

National Avenue Corridor Master Plan Future Multi-Modal Conditions Report

**Prepared for:
MIG**

Funded by:
Caltrans Transportation Planning Grant Program

February 28, 2014

SD12-0070

FEHR & PEERS

In association with Darnell Associates

Table of Contents

EXECUTIVE SUMMARY.....	4
Project Setting.....	4
Goals and Objectives.....	5
Elements of the Master Plan	6
Mobility Assessment Findings	6
INTRODUCTION.....	10
MULTI-MODAL CONTEXT AND CONDITIONS	11
Street Network.....	11
Public Transit	13
Bicycle Facilites	13
Pedestrian Facilites.....	14
Parking.....	18
MULTI-MODAL STRATEGY AND IMPROVEMENTS	19
Key improvements.....	20
Street Network	20
Multi-Modal Enhancements.....	21
Public Transit.....	21
Bicycle Facilities.....	22
Ramifications of Two-Way Left-Turn (TWLT) Lane Removal.....	23
Pedestrian Facilities	28
Parking.....	29
Lighting	29
Planning-Level Cost Estimate.....	30
FUTURE YEAR VOLUMES	31
Street Network.....	31
Transit Ridership	36
Pedestrian Volumes.....	37

Bicycle Volumes.....	41
LEVEL OF SERVICE ANALYSIS.....	44
Methodology.....	44
Automobile	44
Multi-Modal Level of Service.....	48
Level of Service Evaluation.....	51
Roadway Level of Service.....	51
Intersection Level of Service	53
Transit Level of Service.....	57
Bicycle Level of Service.....	61
Pedestrian Level of Service.....	65
CONCLUSION.....	69

Appendices

Appendix A: Proposed Mobility Concept Figures
Appendix B: Land Use Assumptions
Appendix C: Model Volumes
Appendix D: Post-Processor Spreadsheets
Appendix E: MXD Model Results
Appendix F: Intersection Level of Service Worksheets
Appendix G: Transit Level of Service Worksheets
Appendix H: Bicycle Level of Service Worksheets
Appendix I: Pedestrian Level of Service Worksheets
Appendix J: Planning-Level Cost Estimates

List of Figures

Figure 1: Projected Roadway Geometrics and Daily Traffic Volumes Under Buildout of the Preferred Plan	33
Figure 2: Projected Lane Configurations and Traffic Volumes Under Buildout of the Preferred Plan	34
Figure 3: Future Pedestrian Peak Hour Volumes	39
Figure 4: Future Bicycle Peak Hour Volumes	42
Figure 5: Future Roadway and Intersection LOS	56
Figure 6: Future Transit LOS (AM Peak)	59
Figure 7: Future Transit LOS (PM Peak)	60
Figure 8: Future Bicycle LOS (AM Peak)	63
Figure 9: Future Bicycle LOS (PM Peak)	64
Figure 10: Future Pedestrian LOS (AM Peak)	67
Figure 11: Future Pedestrian LOS (PM Peak)	68

List of Tables

Table ES-1: Summary of Future Conditions National Avenue Corridor LOS Analysis	7
Table 1: Southeastern San Diego Project Focus Areas, Types and Solutions	15
Table 2: Existing and Future Transit and Daily Boardings and Alightings	37
Table 3: Level of Service Definitions	45
Table 4: City of San Diego Circulation Element Roadway Classifications and LOS Standards	46
Table 5: Signalized Intersection Level of Service Criteria	47
Table 6: Unsignalized Intersection Level of Service Criteria	48
Table 7: Multi-Modal LOS Letter Grade Numerical Equivalents	49
Table 8: Existing and Future Roadway Segment LOS Results	52
Table 9: Existing and Future Intersection LOS Results	53
Table 10: Existing and Future Transit AM Peak Hour LOS Results	57
Table 11: Existing and Future Transit PM Peak Hour LOS Results	58
Table 12: Existing and Future Bicycle AM Peak Hour LOS Results	61
Table 13: Existing and Future Bicycle PM Peak Hour LOS Results	62
Table 14: Existing and Future Pedestrian AM Peak Hour LOS Results	65
Table 15: Existing and Future Pedestrian PM Peak Hour LOS Results	66

EXECUTIVE SUMMARY

The National Avenue Corridor Master Plan seeks to improve the quality of life and support the economic vitality of the National Avenue project area by promoting a multi-modal transportation system that is integrated with land use planning and urban design. The Corridor Master Plan is being developed in coordination with the Southeastern San Diego Community Plan update and is an integral feature of that process.

This report describes the transportation-related improvements for enhancing the safety and efficiency of moving pedestrians, bicyclists, transit, and vehicles. It also provides the technical analysis of the recommended improvements to the circulation system and documents the potential effects on circulation as a result of implementation of the Corridor Master Plan.

PROJECT SETTING

National Avenue is one of several key mobility corridors located in the Southeastern San Diego Community Planning Area in the City of San Diego. The Southeastern San Diego Community is located directly to the east of Downtown and bounded by State Route 94 to the north, the City of National City to the south, Interstate 5 (I-5) to the west, and Interstate 805 (I-805) to the east. For the purposes of this Master Plan, the project area is identified as the National Avenue corridor between 27th Street and 43rd Street.

The National Avenue Corridor has good local and regional transportation access via the freeways and public transportation. However, the current design and characteristics of National Avenue favors vehicular travel and one of the major issues identified by community residents and stakeholders is the need to improve the safety and experience for pedestrians and bicyclists. Accordingly, the travel conditions and deficiencies of these modes and for vehicles and transit are described in this report to develop a better understanding of the current state of the transportation infrastructure in the National Avenue Corridor project area and further provide context for the proposed improvements recommended to enhance mobility for all users.

Public transit for the project area is provided by the San Diego Metropolitan Transit System (MTS) and is limited to public bus. Presently, the Master Plan project area is served by only one bus route (MTS Route 11). Route 11 runs between San Diego State University and Skyline Hills. Although the MTS Route 11 is

the primary source of public transit in the area, it serves the corridor well with stops every one or two blocks.

Additionally, three San Diego Trolley stations are located nearby. The Orange Line station at 32nd Street and Commercial Street is located about $\frac{3}{4}$ of a mile north of the National Avenue intersection with 32nd Street, the Pacific Fleet Station at 32nd Street and Harbor Drive is located about $\frac{3}{4}$ of a mile south of the National Avenue intersection with 32nd Street, and the Blue Line Harborside Station is less than $\frac{1}{2}$ -mile south of the National Avenue and 28th Street intersection, south of the I-5 Freeway.

GOALS AND OBJECTIVES

As described by goals and policies of the San Diego General Plan and the Southeastern San Diego Community Plan that apply to the study area, a major aspect of the Master Plan is to create a comprehensive and interconnected multi-modal circulation system that supports the convenient and efficient movement of all modes (pedestrians, bicyclists, transit and vehicles) that travel along the corridor and to enhance safety and community mobility. Specifically, the recommended transportation-related improvements were based on the following mobility objectives:

- Balance the needs of moving and parked vehicles with the needs of active travel modes
- Encourage walking, bicycling, and transit with safe, attractive and convenient facilities
- Ensure adequate pedestrian access to the numerous transit stops/stations throughout the corridor
- Ensure a safer and more comfortable environment for waiting transit patrons by providing additional amenities at transit stops/stations throughout the corridor
- Implement facilities and amenities to encourage bicycle ridership along the corridor
- Maintain a sufficient amount of parking to serve local businesses and residents
- Utilize street design and traffic calming measures to maintain traffic flow with moderate vehicle speeds
- Provide additional safety measures (i.e. highly visible marked crossings, shorter crossing distances, reduction in conflict points and impediments, etc.) in areas projected to have a high level of pedestrian activity

These guiding principles and objectives were used during the Master Plan planning process where numerous geometric alternatives were developed, analyzed on a preliminary basis and vetted by the project team, City staff, and the community. Through this process, the Preferred Mobility Option was developed for the National Avenue Corridor Master Plan.

ELEMENTS OF THE MASTER PLAN

To improve walkability, bicycling, and transit integration into the street network and still maintain the future needs of vehicles, the Master Plan proposes the following main streetscape improvements:

- Remove the center left turn lane and re-stripe and resize the National Avenue cross section (i.e. 10-foot vehicle travel lanes and left turn lanes) to provide a balanced right-of-way with designated facilities for each mode; Left turn pockets will be maintained for circulation purposes at the intersections at: 28th Street, 29th Street, 30th Street, 31st Street, 32nd Street, 35th Street, 36th Street, 38th Street, 41st Street, and 43rd Street.
- Stripe buffered Class II bicycle lanes from 27th Street to approximately 400 feet east of 41st Street.
- Connect both sides of the street by improving and providing highly visible enhanced crosswalks at multiple locations.
- Enhance landscape along sidewalks with additional street trees and groundcover plantings in order to supplement existing trees and have more continuous shade for pedestrians.

MOBILITY ASSESSMENT FINDINGS

Various methodologies were used to evaluate the travel experience along the corridor with the proposed land use and roadway network changes. A level of service (LOS) rating was determined for each mode of travel based on specific evaluation criteria established for each of the modes along the study corridor. In general, roadway and intersection LOS is based on the facility operations, while LOS evaluations for pedestrian, bicycle, and transit facilities are based on user perception of the traveling experience on the subject facilities. **Table ES-1** summarizes the results of the multimodal level of service analysis conducted for the future year conditions along the corridor.

Traffic operating conditions indicate that portions of the corridor will experience an increased delay for automobiles with the proposed improvements. In fact, the removal of the center turn lane results in a change from acceptable roadway LOS to failing LOS by year 2035, based on planning-level roadway segment analysis. However, a detailed analysis of peak conditions show that through traffic along the corridor will traverse the corridor at slower speeds, but will maintain acceptable levels of service. Autos accessing the corridor from stop controlled side-streets will experience a higher level of delay and poor levels of service. This is due to increased traffic volume on National Avenue. Side-street traffic is low and will either self-mitigate by electing an alternative route or will wait for gaps in traffic that will occur when upstream and downstream signals provide gaps in the traffic flow.

**Table ES-1: Summary of Future Conditions
 National Avenue Corridor LOS Analysis**

		<i>AM</i>			<i>PM</i>			
<i>Intersection</i>		<i>Transit EB/WB</i>	<i>Pedestrian EB/WB</i>	<i>Bicycle EB/WB</i>	<i>Intersection</i>	<i>Transit EB/WB</i>	<i>Pedestrian EB/WB</i>	<i>Bicycle EB/WB</i>
@ 27 th Street ¹	B				C			
27 th St to 28 th St ¹		C/C	B/C	C/C		D/C	C/B	C/C
@28 th Street ¹	D				E²			
28 th St to I-5 NB Ramps ¹		C/D	C/C	C/D		C/D	C/B	D/D
@ I-5 NB Ramps ¹	B				B			
I-5 NB Ramps to 29 th St ¹		D/C	B/C	C/C		D/B	C/B	C/C
@ I-5 SB Ramps ¹	C				D			
29 th St to 30 th St		C/D	B/B	D/C		C/C	B/B	D/C
@30 th Street	B				B			
30 th St to 31 st St		C/B	B/C	C/D		C/B	B/B	C/D
@ 31 st Street ³	A				A			
31 st St to 32 nd St		C/C	C/B	D/C		C/C	C/B	D/C
@ 32 nd Street	A				B			
32 nd St to 33 rd St		C/C	B/C	C/C		D/C	C/C	C/C
@ 33 rd Street	E²				F²			
33 rd St to 35 th St		C/B	C/B	C/C		C/B	C/B	C/C
@ 35 th Street	B				B			
35 th St to 36 th St		C/C	C/C	D/D		D/C	C/B	D/D
@ 36 th Street	B				C			
36 th St to 37 th St		C/C	B/C	C/C		C/C	B/C	C/C
@37 th Street	E²				F²			
37 th St to 38 th St		C/B	C/B	C/C		C/B	C/B	D/C

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 National Avenue Corridor LOS Analysis**

		<i>AM</i>			<i>PM</i>			
<i>Intersection</i>		<i>Transit EB/WB</i>	<i>Pedestrian EB/WB</i>	<i>Bicycle EB/WB</i>	<i>Intersection</i>	<i>Transit EB/WB</i>	<i>Pedestrian EB/WB</i>	<i>Bicycle EB/WB</i>
@ 38 th Street	B				B			
38 th St to 39 th St		C/B	B/C	D/C		C/B	B/C	D/C
@ 39 th Street	C				F²			
39 th St to 40 th St		C/B	B/B	C/C		C/B	B/B	C/C
@ 40 th Street	D				E²			
40 th St to 41 st St		C/B	B/B	C/C		C/B	B/B	C/C
@41 st Street ³	A				A			
41 st St to 43 rd St		C/C	C/B	C/C		C/C	C/B	D/C
@ 43 rd Street	B				B			

1. Portions or the entire intersection area or segment area is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.
3. Under future conditions, intersection is assumed to be signalized and signalization at this location has already been identified as a transportation need by the City of San Diego.

The proposed land uses within the Master Plan are expected to increase traffic across all modes within the National Avenue corridor. However, due to the neighborhood mixed-use nature and village-style land uses that are proposed within key parts of the study area, it is anticipated that there will be a better balance between various modes of travel and the project design, coupled with enhancements to pedestrian, bicycle and transit infrastructure, will minimize the number of vehicle trips. While it is anticipated that vehicular travel within the corridor will increase, it is projected that the volumes of active travel modes (pedestrian and bike) will more than double, and transit demand will increase by 129% by 2035.

The reduction in capacity along the corridor will help improve the pedestrian and bicycle conditions along the corridor. Slower speeds coupled with improved bicycle facilities will improve the bicycling conditions and encourage new bicycle activity along the corridor. Slower speeds along the corridor will also improve pedestrian access, making pedestrians more visible to drivers along and crossing National Avenue. Although the traffic operating conditions along the corridor may degrade compared to existing conditions, the improvements planned along the corridor will provide for a more balanced, integrated transportation system along National Avenue.

As future development occurs in the corridor, it is recommended that the City of San Diego continue to monitor the pedestrian and vehicular volumes to determine the correct time to implement the proposed enhanced crosswalk and traffic signalization improvements. The City should also work with SANDAG and MTS to monitor transit ridership throughout the National Avenue corridor to determine the appropriate time to increase bus frequencies and whether or not additional transit service is needed.

INTRODUCTION

The National Avenue Corridor Master Plan seeks to improve the quality of life and support the economic vitality of the National Avenue project area by promoting a multi-modal transportation system that is integrated with land use planning and urban design. The Corridor Master Plan is being developed in coordination with the Southeastern San Diego Community Plan update and is an integral feature of that process.

This report describes the transportation-related improvements for enhancing the safety and efficiency of moving pedestrians, bicyclists, transit, and vehicles. It also provides the technical analysis of the recommended improvements to the circulation system and documents the potential effects on circulation as a result of implementation of the Corridor Master Plan.

MULTI-MODAL CONTEXT AND CONDITIONS

National Avenue is one of several key mobility corridors located in the Southeastern San Diego Community Planning Area in the City of San Diego. The Southeastern San Diego Community is located directly to the east of Downtown and bounded by State Route 94 to the north, the City of National City to the south, Interstate 5 (I-5) to the west, and Interstate 805 (I-805) to the east. For the purposes of this Master Plan, the project area is identified as the National Avenue corridor between 27th Street and 43rd Street.

The National Avenue Corridor has good local and regional transportation access via the freeways and public transportation. However, the current design and characteristics of National Avenue favors vehicular travel and one of the major issues identified by community residents and stakeholders is the need to improve the safety and experience for pedestrians and bicyclists. Accordingly, the travel conditions and deficiencies of these modes and for vehicles and transit are described below to develop a better understanding of the current state of the transportation infrastructure in the National Avenue Corridor project area and further provide context for the proposed improvements recommended to enhance mobility for all users. (For a complete account of existing conditions, see the April 2013 *National Avenue Corridor Master Plan Existing Conditions Report*.)

STREET NETWORK

The corridor's network of streets serves as the foundation for regional and local circulation. National Avenue is classified as a major roadway facility in the adopted *Southeastern San Diego Community Plan* (City of San Diego, 1987). Within the project area, National Avenue is a four-lane roadway between 27th and 28th streets and then functions as a two-lane roadway with a two-way left-turn lane between 28th Street and 43rd Street. No separate bike facilities are provided, and parallel parking is available on both sides of the roadway east of the I-5 freeway. The right-of-way width varies from approximately 68 to 80 feet and the curb to curb width is predominantly 52 feet but widens during certain portions between 33rd Street and 35th Street and portions east of 41st Street. The posted speed limit along this facility is 30 miles per hour (mph), with the exception of some segments that are within the designated school zone areas where the posted speed limit becomes 25 mph when children are present. National Avenue provides direct access to adjacent land uses, freeway access to the Interstate 5 (I-5), and local east-west connectivity for inter-community trips. Additionally, the existing daily traffic volume along National

Avenue currently ranges between 9,707 and 18,431 vehicles per day (vpd), with the highest volumes occurring close to the I-5 interchange. Most segments serve approximately 12,000 vpd or less.

In the project area, local north-south connectivity for inter-community travel is provided by the following:

- 28th Street, a 2-lane collector street with a posted speed limit of 25 mph north of National Avenue and a 3-lane roadway (2 lanes northbound, 1 lane southbound) with a posted speed limit of 30 mph immediately south of National Avenue.
- 30th Street, a 2-lane collector street with a speed limit of 25 mph within the Project Area. There are no bike lanes, and parallel parking is available on both sides of the street.
- 32nd Street, a 2-lane collector street with a speed limit of 30 mph north of National Avenue within the Project Area.
- 35th Street, a 2-lane collector street with a speed limit of 25 mph within the Project Area.
- 36th Street, a 2-lane collector street with a speed limit of 25 mph within the Project Area.
- 37th Street, a 2-lane roadway with a speed limit of 25 mph within the Project Area).
- 38th Street, a 2-lane roadway with a speed limit of 25 mph within the Project Area.
- 40th Street, a 2-lane roadway with a speed limit of 25 mph within the Project Area.
- 41st Street, a 2-lane roadway with a speed limit of 25 mph within the Project Area.
- 43rd Street, a 2-lane roadway with a posted speed limit of 25 mph north of National Avenue and a 3-lane roadway with a posted speed limit of 30 mph south of National Avenue within the Project Area. 43rd Street is classified as a two-lane collector street with Center Left Turn Lane in the currently adopted *Southeastern San Diego Community Plan* (City of San Diego, 1987).

The I-5 Freeway that traverses through the project area provides good regional and citywide access. The eight-lane freeway generally runs north-south and begins at the U.S. Mexico border and heads north through Downtown San Diego and the coastal portion of the City continuing through North County to Los Angeles. Project area access to the I-5 Freeway to and from the north is provided by on- and off-ramps located on National Avenue between 27th Street and 29th Street, and access to the I-5 Freeway to and from the south is provided by on and off ramps located on Boston Avenue and 27th Street.

PUBLIC TRANSIT

Public transit for the project area is provided by the San Diego Metropolitan Transit System (MTS) and is limited to public bus. Presently, the Master Plan project area is served by only one bus route (MTS Route 11). Route 11 runs between San Diego State University and Skyline Hills with headways of approximately 15 minutes before 7:30 pm and 30 minutes thereafter on weekdays. On Saturdays, Route 11 operates starting with 30-minute headways before 8:00 pm and 60-minute headways thereafter. Sunday services are provided with 30-minute headways. Although the MTS Route 11 is the primary source of public transit in the area, it serves the corridor well with stops every one or two blocks.

Additionally, three San Diego Trolley stations are located nearby. The Orange Line station at 32nd Street and Commercial Street is located about $\frac{3}{4}$ of a mile north of the National Avenue intersection with 32nd Street, the Pacific Fleet Station at 32nd Street and Harbor Drive is located about $\frac{3}{4}$ of a mile south of the National Avenue intersection with 32nd Street, and the Blue Line Harborside Station is less than $\frac{1}{2}$ -mile south of the National Avenue/28th Street intersection, south of the I-5 Freeway.

Bus ridership is relatively high in the project area considering there is only one line that services the project area. According to 2010 transit passenger load information obtained from SANDAG, the daily ridership for all transit stops in the project area totaled to 1,467 daily boardings and 1,438 daily alightings. The bus stops at the National Avenue/38th Street and National Avenue/43rd Street intersections have the highest bus loading activity at 517 and 529 total daily boardings/alightings daily, respectively.

BICYCLE FACILITIES

Bicycling is considered an environmentally-friendly mode of transportation that enhances both personal and social well-being. Bicycling is recognized as an integral component of the Southeastern San Diego Community's transportation system, today and in the future. It is an important travel mode and a key component of a seamless multi-modal transportation system. In addition to transportation, this mode of travel provides many public access, health, and economic benefits.

No designated bicycle facilities are provided on National Avenue. The nearest existing designated bicycle facilities to the project area include:

- A bicycle & pedestrian bridge on 30th Street that spans I-5 and connects 30th Street between Newton Avenue and Boston Avenue.
- A bicycle & pedestrian overcrossing located at the cul-de-sac on 36th Street, south of Acacia Grove Way that spans a creek and connects to the adjacent park at Beta Street/Birch Street.

Although National Avenue is not designated as a bicycle facility, bicycles are accommodated on the street. With traffic volumes of 12,000 vpd or less (except for the segment immediately east of 28th Street), one travel lane in each direction, and a 30 mile per hour posted speed limit, National Avenue provides a more reasonable environment for more experienced bicyclists, but is not conducive to travel by less confident and/or inexperienced riders. During field observations, some cyclists were seen using the sidewalk to avoid sharing the road with vehicles. While bicycling on the sidewalk is generally permitted in residential areas, it is prohibited in business districts similar to those along portions of National Avenue.

Reflective of the lack of designated facilities, existing bicycle data collected at all of the project area intersections during the AM and PM peak periods showed that existing bicycle usage along National Avenue is low, with fewer than seven bicycles traveling through an approach of a study intersection during the peak hours.

PEDESTRIAN FACILITIES

As described in the City of San Diego's *Pedestrian Master Plan* (City of San Diego, 2006), there is a broad range of benefits for making more walkable communities that, when combined all together create a compelling reason for improving the City's walking environment through the implementation of new or enhanced pedestrian projects. For instance, walking is another environmentally-friendly mode of transportation that enhances both personal and social well-being. In addition to transportation, this mode of travel provides many public access, health and economic benefits. Safe, convenient, attractive, and well-designed pedestrian facilities are essential if this mode is to be properly accommodated and encouraged. Pedestrian circulation is particularly important in this project area because approximately 14 percent of the total occupied households do not own a motor vehicle.¹ Additionally, the *Pedestrian Master Plan* also identified that 3.62% of residents living in the Southeastern San Diego (SESD) community walk to work as their primary means of transportation (City of San Diego, 2006). The City of San Diego's *Pedestrian Master Plan* identifies National Avenue in this study area as SESD focus areas with certain recommendations listed in **Table 1** below.

¹ American Community Survey (ACS) 2007-2011.

Table 1: : Southeastern San Diego Project Focus Areas, Types and Solutions

Project Focus Area	Roadway	Segment	Project Focus Area Type	Route Type	Council District	Potential Pedestrian Environment Improvement Measures
6	National Avenue	I-5 NB Ramps to 29 th Street	Freeway	Corridor	District 8	<ul style="list-style-type: none"> • Reduced crossing distances at intersections • Reduce pedestrian-motorist conflicts by limiting vehicular turning movements at intersections • Improved ADA/accessibility conditions • Minimize pedestrian conflict from free right turning vehicles through intersection reconfiguration and/or treatments
7	National Avenue	29 th Street to Interstate 15	Residential	Corridor and Connector	District 8	<ul style="list-style-type: none"> • Reduced crossing distances at intersections • Provide pedestrian refuges • Provide traffic calming • Reduce pedestrian-motorist conflicts by limiting vehicular turning movements at intersections • Increase crossing safety • Improved ADA/accessibility conditions
8	National Avenue	Interstate 15 to 36 th Street	School/Park	Connector	District 4	<ul style="list-style-type: none"> • Reduced crossing distances at intersections • Provide pedestrian refuges • Provide traffic calming • Reduce pedestrian-motorist conflicts by limiting vehicular turning movements at intersections • Improved ADA/accessibility conditions
9	National Avenue	36 th Street to 45 th Street	Residential	Connector	District 4	<ul style="list-style-type: none"> • Reduced crossing distances at intersections • Provide pedestrian refuges • Reduce pedestrian-motorist conflicts by limiting vehicular turning movements at intersections • Improved ADA/accessibility conditions

Source: Pedestrian Master Plan (City of San Diego, December 2006)

The land-uses, density, scale, and configuration of National Avenue are conducive to pedestrian activity. There are several storefronts or retail centers lining various sections of National Avenue, and community facilities such as schools and parks, are located on side streets proximate to National Avenue. These land uses typically generate pedestrian traffic but demand may be lower given the difficulty in crossing National Avenue at several unsignalized intersections.

Under existing conditions, National Avenue generally includes a streetscape with sidewalks and a landscape buffer plus several amenities for pedestrians and transit patrons. Frontages along both sides of National Avenue generally include active commercial uses plus single-family and multi-family residential uses, with a sidewalk approximately five feet wide and an additional four to five feet of width containing a row of trees between the sidewalk and vehicular right-of-way. On-street parking is allowed on both sides along most project area segments of National Avenue and provides an additional buffer for pedestrians.

A number of the intersections along National Avenue are marked with crosswalks on at least one of the legs. Examples include the National Avenue intersections at:

- 28th Street (signalized with marked crosswalks on all four legs)
- I-5 NB Off Ramp (signalized with marked crosswalk on southern leg)
- 31st Street (two-way stop-controlled with a marked crosswalk on the eastern leg and pedestrian warning signs)
- 32nd Street (signalized with marked crosswalks on all four legs)
- 35th Street (signalized with marked school crosswalks on all four legs)
- 36th Street (signalized with marked school crosswalks on all four legs)
- 37th Street (two-way stop-controlled with a marked crosswalk on the western leg and overhead pedestrian crossing warning signs with flashing beacons and pedestrian crossing markings)
- 38th Street (signalized with marked crosswalks on all four legs)
- 41st Street (two-way-stop-controlled with marked school crosswalk on the western leg and flashing school pedestrian warning signs and school crossing pavement markings)
- 43rd Street (signalized with marked crosswalks on all four legs)

The intersection of National Avenue and 30th Street is the only signalized intersection in the project area that does not have marked crosswalks on any of its legs.

All of the remaining intersections on National Avenue in the project area are side-street stop controlled, with vehicular traffic on National Avenue uncontrolled, and no marked crosswalks across National Avenue including:

- 27th Street
- 29th Street
- 33rd Street
- 39th Street
- 40th Street

The lack of marked and/or controlled pedestrian crossings at multiple locations in the project area contributes to an unsatisfactory experience for pedestrians crossing National Avenue. Thus, better connections between both sides of National Avenue are needed.

In contrast to the pedestrian experience for crossing National Avenue, the presence of sidewalks, short block lengths, street tree buffers, and on-street parking tend to promote a more comfortable existing pedestrian experience for those walking along National Avenue. Additionally, curb ramps exist at all corners of the intersections along National Avenue; however some are non-compliant with current ADA standards. One detriment to pedestrian travel along National Avenue is the presence of bicyclists riding on the sidewalk, where riders are avoiding potential conflicts with vehicles on the street.

PARKING

An inventory of all on-street parking spaces within the project area was prepared in April 2013. The project area consisted of National Avenue between 27th Street and 43rd Street but did not include the side streets. On-street parking is generally parallel parking and free of charge. Along certain segments there are posted time-limits (i.e., 15-minute, 30-minute, 60-minute, and 2-hour maximums). Overall, there are roughly 575 on-street parking spaces in the entire project area.

On-street parking demand observations were conducted on April 3, 2013 during the AM and PM peak commute periods. Observations showed that existing on-street parking is heavily utilized on some segments and underutilized on others. Based on existing observations, the highest occupied blocks by directions are:

- Eastbound, between 31th Street and 32nd Street in the AM and PM peak – 100% occupied
- Westbound, between 38th Street and 39th Street in the AM and PM peak – approximately 65% occupied in the AM peak hour period and 85% occupied in the PM peak period

The City of San Diego's *Street Design Manual* (City of San Diego, 2002) suggests that angled parking may be implemented on one side of the road along commercial streets if the curb to curb width is 44 feet or greater. Angled parking may be implemented on both sides of the street if the curb to curb width is 52 feet or greater. The Master Plan for National Avenue will remove the on-street parking along select segment portions of the corridor. With increased development intensities and corresponding vehicle demand in the area, it is likely that future demands for parking could increase. Therefore, as improvements along the corridor are implemented, considerations should be made for restriping the intersecting streets to provide additional parking where feasible.

MULTI-MODAL STRATEGY AND IMPROVEMENTS

As described by goals and policies of the San Diego General Plan and the Southeastern San Diego Community Plan that apply to the study area, a major aspect of the Master Plan is to create a comprehensive and interconnected multi-modal circulation system that supports the convenient and efficient movement of all modes (pedestrians, bicyclists, transit and vehicles) that travel along the corridor and to enhance safety and community mobility. Specifically, the recommended transportation-related improvements were based on the following mobility objectives:

- Balance the needs of moving and parked vehicles with the needs of active travel modes
- Encourage walking, bicycling, and transit with safe, attractive and convenient facilities
- Ensure adequate pedestrian access to the numerous transit stops/stations throughout the corridor
- Ensure a safer and more comfortable environment for waiting transit patrons by providing additional amenities at transit stops/stations throughout the corridor
- Implement facilities and amenities to encourage bicycle ridership along the corridor
- Maintain a sufficient amount of parking to serve local businesses and residents
- Utilize street design and traffic calming measures to maintain traffic flow with moderate vehicle speeds
- Provide additional safety measures (i.e. highly visible marked crossings, shorter crossing distances, reduction in conflict points and impediments, etc.) in areas projected to have a high level of pedestrian activity

These guiding principles and objectives were used during the Master Plan planning process where numerous geometric alternatives were developed, analyzed on a preliminary basis and vetted by the project team, City staff, and the community. Through this process, the Preferred Mobility Option was developed for the National Avenue Corridor Master Plan and the details of this concept, by mode, are described in this section. The corresponding graphic illustrating these proposed mobility concepts and recommendations are provided in **Appendix A**.

It should be noted that the timing of all recommended improvements will be contingent on the growth of future development within the corridor, and will be subject to further engineering study prior to implementation. Additionally, as development occurs along National Avenue the movements of all modes (auto, pedestrian, bicycle and transit) should be monitored to determine the appropriate time to implement each of the recommended improvements.

KEY IMPROVEMENTS

STREET NETWORK

The existing design of the National Avenue Corridor favors automobiles, and one of the major issues of the Master Plan Corridor is the limited consideration for other mobility choices. Community participants have mentioned that sections of National Avenue are in disrepair and need to be improved so that the corridor can become a welcoming roadway that enhances connectivity to a mixture of community-serving uses. Additionally, several stakeholders suggested that some of the wider streets in commercial areas and in proximity to schools be narrowed to reduce vehicle speeds and make walking safer. Also with no right-of-way reserved for biking, cyclists are forced to share the road with vehicles, which limits the number of cyclists using the corridor, especially those riders that are not as confident and are more risk averse than experienced commuter cyclists. Based on the state and perception of the project area's transportation infrastructure, a main objective of the Master Plan is to establish a comprehensive and interconnected mobility network that shifts the project area's predominately auto-oriented character to be more accommodating to pedestrians, bicyclists, and transit riders.

To improve walkability, bicycling, and transit integration into the street network and still maintain the future needs of vehicles, the Master Plan proposes the following main streetscape improvements:

- Remove the center left turn lane and re-stripe and re-size the National Avenue cross section (i.e. with 10-foot vehicle through and left turn lanes) to provide a balanced right-of-way with designated facilities for each mode. Left turn pockets will be removed at some locations but maintained for circulation purposes at the intersections at: 28th Street, 29th Street, 30th Street, 31st Street, 32nd Street, 35th Street, 36th Street, 38th Street, 41st Street, and 43rd Street.
- Stripe buffered Class II bicycle lanes from 27th Street to approximately 400 feet east of 41st Street.
- Connect both sides of the street by improving and/or providing highly visible enhanced crosswalks at all intersections where they do not currently exist (final installations are to be based on applicable warrants).
- Enhance landscape along sidewalks with additional street trees and groundcover plantings in order to supplement existing trees and have more continuous shade for pedestrians

The final locations, design, and timing of all the proposed street network improvements will depend on future development, community needs, and further engineering study.

MULTI-MODAL ENHANCEMENTS

Land use recommendations for the National Avenue Corridor Master Plan project area include a mix of commercial and residential uses, with a light industrial area just west of the SR-15 Freeway and some institutional land use designations on the south side of National on 35th and 36th Streets. The expansion and revitalization of neighborhood and community mixed-use development within the project area is expected to increase bicycle and pedestrian activity along the corridor and reduce the need for trips made by private automobile. This increase in multi-modal activity, in association with the projected overall increase in vehicular traffic in the corridor, would increase the potential for conflicts among various modes of travel, unless mobility enhancements are integrated into the Master Plan.

Therefore, the Master Plan supports additional facility enhancements within the National Avenue project area to provide a safer environment and interaction amongst the various travel modes. As illustrated in the National Avenue Mobility Concept diagrams, these enhancements include:

- Curb bulb-outs at intersections (where possible) to reduce the effective width of the right-of-way and pedestrian exposure
- Enhanced crosswalks (where warranted) to improve their visibility at all study intersections and better highlight the presence of pedestrians in the corridor
- Implementation of pedestrian countdown heads at National Avenue and 30th Street
- Install new traffic signals at 31st Avenue and 41st Avenue to improve crossing conditions for pedestrians and to better balance delays for all
- Ensure ADA-compliant facilities
- Installation of buffers between pedestrian, bicycle, and vehicular right-of-ways in order to distinguish between designated pedestrian, bicycle, and vehicular zones

Specific details of the safety enhancements listed above are also described in respective sub-sections to follow.

PUBLIC TRANSIT

Under existing conditions the project area is only directly serviced by the MTS Bus Route 11. It is expected that as the area continues to develop per the buildout of the Master Plan the demand for transit use will continue to increase along with the desire for increased transit service.

The 2050 SANDAG Regional Transportation Plan (RTP) (SANDAG, 2011) does not specially mention any planned improvements specific to Route 11 servicing the corridor, but does mention general frequency enhancements for key local bus routes to 15-minute headways all day by 2020 and 10-minute headways all day by 2035. The RTP also listed as a planned project, the implementation of a Rapid 11 bus route, an express service that travels through Spring Valley to San Diego State University via Southeastern San Diego, Downtown, Hillcrest, and Mid-city in 2035. The route is expected to operate with 10 minute headways in both the peak and off-peak periods. Since it is not known at this time whether or not the proposed Rapid 11 will serve the National Avenue project area, it is assumed that there will be no substantive changes in the project area's bus operations between existing and future buildout of the Master Plan. Regardless, opportunities do exist through Master Plan implementation to improve the transit experience for waiting transit patrons. This can be achieved by implementing a standard set of amenities (i.e. benches, shelters, trash receptacles, and pedestrian-scale lighting) at all bus stops along the National Avenue project area. These recommended improvements accommodate the projected increase in ridership and would improve the safety and comfort for transit patrons at stops.

Additionally, as the resident and employee population within the corridor increases it is recommended that the City of San Diego work with MTS to determine if any additional improvements (i.e. increasing headways and/or implementation of a new bus route) are necessary to provide better connectivity and more efficient travel between the Planning Area and other neighborhoods.

BICYCLE FACILITIES

To ensure connectivity to both the local and regional area and to close gaps in the system, future bicycle facilities are proposed along the National Avenue Master Plan Corridor, which is consistent with the City of San Diego's *Bicycle Master Plan Update* (City of San Diego, 2011). Thus, the Preferred Mobility Option proposes to remove the center left turn lane at each block and to re-stripe the curb-to-curb to accommodate the installation of six-foot wide Class II bicycle lanes along both sides of the National Avenue corridor.

Safe, convenient, attractive and well-designed bicycle facilities are essential if this mode is to be properly encouraged along the National Avenue Corridor in the buildout of the Master Plan. Therefore, as an extra safety measure and to facilitate convenient bicycle travel, the Preferred Mobility Option proposes to include a 3-foot buffer lane between the bike lane and vehicle travel lane, with the exception of select segments between 27th Street and 29th Street and at intersection lane transitions.

Secure bicycle parking is essential to ensuring that bicycling is a convenient travel mode. This includes both on-street bicycle parking to provide access to public facilities, stores, and services, as well as off-street bicycle parking within housing developments and offices for residents and employees, respectively. As part of the public right-of-way and streetscape improvements, the Master Plan recommends that public bicycle racks be installed at key points along the National Avenue Corridor (i.e. commercial uses, transit stops, and other public gathering places), and that adequate private bicycle parking be required within any new large-scale developments based on the bicycle parking standards included in the City of San Diego’s Municipal Code.

RAMIFICATIONS OF TWO-WAY LEFT-TURN (TWLT) LANE REMOVAL

As noted above, installation of buffered bike lanes on National Avenue are being proposed to provide a designated right-of-way for bicycle travel. According to NACTO (National Organization of City Transportation Officials), buffered bicycle lanes provide the following benefits:

- Provides greater shy distance between motor vehicles and bicyclists.
- Provides space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle travel lane.
- Encourages bicyclists to ride outside of the door zone when buffer is between parked cars and bike lane.
- Provides a greater space for bicycling without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane.
- Appeals to a wider cross-section of bicycle users.
- Encourages bicycling by contributing to the perception of safety among users of the bicycle network.

Studies conducted in Portland and Los Angeles show that adding buffered bicycle lanes will increase bicycle activity from 77% to over 200%.^{2,3}

However, there is not sufficient right-of-way to integrate the buffered bicycle lane along National Avenue without removing either the existing center two-way left-turn (TWLT) lane or parking along one side of the corridor. Eliminating parking on one side of the street was not considered feasible given the residential and commercial reliance on on-street parking and the already limited off-street parking available along the corridor. Therefore, the existing two-way left turn lane is proposed to be removed between all intersections. Left -turn pockets are also proposed to be eliminated at selected intersections

² City of Portland, *Evaluation of Innovative Bicycle Facilities*, 2011

³ Los Angeles County Bicycle Coalition, *Results from the 2011 City of Los Angeles Bicycle and Pedestrian Count*, 2012

where existing and future volumes are relatively low (usually less than 30 during the AM and/or PM peak hours).

TWLT lanes and left-turn pockets at intersections can benefit vehicle operations by shifting left-turning vehicles out of the adjacent through lanes thereby reducing the potential for rear-end, sideswipe and head-on collisions. For streets where intersecting driveways serve higher traffic volumes, TWLT lanes provide a refuge area for vehicles waiting to turn and can reduce delays for vehicles entering and exiting the roadway.

On National Avenue, numerous existing residential and commercial driveways access the street. In most cases each residential driveway serves a limited number of turns during the peak hours (i.e. each single family home typically generates one peak hour trip – either inbound or outbound). Many of the commercial uses fronting the street are small in scale and do not generate a significant number of peak hour trips. Removal of the TWLTL may result in additional delay to through traffic on National Avenue due to vehicles stopping in the through lane to turn into these driveways. However the additional delay is expected to be limited and infrequent due to low volume of traffic generated at these driveways. At intersections where turning movement volumes are higher, left-turn pockets are being retained in most cases to help maintain vehicle flow along the corridor.

With the current configuration, the through lanes on National Avenue place vehicles closer to the curb and parked cars, where bicyclists typically ride. Removing this center lane, and installing buffered bicycle lanes, will provide bicyclists and drivers their own designated space. Consequently, the proposed configuration would move vehicular traffic further away from the edge of the travel lane adjacent to the bicycle lane and reduce potential conflicts with vehicles overtaking and moving around bicyclists. Bicyclists feel vulnerable when they are passed by motorists, and this maneuver is the most common cause of fatal bicycle/vehicle collisions.⁴ Buffered bicycle lanes reduce stress for bicyclists, and the additional 3-foot buffer provides an additional safety benefit by further separating vehicles from bicyclists.

As observed in this corridor, some bicyclists travel on the existing sidewalk to avoid potential conflicts with vehicles on the street. Although many bicyclists do not perceive it, studies have shown that sidewalk riding is more dangerous to the bicyclist than street riding. This is because of the crossing problems at intersections and driveways. Drivers do not expect a bicyclist to be on the sidewalk and often times a bicyclist on the sidewalk cannot be seen from private driveways or approaching an intersection from the wrong direction. The installation of buffered bicycle lanes has been shown to encourage bicyclists to ride in the street, as opposed to on the sidewalk where they would conflict with and represent a substantial hazard to pedestrians.

⁴ City of Pasadena, *Century of Bikes: Bicycle Master Plan*, 2000.

While TWLT lanes benefit vehicles, the Federal Highway Administration notes that these facilities do not afford a refuge area for pedestrians, especially for those crossing at midblock locations.⁴ Pedestrian midblock crossings are not encouraged as part of the proposed lane elimination, but removing the TWLTL would minimize the exposure of pedestrians to vehicles while crossing the street.

While the buffer lane will benefit bicyclists, the removal of a two-way left turn lane raises concerns over potential operational impacts and safety to vehicle turning movements along the corridor. Despite this concern, however, there are roadway segments that exist in the City with the cross section of two-lane streets without a center two-way left-turn and with bicycle lanes, which are listed and described below:

- **Gilman Drive from Villa La Jolla Drive to Voigt Drive** – however, segment characteristics are different from the National Avenue study segments because it is adjacent to institutional uses, there are minimal driveways, there is no on-street parking, and existing daily segment volumes are higher than both the existing and projected segment volumes of the National Avenue corridor.



Source: Google Earth, 2014

- **Sunset Boulevard from Ingleside Avenue to Fort Stockton Drive** – the segment has comparable characteristics to the National Avenue study segments since it is adjacent to residential uses with driveways and on-street parking is allowed on both sides of the street. Although the cross-section and surrounding environment is fairly similar to the National Avenue corridor, the existing daily segment volumes are considerably lower than both the existing and projected segment volumes of the National Avenue corridor.



Source: Google Earth, 2014

- **Island Avenue from 24th Street to 28th Street** – the segment has comparable characteristics to the National Avenue study segments since it is adjacent to residential uses with driveways and on-street parking is allowed on both sides of the street.



Source: Google Earth, 2014

- **Rosecrans Street from Talbot Street to Kellogg Street** – the segment has comparable characteristics to the National Avenue study segments since it is adjacent to residential uses with driveways and on-street parking is allowed on both sides of the street. Although this segment has peaking characteristics related to military uses to the south and its' existing and projected daily segment volumes are higher than the both the existing and projected segment volumes of the National Avenue corridor, it does demonstrate the functionality of this cross section with heavy traffic.



Source: Google Earth, 2014

Overall, the safety benefits to bicycles and pedestrians resulting from the removal of the TWLTL would contribute to enhancing National Avenue as a multi-modal corridor. Potential issues pertaining to vehicle operations (increased delay, rear-end accidents, slower speeds) may occur initially when the street is restriped. However, adjustments to travel behavior will likely occur over time and the potential conflict and delay issues will reduce as drivers become more familiar with the change in roadway configuration. Conditions along the corridor should be monitored after the changes to the corridor are made to determine if safety or operational issues need to be addressed on a location by location basis.

PEDESTRIAN FACILITIES

Under existing conditions, pedestrian access through the National Avenue Master Plan Corridor is readily available by means of sidewalk along both sides of the street; however, some segment portions are not being used to their full potential because of a lack aesthetics and pedestrian safety enhancements. To achieve a vibrant, walkable environment and a multi-modal corridor in the future, a pleasant, uniform streetscape and public realm with safe and convenient access to transit and uses need to be established. Based on projected land uses, transit stop locations, and projected volumes the Master Plan recommends the following pedestrian-related improvements, which are illustrated in the Preferred National Avenue Mobility Concept diagram:

- Repair sidewalks for pedestrian safety and ADA compliance.
- Implement high visibility crosswalks at intersections where appropriate across the corridor (when warranted or allowed per the city's crosswalk policy).
- Implement continuous urban parkways between the sidewalk and roadway to provide greater pedestrian comfort and an additional buffer.
- Designate a total of 14 feet of sidewalk and urban parkway through the project area as new development occurs along the corridor frontage to provide a clear path of travel and to encourage walking.
- Implement curb bulb-outs to reduce the effective crossing distance for pedestrians and improve visibility around parked cars at the intersection of National Avenue at: 29th Street, 33rd Street, 37th Street, 39th Street, and 40th Street (implemented during planning study).
- Implementation of pedestrian countdown signal heads at 30th Street.
- Installation of a new ADA ramp and crosswalk on the east leg of National Avenue/I-5 Northbound Off-Ramp signalized intersection (the adjacent intersection to the east at 29th Street is unsignalized and the signal provides a controlled crossing location).
- Implementation of a mid-block enhanced crosswalk possibly with pedestrian refuge island on National Avenue just west of SR-15, if the industrial area is converted into a public park.

It shall be noted that the final locations, design and timing of all the proposed improvements and recommendations will depend on future development, pedestrian activity, and further engineering study.

