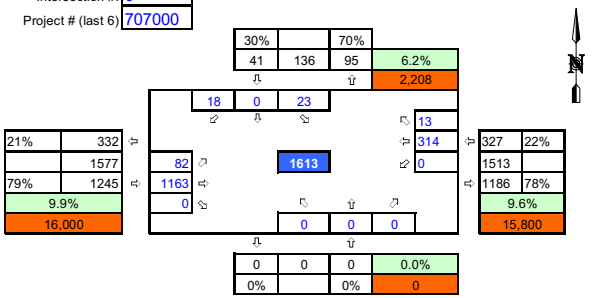
Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.





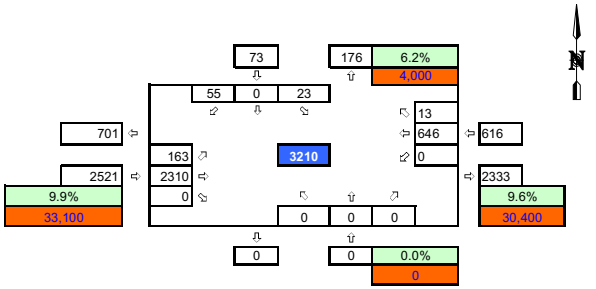
Int 6 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Harbor Dr**
Intersection #: 6
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sigsbee St**
E/W Street: **Harbor Dr**



LEGEND
Existing K-Factor: xx%
ADT Volume: xx

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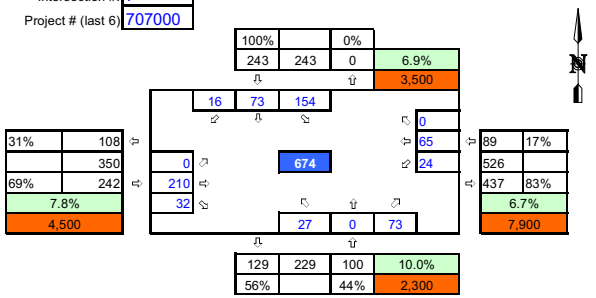
Int 6 PM

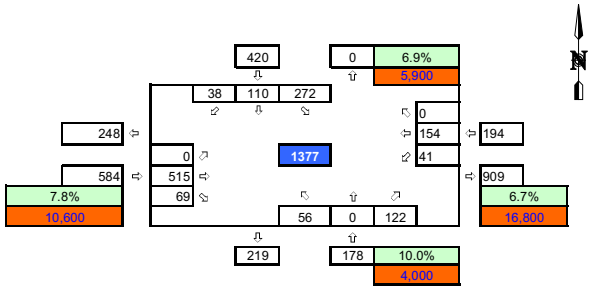
Int 7 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **I-5 SB Off-Ramp / Beardsley St**
E/W Street: **Logan Ave**
Intersection #: 7
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **I-5 SB Off-Ramp / Beardsley St**
E/W Street: **Logan Ave**



LEGEND
Existing K-Factor: xx%
ADT Volume: xx

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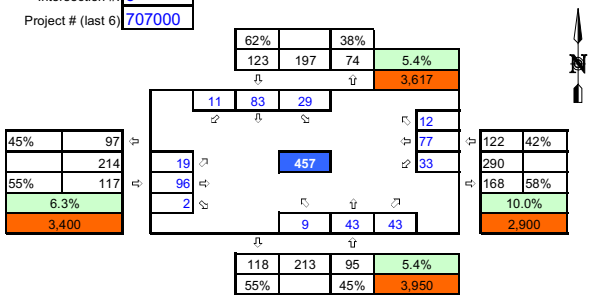
Int 7 PM

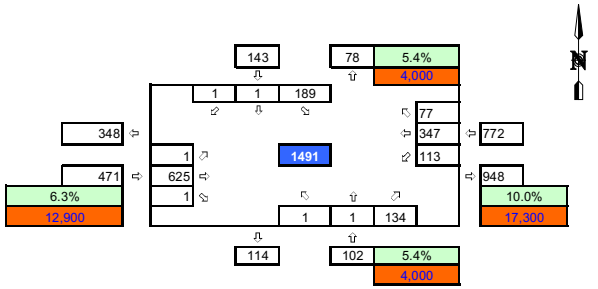
Int 8 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Beardsley St**
E/W Street: **National Ave**
Intersection #: 8
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Beardsley St**
E/W Street: **National Ave**



LEGEND

Existing K-Factor	xx%
ADT Volume	xx

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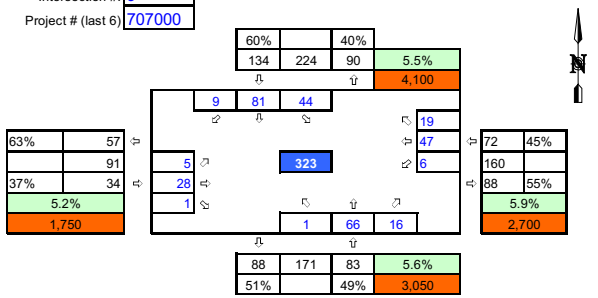
Int 8 PM

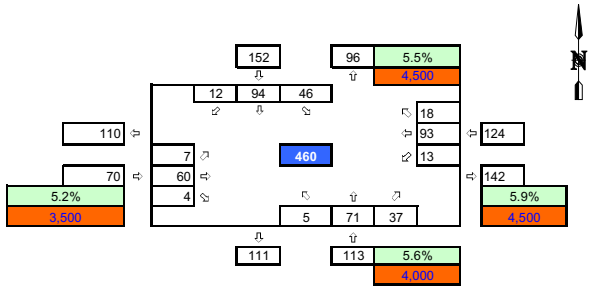
Int 9 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Beardsley St**
E/W Street: **Newton Ave**
Intersection #: 9
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Beardsley St**
E/W Street: **Newton Ave**



LEGEND

Existing K-Factor	xx%
ADT Volume	xx

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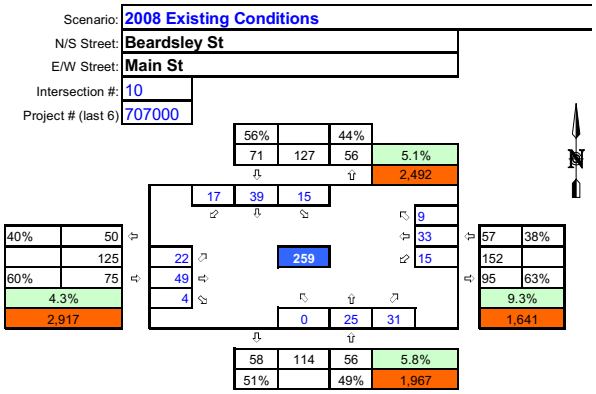
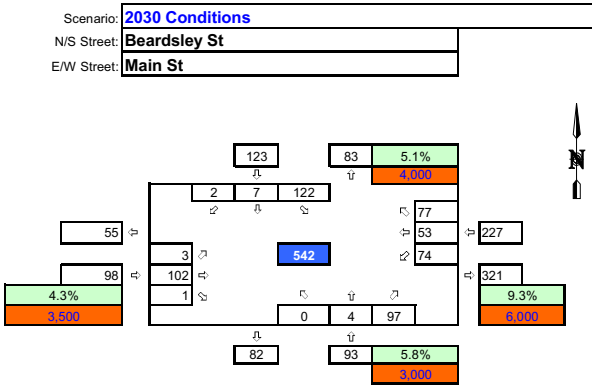
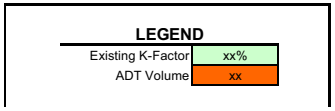
Int 9 PM

Int 10 PM Peak Volumes

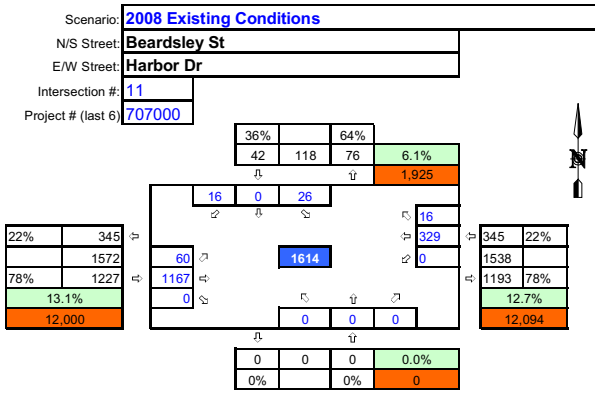


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

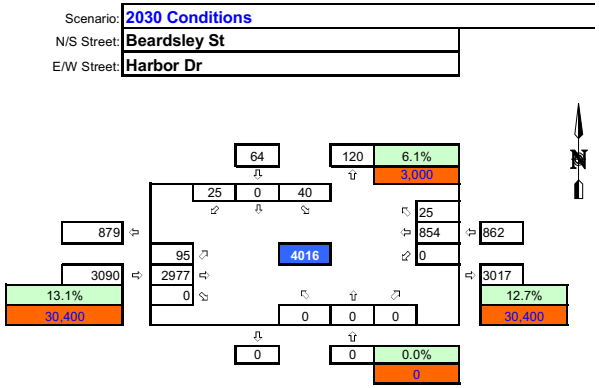


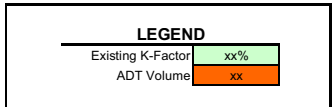


Int 11 PM Peak Volumes

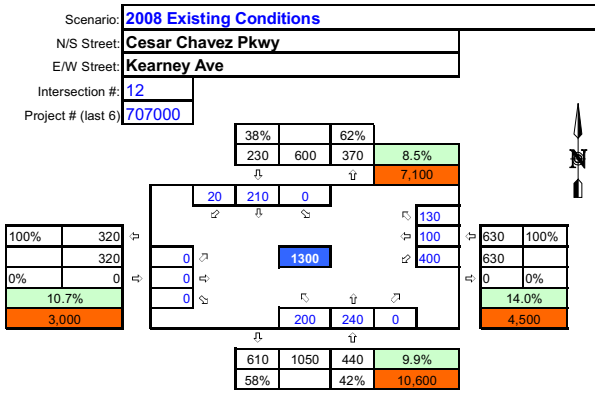


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

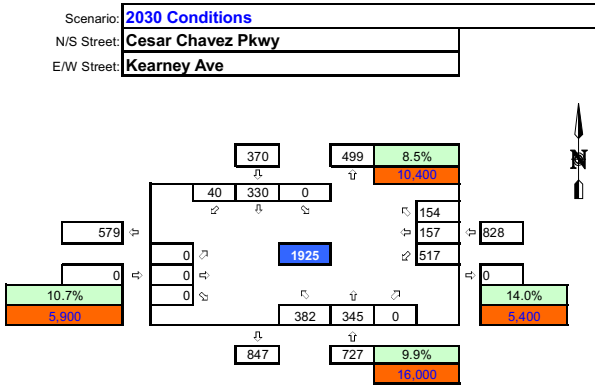


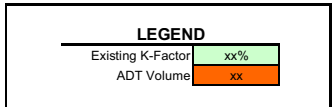


Int 12 PM Peak Volumes

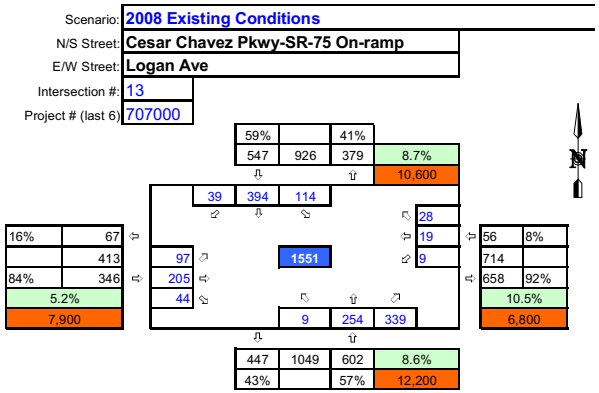


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

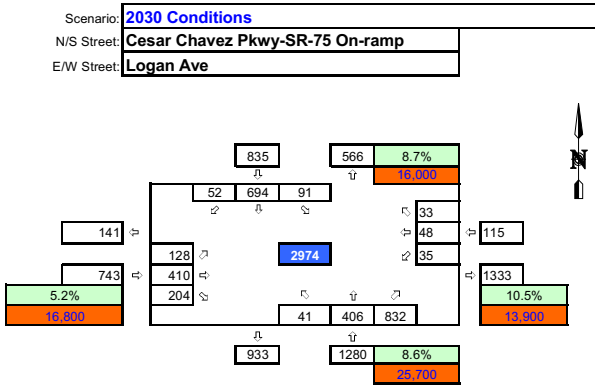


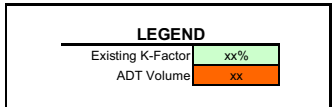


Int 13 PM Peak Volumes

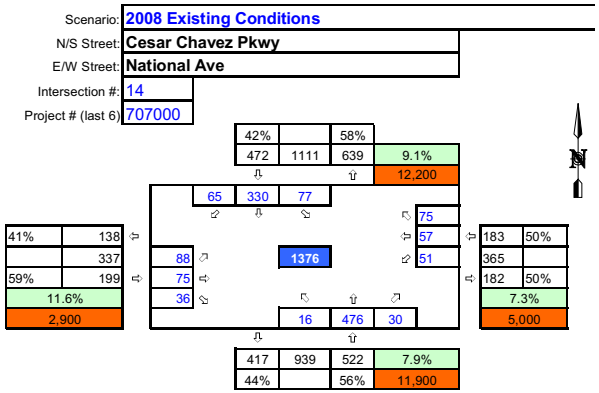


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

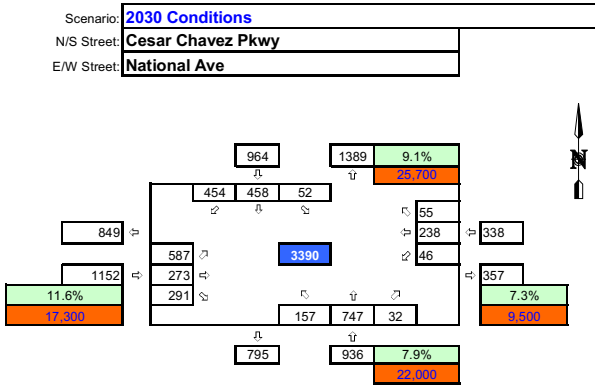


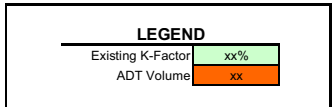


Int 14 PM Peak Volumes

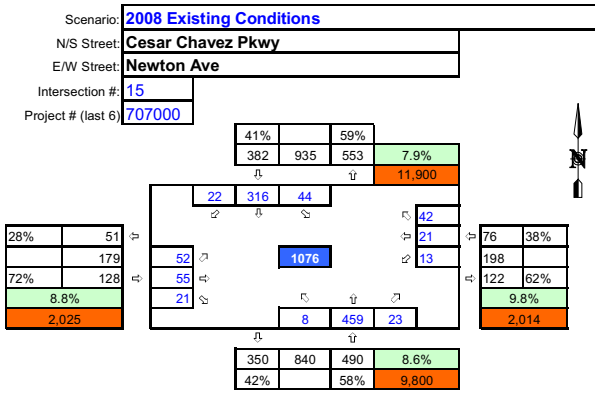


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

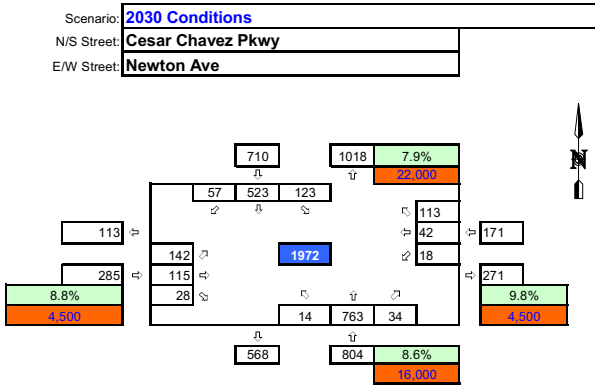


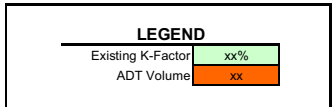


Int 15 PM Peak Volumes

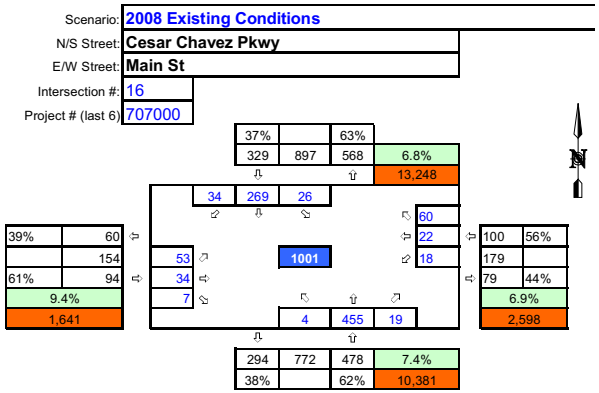


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

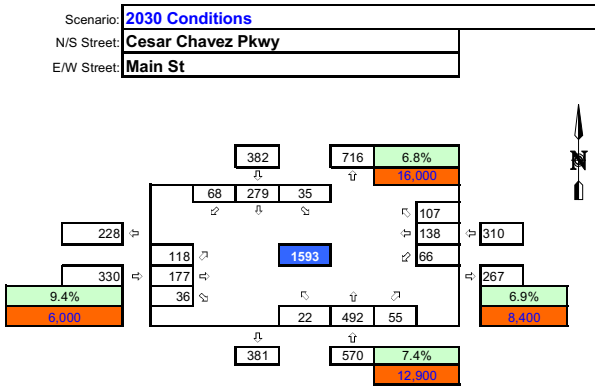


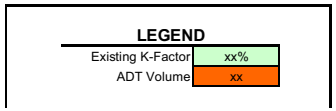


Int 16 PM Peak Volumes

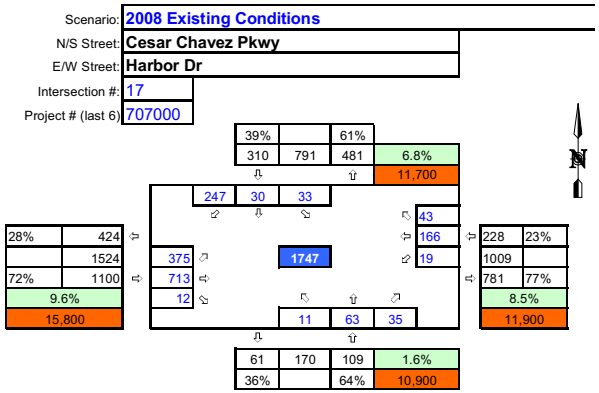


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

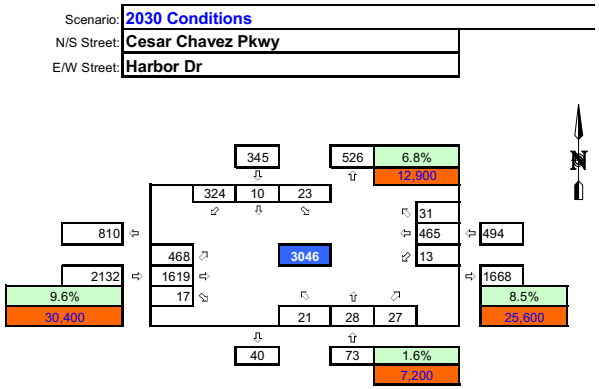


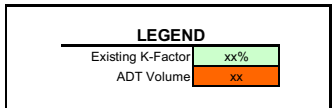


Int 17 PM Peak Volumes

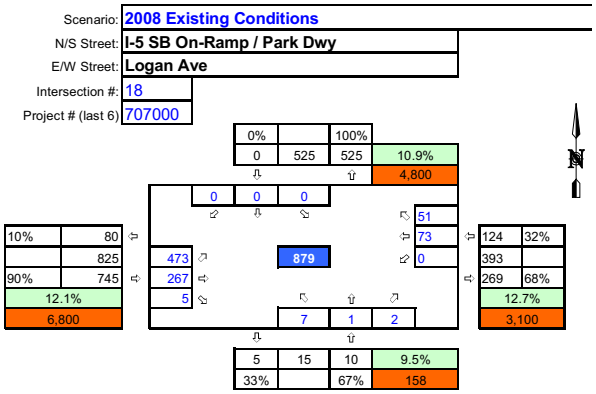


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

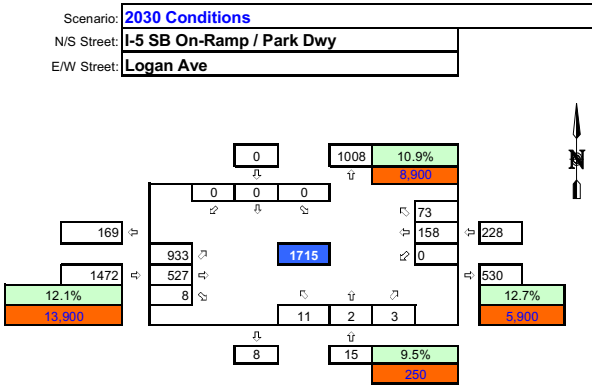


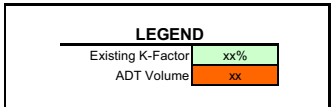


Int 18 PM Peak Volumes

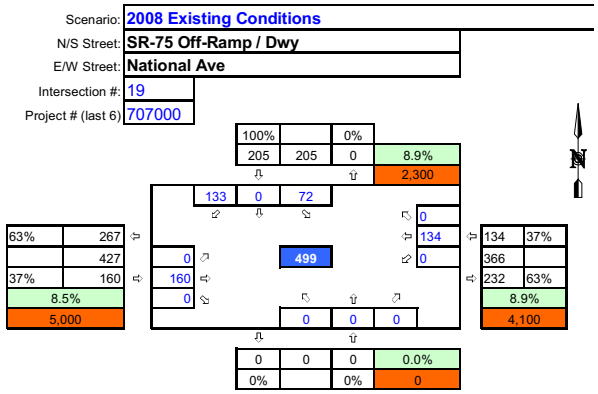


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

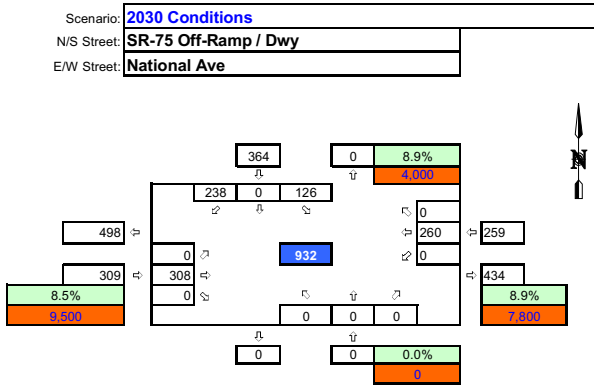


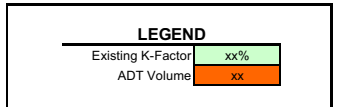


Int 19 PM Peak Volumes

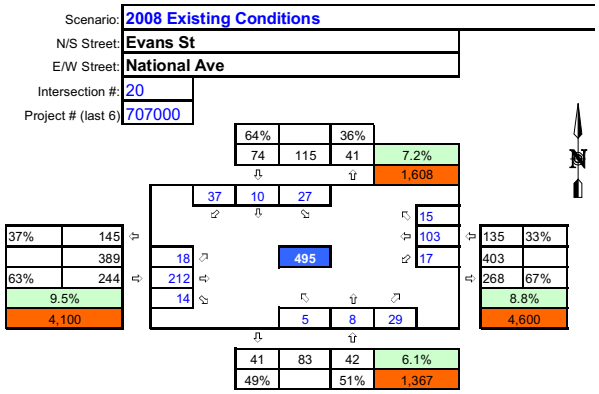


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

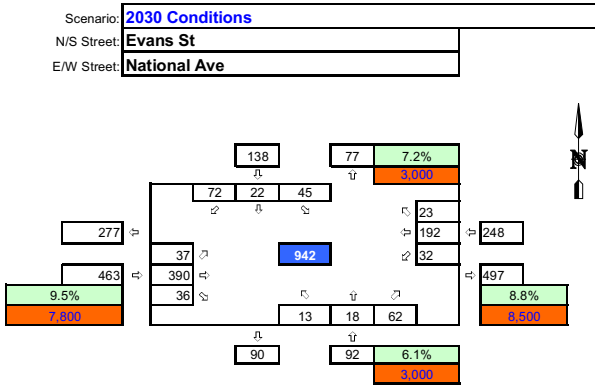


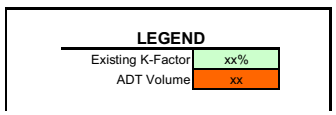


Int 20 PM Peak Volumes

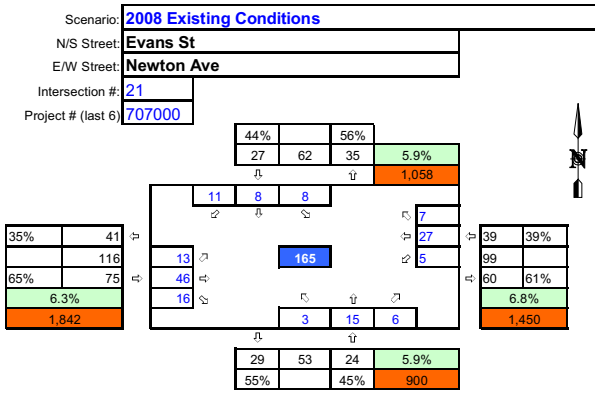


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

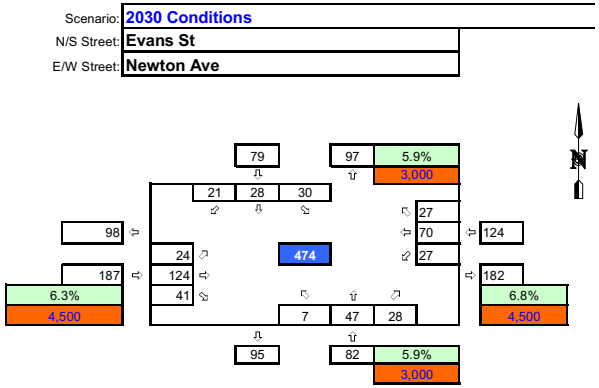


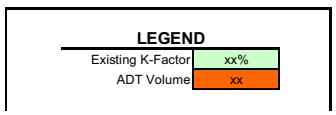


Int 21 PM Peak Volumes

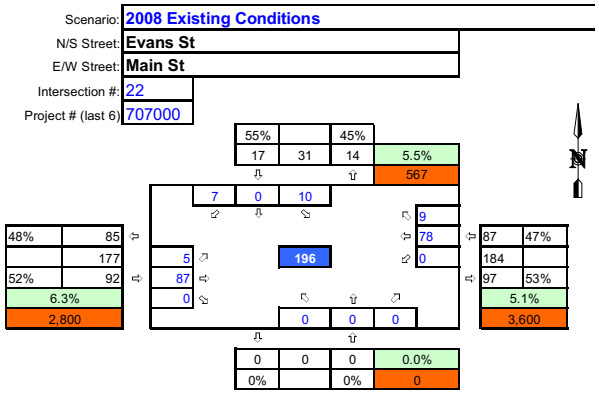


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

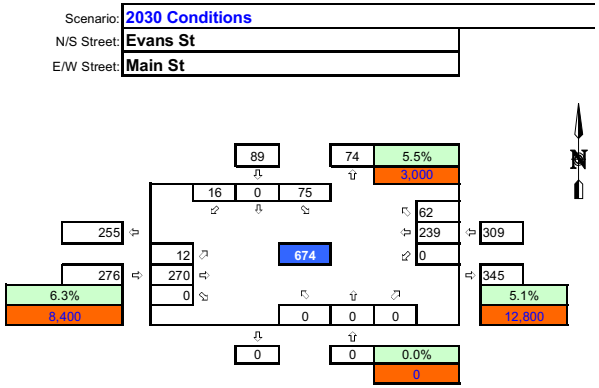


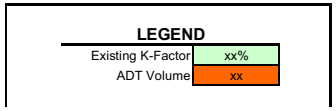


Int 22 PM Peak Volumes

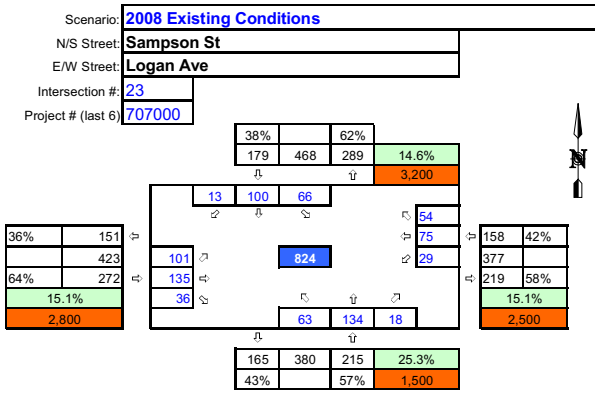


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

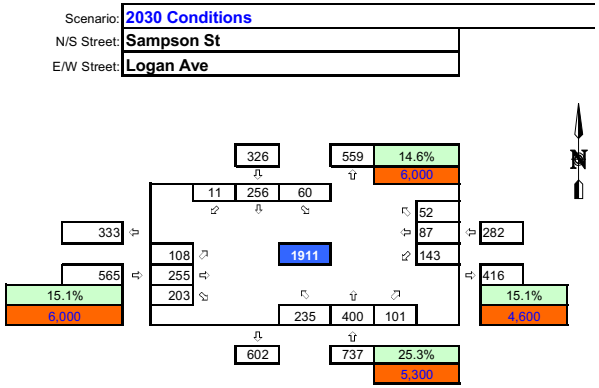


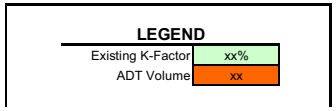


Int 23 PM Peak Volumes

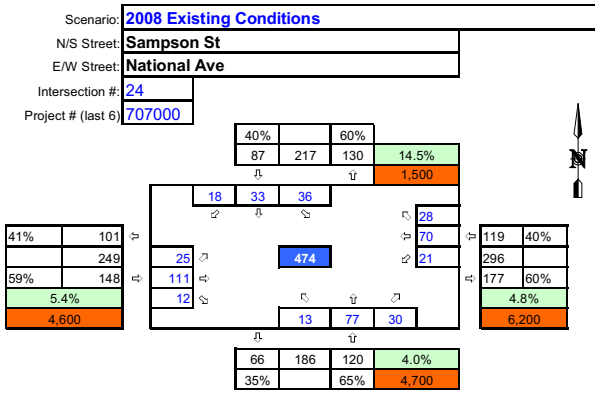


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

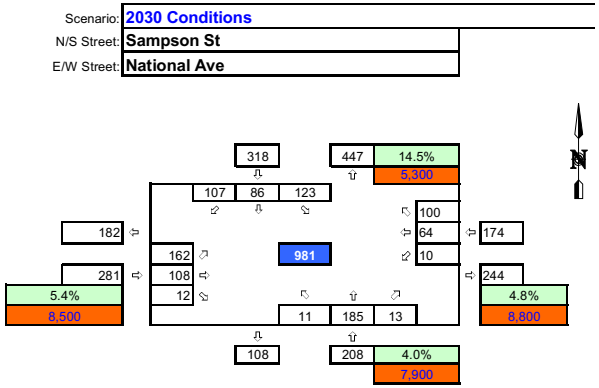


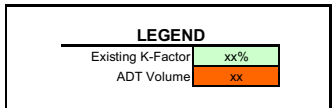


Int 24 PM Peak Volumes

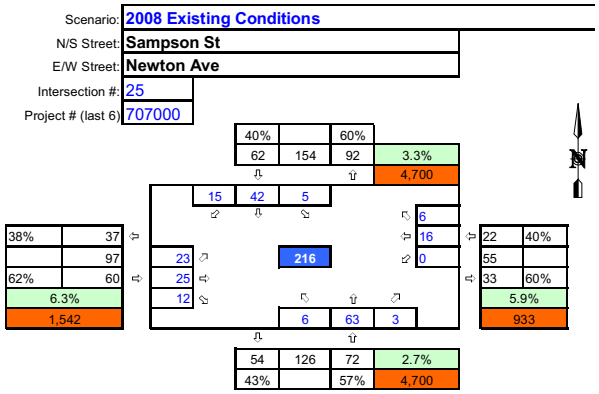


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

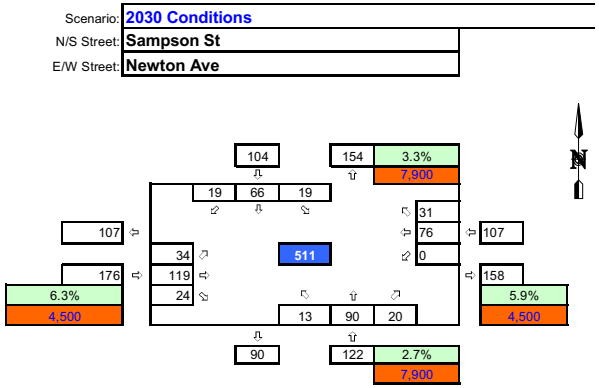


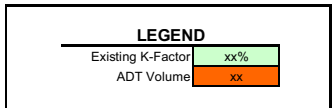


Int 25 PM Peak Volumes

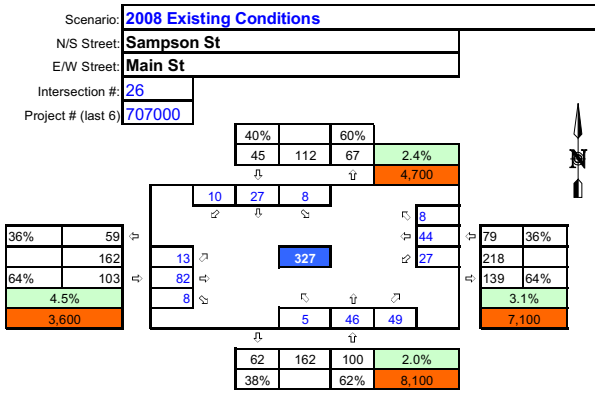


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

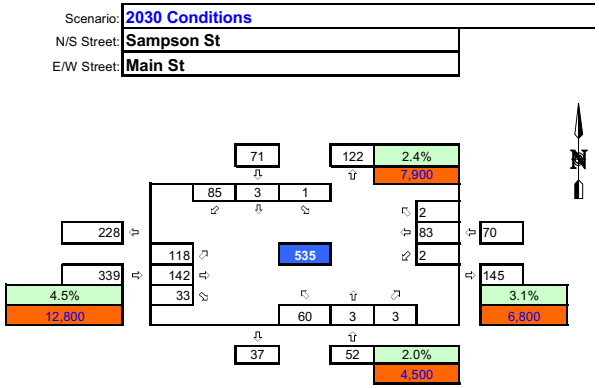


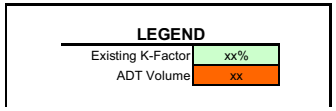


Int 26 PM Peak Volumes

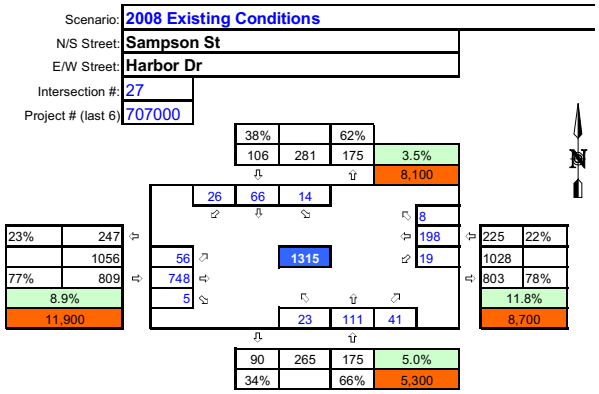


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

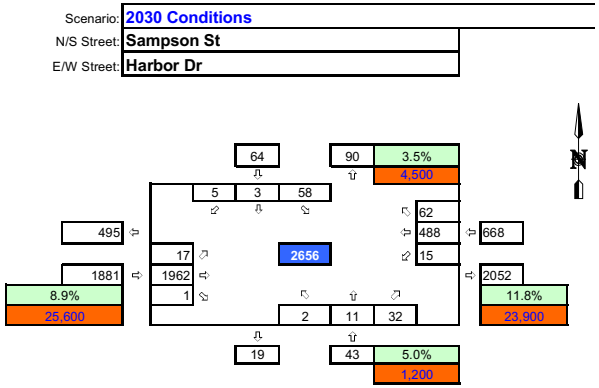


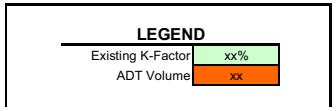


Int 27 PM Peak Volumes



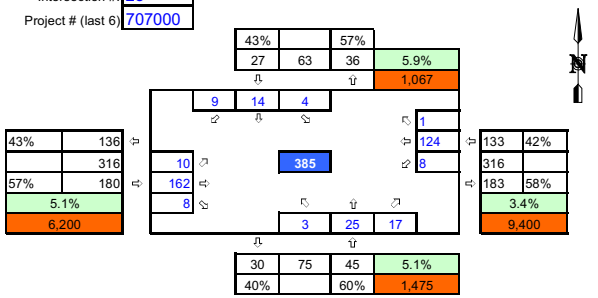
Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.





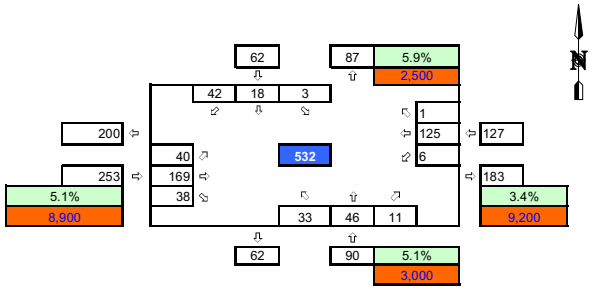
Int 28 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **Sicard St**
E/W Street: **National Ave**
Intersection #: 28
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **Sicard St**
E/W Street: **National Ave**



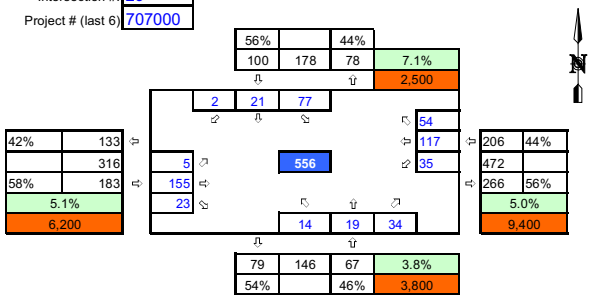
LEGEND

Existing K-Factor	xx%
ADT Volume	xx

K:\SND_TPTO\095707000\Excel\Turn32-Alt1.xlsx
Int 28 PM

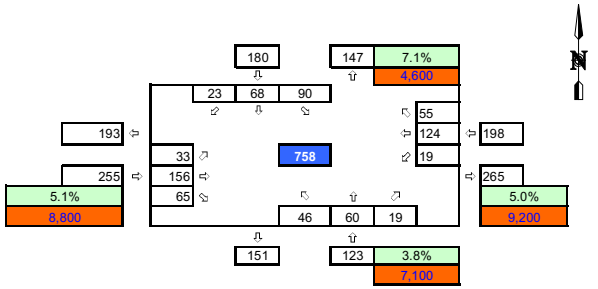
Int 29 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **26th St**
E/W Street: **National Ave**
Intersection #: 29
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **26th St**
E/W Street: **National Ave**

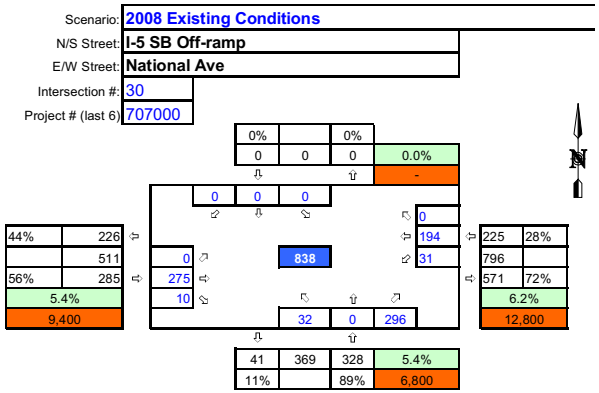


LEGEND

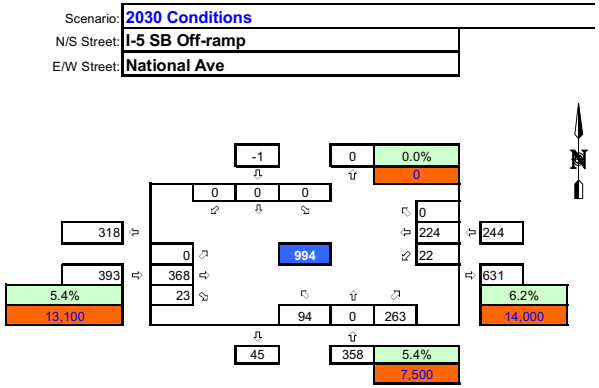
Existing K-Factor	xx%
ADT Volume	xx

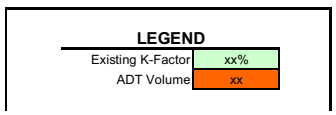
K:\SND_TPTO\095707000\Excel\Turn32-Alt1.xlsx
Int 29 PM

Int 30 PM Peak Volumes

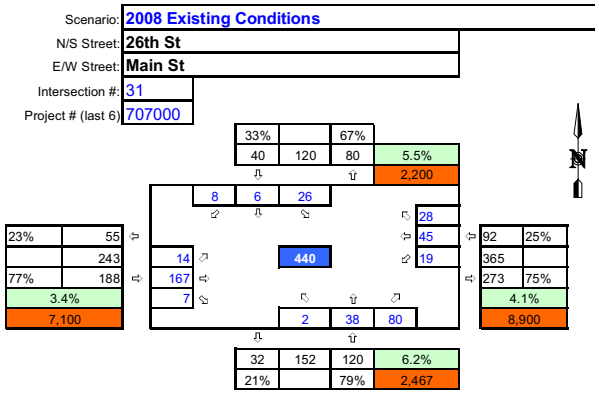


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

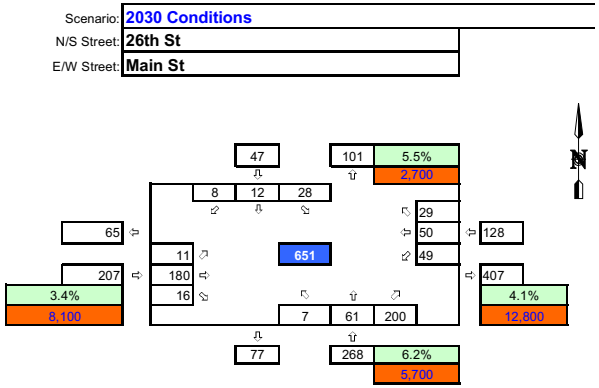


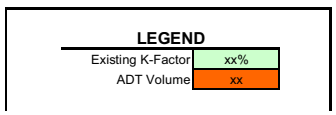


Int 31 PM Peak Volumes

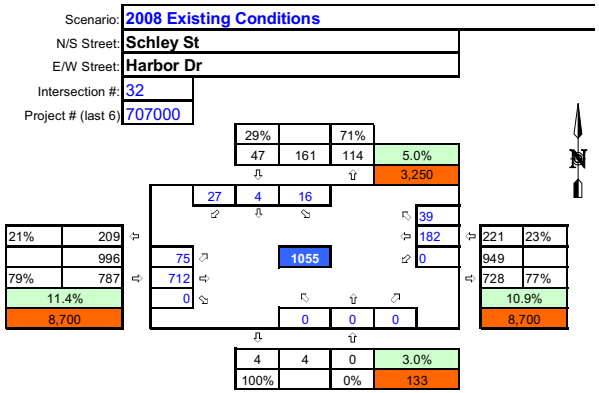


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

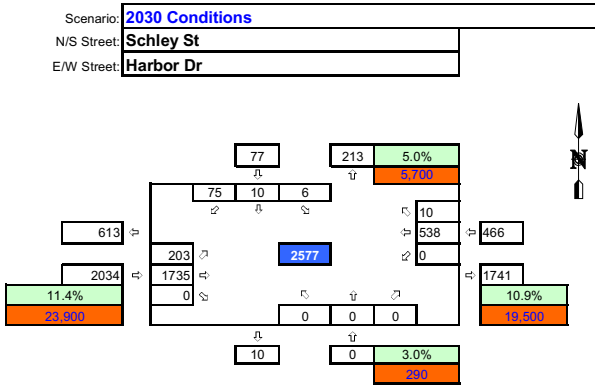


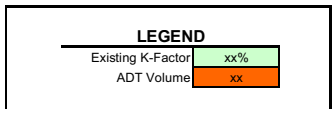


Int 32 PM Peak Volumes

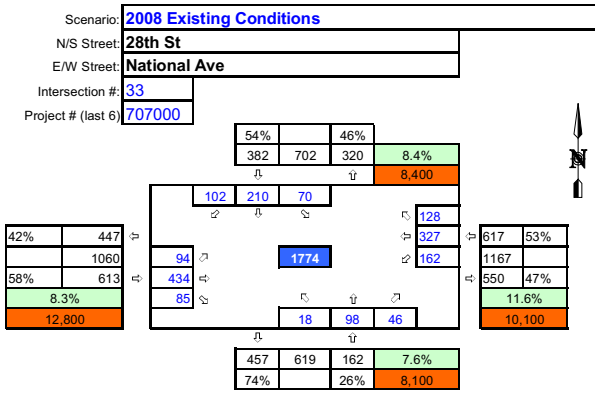


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

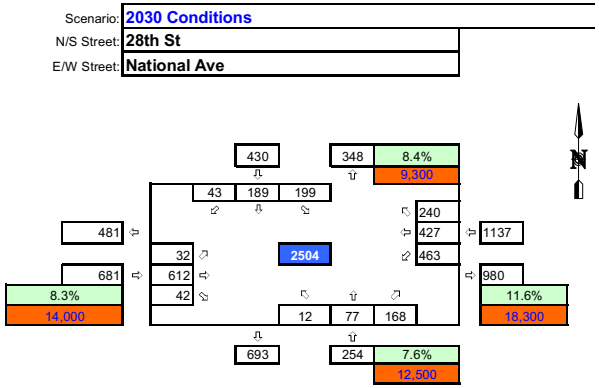


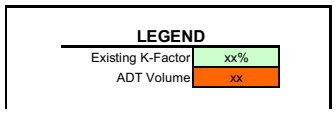


Int 33 PM Peak Volumes

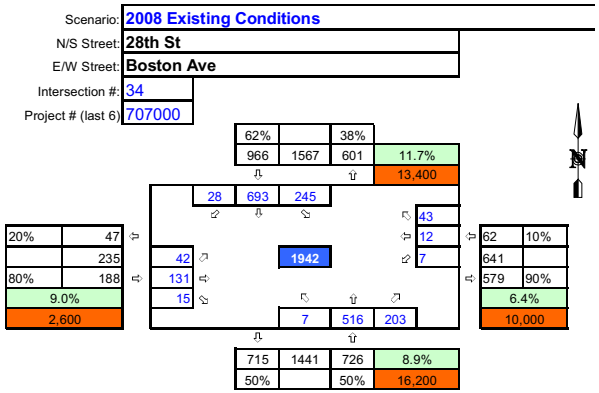


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

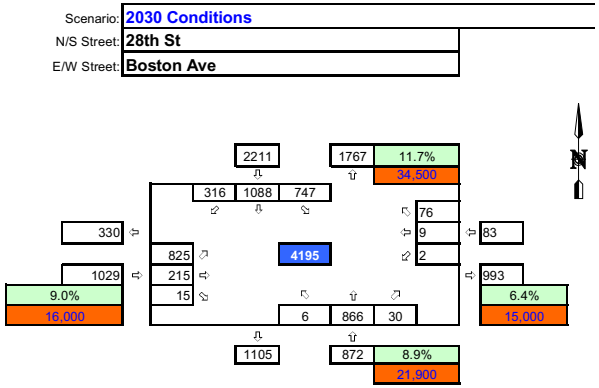


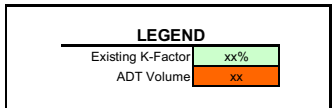


Int 34 PM Peak Volumes

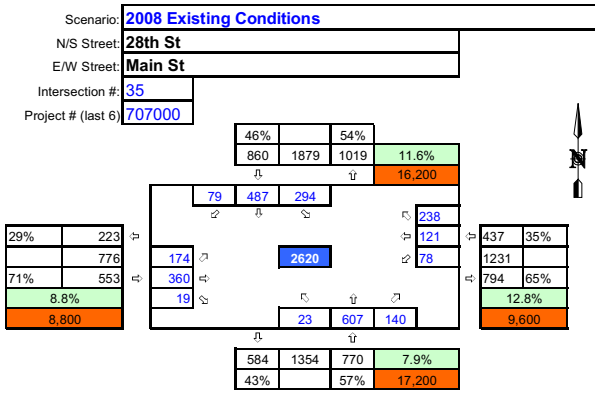


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

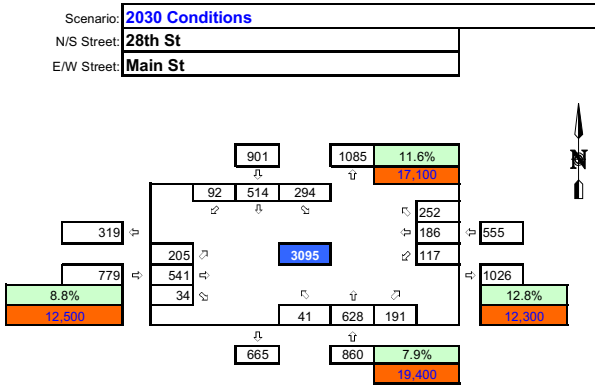


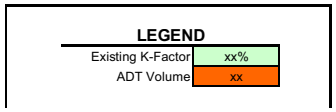


Int 35 PM Peak Volumes

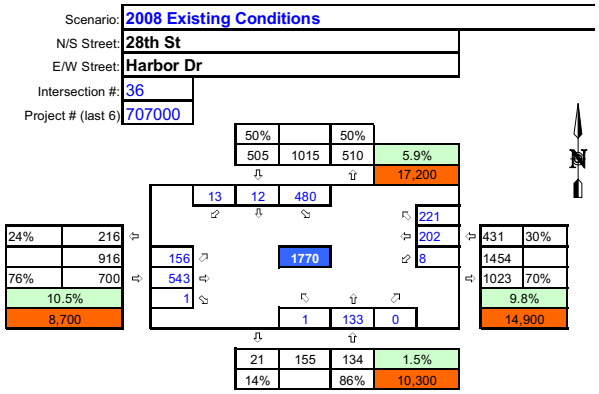


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

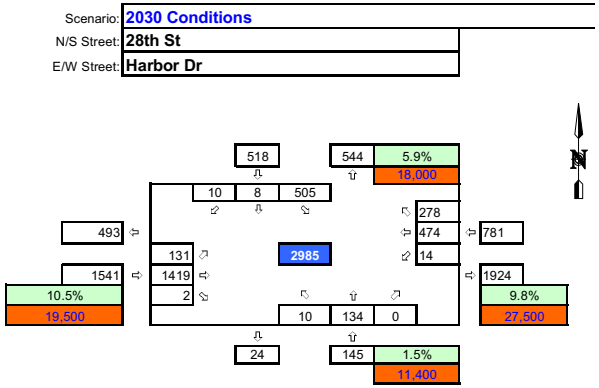


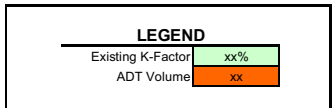


Int 36 PM Peak Volumes

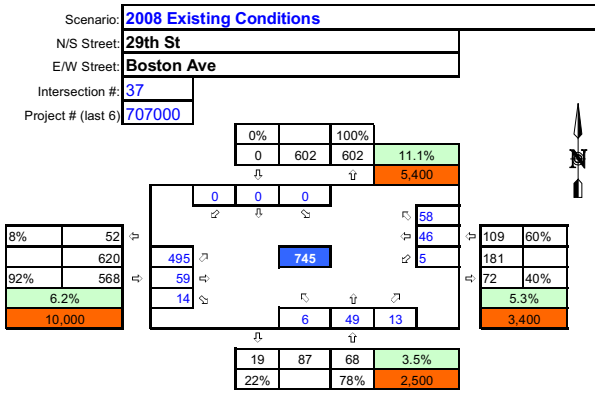


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

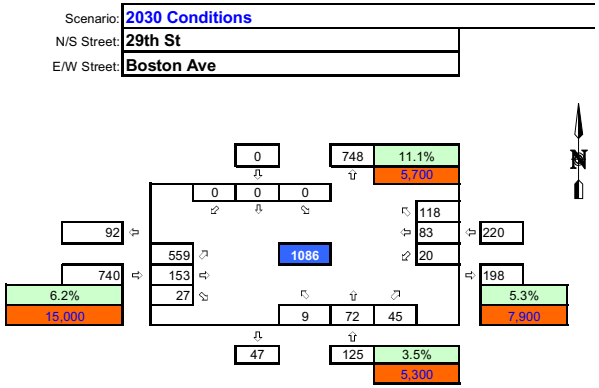


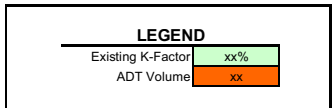


Int 37 PM Peak Volumes

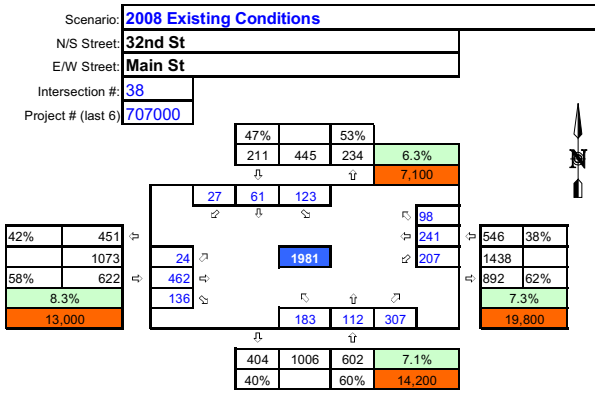


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

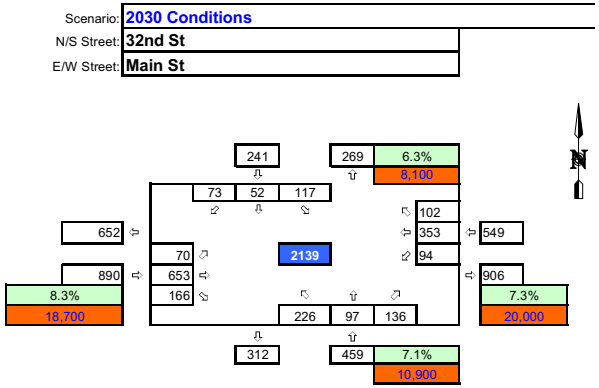


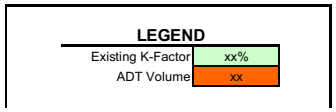


Int 38 PM Peak Volumes

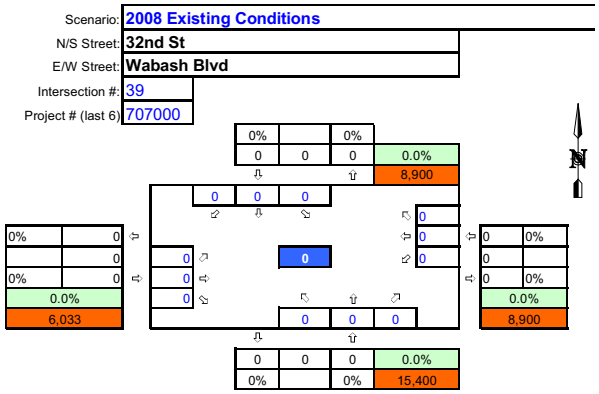


Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

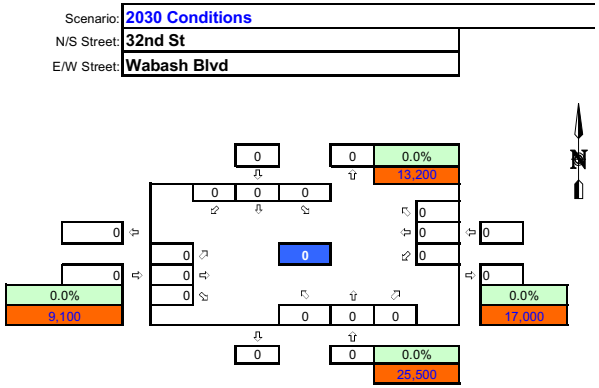


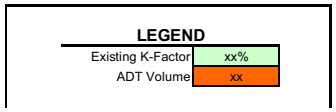


Int 39 PM Peak Volumes



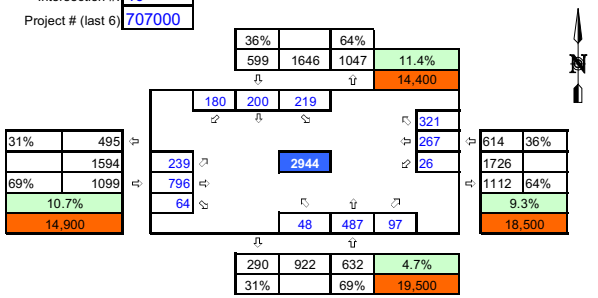
Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.





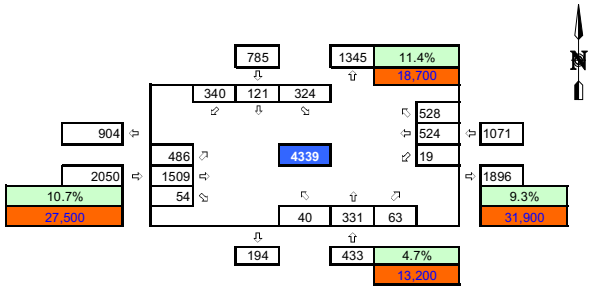
Int 40 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **32nd St**
E/W Street: **Harbor Dr**
Intersection #: 40
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **32nd St**
E/W Street: **Harbor Dr**

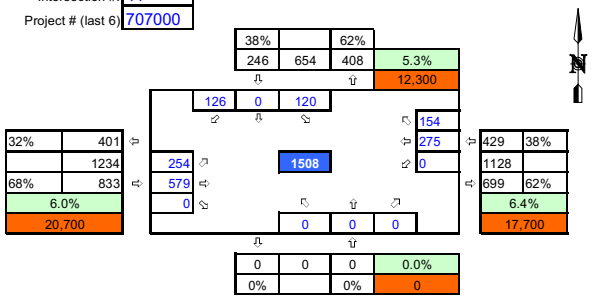


LEGEND

Existing K-Factor	xx%
ADT Volume	xx

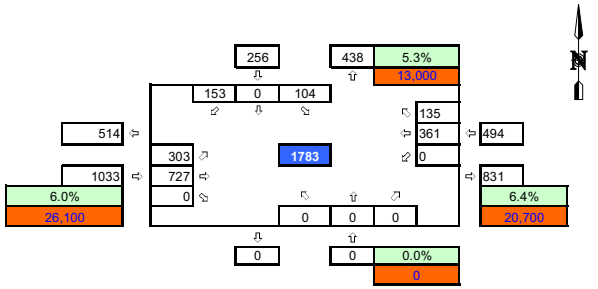
Int 41 PM Peak Volumes

Scenario: **2008 Existing Conditions**
N/S Street: **I-15 Ramps**
E/W Street: **Main St**
Intersection #: 41
Project # (last 6): 707000



Note: Traffic volumes were collected by Traffic Data Services Southwest during February 2005.

Scenario: **2030 Conditions**
N/S Street: **I-15 Ramps**
E/W Street: **Main St**



LEGEND

Existing K-Factor	xx%
ADT Volume	xx

APPENDIX I

- Signal Warrants Worksheets

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 4)

Major Street: Boston Ave Date: 2010-09-22

Minor Street: 29th St-I-5 SB On ramp Scenario: Year 2030

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☐ NO ☒**

APPROACH LANES	One	2 or More	Hour AM	Hour PM
Both Approaches - Major Street	x		623	1076
Higher Approach - Minor Street	x		61	143

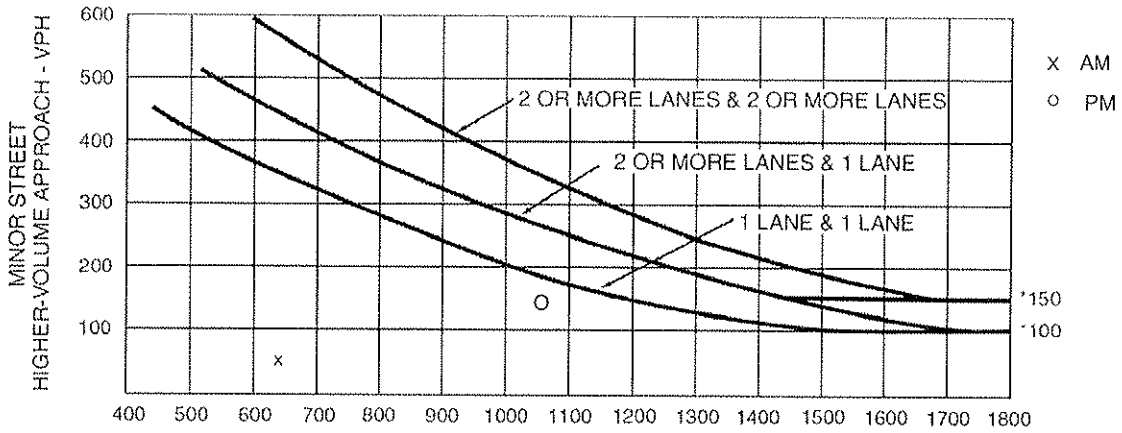
The plotted point falls above the curve in Figure 4C-3.	Yes ☐ No ☒
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

Major Street: Boston Ave Date: 09-22-2010

Minor Street: 29th St - I-5 SB On-ramp Scenario: Year 2030

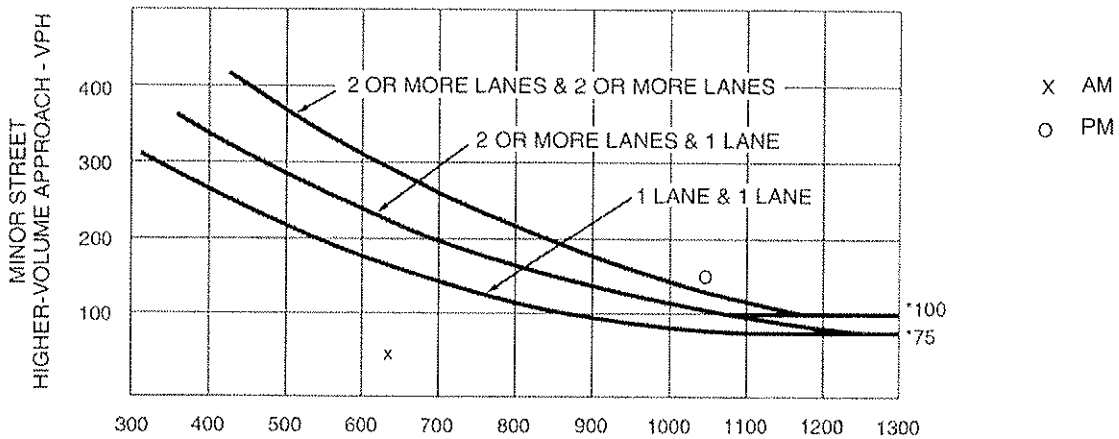


MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 4)

Major Street: Harbor Dr Date: 2010-09-22

Minor Street: Sigsbee St Scenario: Year 2030

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	Hour AM	Hour PM
Both Approaches - Major Street		x	2190	2955
Higher Approach - Minor Street	x		200	160

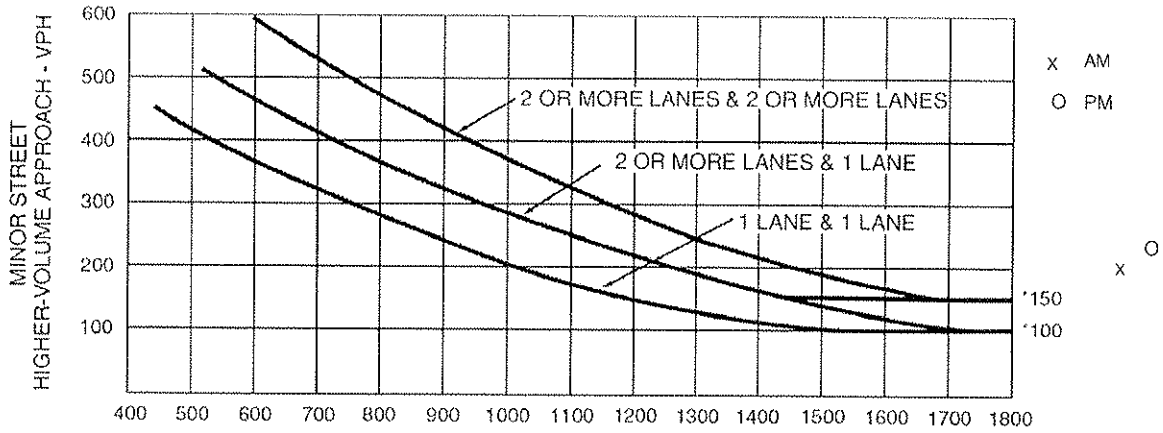
The plotted point falls above the curve in Figure 4C-3.	Yes ☒ No ☐
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☒ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

Major Street: Harbor Dr Date: 09-22-2010

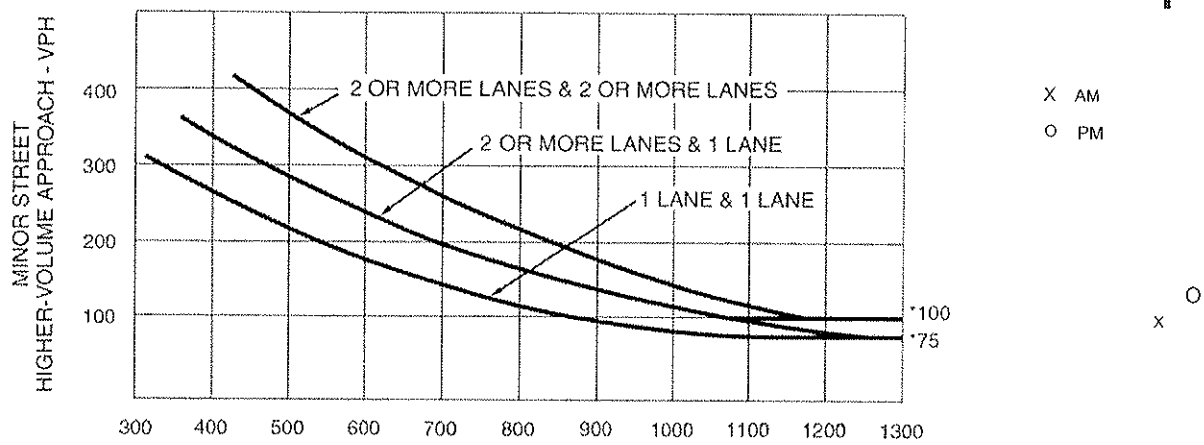
Minor Street Sigsbee St Scenario: Year 2030



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 4)

Major Street: Logan Ave Date: 2010-09-22

Minor Street: Beardsley St / I-5 SB Ramps Scenario: Year 2030

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More				Hour
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☒ NO ☐**

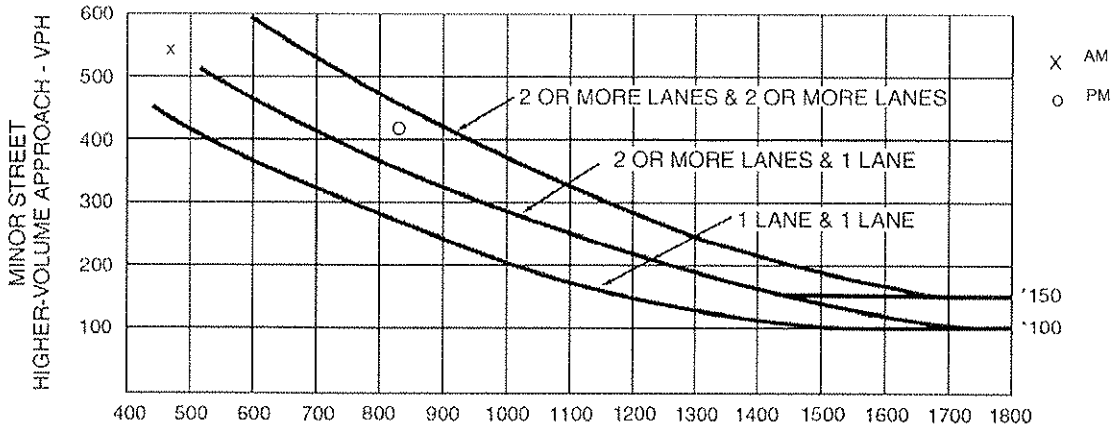
APPROACH LANES	One	2 or More	AM	Hour PM
Both Approaches - Major Street	x		498	802
Higher Approach - Minor Street	x		544	420

The plotted point falls above the curve in Figure 4C-3.	Yes ☒ No ☐
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☒ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

Major Street: Logan Ave
Date: 09-22-2010
Minor Street: Beardsley St / I-5 SB Ramps
Scenario: Year 2030

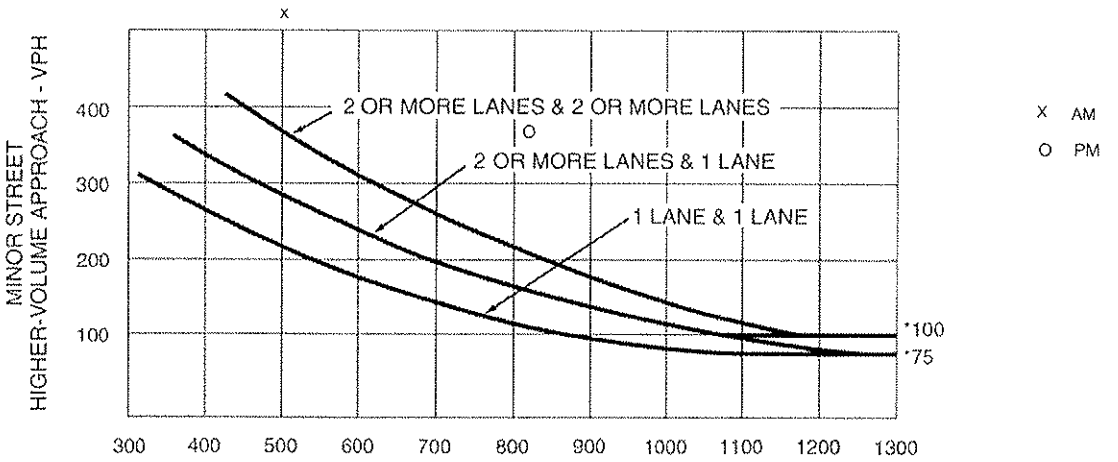


MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 4)

Major Street: Logan Ave Date: 2010-09-22

Minor Street: Sampson St Scenario: Year 2030

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	Hour AM	Hour PM
Both Approaches - Major Street	x		725	854
Higher Approach - Minor Street	x		312	354

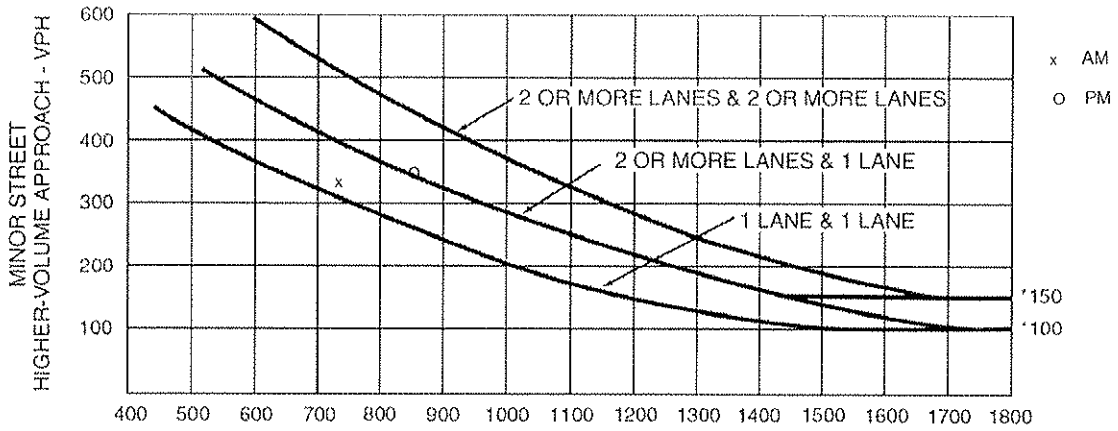
The plotted point falls above the curve in Figure 4C-3.	Yes ☒ No ☐
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☒ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

Major Street: Logan Ave Date: 09-22-2010

Minor Street: Sampson St Scenario: Year 2030

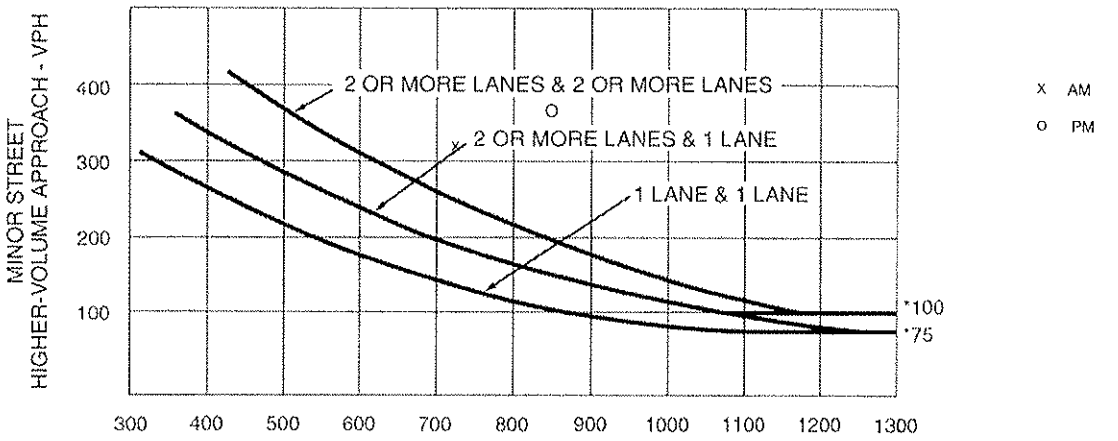


MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 4)

Major Street: National Ave Date: 2010-09-22

Minor Street: 16th St Scenario: Year 2030

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	Hour AM	Hour PM
Both Approaches - Major Street	x		806	955
Higher Approach - Minor Street	x		192	220

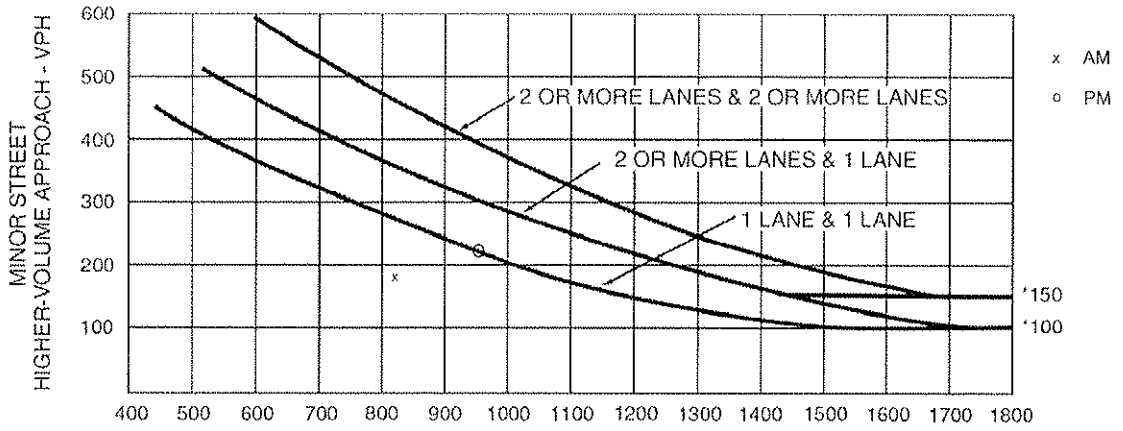
The plotted point falls above the curve in Figure 4C-3.	Yes ☒ No ☐
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☒ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

Major Street: National Ave Date: 09-22-2010

Minor Street: 16th St Scenario: Year 2030

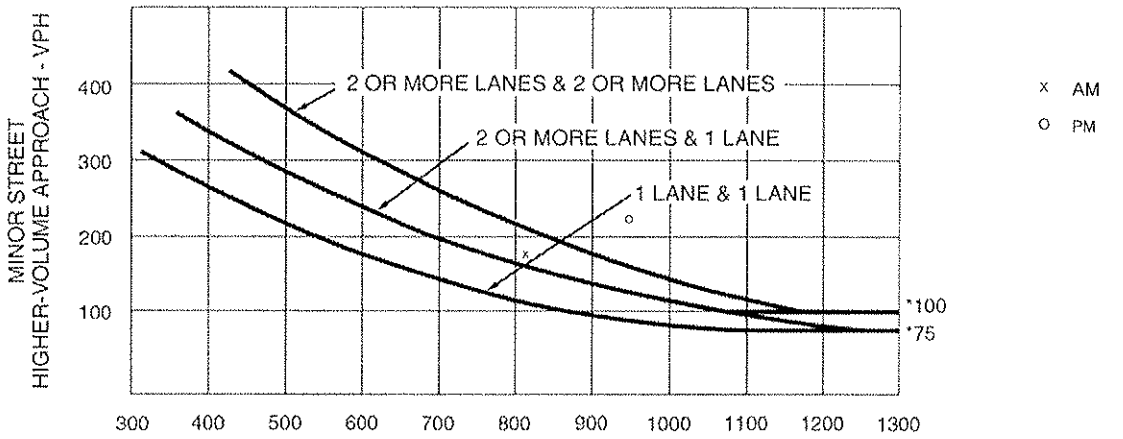


MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 4)

Major Street: National Ave Date: 2010-09-22

Minor Street: Beardsley St Scenario: Year 2030

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	Hour AM	Hour PM
Both Approaches - Major Street	x		996	1204
Higher Approach - Minor Street	x		374	282

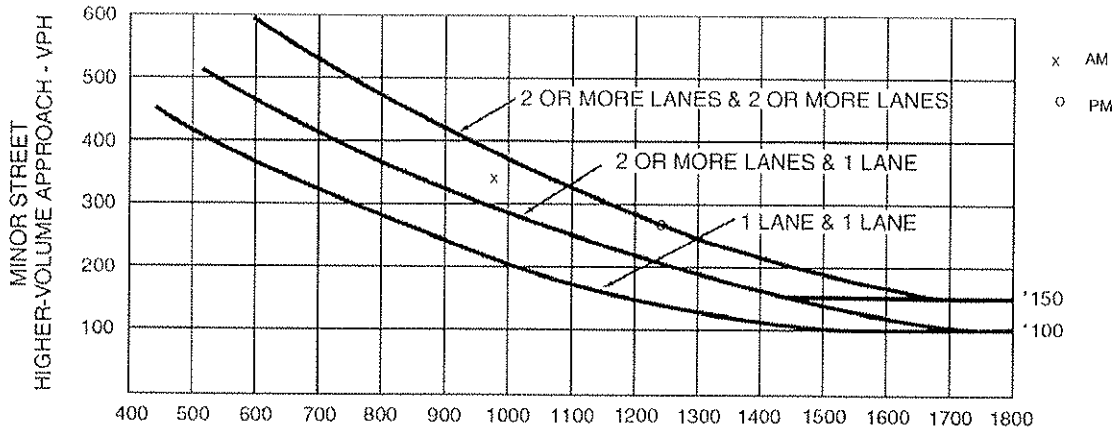
The plotted point falls above the curve in Figure 4C-3.	Yes ☒ No ☐
OR, The plotted point falls above the curve in Figure 4C-4.	Yes ☒ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-3. Warrant 3, Peak Hour

Major Street: National Ave Date: 09-22-2010

Minor Street Beardsley St Scenario: Year 2030

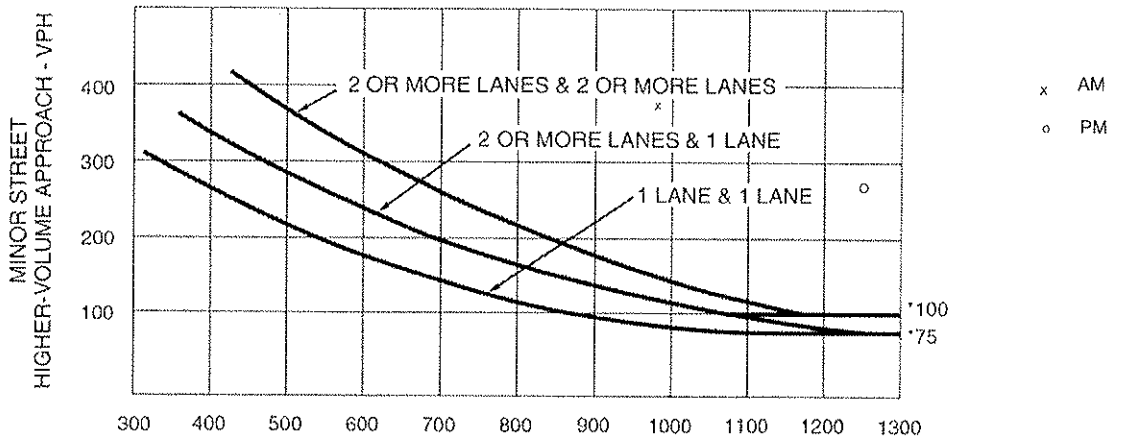


MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

APPENDIX J

- Queuing Analysis Worksheets

Lane Group	EBT	WBT	NBT	SBT	SWR
Lane Group Flow (vph)	127	175	40	111	22
v/c Ratio	0.33	0.47	0.02	0.06	0.14
Control Delay	16.9	21.2	7.2	5.9	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	21.2	7.2	5.9	27.9
Queue Length 50th (ft)	25	41	1	3	5
Queue Length 95th (ft)	65	104	13	20	29
Internal Link Dist (ft)	166	452	369	79	
Turn Bay Length (ft)					
Base Capacity (vph)	703	687	1988	2016	370
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.25	0.02	0.06	0.06

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	61	13	114	133	83
v/c Ratio	0.01	0.15	0.04	0.27	0.13	0.07
Control Delay	8.0	5.6	8.0	7.9	4.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	5.6	8.0	7.9	4.7	4.9
Queue Length 50th (ft)	0	3	1	9	6	4
Queue Length 95th (ft)	4	18	10	38	29	22
Internal Link Dist (ft)		588		570	296	200
Turn Bay Length (ft)						
Base Capacity (vph)	612	837	636	902	1195	1352
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.07	0.02	0.13	0.11	0.06

Intersection Summary

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	433	443	117	114	237
v/c Ratio	0.77	0.78	0.36	0.33	0.35
Control Delay	33.1	32.7	26.6	26.0	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	32.7	26.6	26.0	23.3
Queue Length 50th (ft)	110	110	36	35	37
Queue Length 95th (ft)	#351	#353	94	91	77
Internal Link Dist (ft)		251		313	132
Turn Bay Length (ft)					
Base Capacity (vph)	632	641	538	567	1075
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.69	0.22	0.20	0.22

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	61	200	17	23	40	12	154	159	80	677
v/c Ratio	0.25	0.57	0.09	0.07	0.13	0.10	0.09	0.19	0.44	0.32
Control Delay	27.4	27.5	23.5	23.2	7.8	29.5	8.4	2.9	39.7	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	27.5	23.5	23.2	7.8	29.5	8.4	2.9	39.7	7.9
Queue Length 50th (ft)	28	72	8	10	0	6	7	0	38	41
Queue Length 95th (ft)	44	98	17	20	16	m17	46	9	73	176
Internal Link Dist (ft)		618		587			299			313
Turn Bay Length (ft)										
Base Capacity (vph)	546	724	438	745	642	119	1768	835	236	2090
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.28	0.04	0.03	0.06	0.10	0.09	0.19	0.34	0.32

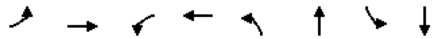
Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	57	63	99	138	16	347	46	542	138
v/c Ratio	0.35	0.25	0.57	0.50	0.04	0.14	0.07	0.44	0.13
Control Delay	36.3	22.9	44.4	25.5	2.0	1.8	2.6	5.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	36.3	22.9	44.4	25.5	2.0	1.8	2.6	5.8	1.4
Queue Length 50th (ft)	26	18	47	39	1	10	6	109	0
Queue Length 95th (ft)	46	38	90	86	m3	15	m5	38	1
Internal Link Dist (ft)		608		356		301		299	
Turn Bay Length (ft)									
Base Capacity (vph)	481	696	517	709	414	2469	666	1238	1085
Starvation Cap Reductn	0	0	0	0	0	0	0	293	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.09	0.19	0.19	0.04	0.14	0.07	0.57	0.13

Intersection Summary

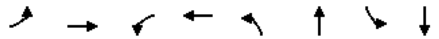
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	50	28	75	11	285	33	573
v/c Ratio	0.32	0.27	0.22	0.38	0.03	0.11	0.04	0.41
Control Delay	39.9	24.6	36.6	25.8	0.9	0.9	1.3	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	39.9	24.6	36.6	25.8	0.9	0.9	1.3	3.5
Queue Length 50th (ft)	19	13	13	18	0	3	1	99
Queue Length 95th (ft)	36	31	29	41	1	6	m3	51
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	495	665	506	671	430	2692	821	1398
Starvation Cap Reductn	0	0	0	0	0	0	0	263
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.08	0.06	0.11	0.03	0.11	0.04	0.50

Intersection Summary

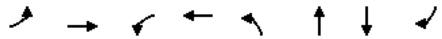
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	51	27	101	8	187	28	498
v/c Ratio	0.22	0.12	0.09	0.23	0.02	0.09	0.04	0.45
Control Delay	22.6	20.1	19.7	12.7	8.1	6.6	4.3	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	22.6	20.1	19.7	12.7	8.1	6.6	4.3	5.5
Queue Length 50th (ft)	22	17	9	18	2	20	5	102
Queue Length 95th (ft)	48	39	26	51	7	33	m7	69
Internal Link Dist (ft)		588		983		201		305
Turn Bay Length (ft)								
Base Capacity (vph)	485	720	515	685	397	2166	721	1106
Starvation Cap Reductn	0	0	0	0	0	0	0	93
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.07	0.05	0.15	0.02	0.09	0.04	0.49

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	127	201	68	615	5	52	144	359
v/c Ratio	0.73	0.21	0.53	0.68	0.04	0.23	0.26	0.51
Control Delay	63.8	12.4	55.5	20.7	29.8	17.9	17.9	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	12.4	55.5	20.8	29.8	17.9	17.9	12.6
Queue Length 50th (ft)	44	26	23	97	2	6	40	41
Queue Length 95th (ft)	#228	46	#127	134	11	34	97	124
Internal Link Dist (ft)		578		501		308	11	
Turn Bay Length (ft)	140		100		150			
Base Capacity (vph)	173	1484	128	1428	435	642	907	974
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	64	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.14	0.53	0.45	0.01	0.08	0.16	0.37

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	17	83	51	126	76	100
v/c Ratio	0.06	0.18	0.16	0.27	0.07	0.10
Control Delay	7.9	7.0	8.6	7.6	5.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	7.0	8.6	7.6	5.3	5.0
Queue Length 50th (ft)	1	4	3	6	4	4
Queue Length 95th (ft)	10	27	26	46	24	27
Internal Link Dist (ft)		581		561	314	281
Turn Bay Length (ft)						
Base Capacity (vph)	628	929	667	925	1371	1306
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.08	0.14	0.06	0.08

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	301	85	602	120	116
v/c Ratio	0.07	0.22	0.41	0.34	0.42	0.19
Control Delay	41.1	12.0	41.4	11.7	29.2	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	12.0	41.4	11.7	29.2	14.3
Queue Length 50th (ft)	3	44	25	70	30	22
Queue Length 95th (ft)	26	67	109	141	107	75
Internal Link Dist (ft)		413		428	186	3
Turn Bay Length (ft)	230		250			
Base Capacity (vph)	309	1742	309	1910	799	1003
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	71	1	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.17	0.28	0.33	0.15	0.12

Intersection Summary

Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	63	217	603	120
v/c Ratio	0.35	0.11	0.39	0.23
Control Delay	35.4	6.1	10.7	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.4	6.1	10.7	9.4
Queue Length 50th (ft)	20	20	95	13
Queue Length 95th (ft)	68	24	66	42
Internal Link Dist (ft)		378	228	1
Turn Bay Length (ft)	75			
Base Capacity (vph)	212	2909	2213	958
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	95	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.07	0.28	0.13

Intersection Summary

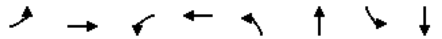
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	132	230	22	92	612	138	30	551
v/c Ratio	0.59	0.17	0.04	0.55	0.86	0.28	0.05	0.88
Control Delay	66.0	25.0	10.6	66.5	45.0	28.7	8.9	45.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	25.0	10.6	66.5	45.0	28.7	8.9	45.8
Queue Length 50th (ft)	87	52	0	60	373	66	0	315
Queue Length 95th (ft)	177	97	16	124	547	133	19	597
Internal Link Dist (ft)		590			82	302		221
Turn Bay Length (ft)								
Base Capacity (vph)	335	1818	824	278	966	685	805	860
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.13	0.03	0.33	0.63	0.20	0.04	0.64

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	28	77	11	106	10	424	101	139	743
v/c Ratio	0.17	0.31	0.06	0.37	0.08	0.21	0.11	0.67	0.28
Control Delay	19.9	18.7	18.0	10.8	24.6	7.0	2.5	39.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	18.7	18.0	10.8	24.6	7.0	2.5	39.0	4.2
Queue Length 50th (ft)	7	16	3	5	3	33	0	38	31
Queue Length 95th (ft)	21	37	11	27	14	61	19	#105	99
Internal Link Dist (ft)		207		577		298			139
Turn Bay Length (ft)									
Base Capacity (vph)	481	689	493	666	123	1997	954	208	2680
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	28
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.11	0.02	0.16	0.08	0.21	0.11	0.67	0.28

Intersection Summary

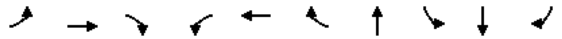
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	70	135	59	472	25	263	243	716
v/c Ratio	0.42	0.16	0.19	0.49	0.12	0.23	1.01	0.40
Control Delay	25.4	13.2	17.6	12.2	31.0	10.7	96.3	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	25.4	13.2	17.6	12.2	31.0	10.7	96.3	10.3
Queue Length 50th (ft)	19	14	15	43	7	20	~94	41
Queue Length 95th (ft)	50	31	40	76	29	51	#313	195
Internal Link Dist (ft)		327		314		279		298
Turn Bay Length (ft)								
Base Capacity (vph)	314	1527	584	1658	276	1810	240	2017
Starvation Cap Reductn	0	0	0	0	0	0	0	358
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.09	0.10	0.28	0.09	0.15	1.01	0.43

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	64	259	2	15	433	134	8	197	207	26
v/c Ratio	0.45	0.21	0.01	0.15	0.51	0.22	0.03	0.37	0.38	0.05
Control Delay	75.0	22.4	32.5	75.2	30.1	4.0	45.7	27.9	28.8	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Total Delay	75.0	22.4	32.5	75.2	30.1	4.0	45.7	28.1	28.9	9.3
Queue Length 50th (ft)	63	76	0	15	135	0	6	100	107	4
Queue Length 95th (ft)	#149	103	7	40	166	28	18	155	166	17
Internal Link Dist (ft)		247			310		22		134	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	142	1535	480	102	1408	733	662	746	751	514
Starvation Cap Reductn	0	0	0	0	0	0	0	138	137	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.17	0.00	0.15	0.31	0.18	0.01	0.32	0.34	0.05

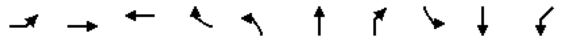
Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	297	345	429	124	56	29	46	113
v/c Ratio	0.08	0.46	0.66	0.28	0.50	0.12	0.07	0.24	0.32
Control Delay	38.4	13.7	29.2	10.1	39.3	22.4	9.9	35.7	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	13.7	29.2	10.1	39.3	22.4	9.9	35.7	25.7
Queue Length 50th (ft)	3	20	103	36	41	17	0	15	34
Queue Length 95th (ft)	21	60	#324	107	#159	51	20	56	83
Internal Link Dist (ft)		151		932		1629			377
Turn Bay Length (ft)									
Base Capacity (vph)	123	1055	655	1905	263	757	649	194	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.28	0.53	0.23	0.47	0.07	0.04	0.24	0.17

Intersection Summary

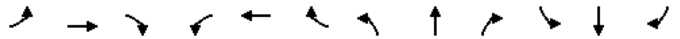
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SWL
Lane Group Flow (vph)	68	59	158	364	107	225	449	263	208	501
v/c Ratio	0.25	0.12	0.45	0.85	0.55	0.68	0.39	0.80	0.24	0.78
Control Delay	36.1	20.9	39.0	57.6	58.7	52.6	22.5	62.7	33.6	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	36.1	20.9	39.0	57.6	58.7	52.6	22.5	62.7	33.6	50.6
Queue Length 50th (ft)	39	17	95	251	77	159	129	188	64	180
Queue Length 95th (ft)	86	54	148	334	110	189	135	#303	94	261
Internal Link Dist (ft)		174	440			319			1629	472
Turn Bay Length (ft)										
Base Capacity (vph)	319	562	410	495	370	546	1409	380	1053	764
Starvation Cap Reductn	0	0	0	0	0	20	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.10	0.39	0.74	0.29	0.43	0.32	0.69	0.20	0.66

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	178	125	241	367	321	23	119	22	110	912	168
v/c Ratio	0.62	0.46	0.51	0.68	0.51	0.64	0.15	0.25	0.10	0.27	0.65	0.18
Control Delay	51.6	23.2	12.1	42.3	20.2	11.2	39.4	33.5	16.4	16.6	21.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3
Total Delay	51.6	23.2	12.1	42.3	20.2	11.2	39.4	33.5	16.4	16.6	22.1	3.9
Queue Length 50th (ft)	45	37	0	84	71	0	8	22	0	21	116	7
Queue Length 95th (ft)	#131	32	24	#253	68	64	36	58	21	52	#303	38
Internal Link Dist (ft)		710			294			151			215	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	193	391	246	356	716	505	169	542	249	477	1395	931
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	179	364
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.46	0.51	0.68	0.51	0.64	0.14	0.22	0.09	0.23	0.75	0.30