PARKING

With the proposed cross-section of the Preferred National Avenue Mobility Concept, limited removal of existing on-street parking near intersections will need to occur to maintain the Class II bicycle lanes and accommodate left turn pockets (if included). The Master Plan supports on-street parking strategies that can be implemented to help accommodate future parking demand. For example, time-limit parking and pricing strategies, such as installing parking meters and variable pricing that fluctuates by demand and time of day, can be implemented in the future to help encourage parking turnover, as well as raise funds for transportation improvements. On-street parking along the streets intersecting National Avenue should also be evaluated to determine if parking can be reconfigured to increase supply. Angled parking along one or both sides of the street will increase parking supply and aid in calming traffic and reducing cut through traffic on either side of the corridor. Streets with curb to curb width of 44 feet or greater should be considered for angled parking modifications.

LIGHTING

Street lighting is an important part of mobility infrastructure by increasing the visibility of pedestrians, bicyclists and automobiles along the corridor. Based on a preliminary review of existing lighting on National Avenue, improvements could be made to street lighting especially near intersections where numerous conflicting movements occur among the various travel modes. The existing light locations and proposed new light locations are indicated on the mobility concept diagrams (see **Appendix A**), and the future enhancements are proposed to meet the following general requirements:

1. Fulfill the recommendations of the San Diego Street Design Manual, Street Lighting Chapter, which includes specific requirements for intersection lights and mid-block lights.
2. In general, for National Avenue, the current requirement per the Street Design Manual is for two lights per intersection (two lights at 250-watt high pressure sodium).
3. Mid-block lighting for National Avenue is intended to occur at staggered intervals not to exceed 150 feet per the Street Design Manual.
4. Mid-block lighting is currently prescribed to be Type III cutoff, 250-watt high pressure sodium.
5. Proposed lighting is based on a review of the spacing of existing lights and where new light poles are generally needed. Future lighting plans will need to assess overall wattage and condition of existing lights and overall levels of illumination needed throughout the street corridor.
6. Future lighting plans will need to be verified with any subsequent Street Design Manual Updates.

In addition, the City of San Diego is systematically undergrounding utilities throughout the City as part of its Capital Improvement Program (CIP) and lighting enhancements are planned to be included as part of this program.

PLANNING-LEVEL COST ESTIMATE

A planning-level cost estimate was prepared based on the improvements and enhancements described in the Preferred Mobility Option for the National Avenue Corridor Master Plan (see **Appendix J**). The unit costs for improvements used in the cost estimate are comparable to the unit costs used in similar projects in the San Diego area. It is estimated that intersection-level improvements would total approximately \$1,168,000 and segment-level improvements would total approximately \$421,000 for a subtotal of \$1,589,000. After an application of a 30% contingency and additional budget for design-related expenses (another 30% of subtotal) the grand total for the improvements and enhancements of the Preferred Mobility Option is approximately \$2.5 million dollars.

FUTURE YEAR VOLUMES

A refined SANDAG Series 12 traffic model was prepared for the Southeastern Community Plan update by Chen-Ryan Associates and SANDAG. This model forecasted traffic volumes which were used to assess traffic and circulation outcomes for the National Avenue study and reflect traffic conditions resulting from the full implementation of the Master Plan under community plan buildout conditions. This section reviews and documents the sources and methodologies utilized to develop the future year transportation volumes, for all modes, under buildout of the proposed Corridor Master Plan.

STREET NETWORK

Future Year traffic volumes were derived from the SANDAG Series 12 Transportation Forecast per the City of San Diego's *Small Study Area Traffic Modeling Process* (April 2012). The forecasting task was performed by another consultant (Chen-Ryan Associates) in conjunction with SANDAG and the adjusted forecast results were provided to Fehr & Peers for use in this study. As part of the modeling process, a thorough review of model inputs was completed for the Base Year and Future Year scenarios. This review included the following:

- Circulation network
- Number of lanes on roadways and approach lanes at signalized intersections
- Traffic controls
- Street classification
- Base year traffic volumes
- Roadway speed limits
- Zone connector locations and granularity
- Traffic Analysis Zones
- City approved model land use and trip generation inputs (land use description, unit type, quantity, and City of San Diego trip generation rates)

Using the inputs outlined above, SANDAG calibrated/validated the base year model to meet the standards set forth by the City of San Diego.

The model assumed the 2035 Revenue Constrained RTP Highway Network which includes interchange improvements along SR-94 and other planned regional highway and transit service improvements. The

Future Year Model was developed based on the calibrated Base Year Model with the following assumptions:

- Buildout of the proposed Master Plan and draft SESD and Encanto Community Plan Update (CPU) land uses (Master Plan land use assumptions are provided in **Appendix B**)
- Reasonably expected roadway network with the SR-94 Alternative 1
- Year 2035 land uses outside of the SESD and Encanto CPU study area that may affect circulation in the corridor
- Year 2035 roadway/transit network outside of the SESD and Encanto CPU study area

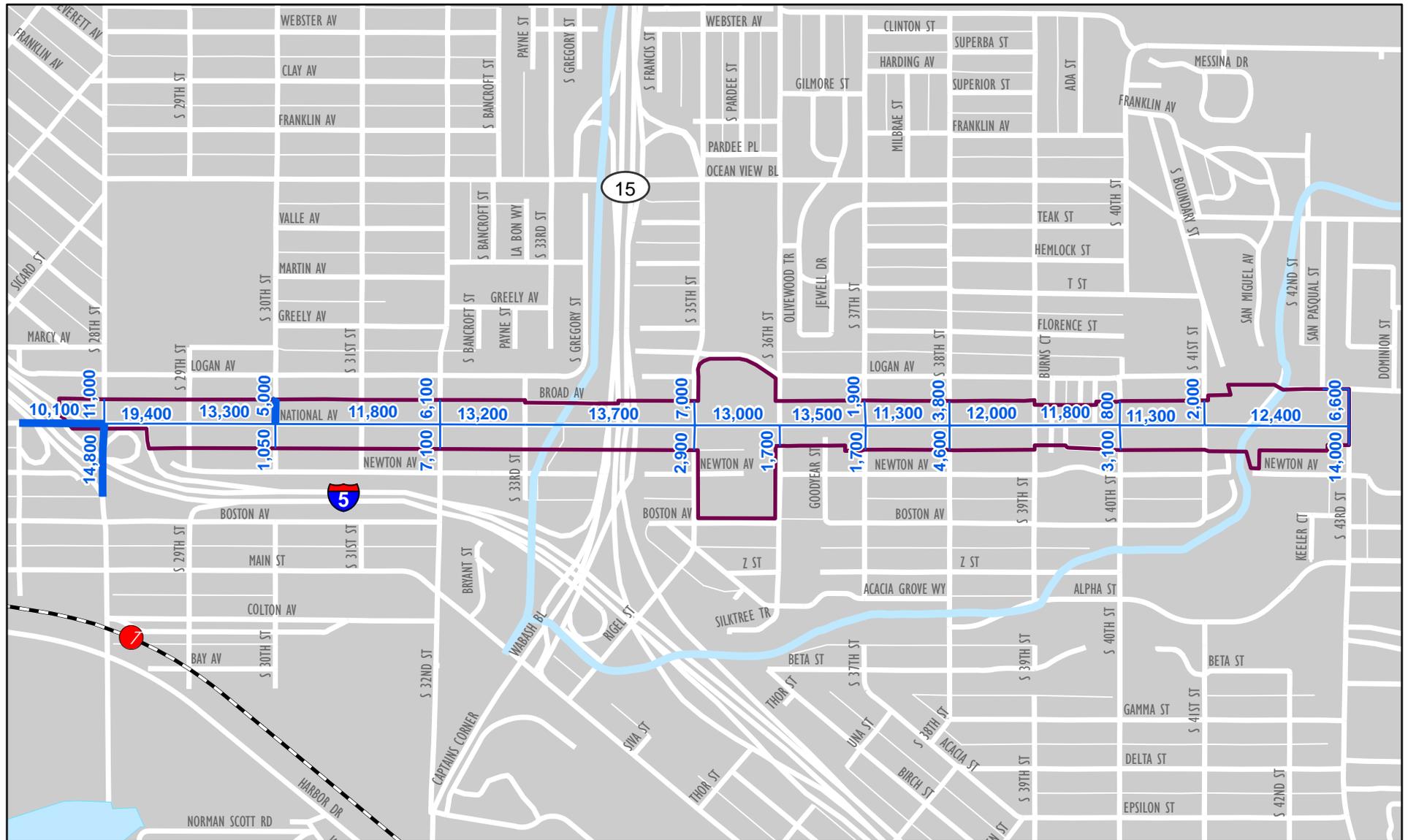
The land use data included in the model reflect the proposed future uses for the entire Southeastern San Diego Community Plan area. The model inputs described above were reviewed by Chen-Ryan Associates and approved by City staff prior to running the model forecasts used to derive Future Year volumes.

The Future Year forecast daily volumes were reviewed and adjusted by the project team based on existing travel patterns, anticipated growth within the study area, projected access points, and overall regional growth. In general, the daily volumes from the model were used directly for this analysis. Due to the regional nature of the traffic model, many of the local streets that intersect the National Avenue corridor are not included in the model network. As such, future volumes for these facilities were forecasted by applying a growth factor to existing volumes where the growth factor was determined from data on adjacent roadway segments. The final adjusted forecast daily traffic volumes along National Avenue are illustrated in **Figure 1**, and the associated volumes and adjustments are included in **Appendix C**.

Using the Furness Method, the forecasted ADT volumes were then used to calculate peak hour intersection turning movement volumes under buildout conditions of the Master Plan, which are displayed in **Figure 2**. The Furness Method balances the inbound and outbound traffic flows on each approach to the intersection based on existing conditions peak hour volumes, existing daily volumes and future daily volumes. Intersection volumes were then reviewed and adjustments were made to ensure reasonable growth on all legs of the intersection and that inbound and outbound volumes were balanced within 10% of the total link volume. Peak hour volume calculations and adjustment process spreadsheets for each intersection are included in **Appendix D**.

Figure 1: Projected Roadway Geometrics & Daily Traffic Volumes Under Buildout of the Preferred Plan - National Ave

February 2014



— 2-Lane Roadway **X,XXX** Daily Traffic Volumes
— 3-Lane Roadway
— 4-Lane Roadway

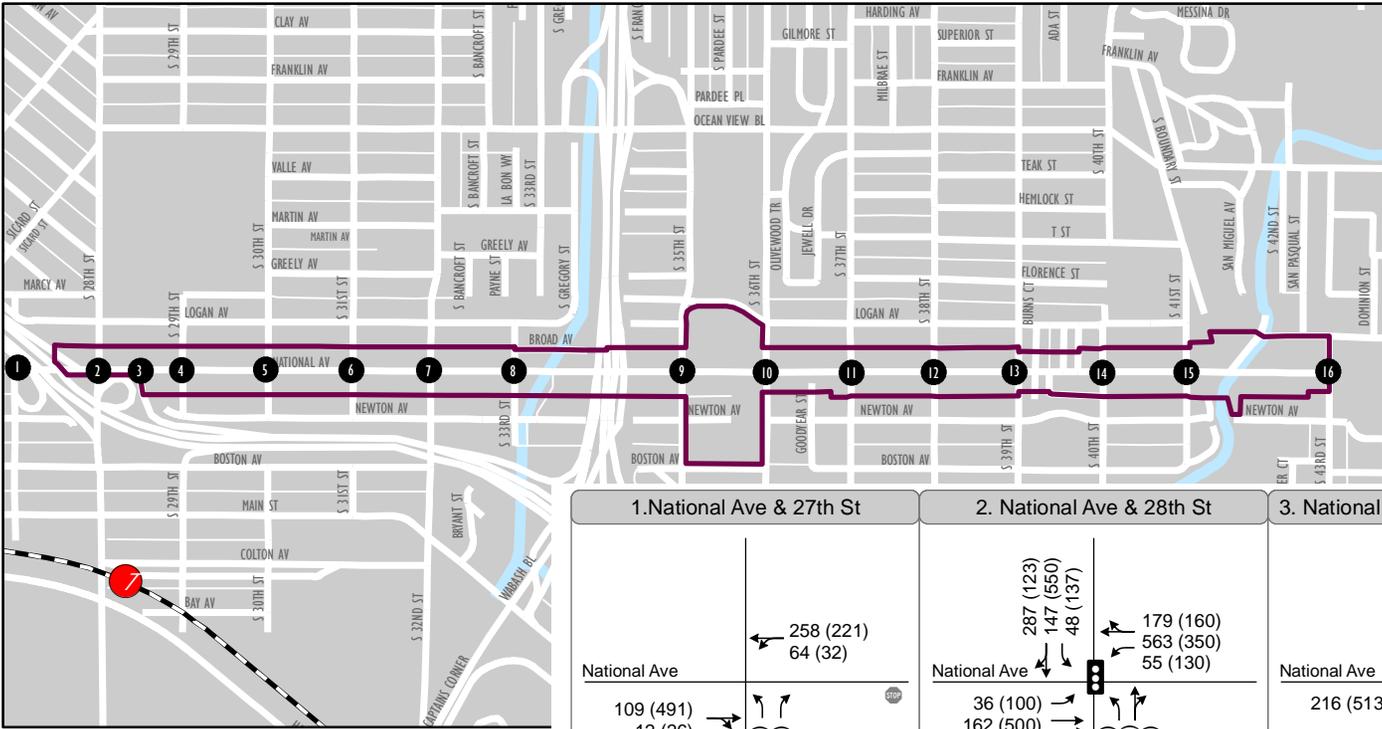
Project Area
 Trolley
● Trolley Station

FEHR & PEERS
 0 0.05 0.1 0.2 Miles

Source:
 Fehr & Peers (2014)

Figure 2: Projected Lane Configurations and Traffic Volumes Under Buildout of the Preferred Plan - National Ave (Page 1 of 2)

February 2014



1. National Ave & 27th St	2. National Ave & 28th St	3. National Ave & I-5 NB Off Ramp	4. National Ave & 29th St
<p>National Ave</p> <p>109 (491) 12 (26)</p> <p>27th St</p> <p>41 (39) 186 (222)</p> <p>258 (221) 64 (32)</p>	<p>National Ave</p> <p>36 (100) 162 (500) 86 (87)</p> <p>28th St</p> <p>32 (31) 95 (125) 13 (44)</p> <p>287 (123) 147 (650) 48 (137)</p> <p>179 (160) 563 (350) 55 (130)</p>	<p>National Ave</p> <p>216 (513)</p> <p>I-5 Off-Ramp</p> <p>267 (307) 94 (142)</p> <p>546 (315)</p>	<p>National Ave</p> <p>70 (76) 225 (617) 1 (13)</p> <p>29th St</p> <p>2 (6) 3 (2) 0 (13)</p> <p>15 (25) 1 (2) 23 (35)</p> <p>104 (41) 550 (280) 4 (14)</p>
5. National Ave & 30th St	6. National Ave & 31st St	7. National Ave & 32nd St	8. National Ave & 33rd St
<p>National Ave</p> <p>37 (105) 193 (500) 21 (27)</p> <p>30th St</p> <p>29 (37) 12 (6) 7 (9)</p> <p>116 (116) 9 (20) 44 (68)</p> <p>48 (46) 485 (311) 6 (5)</p>	<p>National Ave</p> <p>34 (25) 242 (534) 6 (12)</p> <p>31st St</p> <p>11 (3) 3 (2) 5 (9)</p> <p>17 (19) 9 (5) 6 (15)</p> <p>27 (18) 569 (295) 3 (12)</p>	<p>National Ave</p> <p>30 (52) 239 (478) 28 (63)</p> <p>32nd St</p> <p>54 (66) 26 (40) 31 (114)</p> <p>31 (42) 74 (109) 49 (104)</p> <p>61 (67) 480 (210) 83 (58)</p>	<p>National Ave</p> <p>11 (16) 373 (742) 1 (1)</p> <p>33rd St</p> <p>1 (0) 1 (1) 3 (3)</p> <p>7 (11) 2 (0) 32 (34)</p> <p>41 (18) 627 (325) 3 (0)</p>

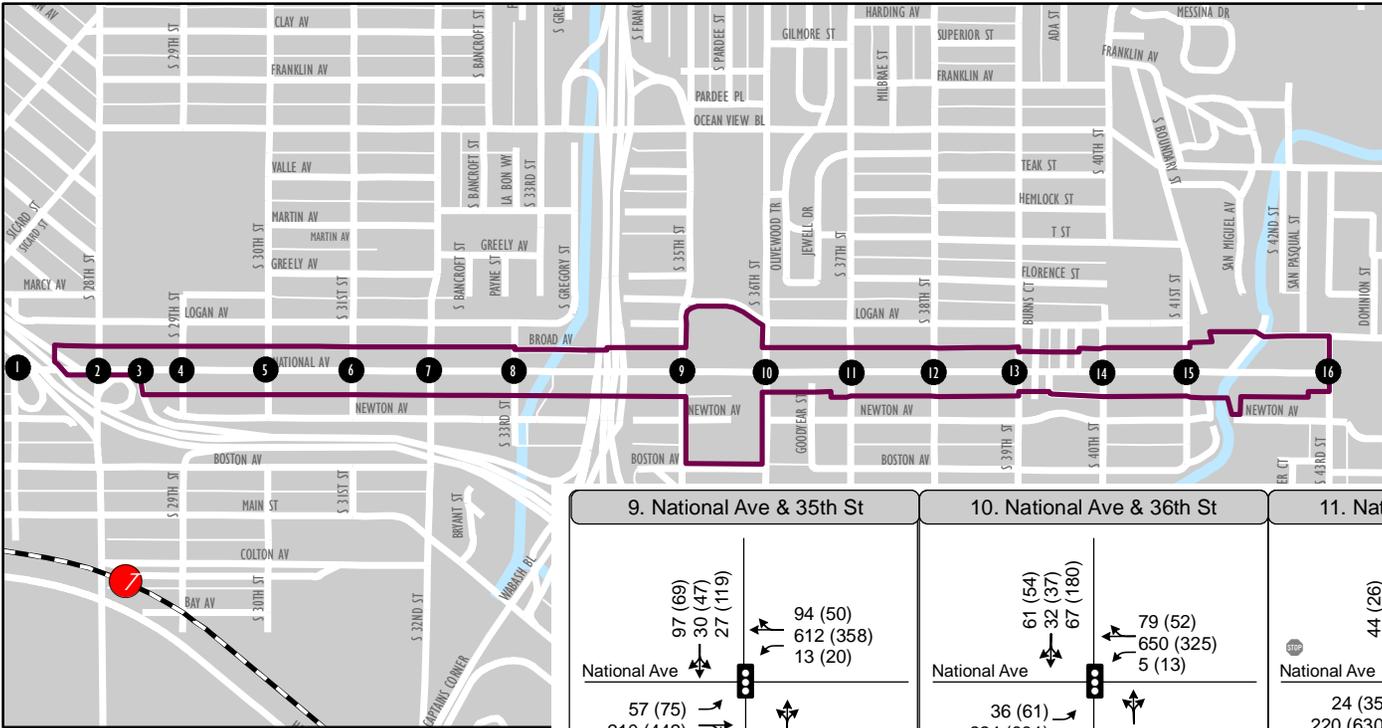
- Study Intersection
- Turn Lane
- AM Peak Hour Traffic Volume
- PM Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign
- Project Area
- Trolley
- Trolley Station



Source: Fehr & Peers (2014)

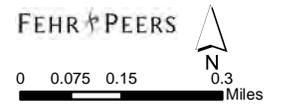
Figure 2: Projected Lane Configurations and Traffic Volumes Under Buildout of the Preferred Plan - National Ave (Page 2 of 2)

February 2014



9. National Ave & 35th St	10. National Ave & 36th St	11. National Ave & 37th St	12. National Ave & 38th St
13. National Ave & 39th St	14. National Ave & 40th St	15. National Ave & 41st St	16. National Ave & 43rd St

- Study Intersection
- Turn Lane
- AM Peak Hour Traffic Volume
- (PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign
- Project Area
- Trolley
- Trolley Station



Source: Fehr & Peers (2014)

TRANSIT RIDERSHIP

The projected future transit ridership at stops within the Project Area was developed by applying a growth factor to existing boarding and alighting data provided in the *National Avenue Corridor Master Plan Existing Conditions Report*. While projecting increases in multi-modal trips requires some level of judgment and is dependent on numerous factors, some quantitative methods are available to assist in this process. The transit ridership growth factor was developed utilizing the mixed-use development (MXD) tool to estimate the specific transit ridership associated with the Project Area under both existing and buildout conditions of the Master Plan. MXD is an analysis tool, developed in partnership with the Environmental Protection Agency (EPA), which quantifies relationships between characteristics of MXDs and the likelihood that trips generated by those MXDs will stay internal to a site or area and use modes of transportation other than the private vehicle. The tool provides estimates of external transit and pedestrian trips and all land uses within approximately 1/3-mile of the study corridor including dwelling units, schools, retail uses, etc.

The ridership estimates for each model year were then compared to calculate the transit ridership growth factor within the Study Area. Overall, the existing daily transit ridership is estimated to increase by 50%. This projected increase in ridership is due to the planned increase in land use density throughout the corridor, the proposed transit oriented nature and design of the proposed land uses, and the projected increase in traffic activity.

Table 2 summarizes the results for forecasting the future transit daily boardings and alightings. The MXD model results, as well as existing transit boarding data, are provided in **Appendix E**

Table 2: Existing and Future Transit and Daily Boardings and Alightings

National Ave Transit Stop	Existing ¹			Future ²		
	Boarding	Alighting	Total	Boarding	Alighting	Total
<u>Route 11</u>						
@ 28 th Street	45	79	124	70	120	190
@ 29 th Street	114	125	239	170	190	360
@ 30 th Street	133	142	275	200	215	415
@ 32 nd Street	122	117	239	185	175	360
@ 33 rd Street	22	19	41	35	30	65
@ 35 th Street	179	161	340	270	240	510
@ 36 th Street	165	153	318	250	230	480
@ 38 th Street	257	260	517	385	390	775
@ 40 th Street	83	80	163	125	120	245
@ 41 st Street	61	59	120	90	90	180
@ 43 rd Street	286	243	529	430	365	795
Total	1,467	1,438	2,905	2,210	2,165	4,375

1. Source: SANDAG Assistance to Transit Operations and Planning Program, 2010
2. Existing ridership information obtained from SANDAG Assistance to Transit Operations and Planning program was increased by 50% to reflect future ridership under buildout conditions of the Master Plan.

PEDESTRIAN VOLUMES

Similar to the projection of transit ridership discussed above, the MXD tool was used to estimate the change in pedestrian trips between existing and future conditions in 2035. MXD provides a specific estimate of external pedestrian trips (vs. those that are captured within the study area) and estimates the change in pedestrian activity between existing and future conditions. The results of the MXD analysis show that the number of existing external pedestrian trips will increase by approximately 32% in the AM peak hour and 42% in the PM peak hour simply based on land use changes and implementation of the Master Plan. Since there are already continuous sidewalks through the project area, the changes to pedestrian infrastructure are expected to include wider sidewalks where feasible, improved pedestrian crossings, and the recommended installation of a traffic signal at 31st Street and 41st Street to enhance pedestrian access and walkability.

Using the MXD results to inform the projection of future pedestrian volumes along the corridor, a 1.5 growth factor was applied to existing pedestrian volumes which accounts for external pedestrian trips and internal pedestrian activity between the blocks. When considering both the pedestrian enhancements and the mixed-use nature of the future land use, it is anticipated that existing pedestrian volumes will effectively increase by more than 50% under buildout of the Master Plan. In addition to applying a 1.5 growth factor to existing pedestrian volumes, it is estimated that the change in land use and corridor improvements would also generate additional pedestrian traffic through and across the National Avenue corridor. Therefore, all pedestrian crossings that show minimal or no pedestrian activity under existing conditions will serve, at a minimum, 10 additional pedestrians in the AM peak hour and 15 pedestrians in the PM peak hour using the facility, which is reflective of the increased pedestrian activity under buildout conditions of the Master Plan. Due to the level of accuracy this projection provides, pedestrian volumes were summarized for the total intersection instead of by the individual movement.

Figure 3 displays the projected pedestrian volumes under buildout of the Master Plan.

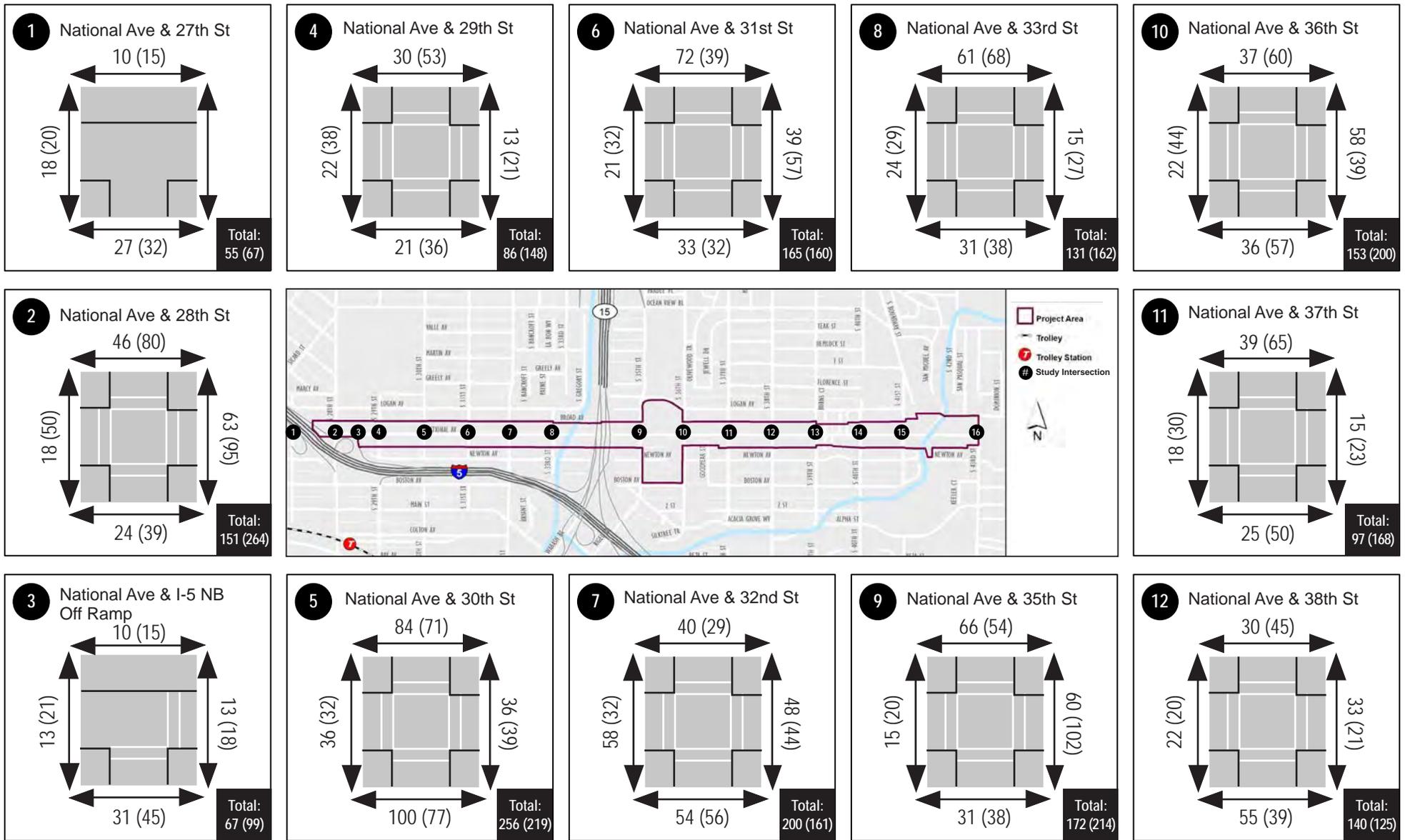


Figure 3: Future Pedestrian Peak Hour Volumes National Ave (Page 1 of 2)

XX (XX) AM(PM) Count Totals
 ←→ Intersection Leg
 ≡ Crosswalk

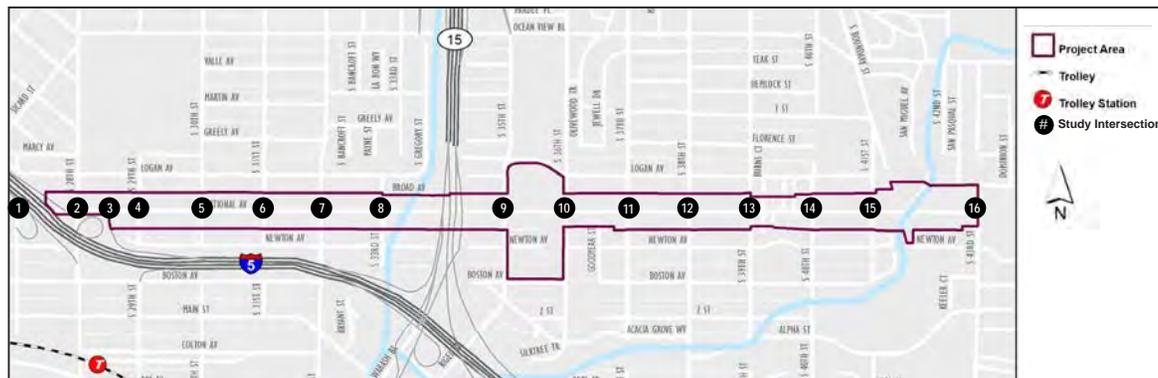
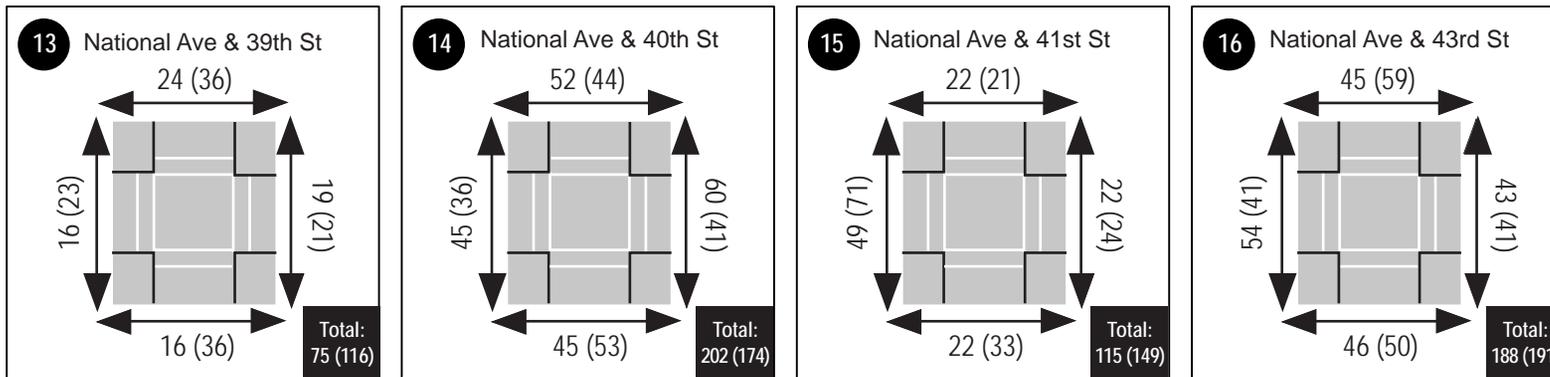
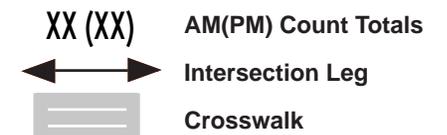


Figure 3: Future Pedestrian Peak Hour Volumes National Ave (Page 2 of 2)



BICYCLE VOLUMES

Similar to the projection of transit ridership and pedestrian volumes previously discussed, the MXD tool was used to estimate the increase in bicycle trips between existing and future conditions. MXD does not provide a specific estimate of bicycle trips, but the amount of growth projected for pedestrian trips was used as a proxy for increased bicycle usage. As noted in the previous section, the results of the MXD analysis show that the existing external pedestrian trips will increase by approximately 32% in the AM peak hour and 42% in the PM peak simply based on land use changes and implementation of the Master Plan. Based on these results, the projection of future bicycle volumes along the corridor was initially estimated by increasing existing bicycle volumes by 50% or applying a growth factor of 1.5.

In addition to applying a growth factor to existing bicycle volumes that would be generated by new uses in the corridor, it is assumed that the installation of dedicated bicycle infrastructure in the form of buffered Class II bike lanes in this corridor will generate new bicycle trips through and across National Avenue. Based on the projected growth and enhanced facilities, an additional 20 bicyclists in the AM peak hour and 25 bicyclists in the PM peak hour are anticipated in each direction of National Avenue. For each of the streets intersecting National Avenue in the project area, it is assumed that an additional 5 bicyclists and 10 bicyclists in the AM and PM peak hour, respectively, will cross National Avenue. **Figure 4** displays the projected bicycle volumes under buildout of the Master Plan.

This evaluation of future bicycle volumes displays the magnitude of bicycle ridership throughout the corridor and indicates key locations in which ridership is projected to be prevalent. These key locations should be the focus of any additional bicycle improvements such as the provision of bike racks. As the corridor develops and bicycle ridership within the study area increases, bicycle racks should be placed in areas with the highest demand. These areas may include transit stops and core commercial areas.

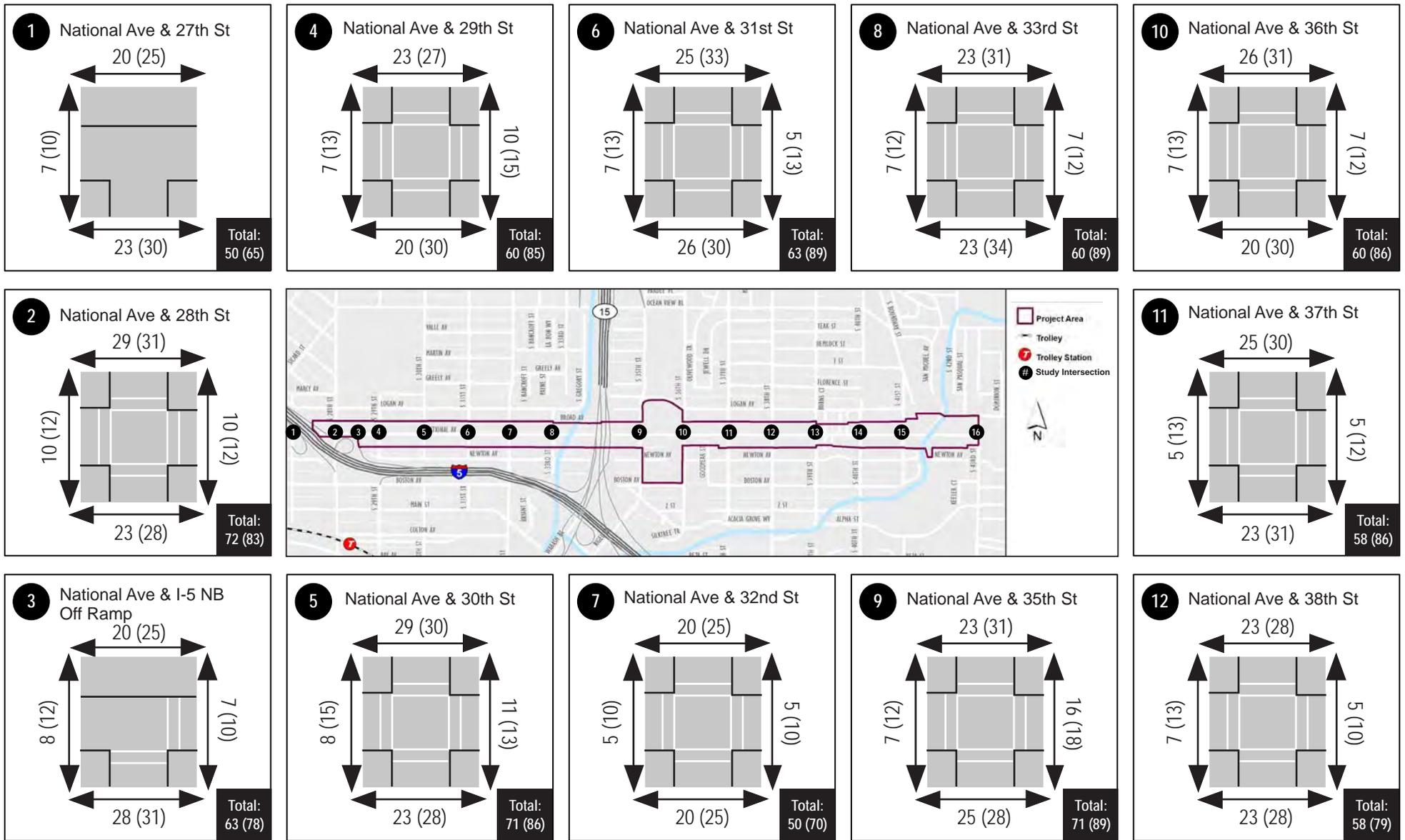


Figure 4: Future Bicycle Peak Hour Volumes National Ave (Page 1 of 2)

XX (XX) AM(PM) Count Totals
 ←→ Intersection Leg
 ▬▬▬ Crosswalk

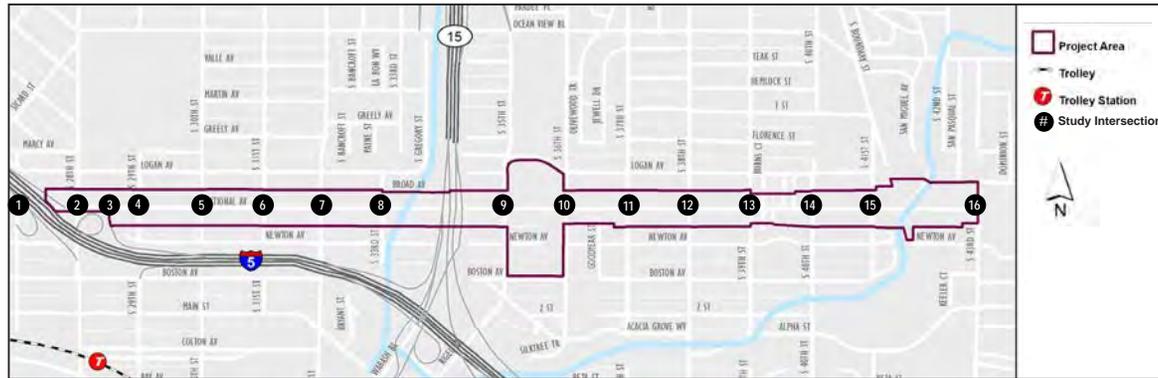
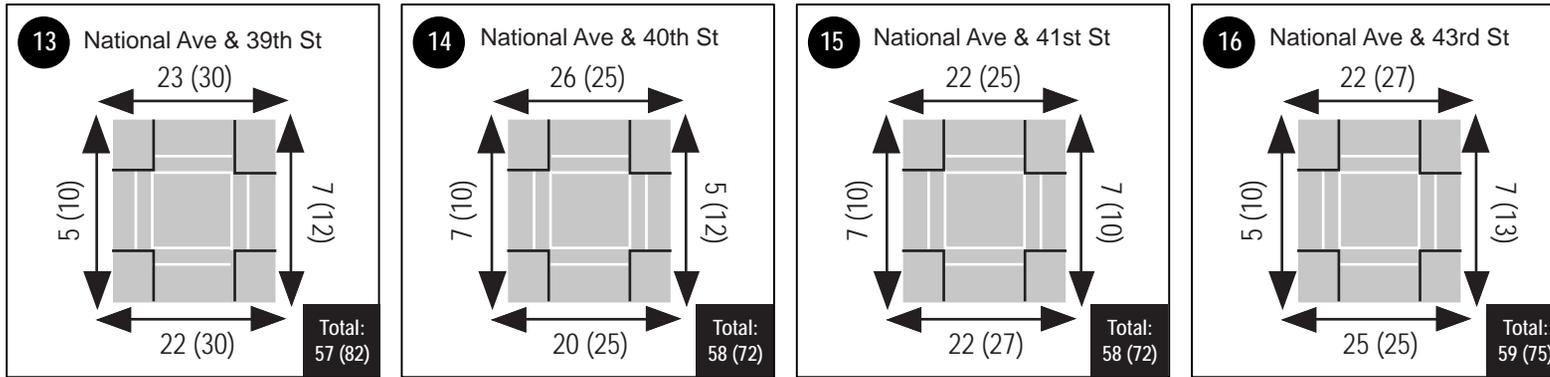
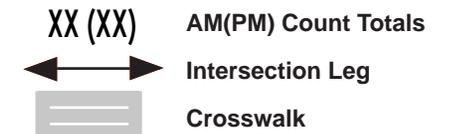


Figure 4: Future Bicycle Peak Hour Volumes National Ave (Page 2 of 2)



LEVEL OF SERVICE ANALYSIS

On September 30, 2008, the State of California approved Assembly Bill 1358 – The Complete Streets Act. This act required, commencing January 1, 2011, that the legislative body of a city or county, plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan.

METHODOLOGY

Various methodologies were used for the level of service (LOS) evaluation of the modes along the study corridor under buildout of the Master Plan. The respective analysis methodologies for each mode of travel are described in this section. In general, roadway and intersection LOS is based on the facility operations, while LOS evaluations for pedestrian, bicycle, and transit facilities are based on user perception of the traveling experience on the subject facilities.

AUTOMOBILE

Level of service (LOS) is a quantitative measure describing operational conditions within a traffic stream, and the motorist's and/or passenger's perception of operations. LOS is based on these conditions in terms of such factors as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. **Table 3** describes generalized definitions of the various LOS categories (A, best, through F, worst) as applied to roadway operations.

Table 3: Level of Service Definitions

LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 2000.

Roadway Segment LOS Volume Thresholds

Roadway segment LOS volume thresholds provide the basis for evaluation of arterial roadway segment performance. The analysis of roadway segment LOS is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes. **Table 4** presents the roadway segment capacity and LOS standards utilized to analyze arterial roadways. This table was developed based on similar standards currently utilized by jurisdictions throughout the San Diego region, and has been approved for use in the City of San Diego.

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical and operational attributes. Typically, the performance and LOS of a roadway segment is heavily influenced by the ability of the arterial intersections to accommodate peak hour volumes. For the purposes of this traffic analysis, LOS D is considered acceptable for Circulation Element roadway segments.

Table 4: City of San Diego Circulation Element Roadway Classifications and LOS Standards

Roadway Functional Classification	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway (6-lane)	< 30,000	< 42,000	< 60,000	< 70,000	< 80,000
Prime Arterial (6-lane)	< 25,000	< 35,000	< 50,000	< 55,000	< 60,000
Major Arterial (6-lane, divided)	< 20,000	< 28,000	< 40,000	< 45,000	< 50,000
Major Arterial (4-lane, divided)	< 15,000	< 21,000	< 30,000	< 35,000	< 40,000
Secondary Arterial/Collector (4-lane w/ center lane)	< 10,000	< 14,000	< 20,000	< 25,000	< 30,000
Collector (4-lane w/o center lane)	< 5,000	< 7,000	< 10,000	< 13,000	< 15,000
Collector (2-lane w/continuous left-turn lane)	< 5,000	< 7,000	< 10,000	< 13,000	< 15,000
Collector (2-lane no fronting property)	< 4,000	< 5,500	< 7,500	< 9,000	< 10,000
Collector (2-lane w/commercial fronting)	< 2,500	< 3,500	< 5,000	< 6,500	< 8,000
Collector (2-lane multi-family)	< 2,500	< 3,500	< 5,000	< 6,500	< 8,000
Sub-Collector (2-lane single-family)	-	-	< 2,200	-	-

Source: SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region, February 2004

Intersection Level of Service Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analysis, including both signalized and unsignalized intersections.

Signalized Intersection Analysis

The analysis of signalized intersections utilized the operational analysis procedure as outlined in the *2000 Highway Capacity Manual (HCM), Transportation Research Board Special Report 209*. This method defines LOS in terms of delay, or more specifically, average control delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption and lost travel time. This technique uses 1,900 vehicles per hour per lane (VPHPL) as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percentage trucks) and shared lane movements (i.e., through and right-turn movements originating from the same lane). The LOS criteria used for this technique are described in **Table 5**. The computerized analysis of intersection operations was performed utilizing the *SYNCHRO 8.0* traffic analysis software.

Table 5: Signalized Intersection Level of Service Criteria

Average Control Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
<10.0	<i>LOS A</i> describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
10.1 – 20.0	<i>LOS B</i> describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for <i>LOS A</i> , causing higher levels of average delay.
20.1 – 35.0	<i>LOS C</i> describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
35.1 – 55.0	<i>LOS D</i> describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
55.1 – 80.0	<i>LOS E</i> is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80.0	<i>LOS F</i> describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the <i>LOS D</i> capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Highway Capacity Manual 2000, TRB Special Report 209.

Unsignalized Intersection Analysis

Unsignalized intersections, including two-way and all-way stop controlled intersections were analyzed using the 2000 Highway Capacity Manual (Section 10) unsignalized intersection analysis methodology. The *SYNCHRO 8.0* Traffic Analysis software supports this methodology and was utilized to produce LOS results. The LOS for a two-way stop controlled (TWSC) intersection is determined by the computed control delay and is defined for each minor movement. **Table 6** summarizes the LOS criteria for unsignalized intersections.

The City of San Diego considers LOS D or better during the AM and PM peak hours to be acceptable for intersection LOS.

Table 6: Unsignalized Intersection Level of Service Criteria

Average Control Delay (sec/veh)	Level of Service (LOS)
≤10	A
>10 and ≤15	B
>15 and ≤25	C
>25 and ≤35	D
>35 and ≤50	E
>50	F

Source: Highway Capacity Manual 2000, TRB Special Report 209.

MULTI-MODAL LEVEL OF SERVICE

Multi-Modal Level of Service (MMLOS) is a method for assessing how well an urban street serves the needs of all non-automobile users (pedestrians, transit passengers, motorists and bicyclists). The multi-modal LOS analysis method used herein for transit, bicycle and pedestrian was required by the City of San Diego and based on research sponsored by the Transportation Research Board (TRB), through the National Cooperative Highway Research Program (NCHRP) Project 3-70, *Multimodal Level of Service Analysis for Urban Streets*. The method that NCHRP 3-70 developed evaluates, by mode, the feel, comfort, accessibility and safety of an urban street based upon the design, control and operations of the roadway. MMLOS uses Quality of Service (QOS) as an indicator of the traveler’s perceived degree of satisfaction with the traveling experience provided within the urban street.

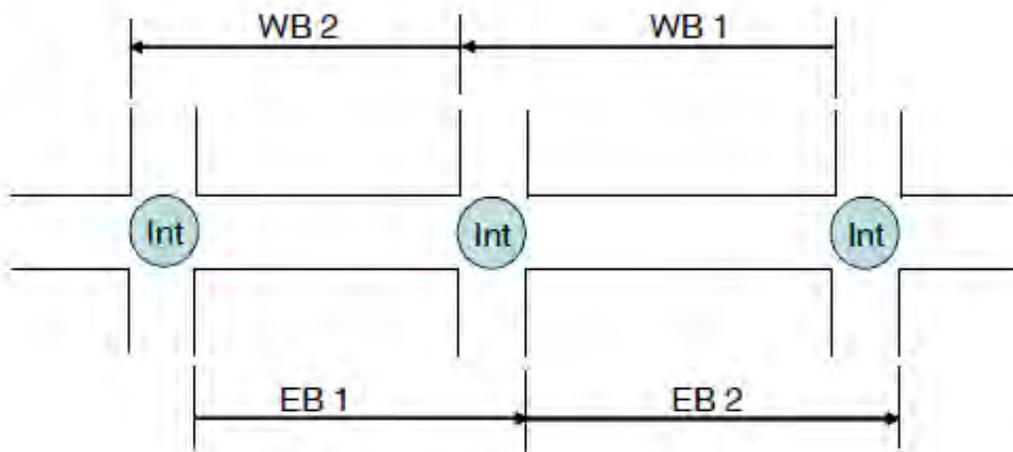
The computerized analysis of MMLOS for all modes was performed utilizing the *Complete Streets LOS, A Multimodal Level of Service Toolkit, Version 3* analysis software developed by Dowling Associates, Inc. This software outputs numerical ratings of the mode of travel, and these rating are then converted into the traditional A-F letter grade system. *Complete Streets LOS* (CSLOS) uses methodologies outlined in the *2010 Highway Capacity Manual (HCM)* to simultaneously determine the LOS for each of the four primary modes along a street: auto, transit, pedestrian, and bicycle. **Table 7** displays the LOS letter grade numerical equivalents for pedestrian, bicycle and transit facilities.

Table 7: Multi-Modal LOS Letter Grade Numerical Equivalents

LOS Model Outputs	LOS Letter Grade
Model \leq 2.00	A
2.00 < Model \leq 2.75	B
2.75 < Model \leq 3.50	C
3.50 < Model \leq 4.25	D
4.25 < Model \leq 5.00	E
Model > 5.00	F

Source: Transportation Research Board NCHRP Project 3-70.

Transit, bicycle, and pedestrian LOS analysis were performed for the National Avenue study area. The corridor was divided into analysis segments, with each **segment** consisting of a length of street (link) plus the downstream intersection at the end of the link. Cross section measurements of a segment (i.e. widths for travel lanes, on-street parking, buffers, and medians) were taken at locations that predominately reflected approximately 75% of a segment’s characteristics. In most cases, such segment characteristics were represented and measured at the center of the segment length. An **intersection** is any point on the street where through traffic is subject to signal control, stop-sign control, or yield-sign control.



The sub-sections below provide a more detailed description of the specific analysis methodologies and data inputs for each mode.

Transit

The transit LOS is based on a combination of the access experience, the waiting experience, and the ride experience. The access experience is represented by the pedestrian LOS score (to be discussed later in this section) for pedestrian access to bus stops in the direction of travel along the street. The waiting and riding experiences are combined into a transit wait/ride score. The transit wait/ride score is a function of the average headway between transit vehicles and the perceived travel time.

The following six variables are used to determine the transit LOS:

- Frequency of service
- Mean speed
- Reliability of service
- Load factors
- Quality of pedestrian access to transit stops
- Transit stop amenities

Bicycle

The bicycle LOS is a weighted combination of the bicyclists' experiences at intersections and on street links in between the intersections. Bicycle LOS is a function of the following five variables:

- Lateral separation between bicycles and vehicular traffic
- Speed and makeup of the vehicular traffic
- Pavement conditions
- Directional vehicular traffic volumes
- Intersection crossing distance

Pedestrian

The pedestrian LOS is a measure of the pedestrians' experiences walking along the roadway/sidewalk on the street segment in between the intersections. Pedestrian LOS is a function of the following number of variables:

- Lateral separation between pedestrians and vehicular traffic
- Width of sidewalk
- Speed and makeup of the vehicular traffic
- Difficulty of crossing arterial
- Directional vehicular traffic volumes
- Right-turn on red
- Left-turn during "Walk" phase
- Delay waiting to cross at signal
- Intersection crossing distance
- Cross-street vehicular traffic volume and speed
- Pedestrian density

LEVEL OF SERVICE EVALUATION

The projected MMLOS analysis results under buildout conditions of the Master Plan are documented below.

ROADWAY LEVEL OF SERVICE

Table 8 displays the LOS analysis results for the key project area roadway segments under both existing conditions and buildout of the Master Plan. As shown in the table, all of the roadway segments are projected to operate at unacceptable levels (LOS F). The worsening of roadway segment LOS under buildout conditions of the Master Plan is primarily caused by the removal of the center left turn lane that reduces the LOS D threshold, coupled with the increase in future ADT volumes. While these operations appear poor, daily volumes and roadway thresholds do not take into consideration distribution of traffic through the day, operations of the signals or traffic flow along the corridor. Therefore, intersection operating conditions are a more effective measurement of operating conditions as they represent the true capacity constraints and traffic flow along the roadway system. The results of the roadway segment evaluation should therefore be reviewed in coordination with the intersection analysis in the next section.

Table 8: Existing and Future Roadway Segment LOS Results

National Avenue Roadway Segment	Existing Conditions				Future Conditions			
	Cross-Section	Average Daily Traffic (ADT)	LOS D Threshold	LOS	Cross-Section	Average Daily Traffic (ADT)	LOS D Threshold	LOS
27 th Street to 28 th Street ¹	4-Ln	9,707	13,000	C	3-Ln	10,100	9,000 ³	F²
28 th Street to I-5 NB Ramps ¹	2-Ln w/ raised median	18,341	13,000	F²	2-Ln w/ raised median	19,400 ⁴	13,000	F²
I-5 NB Ramps to 30 th Street ¹	2-Ln w/TWLTL	10,020	13,000	C	2-Ln, no fronting property	13,300	9,000	F²
30 th Street to 32 nd Street	2-Ln w/TWLTL	10,945	13,000	C	2-Ln, no fronting property	11,800	9,000	F²
32 nd Street to 35 th Street	2-Ln w/TWLTL	10,375	13,000	C	2-Ln, no fronting property	13,450	9,000	F²
35 th Street to 38 th Street	2-Ln w/TWLTL	11,235	13,000	C	2-Ln, no fronting property	12,600	9,000	F²
38 th Street to 40 th Street	2-Ln w/TWLTL	10,572	13,000	C	2-Ln, no fronting property	11,900	9,000	F²
40 th Street to 41 st Street	2-Ln w/TWLTL	10,750	13,000	C	2-Ln, no fronting property	11,300	9,000	F²
41 st Street to 43 rd Street	2-Ln w/ raised median	11,772	13,000	C	2-Ln	12,400	9,000	F²

1. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject to review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.
3. Conservatively, assuming 2-lane with no fronting property LOS D threshold for the 3-lane segment along National Avenue between 27th Street and 28th Street. The poor roadway segment LOS at this location is primarily reflective of the 1-lane westbound operations. The eastbound portion of the segment has 2-lanes and with more capacity could possibly experience better roadway LOS.
4. High future ADT volumes on National Avenue between 28th Street and I-5 NB Ramps are due to the auxiliary lane that serves the freeway and primarily contributes to the poor LOS conditions at this segment. While the roadway segment evaluation is one indication of possible operational issues in a corridor, it is also important to review the results of the intersection analysis, where intersections typically represent the constraints of the roadway system.

Source: Fehr & Peers, February 2014

INTERSECTION LEVEL OF SERVICE

Table 9 displays intersection LOS and average vehicle delay results for the key intersections under the buildout of the Master Plan. The existing intersection LOS is also displayed to show the projected change between the buildout of the Master Plan and current operations.

Table 9: Existing and Future Intersection LOS Results

National Avenue Intersection	Existing			Future				
	LOS			AM Peak Hour		PM Peak Hour		
	Control	AM	PM	Control	Average Delay (sec)	LOS	Average Delay (sec)	LOS
1. @ 27 th Street ^{1,2}	SSSC ³	A	B	SSSC	10.6	B	16.4	C
2. @ 28 th Street ²	signal	C	C	signal	41.7	D	59.7	E⁴
3. @ I-5 NB Off Ramp ²	signal	B	B	signal	10.6	B	10.9	B
4. @ 29 th Street ¹	SSSC	C	C	SSSC	24.9	C	30.2	D
5. @ 30 th Street	signal	A	B	signal	11.3	B	11.1	B
6. @ 31 st Street ^{1,5}	SSSC	C	C	signal	4.0	A	7	A
7. @ 32 nd Street	signal	A	A	signal	7.0	A	10.4	B
8. @ 33 rd Street ¹	SSSC	C	C	SSSC	44.8	E⁴	62.3	F⁴
9. @ 35 th Street	signal	A	A	signal	10.2	B	11.3	B
10. @ 36 th Street	signal	B	B	signal	18.8	B	25.4	C
11. @ 37 th Street ¹	SSSC	D	D	SSSC	42.7	E⁴	140.8	F⁴
12. @ 38 th Street	signal	A	B	signal	10.1	B	12.3	B
13. @ 39 th Street ¹	SSSC	C	D	SSSC	21.5	C	71.7	F⁴
14. @ 40 th Street ¹	SSSC	C	D	SSSC	30.9	D	40.8	E⁴
15. @ 41 st Street ^{1,5}	SSSC	C	E⁴	signal	5.2	A	5.3	A
16. @ 43 rd Street	signal	B	B	signal	12.4	B	11.9	B

1. For side-street stop controlled intersections, the delay shown is the worst delay experienced by any of the approaches. In the AM peak hour, the northbound approach experienced the worst approach delay for the side-street stop controlled intersections, with the exception of National Avenue at 33rd Street and 39th Street which have the southbound approach experiencing the worst delay. In the PM peak hour, the northbound approach experienced the worst approach delay for the side-street stop controlled intersections, with the exception of National Avenue at 29th Street, 33rd Street, and 39th Street which have the southbound approach experiencing the worst delay.
2. Portions or the entire intersection area is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
3. SSSC indicates side-street stop controlled intersections.
4. Bold letter indicates unacceptable LOS E or F.
5. Under future buildout conditions, it assumed that the intersection will be signalized. The need for signalization at this location has already been identified as a transportation need by the City of San Diego.

Source: Fehr & Peers, February 2014

As shown in **Table 9**, 11 of the 16 study intersections are projected to operate at LOS D or better in both the AM and PM peak hours. For the five remaining locations, their operational conditions are projected to worsen under the buildout of the Master Plan with LOS E or LOS F operations during one or both peak hours:

2. 28th Street & National Avenue (LOS E - PM)
8. 33rd Street & National Avenue (LOS E - AM and LOS F - PM)
11. 37th Street & National Avenue (LOS E - AM and LOS F - PM)
13. 39th Street & National Avenue (LOS F - PM)
14. 40th Street & National Avenue (LOS E - PM)

28th Street and National Avenue is a signalized intersection. The intersection is projected to operate at LOS F if no physical and operational changes are made under buildout of the Master Plan. However, intersection operating conditions can be improved at this location if the following improvements are implemented: restripe the northbound and southbound approaches to provide a dedicated left-turn and a through/right lane. The new northbound and southbound left-turns should operate with protected left turn phases. With the recommended striping and signal modifications at this intersection, the intersection's PM peak hour condition will improve from a LOS F to LOS E, but still operate at an unacceptable level in the PM peak hour due to the increase of volumes at critical movements with the implementation of the Master Plan. The change in lane re-striping could be accommodated within the existing curb to curb width and no widening would be needed.

All of the other intersections forecast to operate at failing conditions (LOS E or LOS F) in the future are side-street stop controlled. The poor intersection operating conditions are due to delay imposed on vehicles on the side streets waiting to turn left or right onto National Avenue. The increase in eastbound and westbound through traffic forecast in year 2035 results in limited gap opportunities for vehicles on the stop-controlled approach(es).

Intersection LOS calculation worksheets are provided in **Appendix F**.

Potential Intersection Modifications

To improve the poor conditions experienced at the four side-street stop controlled intersections operating at an LOS E or LOS F in at least one of the peak hours, all-way stop control or traffic signals could be installed at each applicable location. Although the change in control will improve the gap opportunities for vehicles on the current side street approaches, all-way stop control would reduce the traffic flow along National Avenue and reduce the overall capacity of the corridor. In addition, the use of

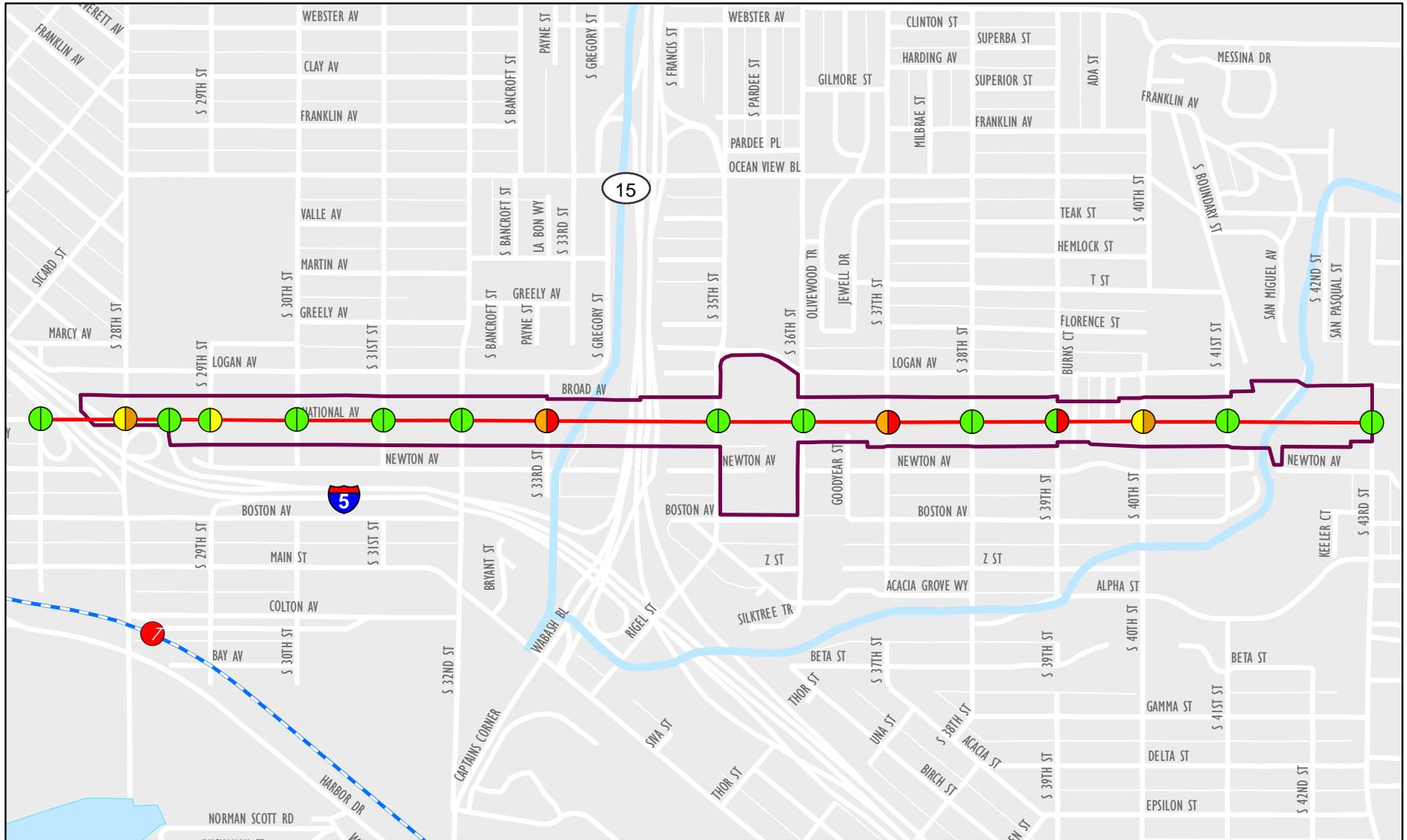
alternating all-way stop control and traffic signals is not recommended from a driver expectation perspective. Thus, all-way stop control is not recommended at any of the intersections on National Avenue as part of the Master Plan.

The volume of traffic on the side streets that will experience LOS E or F conditions during the AM or PM peak hours will be low relative to the overall traffic volumes on National Avenue. With approach volumes ranging from 4 to 154 vehicles in the peak hour, less than one or two vehicles are expected queue on the side streets at any given time with delays of up to 2.4 minutes (141 seconds) to turn onto the corridor. Drivers from the side streets will likely choose an alternate path when delays become excessive by either accessing National Avenue at a signalized intersection or electing to turn right rather than left to avoid longer delays. The grid network of which National Avenue is a part provides ample opportunities for drivers to make decisions to reduce their travel time and avoid unacceptable delays. Since the side street volumes are low, the potential impacts associated with diverted traffic are expected to be minimal and isolated to streets accessing and immediately parallel to National Avenue. It is also important to note that overall traffic volumes and associated delays will be lower during all other hours of the day and that congestion during peak hours in an active corridor is one indicator of a vibrant community.

Figure 5 displays the future LOS for both the Project Area roadway segments and intersections.

Figure 5: Future Roadway and Intersection LOS
National Ave

February 2014



Roadway Segment Level of Service
 A - C
 D
 E
 F

Intersection Level of Service
 AM/PM

Blue Line Trolley
 Project Area
 Trolley Station

FEHR & PEERS
 0 0.05 0.1 0.2 Miles
 N

Source:
 Fehr & Peers (2014)

TRANSIT LEVEL OF SERVICE

Table 10 and **Figure 6** displays the projected Transit AM peak hour LOS along the National Avenue study corridor under buildout of the Master Plan. The existing Transit LOS is also displayed to show the change from current conditions and the Master Plan. MMLoS calculation worksheets are provided in **Appendix G**.

Table 10: Existing and Future Transit AM Peak Hour LOS Results

<i>National Avenue Segment</i>	<i>Existing</i>		<i>Future</i>			
	<i>LOS</i>		<i>Eastbound (EB)</i>		<i>Westbound (WB)</i>	
	<i>EB</i>	<i>WB</i>	<i>LOS Score</i>	<i>Transit LOS</i>	<i>LOS Score</i>	<i>Transit LOS</i>
27 th Street to 28 th Street ¹	D	C	3.49	C	2.92	C
28 th Street to I-5 NB Ramps ¹	C	D	3.15	C	3.69	D
I-5 NB Ramps to 29 th Street ¹	D	C	3.79	D	2.85	C
29 th Street to 30 th Street	C	D	2.81	C	3.52	D
30 th Street to 31 st Street	C	B	3.35	C	2.50	B
31 st Street to 32 nd Street	C	C	2.84	C	3.16	C
32 nd Street to 33 rd Street	D	C	3.41	C	3.08	C
33 rd Street to 35 th Street	D	B	3.38	C	2.41	B
35 th Street to 36 th Street	D	C	3.34	C	3.01	C
36 th Street to 37 th Street	C	C	2.76	C	2.97	C
37 th Street to 38 th Street	C	C	3.21	C	2.73	B
38 th Street to 39 th Street	C	B	2.76	C	2.43	B
39 th Street to 40 th Street	C	B	3.00	C	2.38	B
40 th Street to 41 st Street	C	C	3.24	C	2.65	B
41 st Street to 43 rd Street	C	C	2.78	C	3.03	C

1. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers, February 2014

Table 11 and **Figure 7** each display the projected transit LOS in the project area under buildout of the Master Plan. The existing Transit LOS is also displayed to show the change from current conditions and the Master Plan. MMLoS calculation worksheets are provided in **Appendix G**.

Table 11: Existing and Future Transit PM Peak Hour LOS Results

<i>National Avenue Segment</i>	<i>Existing</i>		<i>Future</i>			
	<i>LOS</i>		<i>Eastbound (EB)</i>		<i>Westbound (WB)</i>	
	<i>EB</i>	<i>WB</i>	<i>LOS Score</i>	<i>Transit LOS</i>	<i>LOS Score</i>	<i>Transit LOS</i>
27 th Street to 28 th Street ¹	C	C	3.56	D	2.86	C
28 th Street to I-5 NB Ramps ¹	B	D	3.22	C	3.55	D
I-5 NB Ramps to 29 th Street ¹	C	C	3.93	D	2.74	B
29 th Street to 30 th Street	B	D	2.93	C	3.43	C
30 th Street to 31 st Street	C	C	3.45	C	2.43	B
31 st Street to 32 nd Street	B	C	2.98	C	3.07	C
32 nd Street to 33 rd Street	C	C	3.53	D	2.99	C
33 rd Street to 35 th Street	C	C	3.49	C	2.3	B
35 th Street to 36 th Street	C	C	3.52	D	2.86	C
36 th Street to 37 th Street	B	C	2.91	C	2.79	C
37 th Street to 38 th Street	C	C	3.36	C	2.63	B
38 th Street to 39 th Street	B	C	2.92	C	2.34	B
39 th Street to 40 th Street	B	C	3.12	C	2.32	B
40 th Street to 41 st Street	B	C	3.35	C	2.59	B
41 st Street to 43 rd Street	B	C	2.86	C	2.94	C

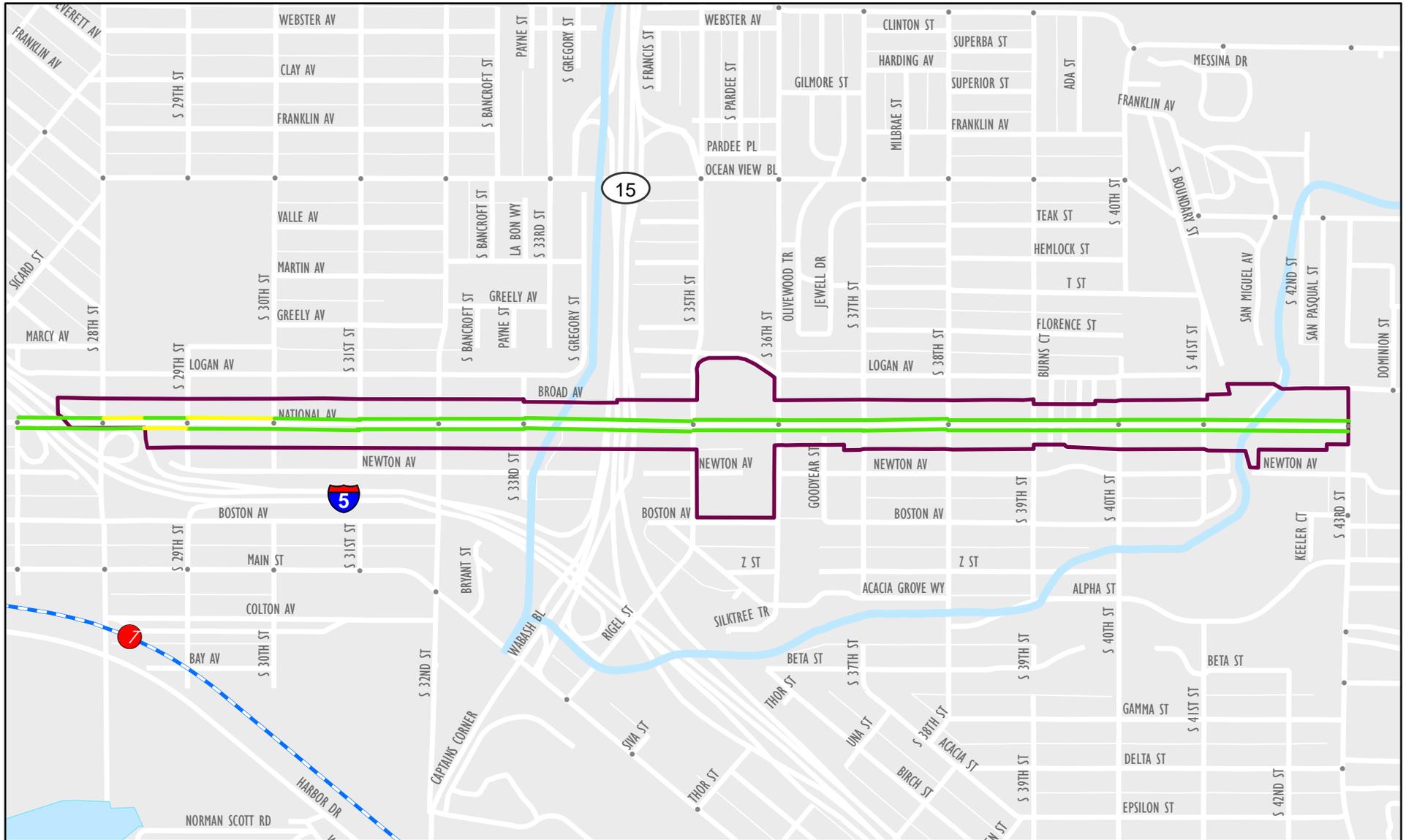
6. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
7. Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers, February 2014

The CSLOS program used to calculate the transit LOS incorporates bus stop information within a segment to estimate the transit LOS. As shown, the National Avenue Corridor provides good to fair transit service (LOS D or better) to transit patrons traveling both directions during both the AM and PM peak hour. The improved Transit LOS along some of the segments is reflective of the addition of standard bus amenities.

Figure 6: Future Transit LOS (AM Peak)
National Ave

February 2014



Transit Level of Service

- A - C
- D
- E
- F

Blue Line Trolley

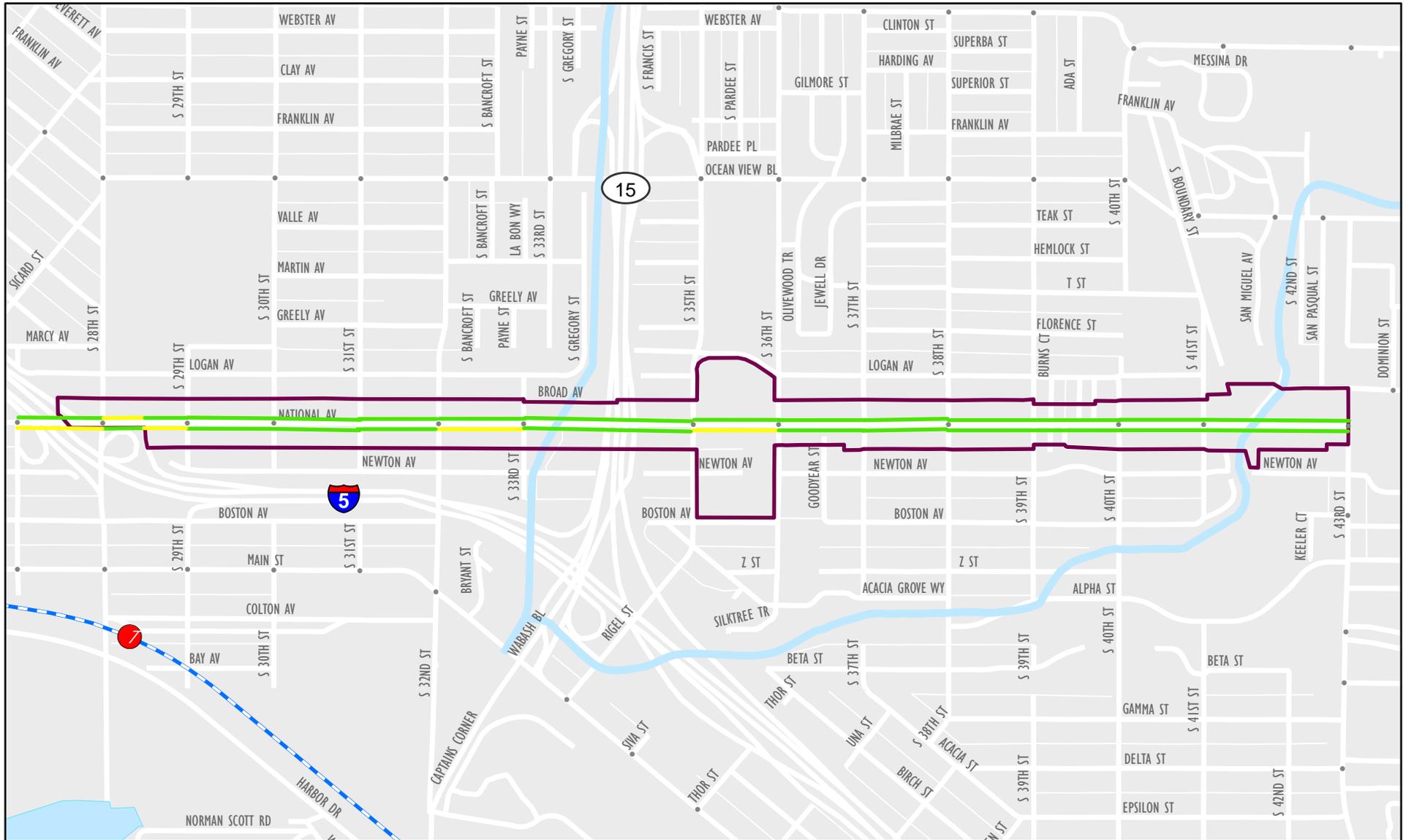
- Project Area
- ⊘ Trolley Station
- Bus Stop



Source:
Fehr & Peers (2014)

Figure 7: Future Transit LOS (PM Peak)
National Ave

February 2014



Transit Level of Service

- A - C
- D
- E
- F

Blue Line Trolley

- Project Area
- ⊘ Trolley Station
- Bus Stop



Source:
Fehr & Peers (2014)

BICYCLE LEVEL OF SERVICE

Table 12 and **Table 13** display Bicycle LOS in the project area under buildout conditions of the Master Plan during the AM peak hour and PM peak hour, respectively. **Figure 8** and **Figure 9** illustrate the Future Bicycle LOS for each of peak hours along the National Avenue corridor. The existing Bicycle LOS is also displayed in each table to show the projected change between current conditions and the Master Plan. MMLOS calculation worksheets are provided in **Appendix H**.

Table 12: Existing and Future Bicycle AM Peak Hour LOS Results

<i>National Avenue Segment</i>	<i>Existing</i>		<i>Future</i>			
	<i>LOS</i>		<i>Eastbound (EB)</i>		<i>Westbound (WB)</i>	
	<i>EB</i>	<i>WB</i>	<i>LOS Score</i>	<i>Bicycle LOS</i>	<i>LOS Score</i>	<i>Bicycle LOS</i>
27 th Street to 28 th Street ¹	D	D	3.17	C	3.42	C
28 th Street to I-5 NB Ramps ¹	D	D	3.43	C	3.86	D
I-5 NB Ramps to 29 th Street ¹	C	D	3.34	C	2.91	C
29 th Street to 30 th Street	D	C	3.65	D	3.42	C
30 th Street to 31 st Street	D	D	3.35	C	3.75	D
31 st Street to 32 nd Street	D	D	3.73	D	3.41	C
32 nd Street to 33 rd Street	C	D	3.39	C	3.45	C
33 rd Street to 35 th Street	C	C	3.39	C	3.43	C
35 th Street to 36 th Street	D	D	3.64	D	4.03	D
36 th Street to 37 th Street	C	D	3.34	C	3.48	C
37 th Street to 38 th Street	D	D	3.42	C	3.42	C
38 th Street to 39 th Street	D	D	3.61	D	3.45	C
39 th Street to 40 th Street	D	D	3.35	C	3.41	C
40 th Street to 41 st Street	D	D	3.41	C	3.41	C
41 st Street to 43 rd Street	C	C	3.46	C	3.42	C

1. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers, February 2014

Table 13: Existing and Future Bicycle PM Peak Hour LOS Results

<i>National Avenue Segment</i>	<i>Existing</i>		<i>Future</i>			
	<i>LOS</i>		<i>Eastbound (EB)</i>		<i>Westbound (WB)</i>	
	<i>EB</i>	<i>WB</i>	<i>LOS Score</i>	<i>Bicycle LOS</i>	<i>LOS Score</i>	<i>Bicycle LOS</i>
27 th Street to 28 th Street ¹	D	D	3.30	C	3.24	C
28 th Street to I-5 NB Ramps ¹	E ¹	D	3.55	D	3.73	D
I-5 NB Ramps to 29 th Street ¹	D	D	3.41	C	2.83	C
29 th Street to 30 th Street	D	C	3.74	D	3.37	C
30 th Street to 31 st Street	D	D	3.41	C	3.70	D
31 st Street to 32 nd Street	D	C	3.82	D	3.37	C
32 nd Street to 33 rd Street	D	D	3.43	C	3.37	C
33 rd Street to 35 th Street	C	C	3.48	C	3.38	C
35 th Street to 36 th Street	D	D	3.76	D	3.97	D
36 th Street to 37 th Street	D	D	3.42	C	3.39	C
37 th Street to 38 th Street	D	D	3.53	D	3.38	C
38 th Street to 39 th Street	D	D	3.69	D	3.38	C
39 th Street to 40 th Street	D	C	3.41	C	3.39	C
40 th Street to 41 st Street	D	D	3.47	C	3.38	C
41 st Street to 43 rd Street	D	C	3.52	D	3.38	C

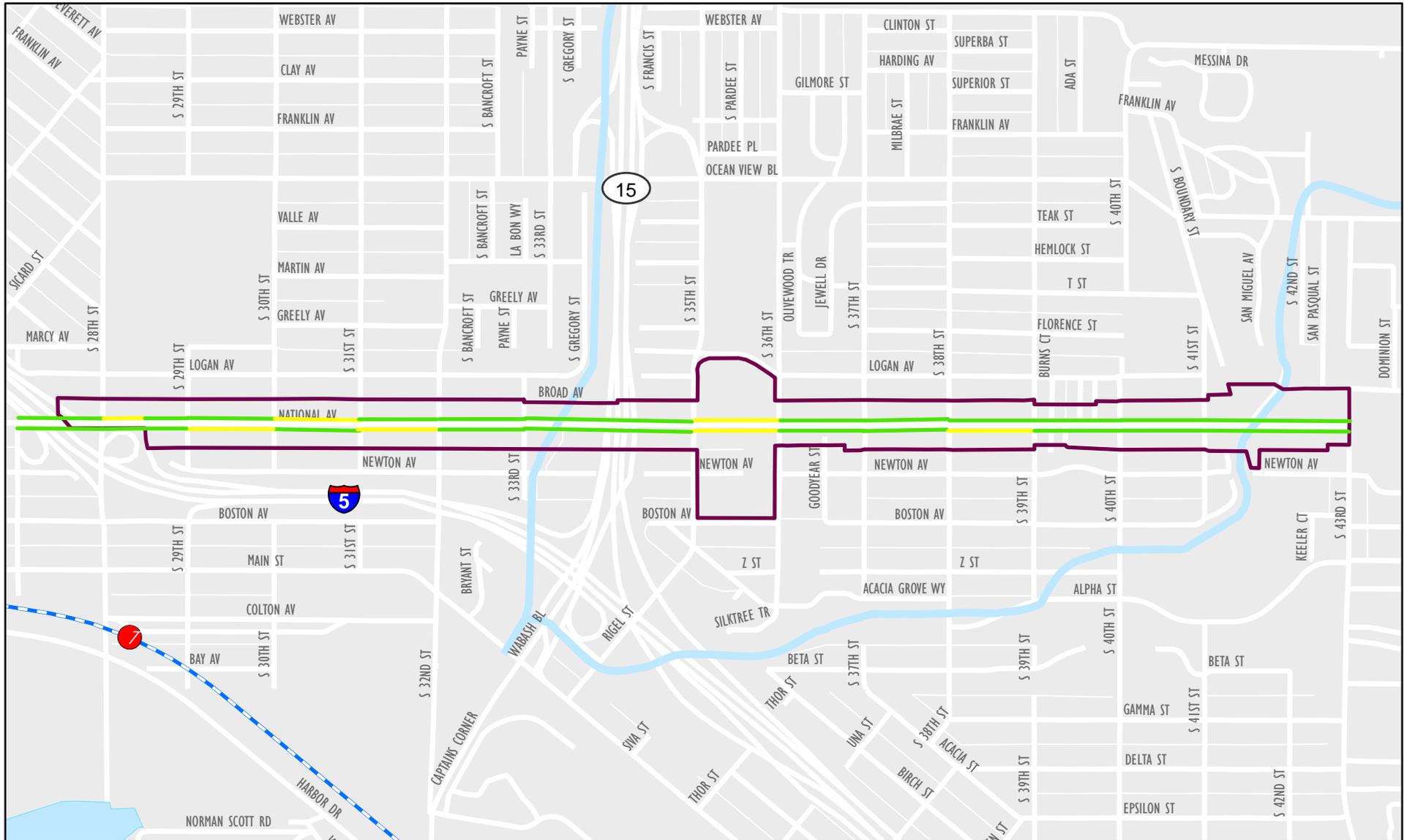
1. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers, February 2014

As shown in the tables, future bicyclists will generally experience fair to good LOS (C or D) when riding along segments of National Avenue during both the AM and PM peak hours. Implementation of designated bicycle facilities does improve the LOS score between existing and future conditions; however the limited improvement reflected in the bicycle LOS for the buildout of the Master Plan is caused by the following factors that influence the CSLOS calculation: the relatively high directional vehicular traffic and speed and the potential of being “doored” due to the presence of on-street parking adjacent to the bicycle lane. An alternative to the proposed buffered bike lane striping shown on the mobility diagrams is to stripe the buffers between the parked vehicles and the bike lane (instead of adjacent to the travel lane). This alternative striping is recommended on streets with significant parking activity such as commercial corridors. The final striping plan for each block will be determined by the City of San Diego.

Figure 8: Future Bicycle LOS (AM Peak)
National Ave

February 2014



Bicycle Level of Service

- A - C
- D
- E
- F

Blue Line Trolley

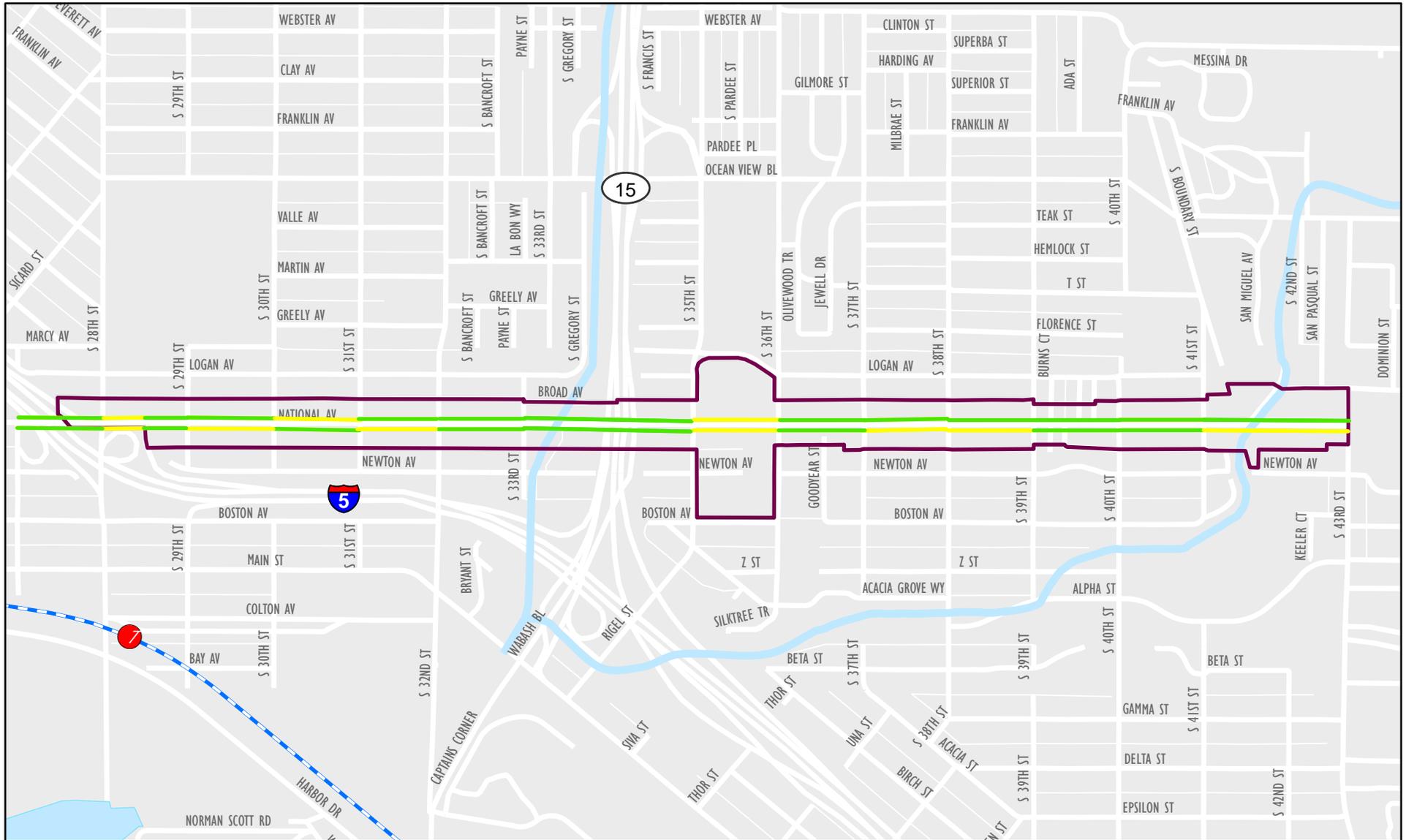
- Project Area
- ⊘ Trolley Station



Source:
Fehr & Peers (2014)

Figure 9: Future Bicycle LOS (PM Peak)
National Ave

February 2014



Bicycle Level of Service

- A - C
- D
- E
- F

Blue Line Trolley

- Project Area
- Trolley Station



Source:
Fehr & Peers (2014)

PEDESTRIAN LEVEL OF SERVICE

Table 14 and **Table 15** display Pedestrian Segment LOS in the project area under buildout conditions of the Master Plan during the AM peak hour and PM peak hour, respectively. **Figure 10** and **Figure 11** illustrate the Future Pedestrian LOS for each of peak hours along the National Avenue corridor. The existing Pedestrian LOS is also displayed in each table to show the projected change between current conditions and the Master Plan. MMLOS calculation worksheets are provided in **Appendix I**.