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	42	162	419	115	459
v/c Ratio	0.15	0.12	0.41	0.21	0.62
Control Delay	21.4	7.5	13.3	5.2	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	7.5	13.3	5.2	10.2
Queue Length 50th (ft)	4	6	19	0	20
Queue Length 95th (ft)	38	28	100	31	113
Internal Link Dist (ft)		932	312		271
Turn Bay Length (ft)					
Base Capacity (vph)	304	2169	1710	824	1041
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.07	0.25	0.14	0.44

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT	SWR
Lane Group Flow (vph)	226	249	58	56	22
v/c Ratio	0.52	0.56	0.03	0.03	0.16
Control Delay	20.5	21.8	6.9	5.8	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	21.8	6.9	5.8	30.3
Queue Length 50th (ft)	52	60	2	1	6
Queue Length 95th (ft)	88	129	13	10	30
Internal Link Dist (ft)	166	452	369	79	
Turn Bay Length (ft)					
Base Capacity (vph)	693	711	1753	1740	135
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.33	0.35	0.03	0.03	0.16

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	8	165	9	87	120	44
v/c Ratio	0.02	0.34	0.03	0.18	0.12	0.04
Control Delay	7.8	7.9	7.9	7.3	5.9	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	7.9	7.9	7.3	5.9	5.7
Queue Length 50th (ft)	1	8	1	5	7	2
Queue Length 95th (ft)	5	34	7	28	38	15
Internal Link Dist (ft)		588		570	296	200
Turn Bay Length (ft)						
Base Capacity (vph)	663	937	622	950	1295	1373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.01	0.09	0.09	0.03

Intersection Summary

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	354	356	205	285	344
v/c Ratio	0.74	0.73	0.50	0.67	0.53
Control Delay	29.6	26.4	25.5	29.8	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	26.4	25.5	29.8	26.1
Queue Length 50th (ft)	108	95	61	89	56
Queue Length 95th (ft)	227	209	143	197	97
Internal Link Dist (ft)		251		313	132
Turn Bay Length (ft)					
Base Capacity (vph)	623	627	585	616	1118
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.57	0.57	0.35	0.46	0.31

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	113	289	11	23	34	10	289	385	120	456
v/c Ratio	0.29	0.55	0.04	0.04	0.07	0.06	0.27	0.54	0.63	0.27
Control Delay	13.8	15.8	11.6	11.3	5.3	26.2	13.8	5.4	43.1	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	15.8	11.6	11.3	5.3	26.2	13.8	5.4	43.1	9.7
Queue Length 50th (ft)	18	45	2	3	0	2	25	0	24	24
Queue Length 95th (ft)	59	126	10	16	13	17	74	50	#158	120
Internal Link Dist (ft)		618		587			299			313
Turn Bay Length (ft)										
Base Capacity (vph)	671	893	464	911	776	183	1429	820	189	1778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.32	0.02	0.03	0.04	0.05	0.20	0.47	0.63	0.26

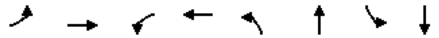
Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	97	122	55	144	18	569	83	355	70
v/c Ratio	0.60	0.46	0.33	0.49	0.03	0.22	0.17	0.27	0.06
Control Delay	46.8	26.6	35.6	20.4	2.2	2.1	4.2	3.7	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	46.8	26.6	35.6	20.4	2.2	2.1	4.2	4.2	1.1
Queue Length 50th (ft)	46	38	25	28	1	22	8	40	0
Queue Length 95th (ft)	89	82	56	75	m4	31	28	89	10
Internal Link Dist (ft)		608		780		301		299	
Turn Bay Length (ft)									
Base Capacity (vph)	589	862	601	852	587	2567	479	1293	1113
Starvation Cap Reductn	0	0	0	0	0	0	0	532	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.14	0.09	0.17	0.03	0.22	0.17	0.47	0.06

Intersection Summary

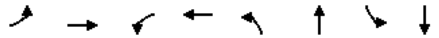
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	70	102	17	82	9	554	50	384
v/c Ratio	0.48	0.45	0.12	0.35	0.02	0.21	0.09	0.28
Control Delay	43.4	30.6	32.2	18.4	0.9	1.3	2.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	43.4	30.6	32.2	18.4	0.9	1.3	2.7	3.4
Queue Length 50th (ft)	34	35	8	12	1	37	1	20
Queue Length 95th (ft)	56	60	21	38	m1	9	m8	93
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	590	819	579	784	581	2633	543	1381
Starvation Cap Reductn	0	0	0	0	0	0	0	424
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.12	0.03	0.10	0.02	0.21	0.09	0.40

Intersection Summary

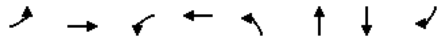
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	56	43	24	108	4	521	29	333
v/c Ratio	0.24	0.13	0.10	0.30	0.01	0.23	0.06	0.28
Control Delay	26.0	20.0	22.4	10.2	7.2	5.7	5.2	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	26.0	20.0	22.4	10.2	7.2	6.1	5.2	4.6
Queue Length 50th (ft)	27	17	11	13	0	23	2	20
Queue Length 95th (ft)	45	34	20	31	5	94	m12	91
Internal Link Dist (ft)		588		983		201		305
Turn Bay Length (ft)								
Base Capacity (vph)	583	840	616	793	555	2312	490	1201
Starvation Cap Reductn	0	0	0	0	0	1224	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.05	0.04	0.14	0.01	0.48	0.06	0.28

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	391	755	21	229	13	115	67	266
v/c Ratio	0.77	0.47	0.18	0.40	0.08	0.54	0.16	0.43
Control Delay	44.5	13.3	52.2	20.4	38.0	42.0	23.5	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	13.3	52.2	20.4	38.0	42.0	23.5	12.1
Queue Length 50th (ft)	154	103	9	47	5	43	24	22
Queue Length 95th (ft)	#644	195	47	43	26	123	68	96
Internal Link Dist (ft)		578		501		308	11	
Turn Bay Length (ft)	140		100		150			
Base Capacity (vph)	509	1751	204	1144	410	544	668	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	57	0	7	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.43	0.10	0.21	0.03	0.21	0.10	0.33

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	28	136	25	115	132	96
v/c Ratio	0.09	0.28	0.08	0.24	0.12	0.10
Control Delay	8.2	8.4	8.2	6.8	5.2	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	8.4	8.2	6.8	5.2	5.5
Queue Length 50th (ft)	2	8	2	5	6	5
Queue Length 95th (ft)	17	52	15	37	41	33
Internal Link Dist (ft)		581		561	314	281
Turn Bay Length (ft)						
Base Capacity (vph)	655	956	639	934	1362	1220
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.14	0.04	0.12	0.10	0.08

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	64	866	23	254	246	125
v/c Ratio	0.43	0.54	0.13	0.22	0.64	0.19
Control Delay	51.4	18.0	42.5	14.5	34.0	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	18.0	42.5	14.5	34.0	12.9
Queue Length 50th (ft)	20	129	7	38	68	20
Queue Length 95th (ft)	#119	213	38	54	159	69
Internal Link Dist (ft)		413		428	186	3
Turn Bay Length (ft)	230		250			
Base Capacity (vph)	149	1597	238	1473	921	1075
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	73	1	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.54	0.10	0.18	0.27	0.12

Intersection Summary

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

Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	79	749	273	68
v/c Ratio	0.42	0.36	0.19	0.15
Control Delay	38.8	7.2	9.5	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.8	7.2	9.5	10.6
Queue Length 50th (ft)	21	82	36	8
Queue Length 95th (ft)	#99	79	23	29
Internal Link Dist (ft)		378	228	1
Turn Bay Length (ft)	75			
Base Capacity (vph)	202	2800	2092	944
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	82	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.27	0.14	0.07

Intersection Summary

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

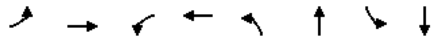
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	108	499	98	228	641	127	50	415
v/c Ratio	0.48	0.41	0.16	0.71	0.86	0.24	0.10	0.81
Control Delay	55.7	27.3	7.1	52.4	37.8	28.5	8.5	43.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	27.3	7.1	52.4	37.8	28.5	8.5	43.5
Queue Length 50th (ft)	55	107	0	115	295	50	0	198
Queue Length 95th (ft)	164	243	39	225	463	139	30	474
Internal Link Dist (ft)		590			82	302		221
Turn Bay Length (ft)								
Base Capacity (vph)	356	1773	842	568	1076	833	799	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.28	0.12	0.40	0.60	0.15	0.06	0.51

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	50	174	10	79	8	580	228	263	775
v/c Ratio	0.22	0.53	0.05	0.23	0.07	0.35	0.27	0.90	0.32
Control Delay	20.4	24.6	17.7	9.4	28.1	11.7	3.0	60.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	24.6	17.7	9.4	28.1	11.7	3.0	60.0	6.0
Queue Length 50th (ft)	14	48	3	5	3	64	0	85	44
Queue Length 95th (ft)	34	88	10	20	14	112	34	#222	131
Internal Link Dist (ft)		207		577		298			139
Turn Bay Length (ft)									
Base Capacity (vph)	505	709	454	669	116	1644	858	293	2438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	3
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.25	0.02	0.12	0.07	0.35	0.27	0.90	0.32

Intersection Summary

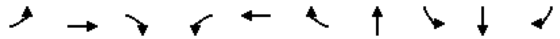
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	218	474	94	433	27	890	342	658
v/c Ratio	0.89	0.43	0.41	0.37	0.20	0.88	0.86	0.38
Control Delay	64.3	23.0	28.9	8.4	44.0	38.7	55.2	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	64.3	23.0	28.9	8.4	44.0	38.7	55.2	13.9
Queue Length 50th (ft)	112	104	40	29	15	243	189	95
Queue Length 95th (ft)	#196	127	77	53	38	292	#318	163
Internal Link Dist (ft)		327		314		290		298
Turn Bay Length (ft)								
Base Capacity (vph)	286	1292	269	1325	144	1115	436	1785
Starvation Cap Reductn	0	0	0	0	0	0	0	648
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.37	0.35	0.33	0.19	0.80	0.78	0.58

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	162	566	1	10	249	273	210	283	296	15
v/c Ratio	0.83	0.47	0.00	0.15	0.34	0.42	0.66	0.66	0.69	0.04
Control Delay	90.7	27.7	34.0	80.2	28.0	4.4	61.5	41.3	42.8	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0
Total Delay	90.7	27.7	34.0	80.2	28.0	4.4	61.5	41.9	43.4	11.8
Queue Length 50th (ft)	~201	186	0	10	73	0	194	180	194	3
Queue Length 95th (ft)	#366	232	6	29	91	26	196	276	293	13
Internal Link Dist (ft)		247			310		22		129	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	196	1465	469	66	1162	727	543	611	614	406
Starvation Cap Reductn	0	0	0	0	0	0	0	106	103	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.39	0.00	0.15	0.21	0.38	0.39	0.56	0.58	0.04

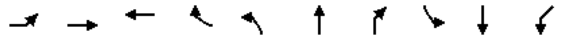
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	28	704	233	381	206	126	345	138	99
v/c Ratio	0.25	0.82	0.74	0.25	0.72	0.29	0.55	0.58	0.31
Control Delay	44.8	34.9	47.6	12.8	48.2	28.5	6.9	42.9	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	34.9	47.6	12.8	48.2	28.5	6.9	42.9	23.9
Queue Length 50th (ft)	12	142	98	34	88	53	0	59	32
Queue Length 95th (ft)	40	#254	#240	97	#219	101	61	129	71
Internal Link Dist (ft)		151		932		1629			377
Turn Bay Length (ft)									
Base Capacity (vph)	111	962	352	1546	320	590	728	300	542
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.73	0.66	0.25	0.64	0.21	0.47	0.46	0.18

Intersection Summary

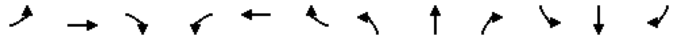
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SWL
Lane Group Flow (vph)	167	125	142	365	105	284	521	199	318	253
v/c Ratio	0.54	0.24	0.41	0.84	0.50	0.65	0.43	0.70	0.39	0.55
Control Delay	39.4	14.4	34.9	52.0	53.3	45.6	21.8	53.7	32.2	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	14.4	34.9	52.0	53.3	45.6	21.8	53.7	32.2	43.9
Queue Length 50th (ft)	87	20	71	209	64	166	132	120	84	77
Queue Length 95th (ft)	176	70	136	340	134	#340	214	196	132	132
Internal Link Dist (ft)		174	440			351			1629	472
Turn Bay Length (ft)										
Base Capacity (vph)	394	651	444	559	310	502	1404	419	1109	706
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.19	0.32	0.65	0.34	0.57	0.37	0.47	0.29	0.36

Intersection Summary

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

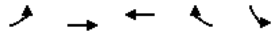


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	299	995	80	37	381	459	60	609	121	270	247	222
v/c Ratio	0.82	0.83	0.13	0.33	0.69	0.79	0.48	0.84	0.29	0.79	0.19	0.23
Control Delay	63.8	36.9	10.0	62.3	40.9	15.7	66.2	55.8	9.9	46.9	18.4	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.2	0.1
Total Delay	63.8	36.9	10.0	62.3	40.9	15.7	66.2	55.8	9.9	52.3	18.6	2.0
Queue Length 50th (ft)	191	~363	12	24	135	0	39	205	1	118	44	16
Queue Length 95th (ft)	#345	263	36	52	80	0	85	#307	38	#247	71	43
Internal Link Dist (ft)		710			294			45			182	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	364	1196	594	134	562	583	151	728	411	342	1293	962
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	36	505	201
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.83	0.13	0.28	0.68	0.79	0.40	0.84	0.29	0.88	0.31	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	279	636	309	173	262
v/c Ratio	0.61	0.32	0.41	0.37	0.55
Control Delay	24.7	6.6	18.9	6.5	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	6.6	18.9	6.5	15.2
Queue Length 50th (ft)	58	34	35	0	39
Queue Length 95th (ft)	#206	106	86	41	102
Internal Link Dist (ft)		932	312		271
Turn Bay Length (ft)					
Base Capacity (vph)	536	2343	1297	690	754
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.27	0.24	0.25	0.35

Intersection Summary

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	290	26	445	401	471
v/c Ratio	0.47	0.09	0.75	0.24	0.32
Control Delay	15.5	11.5	23.7	9.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	11.5	23.7	9.8	8.5
Queue Length 50th (ft)	68	5	128	35	34
Queue Length 95th (ft)	120	18	215	82	84
Internal Link Dist (ft)	166		452	369	79
Turn Bay Length (ft)					
Base Capacity (vph)	796	381	776	1637	1469
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.07	0.57	0.24	0.32

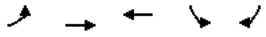
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	43	254	3	575	93	199
v/c Ratio	0.17	0.35	0.01	0.77	0.14	0.28
Control Delay	10.6	10.2	7.7	20.4	10.9	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	10.2	7.7	20.4	10.9	9.2
Queue Length 50th (ft)	8	44	1	137	13	21
Queue Length 95th (ft)	23	81	4	227	49	78
Internal Link Dist (ft)		711		588	202	369
Turn Bay Length (ft)						
Base Capacity (vph)	354	1038	610	1055	663	707
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.24	0.00	0.55	0.14	0.28

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	207	17	438	159	122
v/c Ratio	0.04	0.29	0.04	0.61	0.29	0.20
Control Delay	9.1	8.3	8.8	13.4	7.8	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	8.3	8.8	13.4	7.8	6.0
Queue Length 50th (ft)	1	12	1	36	10	6
Queue Length 95th (ft)	9	69	12	169	52	37
Internal Link Dist (ft)		588		570	296	200
Turn Bay Length (ft)						
Base Capacity (vph)	439	1101	684	1136	866	963
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.19	0.02	0.39	0.18	0.13

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	41	522	1837	120	120
v/c Ratio	0.28	0.21	0.82	0.42	0.34
Control Delay	34.0	3.6	14.2	27.6	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	3.6	14.2	27.6	8.3
Queue Length 50th (ft)	13	24	152	35	0
Queue Length 95th (ft)	44	51	#537	87	38
Internal Link Dist (ft)		158	581	318	
Turn Bay Length (ft)	250				
Base Capacity (vph)	145	2575	2289	455	496
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.20	0.80	0.26	0.24

Intersection Summary

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	211	95	220	108	590
v/c Ratio	0.63	0.47	0.37	0.41	0.80
Control Delay	33.7	38.1	18.4	17.6	32.9
Queue Delay	0.2	0.0	0.0	0.0	0.0
Total Delay	33.9	38.1	18.4	17.6	32.9
Queue Length 50th (ft)	77	37	64	13	225
Queue Length 95th (ft)	149	88	123	56	#488
Internal Link Dist (ft)	154		618	298	247
Turn Bay Length (ft)					
Base Capacity (vph)	434	221	730	444	734
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	19	1	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.43	0.30	0.24	0.80

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	9	268	262	531	91	410
v/c Ratio	0.04	0.36	0.69	0.72	0.14	0.75
Control Delay	11.0	12.0	23.7	18.5	6.2	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	12.0	23.7	18.5	6.2	22.6
Queue Length 50th (ft)	1	42	49	97	5	79
Queue Length 95th (ft)	10	122	166	270	32	229
Internal Link Dist (ft)		570		608	299	298
Turn Bay Length (ft)						
Base Capacity (vph)	281	1013	514	994	902	755
Starvation Cap Reductn	0	0	0	0	0	9
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.26	0.51	0.53	0.10	0.55

Intersection Summary

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	568	589	279	285	414
v/c Ratio	1.00	1.01	0.74	0.72	0.59
Control Delay	66.6	67.1	39.3	37.4	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	67.1	39.3	37.4	28.7
Queue Length 50th (ft)	248	~251	110	111	84
Queue Length 95th (ft)	#600	#610	215	216	138
Internal Link Dist (ft)		251		313	132
Turn Bay Length (ft)					
Base Capacity (vph)	567	582	482	507	946
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.00	1.01	0.58	0.56	0.44

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	152	304	130	109	353	83	109	326	304	76	1077
v/c Ratio	0.64	0.70	0.28	0.49	0.57	0.15	1.14	0.25	0.38	0.46	0.78
Control Delay	38.6	35.8	5.5	27.2	24.6	4.0	165.5	14.3	2.8	45.9	26.1
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	38.6	35.8	5.5	27.3	24.6	4.0	165.5	14.3	2.9	45.9	26.5
Queue Length 50th (ft)	71	144	0	44	148	0	~64	36	0	35	218
Queue Length 95th (ft)	106	179	33	72	173	22	m#150	m96	m25	#113	#458
Internal Link Dist (ft)		618			587			299			313
Turn Bay Length (ft)											
Base Capacity (vph)	381	699	661	318	885	777	96	1329	802	166	1373
Starvation Cap Reductn	0	0	0	0	0	0	0	0	25	0	0
Spillback Cap Reductn	0	0	38	15	0	0	0	0	0	0	52
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.43	0.21	0.36	0.40	0.11	1.14	0.25	0.39	0.46	0.82

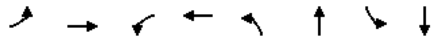
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	207	272	196	130	380	130	98	684	76	810	337
v/c Ratio	0.91	0.44	0.32	0.43	0.62	0.21	0.80	0.38	0.24	0.88	0.37
Control Delay	67.3	22.5	7.2	24.4	26.5	4.3	62.4	9.8	3.9	19.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Total Delay	67.3	22.5	7.2	24.4	26.5	4.3	62.4	9.8	3.9	19.9	1.1
Queue Length 50th (ft)	91	97	17	46	146	0	39	100	6	380	0
Queue Length 95th (ft)	#211	160	59	94	230	33	#136	158	m8	#588	m0
Internal Link Dist (ft)		608			780			301		299	
Turn Bay Length (ft)											
Base Capacity (vph)	258	699	683	346	699	675	123	1820	311	916	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	8	152
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.39	0.29	0.38	0.54	0.19	0.80	0.38	0.24	0.89	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	108	43	125	43	479	103	1032
v/c Ratio	0.52	0.40	0.27	0.46	0.35	0.19	0.16	0.77
Control Delay	43.7	19.0	34.4	20.6	11.8	1.9	2.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	43.7	19.0	34.4	20.6	11.8	1.9	2.5	7.3
Queue Length 50th (ft)	39	20	20	25	4	17	8	92
Queue Length 95th (ft)	78	61	47	69	m19	25	m14	m161
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	426	615	432	622	122	2585	631	1346
Starvation Cap Reductn	0	0	0	0	0	0	0	65
Spillback Cap Reductn	0	3	0	0	0	0	0	81
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.18	0.10	0.20	0.35	0.19	0.16	0.82

Intersection Summary

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

16: Main St & Cesar E. Chavez Pkwy

Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	223	76	359	207	76	468	163	826
v/c Ratio	0.72	0.42	0.25	0.67	0.36	0.72	0.25	0.36	0.86
Control Delay	42.4	23.1	21.0	30.3	4.5	59.0	7.9	8.1	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.8
Total Delay	42.4	23.1	21.0	30.3	4.5	59.0	8.2	8.1	21.7
Queue Length 50th (ft)	67	80	27	145	0	28	50	26	180
Queue Length 95th (ft)	122	122	52	203	38	#119	91	m55	#666
Internal Link Dist (ft)		588		983			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	332	785	448	792	761	105	1856	449	961
Starvation Cap Reductn	0	0	0	0	0	0	741	0	65
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.28	0.17	0.45	0.27	0.72	0.42	0.36	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

17: Harbor Dr & Cesar E. Chavez Pkwy

Timing Plan: AM Peak

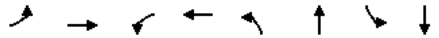
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	128	476	87	1241	11	15	29	168	438
v/c Ratio	0.53	0.38	0.81	0.99	0.09	0.07	0.15	0.35	0.74
Control Delay	50.8	14.4	90.9	44.9	33.5	32.1	13.4	23.7	26.2
Queue Delay	0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	14.4	90.9	56.9	33.5	32.1	13.4	23.7	26.2
Queue Length 50th (ft)	27	72	37	263	4	6	0	57	101
Queue Length 95th (ft)	#102	118	#187	#607	21	25	23	108	256
Internal Link Dist (ft)		578		501		308		11	
Turn Bay Length (ft)	140		100		150				
Base Capacity (vph)	242	1274	108	1279	342	621	497	748	776
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	66	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.37	0.81	1.02	0.03	0.02	0.06	0.22	0.56

Intersection Summary

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

23: Logan Ave & Sampson St

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	120	420	99	147	238	521	67	252
v/c Ratio	0.28	0.65	0.42	0.23	0.51	0.64	0.26	0.31
Control Delay	13.0	15.7	18.2	8.0	14.4	13.6	12.2	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	13.0	15.7	18.2	8.0	14.4	13.7	12.2	9.6
Queue Length 50th (ft)	16	54	14	11	31	66	8	29
Queue Length 95th (ft)	67	193	66	55	125	233	42	105
Internal Link Dist (ft)		167		249		281		225
Turn Bay Length (ft)								
Base Capacity (vph)	653	953	361	953	630	1080	349	1106
Starvation Cap Reductn	0	0	0	0	0	54	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.44	0.27	0.15	0.38	0.51	0.19	0.23

Intersection Summary

24: National Ave & Sampson St

Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	82	70	52	222	128	310
v/c Ratio	0.28	0.14	0.15	0.43	0.14	0.36
Control Delay	11.1	7.4	9.1	8.1	6.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	7.4	9.1	8.1	6.2	6.8
Queue Length 50th (ft)	7	4	4	11	8	18
Queue Length 95th (ft)	39	29	26	64	43	91
Internal Link Dist (ft)		581		561	314	281
Turn Bay Length (ft)						
Base Capacity (vph)	556	944	690	929	1293	1174
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	6	0	0	11	14	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.07	0.08	0.24	0.10	0.26

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	808	82	1444	122	187
v/c Ratio	0.08	0.56	0.41	0.81	0.45	0.37
Control Delay	45.1	17.9	43.8	21.1	31.9	21.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	45.1	17.9	43.8	21.5	31.9	21.0
Queue Length 50th (ft)	4	153	31	245	40	54
Queue Length 95th (ft)	27	225	109	#735	113	121
Internal Link Dist (ft)		413		428	186	3
Turn Bay Length (ft)	230		250			
Base Capacity (vph)	261	1467	332	1790	733	821
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	69	1	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.55	0.25	0.84	0.17	0.23

Intersection Summary

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

Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	80	548	1694	88
v/c Ratio	0.54	0.23	0.90	0.27
Control Delay	49.5	4.7	28.5	3.9
Queue Delay	0.0	0.0	2.2	0.0
Total Delay	49.5	4.7	30.7	3.9
Queue Length 50th (ft)	30	52	~457	0
Queue Length 95th (ft)	#99	45	#517	0
Internal Link Dist (ft)		378	228	
Turn Bay Length (ft)	75			
Base Capacity (vph)	154	2402	1873	328
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	90	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.23	0.95	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

33: National Ave & 28th St

Timing Plan: AM Peak

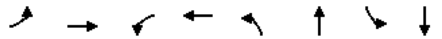
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	115	280	20	209	817	143	93	348	334
v/c Ratio	0.61	0.20	0.03	0.80	0.91	0.36	0.18	0.85	0.49
Control Delay	74.3	28.1	12.3	71.5	43.9	39.2	7.8	61.1	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.3	28.1	12.3	71.5	43.9	39.2	7.8	61.1	7.0
Queue Length 50th (ft)	94	80	0	168	602	93	0	272	5
Queue Length 95th (ft)	#212	142	20	279	#968	171	42	#467	81
Internal Link Dist (ft)		590			82	395		221	
Turn Bay Length (ft)									
Base Capacity (vph)	241	1662	754	421	1087	543	694	565	828
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.17	0.03	0.50	0.75	0.26	0.13	0.62	0.40

Intersection Summary

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

34: Boston Ave & 28th St

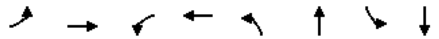
Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	250	348	49	206	98	804	174	1272
v/c Ratio	0.75	0.62	0.20	0.35	0.57	0.60	0.97	0.59
Control Delay	32.8	18.4	16.0	7.6	44.7	18.7	96.9	15.7
Queue Delay	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.5
Total Delay	32.8	18.7	16.0	7.6	44.7	18.7	96.9	16.1
Queue Length 50th (ft)	79	83	13	19	34	116	64	118
Queue Length 95th (ft)	150	151	33	57	#112	225	#208	217
Internal Link Dist (ft)		207		577		298		198
Turn Bay Length (ft)								
Base Capacity (vph)	460	753	343	766	171	1337	179	2143
Starvation Cap Reductn	0	0	0	0	0	0	0	406
Spillback Cap Reductn	0	82	38	0	0	0	0	128
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.52	0.16	0.27	0.57	0.60	0.97	0.73

Intersection Summary

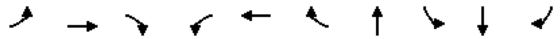
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	489	98	729	49	315	196	1087
v/c Ratio	0.95	0.32	0.27	0.44	0.68	0.34	0.88	0.91
Control Delay	78.8	16.7	19.6	17.0	90.0	16.2	79.7	39.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.2
Total Delay	78.8	16.7	19.6	17.0	90.0	16.2	79.7	75.2
Queue Length 50th (ft)	128	99	38	149	32	45	126	318
Queue Length 95th (ft)	#281	137	78	200	#95	80	#263	#444
Internal Link Dist (ft)		327		314		279		298
Turn Bay Length (ft)								
Base Capacity (vph)	220	1548	371	1651	72	1060	224	1272
Starvation Cap Reductn	0	0	0	0	0	0	0	257
Spillback Cap Reductn	0	0	0	2	0	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.32	0.26	0.44	0.68	0.30	0.88	1.07

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	54	728	4	18	1024	126	9	408	16	27
v/c Ratio	0.20	0.66	0.01	0.15	0.96	0.19	0.03	0.36	0.03	0.05
Control Delay	66.9	32.3	33.0	75.0	53.1	8.9	44.1	25.3	17.4	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	66.9	32.3	33.0	75.0	53.1	8.9	44.1	25.4	17.4	9.4
Queue Length 50th (ft)	26	254	1	18	~442	20	6	103	6	4
Queue Length 95th (ft)	52	309	12	48	#591	56	23	149	19	18
Internal Link Dist (ft)		247			310		22		134	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	413	1491	466	129	1348	747	685	1598	867	533
Starvation Cap Reductn	0	0	0	0	0	0	0	290	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.49	0.01	0.14	0.76	0.17	0.01	0.31	0.02	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	220	227	222
v/c Ratio	0.57	0.59	0.37
Control Delay	24.1	22.2	19.1
Queue Delay	0.0	0.0	0.0
Total Delay	24.1	22.2	19.1
Queue Length 50th (ft)	51	46	50
Queue Length 95th (ft)	139	129	146
Internal Link Dist (ft)	577	323	73
Turn Bay Length (ft)			
Base Capacity (vph)	860	699	666
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.32	0.33

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	41	378	341	623	120	54	28	42	136
v/c Ratio	0.22	0.54	0.71	0.41	0.50	0.11	0.06	0.22	0.41
Control Delay	35.5	13.8	32.7	14.9	39.2	22.2	10.6	35.3	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.5	13.8	32.7	14.9	39.2	22.2	10.6	35.3	25.1
Queue Length 50th (ft)	14	25	108	64	41	13	0	14	37
Queue Length 95th (ft)	54	74	#325	188	#146	53	21	54	98
Internal Link Dist (ft)		151		932		1629			377
Turn Bay Length (ft)									
Base Capacity (vph)	236	1081	601	1720	267	672	579	245	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.35	0.57	0.36	0.45	0.08	0.05	0.17	0.23

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SWL
Lane Group Flow (vph)	98	272	321	184	76	234	375	229	555	946
v/c Ratio	0.49	0.46	1.34	0.36	0.54	0.78	0.32	0.85	0.69	1.30
Control Delay	50.8	39.7	214.0	40.3	76.7	73.3	26.7	84.7	53.2	185.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0
Total Delay	50.8	39.7	214.0	40.3	76.7	73.9	26.7	84.7	53.2	185.1
Queue Length 50th (ft)	74	191	~393	132	69	209	128	205	241	~586
Queue Length 95th (ft)	149	302	#625	218	125	304	171	#355	320	#772
Internal Link Dist (ft)		174	440			319			1629	472
Turn Bay Length (ft)										
Base Capacity (vph)	199	588	240	512	264	393	1268	300	860	730
Starvation Cap Reductn	0	0	0	0	0	29	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.46	1.34	0.36	0.29	0.64	0.30	0.76	0.65	1.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	714	152	326	799	424	33	174	33	141	1130	43
v/c Ratio	0.63	1.82	0.58	0.86	0.88	0.72	0.21	0.38	0.15	0.36	0.85	0.06
Control Delay	63.7	399.9	15.7	55.7	32.9	16.0	39.0	35.2	14.7	20.5	30.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0
Total Delay	63.7	399.9	15.7	55.7	32.9	16.0	39.0	35.2	14.7	20.5	33.0	5.1
Queue Length 50th (ft)	31	~278	7	125	~190	27	13	34	0	29	150	4
Queue Length 95th (ft)	#122	#220	44	#377	157	#188	47	82	27	93	#603	21
Internal Link Dist (ft)		710			294			151			215	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	120	393	261	378	905	588	193	530	253	403	1332	779
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	107	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	1.82	0.58	0.86	0.88	0.72	0.17	0.33	0.13	0.35	0.92	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	51	197	540	116	453
v/c Ratio	0.19	0.14	0.46	0.19	0.65
Control Delay	22.9	7.1	12.7	4.6	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	7.1	12.7	4.6	10.9
Queue Length 50th (ft)	6	8	26	0	21
Queue Length 95th (ft)	47	35	124	30	133
Internal Link Dist (ft)		932	312		271
Turn Bay Length (ft)					
Base Capacity (vph)	271	2274	1888	899	1007
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.29	0.13	0.45

Intersection Summary

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	995	1141	451
v/c Ratio	0.95	0.32	0.36
Control Delay	31.1	0.2	21.0
Queue Delay	2.3	0.0	0.0
Total Delay	33.4	0.2	21.1
Queue Length 50th (ft)	284	0	54
Queue Length 95th (ft)	#597	0	80
Internal Link Dist (ft)		198	395
Turn Bay Length (ft)			
Base Capacity (vph)	1052	3539	1267
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	22	0	58
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.97	0.32	0.37

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	214	503
v/c Ratio	0.06	0.06	0.07	0.23
Control Delay	21.6	21.6	0.5	4.4
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	21.6	21.6	0.5	4.5
Queue Length 50th (ft)	2	2	0	13
Queue Length 95th (ft)	11	11	m4	48
Internal Link Dist (ft)	167	457	11	201
Turn Bay Length (ft)				
Base Capacity (vph)	386	386	3216	2725
Starvation Cap Reductn	0	0	0	920
Spillback Cap Reductn	0	0	0	922
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.07	0.28

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	90	120
v/c Ratio	0.06	0.06	0.05	0.10
Control Delay	21.1	21.1	0.6	4.4
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	21.1	21.1	0.6	4.6
Queue Length 50th (ft)	2	2	0	5
Queue Length 95th (ft)	11	11	m4	26
Internal Link Dist (ft)	1363	1025	3	196
Turn Bay Length (ft)				
Base Capacity (vph)	385	385	1698	1537
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	925
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.05	0.20

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	82	102
v/c Ratio	0.07	0.07	0.05	0.09
Control Delay	19.8	19.8	0.3	4.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.8	19.8	0.3	4.9
Queue Length 50th (ft)	2	2	0	5
Queue Length 95th (ft)	13	13	m2	25
Internal Link Dist (ft)	109	790	1	178
Turn Bay Length (ft)				
Base Capacity (vph)	355	355	1593	1201
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	30
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.05	0.09

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	191	402
v/c Ratio	0.07	0.07	0.06	0.13
Control Delay	34.4	34.4	0.5	3.6
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	34.4	34.4	0.6	3.6
Queue Length 50th (ft)	5	5	2	17
Queue Length 95th (ft)	16	16	3	25
Internal Link Dist (ft)	726	567	134	10
Turn Bay Length (ft)				
Base Capacity (vph)	392	392	3135	4185
Starvation Cap Reductn	0	0	2130	0
Spillback Cap Reductn	0	0	0	143
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.19	0.10

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	516	1048
v/c Ratio	0.06	0.06	0.12	0.36
Control Delay	16.8	16.8	0.6	5.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.8	16.8	0.6	5.4
Queue Length 50th (ft)	2	2	0	20
Queue Length 95th (ft)	9	9	6	71
Internal Link Dist (ft)	2402	727	215	319
Turn Bay Length (ft)				
Base Capacity (vph)	439	439	4395	3203
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	35	127
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.12	0.34

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	464	663	779	660
v/c Ratio	1.51	0.84	0.55	0.50
Control Delay	267.8	28.3	14.8	13.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	267.8	28.3	14.8	13.7
Queue Length 50th (ft)	~254	212	108	85
Queue Length 95th (ft)	#418	#398	156	128
Internal Link Dist (ft)	166	452	369	79
Turn Bay Length (ft)				
Base Capacity (vph)	307	786	1421	1312
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.51	0.84	0.55	0.50

Intersection Summary

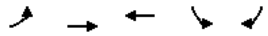
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	99	411	3	525	119	241
v/c Ratio	0.34	0.51	0.01	0.65	0.27	0.53
Control Delay	11.0	9.9	6.7	12.4	11.9	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	9.9	6.7	12.4	11.9	14.7
Queue Length 50th (ft)	10	43	0	60	13	26
Queue Length 95th (ft)	46	136	4	188	57	106
Internal Link Dist (ft)		711		588	202	369
Turn Bay Length (ft)						
Base Capacity (vph)	451	1232	544	1243	720	705
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.33	0.01	0.42	0.17	0.34

Intersection Summary

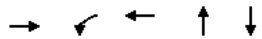
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	37	409	10	296	162	74
v/c Ratio	0.10	0.57	0.03	0.41	0.33	0.13
Control Delay	7.9	11.2	7.6	9.1	10.4	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	11.2	7.6	9.1	10.4	5.6
Queue Length 50th (ft)	3	34	1	23	15	3
Queue Length 95th (ft)	21	154	9	108	64	25
Internal Link Dist (ft)		588		570	296	200
Turn Bay Length (ft)						
Base Capacity (vph)	627	1184	506	1197	889	977
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.35	0.02	0.25	0.18	0.08

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	71	2114	957	109	87
v/c Ratio	0.19	0.83	0.38	0.42	0.29
Control Delay	4.4	9.7	3.7	36.3	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	9.7	3.7	36.3	10.8
Queue Length 50th (ft)	7	223	52	43	0
Queue Length 95th (ft)	23	425	101	104	40
Internal Link Dist (ft)		158	581	318	
Turn Bay Length (ft)	250				
Base Capacity (vph)	403	2788	2750	407	431
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.76	0.35	0.27	0.20

Intersection Summary



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	635	45	167	194	457
v/c Ratio	0.88	0.32	0.19	0.64	0.99
Control Delay	40.9	44.5	13.5	26.8	74.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	44.5	13.5	26.8	74.5
Queue Length 50th (ft)	313	23	46	44	~269
Queue Length 95th (ft)	#586	59	93	110	#495
Internal Link Dist (ft)	154		618	298	247
Turn Bay Length (ft)					
Base Capacity (vph)	726	149	931	400	460
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.30	0.18	0.49	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	21	681	123	461	203	307
v/c Ratio	0.06	0.79	0.59	0.54	0.31	0.74
Control Delay	8.3	18.8	23.8	11.7	6.8	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	18.8	23.8	11.7	6.8	29.0
Queue Length 50th (ft)	3	153	24	82	11	73
Queue Length 95th (ft)	14	308	85	172	59	#238
Internal Link Dist (ft)		570		608	299	298
Turn Bay Length (ft)						
Base Capacity (vph)	452	1128	272	1097	803	531
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.60	0.45	0.42	0.25	0.58

Intersection Summary

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

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	444	456	415	375	402
v/c Ratio	0.87	0.87	0.86	0.74	0.65
Control Delay	43.5	41.1	45.4	35.0	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	41.1	45.4	35.0	32.0
Queue Length 50th (ft)	202	192	184	158	90
Queue Length 95th (ft)	#409	#404	#369	#306	134
Internal Link Dist (ft)		251		313	132
Turn Bay Length (ft)					
Base Capacity (vph)	537	550	507	533	914
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.83	0.82	0.70	0.44

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	141	457	250	130	304	98	152	550	728	124	811
v/c Ratio	0.43	0.80	0.39	0.75	0.38	0.14	0.71	0.58	1.10	0.60	0.95
Control Delay	25.1	36.1	4.4	46.3	16.3	3.1	41.7	27.7	76.6	45.1	52.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Total Delay	25.1	36.1	4.4	46.3	16.3	3.1	41.7	27.7	78.0	45.1	52.8
Queue Length 50th (ft)	55	205	0	53	100	0	72	106	~296	58	210
Queue Length 95th (ft)	97	287	44	#139	143	23	m99	m#202	m#613	112	#386
Internal Link Dist (ft)		618			587			299			313
Turn Bay Length (ft)											
Base Capacity (vph)	399	699	736	197	908	805	230	953	664	230	855
Starvation Cap Reductn	0	0	0	0	0	0	0	0	2	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.65	0.34	0.66	0.33	0.12	0.66	0.58	1.10	0.54	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	326	435	315	120	293	299	130	1196	130	598	446
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.52	0.71	1.07	0.71	0.49
Control Delay	76.7	25.2	6.6	31.8	20.9	17.2	16.5	13.4	106.2	10.1	2.3
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	4.8	0.9
Total Delay	79.8	25.2	6.6	31.8	20.9	17.2	16.5	13.7	106.2	14.9	3.2
Queue Length 50th (ft)	159	174	22	46	106	83	26	228	~76	74	0
Queue Length 95th (ft)	#326	270	77	#109	173	154	m47	152	m#115	m92	m27
Internal Link Dist (ft)		608			780			301		299	
Turn Bay Length (ft)											
Base Capacity (vph)	328	699	748	215	699	637	252	1678	121	845	908
Starvation Cap Reductn	0	0	0	0	0	0	0	119	0	180	219
Spillback Cap Reductn	4	0	7	0	0	7	0	11	0	50	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.62	0.43	0.56	0.42	0.47	0.52	0.77	1.07	0.90	0.65

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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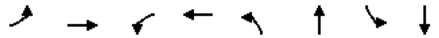
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	217	98	206	43	929	179	1027
v/c Ratio	0.72	0.58	0.49	0.49	0.41	0.41	0.61	0.87
Control Delay	48.7	29.3	35.6	15.9	20.4	5.6	16.7	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Total Delay	48.7	29.3	35.6	15.9	20.4	5.7	16.7	17.1
Queue Length 50th (ft)	69	82	44	39	8	87	25	162
Queue Length 95th (ft)	118	132	81	87	m42	124	m#152	#763
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	353	620	344	646	106	2255	294	1187
Starvation Cap Reductn	0	0	0	0	0	437	0	5
Spillback Cap Reductn	0	0	0	1	0	25	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.35	0.28	0.32	0.41	0.51	0.61	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	342	76	250	293	76	892	272	870
v/c Ratio	0.53	0.74	0.38	0.54	0.58	0.72	0.46	1.08	0.86
Control Delay	32.3	35.9	28.4	29.0	15.6	55.9	8.4	85.0	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	4.3
Total Delay	32.3	35.9	28.4	29.0	15.6	55.9	9.6	85.0	21.3
Queue Length 50th (ft)	58	159	32	111	57	20	86	~148	111
Queue Length 95th (ft)	98	216	63	157	116	#115	172	m#230	m#263
Internal Link Dist (ft)		588		279			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	393	738	316	745	709	106	1954	251	1011
Starvation Cap Reductn	0	0	0	0	0	0	786	0	88
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.46	0.24	0.34	0.41	0.72	0.76	1.08	0.94

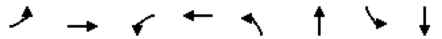
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	509	1673	54	552	54	68	38	69	352
v/c Ratio	0.70	1.00	0.64	0.50	0.42	0.37	0.22	0.19	0.45
Control Delay	45.1	46.7	85.3	21.9	53.1	48.2	15.8	28.8	5.9
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	46.7	85.3	22.0	53.1	48.2	15.8	28.8	5.9
Queue Length 50th (ft)	131	479	31	135	30	37	0	32	37
Queue Length 95th (ft)	#326	#968	#136	156	79	91	30	67	65
Internal Link Dist (ft)		578		501		308		11	
Turn Bay Length (ft)	140		100		150				
Base Capacity (vph)	789	1665	85	1103	339	485	400	566	796
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	58	0	7	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.00	0.64	0.53	0.16	0.14	0.10	0.12	0.44

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	117	498	155	154	255	545	72	292
v/c Ratio	0.29	0.80	0.80	0.25	0.49	0.54	0.26	0.28
Control Delay	18.9	29.2	51.1	12.5	17.5	15.2	15.8	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Total Delay	18.9	29.2	51.1	12.5	17.5	16.9	15.8	12.0
Queue Length 50th (ft)	39	180	63	34	65	139	16	63
Queue Length 95th (ft)	75	284	139	71	190	338	61	162
Internal Link Dist (ft)		167		249		281		225
Turn Bay Length (ft)								
Base Capacity (vph)	552	824	261	825	520	1011	275	1028
Starvation Cap Reductn	0	0	0	0	0	294	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.60	0.59	0.19	0.49	0.76	0.26	0.28

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	176	134	23	185	248	343
v/c Ratio	0.52	0.25	0.06	0.33	0.26	0.46
Control Delay	15.3	9.2	9.2	6.0	7.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	9.2	9.2	6.0	7.3	9.1
Queue Length 50th (ft)	19	12	2	7	21	30
Queue Length 95th (ft)	79	52	15	46	80	120
Internal Link Dist (ft)		581		561	314	281
Turn Bay Length (ft)						
Base Capacity (vph)	624	975	653	942	1213	956
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	26	0	0	39	38	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.14	0.04	0.20	0.21	0.36

Intersection Summary

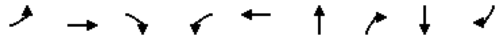
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	61	1635	21	597	191	163
v/c Ratio	0.39	0.92	0.26	0.38	0.65	0.36
Control Delay	57.9	30.2	65.7	14.2	50.0	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	30.2	65.7	14.2	50.0	31.0
Queue Length 50th (ft)	33	369	12	116	97	67
Queue Length 95th (ft)	101	#743	#52	137	218	146
Internal Link Dist (ft)		413		428	186	3
Turn Bay Length (ft)	230		250			
Base Capacity (vph)	221	2112	80	1820	623	607
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	60	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.77	0.26	0.34	0.31	0.27

Intersection Summary

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

Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	90	1652	681	55
v/c Ratio	0.53	0.69	0.37	0.10
Control Delay	51.2	12.0	11.5	0.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	51.2	12.0	11.5	0.8
Queue Length 50th (ft)	41	308	125	0
Queue Length 95th (ft)	110	332	92	0
Internal Link Dist (ft)		378	228	
Turn Bay Length (ft)	75			
Base Capacity (vph)	318	2687	1891	628
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	73	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.61	0.37	0.09

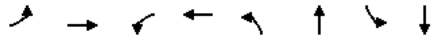
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	102	665	92	503	725	127	183	444	111
v/c Ratio	0.70	0.78	0.20	1.03	0.86	0.28	0.29	1.00	0.19
Control Delay	73.0	43.6	7.4	85.0	35.5	28.8	5.4	80.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	43.6	7.4	85.0	35.5	28.8	5.4	80.0	6.0
Queue Length 50th (ft)	67	218	0	~360	405	62	0	~295	0
Queue Length 95th (ft)	#154	283	38	#605	583	119	49	#542	39
Internal Link Dist (ft)		590			82	454		221	
Turn Bay Length (ft)									
Base Capacity (vph)	152	997	512	490	886	457	628	443	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.67	0.18	1.03	0.82	0.28	0.29	1.00	0.19

Intersection Summary

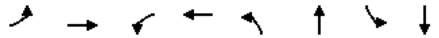
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	348	283	65	152	54	1250	272	1445
v/c Ratio	0.96	0.48	0.25	0.26	0.42	0.92	0.95	0.58
Control Delay	71.3	20.7	27.0	16.4	54.0	41.7	84.3	18.7
Queue Delay	0.0	0.6	0.4	0.0	0.0	97.8	143.9	57.8
Total Delay	71.3	21.3	27.4	16.4	54.0	139.5	228.2	76.5
Queue Length 50th (ft)	212	95	30	43	33	394	174	233
Queue Length 95th (ft)	#389	172	66	92	73	#540	#334	282
Internal Link Dist (ft)		207		577		298		139
Turn Bay Length (ft)								
Base Capacity (vph)	374	606	268	595	140	1353	287	2478
Starvation Cap Reductn	0	0	0	0	0	329	84	1189
Spillback Cap Reductn	0	104	48	0	0	0	0	163
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.56	0.30	0.26	0.39	1.22	1.34	1.12