Table 14: Existing and Future Pedestrian AM Peak Hour LOS Results

<i>National Avenue Segment</i>	<i>Existing</i>		<i>Future</i>			
	<i>LOS</i>		<i>Eastbound (EB)</i>		<i>Westbound (WB)</i>	
	<i>EB</i>	<i>WB</i>	<i>LOS Score</i>	<i>Pedestrian LOS</i>	<i>LOS Score</i>	<i>Pedestrian LOS</i>
27 th Street to 28 th Street ¹	C	B	2.72	B	2.76	C
28 th Street to I-5 NB Ramps ¹	B	C	2.76	C	2.89	C
I-5 NB Ramps to 29 th Street ¹	B	B	2.50	B	2.87	C
29 th Street to 30 th Street	B	C	2.54	B	2.67	B
30 th Street to 31 st Street	B	B	2.35	B	2.78	C
31 st Street to 32 nd Street	A	C	2.78	C	2.65	B
32 nd Street to 33 rd Street	B	B	2.48	B	3.02	C
33 rd Street to 35 th Street	B	C	2.82	C	2.70	B
35 th Street to 36 th Street	B	B	2.79	C	3.13	C
36 th Street to 37 th Street	B	B	2.33	B	3.17	C
37 th Street to 38 th Street	B	C	2.76	C	2.72	B
38 th Street to 39 th Street	B	B	2.32	B	3.03	C
39 th Street to 40 th Street	B	C	2.34	B	2.64	B
40 th Street to 41 st Street	B	C	2.36	B	2.61	B
41 st Street to 43 rd Street	B	C	3.01	C	2.64	B

1. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers, February 2014

Table 15: Existing and Future Pedestrian PM Peak Hour LOS Results

<i>National Avenue Segment</i>	<i>Existing</i>		<i>Future</i>			
	<i>LOS</i>		<i>Eastbound (EB)</i>		<i>Westbound (WB)</i>	
	<i>EB</i>	<i>WB</i>	<i>LOS Score</i>	<i>Pedestrian LOS</i>	<i>LOS Score</i>	<i>Pedestrian LOS</i>
27 th Street to 28 th Street ¹	C	B	2.83	C	2.61	B
28 th Street to I-5 NB Ramps ¹	B	B	2.85	C	2.74	B
I-5 NB Ramps to 29 th Street ¹	C	B	2.85	C	2.71	B
29 th Street to 30 th Street	B	B	2.72	B	2.43	B
30 th Street to 31 st Street	B	B	2.60	B	2.68	B
31 st Street to 32 nd Street	B	B	3.10	C	2.41	B
32 nd Street to 33 rd Street	C	B	2.79	C	2.79	C
33 rd Street to 35 th Street	B	C	3.10	C	2.45	B
35 th Street to 36 th Street	B	B	3.23	C	2.92	B
36 th Street to 37 th Street	C	B	2.69	B	2.85	C
37 th Street to 38 th Street	B	B	3.12	C	2.48	B
38 th Street to 39 th Street	C	B	2.69	B	2.82	C
39 th Street to 40 th Street	B	C	2.64	B	2.48	B
40 th Street to 41 st Street	C	B	2.67	B	2.44	B
41 st Street to 43 rd Street	B	C	3.22	C	2.44	B

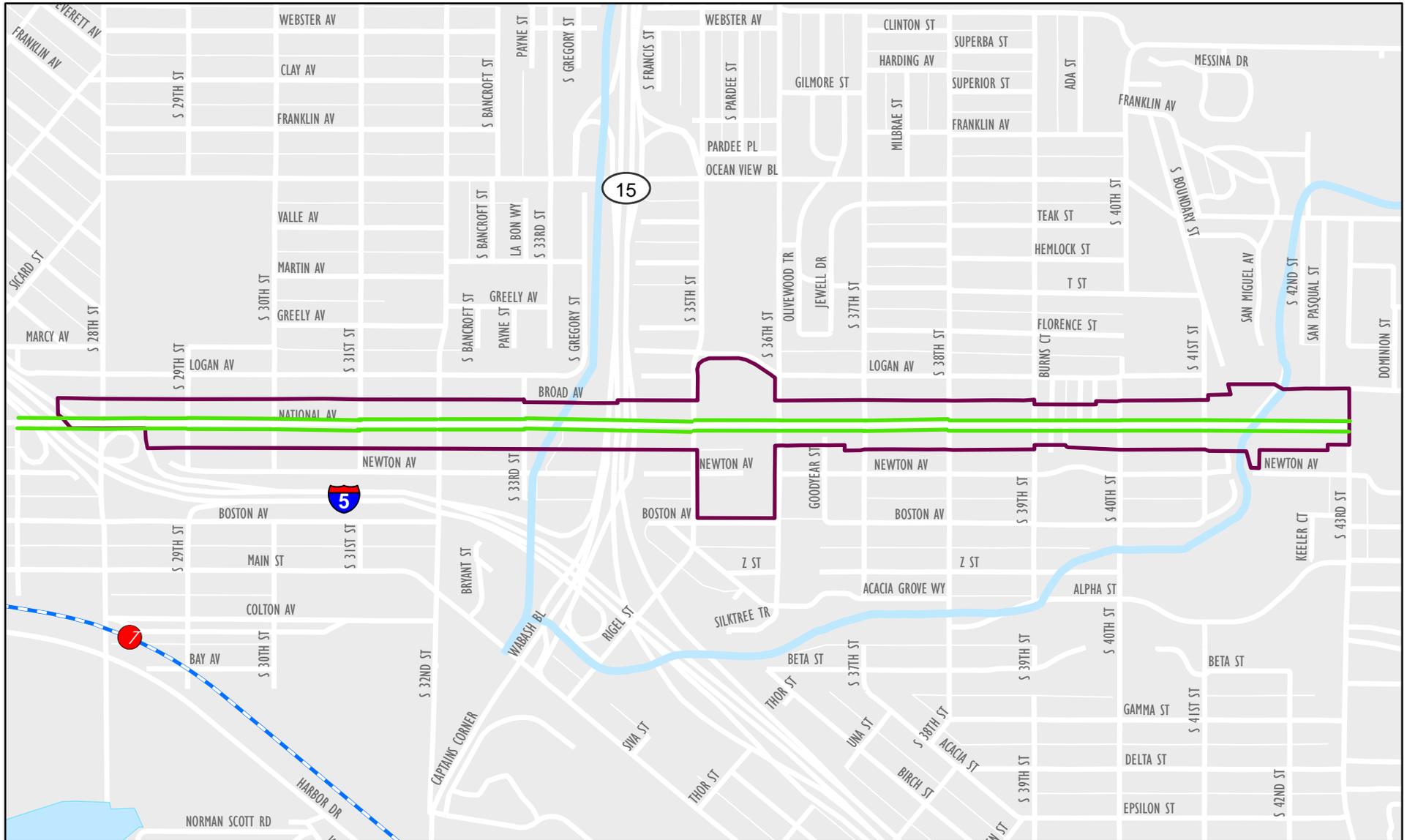
1. Portions or the entire segment is part of Caltrans right-of-way. Therefore, any proposed changes or enhancements at this location are subject for review and approval by Caltrans.
2. Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers, February 2014

As shown in the tables, pedestrians will experience good LOS (C or better) when walking through National Avenue under the buildout of the Master Plan. The overall maintenance of good LOS from existing into the buildout of the Master Plan is brought upon by the implementation of proposed pedestrian enhancements, such as a continuous landscaped parkway buffer along the corridor.

Figure 10: Future Pedestrian LOS (AM Peak)
National Ave

February 2014



Pedestrian Level of Service

- A - C
- D
- E
- F

Blue Line Trolley

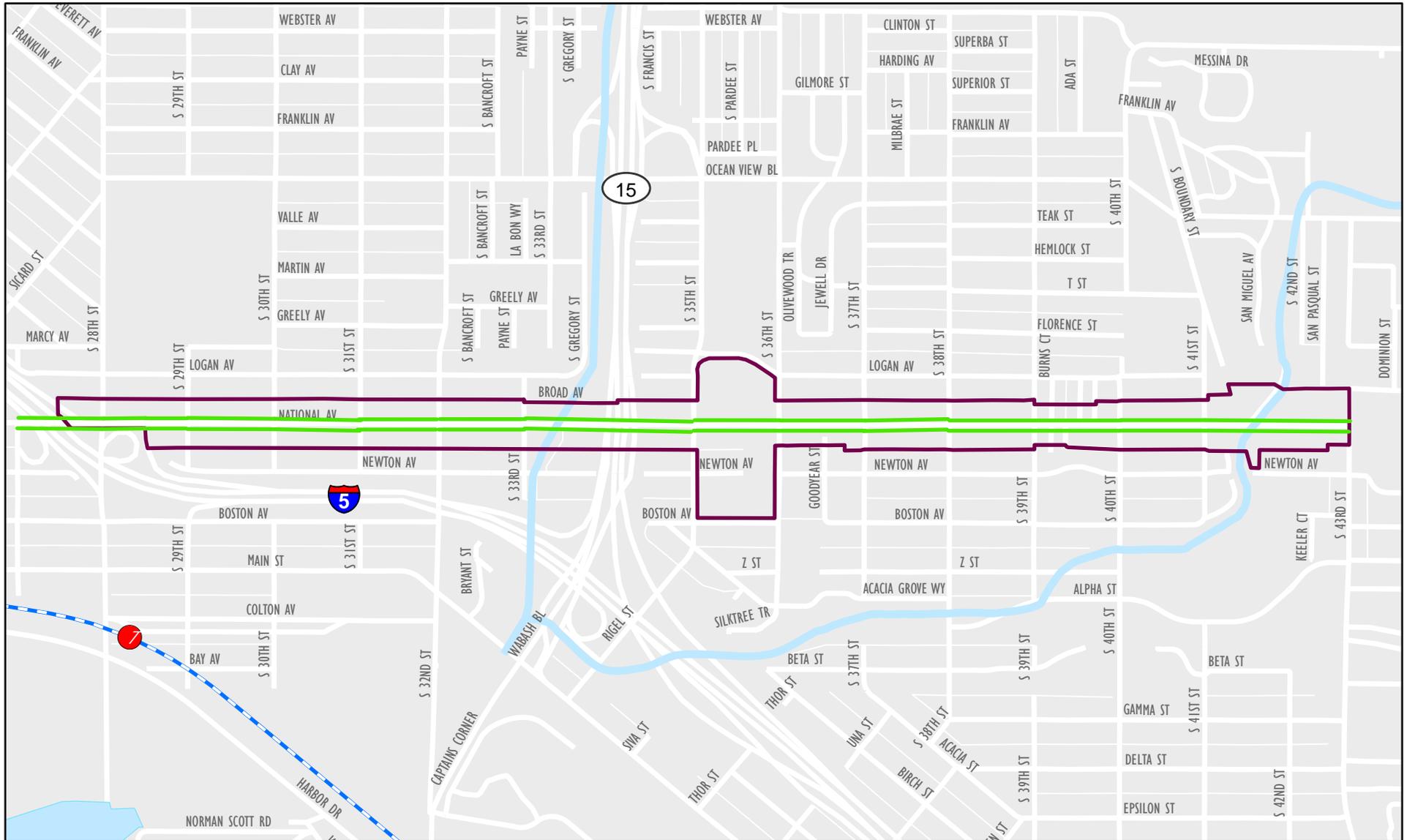
- Project Area
- Trolley Station



Source:
Fehr & Peers (2014)

Figure 11: Future Pedestrian LOS (PM Peak)
National Ave

February 2014



Pedestrian Level of Service

- A - C
- D
- E
- F

Blue Line Trolley

- Project Area
- ⊘ Trolley Station



Source:
Fehr & Peers (2014)

CONCLUSION

The proposed land uses within the Master Plan are expected to increase traffic across all modes within the National Avenue corridor. However, due to the neighborhood mixed-use nature and village style land uses that are proposed within key parts of the study area, it is anticipated that there will be a better balance between various modes of travel and the project design, coupled with enhancements to pedestrian, bicycle and transit infrastructure, will minimize the number of vehicle trips. While it is anticipated that vehicular travel within the corridor will increase, it is projected that the existing volumes of active travel modes (pedestrian and bike) will increase by 50%, and transit demand will increase by 50% by 2035.

To help accommodate the projected increase in travel demand throughout the study area the Master Plan includes a series of multi-modal improvements within the National Avenue corridor, as displayed in **Appendix A**. The mobility option figures illustrate locations for curb bulb-outs, the removal of center left-turn lane, and high visibility crosswalks under the full buildout of the Master Plan. Overall, these recommended improvements will create a more desirable pedestrian and bicycle environment while still balancing the needs of moving and parked vehicles.

Traffic operating conditions indicate that portions of the corridor will experience an increased delay for automobiles with the proposed improvements. In fact, the removal of the center turn lane results in a change from acceptable roadway LOS based on daily volumes to failing LOS by year 2035. However, detailed analysis of peak conditions shows that through traffic along the corridor will traverse the corridor at slower speeds, but will generally maintain acceptable levels of service. Autos accessing the corridor from stop controlled side streets will experience a higher level of delay, due to increase traffic volume on National Avenue, as well as the removal of left-turn pockets at selected intersections. Side street traffic is low and drivers are expected to self-mitigate increased delays by electing to take an alternative route or will wait for gaps in traffic that will occur when upstream and downstream signals provide gaps in the traffic flow.

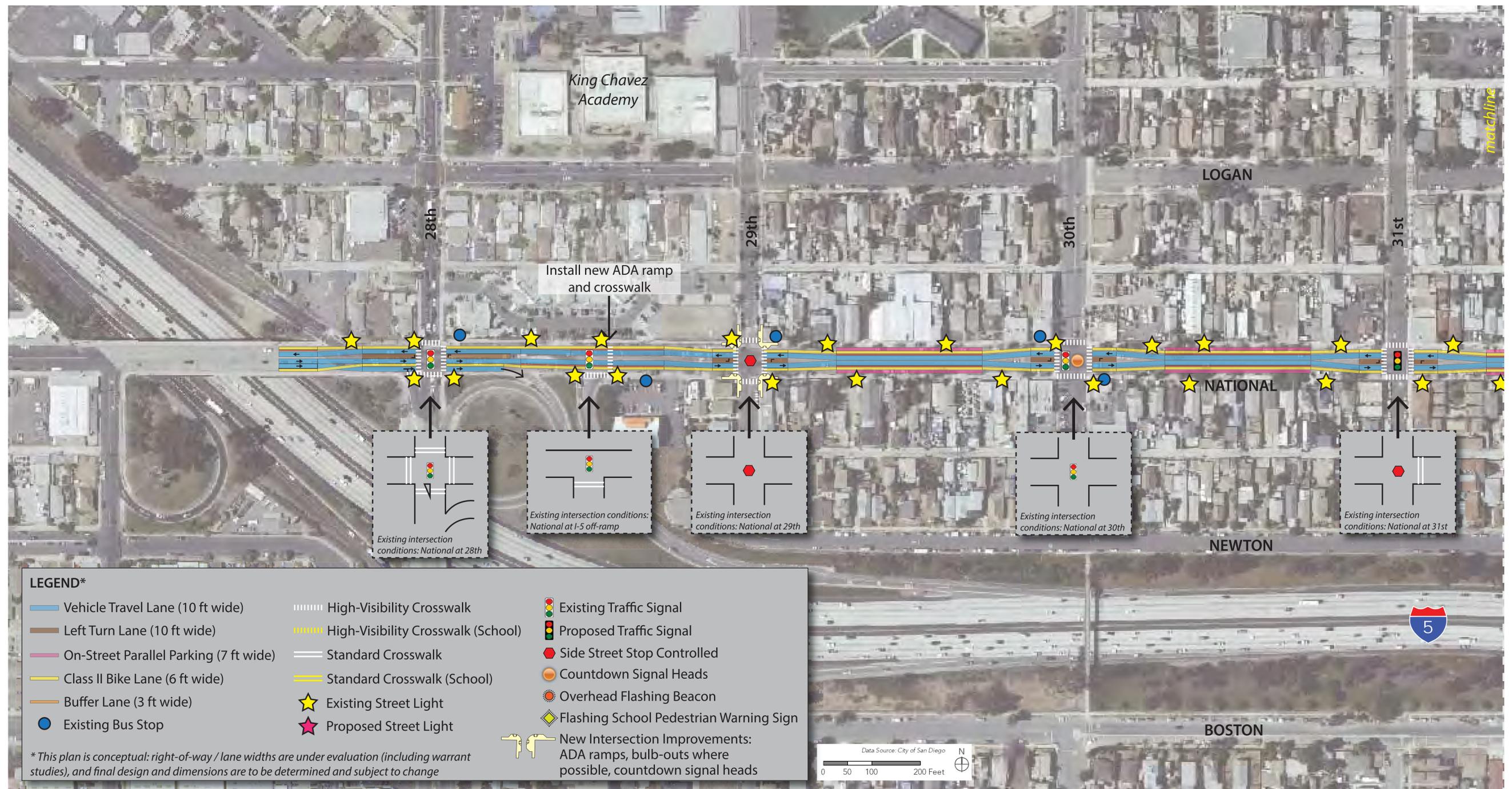
The on-street parking supply on National Avenue will be reduced with implementation of the proposed Corridor Master Plan. However, the increased viability of local and external bicycle and pedestrian trips will minimize the need for additional parking spaces. As sections of the corridor redevelop with new uses, it will be important to provide an appropriate level of off-street parking and maximize parking opportunities on the intersecting side streets by providing additional angled and parallel spaces where feasible.

The reduction in vehicle capacity along the corridor will help improve pedestrian and bicycle conditions along the corridor. Slower speeds coupled with separate bicycle lanes will improve the bicycling conditions and encourage new bicycle activity along the corridor. Slower speeds along the corridor will also improve pedestrian access, making pedestrians more visible to drivers along and crossing National Avenue. The implementation of curb extensions at selected locations will reduce the overall crossing distance and minimize exposure of pedestrians to vehicles. Although the traffic operating conditions along the corridor may degrade compared to existing conditions, the improvements planned along the corridor will provide for a more balanced, integrated transportation system along National Avenue.

As future development occurs in the corridor, it is recommended that the City of San Diego continue to monitor the pedestrian and vehicular volumes to determine the correct time to implement the proposed enhanced crosswalk and traffic signalization improvements. The City should also work with SANDAG and MTS to monitor transit ridership throughout the National Avenue corridor to determine the appropriate time to increase bus frequencies and whether or not additional transit service is needed.

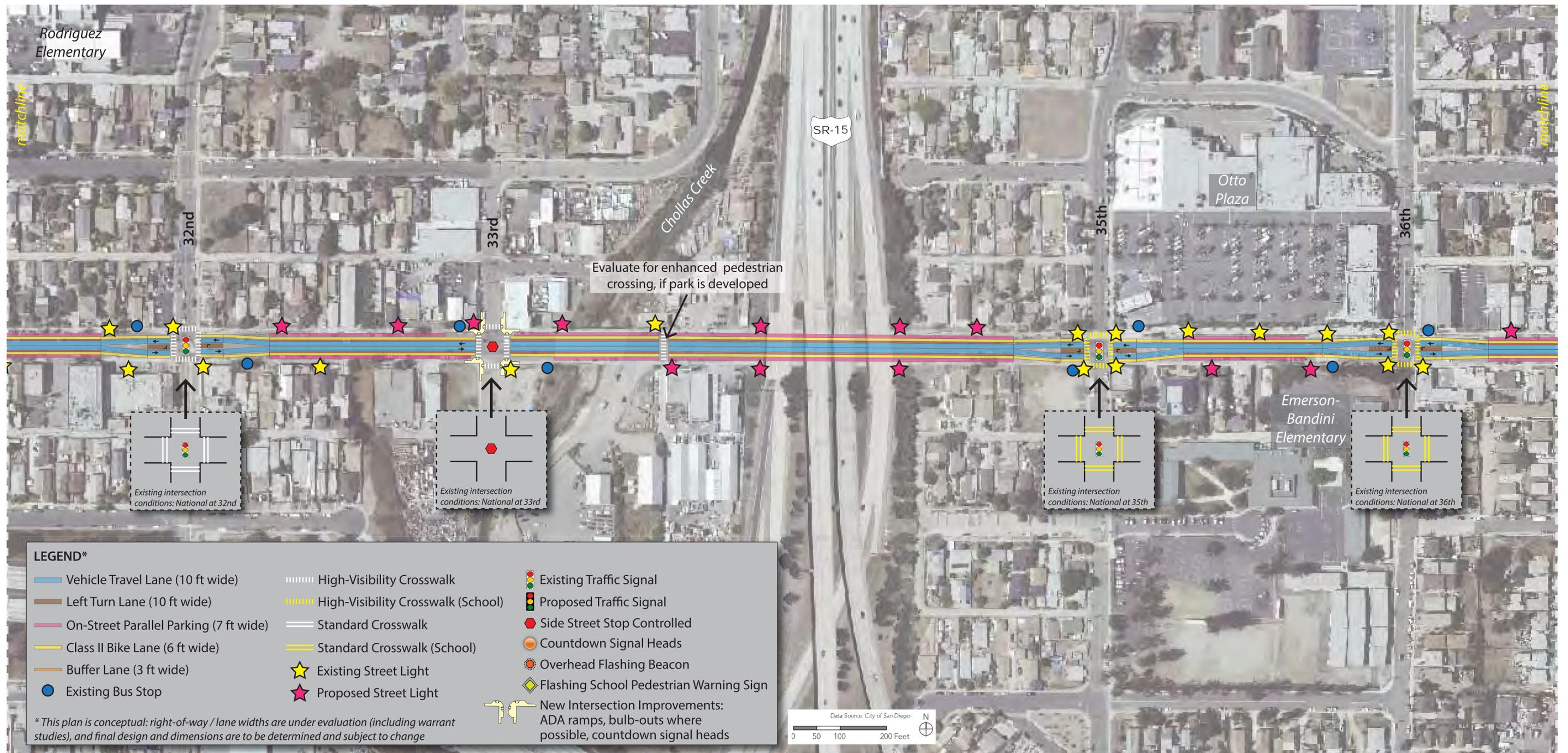
APPENDIX A: PROPOSED MOBILITY CONCEPT FIGURES





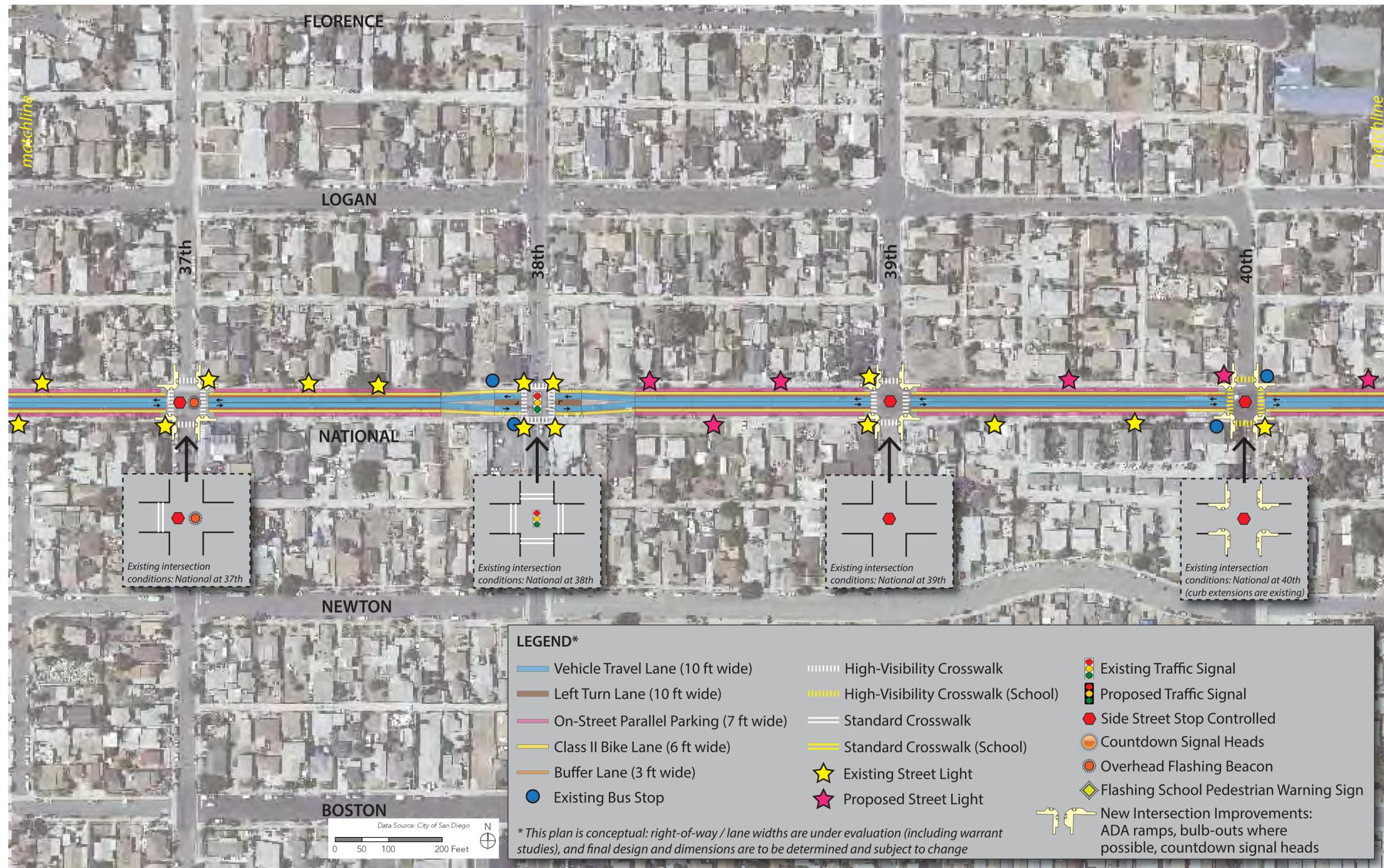
NATIONAL AVENUE MOBILITY CONCEPT (1 of 4; west end): remove center turn lane, maintain left turn pockets at selected intersections where needed, add bulb-outs at selected intersections (where left turn pockets are removed), remove parking near intersections as needed

Feb. 28, 2014

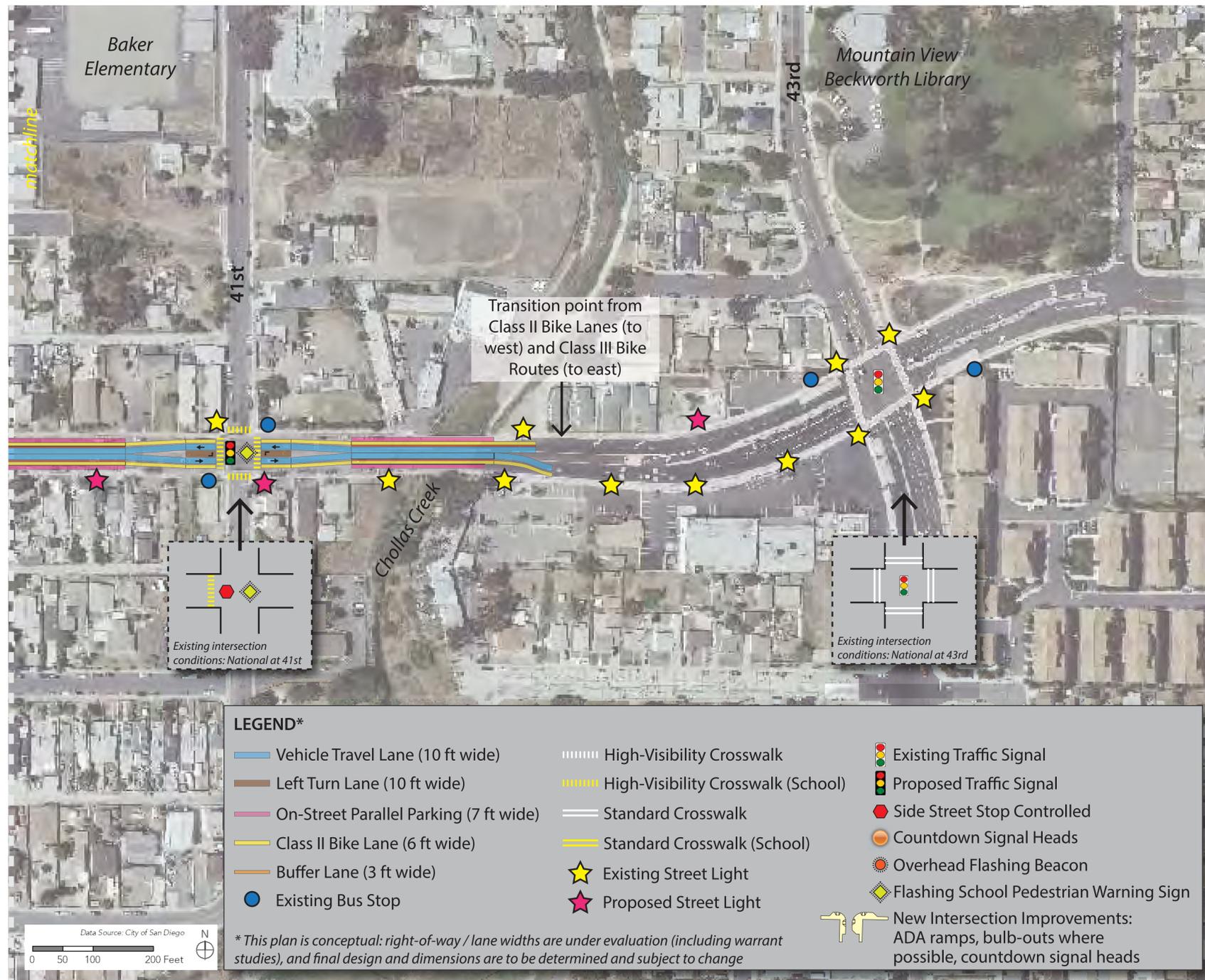


NATIONAL AVENUE MOBILITY CONCEPT (2 of 4; west-central end): remove center turn lane, maintain left turn pockets at selected intersections where needed, add bulb-outs at selected intersections (where left turn pockets are removed), remove parking near intersections as needed

Feb. 28, 2014

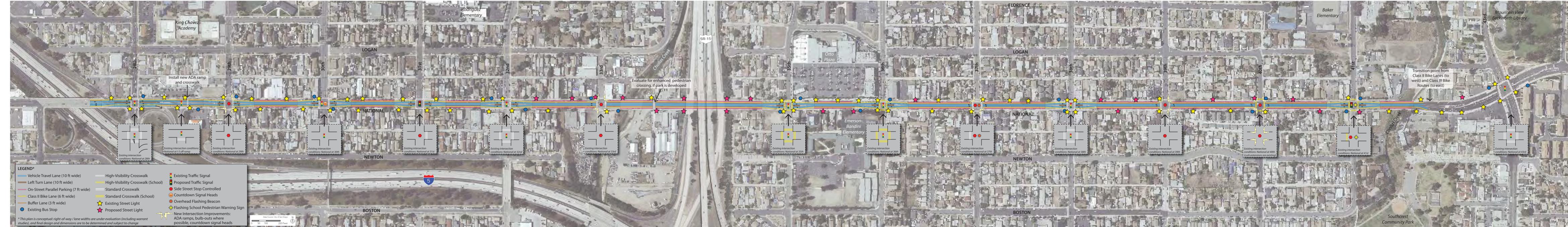


NATIONAL AVENUE MOBILITY CONCEPT (3 of 4; east-central end): remove center turn lane, maintain left turn pockets at selected intersections where needed, add bulb-outs at selected intersections (where left turn pockets are removed), remove parking near intersections as needed
 Feb. 28, 2014



NATIONAL AVENUE MOBILITY CONCEPT (4 of 4; east end): remove center turn lane, maintain left turn pockets at selected intersections where needed, add bulb-outs at selected intersections (where left turn pockets are removed), remove parking near intersections as needed

Feb. 28, 2014



NATIONAL AVENUE MOBILITY CONCEPT: remove center turn lane, maintain left turn pockets at selected intersections where needed, add bulb-outs at selected intersections (where left turn pockets are removed), remove parking near intersections as needed
 Feb. 28, 2014

APPENDIX B: LAND USE ASSUMPTIONS



♀

Land Use Summary

-----	-----	Tri p	Rate	-----	Person	-----	Acti vi ty	
Empl oyment	Code	Name	du	acre	empl oyee	Tri ps	DUs	Acres
0.	111	SINGLE FAMI LY	12.9	0.0	0.0	26.	2.	0.
0.	112	SINGLE FAMI LY	12.9	0.0	0.0	192004.	14884.	0.
0.	121	MULTI -FAMI LY	11.4	0.0	0.0	61229.	5371.	0.
0.	122	MULTI -FAMI LY	8.6	0.0	0.0	63176.	7346.	0.
0.	131	MOBI LE HOME PARK	7.5	0.0	0.0	4575.	610.	0.
0.	1411	CONGREGATE CARE FACI LITY	0.0	4.3	0.0	77.	0.	18.
0.	1421	CORRECTI ONAL FACI LITY	0.0	2.8	0.0	840.	0.	300.
0.	1511	MOTEL	0.0	14.6	0.0	1329.	0.	91.
0.	2111	INDUSTRI AL PARK	0.0	18.3	0.0	476.	0.	26.
0.	2113	LIGHT INDUSTRY GENERAL	0.0	18.6	0.0	41422.	0.	2227.
0.	2114	WAREHOUSI NG	0.0	6.1	0.0	639.	0.	105.
0.	2311	SCRAP YARD/LANDFI LL	0.0	7.4	0.0	48.	0.	6.
0.	4112	RIGH T-OF-WAY	0.0	0.0	0.0	0.	0.	1907.
0.	4113	COMMUNI CATION OR UTI LITY	0.0	3.2	0.0	199.	0.	62.
0.	4114	PARKI NG	0.0	0.0	0.0	0.	0.	11.
0.	4121	RAI L/TRANSIT CENTER	0.0	392.8	0.0	2089.	0.	5.
0.	4129	OTHER TRANSPORTATI ON	0.0	7.9	0.0	18.	0.	2.
0.	5010	VACANT COMMERCIAL	0.0	0.0	0.0	0.	0.	13.
0.	5011	HIGH TURNOVER RESTAURANT	0.0	178.8	0.0	2228.	0.	12.
0.	5013	SUPERMARKET	0.0	206.3	0.0	908.	0.	4.
0.	5014	CONVENI ENCE MARKET CHAI N	0.0	687.8	0.0	29904.	0.	43.
0.	5024	CAR WASH	0.0	137.6	0.0	550.	0.	4.
0.	5025	SERVI CE STATI ON FOOD MART	0.0	206.3	0.0	7839.	0.	38.
0.	5027	SERVI CE STATI ON CAR WASH	0.0	213.2	0.0	4264.	0.	20.
0.	5028	AUTO PARTS	0.0	85.3	0.0	490.	0.	6.
0.	5029	AUTO REPAIR	0.0	27.5	0.0	1418.	0.	52.
0.	5030	AUTO TIRES	0.0	34.4	0.0	317.	0.	9.

Existing Land Use Summary.txt

0.	5131	WHOLESALE TRADE	1986.	0.	20.
0.	0.0	98.9	0.0		
0.	5133	COMMUNITY SHOP CENTER	84075.	0.	779.
0.	0.0	107.9	0.0		
0.	5134	NEIGHBORHOOD SHOP CENTER	18656.	0.	110.
0.	0.0	169.5	0.0		
0.	5136	AUTO DEALERSHIP	89.	0.	0.
0.	0.0	423.8	0.0		
0.	5137	ARTERIAL COMMERCIAL	59701.	0.	1085.
0.	0.0	55.0	0.0		
0.	5138	SERVICE STATION	2971.	0.	16.
0.	0.0	185.7	0.0		
0.	5139	OTHER RETAIL TRADE	1453.	0.	26.
0.	0.0	55.1	0.0		
0.	6012	LOW RISE OFFICE A	16755.	0.	314.
0.	0.0	53.4	0.0		
0.	6013	GOV' T /CIVIC CENTER	2832.	0.	71.
0.	0.0	39.9	0.0		
0.	6014	GOV' T OFFICE	881.	0.	22.
0.	0.0	39.9	0.0		
0.	6111	CEMETERY	1026.	0.	168.
0.	0.0	6.1	0.0		
0.	6112	RELIGIOUS FACILITY	6082.	0.	936.
0.	0.0	6.5	0.0		
0.	6113	LIBRARY	2273.	0.	31.
0.	0.0	73.6	0.0		
0.	6115	FIRE OR POLICE STATION	1715.	0.	42.
0.	0.0	40.7	0.0		
0.	6114	POST OFFICE	1680.	0.	6.
0.	0.0	287.3	0.0		
0.	6119	OTHER PUBLIC SERVICE	393.	0.	28.
0.	0.0	13.8	0.0		
0.	6129	MEETING ROOM FACILITY	1981.	0.	48.
0.	0.0	41.5	0.0		
0.	6511	CLINIC	12686.	0.	188.
0.	0.0	67.3	0.0		
0.	6519	OTHER HEALTH CARE	3527.	0.	52.
0.	0.0	67.3	0.0		
0.	6810	DAY CARE CENTER	1549.	0.	254.
0.	0.0	6.1	0.0		
0.	6812	UNIVERSITY OR COLLEGE	15334.	0.	7667.
0.	0.0	2.0	0.0		
0.	6814	SENIOR HIGH SCHOOL	13132.	0.	3283.
0.	0.0	4.0	0.0		
0.	6815	JUNIOR HIGH OR MIDDLE SCHOOL	6902.	0.	3001.
0.	0.0	2.3	0.0		
0.	6816	ELEMENTARY SCHOOL	39331.	0.	11568.
0.	0.0	3.4	0.0		
0.	6819	OTHER SCHOOL	1317.	0.	60.
0.	0.0	21.8	0.0		
0.	7200	COMMERCIAL RECREATION	395.	0.	9.
0.	0.0	44.0	0.0		
0.	7220	OTHER RECREATION-HIGH	643.	0.	9.
0.	0.0	73.4	0.0		
0.	7611	OPEN SPACE PARK	1828.	0.	237.
0.	0.0	7.7	0.0		
0.	7613	ACTIVE PARK	10249.	0.	133.
0.	0.0	77.0	0.0		
0.	9101	INACTIVE USE	0.	0.	3.
0.	0.0	0.0	0.0		
0.		total	727508.	28213.	35132.

Existing Land Use Summary.txt

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Existing Land Use TG by Land Use by zone.txt
 SESD and Encanto\Base Year 2008 Cal 5
 trip generation and land use by zone

Zone	Code	Name	Type	Amount	Tri ps	
					Person	Vehi cl e
3554	111	SINGLE FAMILY	du	1.0	13.	9.
3554	112	SINGLE FAMILY	du	550.0	7095.	4952.
3554	121	MULTI -FAMILY	du	3.0	34.	24.
3554	1411	CONGREGATE CARE FACILITY	other	6.0	26.	18.
3554	4112	RIGHT-OF-WAY	acre	32.3	0.	0.
3554	7611	OPEN SPACE PARK	acre	2.3	18.	12.
3554		TOTAL			7186.	5015.
3574	2113	LIGHT INDUSTRY GENERAL	ksf	152.7	2840.	2349.
3574	4112	RIGHT-OF-WAY	acre	9.1	0.	0.
3574		TOTAL			2840.	2349.
3594	4112	RIGHT-OF-WAY	acre	21.2	0.	0.
3594		TOTAL			0.	0.
3602	112	SINGLE FAMILY	du	226.0	2915.	2035.
3602	4112	RIGHT-OF-WAY	acre	28.8	0.	0.
3602	4113	COMMUNICATION OR UTILITY	acre	31.3	100.	78.
3602	6112	RELIGIOUS FACILITY	ksf	14.0	91.	70.
3602	6816	ELEMENTARY SCHOOL	other	357.0	1214.	678.
3602	7611	OPEN SPACE PARK	acre	70.6	543.	358.
3602	7613	ACTIVE PARK	acre	9.4	725.	477.
3602		TOTAL			5589.	3696.
3627	112	SINGLE FAMILY	du	295.0	3805.	2656.
3627	121	MULTI -FAMILY	du	25.0	285.	200.
3627	4112	RIGHT-OF-WAY	acre	23.0	0.	0.
3627		TOTAL			4090.	2856.
3696	112	SINGLE FAMILY	du	170.0	2193.	1531.
3696	121	MULTI -FAMILY	du	23.0	262.	184.
3696	122	MULTI -FAMILY	du	13.0	112.	78.
3696	4112	RIGHT-OF-WAY	acre	8.4	0.	0.
3696	6112	RELIGIOUS FACILITY	ksf	5.7	37.	28.
3696	6816	ELEMENTARY SCHOOL	other	713.0	2424.	1355.
3696	7611	OPEN SPACE PARK	acre	0.7	5.	4.
3696		TOTAL			5033.	3180.
3720	112	SINGLE FAMILY	du	337.0	4347.	3034.
3720	121	MULTI -FAMILY	du	3.0	34.	24.
3720	4112	RIGHT-OF-WAY	acre	13.3	0.	0.
3720	6112	RELIGIOUS FACILITY	ksf	16.6	108.	83.
3720	7611	OPEN SPACE PARK	acre	7.2	56.	37.
3720		TOTAL			4545.	3178.
3744	112	SINGLE FAMILY	du	278.0	3586.	2503.
3744	121	MULTI -FAMILY	du	91.0	1037.	728.
3744	122	MULTI -FAMILY	du	13.0	112.	78.
3744	2114	WAREHOUSING	ksf	1.7	10.	9.
3744	4112	RIGHT-OF-WAY	acre	29.7	0.	0.
3744	6111	CEMETERY	acre	44.7	273.	223.
3744	6112	RELIGIOUS FACILITY	ksf	22.0	143.	110.
3744		TOTAL			5161.	3652.

Existing Land Use TG by Land Use by zone.txt
trip generation and Land use by zone

Zone	----- Land Use -----			Type	Amount	-----Trips-----	
	Code	Name				Person	Vehi cle
3745	112	SINGLE FAMILY		du	284.0	3664.	2557.
3745	121	MULTI -FAMILY		du	224.0	2554.	1793.
3745	122	MULTI -FAMILY		du	65.0	559.	392.
3745	4112	RIGHT-OF-WAY		acre	67.8	0.	0.
3745	6112	RELIGIOUS FACILITY		ksf	4.3	28.	21.
3745		TOTAL				6804.	4764.
3764	112	SINGLE FAMILY		du	346.0	4463.	3115.
3764	4112	RIGHT-OF-WAY		acre	18.2	0.	0.
3764	6814	SENIOR HIGH SCHOOL		other	950.0	3800.	1710.
3764	6815	JUNIOR HIGH OR MIDDLE SCHOOL		other	420.0	966.	593.
3764	7613	ACTIVE PARK		acre	4.7	365.	240.
3764		TOTAL				9594.	5658.
3766	112	SINGLE FAMILY		du	13.0	168.	117.
3766	121	MULTI -FAMILY		du	9.0	103.	72.
3766	122	MULTI -FAMILY		du	3.0	26.	18.
3766	2113	LIGHT INDUSTRY GENERAL		ksf	410.3	7631.	6310.
3766	2114	WAREHOUSING		ksf	30.3	185.	155.
3766	4112	RIGHT-OF-WAY		acre	39.4	0.	0.
3766	4113	COMMUNICATION OR UTILITY		acre	15.6	50.	39.
3766	7611	OPEN SPACE PARK		acre	0.7	6.	4.
3766		TOTAL				8168.	6715.
3767	2113	LIGHT INDUSTRY GENERAL		ksf	596.5	11095.	9174.
3767	4112	RIGHT-OF-WAY		acre	8.0	0.	0.
3767	5133	COMMUNITY SHOP CENTER		ksf	127.6	13768.	9743.
3767	6511	CLINIC		ksf	31.9	2148.	1595.
3767	7611	OPEN SPACE PARK		acre	0.1	1.	1.
3767	7613	ACTIVE PARK		acre	5.6	434.	285.
3767		TOTAL				27446.	20798.
3817	112	SINGLE FAMILY		du	270.0	3483.	2431.
3817	121	MULTI -FAMILY		du	45.0	513.	360.
3817	122	MULTI -FAMILY		du	83.0	714.	501.
3817	4112	RIGHT-OF-WAY		acre	29.2	0.	0.
3817	4113	COMMUNICATION OR UTILITY		acre	0.3	1.	1.
3817	6112	RELIGIOUS FACILITY		ksf	15.0	98.	75.
3817	7611	OPEN SPACE PARK		acre	0.1	1.	0.
3817	7613	ACTIVE PARK		acre	5.0	387.	255.
3817		TOTAL				5196.	3623.
3831	112	SINGLE FAMILY		du	9.0	116.	81.
3831	121	MULTI -FAMILY		du	7.0	80.	56.
3831	122	MULTI -FAMILY		du	69.0	593.	417.
3831	2113	LIGHT INDUSTRY GENERAL		ksf	29.2	543.	449.
3831	4112	RIGHT-OF-WAY		acre	17.0	0.	0.
3831	4113	COMMUNICATION OR UTILITY		acre	2.9	9.	7.
3831	5137	ARTERIAL COMMERCIAL		ksf	24.4	1342.	975.
3831	6012	LOW RISE OFFICE A		ksf	51.7	2760.	2125.
3831	6112	RELIGIOUS FACILITY		ksf	13.8	90.	69.
3831	6119	OTHER PUBLIC SERVICE		ksf	8.1	111.	80.

Existing Land Use TG by Land Use by zone.txt						
Zone	Code	Name	Type	Amount	Person	Vehi cl e
3831	6815	JUNIOR HIGH OR MIDDLE SCHOOL	other	212.0	488.	300.
3831		TOTAL			6132.	4559.
3854	112	SINGLE FAMILY	du	21.0	271.	189.
3854	121	MULTI -FAMILY	du	3.0	34.	24.
3854	122	MULTI -FAMILY	du	126.0	1084.	761.
3854	4112	RIGHT-OF-WAY	acre	24.2	0.	0.
3854	5137	ARTERIAL COMMERCIAL	ksf	4.8	264.	192.
3854	6112	RELIGIOUS FACILITY	ksf	15.7	102.	78.
3854	6816	ELEMENTARY SCHOOL	other	273.0	928.	519.
3854		TOTAL			2683.	1763.
3855	112	SINGLE FAMILY	du	150.0	1935.	1351.
3855	121	MULTI -FAMILY	du	122.0	1391.	976.
3855	2113	LIGHT INDUSTRY GENERAL	ksf	14.4	268.	222.
3855	4112	RIGHT-OF-WAY	acre	30.0	0.	0.
3855	4113	COMMUNICATION OR UTILITY	acre	0.3	1.	1.
3855	4114	PARKING	acre	2.8	0.	0.
3855	5025	SERVICE STATION FOOD MART	other	10.0	2063.	1498.
3855	5137	ARTERIAL COMMERCIAL	ksf	58.7	3230.	2346.
3855	6014	GOV' T OFFICE	ksf	22.1	881.	662.
3855	6112	RELIGIOUS FACILITY	ksf	3.4	22.	17.
3855	6810	DAY CARE CENTER	other	75.0	457.	378.
3855	6816	ELEMENTARY SCHOOL	other	737.0	2506.	1400.
3855	7611	OPEN SPACE PARK	acre	0.4	3.	2.
3855		TOTAL			12758.	8854.
3857	112	SINGLE FAMILY	du	240.0	3096.	2161.
3857	121	MULTI -FAMILY	du	241.0	2747.	1929.
3857	122	MULTI -FAMILY	du	27.0	232.	163.
3857	2113	LIGHT INDUSTRY GENERAL	ksf	265.3	4934.	4080.
3857	4112	RIGHT-OF-WAY	acre	52.7	0.	0.
3857	5137	ARTERIAL COMMERCIAL	ksf	34.8	1916.	1392.
3857	6012	LOW RISE OFFICE A	ksf	46.1	2464.	1897.
3857	6112	RELIGIOUS FACILITY	ksf	28.7	186.	143.
3857		TOTAL			15576.	11765.
3858	112	SINGLE FAMILY	du	20.0	258.	180.
3858	121	MULTI -FAMILY	du	33.0	376.	264.
3858	122	MULTI -FAMILY	du	67.0	576.	405.
3858	4112	RIGHT-OF-WAY	acre	5.3	0.	0.
3858	5137	ARTERIAL COMMERCIAL	ksf	20.1	1107.	804.
3858	6012	LOW RISE OFFICE A	ksf	7.0	372.	287.
3858		TOTAL			2690.	1939.
3860	112	SINGLE FAMILY	du	67.0	864.	603.
3860	121	MULTI -FAMILY	du	3.0	34.	24.
3860	4112	RIGHT-OF-WAY	acre	6.9	0.	0.
3860	5137	ARTERIAL COMMERCIAL	ksf	11.1	609.	442.
3860	6816	ELEMENTARY SCHOOL	other	526.0	1788.	999.
3860	7611	OPEN SPACE PARK	acre	4.8	37.	24.
3860		TOTAL			3332.	2093.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 4

----- Land Use -----
Zone Code Name Type Amount Person Vehi cl e

Existing Land Use TG by Land Use by zone.txt

3861	112	SINGLE FAMILY	du	195.0	2515.	1756.
3861	121	MULTI -FAMILY	du	86.0	980.	688.
3861	122	MULTI -FAMILY	du	350.0	3010.	2113.
3861	4112	RIGHT-OF-WAY	acre	19.0	0.	0.
3861	4121	RAIL/TRANSIT CENTER	acre	1.7	669.	511.
3861	5139	OTHER RETAIL TRADE	ksf	11.4	627.	457.
3861	6012	LOW RISE OFFICE A	ksf	3.3	174.	134.
3861	6112	RELIGIOUS FACILITY	ksf	7.0	45.	35.
3861		TOTAL			8022.	5694.
3902	112	SINGLE FAMILY	du	71.0	916.	639.
3902	121	MULTI -FAMILY	du	38.0	433.	304.
3902	122	MULTI -FAMILY	du	200.0	1720.	1208.
3902	2113	LIGHT INDUSTRY GENERAL	ksf	5.7	106.	88.
3902	4112	RIGHT-OF-WAY	acre	51.0	0.	0.
3902	4129	OTHER TRANSPORTATION	acre	1.3	10.	8.
3902	5137	ARTERIAL COMMERCIAL	ksf	7.4	408.	296.
3902	6112	RELIGIOUS FACILITY	ksf	8.9	58.	44.
3902		TOTAL			3651.	2588.
3904	112	SINGLE FAMILY	du	1.0	13.	9.
3904	121	MULTI -FAMILY	du	14.0	160.	112.
3904	4112	RIGHT-OF-WAY	acre	18.8	0.	0.
3904	5137	ARTERIAL COMMERCIAL	ksf	3.2	174.	126.
3904	6111	CEMETERY	acre	116.4	710.	582.
3904	6112	RELIGIOUS FACILITY	ksf	1.5	9.	7.
3904	7220	OTHER RECREATION-HIGH	acre	6.0	438.	299.
3904		TOTAL			1504.	1135.
3905	112	SINGLE FAMILY	du	25.0	322.	225.
3905	121	MULTI -FAMILY	du	11.0	125.	88.
3905	122	MULTI -FAMILY	du	42.0	361.	254.
3905	4112	RIGHT-OF-WAY	acre	4.5	0.	0.
3905	5137	ARTERIAL COMMERCIAL	ksf	3.6	198.	144.
3905	6112	RELIGIOUS FACILITY	ksf	4.8	31.	24.
3905	6511	CLINIC	ksf	153.6	10337.	7676.
3905		TOTAL			11375.	8410.
3920	112	SINGLE FAMILY	du	31.0	400.	279.
3920	121	MULTI -FAMILY	du	26.0	296.	208.
3920	122	MULTI -FAMILY	du	29.0	249.	175.
3920	4112	RIGHT-OF-WAY	acre	6.6	0.	0.
3920	6112	RELIGIOUS FACILITY	ksf	5.3	35.	27.
3920	6816	ELEMENTARY SCHOOL	other	808.0	2747.	1535.
3920		TOTAL			3727.	2224.
3921	112	SINGLE FAMILY	du	22.0	284.	198.
3921	121	MULTI -FAMILY	du	18.0	205.	144.
3921	122	MULTI -FAMILY	du	101.0	869.	610.
3921	4112	RIGHT-OF-WAY	acre	6.1	0.	0.
3921	6816	ELEMENTARY SCHOOL	other	458.0	1557.	870.
3921		TOTAL			2915.	1822.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 5

Zone	Code	Name	Land Use	Type	Amount	Tri ps	Person	Vehi cle
3922	112	SINGLE FAMILY		du	290.0	3741.		2611.
3922	121	MULTI -FAMILY		du	75.0	855.		600.

Existing Land Use TG by Land Use by zone.txt

3922	122	MULTI -FAMILY	du	45.0	387.	272.
3922	131	MOBILE HOME PARK	du	250.0	1875.	1243.
3922	4112	RIGHT-OF-WAY	acre	25.6	0.	0.
3922	5137	ARTERIAL COMMERCIAL	ksf	13.2	728.	528.
3922	6012	LOW RISE OFFICE A	ksf	11.1	595.	458.
3922	6112	RELIGIOUS FACILITY	ksf	40.0	260.	200.
3922	7611	OPEN SPACE PARK	acre	0.3	2.	1.
3922		TOTAL			8443.	5914.
3924	112	SINGLE FAMILY	du	7.0	90.	63.
3924	4112	RIGHT-OF-WAY	acre	4.1	0.	0.
3924	4113	COMMUNICATION OR UTILITY	acre	0.2	1.	0.
3924	4114	PARKING	acre	0.4	0.	0.
3924	5025	SERVICE STATION FOOD MART	other	8.0	1650.	1199.
3924	5137	ARTERIAL COMMERCIAL	ksf	30.6	1683.	1223.
3924	6112	RELIGIOUS FACILITY	ksf	5.9	38.	30.
3924		TOTAL			3463.	2514.
3926	112	SINGLE FAMILY	du	4.0	52.	36.
3926	121	MULTI -FAMILY	du	9.0	103.	72.
3926	122	MULTI -FAMILY	du	35.0	301.	211.
3926	2113	LIGHT INDUSTRY GENERAL	ksf	116.4	2165.	1790.
3926	4112	RIGHT-OF-WAY	acre	4.2	0.	0.
3926	6112	RELIGIOUS FACILITY	ksf	2.4	16.	12.
3926	6129	MEETING ROOM FACILITY	ksf	8.0	331.	239.
3926		TOTAL			2967.	2361.
3927	112	SINGLE FAMILY	du	18.0	232.	162.
3927	121	MULTI -FAMILY	du	9.0	103.	72.
3927	122	MULTI -FAMILY	du	100.0	860.	604.
3927	2111	INDUSTRIAL PARK	ksf	26.0	476.	395.
3927	2113	LIGHT INDUSTRY GENERAL	ksf	96.3	1791.	1481.
3927	4112	RIGHT-OF-WAY	acre	10.0	0.	0.
3927	4114	PARKING	acre	0.4	0.	0.
3927	5137	ARTERIAL COMMERCIAL	ksf	13.6	748.	544.
3927	7611	OPEN SPACE PARK	acre	5.9	46.	30.
3927		TOTAL			4256.	3288.
3929	4112	RIGHT-OF-WAY	acre	2.7	0.	0.
3929	5137	ARTERIAL COMMERCIAL	ksf	20.0	1100.	799.
3929	6013	GOV'T /CIVIC CENTER	ksf	18.5	740.	556.
3929	6819	OTHER SCHOOL	ksf	9.8	213.	176.
3929		TOTAL			2053.	1531.
3944	112	SINGLE FAMILY	du	1.0	13.	9.
3944	121	MULTI -FAMILY	du	141.0	1607.	1128.
3944	131	MOBILE HOME PARK	du	265.0	1988.	1318.
3944	4112	RIGHT-OF-WAY	acre	12.4	0.	0.
3944	4121	RAIL/TRANSIT CENTER	acre	1.1	422.	322.
3944	6112	RELIGIOUS FACILITY	ksf	5.1	33.	25.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 6

Zone	Code	Name	Land Use	Type	Amount	Trips- Person	Vehicle
3944	7611	OPEN SPACE PARK		acre	3.5	27.	17.
3944		TOTAL				4089.	2821.
3945	4112	RIGHT-OF-WAY		acre	0.6	0.	0.
3945	6012	LOW RISE OFFICE A		ksf	64.0	3418.	2632.

Existing Land Use TG by Land Use by zone.txt						
3945	6129	MEETING ROOM FACILITY	ksf	16.0	664.	480.
3945		TOTAL			4082.	3112.
3946	112	SINGLE FAMILY	du	299.0	3857.	2692.
3946	4112	RIGHT-OF-WAY	acre	23.4	0.	0.
3946	6112	RELIGIOUS FACILITY	ksf	14.0	91.	70.
3946	6816	ELEMENTARY SCHOOL	other	614.0	2088.	1167.
3946	7611	OPEN SPACE PARK	acre	14.6	112.	74.
3946		TOTAL			6148.	4002.
3947	112	SINGLE FAMILY	du	112.0	1445.	1008.
3947	121	MULTI-FAMILY	du	13.0	148.	104.
3947	122	MULTI-FAMILY	du	44.0	378.	266.
3947	2113	LIGHT INDUSTRY GENERAL	ksf	7.2	133.	110.
3947	2311	SCRAP YARD/LANDFILL	acre	0.4	3.	2.
3947	4112	RIGHT-OF-WAY	acre	13.4	0.	0.
3947	4114	PARKING	acre	0.3	0.	0.
3947	5131	WHOLESALE TRADE	ksf	4.4	433.	307.
3947	5137	ARTERIAL COMMERCIAL	ksf	4.0	220.	160.
3947	6112	RELIGIOUS FACILITY	ksf	11.5	75.	58.
3947	7611	OPEN SPACE PARK	acre	1.9	15.	10.
3947		TOTAL			2849.	2024.
3949	112	SINGLE FAMILY	du	346.0	4463.	3115.
3949	121	MULTI-FAMILY	du	240.0	2736.	1921.
3949	122	MULTI-FAMILY	du	374.0	3216.	2258.
3949	131	MOBILE HOME PARK	du	95.0	712.	472.
3949	4112	RIGHT-OF-WAY	acre	27.2	0.	0.
3949	5137	ARTERIAL COMMERCIAL	ksf	5.0	273.	198.
3949	5138	SERVICE STATION	other	8.0	1486.	1082.
3949	6112	RELIGIOUS FACILITY	ksf	25.6	166.	128.
3949	6816	ELEMENTARY SCHOOL	other	270.0	918.	513.
3949	7611	OPEN SPACE PARK	acre	1.0	8.	5.
3949		TOTAL			13979.	9693.
3958	112	SINGLE FAMILY	du	58.0	748.	522.
3958	121	MULTI-FAMILY	du	21.0	239.	168.
3958	122	MULTI-FAMILY	du	41.0	353.	248.
3958	2114	WAREHOUSING	ksf	1.5	9.	8.
3958	4112	RIGHT-OF-WAY	acre	4.5	0.	0.
3958	4114	PARKING	acre	0.1	0.	0.
3958	5011	HIGH TURNOVER RESTAURANT	ksf	5.6	1002.	728.
3958	5137	ARTERIAL COMMERCIAL	ksf	5.7	312.	227.
3958		TOTAL			2663.	1900.
3959	112	SINGLE FAMILY	du	128.0	1651.	1153.
3959	121	MULTI-FAMILY	du	8.0	91.	64.

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 7

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
3959	122	MULTI-FAMILY		du	53.0	456.	320.
3959	2113	LIGHT INDUSTRY GENERAL		ksf	4.0	75.	62.
3959	4112	RIGHT-OF-WAY		acre	6.5	0.	0.
3959	4114	PARKING		acre	0.2	0.	0.
3959	5011	HIGH TURNOVER RESTAURANT		ksf	1.5	268.	195.
3959	5014	CONVENIENCE MARKET CHAIN		ksf	3.0	2063.	1499.
3959	5137	ARTERIAL COMMERCIAL		ksf	50.4	2774.	2015.
3959	7613	ACTIVE PARK		acre	0.2	12.	8.

Existing Land Use TG by Land Use by zone. txt						
3959		TOTAL			7390.	5314.
3960	112	SINGLE FAMILY	du	53.0	684.	477.
3960	121	MULTI -FAMILY	du	6.0	68.	48.
3960	122	MULTI -FAMILY	du	110.0	946.	664.
3960	4112	RIGHT-OF-WAY	acre	7.2	0.	0.
3960	5029	AUTO REPAIR	ksf	2.0	55.	40.
3960	5137	ARTERIAL COMMERCIAL	ksf	8.0	440.	320.
3960		TOTAL			2193.	1549.
3961	112	SINGLE FAMILY	du	43.0	555.	387.
3961	121	MULTI -FAMILY	du	16.0	182.	128.
3961	122	MULTI -FAMILY	du	59.0	507.	356.
3961	4112	RIGHT-OF-WAY	acre	4.0	0.	0.
3961	4114	PARKING	acre	0.0	0.	0.
3961	6112	RELIGIOUS FACILITY	ksf	20.0	130.	100.
3961		TOTAL			1374.	971.
3962	4112	RIGHT-OF-WAY	acre	1.1	0.	0.
3962		TOTAL			0.	0.
3969	112	SINGLE FAMILY	du	28.0	361.	252.
3969	121	MULTI -FAMILY	du	44.0	502.	352.
3969	122	MULTI -FAMILY	du	406.0	3492.	2451.
3969	4112	RIGHT-OF-WAY	acre	8.4	0.	0.
3969	5010	VACANT COMMERCIAL	ksf	8.7	0.	0.
3969	5014	CONVENIENCE MARKET CHAIN	ksf	3.2	2186.	1588.
3969	5024	CAR WASH	other	4.0	550.	400.
3969	5029	AUTO REPAIR	ksf	6.1	167.	121.
3969	5134	NEIGHBORHOOD SHOP CENTER	ksf	28.8	4874.	3450.
3969	6012	LOW RISE OFFICE A	ksf	71.8	3833.	2951.
3969	6112	RELIGIOUS FACILITY	ksf	3.5	23.	17.
3969	6115	FIRE OR POLICE STATION	ksf	14.5	590.	435.
3969	7200	COMMERCIAL RECREATION	ksf	9.0	395.	269.
3969		TOTAL			16972.	12287.
3974	112	SINGLE FAMILY	du	123.0	1587.	1108.
3974	121	MULTI -FAMILY	du	33.0	376.	264.
3974	122	MULTI -FAMILY	du	25.0	215.	151.
3974	4112	RIGHT-OF-WAY	acre	10.4	0.	0.
3974	4129	OTHER TRANSPORTATION	acre	0.9	7.	6.
3974	5013	SUPERMARKET	ksf	4.4	908.	659.
3974	5027	SERVICE STATION CAR WASH	other	12.0	2558.	1858.
3974		TOTAL			5651.	4046.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 8

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
3977	112	SINGLE FAMILY		du	99.0	1277.	891.
3977	121	MULTI -FAMILY		du	13.0	148.	104.
3977	122	MULTI -FAMILY		du	30.0	258.	181.
3977	2113	LIGHT INDUSTRY GENERAL		ksf	24.4	454.	376.
3977	2311	SCRAP YARD/LANDFILL		acre	1.5	11.	9.
3977	4112	RIGHT-OF-WAY		acre	9.5	0.	0.
3977	4114	PARKING		acre	0.1	0.	0.
3977	5029	AUTO REPAIR		ksf	11.9	327.	237.
3977	6119	OTHER PUBLIC SERVICE		ksf	2.0	28.	20.
3977		TOTAL				2503.	1819.

Existing Land Use TG by Land Use by zone.txt

3979	112	SINGLE FAMILY	du	79.0	1019.	711.
3979	121	MULTI -FAMILY	du	64.0	730.	512.
3979	122	MULTI -FAMILY	du	23.0	198.	139.
3979	4112	RIGHT-OF-WAY	acre	21.2	0.	0.
3979	6112	RELIGIOUS FACILITY	ksf	4.9	32.	24.
3979	7611	OPEN SPACE PARK	acre	1.9	15.	10.
3979		TOTAL			1993.	1396.
3980	112	SINGLE FAMILY	du	105.0	1354.	945.
3980	121	MULTI -FAMILY	du	75.0	855.	600.
3980	122	MULTI -FAMILY	du	84.0	722.	507.
3980	4112	RIGHT-OF-WAY	acre	20.9	0.	0.
3980	6112	RELIGIOUS FACILITY	ksf	14.5	94.	72.
3980	6115	FIRE OR POLICE STATION	ksf	9.6	391.	288.
3980		TOTAL			3417.	2413.
3984	112	SINGLE FAMILY	du	114.0	1471.	1026.
3984	121	MULTI -FAMILY	du	18.0	205.	144.
3984	122	MULTI -FAMILY	du	24.0	206.	145.
3984	2113	LIGHT INDUSTRY GENERAL	ksf	22.1	412.	340.
3984	2311	SCRAP YARD/LANDFILL	acre	0.4	3.	2.
3984	4112	RIGHT-OF-WAY	acre	9.6	0.	0.
3984	5029	AUTO REPAIR	ksf	2.8	77.	56.
3984	5030	AUTO TIRES	ksf	1.0	34.	25.
3984	5137	ARTERIAL COMMERCIAL	ksf	10.8	596.	433.
3984	6012	LOW RISE OFFICE A	ksf	2.2	118.	91.
3984	6112	RELIGIOUS FACILITY	ksf	4.5	29.	22.
3984	9101	INACTIVE USE	acre	0.1	0.	0.
3984		TOTAL			3151.	2285.
3985	112	SINGLE FAMILY	du	69.0	890.	621.
3985	121	MULTI -FAMILY	du	9.0	103.	72.
3985	122	MULTI -FAMILY	du	21.0	181.	127.
3985	2113	LIGHT INDUSTRY GENERAL	ksf	23.5	438.	362.
3985	2114	WAREHOUSING	ksf	21.0	128.	107.
3985	4112	RIGHT-OF-WAY	acre	12.2	0.	0.
3985	4114	PARKING	acre	0.6	0.	0.
3985	5029	AUTO REPAIR	ksf	1.2	33.	24.
3985	6112	RELIGIOUS FACILITY	ksf	11.0	72.	55.
3985	6816	ELEMENTARY SCHOOL	other	78.0	265.	148.
3985		TOTAL			2109.	1517.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 9

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
3988	112	SINGLE FAMILY	du	275.0	3547.	2476.
3988	4112	RIGHT-OF-WAY	acre	19.3	0.	0.
3988	6815	JUNIOR HIGH OR MIDDLE SCHOOL	other	1127.0	2592.	1592.
3988		TOTAL			6140.	4069.
3989	112	SINGLE FAMILY	du	36.0	464.	324.
3989	121	MULTI -FAMILY	du	31.0	353.	248.
3989	122	MULTI -FAMILY	du	36.0	310.	217.
3989	2113	LIGHT INDUSTRY GENERAL	ksf	41.0	762.	630.
3989	4112	RIGHT-OF-WAY	acre	14.4	0.	0.
3989	6112	RELIGIOUS FACILITY	ksf	74.2	483.	371.
3989		TOTAL			2372.	1791.

Existing Land Use TG by Land Use by zone.txt

3990	112	SINGLE FAMILY	du	108.0	1393.	972.
3990	121	MULTI -FAMILY	du	78.0	889.	624.
3990	122	MULTI -FAMILY	du	47.0	404.	284.
3990	2113	LIGHT INDUSTRY GENERAL	ksf	5.8	108.	90.
3990	4112	RIGHT-OF-WAY	acre	11.4	0.	0.
3990	5137	ARTERIAL COMMERCIAL	ksf	6.8	377.	274.
3990	6111	CEMETERY	acre	7.0	42.	35.
3990	6112	RELIGIOUS FACILITY	ksf	5.2	34.	26.
3990		TOTAL			3248.	2304.
3991	112	SINGLE FAMILY	du	172.0	2219.	1549.
3991	121	MULTI -FAMILY	du	49.0	559.	392.
3991	122	MULTI -FAMILY	du	44.0	378.	266.
3991	4112	RIGHT-OF-WAY	acre	9.2	0.	0.
3991	5137	ARTERIAL COMMERCIAL	ksf	27.8	1529.	1111.
3991	6012	LOW RISE OFFICE A	ksf	3.2	171.	131.
3991	6112	RELIGIOUS FACILITY	ksf	3.2	21.	16.
3991	6129	MEETING ROOM FACILITY	ksf	3.2	134.	97.
3991		TOTAL			5011.	3562.
3992	112	SINGLE FAMILY	du	177.0	2283.	1594.
3992	121	MULTI -FAMILY	du	99.0	1129.	792.
3992	122	MULTI -FAMILY	du	214.0	1840.	1292.
3992	4112	RIGHT-OF-WAY	acre	19.3	0.	0.
3992	6012	LOW RISE OFFICE A	ksf	3.8	206.	158.
3992	6013	GOV' T /CIVIC CENTER	ksf	50.7	2024.	1521.
3992	6112	RELIGIOUS FACILITY	ksf	14.6	95.	73.
3992	7611	OPEN SPACE PARK	acre	5.6	43.	29.
3992	7613	ACTIVE PARK	acre	3.7	284.	187.
3992		TOTAL			7905.	5646.
3993	4112	RIGHT-OF-WAY	acre	4.2	0.	0.
3993	5133	COMMUNITY SHOP CENTER	ksf	360.9	38937.	27553.
3993		TOTAL			38937.	27553.
3994	112	SINGLE FAMILY	du	81.0	1045.	729.
3994	121	MULTI -FAMILY	du	74.0	844.	592.
3994	122	MULTI -FAMILY	du	8.0	69.	48.
3994	4112	RIGHT-OF-WAY	acre	20.3	0.	0.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 10

Zone	Code	Name	Land Use	Type	Amount	Tri ps-----	
						Person	Vehi cl e
3994	5137	ARTERIAL COMMERCIAL		ksf	7.9	434.	315.
3994	7611	OPEN SPACE PARK		acre	7.9	61.	40.
3994		TOTAL				2452.	1725.
3995	112	SINGLE FAMILY		du	274.0	3535.	2467.
3995	121	MULTI -FAMILY		du	17.0	194.	136.
3995	122	MULTI -FAMILY		du	104.0	894.	628.
3995	4112	RIGHT-OF-WAY		acre	42.9	0.	0.
3995	5137	ARTERIAL COMMERCIAL		ksf	45.4	2496.	1813.
3995	6112	RELIGIOUS FACILITY		ksf	52.2	340.	261.
3995	6519	OTHER HEALTH CARE		ksf	22.6	1523.	1131.
3995	6814	SENIOR HIGH SCHOOL		other	2333.0	9332.	4199.
3995	6816	ELEMENTARY SCHOOL		other	759.0	2581.	1442.
3995	7611	OPEN SPACE PARK		acre	0.8	6.	4.
3995	7613	ACTIVE PARK		acre	4.1	319.	210.

Existing Land Use TG by Land Use by zone. txt

3995		TOTAL			21220.	12291.
3996	112	SINGLE FAMILY	du	684.0	8824.	6159.
3996	4112	RIGHT-OF-WAY	acre	38.7	0.	0.
3996	5029	AUTO REPAIR	ksf	1.0	26.	19.
3996	5136	AUTO DEALERSHIP	acre	0.1	39.	28.
3996	6112	RELIGIOUS FACILITY	ksf	18.9	123.	94.
3996		TOTAL			9012.	6300.
3998	112	SINGLE FAMILY	du	144.0	1858.	1297.
3998	121	MULTI-FAMILY	du	122.0	1391.	976.
3998	122	MULTI-FAMILY	du	148.0	1273.	894.
3998	4112	RIGHT-OF-WAY	acre	27.2	0.	0.
3998	5139	OTHER RETAIL TRADE	ksf	2.4	132.	96.
3998	6112	RELIGIOUS FACILITY	ksf	19.3	125.	96.
3998	6114	POST OFFICE	ksf	5.8	1680.	1168.
3998		TOTAL			6459.	4527.
3999	112	SINGLE FAMILY	du	151.0	1948.	1360.
3999	121	MULTI-FAMILY	du	166.0	1892.	1329.
3999	122	MULTI-FAMILY	du	240.0	2064.	1449.
3999	4112	RIGHT-OF-WAY	acre	24.7	0.	0.
3999	5137	ARTERIAL COMMERCIAL	ksf	6.3	349.	253.
3999	6112	RELIGIOUS FACILITY	ksf	33.6	219.	168.
3999	6519	OTHER HEALTH CARE	ksf	26.0	1750.	1300.
3999	6816	ELEMENTARY SCHOOL	other	384.0	1306.	730.
3999	7613	ACTIVE PARK	acre	0.2	13.	8.
3999		TOTAL			9540.	6596.
4002	112	SINGLE FAMILY	du	143.0	1845.	1288.
4002	121	MULTI-FAMILY	du	157.0	1790.	1257.
4002	122	MULTI-FAMILY	du	160.0	1376.	966.
4002	4112	RIGHT-OF-WAY	acre	23.0	0.	0.
4002	4114	PARKING	acre	0.3	0.	0.
4002	5137	ARTERIAL COMMERCIAL	ksf	17.6	967.	702.
4002	6112	RELIGIOUS FACILITY	ksf	50.6	329.	253.
4002	6113	LIBRARY	ksf	3.3	244.	166.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 11

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4002	6119	OTHER PUBLIC SERVICE	ksf	3.5	49.	35.
4002	6815	JUNIOR HIGH OR MIDDLE SCHOOL	other	1242.0	2857.	1755.
4002	6816	ELEMENTARY SCHOOL	other	619.0	2105.	1176.
4002	7613	ACTIVE PARK	acre	18.0	1384.	911.
4002		TOTAL			12945.	8508.
4007	112	SINGLE FAMILY	du	488.0	6295.	4394.
4007	4112	RIGHT-OF-WAY	acre	32.7	0.	0.
4007	6112	RELIGIOUS FACILITY	ksf	29.3	191.	147.
4007	6816	ELEMENTARY SCHOOL	other	589.0	2003.	1119.
4007		TOTAL			8488.	5660.
4008	112	SINGLE FAMILY	du	57.0	735.	513.
4008	121	MULTI-FAMILY	du	75.0	855.	600.
4008	122	MULTI-FAMILY	du	117.0	1006.	706.
4008	1421	CORRECTIONAL FACILITY	other	300.0	840.	609.
4008	4112	RIGHT-OF-WAY	acre	12.2	0.	0.
4008	5133	COMMUNITY SHOP CENTER	ksf	134.3	14495.	10257.

Existing Land Use TG by Land Use by zone.txt						
4008	5138	SERVICE STATION	other	8.0	1486.	1082.
4008	6112	RELIGIOUS FACILITY	ksf	24.1	156.	120.
4008	6119	OTHER PUBLIC SERVICE	ksf	3.6	49.	36.
4008	6816	ELEMENTARY SCHOOL	other	481.0	1635.	914.
4008	7613	ACTIVE PARK	acre	0.2	12.	8.
4008		TOTAL			21270.	14845.
4009	112	SINGLE FAMILY	du	219.0	2825.	1972.
4009	121	MULTI-FAMILY	du	112.0	1277.	896.
4009	122	MULTI-FAMILY	du	124.0	1066.	749.
4009	4112	RIGHT-OF-WAY	acre	17.8	0.	0.
4009	5137	ARTERIAL COMMERCIAL	ksf	13.7	755.	549.
4009	5139	OTHER RETAIL TRADE	ksf	0.9	51.	37.
4009	6112	RELIGIOUS FACILITY	ksf	18.4	120.	92.
4009	6115	FIRE OR POLICE STATION	ksf	3.4	139.	103.
4009		TOTAL			6234.	4398.
4010	112	SINGLE FAMILY	du	328.0	4231.	2953.
4010	4112	RIGHT-OF-WAY	acre	28.2	0.	0.
4010	6112	RELIGIOUS FACILITY	ksf	8.5	55.	42.
4010	7613	ACTIVE PARK	acre	34.6	2662.	1752.
4010	9101	INACTIVE USE	acre	0.1	0.	0.
4010		TOTAL			6948.	4747.
4013	112	SINGLE FAMILY	du	178.0	2296.	1603.
4013	121	MULTI-FAMILY	du	63.0	718.	504.
4013	122	MULTI-FAMILY	du	40.0	344.	242.
4013	4112	RIGHT-OF-WAY	acre	16.6	0.	0.
4013	5137	ARTERIAL COMMERCIAL	ksf	4.0	222.	161.
4013	6112	RELIGIOUS FACILITY	ksf	2.3	15.	11.
4013		TOTAL			3595.	2521.
4018	112	SINGLE FAMILY	du	589.0	7598.	5303.
4018	4112	RIGHT-OF-WAY	acre	33.2	0.	0.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 12

Zone	Code	Name	Land Use	Type	Amount	Tri ps	
						Person	Vehi cle
4018	6112	RELIGIOUS FACILITY		ksf	5.0	32.	25.
4018	7611	OPEN SPACE PARK		acre	8.6	66.	44.
4018		TOTAL				7697.	5372.
4024	112	SINGLE FAMILY		du	404.0	5212.	3638.
4024	121	MULTI-FAMILY		du	389.0	4435.	3113.
4024	122	MULTI-FAMILY		du	322.0	2769.	1944.
4024	4112	RIGHT-OF-WAY		acre	50.2	0.	0.
4024	5029	AUTO REPAIR		ksf	1.8	49.	36.
4024	5134	NEIGHBORHOOD SHOP CENTER		ksf	33.2	5629.	3984.
4024	5137	ARTERIAL COMMERCIAL		ksf	37.5	2065.	1500.
4024	5139	OTHER RETAIL TRADE		ksf	1.2	64.	47.
4024	6112	RELIGIOUS FACILITY		ksf	6.0	39.	30.
4024	6810	DAY CARE CENTER		other	70.0	427.	352.
4024	6816	ELEMENTARY SCHOOL		other	549.0	1867.	1043.
4024	7220	OTHER RECREATION-HIGH		acre	2.8	205.	140.
4024		TOTAL				22760.	15826.
4027	112	SINGLE FAMILY		du	43.0	555.	387.
4027	121	MULTI-FAMILY		du	52.0	593.	416.
4027	122	MULTI-FAMILY		du	88.0	757.	531.

Existing Land Use TG by Land Use by zone.txt

4027	2113	LIGHT INDUSTRY GENERAL	ksf	66.2	1230.	1017.
4027	2114	WAREHOUSING	ksf	25.3	154.	129.
4027	4112	RIGHT-OF-WAY	acre	22.0	0.	0.
4027	4113	COMMUNICATION OR UTILITY	acre	2.8	9.	7.
4027	5137	ARTERIAL COMMERCIAL	ksf	45.4	2496.	1813.
4027	6112	RELIGIOUS FACILITY	ksf	7.1	46.	35.
4027	7611	OPEN SPACE PARK	acre	2.8	22.	14.
4027		TOTAL			5862.	4351.
4028	112	SINGLE FAMILY	du	73.0	942.	657.
4028	121	MULTI-FAMILY	du	51.0	581.	408.
4028	122	MULTI-FAMILY	du	86.0	740.	519.
4028	2114	WAREHOUSING	ksf	4.6	28.	23.
4028	4112	RIGHT-OF-WAY	acre	22.1	0.	0.
4028	5137	ARTERIAL COMMERCIAL	ksf	103.0	5664.	4114.
4028	6012	LOW RISE OFFICE A	ksf	4.2	226.	174.
4028	6112	RELIGIOUS FACILITY	ksf	11.5	75.	57.
4028	6129	MEETING ROOM FACILITY	ksf	2.7	111.	80.
4028		TOTAL			8367.	6034.
4035	112	SINGLE FAMILY	du	182.0	2348.	1639.
4035	121	MULTI-FAMILY	du	223.0	2542.	1785.
4035	122	MULTI-FAMILY	du	360.0	3096.	2174.
4035	4112	RIGHT-OF-WAY	acre	75.9	0.	0.
4035	4113	COMMUNICATION OR UTILITY	acre	0.1	0.	0.
4035	5137	ARTERIAL COMMERCIAL	ksf	13.2	724.	526.
4035	6112	RELIGIOUS FACILITY	ksf	24.5	159.	122.
4035	7613	ACTIVE PARK	acre	16.9	1302.	857.
4035		TOTAL			10171.	7102.
4038	112	SINGLE FAMILY	du	148.0	1909.	1333.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 13

Zone	Code	Name	Land Use		Trips	
			Type	Amount	Person	Vehicle
4038	121	MULTI-FAMILY	du	87.0	992.	696.
4038	122	MULTI-FAMILY	du	89.0	765.	537.
4038	4112	RIGHT-OF-WAY	acre	39.3	0.	0.
4038	5137	ARTERIAL COMMERCIAL	ksf	22.1	1213.	881.
4038	6112	RELIGIOUS FACILITY	ksf	3.6	23.	18.
4038	6816	ELEMENTARY SCHOOL	other	760.0	2584.	1444.
4038	7611	OPEN SPACE PARK	acre	2.9	23.	15.
4038	9101	INACTIVE USE	acre	0.1	0.	0.
4038		TOTAL			7509.	4924.
4039	112	SINGLE FAMILY	du	162.0	2090.	1459.
4039	121	MULTI-FAMILY	du	96.0	1094.	768.
4039	122	MULTI-FAMILY	du	107.0	920.	646.
4039	4112	RIGHT-OF-WAY	acre	18.2	0.	0.
4039	5137	ARTERIAL COMMERCIAL	ksf	8.4	465.	338.
4039	5139	OTHER RETAIL TRADE	ksf	10.5	578.	421.
4039	6012	LOW RISE OFFICE A	ksf	2.9	154.	119.
4039	6112	RELIGIOUS FACILITY	ksf	27.4	178.	137.
4039	6816	ELEMENTARY SCHOOL	other	173.0	588.	329.
4039	7611	OPEN SPACE PARK	acre	1.1	9.	6.
4039		TOTAL			6076.	4221.
4040	112	SINGLE FAMILY	du	83.0	1071.	747.
4040	121	MULTI-FAMILY	du	103.0	1174.	824.

Existing Land Use TG by Land Use by zone.txt

4040	122	MULTI -FAMI LY	du	14.0	120.	85.
4040	4112	RIGHT-OF-WAY	acre	12.4	0.	0.
4040	5137	ARTERIAL COMMERCIAL	ksf	30.8	1694.	1231.
4040	6012	LOW RISE OFFICE A	ksf	13.5	723.	557.
4040	6112	RELIGIOUS FACILITY	ksf	50.6	329.	253.
4040	7613	ACTIVE PARK	acre	17.5	1348.	887.
4040	9101	INACTIVE USE	acre	0.0	0.	0.
4040		TOTAL			6459.	4583.
4044	4112	RIGHT-OF-WAY	acre	0.1	0.	0.
4044		TOTAL			0.	0.
4047	112	SINGLE FAMILY	du	456.0	5882.	4106.
4047	4112	RIGHT-OF-WAY	acre	23.2	0.	0.
4047	4113	COMMUNICATION OR UTILITY	acre	3.8	12.	9.
4047	7611	OPEN SPACE PARK	acre	0.8	6.	4.
4047		TOTAL			5901.	4120.
4050	4112	RIGHT-OF-WAY	acre	0.4	0.	0.
4050	5133	COMMUNITY SHOP CENTER	ksf	75.3	8130.	5753.
4050	5134	NEIGHBORHOOD SHOP CENTER	ksf	48.1	8153.	5770.
4050		TOTAL			16284.	11524.
4057	112	SINGLE FAMILY	du	140.0	1806.	1261.
4057	121	MULTI -FAMI LY	du	140.0	1596.	1120.
4057	122	MULTI -FAMI LY	du	119.0	1023.	718.
4057	4112	RIGHT-OF-WAY	acre	21.6	0.	0.
4057	5137	ARTERIAL COMMERCIAL	ksf	2.8	151.	110.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 14

Zone	Code	Name	Type	Amount	Tri ps	
					Person	Vehi cl e
4057	6112	RELIGIOUS FACILITY	ksf	5.3	35.	27.
4057	7611	OPEN SPACE PARK	acre	7.2	56.	37.
4057	9101	INACTIVE USE	acre	0.0	0.	0.
4057		TOTAL			4667.	3273.
4058	112	SINGLE FAMILY	du	132.0	1703.	1189.
4058	121	MULTI -FAMI LY	du	152.0	1733.	1217.
4058	122	MULTI -FAMI LY	du	44.0	378.	266.
4058	4112	RIGHT-OF-WAY	acre	19.4	0.	0.
4058	5137	ARTERIAL COMMERCIAL	ksf	3.6	197.	143.
4058	6112	RELIGIOUS FACILITY	ksf	9.1	59.	45.
4058	6119	OTHER PUBLIC SERVICE	ksf	2.7	37.	26.
4058	6816	ELEMENTARY SCHOOL	other	543.0	1846.	1032.
4058	7611	OPEN SPACE PARK	acre	0.5	4.	3.
4058	7613	ACTIVE PARK	acre	0.2	12.	8.
4058		TOTAL			5969.	3928.
4061	112	SINGLE FAMILY	du	19.0	245.	171.
4061	121	MULTI -FAMI LY	du	54.0	616.	432.
4061	122	MULTI -FAMI LY	du	347.0	2984.	2095.
4061	4112	RIGHT-OF-WAY	acre	16.0	0.	0.
4061	5137	ARTERIAL COMMERCIAL	ksf	1.8	98.	71.
4061		TOTAL			3943.	2769.
4079	112	SINGLE FAMILY	du	147.0	1896.	1324.
4079	121	MULTI -FAMI LY	du	147.0	1676.	1177.
4079	122	MULTI -FAMI LY	du	110.0	946.	664.

Existing Land Use TG by Land Use by zone.txt

4079	1511	MOTEL	room	64.0	934.	575.
4079	4112	RIGHT-OF-WAY	acre	28.9	0.	0.
4079	5027	SERVICE STATION CAR WASH	other	8.0	1706.	1239.
4079	5137	ARTERIAL COMMERCIAL	ksf	8.2	452.	328.
4079	6112	RELIGIOUS FACILITY	ksf	4.2	27.	21.
4079	6816	ELEMENTARY SCHOOL	other	707.0	2404.	1343.
4079	9101	INACTIVE USE	acre	0.6	0.	0.
4079		TOTAL			10041.	6671.
4080	112	SINGLE FAMILY	du	161.0	2077.	1450.
4080	121	MULTI-FAMILY	du	174.0	1984.	1393.
4080	122	MULTI-FAMILY	du	137.0	1178.	827.
4080	4112	RIGHT-OF-WAY	acre	22.5	0.	0.
4080	5137	ARTERIAL COMMERCIAL	ksf	3.7	205.	149.
4080	6112	RELIGIOUS FACILITY	ksf	15.3	100.	77.
4080	7611	OPEN SPACE PARK	acre	0.8	6.	4.
4080	9101	INACTIVE USE	acre	2.1	0.	0.
4080		TOTAL			5549.	3899.
4683	112	SINGLE FAMILY	du	22.0	284.	198.
4683	121	MULTI-FAMILY	du	10.0	114.	80.
4683	122	MULTI-FAMILY	du	34.0	292.	205.
4683	2113	LIGHT INDUSTRY GENERAL	ksf	38.9	724.	599.
4683	4112	RIGHT-OF-WAY	acre	13.4	0.	0.
4683	4113	COMMUNICATION OR UTILITY	acre	3.9	12.	10.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 15

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4683	4114	PARKING	acre	3.0	0.	0.
4683	4121	RAIL/TRANSIT CENTER	acre	2.5	998.	763.
4683	5010	VACANT COMMERCIAL	ksf	4.2	0.	0.
4683	6129	MEETING ROOM FACILITY	ksf	13.9	576.	416.
4683		TOTAL			3001.	2271.
4684	4112	RIGHT-OF-WAY	acre	1.4	0.	0.
4684	5133	COMMUNITY SHOP CENTER	ksf	81.0	8745.	6188.
4684		TOTAL			8745.	6188.
4685	112	SINGLE FAMILY	du	97.0	1251.	873.
4685	121	MULTI-FAMILY	du	17.0	194.	136.
4685	122	MULTI-FAMILY	du	59.0	507.	356.
4685	2113	LIGHT INDUSTRY GENERAL	ksf	41.6	774.	640.
4685	2311	SCRAP YARD/LANDFILL	acre	1.8	13.	11.
4685	4112	RIGHT-OF-WAY	acre	8.8	0.	0.
4685	6112	RELIGIOUS FACILITY	ksf	5.2	34.	26.
4685		TOTAL			2773.	2042.
4686	112	SINGLE FAMILY	du	71.0	916.	639.
4686	121	MULTI-FAMILY	du	12.0	137.	96.
4686	122	MULTI-FAMILY	du	23.0	198.	139.
4686	2113	LIGHT INDUSTRY GENERAL	ksf	0.5	9.	8.
4686	4112	RIGHT-OF-WAY	acre	5.2	0.	0.
4686		TOTAL			1260.	882.
4687	112	SINGLE FAMILY	du	4.0	52.	36.
4687	121	MULTI-FAMILY	du	6.0	68.	48.
4687	122	MULTI-FAMILY	du	12.0	103.	72.
4687	2113	LIGHT INDUSTRY GENERAL	ksf	34.8	648.	536.

Existing Land Use TG by Land Use by zone.txt

4687	2311	SCRAP YARD/LANDFILL	acre	0.2	2.	1.
4687	4112	RIGHT-OF-WAY	acre	2.7	0.	0.
4687	5137	ARTERIAL COMMERCIAL	ksf	5.3	289.	210.
4687		TOTAL			1162.	904.
4688	112	SINGLE FAMILY	du	3.0	39.	27.
4688	121	MULTI-FAMILY	du	5.0	57.	40.
4688	122	MULTI-FAMILY	du	6.0	52.	36.
4688	2113	LIGHT INDUSTRY GENERAL	ksf	55.5	1032.	854.
4688	4112	RIGHT-OF-WAY	acre	0.3	0.	0.
4688	4114	PARKING	acre	0.5	0.	0.
4688	5137	ARTERIAL COMMERCIAL	ksf	7.5	412.	299.
4688		TOTAL			1591.	1256.
4689	112	SINGLE FAMILY	du	32.0	413.	288.
4689	121	MULTI-FAMILY	du	22.0	251.	176.
4689	122	MULTI-FAMILY	du	24.0	206.	145.
4689	4112	RIGHT-OF-WAY	acre	3.6	0.	0.
4689	6012	LOW RISE OFFICE A	ksf	12.6	675.	520.
4689	6112	RELIGIOUS FACILITY	ksf	28.2	183.	141.
4689	6810	DAY CARE CENTER	other	109.0	665.	549.
4689		TOTAL			2393.	1819.