Intersection Summary

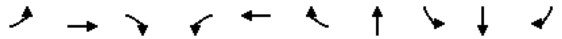
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	239	836	163	619	71	739	391	1141
v/c Ratio	0.94	0.57	0.94	0.41	0.86	0.95	0.95	0.98dr
Control Delay	75.5	24.9	86.2	11.9	117.2	59.1	74.0	31.7
Queue Delay	88.9	0.0	0.0	0.2	0.0	16.3	15.1	21.1
Total Delay	164.4	24.9	86.2	12.0	117.2	75.3	89.1	52.8
Queue Length 50th (ft)	153	223	104	78	51	251	274	307
Queue Length 95th (ft)	#314	283	#242	123	#141	#384	#462	#461
Internal Link Dist (ft)		327		314		290		298
Turn Bay Length (ft)								
Base Capacity (vph)	268	1548	184	1572	83	782	428	1290
Starvation Cap Reductn	0	0	0	0	0	0	38	185
Spillback Cap Reductn	68	0	0	280	0	61	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.54	0.89	0.48	0.86	1.02	1.00	1.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	152	1511	2	15	570	302	157	549	13	14
v/c Ratio	0.54	1.08	0.00	0.27	0.54	0.40	0.54	0.69	0.03	0.04
Control Delay	71.4	80.4	37.0	88.1	33.7	3.8	60.9	38.6	19.6	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	71.4	80.4	37.0	88.1	33.7	3.8	60.9	39.3	19.6	11.8
Queue Length 50th (ft)	77	~842	1	15	187	0	141	165	6	2
Queue Length 95th (ft)	121	#1100	9	45	232	47	229	250	18	14
Internal Link Dist (ft)		247			310		22		129	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	380	1405	456	56	1103	763	464	1078	585	374
Starvation Cap Reductn	0	0	0	0	0	0	0	229	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	1.08	0.00	0.27	0.52	0.40	0.34	0.65	0.02	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	520	240	420
v/c Ratio	0.84	0.70	0.81
Control Delay	36.5	33.3	38.4
Queue Delay	0.0	0.0	0.0
Total Delay	36.5	33.3	38.4
Queue Length 50th (ft)	226	80	183
Queue Length 95th (ft)	#418	156	#348
Internal Link Dist (ft)	577	323	73
Turn Bay Length (ft)			
Base Capacity (vph)	713	429	605
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.73	0.56	0.69

Intersection Summary

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

38: Main St & 32nd St

Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	890	225	495	246	122	334	134	145
v/c Ratio	0.46	0.86	0.86	0.38	0.83	0.29	0.55	0.59	0.44
Control Delay	44.4	36.3	65.0	19.2	58.7	28.4	7.6	44.4	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	36.3	65.0	19.2	58.7	28.4	7.6	44.4	20.1
Queue Length 50th (ft)	33	187	101	77	109	51	5	58	34
Queue Length 95th (ft)	84	#376	#267	153	#279	99	70	127	83
Internal Link Dist (ft)		151		932		1629			377
Turn Bay Length (ft)									
Base Capacity (vph)	189	1041	263	1301	296	550	686	278	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.85	0.86	0.38	0.83	0.22	0.49	0.48	0.28

Intersection Summary

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

39: 32nd St & Wabash St

Timing Plan: PM Peak

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SWL
Lane Group Flow (vph)	250	228	206	451	152	391	870	489	446	234
v/c Ratio	1.00	0.44	0.85	1.03	0.69	1.03	0.80	1.27	0.44	0.49
Control Delay	101.8	27.8	70.9	93.8	64.3	100.9	37.1	179.5	36.1	47.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0
Total Delay	101.8	27.8	70.9	93.8	64.3	100.9	40.0	179.5	36.1	47.7
Queue Length 50th (ft)	~201	100	148	~373	111	~324	318	~473	145	82
Queue Length 95th (ft)	#377	182	#299	#595	181	#534	408	#701	211	122
Internal Link Dist (ft)		174	440			351			1629	472
Turn Bay Length (ft)										
Base Capacity (vph)	249	518	243	436	274	378	1150	384	1014	581
Starvation Cap Reductn	0	0	0	0	0	0	177	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.44	0.85	1.03	0.55	1.03	0.89	1.27	0.44	0.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	1288	109	43	474	500	76	750	152	337	304	217
v/c Ratio	0.68	1.14	0.19	0.74	0.61	0.76	0.52	1.15	0.43	0.82	0.23	0.26
Control Delay	64.4	108.2	10.2	117.7	35.7	14.6	65.4	126.3	25.5	48.3	20.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	0.3	0.1
Total Delay	64.4	108.2	10.2	117.7	35.7	14.6	65.4	126.3	25.5	65.4	20.4	2.6
Queue Length 50th (ft)	101	~580	20	30	160	16	51	~304	40	154	54	14
Queue Length 95th (ft)	191	#660	54	#113	140	#208	114	#553	123	#451	99	45
Internal Link Dist (ft)		710			294			45			182	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	371	1126	585	58	781	659	193	653	351	410	1310	845
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	67	517	155
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.14	0.19	0.74	0.61	0.76	0.39	1.15	0.43	0.98	0.38	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	329	790	392	167	296
v/c Ratio	0.67	0.38	0.49	0.34	0.62
Control Delay	28.4	6.9	19.9	6.1	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	6.9	19.9	6.1	17.2
Queue Length 50th (ft)	77	48	50	0	47
Queue Length 95th (ft)	#274	135	108	41	121
Internal Link Dist (ft)		932	312		271
Turn Bay Length (ft)					
Base Capacity (vph)	515	2320	1241	664	725
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.64	0.34	0.32	0.25	0.41

Intersection Summary

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

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	893	1565	824
v/c Ratio	0.92	0.44	0.60
Control Delay	28.4	0.4	21.4
Queue Delay	31.4	0.0	0.4
Total Delay	59.7	0.4	21.8
Queue Length 50th (ft)	245	0	95
Queue Length 95th (ft)	#516	0	131
Internal Link Dist (ft)		139	454
Turn Bay Length (ft)			
Base Capacity (vph)	973	3539	1362
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	133	0	156
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.06	0.44	0.68

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	523	337
v/c Ratio	0.08	0.08	0.16	0.14
Control Delay	31.9	31.9	0.2	3.4
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	31.9	31.9	0.2	3.5
Queue Length 50th (ft)	4	4	0	8
Queue Length 95th (ft)	17	17	3	33
Internal Link Dist (ft)	517	1529	11	201
Turn Bay Length (ft)				
Base Capacity (vph)	276	276	3278	2860
Starvation Cap Reductn	0	0	0	1388
Spillback Cap Reductn	0	0	81	1069
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.16	0.23

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	190	115
v/c Ratio	0.07	0.07	0.11	0.09
Control Delay	28.6	28.6	0.5	3.6
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	28.6	28.6	0.5	3.7
Queue Length 50th (ft)	3	3	0	5
Queue Length 95th (ft)	15	15	9	25
Internal Link Dist (ft)	291	945	3	196
Turn Bay Length (ft)				
Base Capacity (vph)	356	356	1703	1635
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	1026
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.11	0.19

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	124	51
v/c Ratio	0.08	0.08	0.07	0.04
Control Delay	26.4	26.4	0.6	4.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.4	26.4	0.6	4.9
Queue Length 50th (ft)	3	3	0	3
Queue Length 95th (ft)	16	16	9	15
Internal Link Dist (ft)	190	1010	1	182
Turn Bay Length (ft)				
Base Capacity (vph)	379	379	1596	1400
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	13
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.08	0.04

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	554	549
v/c Ratio	0.10	0.10	0.18	0.15
Control Delay	36.9	36.9	0.6	3.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	36.9	36.9	0.7	3.2
Queue Length 50th (ft)	5	5	8	24
Queue Length 95th (ft)	16	16	9	33
Internal Link Dist (ft)	512	1235	129	6
Turn Bay Length (ft)				
Base Capacity (vph)	250	250	3151	4251
Starvation Cap Reductn	0	0	1598	0
Spillback Cap Reductn	0	0	0	745
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.04	0.36	0.16

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	1138	651
v/c Ratio	0.09	0.09	0.25	0.18
Control Delay	27.4	27.4	0.3	3.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.4	27.4	0.3	3.2
Queue Length 50th (ft)	3	3	0	11
Queue Length 95th (ft)	12	12	m8	40
Internal Link Dist (ft)	1768	925	182	351
Turn Bay Length (ft)				
Base Capacity (vph)	279	279	4619	3690
Starvation Cap Reductn	0	0	632	0
Spillback Cap Reductn	0	0	95	123
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.29	0.18

Intersection Summary

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	298	25	447	427	490
v/c Ratio	0.49	0.09	0.75	0.26	0.33
Control Delay	15.9	11.4	23.6	10.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	11.4	23.6	10.0	8.8
Queue Length 50th (ft)	71	5	129	38	36
Queue Length 95th (ft)	124	17	216	87	89
Internal Link Dist (ft)	166		452	369	79
Turn Bay Length (ft)					
Base Capacity (vph)	782	374	777	1627	1478
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.07	0.58	0.26	0.33

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	297	578	93	209
v/c Ratio	0.45	0.77	0.15	0.32
Control Delay	10.1	17.9	9.3	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.1	17.9	9.3	7.4
Queue Length 50th (ft)	41	103	11	16
Queue Length 95th (ft)	84	190	37	55
Internal Link Dist (ft)	711	588	202	369
Turn Bay Length (ft)				
Base Capacity (vph)	764	864	605	659
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.67	0.15	0.32

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	212	21	449	162	125
v/c Ratio	0.05	0.30	0.05	0.62	0.30	0.21
Control Delay	9.4	8.4	9.0	13.7	7.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	8.4	9.0	13.7	7.4	5.9
Queue Length 50th (ft)	1	12	1	36	10	6
Queue Length 95th (ft)	10	70	14	176	49	36
Internal Link Dist (ft)		588		570	296	200
Turn Bay Length (ft)						
Base Capacity (vph)	352	964	601	985	804	884
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.22	0.03	0.46	0.20	0.14

Intersection Summary

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	41	500	1815	109	109
v/c Ratio	0.21	0.20	0.82	0.39	0.32
Control Delay	28.8	3.4	16.0	26.7	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	3.4	16.0	26.7	8.6
Queue Length 50th (ft)	11	22	142	29	0
Queue Length 95th (ft)	41	46	#555	80	37
Internal Link Dist (ft)		158	581	318	
Turn Bay Length (ft)	250				
Base Capacity (vph)	226	2592	2204	455	488
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.19	0.82	0.24	0.22

Intersection Summary

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

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	216	96	227	108	591
v/c Ratio	0.63	0.49	0.38	0.42	0.87
Control Delay	33.4	39.3	18.5	17.9	38.3
Queue Delay	0.2	0.1	0.0	0.0	0.0
Total Delay	33.6	39.3	18.5	17.9	38.3
Queue Length 50th (ft)	80	38	66	13	227
Queue Length 95th (ft)	153	89	127	56	#490
Internal Link Dist (ft)	154		618	298	247
Turn Bay Length (ft)					
Base Capacity (vph)	435	210	731	424	680
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	22	2	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.46	0.31	0.25	0.87

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	9	273	260	542	91	407
v/c Ratio	0.04	0.36	0.68	0.72	0.14	0.75
Control Delay	11.0	11.9	23.2	18.6	6.2	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	11.9	23.2	18.6	6.2	22.7
Queue Length 50th (ft)	1	43	49	101	5	80
Queue Length 95th (ft)	10	124	164	278	32	227
Internal Link Dist (ft)		570		608	299	298
Turn Bay Length (ft)						
Base Capacity (vph)	271	1012	510	994	896	751
Starvation Cap Reductn	0	0	0	0	0	9
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.27	0.51	0.55	0.10	0.55

Intersection Summary

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	585	608	279	282	421
v/c Ratio	1.03	1.05	0.74	0.71	0.60
Control Delay	74.9	76.4	39.3	37.0	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	74.9	76.4	39.3	37.0	28.8
Queue Length 50th (ft)	~273	~293	110	110	85
Queue Length 95th (ft)	#622	#633	215	214	141
Internal Link Dist (ft)		251		313	132
Turn Bay Length (ft)					
Base Capacity (vph)	566	581	481	507	946
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.03	1.05	0.58	0.56	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	152	326	130	109	380	83	109	326	326	76	976
v/c Ratio	0.63	0.72	0.27	0.50	0.59	0.14	1.14	0.25	0.41	0.46	0.73
Control Delay	37.3	35.9	5.3	27.6	24.7	3.9	165.6	15.3	3.7	45.9	24.6
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	37.3	35.9	5.3	27.8	24.7	3.9	165.6	15.3	3.7	45.9	24.9
Queue Length 50th (ft)	69	151	0	43	156	0	~64	43	0	35	197
Queue Length 95th (ft)	107	194	33	74	188	22	m#146	m103	m50	#113	#398
Internal Link Dist (ft)		618			587			299			313
Turn Bay Length (ft)											
Base Capacity (vph)	372	699	661	299	885	777	96	1297	794	166	1340
Starvation Cap Reductn	0	0	0	0	0	0	0	0	16	0	0
Spillback Cap Reductn	0	0	47	18	0	0	0	0	0	0	52
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.47	0.21	0.39	0.43	0.11	1.14	0.25	0.42	0.46	0.76

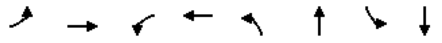
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	207	272	207	130	380	120	109	674	65	832	337
v/c Ratio	0.91	0.44	0.34	0.43	0.62	0.20	1.01	0.37	0.21	0.91	0.37
Control Delay	67.3	22.5	8.5	24.4	26.5	4.4	114.5	8.9	4.9	23.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	67.3	22.5	8.5	24.4	26.5	4.4	114.5	8.9	4.9	23.6	1.2
Queue Length 50th (ft)	91	97	23	46	146	0	~63	97	6	396	0
Queue Length 95th (ft)	#211	160	68	94	230	32	#163	95	m11	#610	m0
Internal Link Dist (ft)		608			780			301		299	
Turn Bay Length (ft)											
Base Capacity (vph)	258	699	678	346	699	669	108	1820	317	916	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	135
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.39	0.31	0.38	0.54	0.18	1.01	0.37	0.21	0.91	0.44

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	108	43	130	43	490	109	1060
v/c Ratio	0.54	0.39	0.26	0.46	0.35	0.19	0.18	0.79
Control Delay	44.1	18.5	33.8	19.7	12.0	1.9	2.7	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Total Delay	44.1	18.5	33.8	19.7	12.0	1.9	2.7	8.3
Queue Length 50th (ft)	41	20	20	25	4	18	9	101
Queue Length 95th (ft)	81	61	46	69	m19	m26	m16	m#162
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	422	615	432	624	122	2572	620	1338
Starvation Cap Reductn	0	0	0	0	0	0	0	64
Spillback Cap Reductn	0	2	0	0	0	0	0	69
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.18	0.10	0.21	0.35	0.19	0.18	0.84

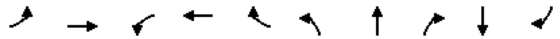
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	223	76	380	207	92	468	163	842
v/c Ratio	0.90	0.41	0.26	0.69	0.35	0.65	0.25	0.35	0.89
Control Delay	73.3	23.4	22.3	31.3	4.8	40.1	7.3	6.7	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	5.7
Total Delay	73.3	23.4	22.3	31.3	4.8	40.1	7.7	6.7	24.9
Queue Length 50th (ft)	73	81	27	156	0	31	48	26	209
Queue Length 95th (ft)	#180	138	60	246	43	#119	74	m36	#626
Internal Link Dist (ft)		588		983			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	207	624	335	629	647	141	1837	461	950
Starvation Cap Reductn	0	0	0	0	0	0	795	0	74
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.36	0.23	0.60	0.32	0.65	0.45	0.35	0.96

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	118	482	87	1148	108	11	15	29	174	554
v/c Ratio	0.53	0.38	0.88	0.90	0.16	0.09	0.07	0.15	0.41	1.04
Control Delay	56.1	11.0	112.4	28.6	3.5	35.9	34.6	13.7	26.2	74.2
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	11.0	112.4	28.6	3.6	35.9	34.6	13.7	26.2	74.2
Queue Length 50th (ft)	35	43	52	142	2	6	8	0	70	~326
Queue Length 95th (ft)	#96	118	#194	#400	29	22	26	23	116	#542
Internal Link Dist (ft)		578		501			308		11	
Turn Bay Length (ft)	140		100			150				
Base Capacity (vph)	221	1366	99	1384	979	306	566	455	650	707
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	259	0	144	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.35	0.88	0.83	0.15	0.04	0.04	0.06	0.27	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	110	414	115	149	230	587	67	273
v/c Ratio	0.27	0.67	0.53	0.24	0.48	0.69	0.28	0.32
Control Delay	14.1	17.4	23.9	8.6	13.2	14.2	12.3	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	14.1	17.4	23.9	8.6	13.2	14.3	12.3	9.2
Queue Length 50th (ft)	16	59	19	12	31	81	8	33
Queue Length 95th (ft)	65	201	84	58	115	263	42	108
Internal Link Dist (ft)		167		249		281		225
Turn Bay Length (ft)								
Base Capacity (vph)	608	892	321	892	629	1101	317	1130
Starvation Cap Reductn	0	0	0	0	0	58	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.46	0.36	0.17	0.37	0.56	0.21	0.24

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	85	70	52	225	141	334
v/c Ratio	0.30	0.14	0.15	0.43	0.15	0.38
Control Delay	11.5	7.5	9.3	8.1	6.3	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	7.5	9.3	8.1	6.3	7.1
Queue Length 50th (ft)	7	4	4	12	9	21
Queue Length 95th (ft)	41	29	26	63	47	102
Internal Link Dist (ft)		581		561	314	281
Turn Bay Length (ft)						
Base Capacity (vph)	551	940	687	926	1297	1175
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	11	0	0	19	25	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.07	0.08	0.25	0.11	0.28

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	845	82	1471	122	183
v/c Ratio	0.08	0.53	0.42	0.72	0.45	0.39
Control Delay	45.5	18.4	45.9	18.7	32.7	22.8
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	45.5	18.4	45.9	18.8	32.7	22.8
Queue Length 50th (ft)	4	163	33	255	41	56
Queue Length 95th (ft)	27	232	112	#757	113	117
Internal Link Dist (ft)		413		428	186	3
Turn Bay Length (ft)	230		250			
Base Capacity (vph)	233	1661	279	2038	721	778
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	69	1	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.51	0.29	0.75	0.17	0.24

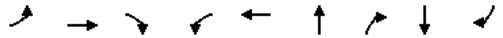
Intersection Summary

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

Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	93	549	1728	93
v/c Ratio	0.53	0.23	0.97	0.27
Control Delay	44.4	4.8	39.4	3.7
Queue Delay	0.0	0.0	12.0	0.0
Total Delay	44.4	4.8	51.5	3.7
Queue Length 50th (ft)	33	52	~487	0
Queue Length 95th (ft)	95	46	#577	0
Internal Link Dist (ft)		378	228	
Turn Bay Length (ft)	75			
Base Capacity (vph)	217	2434	1776	383
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	90	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.23	1.02	0.24

Intersection Summary

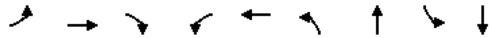
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	115	266	20	202	788	147	89	360	334
v/c Ratio	0.61	0.20	0.03	0.79	0.91	0.37	0.16	0.86	0.47
Control Delay	73.5	28.2	12.2	70.3	43.8	38.7	7.8	60.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.5	28.2	12.2	70.3	43.8	38.7	7.8	60.4	6.1
Queue Length 50th (ft)	92	76	0	160	580	92	0	274	0
Queue Length 95th (ft)	#212	134	20	269	857	177	41	#501	72
Internal Link Dist (ft)		590			82	454		221	
Turn Bay Length (ft)									
Base Capacity (vph)	243	1658	752	423	1080	538	701	568	840
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.16	0.03	0.48	0.73	0.27	0.13	0.63	0.40

Intersection Summary

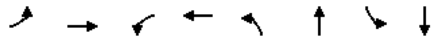
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	272	217	163	54	228	98	826	185	1283
v/c Ratio	0.82	0.37	0.27	0.16	0.37	0.62	0.68	0.77	0.59
Control Delay	40.4	18.1	3.9	15.7	8.6	51.9	23.2	53.9	16.5
Queue Delay	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	2.6
Total Delay	40.4	18.1	4.0	15.8	8.6	51.9	23.2	53.9	19.1
Queue Length 50th (ft)	98	65	0	15	27	40	151	75	139
Queue Length 95th (ft)	185	114	33	37	70	#118	248	#197	220
Internal Link Dist (ft)		207			577		298		139
Turn Bay Length (ft)									
Base Capacity (vph)	418	735	720	427	745	157	1219	243	2176
Starvation Cap Reductn	0	0	0	0	0	0	0	0	740
Spillback Cap Reductn	0	0	77	47	0	0	0	0	125
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.30	0.25	0.14	0.31	0.62	0.68	0.76	0.89

Intersection Summary

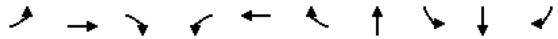
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	489	98	750	43	315	207	1098
v/c Ratio	0.96	0.31	0.26	0.45	0.61	0.34	0.95	0.93
Control Delay	81.3	16.3	19.0	16.7	81.5	16.6	92.9	41.9
Queue Delay	0.9	0.0	0.0	0.0	0.0	0.0	0.0	47.1
Total Delay	82.1	16.3	19.0	16.7	81.5	16.6	92.9	89.0
Queue Length 50th (ft)	128	96	37	150	28	45	134	328
Queue Length 95th (ft)	#281	134	76	201	#83	81	#280	#464
Internal Link Dist (ft)		327		314		279		298
Turn Bay Length (ft)								
Base Capacity (vph)	217	1560	377	1663	71	1027	219	1234
Starvation Cap Reductn	0	0	0	0	0	0	0	236
Spillback Cap Reductn	1	0	0	8	0	7	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.31	0.26	0.45	0.61	0.31	0.95	1.10

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	76	728	4	20	1025	125	9	368	16	24
v/c Ratio	0.39	0.63	0.01	0.17	0.95	0.19	0.03	0.34	0.03	0.05
Control Delay	71.9	31.9	33.8	73.3	52.2	7.8	43.0	23.3	16.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	71.9	31.9	33.8	73.3	52.2	7.8	43.0	23.4	16.2	9.5
Queue Length 50th (ft)	38	254	1	19	~418	18	5	86	6	4
Queue Length 95th (ft)	#80	310	12	50	#556	51	23	126	18	17
Internal Link Dist (ft)		247			310		22		134	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	195	1397	432	122	1438	749	646	1509	819	510
Starvation Cap Reductn	0	0	0	0	0	0	0	299	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.52	0.01	0.16	0.71	0.17	0.01	0.30	0.02	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	271	242	230
v/c Ratio	0.63	0.60	0.39
Control Delay	25.4	23.3	21.7
Queue Delay	0.0	0.0	0.0
Total Delay	25.4	23.3	21.7
Queue Length 50th (ft)	72	54	57
Queue Length 95th (ft)	167	140	#181
Internal Link Dist (ft)	577	323	73
Turn Bay Length (ft)			
Base Capacity (vph)	844	638	623
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.38	0.37

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	383	341	705	120	54	28	48	135
v/c Ratio	0.21	0.55	0.71	0.46	0.50	0.13	0.07	0.24	0.41
Control Delay	35.0	15.2	33.0	15.6	39.5	24.2	10.8	34.5	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	15.2	33.0	15.6	39.5	24.2	10.8	34.5	25.2
Queue Length 50th (ft)	14	30	110	75	42	17	0	17	37
Queue Length 95th (ft)	51	82	#325	221	#146	53	21	60	98
Internal Link Dist (ft)		151		932		1629			377
Turn Bay Length (ft)									
Base Capacity (vph)	257	1076	599	1690	265	647	558	252	597
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.36	0.57	0.42	0.45	0.08	0.05	0.19	0.23

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SWL
Lane Group Flow (vph)	98	272	321	184	76	234	375	229	555	946
v/c Ratio	0.61	0.50	1.59	0.39	0.49	0.74	0.33	0.77	0.65	1.45
Control Delay	56.7	36.7	315.8	37.4	62.2	59.6	23.4	63.0	41.4	246.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	56.7	36.7	315.8	37.4	62.2	59.8	23.4	63.0	41.4	246.6
Queue Length 50th (ft)	62	155	~341	108	54	164	102	162	190	~496
Queue Length 95th (ft)	#169	281	#596	205	111	265	157	267	261	#729
Internal Link Dist (ft)		174	440			319			1629	472
Turn Bay Length (ft)										
Base Capacity (vph)	160	546	202	474	314	429	1260	394	992	651
Starvation Cap Reductn	0	0	0	0	0	19	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.50	1.59	0.39	0.24	0.57	0.30	0.58	0.56	1.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	697	152	326	822	424	33	174	33	141	1130	65
v/c Ratio	0.83	1.80	0.61	0.88	0.92	0.74	0.35	0.34	0.13	0.36	0.86	0.08
Control Delay	89.6	390.4	18.1	59.1	38.6	17.4	50.0	34.2	14.4	20.7	30.7	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0
Total Delay	89.6	390.4	18.1	59.1	38.6	17.4	50.0	34.2	14.4	20.7	32.2	4.6
Queue Length 50th (ft)	42	~284	6	132	~216	32	14	34	0	29	190	5
Queue Length 95th (ft)	#161	#208	49	#377	163	#198	#56	82	27	93	#507	27
Internal Link Dist (ft)		710			294			151			215	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	118	388	248	369	889	575	94	543	259	393	1308	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	68	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	1.80	0.61	0.88	0.92	0.74	0.35	0.32	0.13	0.36	0.91	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	40	203	561	116	408
v/c Ratio	0.15	0.14	0.46	0.19	0.62
Control Delay	22.6	6.9	12.5	4.5	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	6.9	12.5	4.5	10.7
Queue Length 50th (ft)	4	8	26	0	19
Queue Length 95th (ft)	40	36	130	30	123
Internal Link Dist (ft)		932	312		271
Turn Bay Length (ft)					
Base Capacity (vph)	270	2285	1897	902	991
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.09	0.30	0.13	0.41

Intersection Summary

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	1014	1196	453
v/c Ratio	0.95	0.34	0.38
Control Delay	29.5	0.3	23.6
Queue Delay	14.4	0.0	0.1
Total Delay	43.9	0.3	23.7
Queue Length 50th (ft)	308	0	60
Queue Length 95th (ft)	#641	0	88
Internal Link Dist (ft)		139	454
Turn Bay Length (ft)			
Base Capacity (vph)	1085	3539	1190
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	89	0	115
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.02	0.34	0.42

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	214	503
v/c Ratio	0.07	0.07	0.08	0.26
Control Delay	22.0	22.0	1.4	6.2
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	22.0	22.0	1.4	6.2
Queue Length 50th (ft)	3	3	4	34
Queue Length 95th (ft)	11	11	17	56
Internal Link Dist (ft)	167	457	11	201
Turn Bay Length (ft)				
Base Capacity (vph)	352	352	2989	2686
Starvation Cap Reductn	0	0	0	758
Spillback Cap Reductn	0	0	0	858
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.07	0.28

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	90	120
v/c Ratio	0.07	0.07	0.05	0.10
Control Delay	21.6	21.6	0.6	4.3
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	21.6	21.6	0.6	4.5
Queue Length 50th (ft)	2	2	0	5
Queue Length 95th (ft)	11	11	m4	26
Internal Link Dist (ft)	1363	1025	3	196
Turn Bay Length (ft)				
Base Capacity (vph)	353	353	1681	1571
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	935
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.05	0.19

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	82	102
v/c Ratio	0.07	0.07	0.05	0.09
Control Delay	19.5	19.5	0.3	4.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.5	19.5	0.3	4.9
Queue Length 50th (ft)	2	2	0	5
Queue Length 95th (ft)	13	13	m2	25
Internal Link Dist (ft)	109	790	1	178
Turn Bay Length (ft)				
Base Capacity (vph)	363	363	1598	1220
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	31
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.05	0.09

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	191	402
v/c Ratio	0.07	0.07	0.06	0.12
Control Delay	34.0	34.0	0.4	3.6
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	34.0	34.0	0.6	3.6
Queue Length 50th (ft)	5	5	2	17
Queue Length 95th (ft)	16	16	2	25
Internal Link Dist (ft)	726	567	134	10
Turn Bay Length (ft)				
Base Capacity (vph)	370	370	3127	4168
Starvation Cap Reductn	0	0	2171	0
Spillback Cap Reductn	0	0	0	41
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.20	0.10

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	516	1048
v/c Ratio	0.06	0.06	0.12	0.36
Control Delay	16.9	16.9	0.5	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.9	16.9	0.5	5.3
Queue Length 50th (ft)	2	2	0	20
Queue Length 95th (ft)	9	9	m6	71
Internal Link Dist (ft)	2402	727	215	319
Turn Bay Length (ft)				
Base Capacity (vph)	429	429	4424	3197
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	10	154
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.12	0.34

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	472	665	818	681
v/c Ratio	1.61	0.85	0.58	0.52
Control Delay	311.3	28.5	15.3	13.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	311.3	28.5	15.3	13.9
Queue Length 50th (ft)	~267	212	116	88
Queue Length 95th (ft)	#325	#400	166	133
Internal Link Dist (ft)	166	452	369	79
Turn Bay Length (ft)				
Base Capacity (vph)	293	786	1409	1320
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.61	0.85	0.58	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

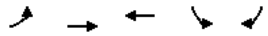
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	510	528	119	239
v/c Ratio	0.71	0.61	0.28	0.55
Control Delay	14.7	11.3	14.0	16.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.7	11.3	14.0	16.9
Queue Length 50th (ft)	63	62	15	29
Queue Length 95th (ft)	215	197	69	125
Internal Link Dist (ft)	711	588	202	369
Turn Bay Length (ft)				
Base Capacity (vph)	1024	1231	685	674
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.43	0.17	0.35

Intersection Summary

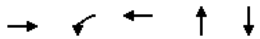
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	38	420	10	306	162	75
v/c Ratio	0.10	0.58	0.03	0.42	0.34	0.14
Control Delay	7.9	11.3	7.6	9.2	10.7	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	11.3	7.6	9.2	10.7	5.7
Queue Length 50th (ft)	3	36	1	24	15	3
Queue Length 95th (ft)	21	160	9	111	65	25
Internal Link Dist (ft)		588		570	296	200
Turn Bay Length (ft)						
Base Capacity (vph)	616	1186	495	1198	869	958
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.35	0.02	0.26	0.19	0.08

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	71	2114	924	98	76
v/c Ratio	0.18	0.82	0.36	0.39	0.26
Control Delay	4.1	9.3	3.5	35.8	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	9.3	3.5	35.8	11.1
Queue Length 50th (ft)	6	213	48	38	0
Queue Length 95th (ft)	22	406	92	96	37
Internal Link Dist (ft)		158	581	318	
Turn Bay Length (ft)	250				
Base Capacity (vph)	422	2802	2761	408	424
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.75	0.33	0.24	0.18

Intersection Summary



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	654	43	174	195	456
v/c Ratio	0.89	0.30	0.20	0.64	1.06
Control Delay	40.4	43.6	12.6	26.4	93.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	43.6	12.6	26.4	93.5
Queue Length 50th (ft)	314	22	45	44	~292
Queue Length 95th (ft)	#586	57	92	110	#518
Internal Link Dist (ft)	154		618	298	247
Turn Bay Length (ft)					
Base Capacity (vph)	772	153	975	411	431
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.85	0.28	0.18	0.47	1.06

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	21	692	123	473	200	306
v/c Ratio	0.06	0.80	0.64	0.56	0.31	0.73
Control Delay	8.6	19.3	28.7	12.1	6.8	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	19.3	28.7	12.1	6.8	28.3
Queue Length 50th (ft)	3	151	24	82	11	72
Queue Length 95th (ft)	14	329	#110	186	57	#224
Internal Link Dist (ft)		570		608	299	298
Turn Bay Length (ft)						
Base Capacity (vph)	429	1117	247	1087	814	549
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.62	0.50	0.44	0.25	0.56

Intersection Summary

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

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	459	473	416	373	409
v/c Ratio	0.88	0.88	0.87	0.74	0.66
Control Delay	44.7	42.3	47.0	35.4	32.4
Queue Delay	2.2	2.1	0.0	0.0	0.1
Total Delay	46.9	44.4	47.0	35.4	32.4
Queue Length 50th (ft)	211	202	184	157	91
Queue Length 95th (ft)	#429	#426	#371	#306	136
Internal Link Dist (ft)		251		313	132
Turn Bay Length (ft)					
Base Capacity (vph)	531	546	495	521	895
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	21	21	0	0	32
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.90	0.84	0.72	0.47

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	141	489	250	109	380	98	152	550	761	124	798
v/c Ratio	0.54	0.88	0.41	1.47	0.48	0.14	0.72	0.51	1.12	0.66	0.84
Control Delay	42.6	54.8	8.3	299.6	25.9	5.3	63.4	28.6	96.4	61.4	40.5
Queue Delay	0.0	0.0	0.1	27.4	0.0	0.0	0.0	0.3	19.9	0.0	0.5
Total Delay	42.6	54.8	8.4	327.0	25.9	5.3	63.4	28.9	116.2	61.4	41.1
Queue Length 50th (ft)	79	311	12	~101	181	0	96	153	~446	79	254
Queue Length 95th (ft)	169	#595	83	#195	321	35	#198	214	#729	151	332
Internal Link Dist (ft)		618			587			299			313
Turn Bay Length (ft)											
Base Capacity (vph)	261	556	616	74	797	716	250	1297	677	241	1241
Starvation Cap Reductn	0	0	0	0	0	0	0	268	27	0	147
Spillback Cap Reductn	0	0	23	3	0	0	0	0	0	0	94
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.88	0.42	1.54	0.48	0.14	0.61	0.53	1.17	0.51	0.73

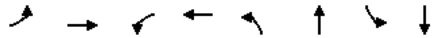
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	326	435	315	120	293	299	130	1196	130	598	446
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.52	0.71	1.07	0.71	0.49
Control Delay	76.7	25.2	6.6	31.8	20.9	17.2	17.7	14.0	129.6	20.1	3.9
Queue Delay	16.8	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	7.5	0.4
Total Delay	93.5	25.2	6.6	31.8	20.9	17.3	17.7	14.4	129.6	27.6	4.3
Queue Length 50th (ft)	159	174	22	46	106	83	32	205	~74	212	11
Queue Length 95th (ft)	#326	270	77	#109	173	154	m70	168	#121	337	56
Internal Link Dist (ft)		608			780			301		299	
Turn Bay Length (ft)											
Base Capacity (vph)	328	699	748	215	699	637	252	1678	121	845	908
Starvation Cap Reductn	0	0	0	0	0	0	0	125	0	204	141
Spillback Cap Reductn	18	0	0	0	0	33	0	11	0	5	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.62	0.42	0.56	0.42	0.50	0.52	0.77	1.07	0.93	0.58

Intersection Summary

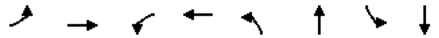
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	217	98	217	43	924	185	1054
v/c Ratio	0.69	0.61	0.52	0.53	0.40	0.40	0.61	0.87
Control Delay	48.3	31.2	37.9	16.6	17.7	4.3	16.7	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	48.3	31.2	37.9	16.6	17.7	4.4	16.7	17.9
Queue Length 50th (ft)	62	83	45	40	6	62	26	168
Queue Length 95th (ft)	107	134	82	91	m12	65	m#162	#797
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	344	620	344	651	108	2287	302	1206
Starvation Cap Reductn	0	0	0	0	0	494	0	2
Spillback Cap Reductn	0	0	0	0	0	5	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.35	0.28	0.33	0.40	0.52	0.61	0.88

Intersection Summary

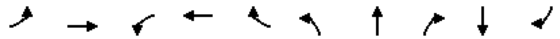
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	342	76	272	92	892	272	891
v/c Ratio	0.59	0.73	0.43	0.58	0.79	0.46	1.00	0.88
Control Delay	35.9	35.4	30.5	30.0	64.3	8.4	57.9	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	6.4
Total Delay	35.9	35.4	30.5	30.0	64.3	9.6	57.9	24.6
Queue Length 50th (ft)	58	157	33	122	28	87	72	97
Queue Length 95th (ft)	102	216	65	171	#135	170	m#218	m#604
Internal Link Dist (ft)		588		983		201		305
Turn Bay Length (ft)								
Base Capacity (vph)	294	624	238	629	116	1949	273	1007
Starvation Cap Reductn	0	0	0	0	0	777	0	86
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.55	0.32	0.43	0.79	0.76	1.00	0.97

Intersection Summary

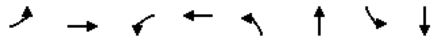
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	641	1673	33	508	47	54	68	38	69	341
v/c Ratio	0.84	0.95	0.41	0.50	0.09	0.43	0.37	0.22	0.22	0.46
Control Delay	53.3	33.6	71.7	17.9	3.8	55.8	50.9	15.7	28.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	53.3	33.6	71.7	17.9	3.9	55.8	51.1	15.7	28.7	5.5
Queue Length 50th (ft)	232	452	24	76	0	38	47	0	36	35
Queue Length 95th (ft)	#460	#968	#78	130	12	79	91	30	67	62
Internal Link Dist (ft)		578		501			308		11	
Turn Bay Length (ft)	140		100			150				
Base Capacity (vph)	763	1757	82	1167	818	328	469	388	526	741
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	201	0	124	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.95	0.40	0.44	0.08	0.16	0.20	0.10	0.13	0.46

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	110	490	182	147	250	617	72	313
v/c Ratio	0.25	0.73	0.83	0.22	0.54	0.66	0.38	0.33
Control Delay	14.8	21.4	50.2	9.0	19.3	18.2	21.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Total Delay	14.8	21.4	50.2	9.0	19.3	20.1	21.3	12.7
Queue Length 50th (ft)	29	138	63	23	66	172	17	71
Queue Length 95th (ft)	61	231	#163	54	169	#360	65	153
Internal Link Dist (ft)		167		249		281		225
Turn Bay Length (ft)								
Base Capacity (vph)	560	827	273	826	466	937	189	953
Starvation Cap Reductn	0	0	0	0	0	178	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.59	0.67	0.18	0.54	0.81	0.38	0.33

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	180	134	23	190	273	368
v/c Ratio	0.55	0.25	0.07	0.34	0.28	0.48
Control Delay	17.0	9.8	9.8	6.3	7.4	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	9.8	9.8	6.3	7.4	9.4
Queue Length 50th (ft)	21	13	2	8	25	34
Queue Length 95th (ft)	86	55	16	49	87	131
Internal Link Dist (ft)		581		561	314	281
Turn Bay Length (ft)						
Base Capacity (vph)	565	909	609	887	1255	983
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	21	0	0	34	48	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.15	0.04	0.22	0.23	0.37

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	61	1635	21	603	191	161
v/c Ratio	0.39	0.92	0.26	0.38	0.65	0.35
Control Delay	57.9	30.2	65.7	14.2	50.0	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	30.2	65.7	14.2	50.0	30.8
Queue Length 50th (ft)	33	369	12	117	97	66
Queue Length 95th (ft)	101	#743	#52	139	218	143
Internal Link Dist (ft)		413		428	186	3
Turn Bay Length (ft)	230		250			
Base Capacity (vph)	221	2112	80	1821	623	615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	60	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.77	0.26	0.34	0.31	0.26

Intersection Summary

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

Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	117	1630	692	61
v/c Ratio	0.59	0.68	0.39	0.11
Control Delay	50.7	11.9	12.5	0.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.7	11.9	12.5	0.8
Queue Length 50th (ft)	52	300	131	0
Queue Length 95th (ft)	134	322	106	0
Internal Link Dist (ft)		378	228	
Turn Bay Length (ft)	75			
Base Capacity (vph)	327	2709	1886	630
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	73	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.60	0.38	0.10

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	102	639	92	487	703	127	177	440	111
v/c Ratio	0.69	0.77	0.21	0.98	0.84	0.27	0.28	0.98	0.19
Control Delay	71.9	43.4	7.5	74.3	34.0	28.3	5.4	74.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.9	43.4	7.5	74.3	34.0	28.3	5.4	74.5	6.0
Queue Length 50th (ft)	66	208	0	318	382	61	0	286	0
Queue Length 95th (ft)	#154	271	38	#580	553	119	49	#534	39
Internal Link Dist (ft)		590			82	387		221	
Turn Bay Length (ft)									
Base Capacity (vph)	154	997	512	495	885	465	628	448	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.64	0.18	0.98	0.79	0.27	0.28	0.98	0.19

Intersection Summary

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

34: Boston Ave & 28th St

Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	380	457	185	76	163	54	1305	293	1010
v/c Ratio	1.01	0.75	0.29	0.52	0.27	0.42	1.01	1.07	0.43
Control Delay	81.8	35.1	4.6	38.6	13.5	49.7	57.7	111.4	13.2
Queue Delay	0.0	0.0	0.1	1.5	0.0	0.0	95.3	0.0	0.7
Total Delay	81.8	35.1	4.7	40.1	13.5	49.7	153.0	111.4	13.9
Queue Length 50th (ft)	~219	226	0	34	36	30	~393	~186	108
Queue Length 95th (ft)	#403	343	43	#88	83	67	#547	#342	143
Internal Link Dist (ft)		207			577		298		206
Turn Bay Length (ft)									
Base Capacity (vph)	375	612	641	147	609	135	1288	275	2367
Starvation Cap Reductn	0	0	0	0	0	0	239	0	905
Spillback Cap Reductn	0	0	64	15	0	0	0	0	151
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.75	0.32	0.58	0.27	0.40	1.24	1.07	0.69

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

35: Main St & 28th St

Timing Plan: PM Peak

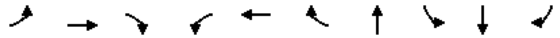
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	239	836	163	641	65	739	402	1152
v/c Ratio	0.97	0.56	0.94	0.42	0.81	0.98	0.95	0.99dr
Control Delay	84.0	25.2	86.6	12.7	111.3	67.3	74.7	32.9
Queue Delay	125.7	0.0	0.0	0.2	0.0	22.4	29.2	31.9
Total Delay	209.7	25.2	86.6	12.9	111.3	89.7	103.9	64.8
Queue Length 50th (ft)	161	226	107	87	46	251	280	308
Queue Length 95th (ft)	#327	288	#247	134	#129	#384	#470	#462
Internal Link Dist (ft)		327		314		290		298
Turn Bay Length (ft)								
Base Capacity (vph)	248	1509	176	1536	80	753	429	1281
Starvation Cap Reductn	0	0	0	0	0	0	49	198
Spillback Cap Reductn	65	0	0	281	0	55	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.55	0.93	0.51	0.81	1.06	1.06	1.06

Intersection Summary

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

36: Harbor Dr & 28th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	185	1467	2	20	577	277	156	522	13	14
v/c Ratio	0.62	1.13	0.00	0.21	0.56	0.38	0.54	0.65	0.03	0.04
Control Delay	72.8	103.4	39.5	77.8	34.3	3.8	60.8	37.0	19.7	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	72.8	103.4	39.5	77.8	34.3	3.8	60.8	37.5	19.7	12.4
Queue Length 50th (ft)	97	~972	1	20	190	0	145	161	6	2
Queue Length 95th (ft)	144	#1098	9	53	235	46	228	209	18	14
Internal Link Dist (ft)		247			310		22		129	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	392	1294	414	116	1131	753	478	1100	597	373
Starvation Cap Reductn	0	0	0	0	0	0	0	230	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	1.13	0.00	0.17	0.51	0.37	0.33	0.60	0.02	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

37: Boston Ave & I-5 SB On-ramp

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	629	258	438
v/c Ratio	0.93	0.81	0.91
Control Delay	47.6	46.9	54.6
Queue Delay	0.0	0.0	0.0
Total Delay	47.6	46.9	54.6
Queue Length 50th (ft)	330	108	236
Queue Length 95th (ft)	#550	#225	#417
Internal Link Dist (ft)	577	323	73
Turn Bay Length (ft)			
Base Capacity (vph)	726	365	522
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.87	0.71	0.84

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	948	225	585	210	122	334	161	140
v/c Ratio	0.42	0.90	0.85	0.41	0.75	0.36	0.64	0.65	0.42
Control Delay	44.3	40.2	63.7	18.5	51.6	30.4	11.3	46.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	40.2	63.7	18.5	51.6	30.4	11.3	46.0	20.3
Queue Length 50th (ft)	30	208	101	95	91	53	16	69	34
Queue Length 95th (ft)	77	#417	#267	183	#228	99	87	#153	81
Internal Link Dist (ft)		151		932		1629			377
Turn Bay Length (ft)									
Base Capacity (vph)	185	1053	266	1425	296	530	653	290	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.90	0.85	0.41	0.71	0.23	0.51	0.56	0.27

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SWL
Lane Group Flow (vph)	250	228	206	451	152	391	870	489	446	234
v/c Ratio	1.00	0.44	0.85	1.03	0.69	1.03	0.80	1.27	0.44	0.49
Control Delay	101.8	27.8	70.9	93.8	64.3	100.9	37.1	179.5	36.1	47.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0
Total Delay	101.8	27.8	70.9	93.8	64.3	100.9	40.0	179.5	36.1	47.7
Queue Length 50th (ft)	~201	100	148	~373	111	~324	318	~473	145	82
Queue Length 95th (ft)	#377	182	#299	#595	181	#534	408	#701	211	122
Internal Link Dist (ft)		174	440			351			1629	472
Turn Bay Length (ft)										
Base Capacity (vph)	249	518	243	436	274	378	1150	384	1014	581
Starvation Cap Reductn	0	0	0	0	0	0	177	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.44	0.85	1.03	0.55	1.03	0.89	1.27	0.44	0.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	174	1261	109	43	472	500	76	750	152	337	304	228
v/c Ratio	0.71	1.12	0.19	0.74	0.64	0.77	0.52	1.01	0.40	0.92	0.23	0.26
Control Delay	64.1	98.9	10.0	117.7	37.6	15.3	65.4	81.6	24.6	64.9	20.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.3	0.2
Total Delay	64.1	98.9	10.0	117.7	37.6	15.3	65.4	81.6	24.6	93.5	20.4	2.6
Queue Length 50th (ft)	116	~559	20	30	162	15	51	270	42	162	54	15
Queue Length 95th (ft)	211	#593	54	#113	139	#213	114	#516	123	#482	99	47
Internal Link Dist (ft)		710			294			45			182	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	371	1126	585	58	739	648	193	743	384	365	1310	862
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	44	518	165
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	1.12	0.19	0.74	0.64	0.77	0.39	1.01	0.40	1.05	0.38	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	277	808	405	167	270
v/c Ratio	0.62	0.40	0.49	0.33	0.57
Control Delay	26.8	7.0	19.1	5.9	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	7.0	19.1	5.9	16.5
Queue Length 50th (ft)	62	48	49	0	43
Queue Length 95th (ft)	#219	138	111	41	114
Internal Link Dist (ft)		932	312		271
Turn Bay Length (ft)					
Base Capacity (vph)	518	2334	1292	684	737
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.35	0.31	0.24	0.37

Intersection Summary

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

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	497	1663	808
v/c Ratio	0.74	0.47	0.39
Control Delay	17.6	0.5	9.1
Queue Delay	0.0	0.0	0.0
Total Delay	17.6	0.5	9.1
Queue Length 50th (ft)	72	0	43
Queue Length 95th (ft)	#198	0	66
Internal Link Dist (ft)		206	387
Turn Bay Length (ft)			
Base Capacity (vph)	684	3539	2081
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	14
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.73	0.47	0.39

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	523	337
v/c Ratio	0.08	0.08	0.18	0.15
Control Delay	32.5	32.5	0.2	4.6
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	32.5	32.5	0.2	4.7
Queue Length 50th (ft)	5	5	1	22
Queue Length 95th (ft)	17	17	m4	33
Internal Link Dist (ft)	517	1529	11	201
Turn Bay Length (ft)				
Base Capacity (vph)	277	277	3086	2905
Starvation Cap Reductn	0	0	0	1210
Spillback Cap Reductn	0	0	129	1060
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.18	0.20

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	190	115
v/c Ratio	0.07	0.07	0.11	0.09
Control Delay	28.6	28.6	0.5	3.6
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	28.6	28.6	0.5	3.7
Queue Length 50th (ft)	3	3	0	5
Queue Length 95th (ft)	15	15	9	25
Internal Link Dist (ft)	291	945	3	196
Turn Bay Length (ft)				
Base Capacity (vph)	356	356	1703	1635
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	1025
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.11	0.19

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	124	51
v/c Ratio	0.08	0.08	0.07	0.04
Control Delay	26.0	26.0	0.5	4.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.0	26.0	0.5	4.9
Queue Length 50th (ft)	3	3	0	3
Queue Length 95th (ft)	16	16	7	15
Internal Link Dist (ft)	190	1010	1	182
Turn Bay Length (ft)				
Base Capacity (vph)	387	387	1594	1408
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	13
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.08	0.04

Intersection Summary

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	554	549
v/c Ratio	0.09	0.09	0.18	0.15
Control Delay	36.9	36.9	0.5	3.2
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	36.9	36.9	0.7	3.2
Queue Length 50th (ft)	5	5	7	24
Queue Length 95th (ft)	16	16	8	33
Internal Link Dist (ft)	512	1235	129	6
Turn Bay Length (ft)				
Base Capacity (vph)	258	258	3139	4232
Starvation Cap Reductn	0	0	1640	0
Spillback Cap Reductn	0	0	0	604
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.37	0.15

Intersection Summary

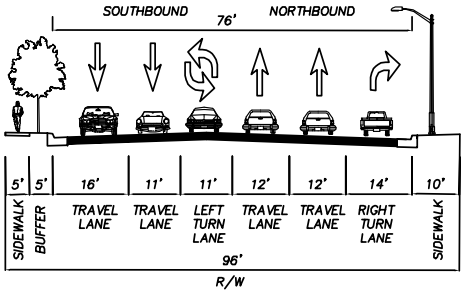
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	9	9	1138	651
v/c Ratio	0.09	0.09	0.25	0.18
Control Delay	27.4	27.4	0.3	3.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.4	27.4	0.3	3.2
Queue Length 50th (ft)	3	3	0	11
Queue Length 95th (ft)	12	12	m9	40
Internal Link Dist (ft)	1768	925	182	351
Turn Bay Length (ft)				
Base Capacity (vph)	279	279	4619	3690
Starvation Cap Reductn	0	0	613	0
Spillback Cap Reductn	0	0	93	137
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.28	0.18

Intersection Summary

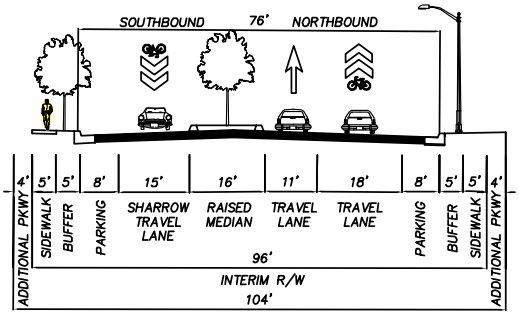
m Volume for 95th percentile queue is metered by upstream signal.