9aug13/08: 28:04/tgm.pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 16

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
4690	112	SINGLE FAMILY		du	16.0	206.	144.
4690	121	MULTI-FAMILY		du	9.0	103.	72.
4690	122	MULTI-FAMILY		du	6.0	52.	36.
4690	2113	LIGHT INDUSTRY GENERAL		ksf	2.3	43.	35.
4690	2311	SCRAP YARD/LANDFILL		acre	0.9	7.	6.
4690	4112	RIGHT-OF-WAY		acre	1.2	0.	0.
4690	4114	PARKING		acre	0.1	0.	0.
4690	5029	AUTO REPAIR		ksf	9.0	248.	180.
4690	5030	AUTO TIRES		ksf	3.5	120.	87.
4690	5137	ARTERIAL COMMERCIAL		ksf	4.0	220.	160.
4690	6012	LOW RISE OFFICE A		ksf	2.3	124.	95.
4690		TOTAL				1122.	816.
4691	112	SINGLE FAMILY		du	8.0	103.	72.
4691	2113	LIGHT INDUSTRY GENERAL		ksf	13.9	259.	214.
4691	2114	WAREHOUSING		ksf	1.0	6.	5.
4691	2311	SCRAP YARD/LANDFILL		acre	0.9	7.	6.
4691	4112	RIGHT-OF-WAY		acre	2.6	0.	0.
4691	5011	HIGH TURNOVER RESTAURANT		ksf	2.2	399.	290.
4691	5136	AUTO DEALERSHIP		acre	0.1	50.	36.
4691	5137	ARTERIAL COMMERCIAL		ksf	4.0	219.	159.
4691		TOTAL				1044.	782.
4692	112	SINGLE FAMILY		du	27.0	348.	243.
4692	122	MULTI-FAMILY		du	68.0	585.	411.
4692	2113	LIGHT INDUSTRY GENERAL		ksf	29.5	548.	453.
4692	4112	RIGHT-OF-WAY		acre	7.9	0.	0.
4692	5137	ARTERIAL COMMERCIAL		ksf	1.0	55.	40.
4692		TOTAL				1536.	1147.
4693	112	SINGLE FAMILY		du	3.0	39.	27.
4693	121	MULTI-FAMILY		du	2.0	23.	16.

Existing Land Use TG by Land Use by zone.txt

4693	122	MULTI -FAMILY	du	12.0	103.	72.
4693	2113	LIGHT INDUSTRY GENERAL	ksf	4.9	91.	75.
4693	2114	WAREHOUSING	ksf	19.5	119.	100.
4693	2311	SCRAP YARD/LANDFILL	acre	0.1	1.	1.
4693	4112	RIGHT-OF-WAY	acre	1.2	0.	0.
4693	5029	AUTO REPAIR	ksf	1.6	45.	33.
4693	5137	ARTERIAL COMMERCIAL	ksf	8.0	441.	320.
4693	6012	LOW RISE OFFICE A	ksf	8.5	454.	350.
4693		TOTAL			1316.	994.
4694	112	SINGLE FAMILY	du	8.0	103.	72.
4694	121	MULTI -FAMILY	du	6.0	68.	48.
4694	2113	LIGHT INDUSTRY GENERAL	ksf	50.2	933.	771.
4694	4112	RIGHT-OF-WAY	acre	1.5	0.	0.
4694	4114	PARKING	acre	0.8	0.	0.
4694	5011	HIGH TURNOVER RESTAURANT	ksf	1.8	315.	229.
4694	5028	AUTO PARTS	ksf	5.7	490.	356.
4694	5137	ARTERIAL COMMERCIAL	ksf	70.5	3878.	2816.
4694		TOTAL			5787.	4292.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 17

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehi cle
4695	112	SINGLE FAMILY	du	25.0	322.	225.
4695	122	MULTI -FAMILY	du	12.0	103.	72.
4695	2113	LIGHT INDUSTRY GENERAL	ksf	0.8	15.	12.
4695	4112	RIGHT-OF-WAY	acre	4.9	0.	0.
4695		TOTAL			441.	310.
4696	112	SINGLE FAMILY	du	116.0	1496.	1044.
4696	121	MULTI -FAMILY	du	15.0	171.	120.
4696	122	MULTI -FAMILY	du	111.0	955.	670.
4696	4112	RIGHT-OF-WAY	acre	8.7	0.	0.
4696	5029	AUTO REPAIR	ksf	1.8	48.	35.
4696	5030	AUTO TIRES	ksf	2.5	86.	62.
4696	5137	ARTERIAL COMMERCIAL	ksf	1.4	79.	58.
4696		TOTAL			2836.	1990.
4697	112	SINGLE FAMILY	du	38.0	490.	342.
4697	121	MULTI -FAMILY	du	12.0	137.	96.
4697	122	MULTI -FAMILY	du	65.0	559.	392.
4697	4112	RIGHT-OF-WAY	acre	3.1	0.	0.
4697	5025	SERVICE STATION FOOD MART	other	12.0	2476.	1798.
4697	5137	ARTERIAL COMMERCIAL	ksf	8.2	453.	329.
4697	6112	RELIGIOUS FACILITY	ksf	5.5	36.	28.
4697		TOTAL			4150.	2985.
4698	112	SINGLE FAMILY	du	56.0	722.	504.
4698	121	MULTI -FAMILY	du	11.0	125.	88.
4698	122	MULTI -FAMILY	du	25.0	215.	151.
4698	4112	RIGHT-OF-WAY	acre	4.3	0.	0.
4698	4114	PARKING	acre	0.2	0.	0.
4698	5014	CONVENIENCE MARKET CHAIN	ksf	17.5	12036.	8742.
4698	5137	ARTERIAL COMMERCIAL	ksf	18.7	1028.	747.
4698	6112	RELIGIOUS FACILITY	ksf	0.6	4.	3.
4698		TOTAL			14132.	10236.
4699	112	SINGLE FAMILY	du	54.0	697.	486.

Existing Land Use TG by Land Use by zone.txt

4699	121	MULTI -FAMI LY	du	8.0	91.	64.
4699	122	MULTI -FAMI LY	du	30.0	258.	181.
4699	4112	RI GHT-OF-WAY	acre	4.7	0.	0.
4699	5137	ARTERIAL COMMERCIAL	ksf	17.5	960.	697.
4699	6112	RELIGIOUS FACI LITY	ksf	11.8	77.	59.
4699		TOTAL			2083.	1488.
4700	112	SINGLE FAMILY	du	17.0	219.	153.
4700	121	MULTI -FAMI LY	du	18.0	205.	144.
4700	122	MULTI -FAMI LY	du	19.0	163.	115.
4700	2113	LIGHT INDUSTRY GENERAL	ksf	11.8	219.	181.
4700	4112	RI GHT-OF-WAY	acre	1.8	0.	0.
4700	4114	PARKING	acre	0.9	0.	0.
4700	5011	HIGH TURNOVER RESTAURANT	ksf	1.4	244.	177.
4700	5014	CONVENI ENCE MARKET CHAIN	ksf	14.0	9629.	6994.
4700	5029	AUTO REPAIR	ksf	4.5	123.	89.
4700	5030	AUTO TIRES	ksf	1.6	54.	39.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 18

Zone	Code	Name	Land Use	Type	Amount	Tri ps-----	
						Person	Vehi cl e
4700	5137	ARTERIAL COMMERCIAL		ksf	21.8	1199.	871.
4700	6013	GOV' T /CIVIC CENTER		ksf	1.7	68.	51.
4700	6112	RELIGIOUS FACI LITY		ksf	4.5	29.	22.
4700	6115	FIRE OR POLICE STATION		ksf	14.6	596.	439.
4700		TOTAL				12748.	9276.
4701	112	SINGLE FAMILY		du	5.0	64.	45.
4701	121	MULTI -FAMI LY		du	14.0	160.	112.
4701	122	MULTI -FAMI LY		du	4.0	34.	24.
4701	2113	LIGHT INDUSTRY GENERAL		ksf	15.7	292.	242.
4701	4112	RI GHT-OF-WAY		acre	1.1	0.	0.
4701	5029	AUTO REPAIR		ksf	8.0	219.	159.
4701	5137	ARTERIAL COMMERCIAL		ksf	21.8	1201.	872.
4701	6112	RELIGIOUS FACI LITY		ksf	1.8	12.	9.
4701		TOTAL				1983.	1463.
4702	112	SINGLE FAMILY		du	22.0	284.	198.
4702	122	MULTI -FAMI LY		du	4.0	34.	24.
4702	2113	LIGHT INDUSTRY GENERAL		ksf	13.8	256.	212.
4702	2311	SCRAP YARD/LANDFILL		acre	0.2	2.	2.
4702	4112	RI GHT-OF-WAY		acre	2.0	0.	0.
4702	5014	CONVENI ENCE MARKET CHAIN		ksf	5.8	3989.	2897.
4702	5030	AUTO TIRES		ksf	0.6	22.	16.
4702	5137	ARTERIAL COMMERCIAL		ksf	0.6	31.	22.
4702	6129	MEETING ROOM FACI LITY		ksf	4.0	166.	120.
4702		TOTAL				4785.	3492.
4703	111	SINGLE FAMILY		du	1.0	13.	9.
4703	112	SINGLE FAMILY		du	182.0	2348.	1639.
4703	4112	RI GHT-OF-WAY		acre	19.0	0.	0.
4703	6113	LI BRARY		ksf	27.6	2029.	1375.
4703	6819	OTHER SCHOOL		ksf	14.5	316.	261.
4703	7611	OPEN SPACE PARK		acre	32.6	251.	165.
4703		TOTAL				4956.	3449.
4704	4112	RI GHT-OF-WAY		acre	1.4	0.	0.
4704	6812	UNI VERSI TY OR COLLEGE		other	7667.0	15334.	12465.
4704		TOTAL				15334.	12465.

Existing Land Use TG by Land Use by zone.txt

4705	112	SINGLE FAMILY	du	256.0	3302.	2305.
4705	4112	RIGHT-OF-WAY	acre	17.6	0.	0.
4705	7611	OPEN SPACE PARK	acre	25.4	195.	128.
4705		TOTAL			3498.	2433.
4706	112	SINGLE FAMILY	du	326.0	4205.	2935.
4706	1411	CONGREGATE CARE FACILITY	other	12.0	52.	36.
4706	4112	RIGHT-OF-WAY	acre	18.6	0.	0.
4706		TOTAL			4257.	2972.
4707	112	SINGLE FAMILY	du	153.0	1974.	1378.
4707	4112	RIGHT-OF-WAY	acre	9.0	0.	0.
4707	4113	COMMUNICATION OR UTILITY	acre	0.6	2.	1.

9aug13/08: 28: 04/tgm. pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 19

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4707	7611	OPEN SPACE PARK	acre	0.8	6.	4.
4707	7613	ACTIVE PARK	acre	3.0	234.	154.
4707		TOTAL			2215.	1537.
4708	112	SINGLE FAMILY	du	351.0	4528.	3160.
4708	121	MULTI-FAMILY	du	17.0	194.	136.
4708	4112	RIGHT-OF-WAY	acre	31.6	0.	0.
4708	7611	OPEN SPACE PARK	acre	0.2	2.	1.
4708		TOTAL			4723.	3298.
4709	112	SINGLE FAMILY	du	209.0	2696.	1882.
4709	121	MULTI-FAMILY	du	188.0	2143.	1505.
4709	122	MULTI-FAMILY	du	119.0	1023.	718.
4709	4112	RIGHT-OF-WAY	acre	20.2	0.	0.
4709	5137	ARTERIAL COMMERCIAL	ksf	2.2	119.	86.
4709	6112	RELIGIOUS FACILITY	ksf	17.0	110.	85.
4709	6519	OTHER HEALTH CARE	ksf	3.8	253.	188.
4709	6816	ELEMENTARY SCHOOL	other	483.0	1642.	918.
4709	7613	ACTIVE PARK	acre	6.6	510.	335.
4709		TOTAL			8497.	5717.
4710	112	SINGLE FAMILY	du	25.0	322.	225.
4710	121	MULTI-FAMILY	du	23.0	262.	184.
4710	122	MULTI-FAMILY	du	171.0	1471.	1032.
4710	4112	RIGHT-OF-WAY	acre	5.9	0.	0.
4710	5137	ARTERIAL COMMERCIAL	ksf	10.1	557.	404.
4710	6119	OTHER PUBLIC SERVICE	ksf	8.7	120.	87.
4710	7613	ACTIVE PARK	acre	0.1	9.	6.
4710		TOTAL			2741.	1939.
4711	112	SINGLE FAMILY	du	12.0	155.	108.
4711	121	MULTI-FAMILY	du	10.0	114.	80.
4711	122	MULTI-FAMILY	du	80.0	688.	483.
4711	2113	LIGHT INDUSTRY GENERAL	ksf	8.0	149.	123.
4711	4112	RIGHT-OF-WAY	acre	2.9	0.	0.
4711	6012	LOW RISE OFFICE A	ksf	5.4	288.	222.
4711		TOTAL			1394.	1016.
4712	112	SINGLE FAMILY	du	24.0	310.	216.
4712	121	MULTI-FAMILY	du	15.0	171.	120.
4712	122	MULTI-FAMILY	du	134.0	1152.	809.

Existing Land Use TG by Land Use by zone.txt						
4712	4112	RIGHT-OF-WAY	acre	3.8	0.	0.
4712	6511	CLINIC	ksf	3.0	201.	149.
4712		TOTAL			1834.	1294.
4713	112	SINGLE FAMILY	du	11.0	142.	99.
4713	121	MULTI-FAMILY	du	6.0	68.	48.
4713	122	MULTI-FAMILY	du	25.0	215.	151.
4713	4112	RIGHT-OF-WAY	acre	1.3	0.	0.
4713	5137	ARTERIAL COMMERCIAL	ksf	6.5	359.	261.
4713		TOTAL			784.	559.

9aug13/08: 28:04/tgm.pr

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 20

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
4714	112	SINGLE FAMILY		du	5.0	64.	45.
4714	121	MULTI-FAMILY		du	13.0	148.	104.
4714	122	MULTI-FAMILY		du	9.0	77.	54.
4714	4112	RIGHT-OF-WAY		acre	3.6	0.	0.
4714	5137	ARTERIAL COMMERCIAL		ksf	30.4	1672.	1214.
4714		TOTAL				1962.	1417.
4715	112	SINGLE FAMILY		du	25.0	322.	225.
4715	121	MULTI-FAMILY		du	17.0	194.	136.
4715	122	MULTI-FAMILY		du	54.0	464.	326.
4715	4112	RIGHT-OF-WAY		acre	4.1	0.	0.
4715	7611	OPEN SPACE PARK		acre	0.0	0.	0.
4715	7613	ACTIVE PARK		acre	2.7	204.	134.
4715		TOTAL				1185.	822.
4716	112	SINGLE FAMILY		du	29.0	374.	261.
4716	121	MULTI-FAMILY		du	4.0	46.	32.
4716	122	MULTI-FAMILY		du	20.0	172.	121.
4716	4112	RIGHT-OF-WAY		acre	2.0	0.	0.
4716	4114	PARKING		acre	0.2	0.	0.
4716	5137	ARTERIAL COMMERCIAL		ksf	9.4	518.	376.
4716		TOTAL				1109.	790.
4717	112	SINGLE FAMILY		du	39.0	503.	351.
4717	121	MULTI-FAMILY		du	34.0	388.	272.
4717	122	MULTI-FAMILY		du	37.0	318.	223.
4717	4112	RIGHT-OF-WAY		acre	2.5	0.	0.
4717	5137	ARTERIAL COMMERCIAL		ksf	1.6	90.	65.
4717		TOTAL				1298.	912.
4718	112	SINGLE FAMILY		du	36.0	464.	324.
4718	121	MULTI-FAMILY		du	21.0	239.	168.
4718	122	MULTI-FAMILY		du	10.0	86.	60.
4718	4112	RIGHT-OF-WAY		acre	8.1	0.	0.
4718	4113	COMMUNICATION OR UTILITY		acre	0.5	1.	1.
4718	5131	WHOLESALE TRADE		ksf	15.7	1553.	1101.
4718	5137	ARTERIAL COMMERCIAL		ksf	15.9	876.	637.
4718	6819	OTHER SCHOOL		ksf	36.1	787.	650.
4718	7613	ACTIVE PARK		acre	0.2	18.	12.
4718		TOTAL				4025.	2953.
4719	112	SINGLE FAMILY		du	48.0	619.	432.
4719	121	MULTI-FAMILY		du	45.0	513.	360.
4719	122	MULTI-FAMILY		du	31.0	267.	187.

Existing Land Use TG by Land Use by zone. txt						
4719	4112	RIGHT-OF-WAY	acre	3.8	0.	0.
4719	5137	ARTERIAL COMMERCIAL	ksf	1.5	84.	61.
4719		TOTAL			1483.	1041.
4720	112	SINGLE FAMILY	du	20.0	258.	180.
4720	121	MULTI-FAMILY	du	22.0	251.	176.
4720	122	MULTI-FAMILY	du	8.0	69.	48.
4720	1511	MOTEL	room	27.0	394.	243.

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 21

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehi cle
4720	4112	RIGHT-OF-WAY	acre	5.5	0.	0.
4720	5137	ARTERIAL COMMERCIAL	ksf	27.0	1485.	1079.
4720		TOTAL			2457.	1726.
4721	112	SINGLE FAMILY	du	24.0	310.	216.
4721	121	MULTI-FAMILY	du	24.0	274.	192.
4721	122	MULTI-FAMILY	du	13.0	112.	78.
4721	4112	RIGHT-OF-WAY	acre	6.4	0.	0.
4721	5137	ARTERIAL COMMERCIAL	ksf	14.5	796.	578.
4721	6816	ELEMENTARY SCHOOL	other	333.0	1132.	633.
4721		TOTAL			2624.	1698.
4722	112	SINGLE FAMILY	du	101.0	1303.	909.
4722	121	MULTI-FAMILY	du	81.0	923.	648.
4722	122	MULTI-FAMILY	du	52.0	447.	314.
4722	2113	LIGHT INDUSTRY GENERAL	ksf	23.7	441.	365.
4722	4112	RIGHT-OF-WAY	acre	14.4	0.	0.
4722	5137	ARTERIAL COMMERCIAL	ksf	2.3	127.	92.
4722	7611	OPEN SPACE PARK	acre	2.6	20.	13.
4722	7613	ACTIVE PARK	acre	0.2	17.	11.
4722		TOTAL			3279.	2354.
4723	112	SINGLE FAMILY	du	15.0	193.	135.
4723	121	MULTI-FAMILY	du	19.0	217.	152.
4723	122	MULTI-FAMILY	du	150.0	1290.	906.
4723	4112	RIGHT-OF-WAY	acre	14.2	0.	0.
4723	5137	ARTERIAL COMMERCIAL	ksf	30.7	1689.	1227.
4723		TOTAL			3389.	2419.
4724	112	SINGLE FAMILY	du	38.0	490.	342.
4724	121	MULTI-FAMILY	du	59.0	673.	472.
4724	122	MULTI-FAMILY	du	120.0	1032.	725.
4724	4112	RIGHT-OF-WAY	acre	4.1	0.	0.
4724		TOTAL			2195.	1539.
4725	112	SINGLE FAMILY	du	32.0	413.	288.
4725	121	MULTI-FAMILY	du	44.0	502.	352.
4725	122	MULTI-FAMILY	du	20.0	172.	121.
4725	4112	RIGHT-OF-WAY	acre	5.7	0.	0.
4725	5137	ARTERIAL COMMERCIAL	ksf	2.1	113.	82.
4725	6816	ELEMENTARY SCHOOL	other	354.0	1204.	673.
4725		TOTAL			2403.	1516.
4726	112	SINGLE FAMILY	du	120.0	1548.	1081.
4726	121	MULTI-FAMILY	du	10.0	114.	80.
4726	4112	RIGHT-OF-WAY	acre	16.7	0.	0.
4726	5025	SERVICE STATION FOOD MART	other	8.0	1650.	1199.

Existing Land Use TG by Land Use by zone.txt						
4726	5137	ARTERIAL COMMERCIAL	ksf	1.4	76.	55.
4726	7611	OPEN SPACE PARK	acre	6.3	49.	32.
4726		TOTAL			3437.	2446.
4727	112	SINGLE FAMILY	du	108.0	1393.	972.

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SESD and Encanto\Base Year 2008 Cal 5
trip generation and land use by zone

page 22

Zone	Code	Name	Land Use		Trips	
			Type	Amount	Person	Vehi cl e
4727	4112	RIGHT-OF-WAY	acre	13.3	0.	0.
4727	7611	OPEN SPACE PARK	acre	8.6	67.	44.
4727		TOTAL			1460.	1016.
4728	112	SINGLE FAMILY	du	220.0	2838.	1981.
4728	121	MULTI -FAMILY	du	22.0	251.	176.
4728	122	MULTI -FAMILY	du	12.0	103.	72.
4728	4112	RIGHT-OF-WAY	acre	13.2	0.	0.
4728	6112	RELIGIOUS FACILITY	ksf	7.7	50.	38.
4728	7611	OPEN SPACE PARK	acre	5.8	45.	29.
4728		TOTAL			3286.	2297.

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Land Use Summary

-----	-----	Trip Rate	-----	Person	-----	Acti vi ty
Code	Name	du	acre	Tri ps	DUs	Acres
0.	111	SINGLE FAMI LY	0.0	26.	2.	0.
0.	12.9		0.0			
0.	112	SINGLE FAMI LY	0.0	202814.	15722.	0.
0.	12.9		0.0			
0.	121	MULTI -FAMI LY	0.0	60944.	5346.	0.
0.	11.4		0.0			
0.	122	MULTI -FAMI LY	0.0	157638.	18330.	0.
0.	8.6		0.0			
0.	131	MOBI LE HOME PARK	0.0	1875.	250.	0.
0.	7.5		0.0			
0.	1411	CONGREGATE CARE FACI LITY	0.0	77.	0.	18.
0.	0.0		4.3			
0.	1421	CORRECTI ONAL FACI LITY	0.0	840.	0.	300.
0.	0.0		2.8			
0.	1511	MOTEL	0.0	1329.	0.	91.
0.	0.0		14.6			
0.	2111	INDUSTRI AL PARK	0.0	4858.	0.	265.
0.	0.0		18.3			
0.	2113	LIGHT INDUSTRY GENERAL	0.0	49196.	0.	2645.
0.	0.0		18.6			
0.	2114	WAREHOUSI NG	0.0	466.	0.	76.
0.	0.0		6.1			
0.	4112	RIGH T-OF-WAY	0.0	0.	0.	1903.
0.	0.0		0.0			
0.	4113	COMMUNI CATION OR UTI LITY	0.0	180.	0.	56.
0.	0.0		3.2			
0.	4114	PARKI NG	0.0	0.	0.	4.
0.	0.0		0.0			
0.	4121	RAI L/TRANSIT CENTER	0.0	1090.	0.	3.
0.	0.0		392.8			
0.	5011	HIGH TURNOVER RESTAURANT	0.0	4802.	0.	27.
0.	0.0		178.8			
0.	5013	SUPERMARKET	0.0	908.	0.	4.
0.	0.0		206.3			
0.	5014	CONVENI ENCE MARKET CHAI N	0.0	27718.	0.	40.
0.	0.0		687.8			
0.	5025	SERVIC E STATI ON FOOD MART	0.0	7839.	0.	38.
0.	0.0		206.3			
0.	5027	SERVIC E STATI ON CAR WASH	0.0	4264.	0.	20.
0.	0.0		213.2			
0.	5028	AUTO PARTS	0.0	490.	0.	6.
0.	0.0		85.3			
0.	5029	AUTO REPAI R	0.0	1173.	0.	43.
0.	0.0		27.5			
0.	5030	AUTO TIRES	0.0	260.	0.	8.
0.	0.0		34.4			
0.	5131	WHOLESALE TRADE	0.0	1553.	0.	16.
0.	0.0		98.9			
0.	5133	COMMUNI TY SHOP CENTER	0.0	117740.	0.	1091.
0.	0.0		107.9			
0.	5134	NEIGHBORHOOD SHOP CENTER	0.0	17061.	0.	101.
0.	0.0		169.5			
0.	5136	AUTO DEALERSHI P	0.0	89.	0.	0.
0.	0.0		423.8			

Proposed Land Use Summary.txt

0.	5137	ARTERIAL COMMERCIAL	124385.	0.	2262.
0.	0.0	55.0 0.0			
0.	5138	SERVICE STATION	2971.	0.	16.
0.	0.0	185.7 0.0			
0.	5139	OTHER RETAIL TRADE	1323.	0.	24.
0.	0.0	55.1 0.0			
0.	6012	LOW RISE OFFICE A	5946.	0.	111.
0.	0.0	53.4 0.0			
0.	6022	LOW RISE OFFICE B	526.	0.	12.
0.	0.0	44.3 0.0			
0.	6042	LOW RISE OFFICE D	1504.	0.	46.
0.	0.0	32.6 0.0			
0.	6052	LOW RISE OFFICE E	1349.	0.	52.
0.	0.0	26.1 0.0			
0.	6072	LOW RISE OFFICE E	1640.	0.	66.
0.	0.0	24.8 0.0			
0.	6082	LOW RISE OFFICE H	3103.	0.	125.
0.	0.0	24.8 0.0			
0.	6013	GOV' T /CIVIC CENTER	2092.	0.	52.
0.	0.0	39.9 0.0			
0.	6014	GOV' T OFFICE	881.	0.	22.
0.	0.0	39.9 0.0			
0.	6111	CEMETERY	1000.	0.	164.
0.	0.0	6.1 0.0			
0.	6112	RELIGIOUS FACILITY	6034.	0.	928.
0.	0.0	6.5 0.0			
0.	6113	LIBRARY	3745.	0.	51.
0.	0.0	73.6 0.0			
0.	6115	FIRE OR POLICE STATION	1715.	0.	42.
0.	0.0	40.7 0.0			
0.	6114	POST OFFICE	1680.	0.	6.
0.	0.0	287.3 0.0			
0.	6119	OTHER PUBLIC SERVICE	317.	0.	23.
0.	0.0	13.8 0.0			
0.	6129	MEETING ROOM FACILITY	1301.	0.	31.
0.	0.0	41.5 0.0			
0.	6511	CLINIC	14546.	0.	216.
0.	0.0	67.3 0.0			
0.	6519	OTHER HEALTH CARE	2004.	0.	30.
0.	0.0	67.3 0.0			
0.	6810	DAY CARE CENTER	1549.	0.	254.
0.	0.0	6.1 0.0			
0.	6812	UNIVERSITY OR COLLEGE	15334.	0.	7667.
0.	0.0	2.0 0.0			
0.	6814	SENIOR HIGH SCHOOL	13132.	0.	3283.
0.	0.0	4.0 0.0			
0.	6815	JUNIOR HIGH OR MIDDLE SCHOOL	6902.	0.	3001.
0.	0.0	2.3 0.0			
0.	6816	ELEMENTARY SCHOOL	39331.	0.	11568.
0.	0.0	3.4 0.0			
0.	6819	OTHER SCHOOL	1103.	0.	51.
0.	0.0	21.8 0.0			
0.	7220	OTHER RECREATION-HIGH	438.	0.	6.
0.	0.0	73.4 0.0			
0.	7611	OPEN SPACE PARK	1870.	0.	243.
0.	0.0	7.7 0.0			
0.	7613	ACTIVE PARK	10961.	0.	142.
0.	0.0	77.0 0.0			
0.	9101	INACTIVE USE	0.	0.	15.
0.	0.0	0.0 0.0			
0.		total	933916.	39650.	37264.

Proposed Land Use Summary.txt

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Proposed Project Land Use TG by Land Use by zone.txt
 203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C
 trip generation and Land use by zone page 1

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
3554	111	SINGLE FAMILY	du	1.0	13.	9.
3554	112	SINGLE FAMILY	du	564.0	7276.	5078.
3554	121	MULTI-FAMILY	du	3.0	34.	24.
3554	1411	CONGREGATE CARE FACILITY	other	6.0	26.	18.
3554	4112	RIGHT-OF-WAY	acre	32.3	0.	0.
3554	7611	OPEN SPACE PARK	acre	2.3	18.	12.
3554		TOTAL			7367.	5141.
3574	2113	LIGHT INDUSTRY GENERAL	ksf	143.4	2668.	2206.
3574	4112	RIGHT-OF-WAY	acre	9.1	0.	0.
3574	5137	ARTERIAL COMMERCIAL	ksf	43.9	2415.	1754.
3574		TOTAL			5083.	3960.
3594	4112	RIGHT-OF-WAY	acre	21.2	0.	0.
3594		TOTAL			0.	0.
3602	112	SINGLE FAMILY	du	227.0	2928.	2044.
3602	4112	RIGHT-OF-WAY	acre	28.8	0.	0.
3602	4113	COMMUNICATION OR UTILITY	acre	31.3	100.	78.
3602	6112	RELIGIOUS FACILITY	ksf	14.0	91.	70.
3602	6816	ELEMENTARY SCHOOL	other	357.0	1214.	678.
3602	7611	OPEN SPACE PARK	acre	70.6	543.	358.
3602	7613	ACTIVE PARK	acre	9.4	725.	477.
3602		TOTAL			5602.	3705.
3627	112	SINGLE FAMILY	du	315.0	4063.	2836.
3627	121	MULTI-FAMILY	du	25.0	285.	200.
3627	4112	RIGHT-OF-WAY	acre	23.0	0.	0.
3627		TOTAL			4348.	3036.
3696	112	SINGLE FAMILY	du	175.0	2257.	1576.
3696	121	MULTI-FAMILY	du	23.0	262.	184.
3696	122	MULTI-FAMILY	du	13.0	112.	78.
3696	4112	RIGHT-OF-WAY	acre	8.4	0.	0.
3696	6112	RELIGIOUS FACILITY	ksf	5.7	37.	28.
3696	6816	ELEMENTARY SCHOOL	other	713.0	2424.	1355.
3696	7611	OPEN SPACE PARK	acre	0.7	5.	4.
3696		TOTAL			5098.	3225.
3720	112	SINGLE FAMILY	du	343.0	4425.	3088.
3720	121	MULTI-FAMILY	du	3.0	34.	24.
3720	4112	RIGHT-OF-WAY	acre	13.3	0.	0.
3720	6112	RELIGIOUS FACILITY	ksf	16.6	108.	83.
3720	7611	OPEN SPACE PARK	acre	7.2	56.	37.
3720		TOTAL			4622.	3232.
3744	112	SINGLE FAMILY	du	518.0	6682.	4664.
3744	121	MULTI-FAMILY	du	66.0	752.	528.
3744	122	MULTI-FAMILY	du	13.0	112.	78.
3744	4112	RIGHT-OF-WAY	acre	29.7	0.	0.
3744	6111	CEMETERY	acre	40.5	247.	202.
3744	6112	RELIGIOUS FACILITY	ksf	22.0	143.	110.
3744		TOTAL			7936.	5583.

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
3745	112	SINGLE FAMILY		du	315.0	4063.	2836.
3745	121	MULTI -FAMILY		du	228.0	2599.	1825.
3745	122	MULTI -FAMILY		du	65.0	559.	392.
3745	4112	RIGHT-OF-WAY		acre	67.8	0.	0.
3745	6112	RELIGIOUS FACILITY		ksf	4.3	28.	21.
3745		TOTAL				7250.	5075.
3764	112	SINGLE FAMILY		du	349.0	4502.	3142.
3764	121	MULTI -FAMILY		du	142.0	1619.	1136.
3764	122	MULTI -FAMILY		du	302.0	2597.	1823.
3764	4112	RIGHT-OF-WAY		acre	18.2	0.	0.
3764	5137	ARTERIAL COMMERCIAL		ksf	60.8	3346.	2430.
3764	6814	SENIOR HIGH SCHOOL		other	950.0	3800.	1710.
3764	6815	JUNIOR HIGH OR MIDDLE SCHOOL		other	420.0	966.	593.
3764	7613	ACTIVE PARK		acre	4.7	365.	240.
3764		TOTAL				17194.	11075.
3766	112	SINGLE FAMILY		du	13.0	168.	117.
3766	121	MULTI -FAMILY		du	6.0	68.	48.
3766	2113	LIGHT INDUSTRY GENERAL		ksf	511.6	9516.	7869.
3766	2114	WAREHOUSING		ksf	30.3	185.	155.
3766	4112	RIGHT-OF-WAY		acre	39.4	0.	0.
3766	4113	COMMUNICATION OR UTILITY		acre	15.6	50.	39.
3766	6082	LOW RISE OFFICE H		ksf	125.1	3103.	2390.
3766	7611	OPEN SPACE PARK		acre	0.7	6.	4.
3766		TOTAL				13096.	10621.
3767	2113	LIGHT INDUSTRY GENERAL		ksf	596.5	11095.	9174.
3767	4112	RIGHT-OF-WAY		acre	8.0	0.	0.
3767	5133	COMMUNITY SHOP CENTER		ksf	127.6	13768.	9743.
3767	6511	CLINIC		ksf	31.9	2148.	1595.
3767	7611	OPEN SPACE PARK		acre	0.1	1.	1.
3767	7613	ACTIVE PARK		acre	5.6	434.	285.
3767		TOTAL				27446.	20798.
3817	112	SINGLE FAMILY		du	283.0	3651.	2548.
3817	121	MULTI -FAMILY		du	45.0	513.	360.
3817	122	MULTI -FAMILY		du	88.0	757.	531.
3817	4112	RIGHT-OF-WAY		acre	29.2	0.	0.
3817	4113	COMMUNICATION OR UTILITY		acre	0.3	1.	1.
3817	6112	RELIGIOUS FACILITY		ksf	15.0	98.	75.
3817	7611	OPEN SPACE PARK		acre	0.1	1.	0.
3817	7613	ACTIVE PARK		acre	5.8	449.	296.
3817		TOTAL				5469.	3812.
3831	112	SINGLE FAMILY		du	10.0	129.	90.
3831	121	MULTI -FAMILY		du	4.0	46.	32.
3831	122	MULTI -FAMILY		du	46.0	396.	278.
3831	2113	LIGHT INDUSTRY GENERAL		ksf	29.2	543.	449.
3831	4112	RIGHT-OF-WAY		acre	17.0	0.	0.
3831	4113	COMMUNICATION OR UTILITY		acre	2.9	9.	7.
3831	5137	ARTERIAL COMMERCIAL		ksf	63.2	3477.	2525.

Zone	Code	Proposed Project Land Use TG by Land Use by zone.txt Name	Type	Amount	Person	Vehi cl e
3831	6052	LOW RISE OFFICE E	ksf	51.7	1349.	1039.
3831	6112	RELIGIOUS FACILITY	ksf	27.7	180.	138.
3831	6119	OTHER PUBLIC SERVICE	ksf	8.1	111.	80.
3831	6815	JUNIOR HIGH OR MIDDLE SCHOOL	other	212.0	488.	300.
3831		TOTAL			6727.	4939.
3854	112	SINGLE FAMILY	du	21.0	271.	189.
3854	121	MULTI -FAMILY	du	3.0	34.	24.
3854	122	MULTI -FAMILY	du	126.0	1084.	761.
3854	4112	RIGHT-OF-WAY	acre	24.2	0.	0.
3854	5137	ARTERIAL COMMERCIAL	ksf	4.8	264.	192.
3854	6112	RELIGIOUS FACILITY	ksf	15.7	102.	78.
3854	6816	ELEMENTARY SCHOOL	other	273.0	928.	519.
3854		TOTAL			2683.	1763.
3855	112	SINGLE FAMILY	du	297.0	3831.	2674.
3855	121	MULTI -FAMILY	du	86.0	980.	688.
3855	122	MULTI -FAMILY	du	107.0	920.	646.
3855	2113	LIGHT INDUSTRY GENERAL	ksf	12.1	225.	186.
3855	4112	RIGHT-OF-WAY	acre	30.0	0.	0.
3855	4113	COMMUNICATION OR UTILITY	acre	0.3	1.	1.
3855	4114	PARKING	acre	0.3	0.	0.
3855	5025	SERVICE STATION FOOD MART	other	10.0	2063.	1498.
3855	5134	NEIGHBORHOOD SHOP CENTER	ksf	8.7	1473.	1042.
3855	5137	ARTERIAL COMMERCIAL	ksf	92.1	5066.	3680.
3855	6014	GOV' T OFFICE	ksf	22.1	881.	662.
3855	6112	RELIGIOUS FACILITY	ksf	3.4	22.	17.
3855	6810	DAY CARE CENTER	other	75.0	457.	378.
3855	6816	ELEMENTARY SCHOOL	other	737.0	2506.	1400.
3855	7611	OPEN SPACE PARK	acre	0.4	3.	2.
3855		TOTAL			18430.	12875.
3857	112	SINGLE FAMILY	du	252.0	3251.	2269.
3857	121	MULTI -FAMILY	du	276.0	3146.	2209.
3857	122	MULTI -FAMILY	du	124.0	1066.	749.
3857	2113	LIGHT INDUSTRY GENERAL	ksf	364.0	6770.	5598.
3857	4112	RIGHT-OF-WAY	acre	51.0	0.	0.
3857	5137	ARTERIAL COMMERCIAL	ksf	59.3	3262.	2369.
3857	6042	LOW RISE OFFICE D	ksf	46.1	1504.	1158.
3857	6112	RELIGIOUS FACILITY	ksf	28.7	186.	143.
3857		TOTAL			19186.	14495.
3858	112	SINGLE FAMILY	du	20.0	258.	180.
3858	121	MULTI -FAMILY	du	33.0	376.	264.
3858	122	MULTI -FAMILY	du	67.0	576.	405.
3858	4112	RIGHT-OF-WAY	acre	5.3	0.	0.
3858	5137	ARTERIAL COMMERCIAL	ksf	20.1	1107.	804.
3858	6012	LOW RISE OFFICE A	ksf	7.0	372.	287.
3858	9101	INACTIVE USE	acre	0.3	0.	0.
3858		TOTAL			2690.	1939.
3860	112	SINGLE FAMILY	du	83.0	1071.	747.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C
trip generation and land use by zone page 4

Zone	Code	Name	Land Use	Type	Amount	Tri ps	Person	Vehi cl e
3860	122	MULTI -FAMILY		du	68.0	585.		411.

Proposed Project Land Use TG by Land Use by zone. txt						
3860	4112	RIGHT-OF-WAY	acre	6.9	0.	0.
3860	5137	ARTERIAL COMMERCIAL	ksf	27.2	1499.	1089.
3860	6816	ELEMENTARY SCHOOL	other	526.0	1788.	999.
3860	7611	OPEN SPACE PARK	acre	4.8	37.	24.
3860		TOTAL			4980.	3270.
3861	112	SINGLE FAMILY	du	190.0	2451.	1711.
3861	121	MULTI-FAMILY	du	96.0	1094.	768.
3861	122	MULTI-FAMILY	du	468.0	4025.	2826.
3861	4112	RIGHT-OF-WAY	acre	19.0	0.	0.
3861	4121	RAIL/TRANSIT CENTER	acre	1.7	669.	511.
3861	5139	OTHER RETAIL TRADE	ksf	11.4	627.	457.
3861	6112	RELIGIOUS FACILITY	ksf	7.0	45.	35.
3861		TOTAL			8912.	6307.
3902	112	SINGLE FAMILY	du	75.0	967.	675.
3902	121	MULTI-FAMILY	du	55.0	627.	440.
3902	122	MULTI-FAMILY	du	227.0	1952.	1371.
3902	2113	LIGHT INDUSTRY GENERAL	ksf	40.7	758.	627.
3902	4112	RIGHT-OF-WAY	acre	51.0	0.	0.
3902	6112	RELIGIOUS FACILITY	ksf	8.9	58.	44.
3902		TOTAL			4362.	3157.
3904	112	SINGLE FAMILY	du	4.0	52.	36.
3904	121	MULTI-FAMILY	du	34.0	388.	272.
3904	4112	RIGHT-OF-WAY	acre	18.6	0.	0.
3904	6111	CEMETERY	acre	116.4	710.	582.
3904	6112	RELIGIOUS FACILITY	ksf	1.5	9.	7.
3904	7220	OTHER RECREATION-HIGH	acre	6.0	438.	299.
3904	9101	INACTIVE USE	acre	0.7	0.	0.
3904		TOTAL			1597.	1196.
3905	112	SINGLE FAMILY	du	25.0	322.	225.
3905	121	MULTI-FAMILY	du	11.0	125.	88.
3905	122	MULTI-FAMILY	du	42.0	361.	254.
3905	4112	RIGHT-OF-WAY	acre	4.5	0.	0.
3905	5137	ARTERIAL COMMERCIAL	ksf	3.6	198.	144.
3905	6112	RELIGIOUS FACILITY	ksf	4.8	31.	24.
3905	6511	CLINIC	ksf	153.6	10337.	7676.
3905		TOTAL			11375.	8410.
3920	112	SINGLE FAMILY	du	33.0	426.	297.
3920	121	MULTI-FAMILY	du	27.0	308.	216.
3920	122	MULTI-FAMILY	du	29.0	249.	175.
3920	4112	RIGHT-OF-WAY	acre	6.6	0.	0.
3920	6112	RELIGIOUS FACILITY	ksf	5.3	35.	27.
3920	6816	ELEMENTARY SCHOOL	other	808.0	2747.	1535.
3920		TOTAL			3765.	2250.
3921	112	SINGLE FAMILY	du	22.0	284.	198.
3921	121	MULTI-FAMILY	du	18.0	205.	144.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C
trip generation and land use by zone page 5

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
3921	122	MULTI-FAMILY		du	101.0	869.	610.
3921	4112	RIGHT-OF-WAY		acre	6.1	0.	0.
3921	6816	ELEMENTARY SCHOOL		other	458.0	1557.	870.
3921		TOTAL				2915.	1822.

Proposed Project Land Use TG by Land Use by zone. txt

3922	112	SINGLE FAMILY	du	285.0	3676.	2566.
3922	121	MULTI -FAMILY	du	80.0	912.	640.
3922	122	MULTI -FAMILY	du	306.0	2632.	1848.
3922	131	MOBILE HOME PARK	du	250.0	1875.	1243.
3922	4112	RIGHT-OF-WAY	acre	25.6	0.	0.
3922	6112	RELIGIOUS FACILITY	ksf	40.0	260.	200.
3922	7611	OPEN SPACE PARK	acre	0.3	2.	1.
3922	9101	INACTIVE USE	du	0.5	0.	0.
3922		TOTAL			9357.	6499.
3924	122	MULTI -FAMILY	du	163.0	1402.	984.
3924	4112	RIGHT-OF-WAY	acre	4.1	0.	0.
3924	4113	COMMUNICATION OR UTILITY	acre	0.2	1.	0.
3924	5025	SERVICE STATION FOOD MART	other	8.0	1650.	1199.
3924	5137	ARTERIAL COMMERCIAL	ksf	43.3	2383.	1731.
3924	6112	RELIGIOUS FACILITY	ksf	4.0	26.	20.
3924		TOTAL			5462.	3934.
3926	121	MULTI -FAMILY	du	74.0	844.	592.
3926	122	MULTI -FAMILY	du	324.0	2786.	1956.
3926	2113	LIGHT INDUSTRY GENERAL	ksf	179.4	3337.	2760.
3926	4112	RIGHT-OF-WAY	acre	4.2	0.	0.
3926	5137	ARTERIAL COMMERCIAL	ksf	35.5	1955.	1420.
3926		TOTAL			8922.	6728.
3927	112	SINGLE FAMILY	du	18.0	232.	162.
3927	121	MULTI -FAMILY	du	118.0	1345.	944.
3927	122	MULTI -FAMILY	du	305.0	2623.	1841.
3927	2111	INDUSTRIAL PARK	ksf	152.0	2781.	2310.
3927	2113	LIGHT INDUSTRY GENERAL	ksf	153.4	2854.	2360.
3927	4112	RIGHT-OF-WAY	acre	10.0	0.	0.
3927	5137	ARTERIAL COMMERCIAL	ksf	24.2	1332.	968.
3927	7611	OPEN SPACE PARK	acre	6.4	49.	32.
3927		TOTAL			11217.	8618.
3929	122	MULTI -FAMILY	du	244.0	2098.	1473.
3929	4112	RIGHT-OF-WAY	acre	2.7	0.	0.
3929	5137	ARTERIAL COMMERCIAL	ksf	60.9	3349.	2433.
3929		TOTAL			5448.	3906.
3944	112	SINGLE FAMILY	du	1.0	13.	9.
3944	122	MULTI -FAMILY	du	1294.0	11128.	7813.
3944	4112	RIGHT-OF-WAY	acre	12.4	0.	0.
3944	4121	RAIL/TRANSIT CENTER	acre	1.1	422.	322.
3944	5137	ARTERIAL COMMERCIAL	ksf	30.4	1670.	1213.
3944	6112	RELIGIOUS FACILITY	ksf	5.1	33.	25.
3944	7611	OPEN SPACE PARK	acre	3.5	27.	17.
3944		TOTAL			13292.	9400.

30jan14/13: 36: 48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 6

Zone	Code	Name	Land Use	Type	Amount	Trips	Person	Vehi cle
3945	122	MULTI -FAMILY		du	147.0	1264.		888.
3945	4112	RIGHT-OF-WAY		acre	0.6	0.		0.
3945	5137	ARTERIAL COMMERCIAL		ksf	29.4	1615.		1173.
3945	6012	LOW RISE OFFICE A		ksf	64.0	3418.		2632.
3945	6129	MEETING ROOM FACILITY		ksf	16.0	664.		480.

Proposed Project Land Use TG by Land Use by zone. txt						
3945	7611	OPEN SPACE PARK	acre	3.8	30.	19.
3945		TOTAL			6991.	5192.
3946	112	SINGLE FAMILY	du	309.0	3986.	2782.
3946	121	MULTI -FAMI LY	du	61.0	695.	488.
3946	122	MULTI -FAMI LY	du	218.0	1875.	1316.
3946	4112	RIGHT-OF-WAY	acre	23.4	0.	0.
3946	5137	ARTERIAL COMMERCIAL	ksf	48.9	2691.	1954.
3946	6112	RELIGIOUS FACILITY	ksf	2.7	17.	13.
3946	6816	ELEMENTARY SCHOOL	other	614.0	2088.	1167.
3946	7611	OPEN SPACE PARK	acre	14.6	112.	74.
3946		TOTAL			11464.	7795.
3947	112	SINGLE FAMILY	du	116.0	1496.	1044.
3947	121	MULTI -FAMI LY	du	13.0	148.	104.
3947	122	MULTI -FAMI LY	du	191.0	1643.	1153.
3947	4112	RIGHT-OF-WAY	acre	13.4	0.	0.
3947	4114	PARKING	acre	0.3	0.	0.
3947	5137	ARTERIAL COMMERCIAL	ksf	25.6	1410.	1024.
3947	6112	RELIGIOUS FACILITY	ksf	11.5	75.	58.
3947	7611	OPEN SPACE PARK	acre	1.9	15.	10.
3947	9101	INACTIVE USE	du	0.0	0.	0.
3947		TOTAL			4786.	3393.
3949	112	SINGLE FAMILY	du	572.0	7379.	5150.
3949	121	MULTI -FAMI LY	du	58.0	661.	464.
3949	122	MULTI -FAMI LY	du	1098.0	9443.	6629.
3949	4112	RIGHT-OF-WAY	acre	27.2	0.	0.
3949	5137	ARTERIAL COMMERCIAL	ksf	19.7	1085.	788.
3949	5138	SERVICE STATION	other	8.0	1486.	1082.
3949	6112	RELIGIOUS FACILITY	ksf	25.6	166.	128.
3949	6816	ELEMENTARY SCHOOL	other	270.0	918.	513.
3949	7611	OPEN SPACE PARK	acre	1.0	8.	5.
3949		TOTAL			21145.	14760.
3958	112	SINGLE FAMILY	du	58.0	748.	522.
3958	121	MULTI -FAMI LY	du	21.0	239.	168.
3958	122	MULTI -FAMI LY	du	41.0	353.	248.
3958	2114	WAREHOUSING	ksf	1.5	9.	8.
3958	4112	RIGHT-OF-WAY	acre	4.5	0.	0.
3958	4114	PARKING	acre	0.1	0.	0.
3958	5011	HIGH TURNOVER RESTAURANT	ksf	5.6	1002.	728.
3958	5137	ARTERIAL COMMERCIAL	ksf	5.7	312.	227.
3958		TOTAL			2663.	1900.
3959	112	SINGLE FAMILY	du	125.0	1612.	1126.
3959	121	MULTI -FAMI LY	du	19.0	217.	152.

30jan14/13: 36: 48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 7

Zone	Code	Name	Land Use	Type	Amount	Tri ps	Person Vehi cle
3959	122	MULTI -FAMI LY		du	50.0	430.	302.
3959	2113	LIGHT INDUSTRY GENERAL		ksf	3.1	57.	47.
3959	4112	RIGHT-OF-WAY		acre	6.5	0.	0.
3959	4114	PARKING		acre	0.2	0.	0.
3959	5011	HIGH TURNOVER RESTAURANT		ksf	1.5	268.	195.
3959	5014	CONVENIENCE MARKET CHAIN		ksf	3.0	2063.	1499.
3959	5137	ARTERIAL COMMERCIAL		ksf	58.2	3200.	2324.
3959	7613	ACTIVE PARK		acre	0.2	12.	8.

Proposed Project Land Use TG by Land Use by zone. txt						
3959		TOTAL			7860.	5652.
3960	112	SINGLE FAMILY	du	53.0	684.	477.
3960	121	MULTI -FAMILY	du	6.0	68.	48.
3960	122	MULTI -FAMILY	du	110.0	946.	664.
3960	4112	RIGHT-OF-WAY	acre	7.2	0.	0.
3960	5029	AUTO REPAIR	ksf	2.0	55.	40.
3960	5137	ARTERIAL COMMERCIAL	ksf	8.0	440.	320.
3960		TOTAL			2193.	1549.
3961	112	SINGLE FAMILY	du	43.0	555.	387.
3961	121	MULTI -FAMILY	du	7.0	80.	56.
3961	122	MULTI -FAMILY	du	85.0	731.	513.
3961	4112	RIGHT-OF-WAY	acre	4.0	0.	0.
3961	4114	PARKING	acre	0.0	0.	0.
3961	5137	ARTERIAL COMMERCIAL	ksf	2.7	146.	106.
3961	6112	RELIGIOUS FACILITY	ksf	20.0	130.	100.
3961		TOTAL			1641.	1162.
3962	4112	RIGHT-OF-WAY	acre	1.1	0.	0.
3962		TOTAL			0.	0.
3969	122	MULTI -FAMILY	du	965.0	8299.	5826.
3969	4112	RIGHT-OF-WAY	acre	8.4	0.	0.
3969	5011	HIGH TURNOVER RESTAURANT	ksf	14.4	2575.	1870.
3969	5029	AUTO REPAIR	ksf	6.1	167.	121.
3969	5134	NEIGHBORHOOD SHOP CENTER	ksf	28.8	4874.	3450.
3969	5137	ARTERIAL COMMERCIAL	ksf	30.3	1668.	1211.
3969	6012	LOW RISE OFFICE A	ksf	4.8	258.	199.
3969	6072	LOW RISE OFFICE E	ksf	66.1	1640.	1263.
3969	6112	RELIGIOUS FACILITY	ksf	3.5	23.	17.
3969	6115	FIRE OR POLICE STATION	ksf	14.5	590.	435.
3969	7613	ACTIVE PARK	acre	0.1	7.	5.
3969		TOTAL			20100.	14397.
3974	122	MULTI -FAMILY	du	483.0	4154.	2916.
3974	4112	RIGHT-OF-WAY	acre	10.4	0.	0.
3974	5013	SUPERMARKET	ksf	4.4	908.	659.
3974	5027	SERVICE STATION CAR WASH	other	12.0	2558.	1858.
3974	9101	INACTIVE USE	du	0.6	0.	0.
3974		TOTAL			7620.	5434.
3977	112	SINGLE FAMILY	du	100.0	1290.	900.
3977	121	MULTI -FAMILY	du	16.0	182.	128.

30jan14/13: 36: 48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 8

Zone	Code	Name	Land Use	Type	Amount	Tri ps	Person	Vehi cle
3977	122	MULTI -FAMILY		du	30.0	258.	181.	
3977	2113	LIGHT INDUSTRY GENERAL		ksf	77.8	1447.	1196.	
3977	4112	RIGHT-OF-WAY		acre	9.5	0.	0.	
3977	4114	PARKING		acre	0.1	0.	0.	
3977	5029	AUTO REPAIR		ksf	11.9	327.	237.	
3977		TOTAL				3504.	2643.	
3979	112	SINGLE FAMILY		du	84.0	1084.	756.	
3979	121	MULTI -FAMILY		du	64.0	730.	512.	
3979	122	MULTI -FAMILY		du	23.0	198.	139.	
3979	4112	RIGHT-OF-WAY		acre	21.2	0.	0.	

Proposed Project Land Use TG by Land Use by zone. txt						
3979	6112	RELIGIOUS FACILITY	ksf	4.9	32.	24.
3979	7611	OPEN SPACE PARK	acre	1.9	15.	10.
3979	9101	INACTIVE USE	du	0.2	0.	0.
3979		TOTAL			2057.	1441.
3980	112	SINGLE FAMILY	du	108.0	1393.	972.
3980	121	MULTI-FAMILY	du	76.0	866.	608.
3980	122	MULTI-FAMILY	du	84.0	722.	507.
3980	4112	RIGHT-OF-WAY	acre	20.9	0.	0.
3980	6112	RELIGIOUS FACILITY	ksf	14.5	94.	72.
3980	6115	FIRE OR POLICE STATION	ksf	9.6	391.	288.
3980		TOTAL			3467.	2448.
3984	112	SINGLE FAMILY	du	92.0	1187.	828.
3984	121	MULTI-FAMILY	du	10.0	114.	80.
3984	122	MULTI-FAMILY	du	136.0	1170.	821.
3984	2113	LIGHT INDUSTRY GENERAL	ksf	22.1	412.	340.
3984	4112	RIGHT-OF-WAY	acre	9.6	0.	0.
3984	5029	AUTO REPAIR	ksf	2.0	55.	40.
3984	5137	ARTERIAL COMMERCIAL	ksf	26.8	1471.	1069.
3984	6012	LOW RISE OFFICE A	ksf	2.2	118.	91.
3984	6112	RELIGIOUS FACILITY	ksf	4.5	29.	22.
3984	9101	INACTIVE USE	du	0.1	0.	0.
3984		TOTAL			4556.	3292.
3985	112	SINGLE FAMILY	du	64.0	826.	576.
3985	122	MULTI-FAMILY	du	86.0	740.	519.
3985	2113	LIGHT INDUSTRY GENERAL	ksf	23.5	438.	362.
3985	2114	WAREHOUSING	ksf	21.0	128.	107.
3985	4112	RIGHT-OF-WAY	acre	12.2	0.	0.
3985	4114	PARKING	acre	0.6	0.	0.
3985	5137	ARTERIAL COMMERCIAL	ksf	20.0	1101.	800.
3985	6112	RELIGIOUS FACILITY	ksf	11.0	72.	55.
3985	6816	ELEMENTARY SCHOOL	other	78.0	265.	148.
3985		TOTAL			3570.	2568.
3988	112	SINGLE FAMILY	du	303.0	3909.	2728.
3988	121	MULTI-FAMILY	du	7.0	80.	56.
3988	4112	RIGHT-OF-WAY	acre	19.3	0.	0.
3988	6815	JUNIOR HIGH OR MIDDLE SCHOOL	other	1127.0	2592.	1592.
3988		TOTAL			6581.	4377.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 9

Zone	Code	Name	Land Use		Trips	
			Type	Amount	Person	Vehicle
3989	112	SINGLE FAMILY	du	36.0	464.	324.
3989	121	MULTI-FAMILY	du	22.0	251.	176.
3989	122	MULTI-FAMILY	du	114.0	980.	688.
3989	2113	LIGHT INDUSTRY GENERAL	ksf	41.0	762.	630.
3989	4112	RIGHT-OF-WAY	acre	14.4	0.	0.
3989	5137	ARTERIAL COMMERCIAL	ksf	31.0	1706.	1239.
3989	6112	RELIGIOUS FACILITY	ksf	68.8	447.	344.
3989		TOTAL			4611.	3401.
3990	112	SINGLE FAMILY	du	109.0	1406.	981.
3990	121	MULTI-FAMILY	du	78.0	889.	624.
3990	122	MULTI-FAMILY	du	47.0	404.	284.
3990	4112	RIGHT-OF-WAY	acre	11.4	0.	0.

Proposed Project Land Use TG by Land Use by zone. txt						
3990	5137	ARTERIAL COMMERCIAL	ksf	37.4	2055.	1492.
3990	6111	CEMETERY	acre	7.0	42.	35.
3990	6112	RELIGIOUS FACILITY	ksf	5.2	34.	26.
3990		TOTAL			4831.	3443.
3991	112	SINGLE FAMILY	du	175.0	2257.	1576.
3991	121	MULTI-FAMILY	du	66.0	752.	528.
3991	122	MULTI-FAMILY	du	37.0	318.	223.
3991	4112	RIGHT-OF-WAY	acre	9.2	0.	0.
3991	5137	ARTERIAL COMMERCIAL	ksf	38.5	2118.	1538.
3991	6012	LOW RISE OFFICE A	ksf	3.2	171.	131.
3991	6112	RELIGIOUS FACILITY	ksf	3.2	21.	16.
3991	6129	MEETING ROOM FACILITY	ksf	3.2	134.	97.
3991		TOTAL			5771.	4110.
3992	112	SINGLE FAMILY	du	178.0	2296.	1603.
3992	121	MULTI-FAMILY	du	103.0	1174.	824.
3992	122	MULTI-FAMILY	du	285.0	2451.	1721.
3992	4112	RIGHT-OF-WAY	acre	19.3	0.	0.
3992	5137	ARTERIAL COMMERCIAL	ksf	8.5	470.	341.
3992	6012	LOW RISE OFFICE A	ksf	3.8	206.	158.
3992	6013	GOV'T /CIVIC CENTER	ksf	50.7	2024.	1521.
3992	6112	RELIGIOUS FACILITY	ksf	14.6	95.	73.
3992	7611	OPEN SPACE PARK	acre	5.6	43.	29.
3992	7613	ACTIVE PARK	acre	3.7	284.	187.
3992	9101	INACTIVE USE	du	2.8	0.	0.
3992		TOTAL			9044.	6457.
3993	4112	RIGHT-OF-WAY	acre	4.2	0.	0.
3993	5133	COMMUNITY SHOP CENTER	ksf	360.9	38937.	27553.
3993		TOTAL			38937.	27553.
3994	112	SINGLE FAMILY	du	82.0	1058.	738.
3994	121	MULTI-FAMILY	du	109.0	1243.	872.
3994	122	MULTI-FAMILY	du	23.0	198.	139.
3994	4112	RIGHT-OF-WAY	acre	20.3	0.	0.
3994	7611	OPEN SPACE PARK	acre	7.9	61.	40.
3994		TOTAL			2559.	1789.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 10

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
3995	112	SINGLE FAMILY		du	212.0	2735.	1909.
3995	121	MULTI-FAMILY		du	3.0	34.	24.
3995	122	MULTI-FAMILY		du	679.0	5839.	4100.
3995	4112	RIGHT-OF-WAY		acre	42.9	0.	0.
3995	5137	ARTERIAL COMMERCIAL		ksf	33.5	1841.	1337.
3995	6112	RELIGIOUS FACILITY		ksf	52.2	340.	261.
3995	6814	SENIOR HIGH SCHOOL		other	2333.0	9332.	4199.
3995	6816	ELEMENTARY SCHOOL		other	759.0	2581.	1442.
3995	7611	OPEN SPACE PARK		acre	0.8	6.	4.
3995	7613	ACTIVE PARK		acre	4.1	319.	210.
3995		TOTAL				23026.	13485.
3996	112	SINGLE FAMILY		du	706.0	9107.	6357.
3996	4112	RIGHT-OF-WAY		acre	38.7	0.	0.
3996	5029	AUTO REPAIR		ksf	1.0	26.	19.
3996	5136	AUTO DEALERSHIP		acre	0.1	39.	28.

Proposed Project Land Use TG by Land Use by zone. txt						
3996	6112	RELIGIOUS FACILITY	ksf	18.9	123.	94.
3996	7613	ACTIVE PARK	acre	0.5	38.	25.
3996		TOTAL			9334.	6523.
3998	112	SINGLE FAMILY	du	144.0	1858.	1297.
3998	121	MULTI-FAMILY	du	111.0	1265.	888.
3998	122	MULTI-FAMILY	du	168.0	1445.	1014.
3998	4112	RIGHT-OF-WAY	acre	27.2	0.	0.
3998	5137	ARTERIAL COMMERCIAL	ksf	6.7	370.	269.
3998	5139	OTHER RETAIL TRADE	ksf	1.2	66.	48.
3998	6112	RELIGIOUS FACILITY	ksf	19.3	125.	96.
3998	6114	POST OFFICE	ksf	5.8	1680.	1168.
3998		TOTAL			6810.	4781.
3999	112	SINGLE FAMILY	du	189.0	2438.	1702.
3999	121	MULTI-FAMILY	du	160.0	1824.	1281.
3999	122	MULTI-FAMILY	du	326.0	2804.	1968.
3999	4112	RIGHT-OF-WAY	acre	24.7	0.	0.
3999	5137	ARTERIAL COMMERCIAL	ksf	30.0	1650.	1199.
3999	6112	RELIGIOUS FACILITY	ksf	33.6	219.	168.
3999	6519	OTHER HEALTH CARE	ksf	26.0	1750.	1300.
3999	6816	ELEMENTARY SCHOOL	other	384.0	1306.	730.
3999	7613	ACTIVE PARK	acre	0.2	13.	8.
3999	9101	INACTIVE USE	du	0.1	0.	0.
3999		TOTAL			12003.	8355.
4002	112	SINGLE FAMILY	du	151.0	1948.	1360.
4002	121	MULTI-FAMILY	du	150.0	1710.	1201.
4002	122	MULTI-FAMILY	du	189.0	1625.	1141.
4002	4112	RIGHT-OF-WAY	acre	23.0	0.	0.
4002	4114	PARKING	acre	0.3	0.	0.
4002	5137	ARTERIAL COMMERCIAL	ksf	20.0	1100.	799.
4002	6112	RELIGIOUS FACILITY	ksf	50.6	329.	253.
4002	6113	LIBRARY	ksf	3.3	244.	166.
4002	6815	JUNIOR HIGH OR MIDDLE SCHOOL	other	1242.0	2857.	1755.
4002	6816	ELEMENTARY SCHOOL	other	619.0	2105.	1176.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 11

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4002	7613	ACTIVE PARK	acre	18.0	1384.	911.
4002	9101	INACTIVE USE	du	0.1	0.	0.
4002		TOTAL			13302.	8760.
4007	112	SINGLE FAMILY	du	489.0	6308.	4403.
4007	121	MULTI-FAMILY	du	10.0	114.	80.
4007	4112	RIGHT-OF-WAY	acre	32.7	0.	0.
4007	6112	RELIGIOUS FACILITY	ksf	29.3	191.	147.
4007	6816	ELEMENTARY SCHOOL	other	589.0	2003.	1119.
4007		TOTAL			8615.	5749.
4008	112	SINGLE FAMILY	du	57.0	735.	513.
4008	121	MULTI-FAMILY	du	103.0	1174.	824.
4008	122	MULTI-FAMILY	du	187.0	1608.	1129.
4008	1421	CORRECTIONAL FACILITY	other	300.0	840.	609.
4008	4112	RIGHT-OF-WAY	acre	12.2	0.	0.
4008	5133	COMMUNITY SHOP CENTER	ksf	134.3	14495.	10257.
4008	5137	ARTERIAL COMMERCIAL	ksf	32.1	1767.	1283.
4008	5138	SERVICE STATION	other	8.0	1486.	1082.

Proposed Project Land Use TG by Land Use by zone. txt						
4008	6112	RELIGIOUS FACILITY	ksf	24.1	156.	120.
4008	6119	OTHER PUBLIC SERVICE	ksf	3.6	49.	36.
4008	6816	ELEMENTARY SCHOOL	other	481.0	1635.	914.
4008	7613	ACTIVE PARK	acre	0.2	12.	8.
4008		TOTAL			23958.	16775.
4009	112	SINGLE FAMILY	du	226.0	2915.	2035.
4009	121	MULTI -FAMILY	du	100.0	1140.	800.
4009	122	MULTI -FAMILY	du	141.0	1213.	851.
4009	4112	RIGHT-OF-WAY	acre	17.8	0.	0.
4009	5137	ARTERIAL COMMERCIAL	ksf	13.7	755.	549.
4009	5139	OTHER RETAIL TRADE	ksf	0.9	51.	37.
4009	6112	RELIGIOUS FACILITY	ksf	18.4	120.	92.
4009	6115	FIRE OR POLICE STATION	ksf	3.4	139.	103.
4009	9101	INACTIVE USE	du	0.1	0.	0.
4009		TOTAL			6334.	4467.
4010	112	SINGLE FAMILY	du	360.0	4644.	3242.
4010	121	MULTI -FAMILY	du	23.0	262.	184.
4010	4112	RIGHT-OF-WAY	acre	28.2	0.	0.
4010	6112	RELIGIOUS FACILITY	ksf	8.5	55.	42.
4010	7613	ACTIVE PARK	acre	34.6	2662.	1752.
4010	9101	INACTIVE USE	du	0.1	0.	0.
4010		TOTAL			7623.	5220.
4013	112	SINGLE FAMILY	du	178.0	2296.	1603.
4013	121	MULTI -FAMILY	du	63.0	718.	504.
4013	122	MULTI -FAMILY	du	40.0	344.	242.
4013	4112	RIGHT-OF-WAY	acre	16.6	0.	0.
4013	5137	ARTERIAL COMMERCIAL	ksf	4.0	222.	161.
4013	6112	RELIGIOUS FACILITY	ksf	2.3	15.	11.
4013		TOTAL			3595.	2521.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 12

Zone	Code	Name	Land Use	Type	Amount	Trips Person	Trips Vehicle
4018	112	SINGLE FAMILY		du	613.0	7908.	5520.
4018	4112	RIGHT-OF-WAY		acre	33.2	0.	0.
4018	6112	RELIGIOUS FACILITY		ksf	5.0	32.	25.
4018	7611	OPEN SPACE PARK		acre	8.6	66.	44.
4018	7613	ACTIVE PARK		acre	0.2	11.	7.
4018		TOTAL				8018.	5596.
4024	112	SINGLE FAMILY		du	368.0	4747.	3314.
4024	121	MULTI -FAMILY		du	58.0	661.	464.
4024	122	MULTI -FAMILY		du	1319.0	11343.	7964.
4024	4112	RIGHT-OF-WAY		acre	50.2	0.	0.
4024	5134	NEIGHBORHOOD SHOP CENTER		ksf	33.2	5629.	3984.
4024	5137	ARTERIAL COMMERCIAL		ksf	75.2	4136.	3004.
4024	6112	RELIGIOUS FACILITY		ksf	6.0	39.	30.
4024	6810	DAY CARE CENTER		other	70.0	427.	352.
4024	6816	ELEMENTARY SCHOOL		other	549.0	1867.	1043.
4024		TOTAL				28849.	20155.
4027	112	SINGLE FAMILY		du	54.0	697.	486.
4027	121	MULTI -FAMILY		du	127.0	1448.	1016.
4027	122	MULTI -FAMILY		du	29.0	249.	175.
4027	2111	INDUSTRIAL PARK		ksf	113.5	2077.	1726.

Proposed Project Land Use TG by Land Use by zone. txt						
4027	2113	LIGHT INDUSTRY GENERAL	ksf	27.2	506.	419.
4027	4112	RIGHT-OF-WAY	acre	19.9	0.	0.
4027	5137	ARTERIAL COMMERCIAL	ksf	89.1	4902.	3561.
4027	6112	RELIGIOUS FACILITY	ksf	7.1	46.	35.
4027	7611	OPEN SPACE PARK	acre	1.9	14.	9.
4027	7613	ACTIVE PARK	acre	7.7	593.	390.
4027		TOTAL			10533.	7818.
4028	112	SINGLE FAMILY	du	75.0	967.	675.
4028	121	MULTI -FAMI LY	du	175.0	1995.	1401.
4028	122	MULTI -FAMI LY	du	70.0	602.	423.
4028	2114	WAREHOUSING	ksf	4.0	24.	20.
4028	4112	RIGHT-OF-WAY	acre	22.1	0.	0.
4028	5137	ARTERIAL COMMERCIAL	ksf	150.7	8290.	6022.
4028	6112	RELIGIOUS FACILITY	ksf	11.5	75.	57.
4028	6129	MEETING ROOM FACILITY	ksf	2.7	111.	80.
4028		TOTAL			12065.	8678.
4035	112	SINGLE FAMILY	du	181.0	2335.	1630.
4035	121	MULTI -FAMI LY	du	208.0	2371.	1665.
4035	122	MULTI -FAMI LY	du	444.0	3818.	2681.
4035	4112	RIGHT-OF-WAY	acre	75.9	0.	0.
4035	4113	COMMUNICATION OR UTILITY	acre	0.1	0.	0.
4035	5137	ARTERIAL COMMERCIAL	ksf	13.6	746.	542.
4035	6112	RELIGIOUS FACILITY	ksf	24.5	159.	122.
4035	7613	ACTIVE PARK	acre	16.9	1302.	857.
4035		TOTAL			10732.	7496.
4038	112	SINGLE FAMILY	du	153.0	1974.	1378.
4038	121	MULTI -FAMI LY	du	90.0	1026.	720.

30jan14/13: 36: 48/tgm. pr

♀203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 13

Zone	Code	Name	Land Use		Tri ps	
			Type	Amount	Person	Vehi cle
4038	122	MULTI -FAMI LY	du	146.0	1256.	882.
4038	4112	RIGHT-OF-WAY	acre	39.3	0.	0.
4038	5137	ARTERIAL COMMERCIAL	ksf	41.9	2304.	1673.
4038	6112	RELIGIOUS FACILITY	ksf	3.6	23.	18.
4038	6816	ELEMENTARY SCHOOL	other	760.0	2584.	1444.
4038	7611	OPEN SPACE PARK	acre	2.9	23.	15.
4038	9101	INACTIVE USE	du	0.4	0.	0.
4038		TOTAL			9189.	6129.
4039	112	SINGLE FAMILY	du	168.0	2167.	1513.
4039	121	MULTI -FAMI LY	du	90.0	1026.	720.
4039	122	MULTI -FAMI LY	du	173.0	1488.	1045.
4039	4112	RIGHT-OF-WAY	acre	18.2	0.	0.
4039	5137	ARTERIAL COMMERCIAL	ksf	8.4	465.	338.
4039	5139	OTHER RETAIL TRADE	ksf	10.5	578.	421.
4039	6112	RELIGIOUS FACILITY	ksf	27.4	178.	137.
4039	6816	ELEMENTARY SCHOOL	other	173.0	588.	329.
4039	7611	OPEN SPACE PARK	acre	1.1	9.	6.
4039	9101	INACTIVE USE	du	0.4	0.	0.
4039		TOTAL			6499.	4507.
4040	112	SINGLE FAMILY	du	83.0	1071.	747.
4040	121	MULTI -FAMI LY	du	100.0	1140.	800.
4040	122	MULTI -FAMI LY	du	156.0	1342.	942.
4040	4112	RIGHT-OF-WAY	acre	12.4	0.	0.

Proposed Project Land Use TG by Land Use by zone. txt						
4040	5137	ARTERIAL COMMERCIAL	ksf	69.1	3801.	2760.
4040	6012	LOW RISE OFFICE A	ksf	3.9	210.	161.
4040	6022	LOW RISE OFFICE B	ksf	5.4	239.	184.
4040	6112	RELIGIOUS FACILITY	ksf	50.6	329.	253.
4040	7613	ACTIVE PARK	acre	17.5	1348.	887.
4040	9101	INACTIVE USE	acre	0.0	0.	0.
4040		TOTAL			9478.	6735.
4044	4112	RIGHT-OF-WAY	acre	0.1	0.	0.
4044		TOTAL			0.	0.
4047	112	SINGLE FAMILY	du	458.0	5908.	4124.
4047	4112	RIGHT-OF-WAY	acre	23.2	0.	0.
4047	4113	COMMUNICATION OR UTILITY	acre	3.8	12.	9.
4047	7611	OPEN SPACE PARK	acre	0.8	6.	4.
4047		TOTAL			5927.	4138.
4050	121	MULTI-FAMILY	du	187.0	2132.	1497.
4050	4112	RIGHT-OF-WAY	acre	0.4	0.	0.
4050	5133	COMMUNITY SHOP CENTER	ksf	176.7	19062.	13489.
4050		TOTAL			21194.	14986.
4057	112	SINGLE FAMILY	du	147.0	1896.	1324.
4057	121	MULTI-FAMILY	du	131.0	1493.	1048.
4057	122	MULTI-FAMILY	du	133.0	1144.	803.
4057	4112	RIGHT-OF-WAY	acre	21.6	0.	0.
4057	5137	ARTERIAL COMMERCIAL	ksf	2.8	151.	110.

30jan14/13: 36: 48/tgm. pr

¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 14

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
4057	6112	RELIGIOUS FACILITY		ksf	5.3	35.	27.
4057	7611	OPEN SPACE PARK		acre	7.2	56.	37.
4057	9101	INACTIVE USE		du	2.9	0.	0.
4057		TOTAL				4775.	3348.
4058	112	SINGLE FAMILY		du	135.0	1741.	1216.
4058	121	MULTI-FAMILY		du	120.0	1368.	960.
4058	122	MULTI-FAMILY		du	174.0	1496.	1051.
4058	4112	RIGHT-OF-WAY		acre	19.4	0.	0.
4058	5137	ARTERIAL COMMERCIAL		ksf	16.6	913.	663.
4058	6112	RELIGIOUS FACILITY		ksf	9.1	59.	45.
4058	6119	OTHER PUBLIC SERVICE		ksf	2.7	37.	26.
4058	6816	ELEMENTARY SCHOOL		other	543.0	1846.	1032.
4058	7611	OPEN SPACE PARK		acre	0.5	4.	3.
4058	7613	ACTIVE PARK		acre	0.2	12.	8.
4058		TOTAL				7477.	5004.
4061	112	SINGLE FAMILY		du	19.0	245.	171.
4061	121	MULTI-FAMILY		du	12.0	137.	96.
4061	122	MULTI-FAMILY		du	422.0	3629.	2548.
4061	4112	RIGHT-OF-WAY		acre	16.0	0.	0.
4061	5137	ARTERIAL COMMERCIAL		ksf	1.8	98.	71.
4061		TOTAL				4109.	2886.
4079	112	SINGLE FAMILY		du	150.0	1935.	1351.
4079	121	MULTI-FAMILY		du	147.0	1676.	1177.
4079	122	MULTI-FAMILY		du	110.0	946.	664.
4079	1511	MOTEL		room	64.0	934.	575.

Proposed Project Land Use TG by Land Use by zone. txt						
4079	4112	RIGHT-OF-WAY	acre	28.9	0.	0.
4079	5027	SERVICE STATION CAR WASH	other	8.0	1706.	1239.
4079	5137	ARTERIAL COMMERCIAL	ksf	13.3	732.	532.
4079	6112	RELIGIOUS FACILITY	ksf	4.2	27.	21.
4079	6816	ELEMENTARY SCHOOL	other	707.0	2404.	1343.
4079	9101	INACTIVE USE	du	0.7	0.	0.
4079		TOTAL			10360.	6901.
4080	112	SINGLE FAMILY	du	168.0	2167.	1513.
4080	121	MULTI -FAMILY	du	178.0	2029.	1425.
4080	122	MULTI -FAMILY	du	137.0	1178.	827.
4080	4112	RIGHT-OF-WAY	acre	22.5	0.	0.
4080	5137	ARTERIAL COMMERCIAL	ksf	3.7	205.	149.
4080	6112	RELIGIOUS FACILITY	ksf	15.3	100.	77.
4080	7611	OPEN SPACE PARK	acre	0.8	6.	4.
4080	9101	INACTIVE USE	du	2.2	0.	0.
4080		TOTAL			5685.	3994.
4683	121	MULTI -FAMILY	du	4.0	46.	32.
4683	122	MULTI -FAMILY	du	1444.0	12418.	8718.
4683	4112	RIGHT-OF-WAY	acre	13.4	0.	0.
4683	4113	COMMUNICATION OR UTILITY	acre	0.8	3.	2.
4683	5133	COMMUNITY SHOP CENTER	ksf	145.4	15693.	11105.
4683	5137	ARTERIAL COMMERCIAL	ksf	103.2	5676.	4123.

30jan14/13: 36: 48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 15

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4683	6129	MEETING ROOM FACILITY	ksf	5.4	226.	163.
4683	6511	CLINIC	ksf	27.6	1861.	1382.
4683	7611	OPEN SPACE PARK	acre	2.0	15.	10.
4683		TOTAL			35938.	25535.
4684	122	MULTI -FAMILY	du	368.0	3165.	2222.
4684	4112	RIGHT-OF-WAY	acre	1.4	0.	0.
4684	5133	COMMUNITY SHOP CENTER	ksf	145.8	15735.	11135.
4684		TOTAL			18900.	13357.
4685	112	SINGLE FAMILY	du	99.0	1277.	891.
4685	121	MULTI -FAMILY	du	17.0	194.	136.
4685	122	MULTI -FAMILY	du	59.0	507.	356.
4685	2113	LIGHT INDUSTRY GENERAL	ksf	87.3	1623.	1342.
4685	4112	RIGHT-OF-WAY	acre	8.8	0.	0.
4685	6112	RELIGIOUS FACILITY	ksf	5.2	34.	26.
4685		TOTAL			3635.	2752.
4686	112	SINGLE FAMILY	du	74.0	955.	666.
4686	122	MULTI -FAMILY	du	83.0	714.	501.
4686	2113	LIGHT INDUSTRY GENERAL	ksf	0.5	9.	8.
4686	4112	RIGHT-OF-WAY	acre	5.2	0.	0.
4686	5137	ARTERIAL COMMERCIAL	ksf	12.7	696.	506.
4686		TOTAL			2374.	1681.
4687	112	SINGLE FAMILY	du	4.0	52.	36.
4687	121	MULTI -FAMILY	du	21.0	239.	168.
4687	122	MULTI -FAMILY	du	4.0	34.	24.
4687	2113	LIGHT INDUSTRY GENERAL	ksf	61.2	1139.	941.
4687	4112	RIGHT-OF-WAY	acre	2.7	0.	0.
4687	5137	ARTERIAL COMMERCIAL	ksf	6.2	343.	249.

Proposed Project Land Use TG by Land Use by zone. txt						
4687		TOTAL			1807.	1419.
4688	112	SINGLE FAMILY	du	2.0	26.	18.
4688	121	MULTI -FAMILY	du	2.0	23.	16.
4688	122	MULTI -FAMILY	du	50.0	430.	302.
4688	2113	LIGHT INDUSTRY GENERAL	ksf	57.2	1065.	880.
4688	4112	RIGHT-OF-WAY	acre	0.3	0.	0.
4688	4114	PARKING	acre	0.5	0.	0.
4688	5137	ARTERIAL COMMERCIAL	ksf	10.5	576.	418.
4688		TOTAL			2119.	1635.
4689	112	SINGLE FAMILY	du	32.0	413.	288.
4689	121	MULTI -FAMILY	du	16.0	182.	128.
4689	122	MULTI -FAMILY	du	48.0	413.	290.
4689	4112	RIGHT-OF-WAY	acre	3.6	0.	0.
4689	5133	COMMUNITY SHOP CENTER	ksf	0.5	49.	35.
4689	5137	ARTERIAL COMMERCIAL	ksf	1.3	73.	53.
4689	6012	LOW RISE OFFICE A	ksf	12.6	675.	520.
4689	6112	RELIGIOUS FACILITY	ksf	28.2	183.	141.
4689	6810	DAY CARE CENTER	other	109.0	665.	549.
4689		TOTAL			2653.	2003.

30jan14/13: 36: 48/tgm. pr
 ¶203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C
 trip generation and land use by zone page 16

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
4690	112	SINGLE FAMILY		du	10.0	129.	90.
4690	121	MULTI -FAMILY		du	19.0	217.	152.
4690	122	MULTI -FAMILY		du	2.0	17.	12.
4690	2113	LIGHT INDUSTRY GENERAL		ksf	37.0	687.	568.
4690	4112	RIGHT-OF-WAY		acre	1.2	0.	0.
4690	4114	PARKING		acre	0.1	0.	0.
4690	5029	AUTO REPAIR		ksf	6.0	165.	120.
4690	5030	AUTO TIRES		ksf	3.5	120.	87.
4690	5137	ARTERIAL COMMERCIAL		ksf	10.9	599.	435.
4690	6012	LOW RISE OFFICE A		ksf	2.3	124.	95.
4690		TOTAL				2058.	1560.
4691	112	SINGLE FAMILY		du	8.0	103.	72.
4691	121	MULTI -FAMILY		du	10.0	114.	80.
4691	2113	LIGHT INDUSTRY GENERAL		ksf	37.0	687.	568.
4691	4112	RIGHT-OF-WAY		acre	2.6	0.	0.
4691	5011	HIGH TURNOVER RESTAURANT		ksf	2.2	399.	290.
4691	5136	AUTO DEALERSHIP		acre	0.1	50.	36.
4691	5137	ARTERIAL COMMERCIAL		ksf	11.6	639.	464.
4691		TOTAL				1993.	1510.
4692	112	SINGLE FAMILY		du	27.0	348.	243.
4692	122	MULTI -FAMILY		du	68.0	585.	411.
4692	2113	LIGHT INDUSTRY GENERAL		ksf	29.5	548.	453.
4692	4112	RIGHT-OF-WAY		acre	7.9	0.	0.
4692	5137	ARTERIAL COMMERCIAL		ksf	1.0	55.	40.
4692		TOTAL				1536.	1147.
4693	112	SINGLE FAMILY		du	3.0	39.	27.
4693	121	MULTI -FAMILY		du	2.0	23.	16.
4693	2113	LIGHT INDUSTRY GENERAL		ksf	4.9	91.	75.
4693	2114	WAREHOUSING		ksf	19.5	119.	100.
4693	4112	RIGHT-OF-WAY		acre	1.2	0.	0.

Proposed Project Land Use TG by Land Use by zone. txt

4693	5029	AUTO REPAIR	ksf	1.6	45.	33.
4693	5137	ARTERIAL COMMERCIAL	ksf	28.7	1576.	1145.
4693	6012	LOW RISE OFFICE A	ksf	2.0	107.	82.
4693	6022	LOW RISE OFFICE B	ksf	6.5	288.	222.
4693		TOTAL			2288.	1700.
4694	112	SINGLE FAMILY	du	8.0	103.	72.
4694	121	MULTI -FAMILY	du	2.0	23.	16.
4694	122	MULTI -FAMILY	du	21.0	181.	127.
4694	2113	LIGHT INDUSTRY GENERAL	ksf	48.9	909.	751.
4694	4112	RIGHT-OF-WAY	acre	1.5	0.	0.
4694	4114	PARKING	acre	0.8	0.	0.
4694	5011	HIGH TURNOVER RESTAURANT	ksf	1.8	315.	229.
4694	5028	AUTO PARTS	ksf	5.7	490.	356.
4694	5134	NEIGHBORHOOD SHOP CENTER	ksf	30.0	5085.	3599.
4694	5137	ARTERIAL COMMERCIAL	ksf	7.6	419.	305.
4694		TOTAL			7524.	5454.
4695	112	SINGLE FAMILY	du	27.0	348.	243.

30jan14/13: 36:48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 17

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4695	121	MULTI -FAMILY	du	17.0	194.	136.
4695	122	MULTI -FAMILY	du	165.0	1419.	996.
4695	4112	RIGHT-OF-WAY	acre	4.9	0.	0.
4695	5137	ARTERIAL COMMERCIAL	ksf	19.4	1067.	775.
4695		TOTAL			3028.	2150.
4696	112	SINGLE FAMILY	du	113.0	1458.	1017.
4696	121	MULTI -FAMILY	du	6.0	68.	48.
4696	122	MULTI -FAMILY	du	131.0	1127.	791.
4696	4112	RIGHT-OF-WAY	acre	8.7	0.	0.
4696	5029	AUTO REPAIR	ksf	1.8	48.	35.
4696	5030	AUTO TIRES	ksf	2.5	86.	62.
4696	5137	ARTERIAL COMMERCIAL	ksf	7.6	415.	301.
4696		TOTAL			3202.	2256.
4697	112	SINGLE FAMILY	du	38.0	490.	342.
4697	121	MULTI -FAMILY	du	21.0	239.	168.
4697	122	MULTI -FAMILY	du	61.0	525.	368.
4697	4112	RIGHT-OF-WAY	acre	3.1	0.	0.
4697	5025	SERVICE STATION FOOD MART	other	12.0	2476.	1798.
4697	5137	ARTERIAL COMMERCIAL	ksf	10.9	597.	434.
4697	6112	RELIGIOUS FACILITY	ksf	5.5	36.	28.
4697		TOTAL			4363.	3138.
4698	112	SINGLE FAMILY	du	50.0	645.	450.
4698	121	MULTI -FAMILY	du	9.0	103.	72.
4698	122	MULTI -FAMILY	du	55.0	473.	332.
4698	4112	RIGHT-OF-WAY	acre	4.3	0.	0.
4698	4114	PARKING	acre	0.2	0.	0.
4698	5014	CONVENIENCE MARKET CHAIN	ksf	17.5	12036.	8742.
4698	5137	ARTERIAL COMMERCIAL	ksf	21.7	1195.	868.
4698	6112	RELIGIOUS FACILITY	ksf	0.6	4.	3.
4698		TOTAL			14456.	10468.
4699	112	SINGLE FAMILY	du	55.0	709.	495.
4699	121	MULTI -FAMILY	du	11.0	125.	88.

Proposed Project Land Use TG by Land Use by zone. txt						
4699	122	MULTI -FAMILY	du	28.0	241.	169.
4699	4112	RIGHT-OF-WAY	acre	4.7	0.	0.
4699	5137	ARTERIAL COMMERCIAL	ksf	18.1	995.	723.
4699	6112	RELIGIOUS FACILITY	ksf	11.8	77.	59.
4699		TOTAL			2148.	1535.
4700	112	SINGLE FAMILY	du	17.0	219.	153.
4700	121	MULTI -FAMILY	du	4.0	46.	32.
4700	122	MULTI -FAMILY	du	94.0	808.	568.
4700	2113	LIGHT INDUSTRY GENERAL	ksf	11.8	219.	181.
4700	4112	RIGHT-OF-WAY	acre	1.8	0.	0.
4700	4114	PARKING	acre	0.1	0.	0.
4700	5011	HIGH TURNOVER RESTAURANT	ksf	1.4	244.	177.
4700	5014	CONVENIENCE MARKET CHAIN	ksf	14.0	9629.	6994.
4700	5029	AUTO REPAIR	ksf	4.5	123.	89.
4700	5030	AUTO TIRES	ksf	1.6	54.	39.

30jan14/13: 36: 48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 18

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4700	5137	ARTERIAL COMMERCIAL	ksf	42.5	2340.	1699.
4700	6013	GOV'T /CIVIC CENTER	ksf	1.7	68.	51.
4700	6112	RELIGIOUS FACILITY	ksf	4.5	29.	22.
4700	6115	FIRE OR POLICE STATION	ksf	14.6	596.	439.
4700		TOTAL			14375.	10446.
4701	112	SINGLE FAMILY	du	5.0	64.	45.
4701	121	MULTI -FAMILY	du	6.0	68.	48.
4701	122	MULTI -FAMILY	du	55.0	473.	332.
4701	2113	LIGHT INDUSTRY GENERAL	ksf	14.5	270.	223.
4701	4112	RIGHT-OF-WAY	acre	1.1	0.	0.
4701	5029	AUTO REPAIR	ksf	5.9	161.	117.
4701	5137	ARTERIAL COMMERCIAL	ksf	34.2	1883.	1368.
4701	6112	RELIGIOUS FACILITY	ksf	1.8	12.	9.
4701		TOTAL			2932.	2142.
4702	112	SINGLE FAMILY	du	21.0	271.	189.
4702	122	MULTI -FAMILY	du	18.0	155.	109.
4702	2113	LIGHT INDUSTRY GENERAL	ksf	13.8	256.	212.
4702	4112	RIGHT-OF-WAY	acre	2.0	0.	0.
4702	5014	CONVENIENCE MARKET CHAIN	ksf	5.8	3989.	2897.
4702	5137	ARTERIAL COMMERCIAL	ksf	8.2	452.	329.
4702	6129	MEETING ROOM FACILITY	ksf	4.0	166.	120.
4702		TOTAL			5290.	3856.
4703	111	SINGLE FAMILY	du	1.0	13.	9.
4703	112	SINGLE FAMILY	du	220.0	2838.	1981.
4703	4112	RIGHT-OF-WAY	acre	19.0	0.	0.
4703	6113	LIBRARY	ksf	27.6	2029.	1375.
4703	6819	OTHER SCHOOL	ksf	14.5	316.	261.
4703	7611	OPEN SPACE PARK	acre	32.6	251.	165.
4703		TOTAL			5447.	3791.
4704	4112	RIGHT-OF-WAY	acre	1.4	0.	0.
4704	6113	LIBRARY	ksf	20.0	1472.	998.
4704	6812	UNIVERSITY OR COLLEGE	other	7667.0	15334.	12465.
4704		TOTAL			16806.	13463.
4705	112	SINGLE FAMILY	du	257.0	3315.	2314.

Proposed Project Land Use TG by Land Use by zone. txt						
4705	4112	RIGHT-OF-WAY	acre	17.6	0.	0.
4705	7611	OPEN SPACE PARK	acre	25.4	195.	128.
4705		TOTAL			3510.	2442.
4706	112	SINGLE FAMILY	du	327.0	4218.	2944.
4706	1411	CONGREGATE CARE FACILITY	other	12.0	52.	36.
4706	4112	RIGHT-OF-WAY	acre	18.6	0.	0.
4706		TOTAL			4270.	2981.
4707	112	SINGLE FAMILY	du	170.0	2193.	1531.
4707	4112	RIGHT-OF-WAY	acre	9.0	0.	0.
4707	4113	COMMUNICATION OR UTILITY	acre	0.6	2.	1.
4707	7611	OPEN SPACE PARK	acre	0.8	6.	4.