APPENDIX K

Conceptual Roadway Segment Improvements

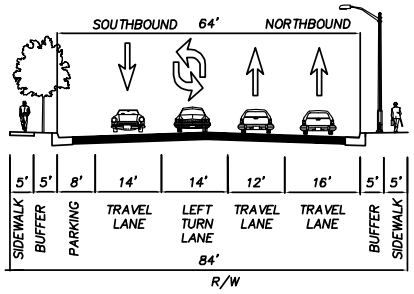


LOGAN AVENUE TO NATIONAL AVENUE
EXISTING CONDITIONS

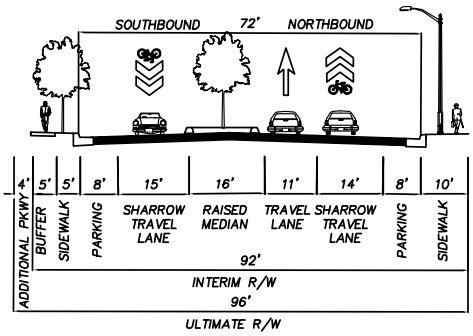


LOGAN AVENUE TO NATIONAL AVENUE
PROPOSED CONDITIONS

See x-section D-D in Figure K-4

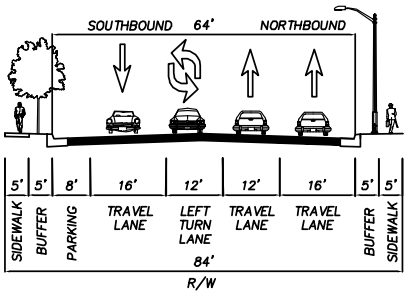


NATIONAL AVENUE TO NEWTON AVENUE
EXISTING CONDITIONS

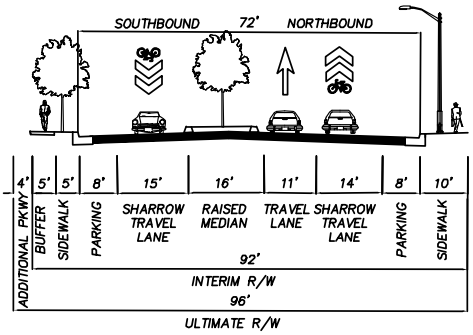


NATIONAL AVENUE TO NEWTON AVENUE
PROPOSED CONDITIONS

See x-section C-C in Figure K-3

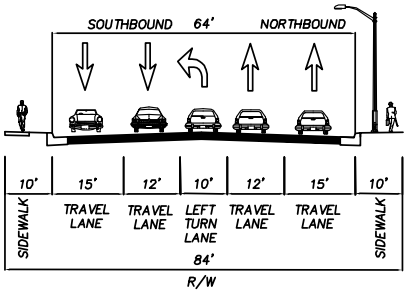


NEWTON AVENUE TO MAIN STREET
EXISTING CONDITIONS

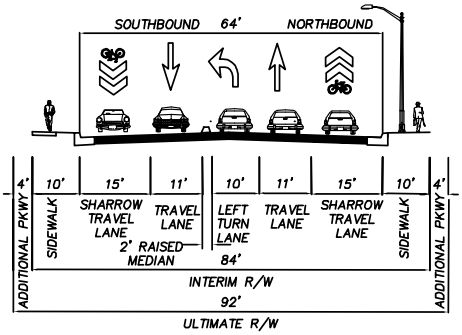


NEWTON AVENUE TO MAIN STREET
PROPOSED CONDITIONS

See x-section B-B in Figure K-3



MAIN STREET TO HARBOR DRIVE
EXISTING CONDITIONS



MAIN STREET TO HARBOR DRIVE
PROPOSED CONDITIONS

See x-section A-A in Figure K-2

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

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FIGURE K-1

Proposed X-Sections Cesar Chavez Pkwy

LEGEND

1. Add second EB left-turn lane from Harbor Drive to Cesar Chavez Parkway. Extend EB left-turn pockets to 450 feet.
2. Add "Sharrow" bicycle markings.
3. Add exclusive NB right-turn lane at the intersection of Cesar Chavez Parkway and Harbor Drive (this improvement will be completed by Caltrans).
4. Extend WB left-turn lane from Harbor Drive to southbound Cesar Chavez Parkway. (this improvement will be completed by Caltrans).
5. Add 2′ wide raised median.
6. Add exclusive WB right-turn lane.

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

Figure K-2: Cesar Chavez Parkway Improvements between Harbor Drive to Main Street

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LEGEND

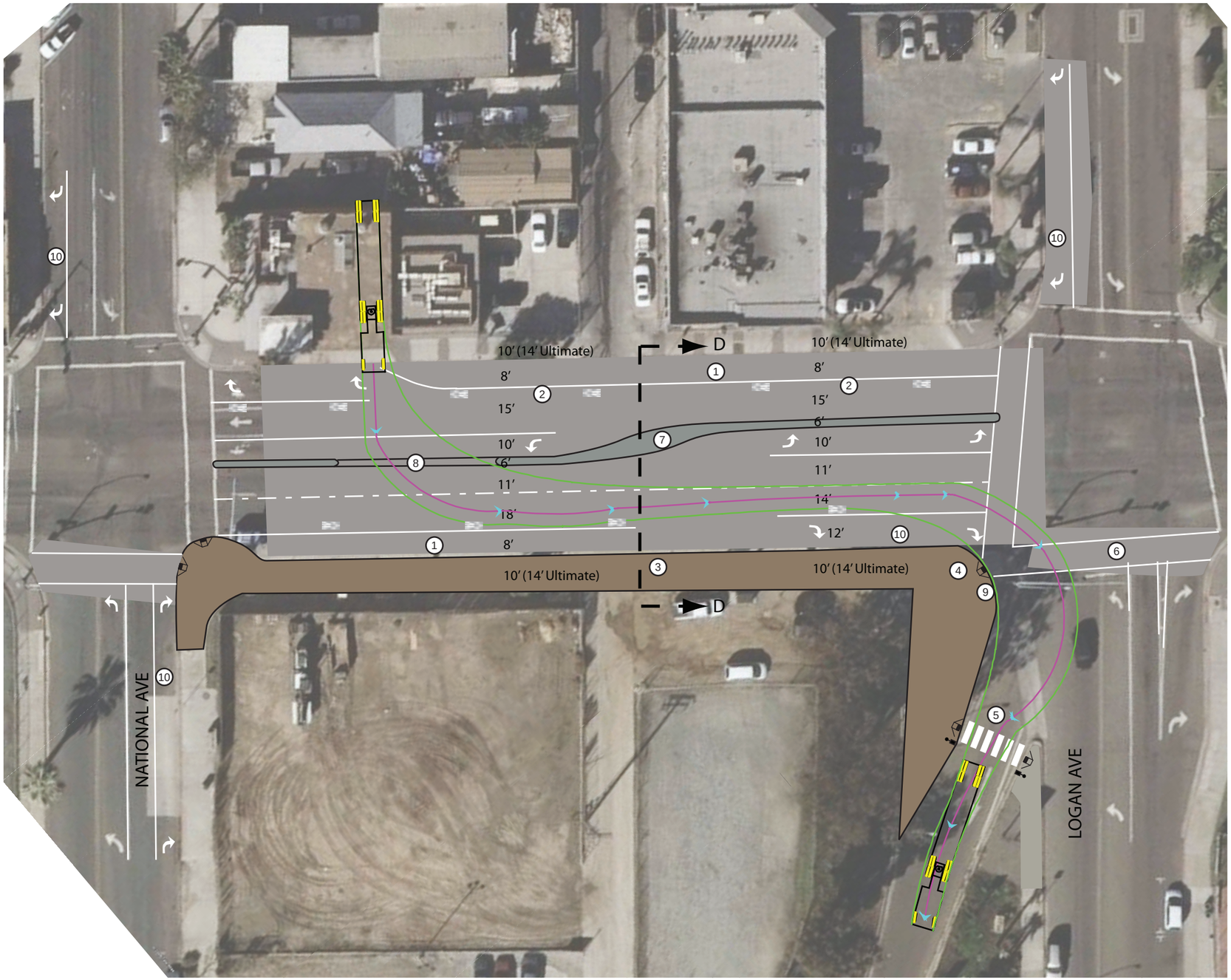
1. Add "Sharrow" pavement markings
2. Add 4'-16' wide raised median
3. Eight foot paralell parking to be done by others.
4. Add exclusive right-turn lane.

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

Figure K-3: Cesar Chavez Parkway Improvements between Main Street and National Avenue

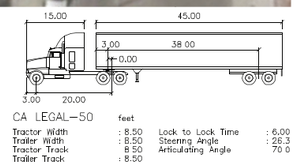
Barrio Logan Community Plan Update

March 2011



LEGEND

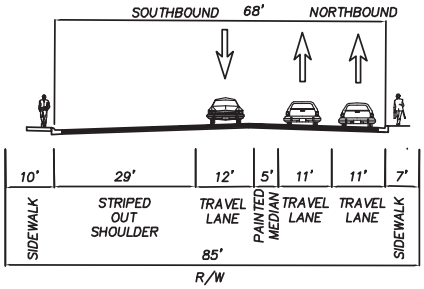
1. Add parking.
2. Add "Sharrow" bike treatment.
3. Existing Bus Stop to remain.
4. Close SR-75 ramp entrance along Cesar Chavez Parkway.
5. Improve pedestrian crossing (to be done by Caltrans).
6. Realign crosswalk.
7. Install 16' wide raised median.
8. Provide access for fire trucks to fire station.
9. Curb return must be designed to accomodate fire trucks access to the SR-75 on-ramp.
10. Install exclusive right-turn lane.



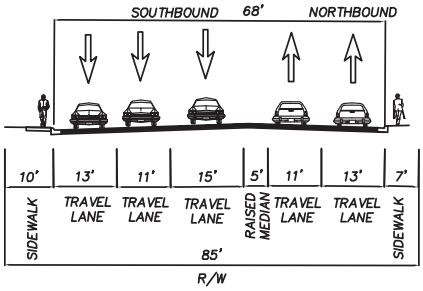
Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

Figure K-4: Cesar Chavez Parkway Improvements between National Avenue and Logan Avenue

March 2011

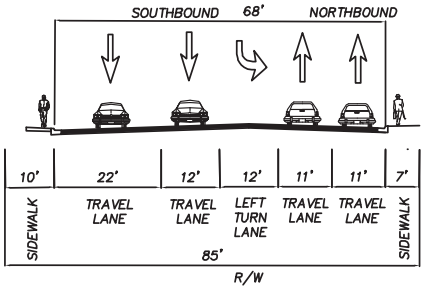


BOSTON AVENUE TO NATIONAL AVENUE
(NORTH OF I-5 SB OFF-RAMP ON BRIDGE)
EXISTING CONDITIONS

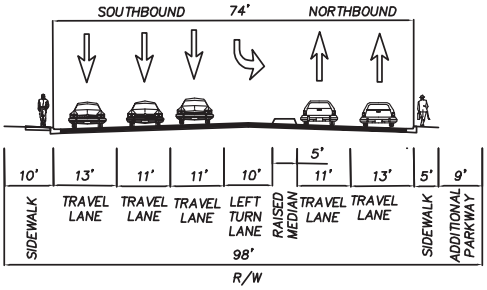


BOSTON AVENUE TO NATIONAL AVENUE
(NORTH OF I-5 SB OFF-RAMP ON BRIDGE)
PROPOSED CONDITIONS

See x-section A-A in Figure K-6

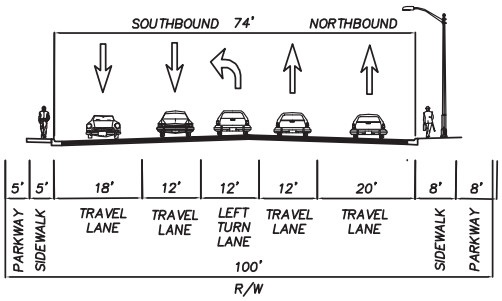


BOSTON AVENUE TO NATIONAL AVENUE
(SOUTH OF I-5 SB OFF-RAMP)
EXISTING CONDITIONS

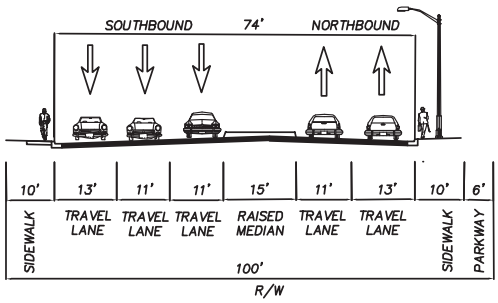


BOSTON AVENUE TO NATIONAL AVENUE
(SOUTH OF I-5 SB OFF-RAMP)
PROPOSED CONDITIONS

See x-section B-B in Figure K-6

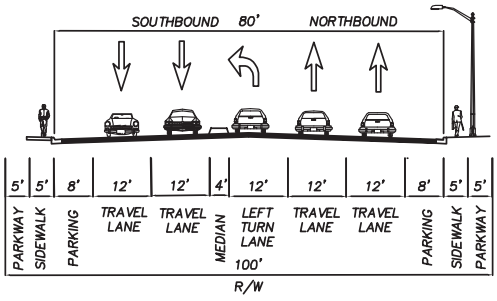


MAIN STREET TO BOSTON AVENUE
EXISTING CONDITIONS

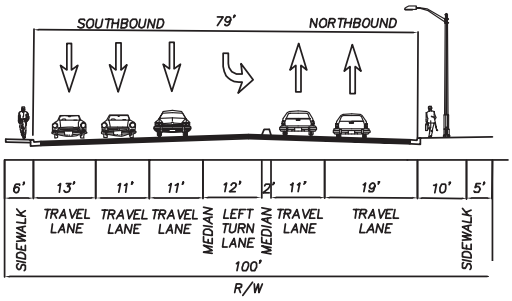


MAIN STREET TO BOSTON AVENUE
PROPOSED CONDITIONS

See x-section C-C in Figure K-6



HARBOR DRIVE TO MAIN STREET
(BETWEEN MAIN STREET AND NAVY ENTRANCE)
EXISTING CONDITIONS



HARBOR DRIVE TO MAIN STREET
(BETWEEN MAIN STREET AND NAVY ENTRANCE)
PROPOSED CONDITIONS

See x-section D-D in Figure K-7

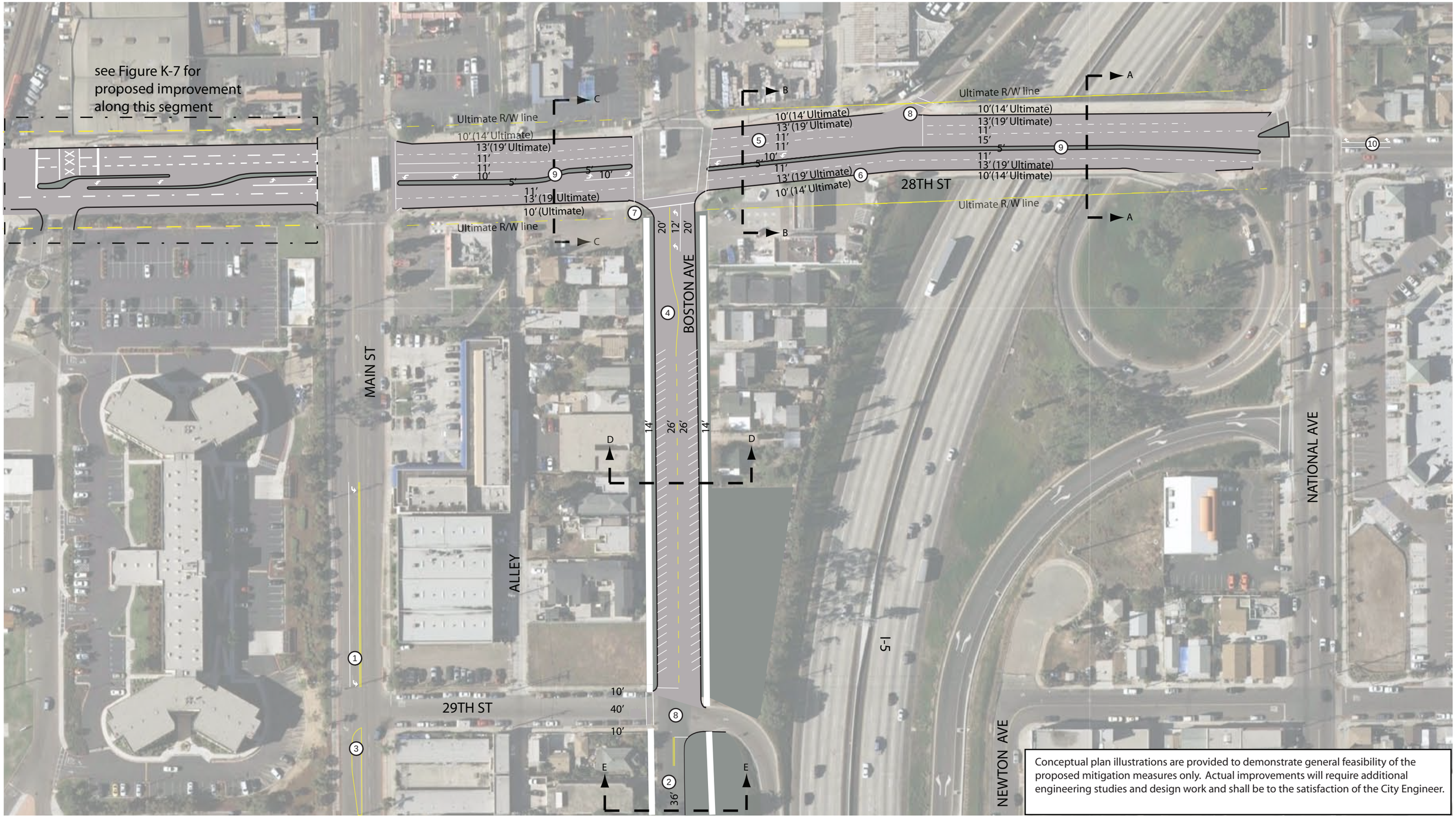
Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

Kimley-Horn and Associates, Inc.

FIGURE K-5

28th Street Proposed X-Sections (INTERIM)

K:\SND_TPTO\095707000\Illustrator\28th Stret x-section. ai



Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

LEGEND

1. Stripe westbound left-turn along Main Street at 29th Street
2. Convert Boston Avenue between 29th Street to 32nd Street to residential local street with 36 feet of curb to curb width.
3. Stripe out inside eastbound through lane along Main Street just east of 29th Street.
4. Convert Boston Avenue to a Commercial Local Street. Evaluate for with diagonal parking along both sides (52' curb to curb width)
5. Restripe 28th Street and add third southbound thru lane between I-5 and Boston Ave.
6. Widen along east side of 28th Street to accomodate restriping and addition of third southbound thru lane. (this widening should only fix the alignment thru the intersection and should tie back to the bridge)
7. Add truck restriction for the northbound right-turn movement.
8. Install traffic signal.
9. Install raised median.
10. Add exclusive southbound right-turn lane.

N

Figure K-6: 28th Street Freeway Access Improvements - between Main Street and National Avenue

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Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

LEGEND

1. Modify raised median along Harbor Drive to accomodate second EB left-turn lane from Harbor Drive to 28th Street to improve truck turning from Harbor Drive.
2. Modify median along 28th Street between Harbor Drive and Main Street.
3. Add second SB left-turn lane from 28th Street to Harbor Drive.
4. Add raised median to channelize SB left-turn movement onto Naval Base.
5. Widen sidewalk by five feet .
6. Remove parking along west side of 28th Street between Main Street and Harbor Drive. Widen roadway 4' to the west to accomodate proposed improvements. Reconstruct driveways and curb ramps (8-10 fewer parking spaces).
7. Remove parking along east side of 28th Street between Main Street and Harbor Drive. Reconstruct driveways and curb ramps (10-12 fewer parking spaces.) Widen sidewalk to 10'.
8. Add "quad" gates.

Figure K-7: 28th Street and Harbor Drive improvements (Interim)

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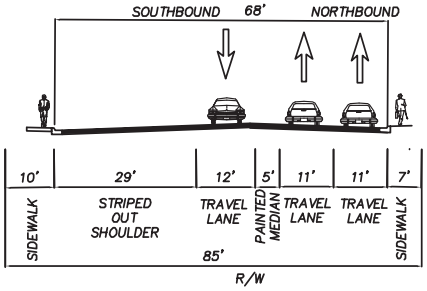
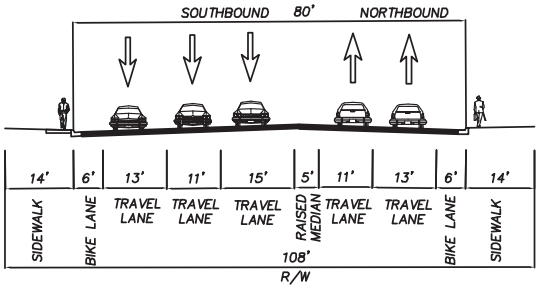
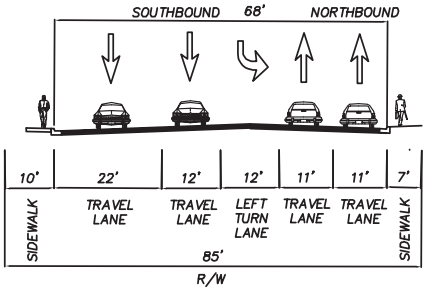


BOSTON AVENUE TO NATIONAL AVENUE
(NORTH OF I-5 SB OFF-RAMP ON BRIDGE)
EXISTING CONDITIONS

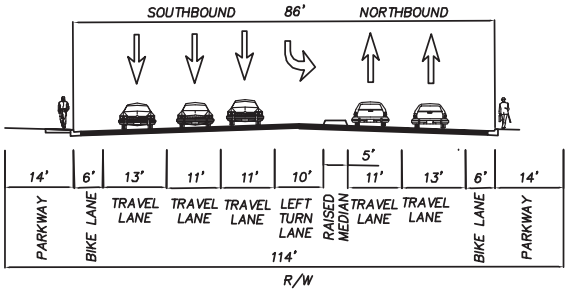


BOSTON AVENUE TO NATIONAL AVENUE
(NORTH OF I-5 SB OFF-RAMP ON BRIDGE)
PROPOSED CONDITIONS

See x-section A-A in Figure K-6

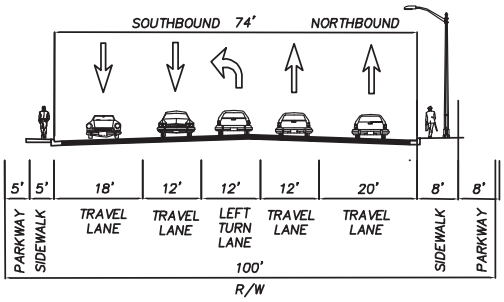


BOSTON AVENUE TO NATIONAL AVENUE
(SOUTH OF I-5 SB OFF-RAMP)
EXISTING CONDITIONS

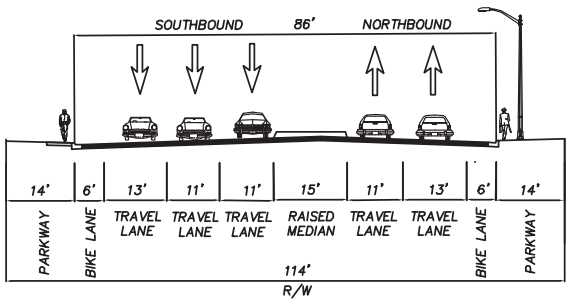


BOSTON AVENUE TO NATIONAL AVENUE
(SOUTH OF I-5 SB OFF-RAMP)
PROPOSED CONDITIONS

See x-section B-B in Figure K-6

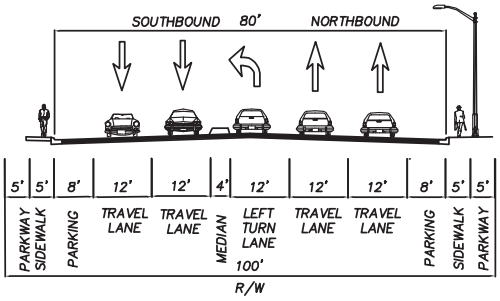


MAIN STREET TO BOSTON AVENUE
EXISTING CONDITIONS

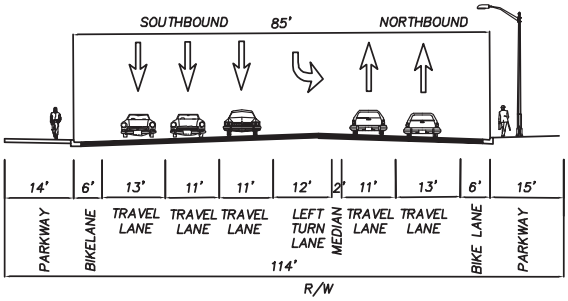


MAIN STREET TO BOSTON AVENUE
PROPOSED CONDITIONS

See x-section C-C in Figure K-6



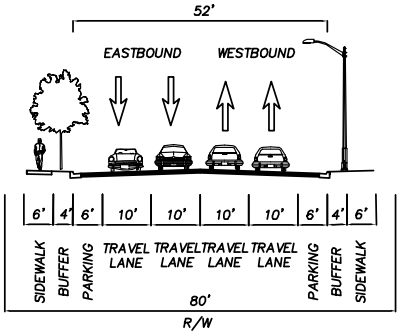
HARBOR DRIVE TO MAIN STREET
(BETWEEN MAIN STREET AND NAVY ENTRANCE)
EXISTING CONDITIONS



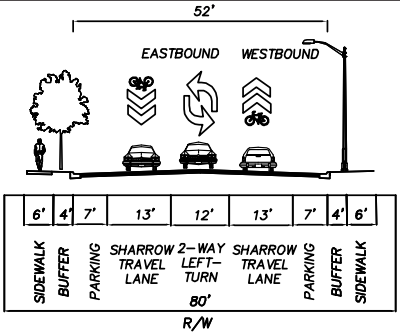
HARBOR DRIVE TO MAIN STREET
(BETWEEN MAIN STREET AND NAVY ENTRANCE)
PROPOSED CONDITIONS

See x-section D-D in Figure K-7

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

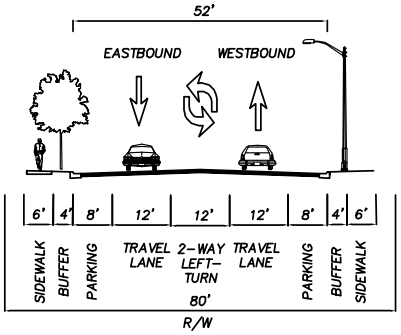


COMMERCIAL ST TO 16TH ST
EXISTING CONDITIONS

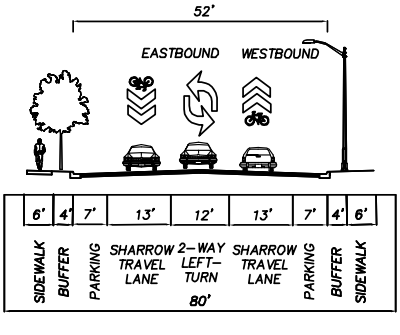


COMMERCIAL ST TO 16TH ST
PROPOSED CONDITIONS

See x-section A-A in Figure K-11

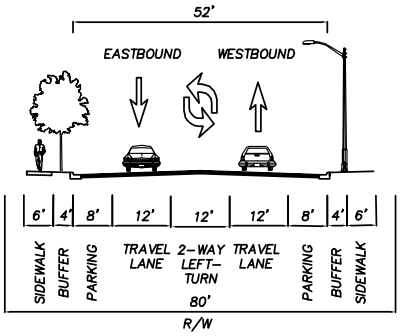


16TH ST TO SIGSBEE ST
EXISTING CONDITIONS

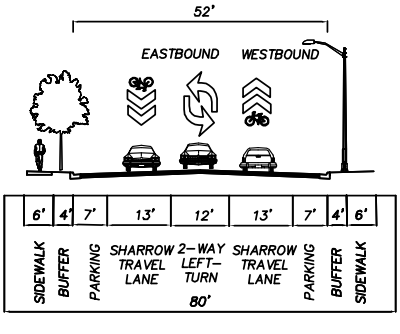


16TH ST TO SIGSBEE ST
PROPOSED CONDITIONS

See x-section B-B in Figure K-11

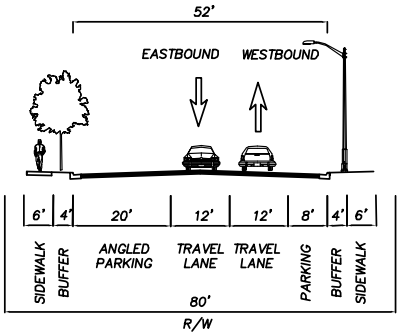


SIGSBEE ST TO BEARDSLEY ST
EXISTING CONDITIONS

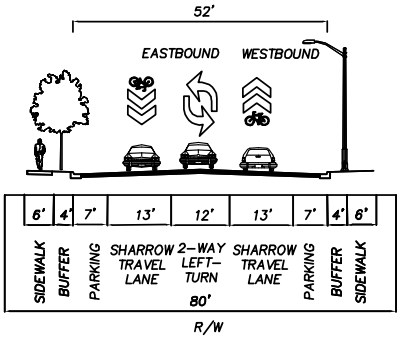


SIGSBEE ST TO BEARDSLEY ST
PROPOSED CONDITIONS

See x-section C-C in Figure K-11



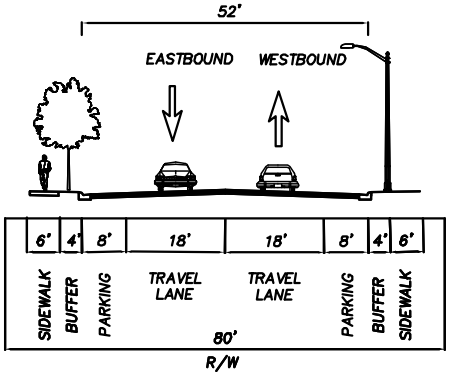
BEARDSLEY ST TO CESAR CHAVEZ PKWY
EXISTING CONDITIONS



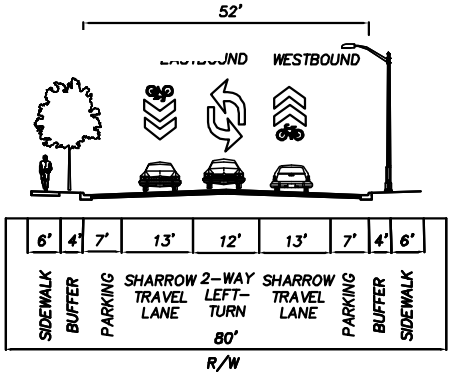
BEARDSLEY ST TO CESAR CHAVEZ PKWY
PROPOSED CONDITIONS

See x-section D-D in Figure K-11

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

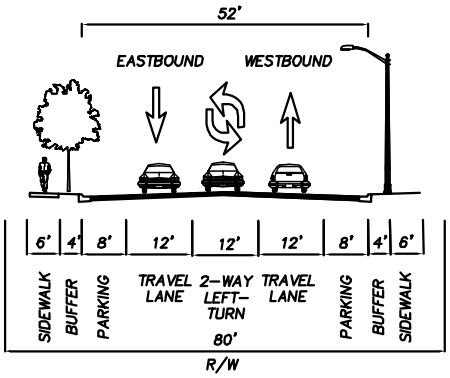


CESAR CHAVEZ PKWAY TO DEWEY ST
EXISTING CONDITIONS

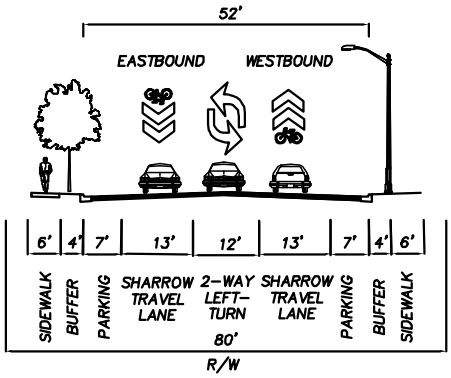


CESAR CHAVEZ PKWAY TO EVANS ST
PROPOSED CONDITIONS

See x-section A-A in Figure K-12

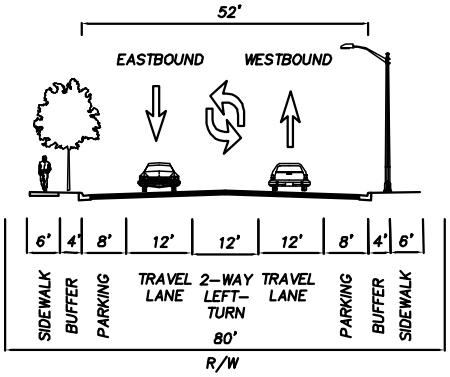


DEWEY ST TO EVANS ST
EXISTING CONDITIONS

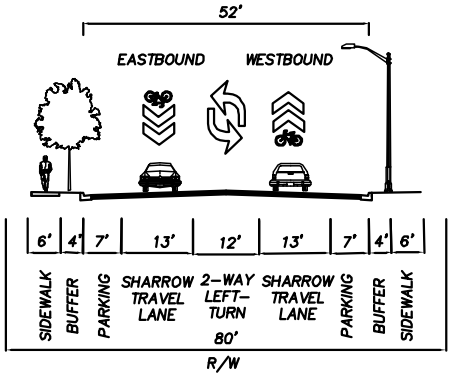


DEWEY ST TO EVANS ST
PROPOSED CONDITIONS

See x-section B-B in Figure K-12



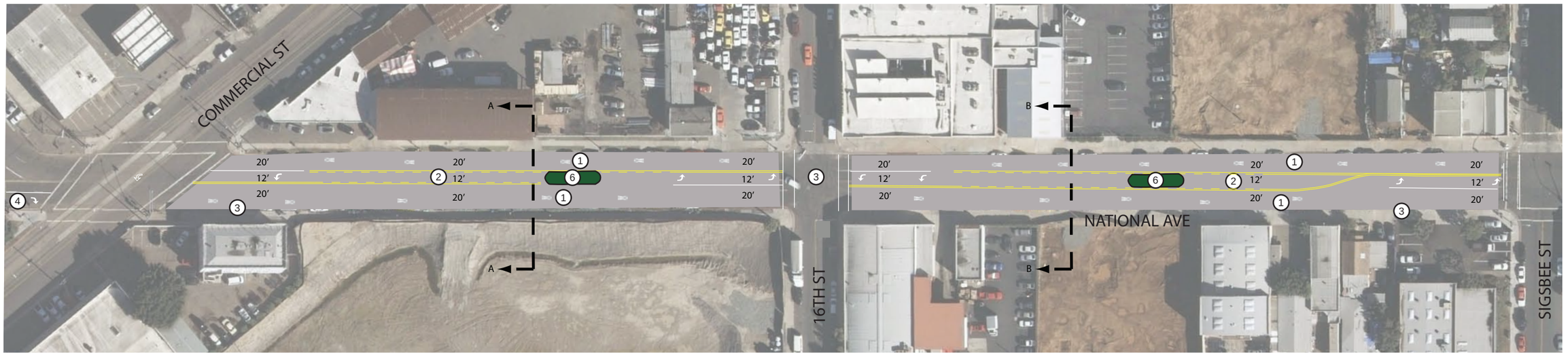
EVANS ST TO 26TH ST
EXISTING CONDITIONS

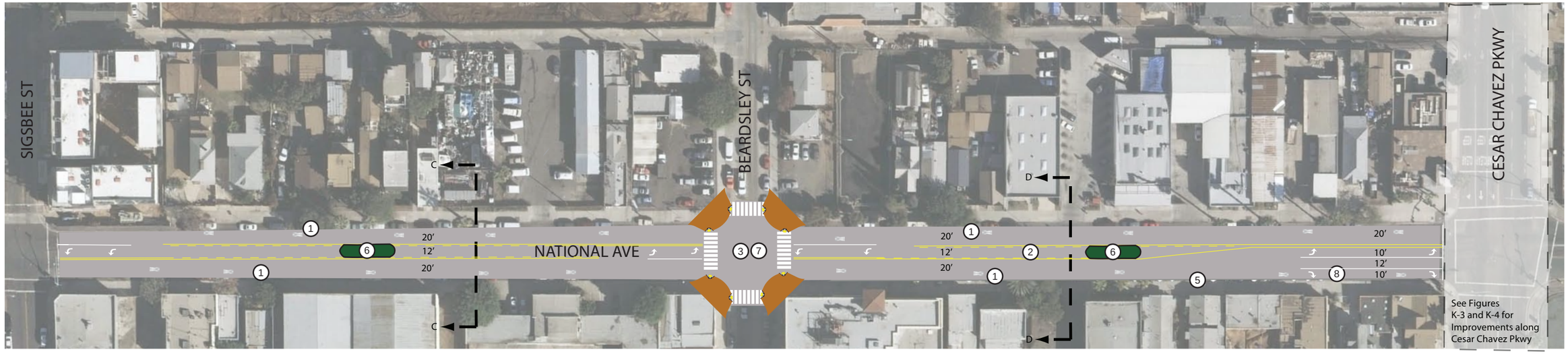


EVANS ST TO 26TH ST
PROPOSED CONDITIONS

See x-section C-C in Figure K-12

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.





LEGEND

1. Install "sharrow" bicycle markings between Commercial St and Cesar Chavez Pkwy.
2. Install two-way left-turn lane.
3. Install traffic signal.
4. Add eastbound right-turn lane.
5. Remove diagonal parking.
6. Evaluate for traffic calming measures that address emergency vehicle route requirements.
7. Evaluate the installation of intersection pop-outs and crosswalk improvements.
8. Install an exclusive eastbound right-turn lane.

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

N

Figure K-11: National Avenue Improvements - between Commercial St and Cesar Chavez Pkwy

March 2011

Barrio Logan Community Plan Update

LEGEND

1. Add "sharrow" bicycle markings between Cesar Chavez Parkway and 26th Street .
2. Evaluate for traffic calming measures that address emergency vehicle route requirements.
3. Consider the installation of intersection pop-outs and crosswalk improvements.
4. Install an exclusive westbound right-turn lane.

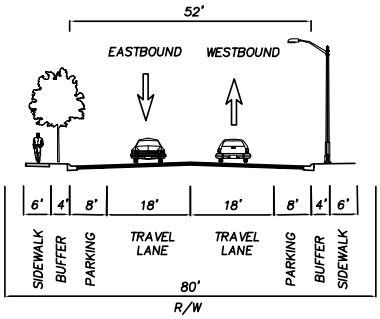
Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

N

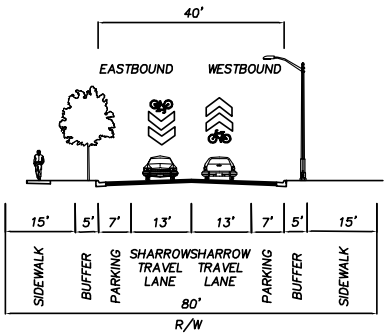
Figure K-12: National Avenue Improvements - between Cesar Chavez Parkway and 26th Street

March 2011

Barrio Logan Community Plan Update

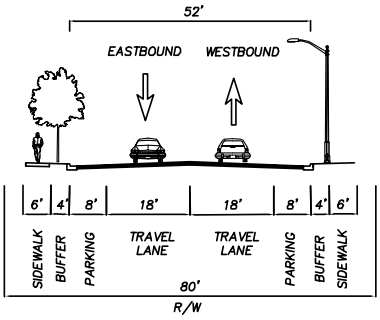


26TH ST TO 28TH ST
EXISTING CONDITIONS

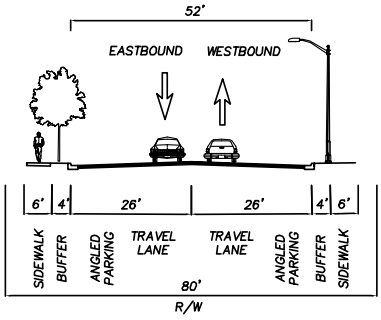


26TH ST TO 28TH ST
PROPOSED CONDITIONS

See x-section A-A in Figure K-14

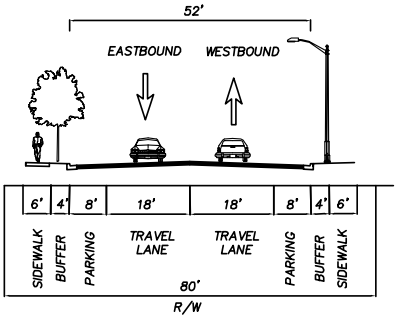


28TH ST TO 29TH ST
EXISTING CONDITIONS

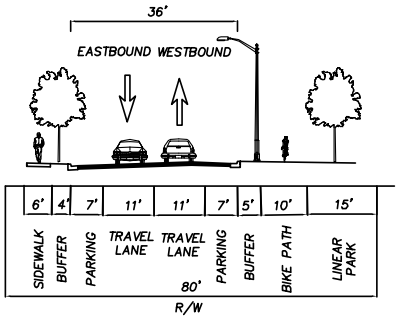


28TH ST TO 29TH ST
PROPOSED CONDITIONS

See x-section D-D in Figure K-6



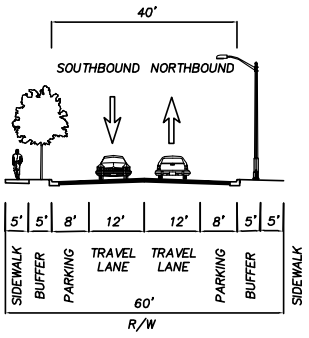
29TH ST TO 32TH ST
EXISTING CONDITIONS



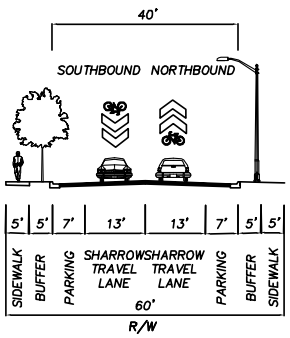
29TH ST TO 32TH ST
PROPOSED CONDITIONS

See x-section E-E in Figure K-6

26th STREET



NATIONAL AVE TO BOSTON AVE
EXISTING CONDITIONS



NATIONAL AVE TO BOSTON AVE
PROPOSED CONDITIONS

See x-section B-B in Figure K-11

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

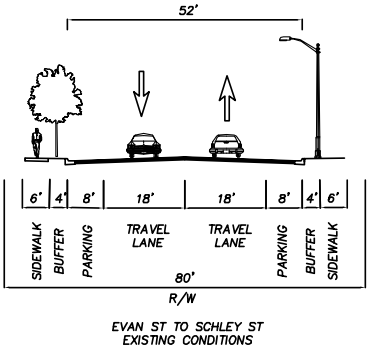
LEGEND

1. Enlarge center island to eliminate the northbound lane of 26th Street between Main Street and Boston Avenue.
2. Convert Boston Avenue and 26th Street to a "Green Street" with "Sharrow" treatments for bycicle circulation.
3. Sharrow vehicle/bicycle lane.
4. Widen sidewalk along both sides of Boston Avenue by six feet. Add landscape.
5. Provide drainage and landscape improvements to raised median along Main Street.
6. Restripe the NB and SB through lanes at the intersection of Main Street and Schley Street.
7. Provide a 10' NB striped out lane for fire access.
8. Prohibit southbound through and southbound left-turn movements.

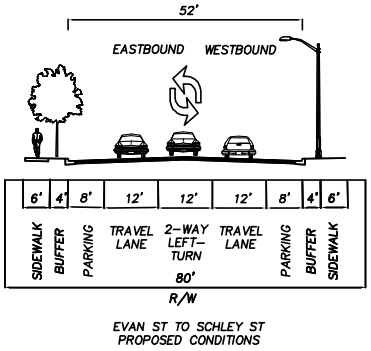
N

Figure K-14: Boston Avenue and 26th Street Improvements

March 2011



EVAN ST TO SCHLEY ST
EXISTING CONDITIONS



EVAN ST TO SCHLEY ST
PROPOSED CONDITIONS

See x-section A-A in Figure K-16

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

LEGEND

(1) Restripe roadway segment to accomodate a two-way left-turn lane and paralell parking along both sides.

(2) Left-turn lane would be removed with improvements to the Main St/26th St and Schley St intersection depicted on Figure 19.

Conceptual plan illustrations are provided to demonstrate general feasibility of the proposed mitigation measures only. Actual improvements will require additional engineering studies and design work and shall be to the satisfaction of the City Engineer.

N

Figure K-16: Main Street Improvements - between Cesar Chavez Parkway and 26th Street

March 2011

Barrio Logan Community Plan Update

APPENDIX L

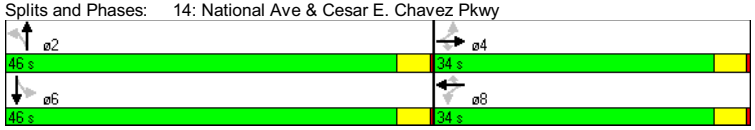
- Synchro analysis for queuing related mitigations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	190	250	180	120	350	120	90	580	70	745
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		6	
Detector Phases	4	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	27.1	27.1	27.1	27.1	27.1	27.1	44.9	44.9	44.9	44.9
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.56	0.56	0.56	0.56
v/c Ratio	0.89	0.43	0.31	0.42	0.60	0.21	0.65	0.38	0.25	0.68
Control Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	15.2
LOS	E	C	A	C	C	A	D	A	B	B
Approach Delay		30.1			20.9			12.2		15.1
Approach LOS		C			C			B		B

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 77.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	272	196	130	380	130	98	684	76	1147
v/c Ratio	0.89	0.43	0.31	0.42	0.60	0.21	0.65	0.38	0.25	0.68
Control Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	15.2
Queue Length 50th (ft)	84	91	16	43	136	0	26	82	22	212
Queue Length 95th (ft)	#211	160	59	94	230	33	m#123	105	48	270
Internal Link Dist (ft)		608			780			301		299
Turn Bay Length (ft)										
Base Capacity (vph)	263	713	694	353	713	686	153	1820	311	1717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	267
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.38	0.28	0.37	0.53	0.19	0.64	0.38	0.24	0.79

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3185		1530	2924	
Flt Permitted	0.34	1.00	1.00	0.47	1.00	1.00	0.17	1.00		0.35	1.00	
Satd. Flow (perm)	625	1863	1583	882	1863	1583	292	3185		563	2924	
Volume (vph)	190	250	180	120	350	120	90	580	50	70	745	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	272	196	130	380	130	98	630	54	76	810	337
RTOR Reduction (vph)	0	0	95	0	0	86	0	7	0	0	53	0
Lane Group Flow (vph)	207	272	101	130	380	44	98	677	0	76	1094	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.1	27.1	27.1	27.1	27.1	27.1	44.9	44.9		44.9	44.9	
Effective Green, g (s)	27.1	27.1	27.1	27.1	27.1	27.1	44.9	44.9		44.9	44.9	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.56	0.56		0.56	0.56	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	631	536	299	631	536	164	1788		316	1641	
v/s Ratio Prot		0.15			0.20			0.21			c0.37	
v/s Ratio Perm	c0.33		0.06	0.15		0.03	0.34			0.13		
v/c Ratio	0.98	0.43	0.19	0.43	0.60	0.08	0.60	0.38		0.24	0.67	
Uniform Delay, d1	26.1	20.5	18.7	20.5	22.0	18.0	11.6	9.8		8.9	12.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.77		1.00	1.00	
Incremental Delay, d2	54.5	0.5	0.2	1.0	1.6	0.1	14.9	0.6		1.8	2.2	
Delay (s)	80.7	21.0	18.9	21.5	23.6	18.1	24.1	8.1		10.7	14.5	
Level of Service	F	C	B	C	C	B	C	A		B	B	
Approach Delay (s)		38.7			22.1			10.1			14.2	
Approach LOS		D			C			B			B	

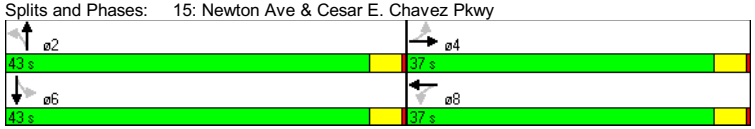
Intersection Summary				
HCM Average Control Delay	19.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	75	40	40	50	40	410	95	810
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	37.0	37.0	37.0	37.0	43.0	43.0	43.0	43.0
Total Split (%)	46.3%	46.3%	46.3%	46.3%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	9.8	9.8	9.8	9.8	64.9	64.9	64.9	64.9
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.81	0.81	0.81	0.81
v/c Ratio	0.53	0.41	0.28	0.46	0.17	0.18	0.17	0.40
Control Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.7
LOS	D	B	C	C	A	A	A	A
Approach Delay		30.3		24.5		3.5		1.7
Approach LOS		C		C		A		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 33 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 51.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	108	43	125	43	479	103	1032
v/c Ratio	0.53	0.41	0.28	0.46	0.17	0.18	0.17	0.40
Control Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.7
Queue Length 50th (ft)	39	20	20	25	6	33	3	16
Queue Length 95th (ft)	78	61	47	69	m17	53	m7	40
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	520	737	528	745	248	2593	613	2565
Starvation Cap Reductn	0	0	0	0	0	0	0	714
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.15	0.08	0.17	0.17	0.18	0.17	0.56

Intersection Summary

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

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1704		1612	3190		1612	3152	
Flt Permitted	0.57	1.00		0.64	1.00		0.26	1.00		0.48	1.00	
Satd. Flow (perm)	1069	1695		1199	1704		447	3190		811	3152	
Volume (vph)	75	40	60	40	50	65	40	410	30	95	810	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	43	65	43	54	71	43	446	33	103	880	152
RTOR Reduction (vph)	0	58	0	0	63	0	0	3	0	0	7	0
Lane Group Flow (vph)	82	50	0	43	62	0	43	476	0	103	1025	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.7	8.7		8.7	8.7		63.3	63.3		63.3	63.3	
Effective Green, g (s)	8.7	8.7		8.7	8.7		63.3	63.3		63.3	63.3	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116	184		130	185		354	2524		642	2494	
v/s Ratio Prot		0.03			0.04			0.15			c0.33	
v/s Ratio Perm	c0.08			0.04			0.10			0.13		
v/c Ratio	0.71	0.27		0.33	0.33		0.12	0.19		0.16	0.41	
Uniform Delay, d1	34.4	32.7		33.0	33.0		1.9	2.0		2.0	2.6	
Progression Factor	1.00	1.00		1.00	1.00		1.23	1.31		0.37	0.37	
Incremental Delay, d2	17.8	0.8		1.5	1.1		0.7	0.2		0.4	0.4	
Delay (s)	52.2	33.5		34.5	34.0		3.0	2.8		1.2	1.4	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		41.6			34.1			2.9			1.4	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

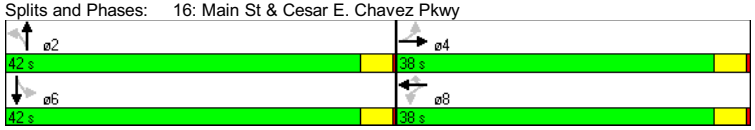
K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	150	190	70	330	190	70	340	150	580
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0	42.0	42.0	42.0	42.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	52.5%	52.5%	52.5%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.1	23.1	23.1	23.1	23.1	48.9	48.9	48.9	48.9
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.61	0.61	0.61	0.61
v/c Ratio	0.72	0.42	0.25	0.67	0.36	0.30	0.25	0.36	0.45
Control Delay	42.4	23.1	21.0	30.3	4.5	14.6	7.9	9.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	42.4	23.1	21.0	30.3	4.5	14.6	8.2	9.6	6.7
LOS	D	C	C	C	A	B	A	A	A
Approach Delay		31.2		20.8			9.1		7.2
Approach LOS		C		C			A		A

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 25 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 70.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	223	76	359	207	76	468	163	826
v/c Ratio	0.72	0.42	0.25	0.67	0.36	0.30	0.25	0.36	0.45
Control Delay	42.4	23.1	21.0	30.3	4.5	14.6	7.9	9.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	42.4	23.1	21.0	30.3	4.5	14.6	8.2	9.6	6.7
Queue Length 50th (ft)	67	80	27	145	0	19	50	25	57
Queue Length 95th (ft)	122	122	52	203	38	59	91	90	77
Internal Link Dist (ft)		588		983			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	332	785	448	792	761	254	1856	449	1834
Starvation Cap Reductn	0	0	0	0	0	0	741	0	175
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.28	0.17	0.45	0.27	0.30	0.42	0.36	0.50

Intersection Summary

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1740	1839		1750	1863	1511	1537	2996		1549	2955	
Flt Permitted	0.31	1.00		0.51	1.00	1.00	0.30	1.00		0.47	1.00	
Satd. Flow (perm)	560	1839		941	1863	1511	484	2996		773	2955	
Volume (vph)	150	190	15	70	330	190	70	340	90	150	580	180
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	16	76	359	207	76	370	98	163	630	196
RTOR Reduction (vph)	0	4	0	0	0	147	0	22	0	0	27	0
Lane Group Flow (vph)	163	219	0	76	359	60	76	446	0	163	799	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.1	23.1		23.1	23.1	23.1	48.9	48.9		48.9	48.9	
Effective Green, g (s)	23.1	23.1		23.1	23.1	23.1	48.9	48.9		48.9	48.9	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.61	0.61		0.61	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	531		272	538	436	296	1831		472	1806	
v/s Ratio Prot		0.12			0.19			0.15			c0.27	
v/s Ratio Perm	c0.29			0.08		0.04	0.16			0.21		
v/c Ratio	1.01	0.41		0.28	0.67	0.14	0.26	0.24		0.35	0.44	
Uniform Delay, d1	28.4	23.0		22.0	25.1	21.1	7.2	7.1		7.7	8.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.68	0.64	
Incremental Delay, d2	72.3	0.5		0.6	3.1	0.1	2.1	0.3		1.9	0.7	
Delay (s)	100.8	23.5		22.6	28.2	21.2	9.3	7.4		7.1	6.0	
Level of Service	F	C		C	C	C	A	A		A	A	
Approach Delay (s)		56.1			25.3			7.7			6.2	
Approach LOS		E			C			A			A	

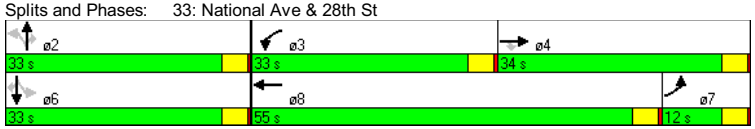
Intersection Summary				
HCM Average Control Delay	18.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	70.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	106	258	18	192	628	33	98	86	115	205	307
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8		2			6	
Permitted Phases			4			2		2	6		6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	34.0	34.0	33.0	55.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	12.0%	34.0%	34.0%	33.0%	55.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	8.8	26.7	26.7	33.9	51.8		27.3	27.3		27.3	27.3
Actuated g/C Ratio	0.09	0.27	0.27	0.34	0.52		0.27	0.27		0.27	0.27
v/c Ratio	0.73	0.30	0.05	0.47	0.86		0.40	0.19		0.92	0.52
Control Delay	72.5	29.1	10.7	32.8	32.4		40.4	14.4		66.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	72.5	29.1	10.7	32.8	32.4		40.4	14.4		66.5	7.0
LOS	E	C	B	C	C		D	B		E	A
Approach Delay		40.3			32.5		30.1			37.4	
Approach LOS		D			C		C			D	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 82 (82%), Referenced to phase 3:WBL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 35.0		Intersection LOS: D	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 33: National Ave & 28th St



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	115	280	20	209	817	143	93	348	334
v/c Ratio	0.73	0.30	0.05	0.47	0.86	0.40	0.19	0.92	0.52
Control Delay	72.5	29.1	10.7	32.8	32.4	40.4	14.4	66.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	29.1	10.7	32.8	32.4	40.4	14.4	66.5	7.0
Queue Length 50th (ft)	73	71	0	113	441	76	13	210	6
Queue Length 95th (ft)	#171	105	17	189	#694	135	59	#372	74
Internal Link Dist (ft)		590			82	454		221	
Turn Bay Length (ft)									
Base Capacity (vph)	157	1062	489	441	958	375	504	400	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.26	0.04	0.47	0.85	0.38	0.18	0.87	0.50

Intersection Summary

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

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1299	1817			1754	1509		1744	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.68	1.00		0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1299	1817			1216	1509		1349	1509
Volume (vph)	106	258	18	192	628	123	33	98	86	115	205	307
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	280	20	209	683	134	36	107	93	125	223	334
RTOR Reduction (vph)	0	0	15	0	7	0	0	0	68	0	0	233
Lane Group Flow (vph)	115	280	5	209	810	0	0	143	25	0	348	101
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.8	26.7	26.7	34.0	51.9			27.3	27.3		27.3	27.3
Effective Green, g (s)	8.8	26.7	26.7	34.0	51.9			27.3	27.3		27.3	27.3
Actuated g/C Ratio	0.09	0.27	0.27	0.34	0.52			0.27	0.27		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	156	945	423	442	943			332	412		368	412
v/s Ratio Prot	c0.06	0.08		0.16	c0.45							
v/s Ratio Perm			0.00					0.12	0.02		c0.26	0.07
v/c Ratio	0.74	0.30	0.01	0.47	0.86			0.43	0.06		0.95	0.25
Uniform Delay, d1	44.5	29.2	27.0	26.0	20.9			29.9	26.9		35.6	28.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.25	2.29		1.00	1.00
Incremental Delay, d2	16.5	0.2	0.0	3.6	7.9			0.9	0.1		32.8	0.3
Delay (s)	61.0	29.3	27.0	29.6	28.8			38.4	61.7		68.5	28.6
Level of Service	E	C	C	C	C			D	E		E	C
Approach Delay (s)		38.0			28.9			47.5			49.0	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	38.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

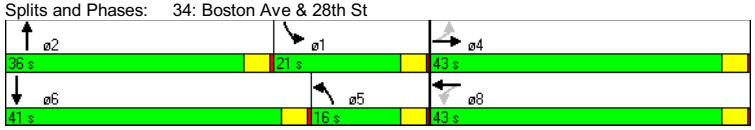
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	230	180	45	70	90	700	160	860
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	43.0	43.0	43.0	43.0	16.0	36.0	21.0	41.0
Total Split (%)	43.0%	43.0%	43.0%	43.0%	16.0%	36.0%	21.0%	41.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	28.4	28.4	28.4	28.4	10.1	44.9	14.7	51.5
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.10	0.45	0.15	0.52
v/c Ratio	0.87	0.69	0.24	0.39	0.55	0.52	0.67	0.50
Control Delay	61.8	33.6	27.1	14.7	59.1	18.1	49.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	9.4	0.6
Total Delay	61.8	33.6	27.1	14.7	59.1	18.5	58.5	14.6
LOS	E	C	C	B	E	B	E	B
Approach Delay		45.4		17.1		22.9		19.9
Approach LOS		D		B		C		B

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 86 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 75		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 25.3	Intersection LOS: C	
Intersection Capacity Utilization 66.6%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	250	348	49	206	98	804	174	1272
v/c Ratio	0.87	0.69	0.24	0.39	0.55	0.52	0.67	0.50
Control Delay	61.8	33.6	27.1	14.7	59.1	18.1	49.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	9.4	0.6
Total Delay	61.8	33.6	27.1	14.7	59.1	18.5	58.5	14.6
Queue Length 50th (ft)	151	171	24	51	65	168	110	156
Queue Length 95th (ft)	219	230	48	95	m106	m305	m145	213
Internal Link Dist (ft)		207		577		298		139
Turn Bay Length (ft)								
Base Capacity (vph)	392	675	278	688	212	1551	301	2548
Starvation Cap Reductn	0	0	0	0	0	302	94	801
Spillback Cap Reductn	0	0	0	0	0	0	0	12
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.52	0.18	0.30	0.46	0.64	0.84	0.73

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

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	0.93		1.00	0.91		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1659		1687	1608		1770	3447		1770	4848	
Flt Permitted	0.51	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	910	1659		526	1608		1770	3447		1770	4848	
Volume (vph)	230	180	140	45	70	120	90	700	40	160	860	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	196	152	49	76	130	98	761	43	174	935	337
RTOR Reduction (vph)	0	33	0	0	72	0	0	3	0	0	51	0
Lane Group Flow (vph)	250	315	0	49	134	0	98	801	0	174	1221	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	28.4	28.4		28.4	28.4		8.8	44.2		15.4	50.8	
Effective Green, g (s)	28.4	28.4		28.4	28.4		8.8	44.2		15.4	50.8	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.09	0.44		0.15	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	471		149	457		156	1524		273	2463	
v/s Ratio Prot		0.19			0.08		0.06	c0.23		c0.10	0.25	
v/s Ratio Perm	c0.27			0.09								
v/c Ratio	0.97	0.67		0.33	0.29		0.63	0.53		0.64	0.50	
Uniform Delay, d1	35.4	31.6		28.3	28.0		44.0	20.3		39.7	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.14	0.76		1.00	0.79	
Incremental Delay, d2	46.8	3.6		1.3	0.4		7.3	1.2		3.3	0.5	
Delay (s)	82.2	35.2		29.6	28.3		57.3	16.5		43.0	13.3	
Level of Service	F	D		C	C		E	B		D	B	
Approach Delay (s)		54.9			28.6			21.0			16.9	
Approach LOS		D			C			C			B	

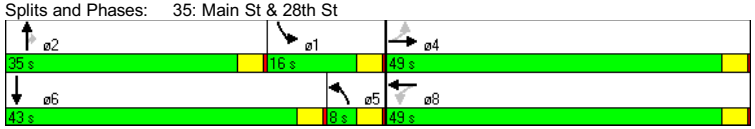
Intersection Summary			
HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	190	400	90	490	45	170	120	180	750
Turn Type	Perm		Perm		Prot		Perm	Prot	
Protected Phases		4		8	5	2		1	6
Permitted Phases	4		8				2		
Detector Phases	4	4	8	8	5	2	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	34.0	34.0	8.0	35.0
Total Split (s)	49.0	49.0	49.0	49.0	8.0	35.0	35.0	16.0	43.0
Total Split (%)	49.0%	49.0%	49.0%	49.0%	8.0%	35.0%	35.0%	16.0%	43.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	46.2	46.2	46.2	46.2	5.0	21.9	21.9	19.9	38.8
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.05	0.22	0.22	0.20	0.39
v/c Ratio	0.97	0.33	0.27	0.46	0.57	0.24	0.32	0.57	0.88
Control Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
LOS	F	B	B	B	E	C	B	C	C
Approach Delay		37.8		18.1		30.7			24.5
Approach LOS		D		B		C			C

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 90 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 35: Main St & 28th St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	207	489	98	729	49	185	130	196	1087
v/c Ratio	0.97	0.33	0.27	0.46	0.57	0.24	0.32	0.57	0.88
Control Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
Queue Length 50th (ft)	128	99	38	149	29	52	0	111	275
Queue Length 95th (ft)	#281	137	78	200	#92	83	51	m194	#355
Internal Link Dist (ft)		327		314		279			298
Turn Bay Length (ft)									
Base Capacity (vph)	213	1496	359	1597	86	1076	519	345	1253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	1	0	66	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.33	0.27	0.46	0.57	0.18	0.25	0.57	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.89	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1538	3219		1760	3375		1736	3471	1383	1736	3100	
Flt Permitted	0.29	1.00		0.42	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	468	3219		783	3375		1736	3471	1383	1736	3100	
Volume (vph)	190	400	50	90	490	180	45	170	120	180	750	250
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	435	54	98	533	196	49	185	130	196	815	272
RTOR Reduction (vph)	0	9	0	0	37	0	0	0	103	0	33	0
Lane Group Flow (vph)	207	480	0	98	692	0	49	185	27	196	1054	0
Confl. Peds. (#/hr)	10		12	12		10			72			27
Confl. Bikes (#/hr)			2			4			6			1
Heavy Vehicles (%)	17%	11%	2%	2%	2%	2%	4%	4%	4%	4%	4%	31%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	46.2	46.2		46.2	46.2		3.8	21.1	21.1	20.7	38.0	
Effective Green, g (s)	46.2	46.2		46.2	46.2		3.8	21.1	21.1	20.7	38.0	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.04	0.21	0.21	0.21	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	216	1487		362	1559		66	732	292	359	1178	
v/s Ratio Prot		0.15			0.21		0.03	0.05		c0.11	c0.34	
v/s Ratio Perm	c0.44			0.13					0.02			
v/c Ratio	0.96	0.32		0.27	0.44		0.74	0.25	0.09	0.55	0.89	
Uniform Delay, d1	26.0	17.0		16.5	18.2		47.6	32.9	31.8	35.4	29.1	
Progression Factor	1.00	1.00		1.00	1.00		0.91	1.06	1.32	0.76	0.50	
Incremental Delay, d2	48.9	0.1		0.4	0.2		35.8	0.8	0.6	1.5	9.7	
Delay (s)	74.9	17.1		16.9	18.4		79.2	35.7	42.7	28.3	24.4	
Level of Service	E	B		B	B		E	D	D	C	C	
Approach Delay (s)		34.3			18.2			44.1			25.0	
Approach LOS		C			B			D			C	

Intersection Summary

HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

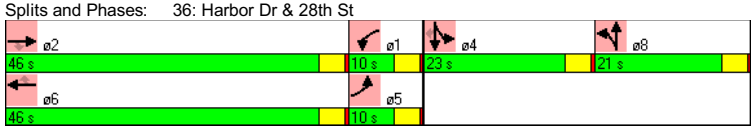
K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	50	670	4	17	942	116	6	375	15	25
Turn Type	Prot		Perm	Prot		Perm		Split		Perm
Protected Phases	5	2		1	6		8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	6	8	4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	46.0	46.0	10.0	46.0	46.0	21.0	23.0	23.0	23.0
Total Split (%)	10.0%	46.0%	46.0%	10.0%	46.0%	46.0%	21.0%	23.0%	23.0%	23.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	5.9	69.2	69.2	5.8	65.2	65.2	5.9	16.6	16.6	16.6
Actuated g/C Ratio	0.06	0.69	0.69	0.06	0.65	0.65	0.06	0.17	0.17	0.17
v/c Ratio	0.28	0.31	0.00	0.18	0.46	0.13	0.08	0.73	0.05	0.10
Control Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
LOS	D	A	A	D	B	A	D	C	B	A
Approach Delay		10.9			10.6		41.3		24.4	
Approach LOS		B			B		D		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 71 (71%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 13.4 Intersection LOS: B
Intersection Capacity Utilization 50.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 36: Harbor Dr & 28th St



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	54	728	4	18	1024	126	9	408	16	27
v/c Ratio	0.28	0.31	0.00	0.18	0.46	0.13	0.08	0.73	0.05	0.10
Control Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
Queue Length 50th (ft)	17	64	0	11	155	0	4	116	7	4
Queue Length 95th (ft)	37	186	5	34	285	27	20	m125	m8	m6
Internal Link Dist (ft)		247			310		22		224	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	198	2358	950	103	2243	977	302	640	347	311
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.31	0.00	0.17	0.46	0.13	0.03	0.64	0.05	0.09

Intersection Summary

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

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.95		0.98		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1412	1719	3438	1457		1730		3367	1827	1520
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1412	1719	3438	1457		1730		3367	1827	1520
Volume (vph)	50	670	4	17	942	116	0	6	2	375	15	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	728	4	18	1024	126	0	7	2	408	16	27
RTOR Reduction (vph)	0	0	1	0	0	51	0	2	0	0	0	23
Lane Group Flow (vph)	54	728	3	18	1024	75	0	7	0	408	16	4
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	6.4	63.6	63.6	2.4	59.6	59.6		1.4		16.6	16.6	16.6
Effective Green, g (s)	6.4	63.6	63.6	2.4	59.6	59.6		1.4		16.6	16.6	16.6
Actuated g/C Ratio	0.06	0.64	0.64	0.02	0.60	0.60		0.01		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	211	2166	898	41	2049	868		24		559	303	252
v/s Ratio Prot	c0.02	0.21		0.01	c0.30			c0.00		c0.12	0.01	
v/s Ratio Perm			0.00			0.05						0.00
v/c Ratio	0.26	0.34	0.00	0.44	0.50	0.09		0.29		0.73	0.05	0.02
Uniform Delay, d1	44.5	8.4	6.6	48.1	11.6	8.6		48.8		39.6	35.1	34.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.53	0.47	0.35
Incremental Delay, d2	0.6	0.4	0.0	7.3	0.9	0.2		6.7		2.9	0.0	0.0
Delay (s)	45.2	8.8	6.6	55.5	12.5	8.8		55.5		24.0	16.7	12.3
Level of Service	D	A	A	E	B	A		E		C	B	B
Approach Delay (s)		11.3			12.8			55.5			23.0	
Approach LOS		B			B			E			C	

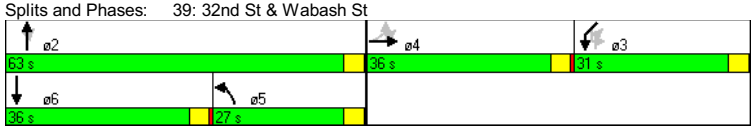
Intersection Summary				
HCM Average Control Delay	14.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	50.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations							
Volume (vph)	25	235	70	505	55	694	735
Turn Type	Perm		Prot		custom		
Protected Phases		4	5	2		6	3
Permitted Phases	4				2 3		
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	27.0	27.0		36.0	27.0
Total Split (s)	36.0	36.0	27.0	63.0	94.0	36.0	31.0
Total Split (%)	27.7%	27.7%	20.8%	48.5%	72.3%	27.7%	23.8%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	Min		Min	C-Max
Act Effct Green (s)	28.5	28.5	20.1	52.7	93.5	28.6	36.8
Actuated g/C Ratio	0.22	0.22	0.15	0.41	0.72	0.22	0.28
v/c Ratio	0.25	0.85	0.29	0.75	0.03	0.81	0.93
Control Delay	41.8	65.5	48.2	37.1	7.1	54.7	63.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	41.8	65.5	48.2	37.3	7.1	54.7	63.1
LOS	D	E	D	D	A	D	E
Approach Delay		60.2		35.9		54.7	63.1
Approach LOS		E		D		D	E

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 3:SWL, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 53.6	Intersection LOS: D	
Intersection Capacity Utilization 77.1%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 39: 32nd St & Wabash St



Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	98	342	76	549	60	871	881
v/c Ratio	0.25	0.85	0.29	0.75	0.03	0.81	0.93
Control Delay	41.8	65.5	48.2	37.1	7.1	54.7	63.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	41.8	65.5	48.2	37.3	7.1	54.7	63.1
Queue Length 50th (ft)	69	269	43	276	8	255	~441
Queue Length 95th (ft)	111	354	m99	411	m21	299	#610
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	447	465	311	821	2078	1196	946
Starvation Cap Reductn	0	0	0	33	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.74	0.24	0.70	0.03	0.73	0.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL2	EBL	EBT	EBR	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0		
Lane Util. Factor		1.00	1.00		1.00	1.00	0.88	0.91		0.97		
Frt		1.00	0.96		1.00	1.00	0.85	0.98		0.99		
Flt Protected		0.95	1.00		0.95	1.00	1.00	1.00		0.96		
Satd. Flow (prot)		1760	1792		1719	1810	2707	4859		3343		
Flt Permitted		0.95	1.00		0.95	1.00	1.00	1.00		0.96		
Satd. Flow (perm)		1760	1792		1719	1810	2707	4859		3343		
Volume (vph)	65	25	235	80	70	505	55	694	108	735	65	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	27	255	87	76	549	60	754	117	799	71	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	332	0	76	549	60	871	0	881	0	0
Heavy Vehicles (%)	2%	4%	2%	2%	5%	5%	5%	5%	2%	4%	4%	4%
Turn Type	Perm	Perm			Prot		custom					
Protected Phases			4		5	2		6		3		
Permitted Phases	4	4					2 3					
Actuated Green, G (s)		28.5	28.5		20.1	52.7	93.5	28.6		36.8		
Effective Green, g (s)		28.5	28.5		20.1	52.7	93.5	28.6		36.8		
Actuated g/C Ratio		0.22	0.22		0.15	0.41	0.72	0.22		0.28		
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0		
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0		
Lane Grp Cap (vph)		386	393		266	734	1947	1069		946		
v/s Ratio Prot			c0.19		0.04	c0.30		c0.18		c0.26		
v/s Ratio Perm		0.06					0.02					
v/c Ratio		0.25	0.84		0.29	0.75	0.03	0.81		0.93		
Uniform Delay, d1		42.0	48.6		48.6	33.0	5.2	48.2		45.4		
Progression Factor		1.00	1.00		0.94	0.93	1.10	1.00		1.00		
Incremental Delay, d2		0.3	15.2		0.6	3.9	0.0	4.9		16.7		
Delay (s)		42.3	63.8		46.4	34.7	5.8	53.1		62.1		
Level of Service		D	E		D	C	A	D		E		
Approach Delay (s)			59.0			33.5		53.1		62.1		
Approach LOS			E			C		D		E		

Intersection Summary

HCM Average Control Delay	52.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

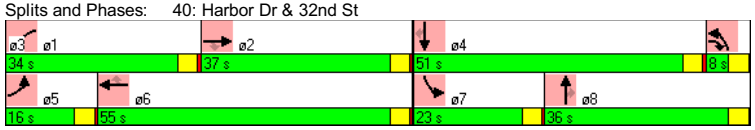
K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	657	140	300	735	390	30	160	30	130	1040	40
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	20.0	20.0	20.0
Total Split (s)	16.0	37.0	8.0	34.0	55.0	55.0	8.0	36.0	36.0	23.0	51.0	51.0
Total Split (%)	12.3%	28.5%	6.2%	26.2%	42.3%	42.3%	6.2%	27.7%	27.7%	17.7%	39.2%	39.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	Max	C-Min	C-Min	None	None	None	None	None	None
Act Effct Green (s)	10.1	30.6	34.6	30.0	52.6	52.6	4.0	38.2	38.2	15.2	49.4	49.4
Actuated g/C Ratio	0.08	0.24	0.27	0.23	0.40	0.40	0.03	0.29	0.29	0.12	0.38	0.38
v/c Ratio	0.57	0.88	0.33	0.84	0.59	0.50	0.62	0.17	0.07	0.70	0.87	0.07
Control Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
LOS	E	E	B	E	C	A	F	D	B	E	B	A
Approach Delay		54.5			32.4			42.9			20.7	
Approach LOS		D			C			D			C	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 94 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 34.4 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	714	152	326	799	424	33	174	33	141	1130	43
v/c Ratio	0.57	0.88	0.33	0.84	0.59	0.50	0.62	0.17	0.07	0.70	0.87	0.07
Control Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
Queue Length 50th (ft)	62	300	28	264	276	6	28	59	0	100	293	3
Queue Length 95th (ft)	115	376	67	#419	347	76	#85	94	28	m115	m#369	m3
Internal Link Dist (ft)		710			294			151			613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	159	873	459	389	1368	858	53	1010	463	251	1306	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	9	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.82	0.33	0.84	0.58	0.49	0.62	0.17	0.07	0.56	0.87	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

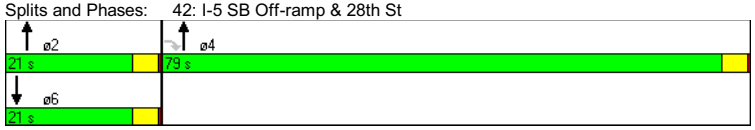
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1719	3438	1518	1687	3374	1509	1719	3438	1501	1719	3438	1538
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)	1719	3438	1518	1687	3374	1509	1719	3438	1501	1719	3438	1538
Volume (vph)	70	657	140	300	735	390	30	160	30	130	1040	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	714	152	326	799	424	33	174	33	141	1130	43
RTOR Reduction (vph)	0	0	54	0	0	248	0	0	23	0	0	21
Lane Group Flow (vph)	76	714	98	326	799	176	33	174	10	141	1130	22
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	8.8	30.6	34.6	30.0	51.8	51.8	4.0	38.2	38.2	15.2	49.4	49.4
Effective Green, g (s)	8.8	30.6	34.6	30.0	51.8	51.8	4.0	38.2	38.2	15.2	49.4	49.4
Actuated g/C Ratio	0.07	0.24	0.27	0.23	0.40	0.40	0.03	0.29	0.29	0.12	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	116	809	404	389	1344	601	53	1010	441	201	1306	584
v/s Ratio Prot	0.04	c0.21	0.01	c0.19	0.24		c0.02	0.05		0.08	c0.33	
v/s Ratio Perm			0.06			0.12			0.01			0.01
v/c Ratio	0.66	0.88	0.24	0.84	0.59	0.29	0.62	0.17	0.02	0.70	0.87	0.04
Uniform Delay, d1	59.1	48.0	37.4	47.7	30.8	26.6	62.3	34.1	32.6	55.2	37.2	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.30	0.10
Incremental Delay, d2	12.5	13.3	0.3	19.0	1.9	1.2	20.6	0.1	0.0	5.0	3.0	0.0
Delay (s)	71.7	61.3	37.7	66.7	32.8	27.8	82.8	34.2	32.6	59.5	14.2	2.4
Level of Service	E	E	D	E	C	C	F	C	C	E	B	A
Approach Delay (s)		58.3			38.6			40.7			18.7	
Approach LOS		E			D			D			B	

Intersection Summary			
HCM Average Control Delay	36.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBR	NBT	SBT	ø2
Lane Configurations				
Volume (vph)	915	1050	415	
Turn Type	custom			
Protected Phases		2 4	6	2
Permitted Phases	4			
Detector Phases	4	2 4	6	
Minimum Initial (s)	4.0		4.0	4.0
Minimum Split (s)	20.0		20.0	20.0
Total Split (s)	79.0	100.0	21.0	21.0
Total Split (%)	79.0%	100.0%	21.0%	21%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None		C-Max	C-Max
Act Effct Green (s)	73.2	100.0	18.8	
Actuated g/C Ratio	0.73	1.00	0.19	
v/c Ratio	0.84	0.32	0.47	
Control Delay	16.7	0.2	25.1	
Queue Delay	9.9	0.0	0.1	
Total Delay	26.6	0.2	25.2	
LOS	C	A	C	
Approach Delay		0.2	25.2	
Approach LOS		A	C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 71.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 42: I-5 SB Off-ramp & 28th St



Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	995	1141	451
v/c Ratio	0.84	0.32	0.47
Control Delay	16.7	0.2	25.1
Queue Delay	9.9	0.0	0.1
Total Delay	26.6	0.2	25.2
Queue Length 50th (ft)	330	0	100
Queue Length 95th (ft)	556	m0	m106
Internal Link Dist (ft)		139	454
Turn Bay Length (ft)			
Base Capacity (vph)	1216	3539	956
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	203	0	63
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.98	0.32	0.51

Intersection Summary

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

Barrio Logan CPU
42: I-5 SB Off-ramp & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0					4.0			4.0	
Lane Util. Factor			1.00					0.95			0.91	
Frt			0.86					1.00			1.00	
Flt Protected			1.00					1.00			1.00	
Satd. Flow (prot)			1611					3539			5085	
Flt Permitted			1.00					1.00			1.00	
Satd. Flow (perm)			1611					3539			5085	
Volume (vph)	0	0	915	0	0	0	0	1050	0	0	415	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	995	0	0	0	0	1141	0	0	451	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	987	0	0	0	0	1141	0	0	451	0
Turn Type			custom									
Protected Phases								2 4			6	
Permitted Phases			4									
Actuated Green, G (s)			73.2					100.0			18.8	
Effective Green, g (s)			73.2					100.0			18.8	
Actuated g/C Ratio			0.73					1.00			0.19	
Clearance Time (s)			4.0								4.0	
Vehicle Extension (s)			3.0								3.0	
Lane Grp Cap (vph)			1179					3539			956	
v/s Ratio Prot								0.32			c0.09	
v/s Ratio Perm			c0.61									
v/c Ratio			0.84					0.32			0.47	
Uniform Delay, d1			9.3					0.0			36.2	
Progression Factor			1.00					1.00			0.64	
Incremental Delay, d2			5.3					0.0			1.2	
Delay (s)			14.6					0.0			24.5	
Level of Service			B					A			C	
Approach Delay (s)		14.6			0.0			0.0			24.5	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

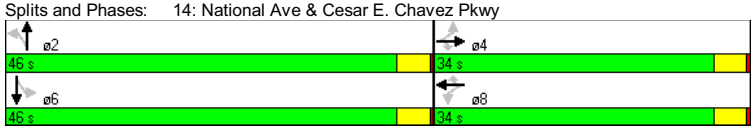
K:\SND_TPTO\095707000\Synchro\HY AI1 AM with Improvements Alt 1 without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	300	400	290	110	270	275	120	1000	120	550
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		6	
Detector Phases	4	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52	0.52	0.52
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.76	0.71	1.07	0.62
Control Delay	68.4	21.5	5.8	32.2	21.1	17.5	41.5	12.8	106.2	3.8
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.2
Total Delay	71.5	21.5	5.8	32.2	21.1	17.5	41.5	13.2	106.2	4.9
LOS	E	C	A	C	C	B	D	B	F	A
Approach Delay		32.0			21.5			16.0		16.1
Approach LOS		C			C			B		B

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 78 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 21.0 Intersection LOS: C
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	435	315	120	293	299	130	1196	130	1044
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.76	0.71	1.07	0.62
Control Delay	68.4	21.5	5.8	32.2	21.1	17.5	41.5	12.8	106.2	3.8
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.2
Total Delay	71.5	21.5	5.8	32.2	21.1	17.5	41.5	13.2	106.2	4.9
Queue Length 50th (ft)	146	113	11	45	104	81	29	137	~76	21
Queue Length 95th (ft)	m#321	230	m55	#111	181	162	m#148	163	m#115	m45
Internal Link Dist (ft)		608			780			301		299
Turn Bay Length (ft)										
Base Capacity (vph)	328	699	748	215	699	637	170	1678	121	1672
Starvation Cap Reductn	0	0	0	0	0	0	0	119	0	375
Spillback Cap Reductn	4	0	0	0	0	7	0	6	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.62	0.42	0.56	0.42	0.47	0.76	0.77	1.07	0.80

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3179		1530	2863	
Flt Permitted	0.47	1.00	1.00	0.31	1.00	1.00	0.19	1.00		0.14	1.00	
Satd. Flow (perm)	875	1863	1583	572	1863	1583	325	3179		231	2863	
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	0	154	0	0	43	0	10	0	0	169	0
Lane Group Flow (vph)	326	435	161	120	293	256	130	1187	0	130	875	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	
Effective Green, g (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	328	699	594	215	699	594	171	1669		121	1503	
v/s Ratio Prot		0.23			0.16			0.37			0.31	
v/s Ratio Perm	c0.37		0.10	0.21		0.16	0.40			c0.56		
v/c Ratio	0.99	0.62	0.27	0.56	0.42	0.43	0.76	0.71		1.07	0.58	
Uniform Delay, d1	24.9	20.4	17.4	19.8	18.5	18.6	15.0	14.4		19.0	13.0	
Progression Factor	0.86	0.86	0.92	1.02	1.02	1.02	0.68	0.71		0.56	0.31	
Incremental Delay, d2	42.3	1.4	0.2	3.1	0.4	0.5	25.3	2.4		85.0	1.0	
Delay (s)	63.7	19.0	16.2	23.3	19.2	19.5	35.5	12.7		95.6	5.1	
Level of Service	E	B	B	C	B	B	D	B		F	A	
Approach Delay (s)		31.7			20.0			15.0			15.1	
Approach LOS		C			C			B			B	

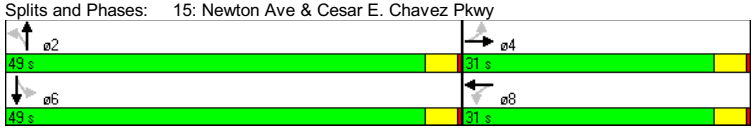
Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	135	130	90	70	40	795	165	890
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	15.6	15.6	15.6	15.6	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.70	0.70	0.70	0.70
v/c Ratio	0.72	0.58	0.49	0.49	0.17	0.41	0.61	0.46
Control Delay	48.7	29.3	35.6	15.9	7.4	6.2	18.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Delay	48.7	29.3	35.6	15.9	7.4	6.3	18.6	6.3
LOS	D	C	D	B	A	A	B	A
Approach Delay		37.1		22.3		6.4		8.1
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	217	98	206	43	929	179	1027
v/c Ratio	0.72	0.58	0.49	0.49	0.17	0.41	0.61	0.46
Control Delay	48.7	29.3	35.6	15.9	7.4	6.2	18.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Delay	48.7	29.3	35.6	15.9	7.4	6.3	18.6	6.3
Queue Length 50th (ft)	69	82	44	39	7	79	37	98
Queue Length 95th (ft)	118	132	81	87	m16	124	m#173	166
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	353	620	344	646	253	2255	294	2256
Starvation Cap Reductn	0	0	0	0	0	446	0	554
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.35	0.28	0.32	0.17	0.51	0.61	0.60

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1686		1612	3189		1612	3195	
Flt Permitted	0.45	1.00		0.43	1.00		0.25	1.00		0.28	1.00	
Satd. Flow (perm)	847	1765		801	1686		422	3189		477	3195	
Volume (vph)	135	130	70	90	70	120	40	795	60	165	890	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	141	76	98	76	130	43	864	65	179	967	60
RTOR Reduction (vph)	0	30	0	0	93	0	0	5	0	0	4	0
Lane Group Flow (vph)	147	187	0	98	113	0	43	924	0	179	1023	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Effective Green, g (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70		0.70	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	344		156	329		298	2248		336	2252	
v/s Ratio Prot		0.11			0.07			0.29			0.32	
v/s Ratio Perm	c0.17			0.12			0.10			c0.38		
v/c Ratio	0.89	0.54		0.63	0.34		0.14	0.41		0.53	0.45	
Uniform Delay, d1	31.4	29.0		29.5	27.8		3.9	4.9		5.6	5.1	
Progression Factor	1.00	1.00		1.00	1.00		0.99	0.99		0.89	0.90	
Incremental Delay, d2	40.3	1.8		7.7	0.6		0.9	0.5		5.3	0.6	
Delay (s)	71.7	30.8		37.2	28.4		4.7	5.4		10.3	5.2	
Level of Service	E	C		D	C		A	A		B	A	
Approach Delay (s)		47.3			31.2			5.3			5.9	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

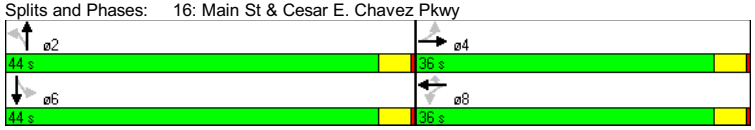
K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	120	290	70	230	270	70	640	250	540
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	20.1	20.1	20.1	20.1	20.1	51.9	51.9	51.9	51.9
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.65	0.65	0.65	0.65
v/c Ratio	0.53	0.74	0.38	0.54	0.58	0.29	0.46	1.08	0.45
Control Delay	32.3	35.9	28.4	29.0	15.6	12.2	8.4	96.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1
Total Delay	32.3	35.9	28.4	29.0	15.6	12.2	9.6	96.4	5.1
LOS	C	D	C	C	B	B	A	F	A
Approach Delay		34.9		22.6			9.8		26.8
Approach LOS		C		C			A		C

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 5 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 22.1 Intersection LOS: C
Intersection Capacity Utilization 74.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	342	76	250	293	76	892	272	870
v/c Ratio	0.53	0.74	0.38	0.54	0.58	0.29	0.46	1.08	0.45
Control Delay	32.3	35.9	28.4	29.0	15.6	12.2	8.4	96.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1
Total Delay	32.3	35.9	28.4	29.0	15.6	12.2	9.6	96.4	5.1
Queue Length 50th (ft)	58	159	32	111	57	13	86	~144	12
Queue Length 95th (ft)	98	216	63	157	116	51	172	#319	90
Internal Link Dist (ft)		588		279			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	393	738	316	745	709	261	1954	251	1943
Starvation Cap Reductn	0	0	0	0	0	0	786	0	207
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.46	0.24	0.34	0.41	0.29	0.76	1.08	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1751	1836		1751	1863	1535	1545	2974		1542	2915	
Flt Permitted	0.43	1.00		0.28	1.00	1.00	0.29	1.00		0.28	1.00	
Satd. Flow (perm)	800	1836		512	1863	1535	473	2974		459	2915	
Volume (vph)	120	290	25	70	230	270	70	640	180	250	540	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	315	27	76	250	293	76	696	196	272	587	283
RTOR Reduction (vph)	0	4	0	0	0	118	0	23	0	0	51	0
Lane Group Flow (vph)	130	338	0	76	250	175	76	869	0	272	819	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.1	20.1		20.1	20.1	20.1	51.9	51.9		51.9	51.9	
Effective Green, g (s)	20.1	20.1		20.1	20.1	20.1	51.9	51.9		51.9	51.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.65	0.65		0.65	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	461		129	468	386	307	1929		298	1891	
v/s Ratio Prot		c0.18			0.13			0.29			0.28	
v/s Ratio Perm	0.16			0.15		0.11	0.16			c0.59		
v/c Ratio	0.65	0.73		0.59	0.53	0.45	0.25	0.45		0.91	0.43	
Uniform Delay, d1	26.8	27.5		26.3	25.9	25.3	5.9	7.0		12.1	6.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.66	0.64	
Incremental Delay, d2	7.0	5.9		6.7	1.2	0.8	1.9	0.8		31.5	0.7	
Delay (s)	33.8	33.4		33.0	27.1	26.1	7.8	7.7		39.5	5.1	
Level of Service	C	C		C	C	C	A	A		D	A	
Approach Delay (s)		33.5			27.4			7.7			13.3	
Approach LOS		C			C			A			B	

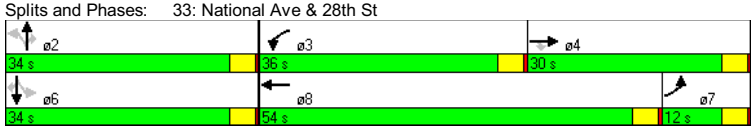
Intersection Summary				
HCM Average Control Delay	17.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	74.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	94	612	85	463	427	18	98	168	199	210	102
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8		2			6	
Permitted Phases			4			2		2	6		6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	35.0	35.0	8.0	35.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	12.0	30.0	30.0	36.0	54.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	12.0%	30.0%	30.0%	36.0%	54.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	12.4	23.2	23.2	32.0	42.9		32.8	32.8		32.8	32.8
Actuated g/C Ratio	0.12	0.23	0.23	0.32	0.43		0.33	0.33		0.33	0.33
v/c Ratio	0.47	0.81	0.21	0.98	0.93		0.30	0.30		1.02	0.20
Control Delay	51.2	44.5	7.5	71.4	44.6		37.7	15.3		84.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	51.2	44.5	7.5	71.4	44.6		37.7	15.3		84.3	6.0
LOS	D	D	A	E	D		D	B		F	A
Approach Delay		41.3			55.6		24.5			68.7	
Approach LOS		D			E		C			E	

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 98 (98%), Referenced to phase 3:WBL, Start of Green		
Natural Cycle: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.02		
Intersection Signal Delay: 50.6	Intersection LOS: D	
Intersection Capacity Utilization 81.3%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 33: National Ave & 28th St



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	102	665	92	503	725	127	183	444	111
v/c Ratio	0.47	0.81	0.21	0.98	0.93	0.30	0.30	1.02	0.20
Control Delay	51.2	44.5	7.5	71.4	44.6	37.7	15.3	84.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	44.5	7.5	71.4	44.6	37.7	15.3	84.3	6.0
Queue Length 50th (ft)	62	208	0	316	397	67	45	~312	0
Queue Length 95th (ft)	#148	268	38	#529	524	124	96	#517	39
Internal Link Dist (ft)		590			82	454		221	
Turn Bay Length (ft)									
Base Capacity (vph)	219	920	480	511	901	425	618	435	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.72	0.19	0.98	0.80	0.30	0.30	1.02	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1597	1762			1762	1509		1734	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.81	1.00		0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1597	1762			1440	1509		1342	1509
Volume (vph)	94	612	85	463	427	240	18	98	168	199	210	102
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	665	92	503	464	261	20	107	183	216	228	111
RTOR Reduction (vph)	0	0	71	0	23	0	0	0	123	0	0	75
Lane Group Flow (vph)	102	665	21	503	702	0	0	127	60	0	444	36
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	12.4	23.3	23.3	31.9	42.8			32.8	32.8		32.8	32.8
Effective Green, g (s)	12.4	23.3	23.3	31.9	42.8			32.8	32.8		32.8	32.8
Actuated g/C Ratio	0.12	0.23	0.23	0.32	0.43			0.33	0.33		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	219	825	369	509	754			472	495		440	495
v/s Ratio Prot	0.06	c0.19		c0.31	c0.40							
v/s Ratio Perm			0.01					0.09	0.04		c0.33	0.02
v/c Ratio	0.47	0.81	0.06	0.99	0.93			0.27	0.12		1.01	0.07
Uniform Delay, d1	40.7	36.2	29.8	33.9	27.2			24.8	23.5		33.6	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.34	3.36		1.00	1.00
Incremental Delay, d2	1.6	5.8	0.1	37.1	18.1			0.3	0.1		45.2	0.1
Delay (s)	42.3	42.0	29.9	71.0	45.3			33.5	79.2		78.8	23.2
Level of Service	D	D	C	E	D			C	E		E	C
Approach Delay (s)		40.7			55.8			60.5			67.7	
Approach LOS		D			E			E			E	

Intersection Summary

HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

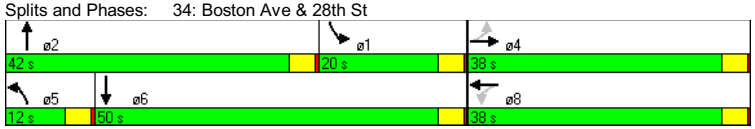
K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	320	100	60	70	50	1050	250	1060
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	12.0	42.0	20.0	50.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	12.0%	42.0%	20.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lead	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	32.9	32.9	32.9	32.9	7.3	39.1	16.0	49.6
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.07	0.39	0.16	0.50
v/c Ratio	0.96	0.48	0.25	0.26	0.42	0.91	0.96	0.58
Control Delay	72.5	20.9	27.0	16.4	57.5	26.4	69.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	74.0	1.0
Total Delay	72.5	20.9	27.0	16.4	57.5	26.6	143.4	13.6
LOS	E	C	C	B	E	C	F	B
Approach Delay		49.4		19.6		27.8		34.1
Approach LOS		D		B		C		C

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 98 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 33.7 Intersection LOS: C
Intersection Capacity Utilization 85.1% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	348	283	65	152	54	1250	272	1445
v/c Ratio	0.96	0.48	0.25	0.26	0.42	0.91	0.96	0.58
Control Delay	72.5	20.9	27.0	16.4	57.5	26.4	69.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	74.0	1.0
Total Delay	72.5	20.9	27.0	16.4	57.5	26.6	143.4	13.6
Queue Length 50th (ft)	212	95	30	43	34	250	174	161
Queue Length 95th (ft)	#389	172	66	92	m58	m#503	m#291	175
Internal Link Dist (ft)		207		577		298		139
Turn Bay Length (ft)								
Base Capacity (vph)	374	606	268	595	142	1372	283	2491
Starvation Cap Reductn	0	0	0	0	0	3	53	714
Spillback Cap Reductn	0	1	0	0	0	7	0	77
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.47	0.24	0.26	0.38	0.92	1.18	0.81

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	0.91		1.00	0.92		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1612		1687	1643		1770	3493		1770	4931	
Flt Permitted	0.62	1.00		0.43	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1095	1612		771	1643		1770	3493		1770	4931	
Volume (vph)	320	100	160	60	70	70	50	1050	100	250	1060	270
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	109	174	65	76	76	54	1141	109	272	1152	293
RTOR Reduction (vph)	0	58	0	0	37	0	0	7	0	0	42	0
Lane Group Flow (vph)	348	225	0	65	115	0	54	1243	0	272	1403	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	32.9	32.9		32.9	32.9		6.2	38.4		16.7	48.9	
Effective Green, g (s)	32.9	32.9		32.9	32.9		6.2	38.4		16.7	48.9	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.06	0.38		0.17	0.49	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	360	530		254	541		110	1341		296	2411	
v/s Ratio Prot		0.14			0.07		0.03	c0.36		c0.15	0.28	
v/s Ratio Perm	c0.32			0.08								
v/c Ratio	0.97	0.42		0.26	0.21		0.49	0.93		0.92	0.58	
Uniform Delay, d1	33.0	26.2		24.6	24.2		45.4	29.5		41.0	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.11	0.54		0.77	0.67	
Incremental Delay, d2	38.2	0.5		0.5	0.2		3.0	11.0		23.3	0.7	
Delay (s)	71.2	26.7		25.1	24.4		53.2	26.9		55.0	12.9	
Level of Service	E	C		C	C		D	C		D	B	
Approach Delay (s)		51.3			24.6			28.0			19.6	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

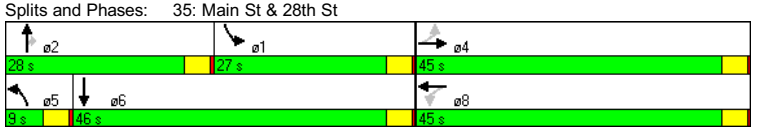
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	220	730	150	290	65	450	230	360	500
Turn Type	Perm		Perm		Prot		Perm	Prot	
Protected Phases		4		8	5	2		1	6
Permitted Phases	4		8				2		
Detector Phases	4	4	8	8	5	2	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	27.0	8.0	27.0
Total Split (s)	45.0	45.0	45.0	45.0	9.0	28.0	28.0	27.0	46.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	9.0%	28.0%	28.0%	27.0%	46.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	42.4	42.4	42.4	42.4	5.0	21.5	21.5	24.0	40.6
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.05	0.22	0.22	0.24	0.41
v/c Ratio	0.95	0.56	0.97	0.40	0.82	0.65	0.69	0.94	0.96dr
Control Delay	76.0	23.7	95.4	11.1	100.4	35.8	28.3	55.9	17.9
Queue Delay	6.2	0.0	0.0	0.0	0.0	0.2	0.0	1.6	0.5
Total Delay	82.2	23.7	95.4	11.1	100.4	36.0	28.3	57.5	18.4
LOS	F	C	F	B	F	D	C	E	B
Approach Delay		36.7		28.7		39.3			28.4
Approach LOS		D		C		D			C

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 6 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 35: Main St & 28th St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	239	836	163	619	71	489	250	391	1141
v/c Ratio	0.95	0.56	0.97	0.40	0.82	0.65	0.69	0.94	0.96dr
Control Delay	76.0	23.7	95.4	11.1	100.4	35.8	28.3	55.9	17.9
Queue Delay	6.2	0.0	0.0	0.0	0.0	0.2	0.0	1.6	0.5
Total Delay	82.2	23.7	95.4	11.1	100.4	36.0	28.3	57.5	18.4
Queue Length 50th (ft)	147	210	~103	70	42	150	94	203	49
Queue Length 95th (ft)	#309	272	#239	115	m#120	198	m170	#426	#101
Internal Link Dist (ft)		327		314		290			298
Turn Bay Length (ft)									
Base Capacity (vph)	252	1492	168	1533	87	833	396	417	1301
Starvation Cap Reductn	0	0	0	0	0	0	0	5	24
Spillback Cap Reductn	8	0	0	36	0	39	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.56	0.97	0.41	0.82	0.62	0.63	0.95	0.89

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.88	1.00	0.86	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	3507		1765	3216		1736	3471	1360	1736	2653	
Flt Permitted	0.33	1.00		0.22	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	605	3507		410	3216		1736	3471	1360	1736	2653	
Volume (vph)	220	730	40	150	290	280	65	450	230	360	500	550
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	793	43	163	315	304	71	489	250	391	543	598
RTOR Reduction (vph)	0	4	0	0	169	0	0	0	71	0	191	0
Lane Group Flow (vph)	239	832	0	163	450	0	71	489	179	391	950	0
Confl. Peds. (#/hr)	27		12	12		27			88			200
Confl. Bikes (#/hr)			8			3						6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)	42.4	42.4		42.4	42.4		5.0	21.5	21.5	24.1	40.6	
Effective Green, g (s)	42.4	42.4		42.4	42.4		5.0	21.5	21.5	24.1	40.6	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.05	0.22	0.22	0.24	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	257	1487		174	1364		87	746	292	418	1077	
v/s Ratio Prot		0.24			0.14		0.04	c0.14		0.23	c0.36	
v/s Ratio Perm	0.39			c0.40					0.13			
v/c Ratio	0.93	0.56		0.94	0.33		0.82	0.66	0.61	0.94	0.96dr	
Uniform Delay, d1	27.4	21.7		27.5	19.3		47.0	35.9	35.5	37.2	27.5	
Progression Factor	1.00	1.00		1.00	1.00		0.90	0.88	0.82	0.66	0.40	
Incremental Delay, d2	37.2	0.5		49.6	0.1		42.1	4.4	9.2	25.8	9.3	
Delay (s)	64.6	22.2		77.1	19.4		84.6	36.2	38.1	50.2	20.2	
Level of Service	E	C		E	B		F	D	D	D	C	
Approach Delay (s)		31.6			31.5			41.0			27.9	
Approach LOS		C			C			D			C	

Intersection Summary

HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

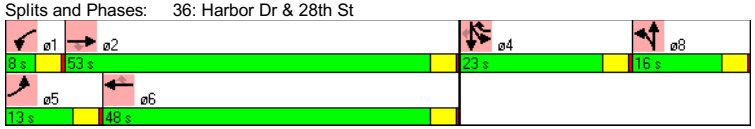
K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	140	1390	2	14	524	278	134	505	12	13
Turn Type	Prot		Perm	Prot		pm+ov		Split		Perm
Protected Phases	5	2		1	6	4	8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	4	8	4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	8.0	8.0	8.0	8.0
Total Split (s)	13.0	53.0	53.0	8.0	48.0	23.0	16.0	23.0	23.0	23.0
Total Split (%)	13.0%	53.0%	53.0%	8.0%	48.0%	23.0%	16.0%	23.0%	23.0%	23.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	8.6	54.8	54.8	4.3	45.5	64.0	11.4	18.5	18.5	18.5
Actuated g/C Ratio	0.09	0.55	0.55	0.04	0.46	0.64	0.11	0.18	0.18	0.18
v/c Ratio	0.54	0.81	0.00	0.20	0.36	0.30	0.75	0.88	0.04	0.05
Control Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
LOS	D	C	A	D	B	A	E	D	C	B
Approach Delay		26.5			14.2		65.7		48.7	
Approach LOS		C			B		E		D	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 28.9 Intersection LOS: C
Intersection Capacity Utilization 77.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 36: Harbor Dr & 28th St



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	152	1511	2	15	570	302	157	549	13	14
v/c Ratio	0.54	0.81	0.00	0.20	0.36	0.30	0.75	0.88	0.04	0.05
Control Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
Queue Length 50th (ft)	48	367	0	10	124	22	98	166	6	1
Queue Length 95th (ft)	81	#612	4	31	167	52	#192	m#205	m12	m5
Internal Link Dist (ft)		247			310		22		214	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	297	1868	761	74	1563	1025	219	640	347	302
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.81	0.00	0.20	0.36	0.29	0.72	0.86	0.04	0.05

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.91	1.00	1.00	0.97		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1393	1719	3438	1485		1821		3367	1827	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1393	1719	3438	1485		1821		3367	1827	1531
Volume (vph)	140	1390	2	14	524	278	10	134	0	505	12	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	1511	2	15	570	302	11	146	0	549	13	14
RTOR Reduction (vph)	0	0	1	0	0	69	0	0	0	0	0	11
Lane Group Flow (vph)	152	1511	1	15	570	233	0	157	0	549	13	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot		pm+ov	Split			Split		Perm
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	8.6	52.5	52.5	1.6	45.5	64.0		11.4		18.5	18.5	18.5
Effective Green, g (s)	8.6	52.5	52.5	1.6	45.5	64.0		11.4		18.5	18.5	18.5
Actuated g/C Ratio	0.09	0.52	0.52	0.02	0.46	0.64		0.11		0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	284	1788	731	28	1564	1010		208		623	338	283
v/s Ratio Prot	c0.05	c0.44		0.01	0.17	0.04		c0.09		c0.16	0.01	
v/s Ratio Perm			0.00			0.11						0.00
v/c Ratio	0.54	0.85	0.00	0.54	0.36	0.23		0.75		0.88	0.04	0.01
Uniform Delay, d1	43.8	20.3	11.3	48.8	17.8	7.6		42.9		39.7	33.4	33.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.90	0.87	0.79
Incremental Delay, d2	1.9	5.1	0.0	18.3	0.7	0.1		14.4		11.8	0.0	0.0
Delay (s)	45.7	25.4	11.3	67.1	18.5	7.7		57.3		47.3	29.2	26.4
Level of Service	D	C	B	E	B	A		E		D	C	C
Approach Delay (s)		27.2			15.6			57.3			46.4	
Approach LOS		C			B			E			D	

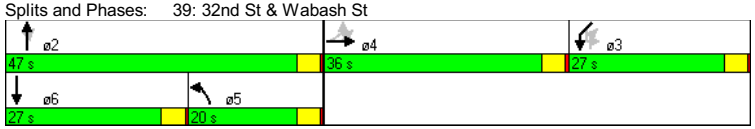
Intersection Summary				
HCM Average Control Delay	28.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations							
Volume (vph)	115	195	140	600	620	619	140
Turn Type	Perm		Prot		custom		
Protected Phases		4	5	2		6	3
Permitted Phases	4				2 3		
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	20.0	27.0		27.0	27.0
Total Split (s)	36.0	36.0	20.0	47.0	74.0	27.0	27.0
Total Split (%)	32.7%	32.7%	18.2%	42.7%	67.3%	24.5%	24.5%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	C-Min		C-Min	None
Act Effct Green (s)	20.2	20.2	15.9	65.5	81.8	45.6	12.3
Actuated g/C Ratio	0.18	0.18	0.14	0.60	0.74	0.41	0.11
v/c Ratio	0.78	0.62	0.61	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
LOS	E	D	D	A	A	D	D
Approach Delay		54.0		8.6		35.8	53.6
Approach LOS		D		A		D	D

Intersection Summary		
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 69 (63%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.78		
Intersection Signal Delay: 26.3	Intersection LOS: C	
Intersection Capacity Utilization 60.4%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 39: 32nd St & Wabash St



Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	250	212	152	652	674	759	223
v/c Ratio	0.78	0.62	0.61	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
Queue Length 50th (ft)	170	140	111	78	25	171	78
Queue Length 95th (ft)	237	199	m145	m212	m56	m182	113
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	510	542	258	1078	2013	2020	682
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.39	0.59	0.60	0.33	0.38	0.33

Intersection Summary

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

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL2	EBL	EBT	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0		4.0		
Lane Util. Factor		1.00	1.00	1.00	1.00	0.88	0.91		0.97		
Frt		1.00	1.00	1.00	1.00	0.85	0.98		0.95		
Flt Protected		0.95	1.00	0.95	1.00	1.00	1.00		0.97		
Satd. Flow (prot)		1752	1863	1719	1810	2707	4872		3264		
Flt Permitted		0.95	1.00	0.95	1.00	1.00	1.00		0.97		
Satd. Flow (perm)		1752	1863	1719	1810	2707	4872		3264		
Volume (vph)	115	115	195	140	600	620	619	79	140	55	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	212	152	652	674	673	86	152	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	212	152	652	674	759	0	223	0	0
Heavy Vehicles (%)	2%	4%	2%	5%	5%	5%	5%	2%	4%	4%	4%
Turn Type	Perm	Perm		Prot		custom					
Protected Phases			4	5	2		6		3		
Permitted Phases	4	4				2 3					
Actuated Green, G (s)		20.2	20.2	15.9	65.5	81.8	45.6		12.3		
Effective Green, g (s)		20.2	20.2	15.9	65.5	81.8	45.6		12.3		
Actuated g/C Ratio		0.18	0.18	0.14	0.60	0.74	0.41		0.11		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0		
Lane Grp Cap (vph)		322	342	248	1078	2013	2020		365		
v/s Ratio Prot			0.11	0.09	c0.36		0.16		c0.07		
v/s Ratio Perm		c0.14				0.25					
v/c Ratio		0.78	0.62	0.61	0.60	0.33	0.38		0.61		
Uniform Delay, d1		42.7	41.4	44.2	14.1	4.8	22.3		46.6		
Progression Factor		1.00	1.00	0.69	0.41	0.36	1.47		1.00		
Incremental Delay, d2		11.1	3.3	2.7	1.5	0.1	0.3		3.0		
Delay (s)		53.9	44.7	33.2	7.4	1.8	33.2		49.6		
Level of Service		D	D	C	A	A	C		D		
Approach Delay (s)			49.7		7.5		33.2		49.6		
Approach LOS			D		A		C		D		

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

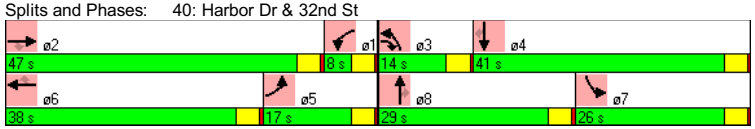
K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1185	100	40	436	460	70	690	140	310	280	200
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	17.0	47.0	14.0	8.0	38.0	38.0	14.0	29.0	29.0	26.0	41.0	41.0
Total Split (%)	15.5%	42.7%	12.7%	7.3%	34.5%	34.5%	12.7%	26.4%	26.4%	23.6%	37.3%	37.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	13.0	43.0	51.9	4.0	34.0	34.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.12	0.39	0.47	0.04	0.31	0.31	0.08	0.23	0.23	0.20	0.35	0.35
v/c Ratio	0.75	0.96	0.14	0.70	0.45	0.62	0.54	0.96	0.35	0.98	0.26	0.33
Control Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
LOS	E	D	A	F	C	A	E	E	B	E	A	A
Approach Delay		48.4			22.6			58.0			32.6	
Approach LOS		D			C			E			C	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 2 (2%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	1288	109	43	474	500	76	750	152	337	304	217
v/c Ratio	0.75	0.96	0.14	0.70	0.45	0.62	0.54	0.96	0.35	0.98	0.26	0.33
Control Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
Queue Length 50th (ft)	105	459	5	31	141	0	52	276	21	243	78	64
Queue Length 95th (ft)	#205	#613	27	#95	191	83	101	#400	77	#429	33	15
Internal Link Dist (ft)		710			294			45			613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	203	1344	788	61	1043	804	156	781	429	344	1189	664
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.96	0.14	0.70	0.45	0.62	0.49	0.96	0.35	0.98	0.26	0.33

Intersection Summary

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

K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

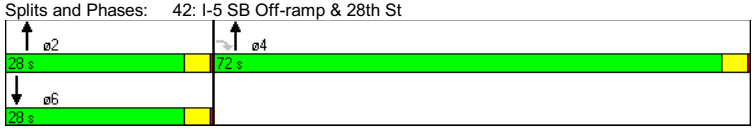
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1484	1719	3438	1502	1719	3438	1510
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)	1719	3438	1538	1687	3374	1484	1719	3438	1502	1719	3438	1510
Volume (vph)	140	1185	100	40	436	460	70	690	140	310	280	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	1288	109	43	474	500	76	750	152	337	304	217
RTOR Reduction (vph)	0	0	48	0	0	345	0	0	88	0	0	142
Lane Group Flow (vph)	152	1288	61	43	474	155	76	750	64	337	304	75
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	13.0	43.0	51.9	4.0	34.0	34.0	8.9	25.0	25.0	22.0	38.1	38.1
Effective Green, g (s)	13.0	43.0	51.9	4.0	34.0	34.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.12	0.39	0.47	0.04	0.31	0.31	0.08	0.23	0.23	0.20	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	203	1344	726	61	1043	459	139	781	341	344	1191	523
v/s Ratio Prot	c0.09	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	
v/s Ratio Perm			0.03			0.10			0.04			0.05
v/c Ratio	0.75	0.96	0.08	0.70	0.45	0.34	0.55	0.96	0.19	0.98	0.26	0.14
Uniform Delay, d1	46.9	32.6	16.0	52.4	30.5	29.3	48.6	42.0	34.3	43.8	25.8	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.61	0.32	1.05
Incremental Delay, d2	14.0	16.4	0.0	50.9	1.4	2.0	4.3	22.9	0.3	40.9	0.1	0.1
Delay (s)	60.9	49.0	16.0	103.4	32.0	31.3	53.0	64.9	34.6	67.6	8.4	26.1
Level of Service	E	D	B	F	C	C	D	E	C	E	A	C
Approach Delay (s)		47.9			34.7			59.3			36.1	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBR	NBT	SBT	ø2
Lane Configurations				
Volume (vph)	822	1440	758	
Turn Type	custom			
Protected Phases		2 4	6	2
Permitted Phases	4			
Detector Phases	4	2 4	6	
Minimum Initial (s)	4.0		4.0	4.0
Minimum Split (s)	20.0		20.0	20.0
Total Split (s)	72.0	100.0	28.0	28.0
Total Split (%)	72.0%	100.0%	28.0%	28%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None		C-Max	C-Max
Act Effct Green (s)	67.7	100.0	24.3	
Actuated g/C Ratio	0.68	1.00	0.24	
v/c Ratio	0.82	0.44	0.67	
Control Delay	19.3	0.2	17.5	
Queue Delay	13.4	0.0	0.7	
Total Delay	32.7	0.2	18.3	
LOS	C	A	B	
Approach Delay		0.2	18.3	
Approach LOS		A	B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 18 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 13.6	Intersection LOS: B
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 42: I-5 SB Off-ramp & 28th St



Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	893	1565	824
v/c Ratio	0.82	0.44	0.67
Control Delay	19.3	0.2	17.5
Queue Delay	13.4	0.0	0.7
Total Delay	32.7	0.2	18.3
Queue Length 50th (ft)	357	0	123
Queue Length 95th (ft)	568	m0	m131
Internal Link Dist (ft)		139	454
Turn Bay Length (ft)			
Base Capacity (vph)	1099	3522	1236
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	202	0	158
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.00	0.44	0.76

Intersection Summary

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

Barrio Logan CPU
42: I-5 SB Off-ramp & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0					4.0			4.0	
Lane Util. Factor			1.00					0.95			0.91	
Frt			0.86					1.00			1.00	
Flt Protected			1.00					1.00			1.00	
Satd. Flow (prot)			1611					3539			5085	
Flt Permitted			1.00					1.00			1.00	
Satd. Flow (perm)			1611					3539			5085	
Volume (vph)	0	0	822	0	0	0	0	1440	0	0	758	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	893	0	0	0	0	1565	0	0	824	0
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	890	0	0	0	0	1565	0	0	824	0
Turn Type			custom									
Protected Phases								2 4			6	
Permitted Phases			4									
Actuated Green, G (s)			67.7					100.0			24.3	
Effective Green, g (s)			67.7					100.0			24.3	
Actuated g/C Ratio			0.68					1.00			0.24	
Clearance Time (s)			4.0								4.0	
Vehicle Extension (s)			3.0								3.0	
Lane Grp Cap (vph)			1091					3539			1236	
v/s Ratio Prot								0.44			c0.16	
v/s Ratio Perm			c0.55									
v/c Ratio			0.82					0.44			0.67	
Uniform Delay, d1			11.6					0.0			34.2	
Progression Factor			1.00					1.00			0.47	
Incremental Delay, d2			4.8					0.0			1.2	
Delay (s)			16.4					0.0			17.4	
Level of Service			B					A			B	
Approach Delay (s)		16.4			0.0			0.0			17.4	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

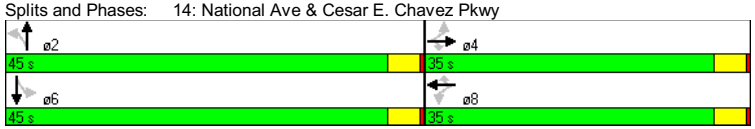
K:\SND_TPTO\095707000\Synchro\HY AI1 PM with Improvements Alt 1 without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	190	250	190	120	350	110	100	570	60	765
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		6	
Detector Phases	4	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	45.0	45.0	45.0	45.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	56.3%	56.3%	56.3%	56.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	26.2	26.2	26.2	26.2	26.2	26.2	45.8	45.8	45.8	45.8
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57	0.57	0.57
v/c Ratio	0.90	0.45	0.34	0.42	0.62	0.20	0.77	0.37	0.21	0.68
Control Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.5
LOS	E	C	A	C	C	A	D	A	A	A
Approach Delay		30.8			21.9			14.1		6.5
Approach LOS		C			C			B		A

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 79 (99%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 78.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	272	207	130	380	120	109	674	65	1169
v/c Ratio	0.90	0.45	0.34	0.42	0.62	0.20	0.77	0.37	0.21	0.68
Control Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.5
Queue Length 50th (ft)	89	97	25	46	146	0	39	79	6	46
Queue Length 95th (ft)	#203	156	69	91	225	31	m#142	100	m11	71
Internal Link Dist (ft)		608			780			301		299
Turn Bay Length (ft)										
Base Capacity (vph)	274	722	692	362	722	687	142	1832	316	1726
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	143
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.38	0.30	0.36	0.53	0.17	0.77	0.37	0.21	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3184		1530	2927	
Flt Permitted	0.32	1.00	1.00	0.47	1.00	1.00	0.17	1.00		0.36	1.00	
Satd. Flow (perm)	602	1863	1583	868	1863	1583	287	3184		576	2927	
Volume (vph)	190	250	190	120	350	110	100	570	50	60	765	310
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	272	207	130	380	120	109	620	54	65	832	337
RTOR Reduction (vph)	0	0	86	0	0	81	0	7	0	0	48	0
Lane Group Flow (vph)	207	272	121	130	380	39	109	667	0	65	1121	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	26.2	26.2	26.2	26.2	26.2	26.2	45.8	45.8		45.8	45.8	
Effective Green, g (s)	26.2	26.2	26.2	26.2	26.2	26.2	45.8	45.8		45.8	45.8	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57		0.57	0.57	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	197	610	518	284	610	518	164	1823		330	1676	
v/s Ratio Prot		0.15			0.20			0.21			c0.38	
v/s Ratio Perm	c0.34		0.08	0.15		0.02	0.38			0.11		
v/c Ratio	1.05	0.45	0.23	0.46	0.62	0.08	0.66	0.37		0.20	0.67	
Uniform Delay, d1	26.9	21.2	19.6	21.3	22.7	18.6	11.8	9.2		8.2	11.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.73		0.34	0.37	
Incremental Delay, d2	78.1	0.5	0.2	1.2	2.0	0.1	19.1	0.6		1.1	1.7	
Delay (s)	105.0	21.7	19.8	22.5	24.7	18.6	28.2	7.3		3.9	6.1	
Level of Service	F	C	B	C	C	B	C	A		A	A	
Approach Delay (s)		46.3			23.1			10.2			6.0	
Approach LOS		D			C			B			A	

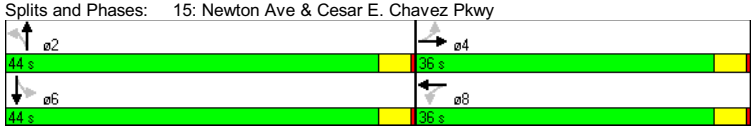
Intersection Summary				
HCM Average Control Delay	18.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	78.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	80	40	40	50	40	420	100	825
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	10.1	10.1	10.1	10.1	64.6	64.6	64.6	64.6
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.81	0.81	0.81	0.81
v/c Ratio	0.55	0.40	0.27	0.46	0.18	0.19	0.18	0.42
Control Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.7
LOS	D	B	C	C	A	A	A	A
Approach Delay		30.5		23.6		3.0		1.7
Approach LOS		C		C		A		A

Intersection Summary		
Cycle Length: 80		
Actuated Cycle Length: 80		
Offset: 32 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.55		
Intersection Signal Delay: 6.6	Intersection LOS: A	
Intersection Capacity Utilization 52.0%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	108	43	130	43	490	109	1060
v/c Ratio	0.55	0.40	0.27	0.46	0.18	0.19	0.18	0.42
Control Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.7
Queue Length 50th (ft)	42	20	20	25	4	24	3	16
Queue Length 95th (ft)	82	61	47	70	m15	47	m11	63
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	502	717	512	725	242	2580	604	2551
Starvation Cap Reductn	0	0	0	0	0	0	0	678
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.15	0.08	0.18	0.18	0.19	0.18	0.57

Intersection Summary

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

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1699		1612	3191		1612	3149	
Flt Permitted	0.56	1.00		0.65	1.00		0.25	1.00		0.47	1.00	
Satd. Flow (perm)	1042	1695		1205	1699		432	3191		803	3149	
Volume (vph)	80	40	60	40	50	70	40	420	30	100	825	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	43	65	43	54	76	43	457	33	109	897	163
RTOR Reduction (vph)	0	58	0	0	67	0	0	3	0	0	8	0
Lane Group Flow (vph)	87	50	0	43	63	0	43	487	0	109	1052	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.0	9.0		9.0	9.0		63.0	63.0		63.0	63.0	
Effective Green, g (s)	9.0	9.0		9.0	9.0		63.0	63.0		63.0	63.0	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	191		136	191		340	2513		632	2480	
v/s Ratio Prot		0.03			0.04			0.15			c0.33	
v/s Ratio Perm	c0.08			0.04			0.10			0.14		
v/c Ratio	0.74	0.26		0.32	0.33		0.13	0.19		0.17	0.42	
Uniform Delay, d1	34.4	32.5		32.7	32.7		2.0	2.1		2.1	2.7	
Progression Factor	1.00	1.00		1.00	1.00		0.97	1.04		0.37	0.33	
Incremental Delay, d2	22.3	0.7		1.3	1.0		0.7	0.2		0.5	0.4	
Delay (s)	56.7	33.2		34.0	33.7		2.7	2.4		1.3	1.3	
Level of Service	E	C		C	C		A	A		A	A	
Approach Delay (s)		43.7			33.8			2.4			1.3	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

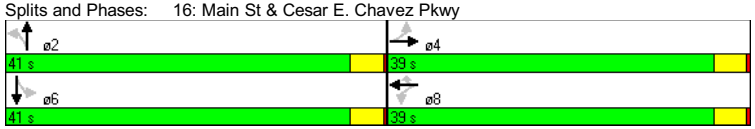
K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	150	190	70	350	190	85	340	150	580
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.5	23.5	23.5	23.5	23.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.61	0.61	0.61	0.61
v/c Ratio	0.73	0.41	0.24	0.69	0.35	0.38	0.25	0.37	0.46
Control Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.2	9.2	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.4	9.2	6.4
LOS	D	C	C	C	A	B	A	A	A
Approach Delay		31.4		21.5			9.9		6.9
Approach LOS		C		C			A		A

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 18 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 70.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	223	76	380	207	92	468	163	842
v/c Ratio	0.73	0.41	0.24	0.69	0.35	0.38	0.25	0.37	0.46
Control Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.2	9.2	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.4	9.2	6.4
Queue Length 50th (ft)	68	80	27	156	0	24	51	29	70
Queue Length 95th (ft)	122	119	51	213	38	79	93	53	93
Internal Link Dist (ft)		588		983			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	331	808	465	815	778	240	1839	442	1816
Starvation Cap Reductn	0	0	0	0	0	0	734	0	161
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.28	0.16	0.47	0.27	0.38	0.42	0.37	0.51

Intersection Summary

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1839		1750	1863	1511	1537	2996		1549	2945	
Flt Permitted	0.28	1.00		0.51	1.00	1.00	0.29	1.00		0.47	1.00	
Satd. Flow (perm)	518	1839		947	1863	1511	472	2996		772	2945	
Volume (vph)	150	190	15	70	350	190	85	340	90	150	580	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	16	76	380	207	92	370	98	163	630	212
RTOR Reduction (vph)	0	4	0	0	0	146	0	22	0	0	30	0
Lane Group Flow (vph)	163	219	0	76	380	61	92	446	0	163	812	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.5	23.5		23.5	23.5	23.5	48.5	48.5		48.5	48.5	
Effective Green, g (s)	23.5	23.5		23.5	23.5	23.5	48.5	48.5		48.5	48.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.61	0.61		0.61	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	152	540		278	547	444	286	1816		468	1785	
v/s Ratio Prot		0.12			0.20			0.15			c0.28	
v/s Ratio Perm	c0.31			0.08		0.04	0.19			0.21		
v/c Ratio	1.07	0.41		0.27	0.69	0.14	0.32	0.25		0.35	0.45	
Uniform Delay, d1	28.2	22.6		21.7	25.1	20.8	7.7	7.3		7.9	8.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.62	0.59	
Incremental Delay, d2	93.6	0.5		0.5	3.8	0.1	3.0	0.3		1.9	0.8	
Delay (s)	121.9	23.1		22.2	28.9	20.9	10.7	7.6		6.8	5.9	
Level of Service	F	C		C	C	C	B	A		A	A	
Approach Delay (s)		64.8			25.6			8.1			6.0	
Approach LOS		E			C			A			A	

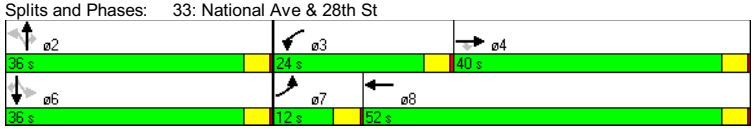
Intersection Summary				
HCM Average Control Delay	20.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	106	245	18	186	599	33	102	82	118	213	307
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8		2			6	
Permitted Phases			4			2		2	6		6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	35.0	35.0	8.0	35.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	12.0	40.0	40.0	24.0	52.0	36.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	12.0%	40.0%	40.0%	24.0%	52.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	8.7	33.1	33.1	26.3	50.7		28.6	28.6		28.6	28.6
Actuated g/C Ratio	0.09	0.33	0.33	0.26	0.51		0.29	0.29		0.29	0.29
v/c Ratio	0.74	0.23	0.04	0.59	0.85		0.37	0.18		0.89	0.50
Control Delay	73.8	24.0	8.9	44.0	32.7		42.5	18.9		59.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	73.8	24.0	8.9	44.0	32.7		42.5	18.9		59.1	6.3
LOS	E	C	A	D	C		D	B		E	A
Approach Delay		37.5			35.0		33.6			33.7	
Approach LOS		D			D		C			C	

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 97 (97%), Referenced to phase 3:WBL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.89		
Intersection Signal Delay: 34.9	Intersection LOS: C	
Intersection Capacity Utilization 83.3%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 33: National Ave & 28th St



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	115	266	20	202	788	147	89	360	334
v/c Ratio	0.74	0.23	0.04	0.59	0.85	0.37	0.18	0.89	0.50
Control Delay	73.8	24.0	8.9	44.0	32.7	42.5	18.9	59.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	24.0	8.9	44.0	32.7	42.5	18.9	59.1	6.3
Queue Length 50th (ft)	73	61	0	123	436	75	16	208	4
Queue Length 95th (ft)	#171	91	16	#238	#690	167	82	#356	67
Internal Link Dist (ft)		590			82	359		221	
Turn Bay Length (ft)									
Base Capacity (vph)	155	1274	583	342	927	440	543	451	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.21	0.03	0.59	0.85	0.33	0.16	0.80	0.48

Intersection Summary

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

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1299	1814			1754	1509		1745	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.70	1.00		0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1299	1814			1239	1509		1355	1509
Volume (vph)	106	245	18	186	599	126	33	102	82	118	213	307
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	266	20	202	651	137	36	111	89	128	232	334
RTOR Reduction (vph)	0	0	13	0	7	0	0	0	64	0	0	231
Lane Group Flow (vph)	115	266	7	202	781	0	0	147	25	0	360	103
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.7	33.1	33.1	26.3	50.7			28.6	28.6		28.6	28.6
Effective Green, g (s)	8.7	33.1	33.1	26.3	50.7			28.6	28.6		28.6	28.6
Actuated g/C Ratio	0.09	0.33	0.33	0.26	0.51			0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	154	1171	524	342	920			354	432		388	432
v/s Ratio Prot	c0.06	0.08		0.16	c0.43							
v/s Ratio Perm			0.00					0.12	0.02		c0.27	0.07
v/c Ratio	0.75	0.23	0.01	0.59	0.85			0.42	0.06		0.93	0.24
Uniform Delay, d1	44.6	24.2	22.5	32.2	21.3			28.9	25.9		34.7	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.44	3.25		1.00	1.00
Incremental Delay, d2	17.8	0.1	0.0	7.3	7.4			0.7	0.1		28.0	0.3
Delay (s)	62.3	24.3	22.5	39.5	28.7			42.4	84.3		62.6	27.6
Level of Service	E	C	C	D	C			D	F		E	C
Approach Delay (s)		35.1			30.9			58.2			45.8	
Approach LOS		D			C			E			D	

Intersection Summary

HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

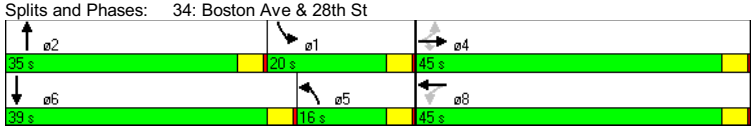
K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	250	200	150	50	80	90	720	170	880
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phases	4	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	16.0	35.0	20.0	39.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	16.0%	35.0%	20.0%	39.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag						Lag	Lead	Lag	Lead
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	31.0	31.0	31.0	31.0	31.0	10.4	42.8	14.2	48.8
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31	0.10	0.43	0.14	0.49
v/c Ratio	0.90	0.39	0.28	0.18	0.40	0.54	0.56	0.74	0.53
Control Delay	63.8	27.6	4.5	23.2	15.3	59.0	22.2	55.2	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.3
Total Delay	63.8	27.6	4.5	23.2	15.3	59.0	22.7	55.2	15.0
LOS	E	C	A	C	B	E	C	E	B
Approach Delay		36.9			16.8		26.5		20.0
Approach LOS		D			B		C		C

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 99 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 24.9 — Intersection LOS: C
Intersection Capacity Utilization 70.0% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	272	217	163	54	228	98	826	185	1283
v/c Ratio	0.90	0.39	0.28	0.18	0.40	0.54	0.56	0.74	0.53
Control Delay	63.8	27.6	4.5	23.2	15.3	59.0	22.2	55.2	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.3
Total Delay	63.8	27.6	4.5	23.2	15.3	59.0	22.7	55.2	15.0
Queue Length 50th (ft)	162	106	0	24	60	64	215	118	175
Queue Length 95th (ft)	242	147	38	47	107	m106	m316	#193	254
Internal Link Dist (ft)		207			577		298		234
Turn Bay Length (ft)									
Base Capacity (vph)	399	728	715	408	719	212	1480	283	2418
Starvation Cap Reductn	0	0	0	0	0	0	262	0	490
Spillback Cap Reductn	0	0	5	0	0	0	0	0	164
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.30	0.23	0.13	0.32	0.46	0.68	0.65	0.67

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1776	1509	1687	1611		1770	3447		1770	4856	
Flt Permitted	0.50	1.00	1.00	0.51	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	882	1776	1509	911	1611		1770	3447		1770	4856	
Volume (vph)	250	200	150	50	80	130	90	720	40	170	880	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	217	163	54	87	141	98	783	43	185	957	326
RTOR Reduction (vph)	0	0	112	0	68	0	0	3	0	0	49	0
Lane Group Flow (vph)	272	217	51	54	160	0	98	823	0	185	1234	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	31.0	31.0	31.0	31.0	31.0		9.0	42.0		15.0	48.0	
Effective Green, g (s)	31.0	31.0	31.0	31.0	31.0		9.0	42.0		15.0	48.0	
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31		0.09	0.42		0.15	0.48	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	273	551	468	282	499		159	1448		266	2331	
v/s Ratio Prot		0.12			0.10		0.06	c0.24		c0.10	0.25	
v/s Ratio Perm	c0.31		0.03	0.06								
v/c Ratio	1.00	0.39	0.11	0.19	0.32		0.62	0.57		0.70	0.53	
Uniform Delay, d1	34.4	27.1	24.6	25.3	26.4		43.8	22.1		40.3	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.16	0.86		0.95	0.73	
Incremental Delay, d2	53.1	0.5	0.1	0.3	0.4		6.5	1.5		6.9	0.8	
Delay (s)	87.6	27.6	24.7	25.6	26.8		57.3	20.6		45.4	14.0	
Level of Service	F	C	C	C	C		E	C		D	B	
Approach Delay (s)		51.9			26.6			24.5			17.9	
Approach LOS		D			C			C			B	

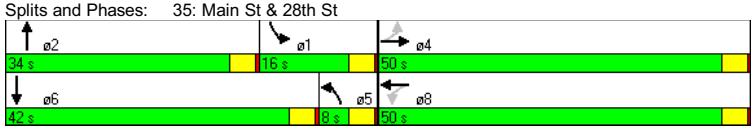
Intersection Summary				
HCM Average Control Delay	27.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	190	400	90	500	40	170	190	750
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	34.0	8.0	35.0
Total Split (s)	50.0	50.0	50.0	50.0	8.0	34.0	16.0	42.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	8.0%	34.0%	16.0%	42.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	47.2	47.2	47.2	47.2	4.4	21.3	19.4	38.4
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.04	0.21	0.19	0.38
v/c Ratio	0.98	0.32	0.27	0.46	0.57	0.41	0.61	0.90
Control Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
LOS	F	B	B	B	E	B	C	C
Approach Delay		37.3		17.5		24.4		26.8
Approach LOS		D		B		C		C

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 35: Main St & 28th St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	489	98	750	43	315	207	1098
v/c Ratio	0.98	0.32	0.27	0.46	0.57	0.41	0.61	0.90
Control Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
Queue Length 50th (ft)	128	96	37	150	27	54	128	296
Queue Length 95th (ft)	#281	134	76	201	#83	63	209	#461
Internal Link Dist (ft)		327		314		279		298
Turn Bay Length (ft)								
Base Capacity (vph)	212	1529	369	1631	75	1024	338	1220
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	3	0	80	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.32	0.27	0.46	0.57	0.33	0.61	0.90

Intersection Summary

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

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.95		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		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		0.95	1.00	
Satd. Flow (prot)	1538	3219		1760	3371		1736	3109		1736	3090	
Flt Permitted	0.28	1.00		0.43	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	458	3219		788	3371		1736	3109		1736	3090	
Volume (vph)	190	400	50	90	500	190	40	170	120	190	750	260
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	435	54	98	543	207	43	185	130	207	815	283
RTOR Reduction (vph)	0	10	0	0	39	0	0	103	0	0	35	0
Lane Group Flow (vph)	207	479	0	98	711	0	43	212	0	207	1063	0
Confl. Peds. (#/hr)	10		12	12		10			72			27
Confl. Bikes (#/hr)			2			4			6			1
Heavy Vehicles (%)	17%	11%	2%	2%	2%	2%	4%	4%	4%	4%	4%	31%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	47.2	47.2		47.2	47.2		3.2	20.5		20.3	37.6	
Effective Green, g (s)	47.2	47.2		47.2	47.2		3.2	20.5		20.3	37.6	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.03	0.20		0.20	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	216	1519		372	1591		56	637		352	1162	
v/s Ratio Prot		0.15			0.21		0.02	0.07		c0.12	c0.34	
v/s Ratio Perm	c0.45			0.12								
v/c Ratio	0.96	0.32		0.26	0.45		0.77	0.33		0.59	0.91	
Uniform Delay, d1	25.5	16.4		15.9	17.7		48.0	33.9		36.1	29.7	
Progression Factor	1.00	1.00		1.00	1.00		0.98	0.82		0.71	0.52	
Incremental Delay, d2	48.9	0.1		0.4	0.2		46.0	1.4		2.3	11.7	
Delay (s)	74.3	16.5		16.3	17.9		93.1	29.2		27.9	27.1	
Level of Service	E	B		B	B		F	C		C	C	
Approach Delay (s)		33.7			17.7			36.9			27.2	
Approach LOS		C			B			D			C	

Intersection Summary

HCM Average Control Delay	27.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	78.7%	ICU Level of Service		D	
Analysis Period (min)	15				

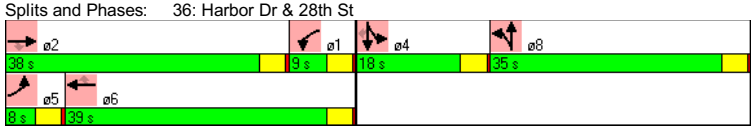
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	70	670	4	18	943	115	6	339	15	22
Turn Type	Prot		Perm	Prot		Perm		Split		Perm
Protected Phases	5	2		1	6		8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	6	8	4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	35.0	8.0	8.0	8.0
Total Split (s)	8.0	38.0	38.0	9.0	39.0	39.0	35.0	18.0	18.0	18.0
Total Split (%)	8.0%	38.0%	38.0%	9.0%	39.0%	39.0%	35.0%	18.0%	18.0%	18.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	5.7	60.8	60.8	5.0	56.6	56.6	15.7	13.6	13.6	13.6
Actuated g/C Ratio	0.06	0.61	0.61	0.05	0.57	0.57	0.16	0.14	0.14	0.14
v/c Ratio	0.40	0.35	0.00	0.23	0.53	0.15	0.03	0.80	0.06	0.11
Control Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
LOS	D	B	B	D	B	A	C	C	B	A
Approach Delay		19.5			18.7		24.4		30.3	
Approach LOS		B			B		C		C	

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 2 (2%), Referenced to phase 2:EBT and 6:WBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.80		
Intersection Signal Delay: 21.0	Intersection LOS: C	
Intersection Capacity Utilization 53.0%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 36: Harbor Dr & 28th St



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	76	728	4	20	1025	125	9	368	16	24
v/c Ratio	0.40	0.35	0.00	0.23	0.53	0.15	0.03	0.80	0.06	0.11
Control Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
Queue Length 50th (ft)	24	54	0	13	148	0	4	108	7	4
Queue Length 95th (ft)	#55	266	8	37	#403	38	15	m118	m9	m6
Internal Link Dist (ft)		247			310		22		224	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	189	2070	817	86	1945	854	549	471	256	233
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.35	0.00	0.23	0.53	0.15	0.02	0.78	0.06	0.10

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.94		0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1401	1719	3438	1450		1763		3367	1827	1516
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1401	1719	3438	1450		1763		3367	1827	1516
Volume (vph)	70	670	4	18	943	115	0	6	2	339	15	22
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	728	4	20	1025	125	0	7	2	368	16	24
RTOR Reduction (vph)	0	0	2	0	0	58	0	2	0	0	0	21
Lane Group Flow (vph)	76	728	2	20	1025	67	0	7	0	368	16	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	4.6	56.0	56.0	2.0	53.4	53.4		12.4		13.6	13.6	13.6
Effective Green, g (s)	4.6	56.0	56.0	2.0	53.4	53.4		12.4		13.6	13.6	13.6
Actuated g/C Ratio	0.05	0.56	0.56	0.02	0.53	0.53		0.12		0.14	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	152	1907	785	34	1836	774		219		458	248	206
v/s Ratio Prot	0.02	c0.21		0.01	c0.30			c0.00		c0.11	0.01	
v/s Ratio Perm			0.00			0.05						0.00
v/c Ratio	0.50	0.38	0.00	0.59	0.56	0.09		0.03		0.80	0.06	0.02
Uniform Delay, d1	46.6	12.3	9.7	48.6	15.5	11.4		38.5		41.9	37.7	37.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.55	0.47	0.36
Incremental Delay, d2	2.6	0.6	0.0	23.4	1.2	0.2		0.1		5.9	0.1	0.0
Delay (s)	49.2	12.9	9.7	72.0	16.7	11.6		38.6		29.0	17.8	13.3
Level of Service	D	B	A	E	B	B		D		C	B	B
Approach Delay (s)		16.3			17.1			38.6			27.7	
Approach LOS		B			B			D			C	

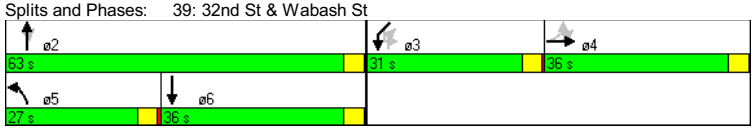
Intersection Summary				
HCM Average Control Delay	18.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	53.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations							
Volume (vph)	25	235	70	505	55	694	735
Turn Type	Perm		Prot		custom		
Protected Phases		4	5	2		6	3
Permitted Phases	4				2 3		
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	27.0	27.0		36.0	27.0
Total Split (s)	36.0	36.0	27.0	63.0	94.0	36.0	31.0
Total Split (%)	27.7%	27.7%	20.8%	48.5%	72.3%	27.7%	23.8%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lag	Lag	Lead			Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	Min		Min	None
Act Effct Green (s)	17.9	17.9	9.5	36.8	68.7	23.2	27.8
Actuated g/C Ratio	0.19	0.19	0.10	0.39	0.72	0.24	0.29
v/c Ratio	0.30	0.72	0.44	0.78	0.03	0.73	0.90
Control Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
LOS	D	D	D	C	A	D	D
Approach Delay		46.2		33.9		37.6	48.2
Approach LOS		D		C		D	D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 94.8		
Natural Cycle: 130		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 41.1	Intersection LOS: D	
Intersection Capacity Utilization 72.3%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 39: 32nd St & Wabash St



Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	98	255	76	549	60	871	881
v/c Ratio	0.30	0.72	0.44	0.78	0.03	0.73	0.90
Control Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
Queue Length 50th (ft)	50	144	43	279	4	173	260
Queue Length 95th (ft)	110	263	105	470	14	265	#544
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	524	554	371	920	2098	1527	979
Starvation Cap Reductn	0	0	0	13	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.46	0.20	0.61	0.03	0.57	0.90

Intersection Summary

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

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL2	EBL	EBT	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0		4.0		
Lane Util. Factor		1.00	1.00	1.00	1.00	0.88	0.91		0.97		
Frt		1.00	1.00	1.00	1.00	0.85	0.98		0.99		
Flt Protected		0.95	1.00	0.95	1.00	1.00	1.00		0.96		
Satd. Flow (prot)		1760	1863	1719	1810	2707	4859		3343		
Flt Permitted		0.95	1.00	0.95	1.00	1.00	1.00		0.96		
Satd. Flow (perm)		1760	1863	1719	1810	2707	4859		3343		
Volume (vph)	65	25	235	70	505	55	694	108	735	65	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	27	255	76	549	60	754	117	799	71	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	255	76	549	60	871	0	881	0	0
Heavy Vehicles (%)	2%	4%	2%	5%	5%	5%	5%	2%	4%	4%	4%
Turn Type	Perm	Perm		Prot	custom						
Protected Phases			4	5	2		6		3		
Permitted Phases	4	4				2 3					
Actuated Green, G (s)		17.9	17.9	9.5	36.8	68.6	23.3		27.8		
Effective Green, g (s)		17.9	17.9	9.5	36.8	68.6	23.3		27.8		
Actuated g/C Ratio		0.19	0.19	0.10	0.39	0.73	0.25		0.29		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0		
Lane Grp Cap (vph)		333	353	173	705	1965	1198		983		
v/s Ratio Prot			c0.14	0.04	c0.30		0.18		c0.26		
v/s Ratio Perm		0.06				0.02					
v/c Ratio		0.29	0.72	0.44	0.78	0.03	0.73		0.90		
Uniform Delay, d1		32.9	36.0	40.0	25.3	3.6	32.7		32.0		
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00		1.00		
Incremental Delay, d2		0.5	7.1	1.8	5.4	0.0	2.2		10.6		
Delay (s)		33.4	43.1	41.8	30.7	3.6	34.9		42.6		
Level of Service		C	D	D	C	A	C		D		
Approach Delay (s)			40.4		29.6		34.9		42.6		
Approach LOS			D		C		C		D		

Intersection Summary

HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

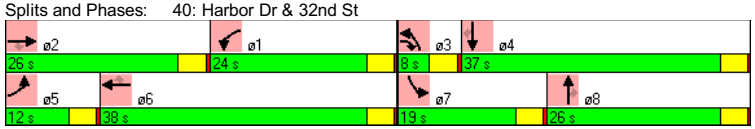
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	641	140	300	756	390	30	160	30	130	1040	60
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	8.0	20.0	20.0	8.0	20.0	20.0	8.0	8.0	8.0
Total Split (s)	12.0	26.0	8.0	24.0	38.0	38.0	8.0	26.0	26.0	19.0	37.0	37.0
Total Split (%)	12.6%	27.4%	8.4%	25.3%	40.0%	40.0%	8.4%	27.4%	27.4%	20.0%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	Max	None	None	None	None	None	Max	Max	Max
Act Effct Green (s)	7.8	21.4	25.4	20.0	35.8	35.8	4.0	22.0	22.0	15.0	33.0	33.0
Actuated g/C Ratio	0.08	0.23	0.27	0.21	0.38	0.38	0.04	0.23	0.23	0.16	0.35	0.35
v/c Ratio	0.71	0.90	0.33	0.91	0.64	0.51	0.45	0.22	0.09	0.52	0.94	0.11
Control Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
LOS	E	D	B	E	C	A	E	C	B	D	D	A
Approach Delay		46.5			29.8			32.4			43.7	
Approach LOS		D			C			C			D	

Intersection Summary			
Cycle Length: 95			
Actuated Cycle Length: 94.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 38.4		Intersection LOS: D	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	697	152	326	822	424	33	174	33	141	1130	65
v/c Ratio	0.71	0.90	0.33	0.91	0.64	0.51	0.45	0.22	0.09	0.52	0.94	0.11
Control Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
Queue Length 50th (ft)	58	214	22	194	218	0	20	44	0	79	344	0
Queue Length 95th (ft)	#134	#312	51	#355	286	62	#58	73	24	140	#483	27
Internal Link Dist (ft)		710			294			151			613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	142	796	456	357	1281	836	73	801	374	273	1202	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.88	0.33	0.91	0.64	0.51	0.45	0.22	0.09	0.52	0.94	0.11

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

K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

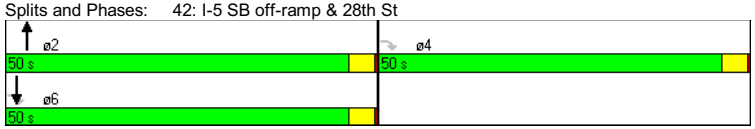
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1519	1687	3374	1509	1719	3438	1496	1719	3438	1538
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)	1719	3438	1519	1687	3374	1509	1719	3438	1496	1719	3438	1538
Volume (vph)	90	641	140	300	756	390	30	160	30	130	1040	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	697	152	326	822	424	33	174	33	141	1130	65
RTOR Reduction (vph)	0	0	48	0	0	265	0	0	25	0	0	42
Lane Group Flow (vph)	98	697	104	326	822	159	33	174	8	141	1130	23
Confl. Bikes (#/hr)			3						16			
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.4	21.4	25.4	20.8	35.8	35.8	4.0	22.0	22.0	15.0	33.0	33.0
Effective Green, g (s)	6.4	21.4	25.4	20.8	35.8	35.8	4.0	22.0	22.0	15.0	33.0	33.0
Actuated g/C Ratio	0.07	0.22	0.27	0.22	0.38	0.38	0.04	0.23	0.23	0.16	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	116	773	405	369	1269	567	72	794	346	271	1192	533
v/s Ratio Prot	0.06	c0.20	0.01	c0.19	0.24		0.02	0.05		c0.08	c0.33	
v/s Ratio Perm			0.06			0.11			0.01			0.01
v/c Ratio	0.84	0.90	0.26	0.88	0.65	0.28	0.46	0.22	0.02	0.52	0.95	0.04
Uniform Delay, d1	43.9	35.9	27.5	36.0	24.5	20.7	44.5	29.6	28.3	36.8	30.3	20.6
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	40.0	13.7	0.3	25.0	1.1	0.3	4.6	0.1	0.0	7.0	16.2	0.1
Delay (s)	83.9	49.6	27.8	61.1	25.6	21.0	49.1	29.8	28.3	43.8	46.5	20.8
Level of Service	F	D	C	E	C	C	D	C	C	D	D	C
Approach Delay (s)		49.6			31.7			32.2			45.0	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	40.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBR	NBT	SBT	ø4
Lane Configurations				
Volume (vph)	933	1100	417	
Turn Type	custom			
Protected Phases		2	6	4
Permitted Phases	4 6			
Detector Phases	4 6	2	6	
Minimum Initial (s)		4.0	4.0	4.0
Minimum Split (s)		20.0	20.0	20.0
Total Split (s)	100.0	50.0	50.0	50.0
Total Split (%)	100.0%	50.0%	50.0%	50%
Yellow Time (s)		3.5	3.5	3.5
All-Red Time (s)		0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		C-Max	C-Max	None
Act Effct Green (s)	100.0	72.9	72.9	
Actuated g/C Ratio	1.00	0.73	0.73	
v/c Ratio	0.63	0.46	0.12	
Control Delay	1.9	1.8	0.9	
Queue Delay	0.1	0.1	0.0	
Total Delay	1.9	1.9	0.9	
LOS	A	A	A	
Approach Delay		1.9	0.9	
Approach LOS		A	A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 91 (91%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 1.7	Intersection LOS: A
Intersection Capacity Utilization 72.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 42: I-5 SB off-ramp & 28th St



Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	1014	1196	453
v/c Ratio	0.63	0.46	0.12
Control Delay	1.9	1.8	0.9
Queue Delay	0.1	0.1	0.0
Total Delay	1.9	1.9	0.9
Queue Length 50th (ft)	0	4	1
Queue Length 95th (ft)	0	m125	m26
Internal Link Dist (ft)		234	359
Turn Bay Length (ft)			
Base Capacity (vph)	1611	2578	3705
Starvation Cap Reductn	0	402	0
Spillback Cap Reductn	47	0	148
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.65	0.55	0.13

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

Barrio Logan CPU
42: I-5 SB off-ramp & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.91	
Frt		0.86		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		1611		3539	5085	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		1611		3539	5085	
Volume (vph)	0	933	0	1100	417	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1014	0	1196	453	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1014	0	1196	453	0
Turn Type		custom				
Protected Phases				2	6	
Permitted Phases		4 6				
Actuated Green, G (s)		100.0		72.9	72.9	
Effective Green, g (s)		100.0		72.9	72.9	
Actuated g/C Ratio		1.00		0.73	0.73	
Clearance Time (s)				4.0	4.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)		1611		2580	3707	
v/s Ratio Prot				0.34	0.09	
v/s Ratio Perm		c0.63				
v/c Ratio		0.63		0.46	0.12	
Uniform Delay, d1		0.0		5.5	4.0	
Progression Factor		1.00		0.17	0.14	
Incremental Delay, d2		0.8		0.5	0.0	
Delay (s)		0.8		1.4	0.6	
Level of Service		A		A	A	
Approach Delay (s)	0.8			1.4	0.6	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

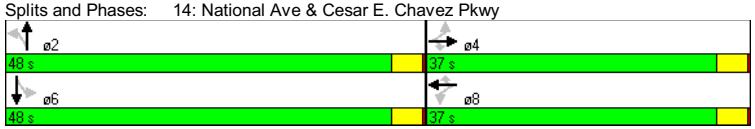
K:\SND_TPTO\095707000\Synchro\HY AI2 AM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	300	400	290	110	270	275	120	1000	120	550
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		6	
Detector Phases	4	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	37.0	48.0	48.0	48.0	48.0
Total Split (%)	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	56.5%	56.5%	56.5%	56.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	32.3	32.3	32.3	32.3	32.3	32.3	44.7	44.7	44.7	44.7
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.53	0.53	0.53	0.53
v/c Ratio	0.97	0.62	0.42	0.54	0.41	0.47	0.78	0.71	1.10	0.63
Control Delay	71.8	25.7	6.8	30.8	21.4	17.8	46.1	14.4	120.2	4.0
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7
Total Delay	74.9	25.7	6.8	30.8	21.4	17.8	46.1	14.8	120.2	4.7
LOS	E	C	A	C	C	B	D	B	F	A
Approach Delay		35.1			21.4			17.9		17.4
Approach LOS		D			C			B		B

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 82 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 22.7 Intersection LOS: C
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	435	315	120	293	299	130	1196	130	1044
v/c Ratio	0.97	0.62	0.42	0.54	0.41	0.47	0.78	0.71	1.10	0.63
Control Delay	71.8	25.7	6.8	30.8	21.4	17.8	46.1	14.4	120.2	4.0
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7
Total Delay	74.9	25.7	6.8	30.8	21.4	17.8	46.1	14.8	120.2	4.7
Queue Length 50th (ft)	165	181	25	48	111	88	48	224	~84	21
Queue Length 95th (ft)	#333	277	82	107	178	160	m#158	203	m#132	m46
Internal Link Dist (ft)		608			780			301		299
Turn Bay Length (ft)										
Base Capacity (vph)	342	723	763	229	723	655	167	1681	118	1663
Starvation Cap Reductn	0	0	0	0	0	0	0	140	0	282
Spillback Cap Reductn	6	0	0	0	0	11	0	10	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.60	0.41	0.52	0.41	0.46	0.78	0.78	1.10	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3179		1530	2863	
Flt Permitted	0.47	1.00	1.00	0.31	1.00	1.00	0.19	1.00		0.14	1.00	
Satd. Flow (perm)	873	1863	1583	573	1863	1583	323	3179		229	2863	
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	0	150	0	0	41	0	9	0	0	156	0
Lane Group Flow (vph)	326	435	165	120	293	258	130	1187	0	130	888	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	32.3	32.3	32.3	32.3	32.3	32.3	44.7	44.7		44.7	44.7	
Effective Green, g (s)	32.3	32.3	32.3	32.3	32.3	32.3	44.7	44.7		44.7	44.7	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.53	0.53		0.53	0.53	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	332	708	602	218	708	602	170	1672		120	1506	
v/s Ratio Prot		0.23			0.16			0.37			0.31	
v/s Ratio Perm	c0.37		0.10	0.21		0.16	0.40			c0.57		
v/c Ratio	0.98	0.61	0.27	0.55	0.41	0.43	0.76	0.71		1.08	0.59	
Uniform Delay, d1	26.1	21.3	18.2	20.7	19.4	19.5	16.0	15.2		20.2	13.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.77		0.48	0.29	
Incremental Delay, d2	44.3	1.6	0.2	3.0	0.4	0.5	26.0	2.4		92.4	1.2	
Delay (s)	70.3	22.9	18.5	23.6	19.8	20.0	37.9	14.1		102.1	5.1	
Level of Service	E	C	B	C	B	C	D	B		F	A	
Approach Delay (s)		36.0			20.5			16.5			15.9	
Approach LOS		D			C			B			B	

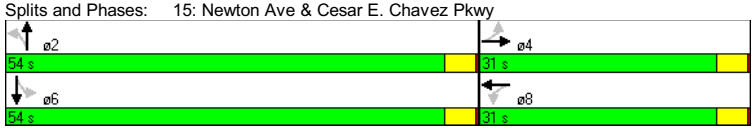
Intersection Summary				
HCM Average Control Delay	21.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	1.04			
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	81.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	130	90	70	40	790	170	910
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	54.0	54.0	54.0	54.0
Total Split (%)	36.5%	36.5%	36.5%	36.5%	63.5%	63.5%	63.5%	63.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	15.6	15.6	15.6	15.6	61.4	61.4	61.4	61.4
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.72	0.72	0.72	0.72
v/c Ratio	0.71	0.62	0.54	0.54	0.17	0.40	0.59	0.46
Control Delay	52.7	33.6	40.9	18.9	5.0	3.9	16.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3
Total Delay	52.7	33.6	40.9	18.9	5.0	4.1	16.1	5.4
LOS	D	C	D	B	A	A	B	A
Approach Delay		40.8		25.7		4.1		7.0
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 11 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 12.2		Intersection LOS: B	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	217	98	217	43	924	185	1054
v/c Ratio	0.71	0.62	0.54	0.54	0.17	0.40	0.59	0.46
Control Delay	52.7	33.6	40.9	18.9	5.0	3.9	16.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3
Total Delay	52.7	33.6	40.9	18.9	5.0	4.1	16.1	5.4
Queue Length 50th (ft)	66	91	48	48	5	65	31	82
Queue Length 95th (ft)	114	144	87	102	m9	56 m#178		151
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	314	583	314	613	256	2307	311	2310
Starvation Cap Reductn	0	0	0	0	0	537	0	599
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.37	0.31	0.35	0.17	0.52	0.59	0.62

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1681		1612	3189		1612	3193	
Flt Permitted	0.40	1.00		0.40	1.00		0.24	1.00		0.29	1.00	
Satd. Flow (perm)	750	1765		750	1681		412	3189		484	3193	
Volume (vph)	120	130	70	90	70	130	40	790	60	170	910	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	141	76	98	76	141	43	859	65	185	989	65
RTOR Reduction (vph)	0	27	0	0	94	0	0	4	0	0	4	0
Lane Group Flow (vph)	130	190	0	98	123	0	43	920	0	185	1050	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6		61.4	61.4		61.4	61.4	
Effective Green, g (s)	15.6	15.6		15.6	15.6		61.4	61.4		61.4	61.4	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.72	0.72		0.72	0.72	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	324		138	309		298	2304		350	2306	
v/s Ratio Prot		0.11			0.07			0.29			0.33	
v/s Ratio Perm	c0.17			0.13			0.10			c0.38		
v/c Ratio	0.94	0.59		0.71	0.40		0.14	0.40		0.53	0.46	
Uniform Delay, d1	34.3	31.7		32.6	30.6		3.7	4.6		5.3	4.9	
Progression Factor	1.00	1.00		1.00	1.00		0.62	0.63		0.81	0.79	
Incremental Delay, d2	58.8	2.7		15.8	0.8		1.0	0.5		5.1	0.6	
Delay (s)	93.1	34.5		48.4	31.4		3.2	3.4		9.4	4.4	
Level of Service	F	C		D	C		A	A		A	A	
Approach Delay (s)		56.4			36.7			3.4			5.2	
Approach LOS		E			D			A			A	

Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

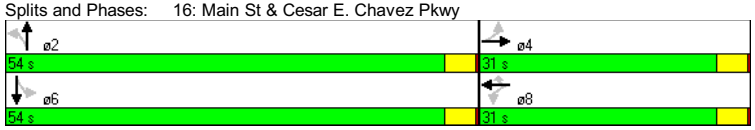
K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	290	70	250	85	640	250	540
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	54.0	54.0	54.0	54.0
Total Split (%)	36.5%	36.5%	36.5%	36.5%	63.5%	63.5%	63.5%	63.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	20.8	20.8	20.8	20.8	56.2	56.2	56.2	56.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.66	0.66	0.66	0.66
v/c Ratio	0.64	0.75	0.47	0.60	0.32	0.45	0.95	0.45
Control Delay	41.8	39.5	35.5	33.0	12.0	8.0	56.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.1
Total Delay	41.8	39.5	35.5	33.0	12.0	9.3	56.7	4.1
LOS	D	D	D	C	B	A	E	A
Approach Delay		40.2		33.5		9.6		16.4
Approach LOS		D		C		A		B

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 3 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 19.9 Intersection LOS: B
Intersection Capacity Utilization 75.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	342	76	272	92	892	272	891
v/c Ratio	0.64	0.75	0.47	0.60	0.32	0.45	0.95	0.45
Control Delay	41.8	39.5	35.5	33.0	12.0	8.0	56.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.1
Total Delay	41.8	39.5	35.5	33.0	12.0	9.3	56.7	4.1
Queue Length 50th (ft)	63	169	35	131	18	91	93	28
Queue Length 95th (ft)	113	236	71	186	60	168	#315	69
Internal Link Dist (ft)		588		983		201		305
Turn Bay Length (ft)								
Base Capacity (vph)	265	586	209	592	286	1989	285	1984
Starvation Cap Reductn	0	0	0	0	0	833	0	224
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.58	0.36	0.46	0.32	0.77	0.95	0.51

Intersection Summary

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

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1751	1836		1750	1863		1544	2972		1542	2903	
Flt Permitted	0.38	1.00		0.26	1.00		0.28	1.00		0.28	1.00	
Satd. Flow (perm)	701	1836		479	1863		462	2972		461	2903	
Volume (vph)	120	290	25	70	250	270	85	640	180	250	540	280
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	315	27	76	272	293	92	696	196	272	587	304
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	64	0
Lane Group Flow (vph)	130	338	0	76	272	0	92	867	0	272	827	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.8	20.8		20.8	20.8		56.2	56.2		56.2	56.2	
Effective Green, g (s)	20.8	20.8		20.8	20.8		56.2	56.2		56.2	56.2	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.66	0.66		0.66	0.66	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	449		117	456		305	1965		305	1919	
v/s Ratio Prot		0.18			0.15			0.29			0.28	
v/s Ratio Perm	c0.19			0.16			0.20			c0.59		
v/c Ratio	0.76	0.75		0.65	0.60		0.30	0.44		0.89	0.43	
Uniform Delay, d1	29.7	29.7		28.8	28.4		6.1	6.9		11.9	6.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.65	0.55	
Incremental Delay, d2	17.1	7.0		11.8	2.1		2.5	0.7		27.7	0.6	
Delay (s)	46.8	36.7		40.6	30.5		8.6	7.6		35.4	4.4	
Level of Service	D	D		D	C		A	A		D	A	
Approach Delay (s)		39.5			32.7			7.7			11.6	
Approach LOS		D			C			A			B	

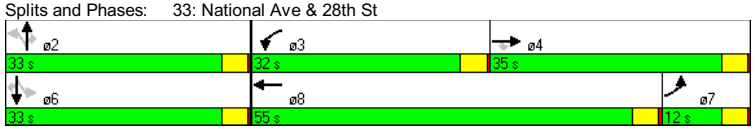
Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	94	588	85	448	406	18	98	163	195	210	102
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8		2			6	
Permitted Phases			4			2		2	6		6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	35.0	35.0	8.0	35.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	12.0	35.0	35.0	32.0	55.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	12.0%	35.0%	35.0%	32.0%	55.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	11.7	25.2	25.2	28.0	41.5		34.8	34.8		34.8	34.8
Actuated g/C Ratio	0.12	0.25	0.25	0.28	0.42		0.35	0.35		0.35	0.35
v/c Ratio	0.49	0.72	0.20	1.09	0.93		0.29	0.28		0.95	0.19
Control Delay	52.0	38.4	6.6	104.6	45.2		19.5	6.2		67.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	52.0	38.4	6.6	104.6	45.2		19.5	6.2		67.1	6.1
LOS	D	D	A	F	D		B	A		E	A
Approach Delay		36.5			69.5		11.8			54.9	
Approach LOS		D			E		B			D	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 70 (70%), Referenced to phase 3:WBL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 51.1		Intersection LOS: D	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 33: National Ave & 28th St



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	102	639	92	487	703	127	177	440	111
v/c Ratio	0.49	0.72	0.20	1.09	0.93	0.29	0.28	0.95	0.19
Control Delay	52.0	38.4	6.6	104.6	45.2	19.5	6.2	67.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	38.4	6.6	104.6	45.2	19.5	6.2	67.1	6.1
Queue Length 50th (ft)	62	193	0	~351	390	58	28	276	0
Queue Length 95th (ft)	#148	237	35	#549	484	124	75	#520	40
Internal Link Dist (ft)		590			82	302		221	
Turn Bay Length (ft)									
Base Capacity (vph)	208	1097	554	447	918	437	640	461	597
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.58	0.17	1.09	0.77	0.29	0.28	0.95	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1597	1759			1762	1509		1734	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.87	1.00		0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1597	1759			1539	1509		1353	1509
Volume (vph)	94	588	85	448	406	241	18	98	163	195	210	102
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	639	92	487	441	262	20	107	177	212	228	111
RTOR Reduction (vph)	0	0	69	0	26	0	0	0	115	0	0	72
Lane Group Flow (vph)	102	639	23	487	677	0	0	127	62	0	440	39
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot		Perm	Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	11.7	25.2	25.2	28.0	41.5			34.8	34.8		34.8	34.8
Effective Green, g (s)	11.7	25.2	25.2	28.0	41.5			34.8	34.8		34.8	34.8
Actuated g/C Ratio	0.12	0.25	0.25	0.28	0.42			0.35	0.35		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	207	892	399	447	730			536	525		471	525
v/s Ratio Prot	0.06	c0.18		c0.30	c0.39							
v/s Ratio Perm			0.01					0.08	0.04		c0.33	0.03
v/c Ratio	0.49	0.72	0.06	1.09	0.93			0.24	0.12		0.93	0.07
Uniform Delay, d1	41.4	34.1	28.4	36.0	27.8			23.2	22.2		31.5	21.8
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.68	1.22		1.00	1.00
Incremental Delay, d2	1.8	2.8	0.1	68.9	17.8			0.2	0.1		25.8	0.1
Delay (s)	43.2	36.9	28.5	104.9	45.7			16.1	27.1		57.3	21.9
Level of Service	D	D	C	F	D			B	C		E	C
Approach Delay (s)		36.7			69.9			22.5			50.1	
Approach LOS		D			E			C			D	

Intersection Summary

HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

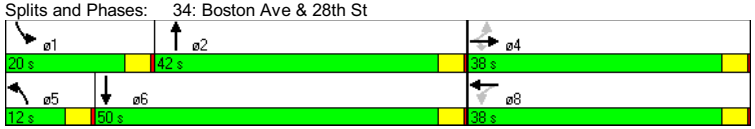
c Critical Lane Group

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	350	420	170	70	70	50	1100	270	580
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phases	4	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0	12.0	42.0	20.0	50.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	38.0%	12.0%	42.0%	20.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	34.0	34.0	34.0	34.0	34.0	7.3	38.0	16.0	48.6
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.07	0.38	0.16	0.49
v/c Ratio	1.04	0.76	0.29	0.55	0.27	0.42	0.98	1.04	0.41
Control Delay	92.5	38.8	4.9	44.7	16.0	46.5	48.0	110.7	7.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	47.1	0.0	0.2
Total Delay	92.5	38.8	4.9	44.9	16.0	46.5	95.2	110.7	7.7
LOS	F	D	A	D	B	D	F	F	A
Approach Delay		52.6			25.2		93.2		30.9
Approach LOS		D			C		F		C

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 88 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.04		
Intersection Signal Delay: 57.8	Intersection LOS: E	
Intersection Capacity Utilization 89.9%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	380	457	185	76	163	54	1305	293	1010
v/c Ratio	1.04	0.76	0.29	0.55	0.27	0.42	0.98	1.04	0.41
Control Delay	92.5	38.8	4.9	44.7	16.0	46.5	48.0	110.7	7.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	47.1	0.0	0.2
Total Delay	92.5	38.8	4.9	44.9	16.0	46.5	95.2	110.7	7.7
Queue Length 50th (ft)	~264	256	0	39	45	34	314	~206	78
Queue Length 95th (ft)	#444	379	46	#103	95	m53	m#517	#374	95
Internal Link Dist (ft)		207			577		298		291
Turn Bay Length (ft)									
Base Capacity (vph)	365	604	635	138	596	142	1334	283	2436
Starvation Cap Reductn	0	0	0	0	0	0	165	0	548
Spillback Cap Reductn	0	0	14	2	0	0	0	0	92
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.76	0.30	0.56	0.27	0.38	1.12	1.04	0.53

Intersection Summary	
~	Volume exceeds capacity, queue is theoretically infinite.
	Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer.
	Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		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)	1687	1776	1509	1687	1634		1770	3495		1770	4798	
Flt Permitted	0.60	1.00	1.00	0.23	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1073	1776	1509	405	1634		1770	3495		1770	4798	
Volume (vph)	350	420	170	70	70	80	50	1100	100	270	580	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	457	185	76	76	87	54	1196	109	293	630	380
RTOR Reduction (vph)	0	0	122	0	41	0	0	7	0	0	105	0
Lane Group Flow (vph)	380	457	63	76	122	0	54	1298	0	293	905	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	34.0	34.0	34.0	34.0	34.0		6.2	38.0		16.0	47.8	
Effective Green, g (s)	34.0	34.0	34.0	34.0	34.0		6.2	38.0		16.0	47.8	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34		0.06	0.38		0.16	0.48	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	365	604	513	138	556		110	1328		283	2293	
v/s Ratio Prot		0.26			0.07		0.03	c0.37		c0.17	0.19	
v/s Ratio Perm	c0.35		0.04	0.19								
v/c Ratio	1.04	0.76	0.12	0.55	0.22		0.49	0.98		1.04	0.39	
Uniform Delay, d1	33.0	29.3	22.7	26.8	23.5		45.4	30.6		42.0	16.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.88	0.98		1.16	0.52	
Incremental Delay, d2	58.2	5.4	0.1	4.7	0.2		2.7	17.3		62.5	0.5	
Delay (s)	91.2	34.7	22.8	31.5	23.7		42.5	47.3		111.4	9.2	
Level of Service	F	C	C	C	C		D	D		F	A	
Approach Delay (s)		53.6			26.2			47.1			32.2	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	42.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

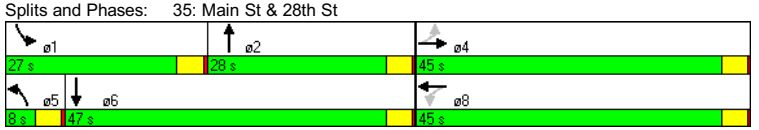
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	220	730	150	300	60	450	370	510
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	45.0	45.0	45.0	45.0	8.0	28.0	27.0	47.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	8.0%	28.0%	27.0%	47.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	42.1	42.1	42.1	42.1	4.0	22.9	23.0	41.9
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.04	0.23	0.23	0.42
v/c Ratio	0.99	0.56	0.98	0.42	0.94	0.94	1.01	0.96dr
Control Delay	88.3	23.9	97.7	11.6	142.7	50.7	87.5	22.5
Queue Delay	14.7	0.0	0.0	0.0	0.0	6.2	0.7	0.3
Total Delay	103.0	23.9	97.7	11.6	142.7	56.9	88.2	22.8
LOS	F	C	F	B	F	E	F	C
Approach Delay		41.5		29.1		63.9		39.7
Approach LOS		D		C		E		D

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.01		
Intersection Signal Delay: 42.7	Intersection LOS: D	
Intersection Capacity Utilization 90.7%	ICU Level of Service E	
Analysis Period (min) 15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 35: Main St & 28th St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	239	836	163	641	65	739	402	1152
v/c Ratio	0.99	0.56	0.98	0.42	0.94	0.94	1.01	0.96dr
Control Delay	88.3	23.9	97.7	11.6	142.7	50.7	87.5	22.5
Queue Delay	14.7	0.0	0.0	0.0	0.0	6.2	0.7	0.3
Total Delay	103.0	23.9	97.7	11.6	142.7	56.9	88.2	22.8
Queue Length 50th (ft)	~156	210	~103	75	43	188	~226	205
Queue Length 95th (ft)	#314	272	#239	122	m#122	m#319	#441	#290
Internal Link Dist (ft)		327		314		290		298
Turn Bay Length (ft)								
Base Capacity (vph)	241	1480	166	1524	69	822	399	1321
Starvation Cap Reductn	0	0	0	0	0	0	1	17
Spillback Cap Reductn	12	0	0	85	0	57	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.56	0.98	0.45	0.94	0.97	1.01	0.88

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.96		1.00	0.86	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.95		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	3507		1765	3215		1736	3156		1736	2660	
Flt Permitted	0.32	1.00		0.22	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	581	3507		407	3215		1736	3156		1736	2660	
Volume (vph)	220	730	40	150	300	290	60	450	230	370	510	550
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	793	43	163	326	315	65	489	250	402	554	598
RTOR Reduction (vph)	0	4	0	0	171	0	0	66	0	0	180	0
Lane Group Flow (vph)	239	832	0	163	470	0	65	673	0	402	972	0
Confl. Peds. (#/hr)	27		12	12		27			88			200
Confl. Bikes (#/hr)			8			3						6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	42.1	42.1		42.1	42.1		4.0	22.9		23.0	41.9	
Effective Green, g (s)	42.1	42.1		42.1	42.1		4.0	22.9		23.0	41.9	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.04	0.23		0.23	0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	1476		171	1354		69	723		399	1115	
v/s Ratio Prot		0.24			0.15		0.04	0.21		c0.23	c0.37	
v/s Ratio Perm	c0.41			0.40								
v/c Ratio	0.98	0.56		0.95	0.35		0.94	0.93		1.01	0.96dr	
Uniform Delay, d1	28.4	22.0		28.0	19.6		47.9	37.8		38.5	26.6	
Progression Factor	1.00	1.00		1.00	1.00		0.98	0.91		1.03	0.65	
Incremental Delay, d2	50.2	0.5		54.8	0.2		87.4	20.3		46.6	9.3	
Delay (s)	78.6	22.5		82.8	19.8		134.5	54.6		86.4	26.7	
Level of Service	E	C		F	B		F	D		F	C	
Approach Delay (s)		35.0			32.6			61.0			42.1	
Approach LOS		C			C			E			D	

Intersection Summary

HCM Average Control Delay	42.1	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.94				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	90.7%	ICU Level of Service		E	
Analysis Period (min)	15				

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

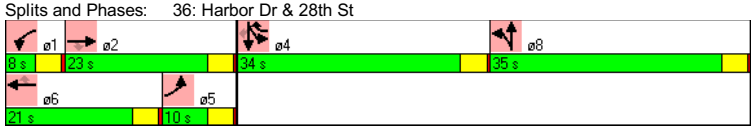
K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	170	1350	2	18	531	255	133	480	12	13
Turn Type	Prot		Perm	Prot		pm+ov		Split		Perm
Protected Phases	5	2		1	6	4	8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	4	8	4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	34.0	35.0	34.0	34.0	34.0
Total Split (s)	10.0	23.0	23.0	8.0	21.0	34.0	35.0	34.0	34.0	34.0
Total Split (%)	10.0%	23.0%	23.0%	8.0%	21.0%	34.0%	35.0%	34.0%	34.0%	34.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	6.0	43.0	43.0	5.1	36.2	59.1	18.9	22.9	22.9	22.9
Actuated g/C Ratio	0.06	0.43	0.43	0.05	0.36	0.59	0.19	0.23	0.23	0.23
v/c Ratio	0.93	1.00	0.00	0.23	0.46	0.28	0.45	0.68	0.03	0.04
Control Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
LOS	F	E	C	D	C	A	D	C	C	A
Approach Delay		60.4			22.5		37.8		32.5	
Approach LOS		E			C		D		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 86 (86%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 44.3 — Intersection LOS: D
Intersection Capacity Utilization 75.2% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 36: Harbor Dr & 28th St



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	185	1467	2	20	577	277	156	522	13	14
v/c Ratio	0.93	1.00	0.00	0.23	0.46	0.28	0.45	0.68	0.03	0.04
Control Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
Queue Length 50th (ft)	61	381	0	12	127	0	96	150	6	1
Queue Length 95th (ft)	#129	#938	7	38	#309	30	128	m151	m9	m0
Internal Link Dist (ft)		247			310		22		214	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	198	1464	524	88	1244	1061	564	1010	548	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	1.00	0.00	0.23	0.46	0.26	0.28	0.52	0.02	0.03

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00		1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.95		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1364	1719	3438	1455		1821		3367	1827	1531
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1364	1719	3438	1455		1821		3367	1827	1531
Volume (vph)	170	1350	2	18	531	255	10	133	0	480	12	13
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	1467	2	20	577	277	11	145	0	522	13	14
RTOR Reduction (vph)	0	0	1	0	0	120	0	0	0	0	0	11
Lane Group Flow (vph)	185	1467	1	20	577	157	0	156	0	522	13	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2						4			2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot		pm+ov	Split			Split		Perm
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	8.4	40.6	40.6	1.6	33.8	56.7		18.9		22.9	22.9	22.9
Effective Green, g (s)	8.4	40.6	40.6	1.6	33.8	56.7		18.9		22.9	22.9	22.9
Actuated g/C Ratio	0.08	0.41	0.41	0.02	0.34	0.57		0.19		0.23	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	277	1383	554	28	1162	825		344		771	418	351
v/s Ratio Prot	0.06	c0.43		0.01	c0.17	0.04		c0.09		c0.16	0.01	
v/s Ratio Perm			0.00			0.06						0.00
v/c Ratio	0.67	1.06	0.00	0.71	0.50	0.19		0.45		0.68	0.03	0.01
Uniform Delay, d1	44.4	29.7	17.7	49.0	26.3	10.5		36.0		35.2	29.9	29.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.86	0.84	0.69
Incremental Delay, d2	6.0	42.1	0.0	60.5	1.5	0.1		1.0		1.9	0.0	0.0
Delay (s)	50.4	71.8	17.7	109.5	27.8	10.6		36.9		32.3	25.1	20.5
Level of Service	D	E	B	F	C	B		D		C	C	C
Approach Delay (s)		69.3			24.3			36.9			31.8	
Approach LOS		E			C			D			C	

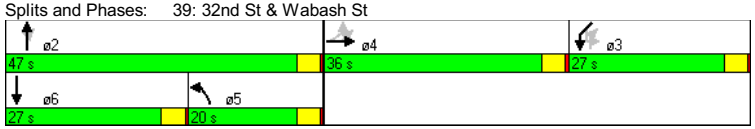
Intersection Summary				
HCM Average Control Delay	49.2	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	75.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations							
Volume (vph)	115	195	140	600	620	619	140
Turn Type	Perm		Prot		custom		
Protected Phases		4	5	2		6	3
Permitted Phases	4				2 3		
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	20.0	27.0		27.0	27.0
Total Split (s)	36.0	36.0	20.0	47.0	74.0	27.0	27.0
Total Split (%)	32.7%	32.7%	18.2%	42.7%	67.3%	24.5%	24.5%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	C-Min		C-Min	None
Act Effct Green (s)	20.2	20.2	16.1	65.5	81.8	45.4	12.3
Actuated g/C Ratio	0.18	0.18	0.15	0.60	0.74	0.41	0.11
v/c Ratio	0.78	0.62	0.60	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
LOS	E	D	D	A	A	C	D
Approach Delay		54.0		8.5		24.7	53.6
Approach LOS		D		A		C	D

Intersection Summary		
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 67 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.78		
Intersection Signal Delay: 23.3	Intersection LOS: C	
Intersection Capacity Utilization 60.4%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 39: 32nd St & Wabash St



Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	250	212	152	652	674	759	223
v/c Ratio	0.78	0.62	0.60	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
Queue Length 50th (ft)	170	140	112	76	25	132	78
Queue Length 95th (ft)	237	199	m143	m217	m56	203	113
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	510	542	257	1078	2013	2012	682
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.39	0.59	0.60	0.33	0.38	0.33

Intersection Summary

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

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL2	EBL	EBT	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0		4.0		
Lane Util. Factor		1.00	1.00	1.00	1.00	0.88	0.91		0.97		
Frt		1.00	1.00	1.00	1.00	0.85	0.98		0.95		
Flt Protected		0.95	1.00	0.95	1.00	1.00	1.00		0.97		
Satd. Flow (prot)		1752	1863	1719	1810	2707	4872		3264		
Flt Permitted		0.95	1.00	0.95	1.00	1.00	1.00		0.97		
Satd. Flow (perm)		1752	1863	1719	1810	2707	4872		3264		
Volume (vph)	115	115	195	140	600	620	619	79	140	55	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	212	152	652	674	673	86	152	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	212	152	652	674	759	0	223	0	0
Heavy Vehicles (%)	2%	4%	2%	5%	5%	5%	5%	2%	4%	4%	4%
Turn Type	Perm	Perm		Prot	custom						
Protected Phases			4	5	2		6		3		
Permitted Phases	4	4				2 3					
Actuated Green, G (s)		20.2	20.2	16.1	65.5	81.8	45.4		12.3		
Effective Green, g (s)		20.2	20.2	16.1	65.5	81.8	45.4		12.3		
Actuated g/C Ratio		0.18	0.18	0.15	0.60	0.74	0.41		0.11		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0		
Lane Grp Cap (vph)		322	342	252	1078	2013	2011		365		
v/s Ratio Prot			0.11	0.09	c0.36		0.16		c0.07		
v/s Ratio Perm		c0.14				0.25					
v/c Ratio		0.78	0.62	0.60	0.60	0.33	0.38		0.61		
Uniform Delay, d1		42.7	41.4	44.0	14.1	4.8	22.5		46.6		
Progression Factor		1.00	1.00	0.69	0.41	0.35	1.00		1.00		
Incremental Delay, d2		11.1	3.3	2.4	1.5	0.1	0.5		3.0		
Delay (s)		53.9	44.7	32.7	7.3	1.7	23.0		49.6		
Level of Service		D	D	C	A	A	C		D		
Approach Delay (s)			49.7		7.4		23.0		49.6		
Approach LOS			D		A		C		D		

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

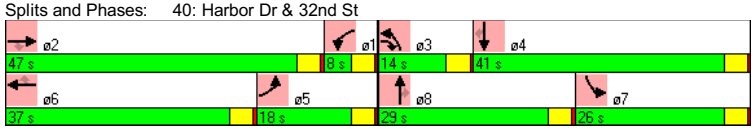
K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7
Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1160	100	40	434	460	70	690	140	310	280	210
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	8.0	20.0	20.0	8.0	8.0	8.0	8.0	8.0	8.0
Total Split (s)	18.0	47.0	14.0	8.0	37.0	37.0	14.0	29.0	29.0	26.0	41.0	41.0
Total Split (%)	16.4%	42.7%	12.7%	7.3%	33.6%	33.6%	12.7%	26.4%	26.4%	23.6%	37.3%	37.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	14.0	43.0	51.9	4.0	33.0	33.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.13	0.39	0.47	0.04	0.30	0.30	0.08	0.23	0.23	0.20	0.35	0.35
v/c Ratio	0.79	0.94	0.14	0.70	0.47	0.63	0.54	0.96	0.35	0.98	0.26	0.34
Control Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
LOS	E	D	A	F	C	A	E	E	B	E	A	A
Approach Delay		46.4			23.3			57.9			32.1	
Approach LOS		D			C			E			C	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 40.8 Intersection LOS: D
Intersection Capacity Utilization 85.0% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	174	1261	109	43	472	500	76	750	152	337	304	228
v/c Ratio	0.79	0.94	0.14	0.70	0.47	0.63	0.54	0.96	0.35	0.98	0.26	0.34
Control Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
Queue Length 50th (ft)	121	444	4	31	142	4	52	276	21	243	78	77
Queue Length 95th (ft)	#234	#592	27	#95	192	92	101	#400	77	#427	34	15
Internal Link Dist (ft)		710			294			45			613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	219	1344	789	61	1012	789	156	781	430	344	1189	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.94	0.14	0.70	0.47	0.63	0.49	0.96	0.35	0.98	0.26	0.34

Intersection Summary

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

K:\SND_TPTO\095707000\Synchro\HY AI2 PM with Improvements without LRT.sy7 Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.

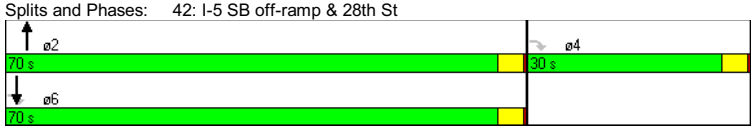
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1483	1719	3438	1502	1719	3438	1510
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)	1719	3438	1538	1687	3374	1483	1719	3438	1502	1719	3438	1510
Volume (vph)	160	1160	100	40	434	460	70	690	140	310	280	210
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	1261	109	43	472	500	76	750	152	337	304	228
RTOR Reduction (vph)	0	0	49	0	0	344	0	0	89	0	0	149
Lane Group Flow (vph)	174	1261	60	43	472	156	76	750	63	337	304	79
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	14.0	43.0	51.9	4.0	33.0	33.0	8.9	25.0	25.0	22.0	38.1	38.1
Effective Green, g (s)	14.0	43.0	51.9	4.0	33.0	33.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.13	0.39	0.47	0.04	0.30	0.30	0.08	0.23	0.23	0.20	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	219	1344	726	61	1012	445	139	781	341	344	1191	523
v/s Ratio Prot	c0.10	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	
v/s Ratio Perm			0.03			0.10			0.04			0.05
v/c Ratio	0.79	0.94	0.08	0.70	0.47	0.35	0.55	0.96	0.19	0.98	0.26	0.15
Uniform Delay, d1	46.6	32.2	16.0	52.4	31.3	30.1	48.6	42.0	34.3	43.8	25.8	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.32	0.99
Incremental Delay, d2	17.8	13.6	0.0	50.9	1.5	2.2	4.3	22.9	0.3	40.9	0.1	0.1
Delay (s)	64.4	45.9	16.0	103.4	32.9	32.3	53.0	64.9	34.5	67.3	8.3	24.7
Level of Service	E	D	B	F	C	C	D	E	C	E	A	C
Approach Delay (s)		45.8			35.6			59.2			35.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	44.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBR	NBT	SBT	ø4
Lane Configurations				
Volume (vph)	457	1530	743	
Turn Type	custom			
Protected Phases		2	6	4
Permitted Phases	4 6			
Detector Phases	4 6	2	6	
Minimum Initial (s)		4.0	4.0	4.0
Minimum Split (s)		20.0	20.0	20.0
Total Split (s)	100.0	70.0	70.0	30.0
Total Split (%)	100.0%	70.0%	70.0%	30%
Yellow Time (s)		3.5	3.5	3.5
All-Red Time (s)		0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		C-Max	C-Max	None
Act Effct Green (s)	100.0	84.5	84.5	
Actuated g/C Ratio	1.00	0.84	0.84	
v/c Ratio	0.31	0.56	0.19	
Control Delay	0.5	0.5	2.4	
Queue Delay	0.0	0.9	0.0	
Total Delay	0.5	1.4	2.4	
LOS	A	A	A	
Approach Delay		1.4	2.4	
Approach LOS		A	A	

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 7 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.56		
Intersection Signal Delay: 1.5	Intersection LOS: A	
Intersection Capacity Utilization 49.3%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 42: I-5 SB off-ramp & 28th St



Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	497	1663	808
v/c Ratio	0.31	0.56	0.19
Control Delay	0.5	0.5	2.4
Queue Delay	0.0	0.9	0.0
Total Delay	0.5	1.4	2.4
Queue Length 50th (ft)	0	1	31
Queue Length 95th (ft)	0	m1	m44
Internal Link Dist (ft)		291	302
Turn Bay Length (ft)			
Base Capacity (vph)	1611	2991	4297
Starvation Cap Reductn	0	945	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.81	0.19

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

Barrio Logan CPU
42: I-5 SB off-ramp & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0					4.0			4.0	
Lane Util. Factor			1.00					0.95			0.91	
Frt			0.86					1.00			1.00	
Flt Protected			1.00					1.00			1.00	
Satd. Flow (prot)			1611					3539			5085	
Flt Permitted			1.00					1.00			1.00	
Satd. Flow (perm)			1611					3539			5085	
Volume (vph)	0	0	457	0	0	0	0	1530	0	0	743	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	497	0	0	0	0	1663	0	0	808	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	497	0	0	0	0	1663	0	0	808	0
Turn Type			custom									
Protected Phases								2			6	
Permitted Phases			4 6									
Actuated Green, G (s)			100.0					84.5			84.5	
Effective Green, g (s)			100.0					84.5			84.5	
Actuated g/C Ratio			1.00					0.84			0.84	
Clearance Time (s)								4.0			4.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)			1611					2990			4297	
v/s Ratio Prot								c0.47			0.16	
v/s Ratio Perm			c0.31									
v/c Ratio			0.31					0.56			0.19	
Uniform Delay, d1			0.0					2.3			1.4	
Progression Factor			1.00					0.09			1.57	
Incremental Delay, d2			0.1					0.2			0.0	
Delay (s)			0.1					0.4			2.3	
Level of Service			A					A			A	
Approach Delay (s)		0.1			0.0			0.4			2.3	
Approach LOS		A			A			A			A	

Intersection Summary					
HCM Average Control Delay	0.9	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		4.0	
Intersection Capacity Utilization	49.3%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

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Synchro 6 Report
3/4/2011
Kimley-Horn and Associates, Inc.