30jan14/13: 36: 48/tgm. pr

♀203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 19

Zone	Code	Name	Land Use		Trips	
			Type	Amount	Person	Vehicle
4707	7613	ACTIVE PARK	acre	3.0	234.	154.
4707		TOTAL			2434.	1690.
4708	112	SINGLE FAMILY	du	394.0	5083.	3548.
4708	121	MULTI-FAMILY	du	17.0	194.	136.
4708	4112	RIGHT-OF-WAY	acre	31.6	0.	0.
4708	7611	OPEN SPACE PARK	acre	0.2	2.	1.
4708		TOTAL			5278.	3685.
4709	112	SINGLE FAMILY	du	213.0	2748.	1918.
4709	121	MULTI-FAMILY	du	186.0	2120.	1489.
4709	122	MULTI-FAMILY	du	136.0	1170.	821.
4709	4112	RIGHT-OF-WAY	acre	20.2	0.	0.
4709	5137	ARTERIAL COMMERCIAL	ksf	2.2	119.	86.
4709	6112	RELIGIOUS FACILITY	ksf	17.0	110.	85.
4709	6519	OTHER HEALTH CARE	ksf	3.8	253.	188.
4709	6816	ELEMENTARY SCHOOL	other	483.0	1642.	918.
4709	7613	ACTIVE PARK	acre	6.6	510.	335.
4709		TOTAL			8672.	5840.
4710	112	SINGLE FAMILY	du	25.0	322.	225.
4710	121	MULTI-FAMILY	du	23.0	262.	184.
4710	122	MULTI-FAMILY	du	171.0	1471.	1032.
4710	4112	RIGHT-OF-WAY	acre	5.9	0.	0.
4710	5137	ARTERIAL COMMERCIAL	ksf	10.1	557.	404.
4710	6119	OTHER PUBLIC SERVICE	ksf	8.7	120.	87.
4710	7613	ACTIVE PARK	acre	0.1	9.	6.
4710		TOTAL			2741.	1939.
4711	112	SINGLE FAMILY	du	12.0	155.	108.
4711	121	MULTI-FAMILY	du	10.0	114.	80.
4711	122	MULTI-FAMILY	du	80.0	688.	483.
4711	2113	LIGHT INDUSTRY GENERAL	ksf	8.0	149.	123.
4711	4112	RIGHT-OF-WAY	acre	2.9	0.	0.
4711	6012	LOW RISE OFFICE A	ksf	5.4	288.	222.
4711		TOTAL			1394.	1016.
4712	112	SINGLE FAMILY	du	24.0	310.	216.
4712	121	MULTI-FAMILY	du	15.0	171.	120.
4712	122	MULTI-FAMILY	du	134.0	1152.	809.
4712	4112	RIGHT-OF-WAY	acre	3.8	0.	0.
4712	6511	CLINIC	ksf	3.0	201.	149.

Proposed Project Land Use TG by Land Use by zone. txt						
4712		TOTAL			1834.	1294.
4713	112	SINGLE FAMILY	du	14.0	181.	126.
4713	121	MULTI -FAMILY	du	2.0	23.	16.
4713	122	MULTI -FAMILY	du	74.0	636.	447.
4713	4112	RIGHT-OF-WAY	acre	1.3	0.	0.
4713	5137	ARTERIAL COMMERCIAL	ksf	18.3	1006.	730.
4713	9101	INACTIVE USE	acre	0.1	0.	0.
4713		TOTAL			1845.	1319.

30jan14/13: 36: 48/tgm. pr

♀203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C
trip generation and land use by zone page 20

Zone	Code	Name	Land Use	Type	Amount	Trips	
						Person	Vehicle
4714	112	SINGLE FAMILY		du	3.0	39.	27.
4714	121	MULTI -FAMILY		du	13.0	148.	104.
4714	122	MULTI -FAMILY		du	88.0	757.	531.
4714	4112	RIGHT-OF-WAY		acre	3.6	0.	0.
4714	5137	ARTERIAL COMMERCIAL		ksf	32.1	1767.	1283.
4714	9101	INACTIVE USE		acre	0.2	0.	0.
4714		TOTAL				2710.	1945.
4715	112	SINGLE FAMILY		du	25.0	322.	225.
4715	121	MULTI -FAMILY		du	17.0	194.	136.
4715	122	MULTI -FAMILY		du	54.0	464.	326.
4715	4112	RIGHT-OF-WAY		acre	4.1	0.	0.
4715	7611	OPEN SPACE PARK		acre	0.0	0.	0.
4715	7613	ACTIVE PARK		acre	2.7	204.	134.
4715	9101	INACTIVE USE		du	0.1	0.	0.
4715		TOTAL				1185.	822.
4716	112	SINGLE FAMILY		du	24.0	310.	216.
4716	122	MULTI -FAMILY		du	88.0	757.	531.
4716	4112	RIGHT-OF-WAY		acre	2.0	0.	0.
4716	5137	ARTERIAL COMMERCIAL		ksf	20.5	1129.	820.
4716		TOTAL				2196.	1568.
4717	112	SINGLE FAMILY		du	42.0	542.	378.
4717	121	MULTI -FAMILY		du	34.0	388.	272.
4717	122	MULTI -FAMILY		du	37.0	318.	223.
4717	4112	RIGHT-OF-WAY		acre	2.5	0.	0.
4717	5137	ARTERIAL COMMERCIAL		ksf	1.6	90.	65.
4717		TOTAL				1337.	939.
4718	112	SINGLE FAMILY		du	49.0	632.	441.
4718	121	MULTI -FAMILY		du	21.0	239.	168.
4718	122	MULTI -FAMILY		du	134.0	1152.	809.
4718	4112	RIGHT-OF-WAY		acre	8.1	0.	0.
4718	4113	COMMUNICATION OR UTILITY		acre	0.5	1.	1.
4718	5131	WHOLESALE TRADE		ksf	15.7	1553.	1101.
4718	5137	ARTERIAL COMMERCIAL		ksf	61.5	3381.	2455.
4718	6819	OTHER SCHOOL		ksf	36.1	787.	650.
4718	7613	ACTIVE PARK		acre	0.2	18.	12.
4718		TOTAL				7764.	5637.
4719	112	SINGLE FAMILY		du	49.0	632.	441.
4719	121	MULTI -FAMILY		du	45.0	513.	360.
4719	122	MULTI -FAMILY		du	31.0	267.	187.
4719	4112	RIGHT-OF-WAY		acre	3.8	0.	0.

Proposed Project Land Use TG by Land Use by zone. txt						
4719	5137	ARTERIAL COMMERCIAL	ksf	1.5	84.	61.
4719	9101	INACTIVE USE	acre	0.1	0.	0.
4719		TOTAL			1496.	1050.
4720	112	SINGLE FAMILY	du	22.0	284.	198.
4720	121	MULTI-FAMILY	du	46.0	524.	368.
4720	122	MULTI-FAMILY	du	4.0	34.	24.

30jan14/13: 36: 48/tgm. pr

♀203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C
trip generation and land use by zone page 21

Zone	Code	Name	Type	Amount	Trips	
					Person	Vehicle
4720	1511	MOTEL	room	27.0	394.	243.
4720	4112	RIGHT-OF-WAY	acre	5.5	0.	0.
4720	5137	ARTERIAL COMMERCIAL	ksf	37.2	2048.	1488.
4720		TOTAL			3285.	2321.
4721	112	SINGLE FAMILY	du	23.0	297.	207.
4721	121	MULTI-FAMILY	du	28.0	319.	224.
4721	122	MULTI-FAMILY	du	13.0	112.	78.
4721	4112	RIGHT-OF-WAY	acre	6.4	0.	0.
4721	5137	ARTERIAL COMMERCIAL	ksf	20.8	1144.	831.
4721	6816	ELEMENTARY SCHOOL	other	333.0	1132.	633.
4721		TOTAL			3004.	1973.
4722	112	SINGLE FAMILY	du	89.0	1148.	801.
4722	121	MULTI-FAMILY	du	73.0	832.	584.
4722	122	MULTI-FAMILY	du	169.0	1453.	1020.
4722	2113	LIGHT INDUSTRY GENERAL	ksf	8.4	156.	129.
4722	4112	RIGHT-OF-WAY	acre	14.4	0.	0.
4722	5137	ARTERIAL COMMERCIAL	ksf	42.9	2360.	1714.
4722	7611	OPEN SPACE PARK	acre	2.6	20.	13.
4722	7613	ACTIVE PARK	acre	0.2	17.	11.
4722	9101	INACTIVE USE	du	1.8	0.	0.
4722		TOTAL			5987.	4274.
4723	112	SINGLE FAMILY	du	11.0	142.	99.
4723	121	MULTI-FAMILY	du	12.0	137.	96.
4723	122	MULTI-FAMILY	du	308.0	2649.	1860.
4723	4112	RIGHT-OF-WAY	acre	14.2	0.	0.
4723	5137	ARTERIAL COMMERCIAL	ksf	43.6	2398.	1741.
4723		TOTAL			5325.	3796.
4724	112	SINGLE FAMILY	du	38.0	490.	342.
4724	121	MULTI-FAMILY	du	41.0	467.	328.
4724	122	MULTI-FAMILY	du	156.0	1342.	942.
4724	4112	RIGHT-OF-WAY	acre	4.1	0.	0.
4724	5137	ARTERIAL COMMERCIAL	ksf	1.7	93.	68.
4724		TOTAL			2392.	1680.
4725	112	SINGLE FAMILY	du	34.0	439.	306.
4725	121	MULTI-FAMILY	du	26.0	296.	208.
4725	122	MULTI-FAMILY	du	43.0	370.	260.
4725	4112	RIGHT-OF-WAY	acre	5.7	0.	0.
4725	5137	ARTERIAL COMMERCIAL	ksf	2.1	113.	82.
4725	6816	ELEMENTARY SCHOOL	other	354.0	1204.	673.
4725		TOTAL			2422.	1529.
4726	112	SINGLE FAMILY	du	190.0	2451.	1711.
4726	121	MULTI-FAMILY	du	10.0	114.	80.

Proposed Project Land Use TG by Land Use by zone.txt							
4726	122	MULTI-FAMILY	du	26.0	224.	157.	
4726	4112	RIGHT-OF-WAY	acre	16.7	0.	0.	
4726	5025	SERVICE STATION FOOD MART	other	8.0	1650.	1199.	
4726	5137	ARTERIAL COMMERCIAL	ksf	22.5	1239.	900.	

30jan14/13: 36: 48/tgm. pr

203RC11C - Proposed Land Use\Reasonably Expected Network with SR-94 Alt 1\with C trip generation and land use by zone page 22

Zone	Code	Name	Land Use		Trips	
			Type	Amount	Person	Vehicle
4726	7611	OPEN SPACE PARK	acre	6.3	49.	32.
4726		TOTAL			5727.	4079.
4727	112	SINGLE FAMILY	du	123.0	1587.	1108.
4727	4112	RIGHT-OF-WAY	acre	13.3	0.	0.
4727	7611	OPEN SPACE PARK	acre	8.6	67.	44.
4727		TOTAL			1653.	1151.
4728	112	SINGLE FAMILY	du	222.0	2864.	1999.
4728	121	MULTI-FAMILY	du	22.0	251.	176.
4728	122	MULTI-FAMILY	du	12.0	103.	72.
4728	4112	RIGHT-OF-WAY	acre	13.2	0.	0.
4728	6112	RELIGIOUS FACILITY	ksf	7.7	50.	38.
4728	7611	OPEN SPACE PARK	acre	5.8	45.	29.
4728	9101	INACTIVE USE	du	0.4	0.	0.
4728		TOTAL			3312.	2315.

30jan14/13: 36: 48/tgm. pr

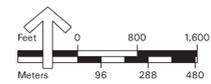
APPENDIX C: MODEL VOLUMES



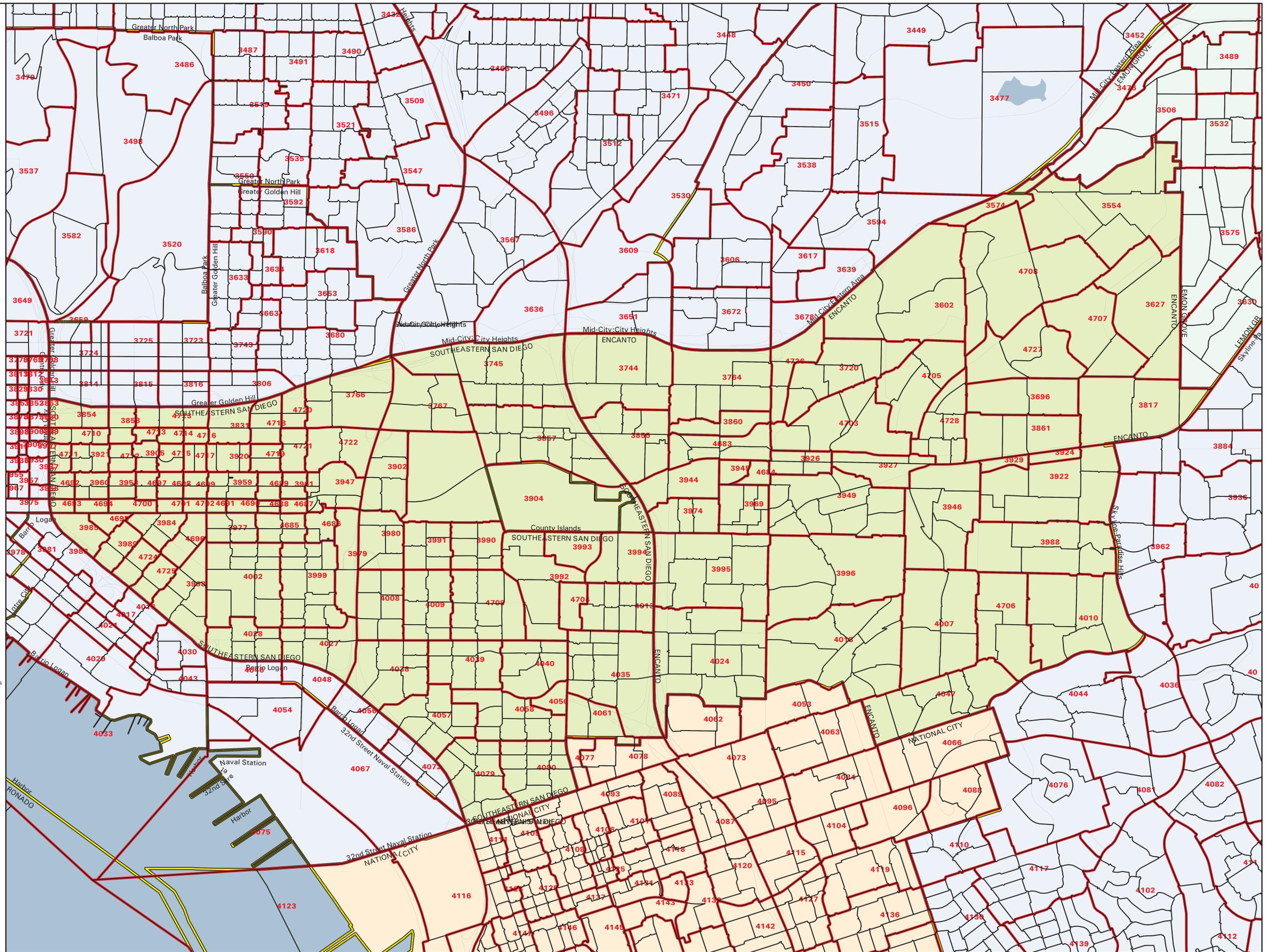
**SANDAG Series 12
City of San Diego
Community Plan Update
Traffic Analysis Zones**

SOUTHEAST SAN DIEGO

- Zones and MGRAs:
-  Traffic Analysis Zones
 -  Master Geographic Reference Areas
 -  Background Base Year Network
 -  City and County Community Planning Areas
- Proposed Study Area:
-  CPA-Defined Study Area
 -  One-TAZ Buffered Study Area



August 1, 2013



**SANDAG Series 12 2035
Revenue Constrained
2011 RTP Highway Network
Forecasted Daily Volumes**

SOUTHEAST SAN DIEGO

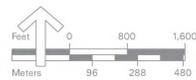
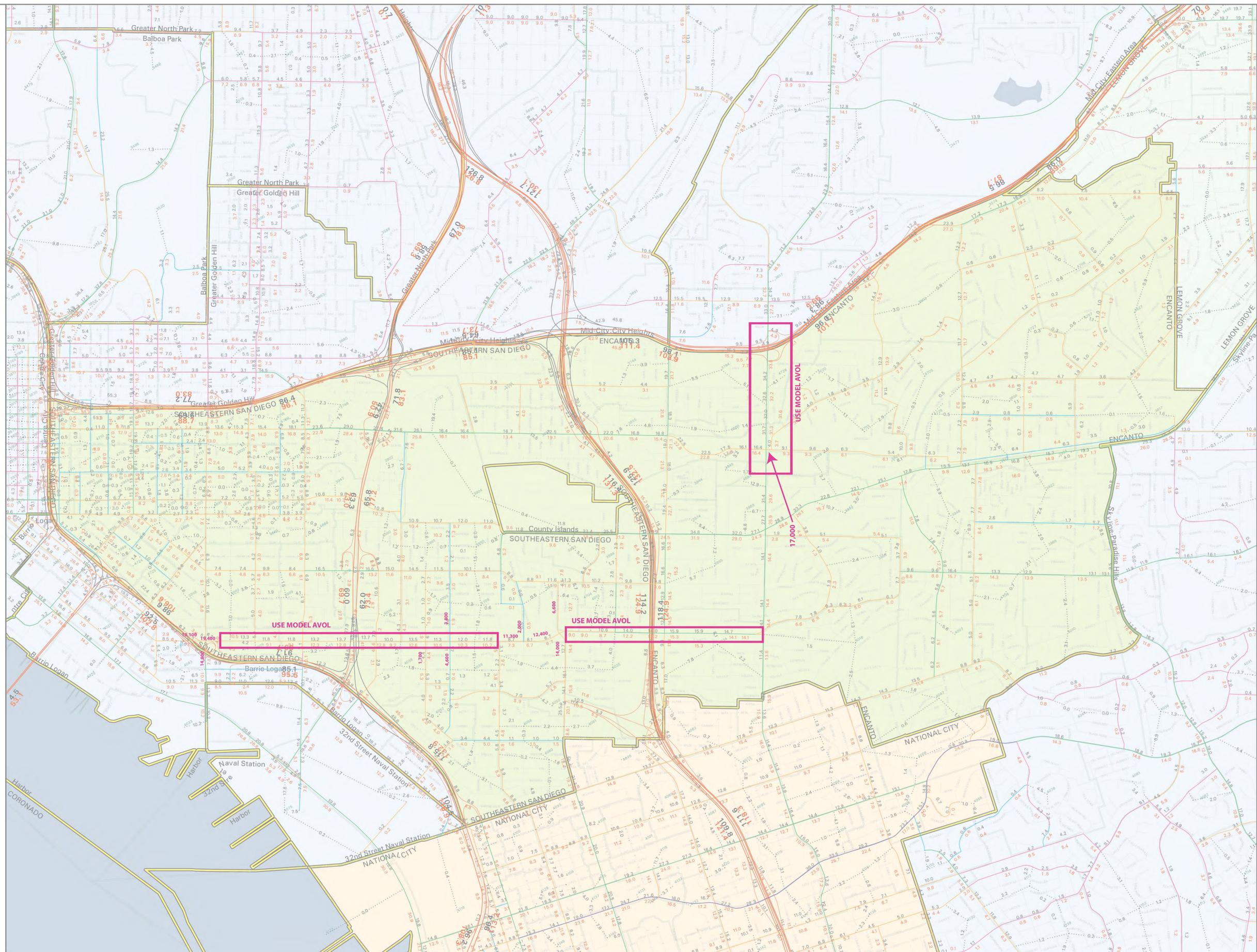
Model Run 01/30/14
2035r1c1C - Proposed Land Use
Reasonably Expected Network with SR-94 Alt 1
with Connection Deletions

Forecasted Volumes:

- # Adjusted Volume
- # Unadjusted Volume
- # Traffic Analysis Zone

**MODEL WITH ADJUSTMENT FOR
NATIONAL / EUCLID PROJECT
ONLY VOLUME IN THE NATIONAL/EUCLID
STUDY AREA HAVE BEEN VERIFIED**

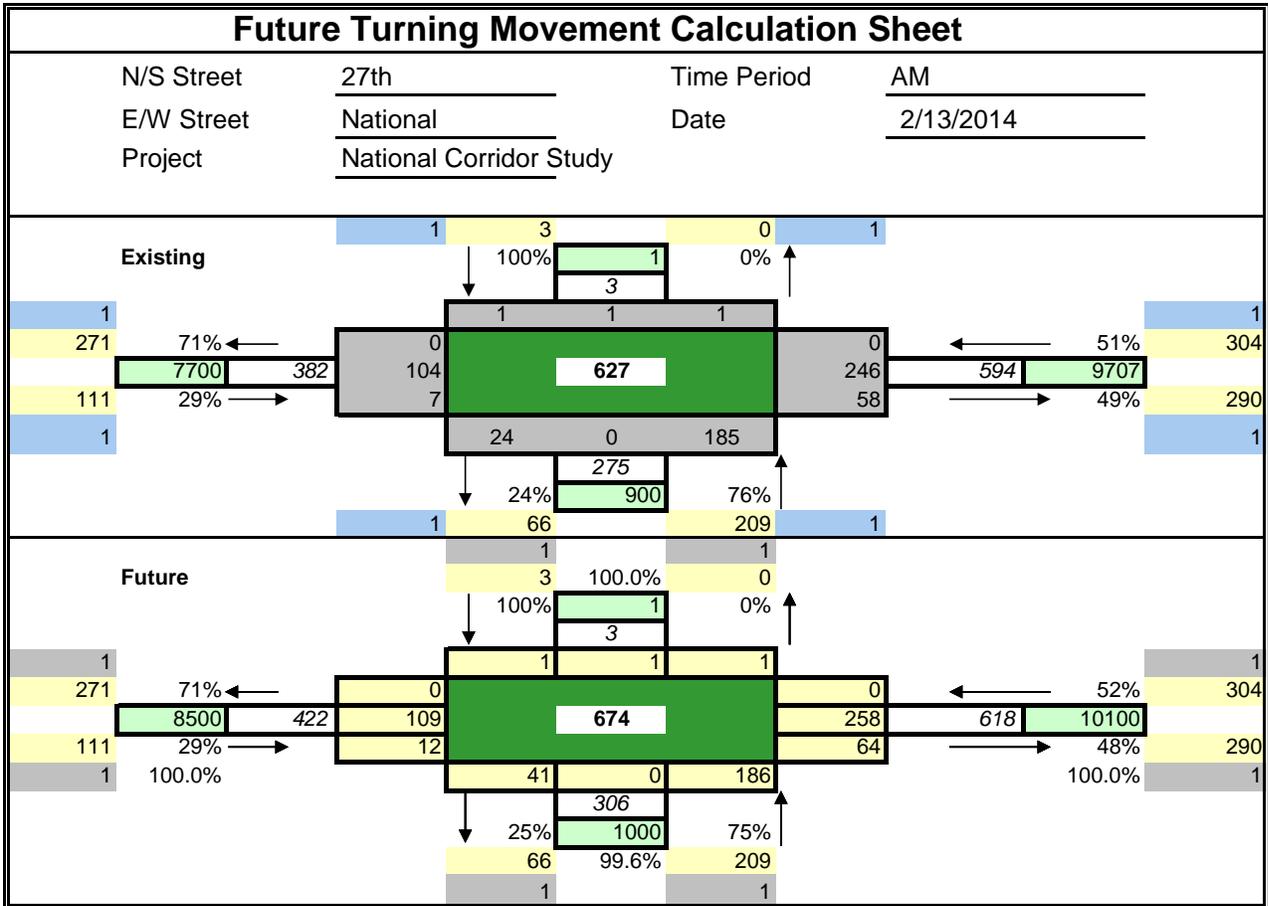
02/10/2014

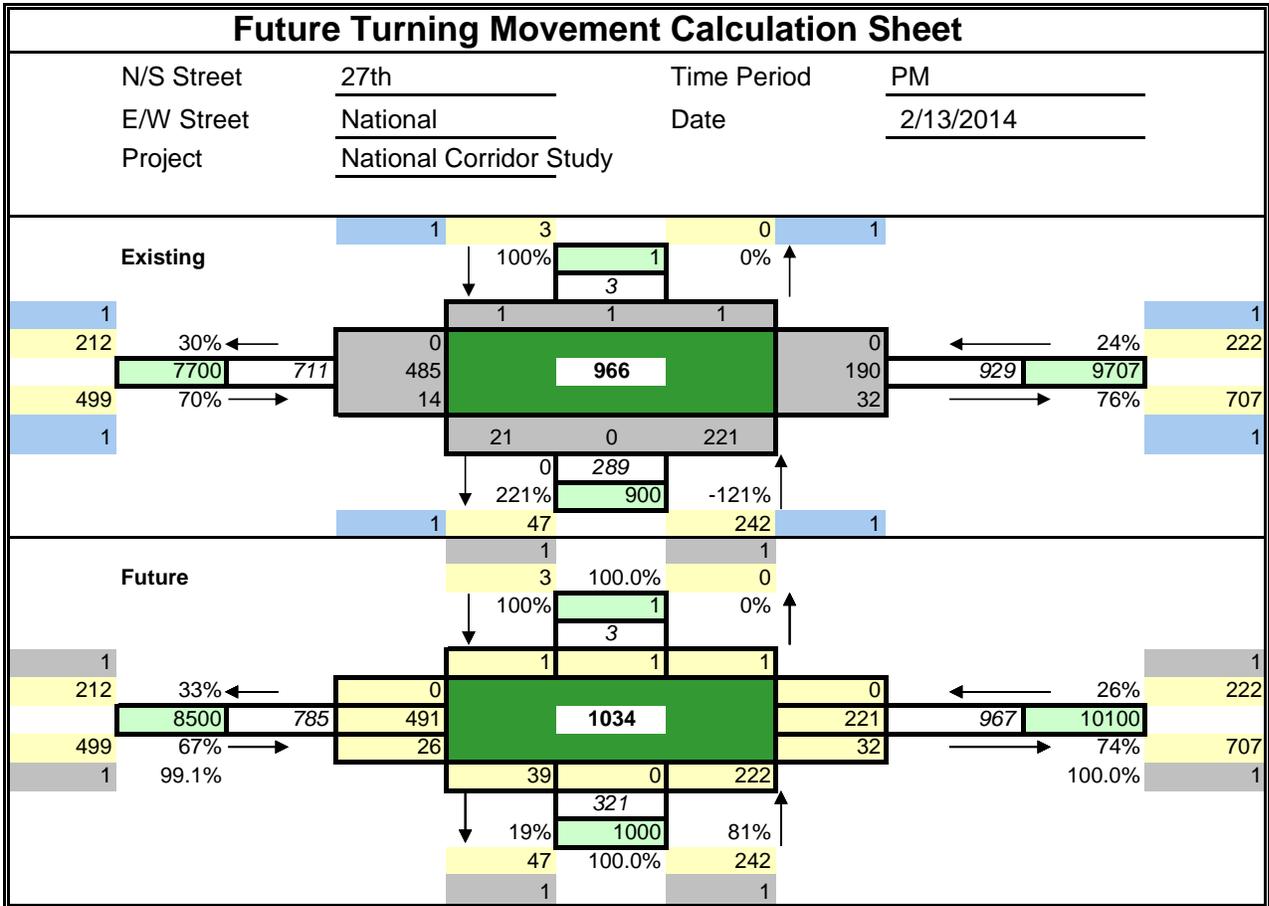


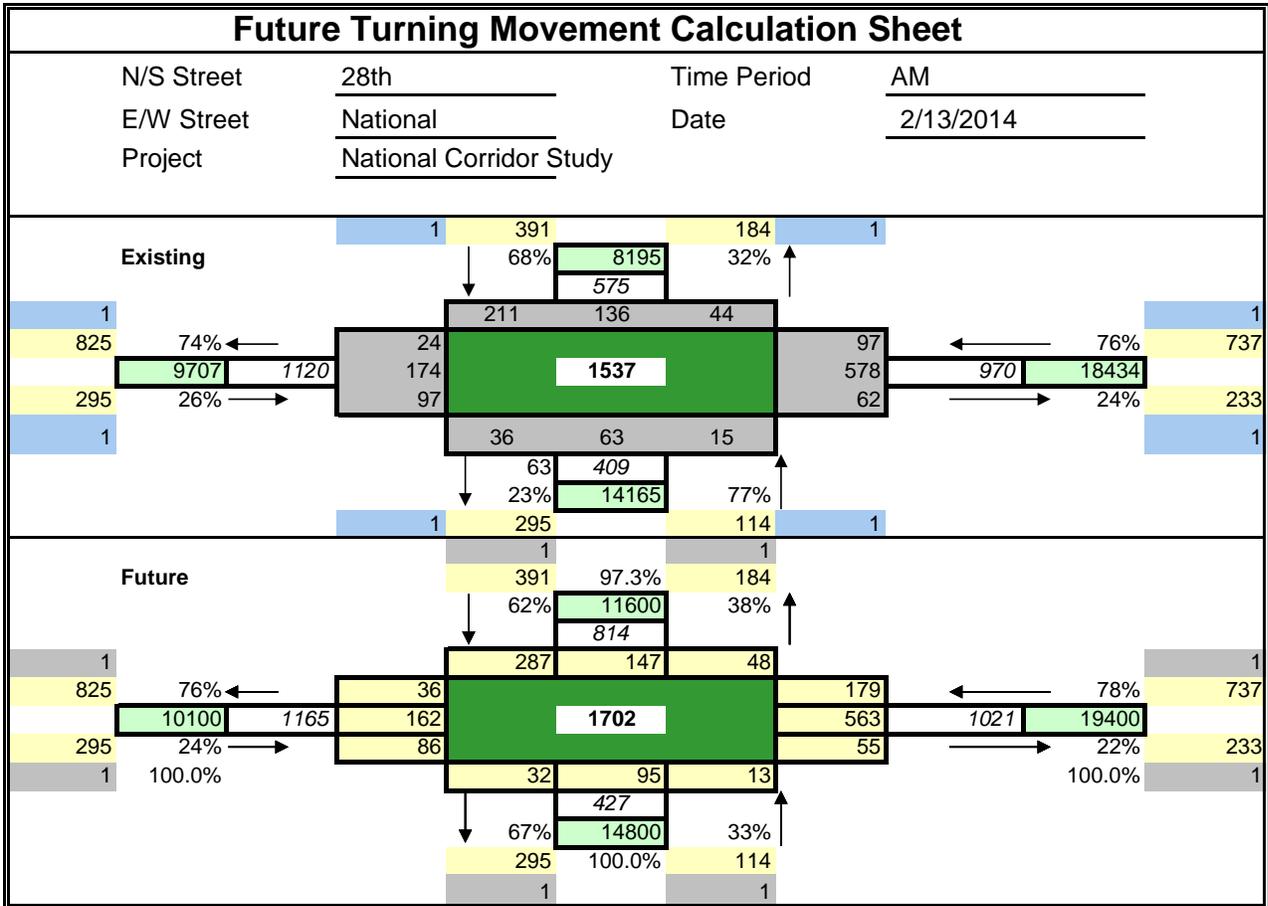
January 31, 2014

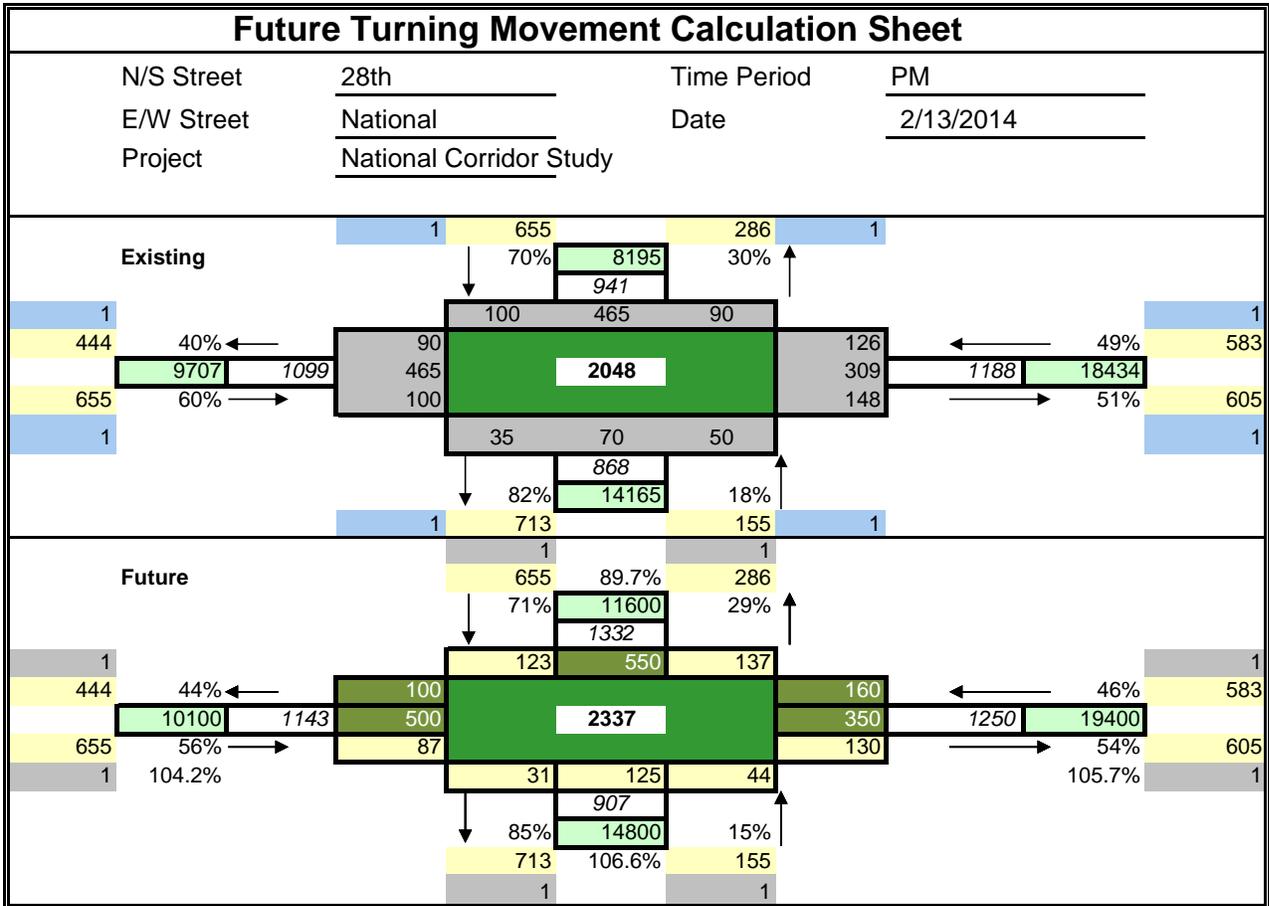
APPENDIX D: POST-PROCESSOR SPREADSHEETS

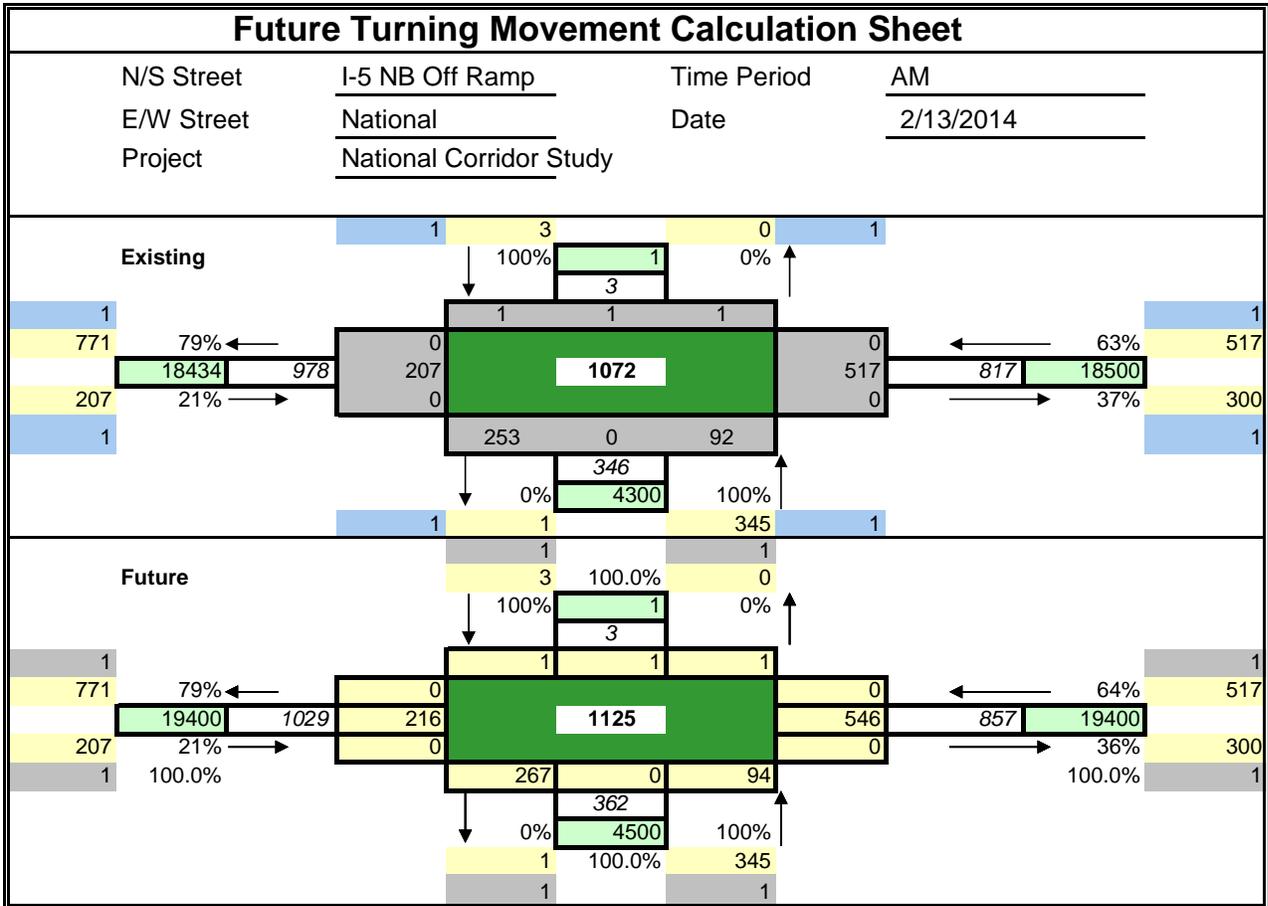


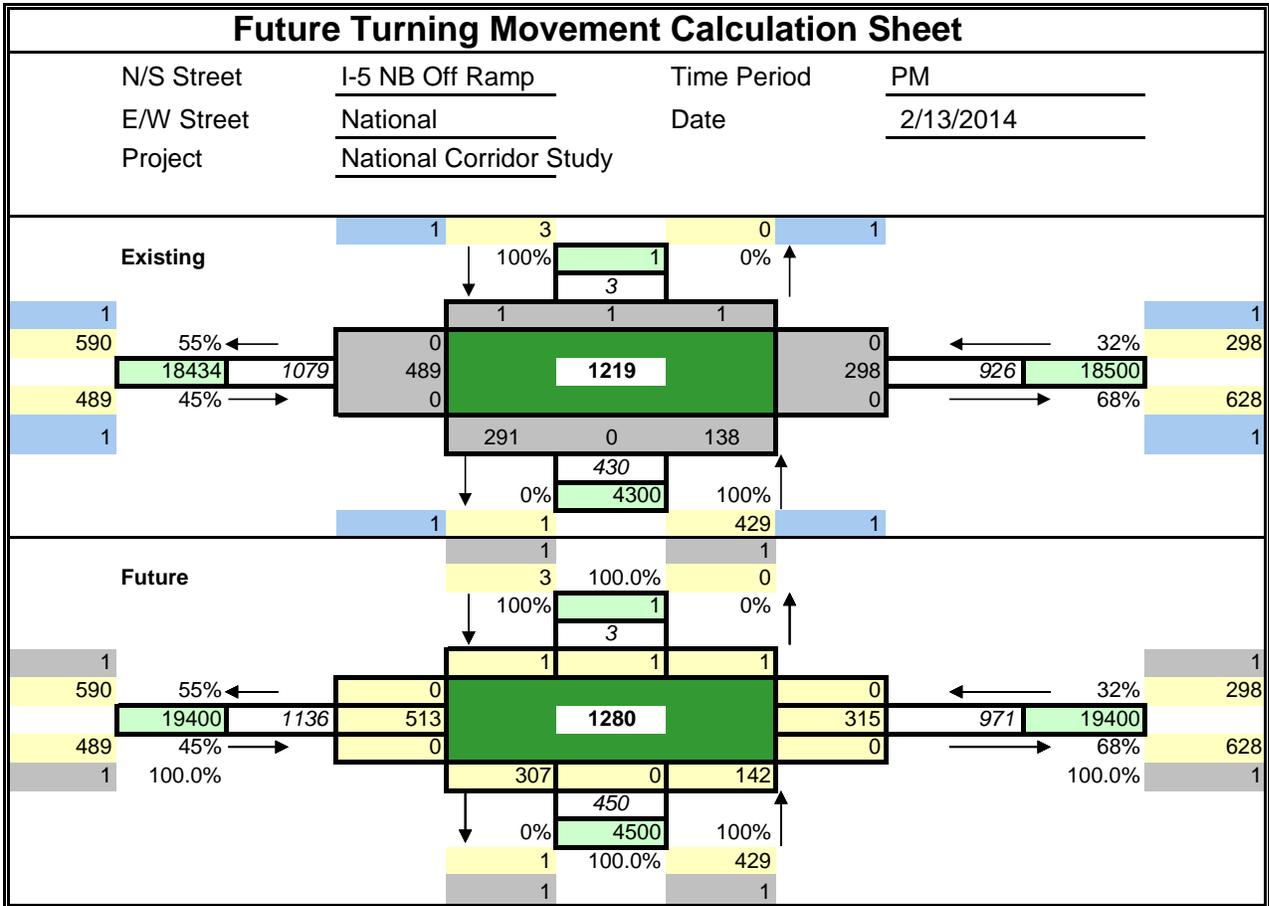


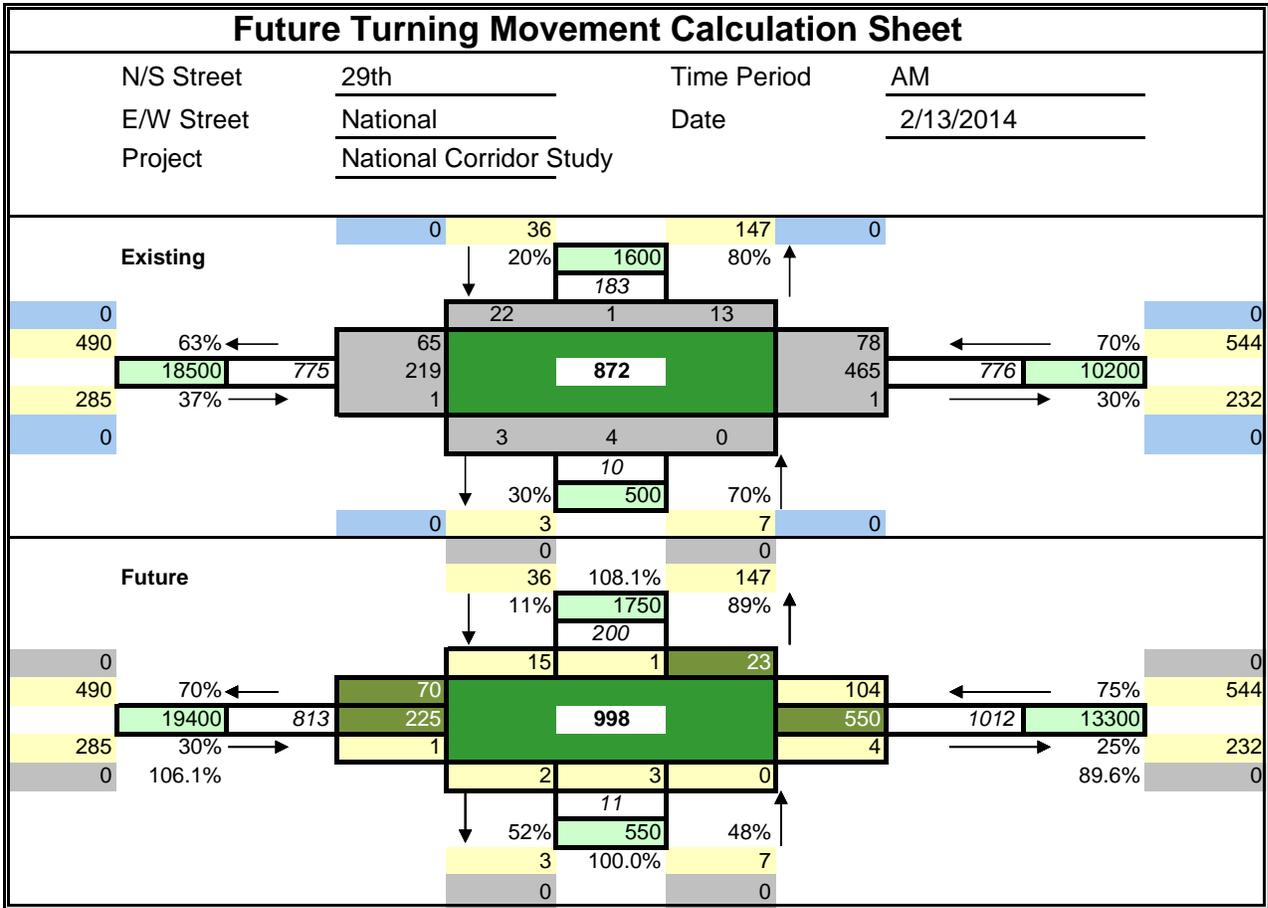


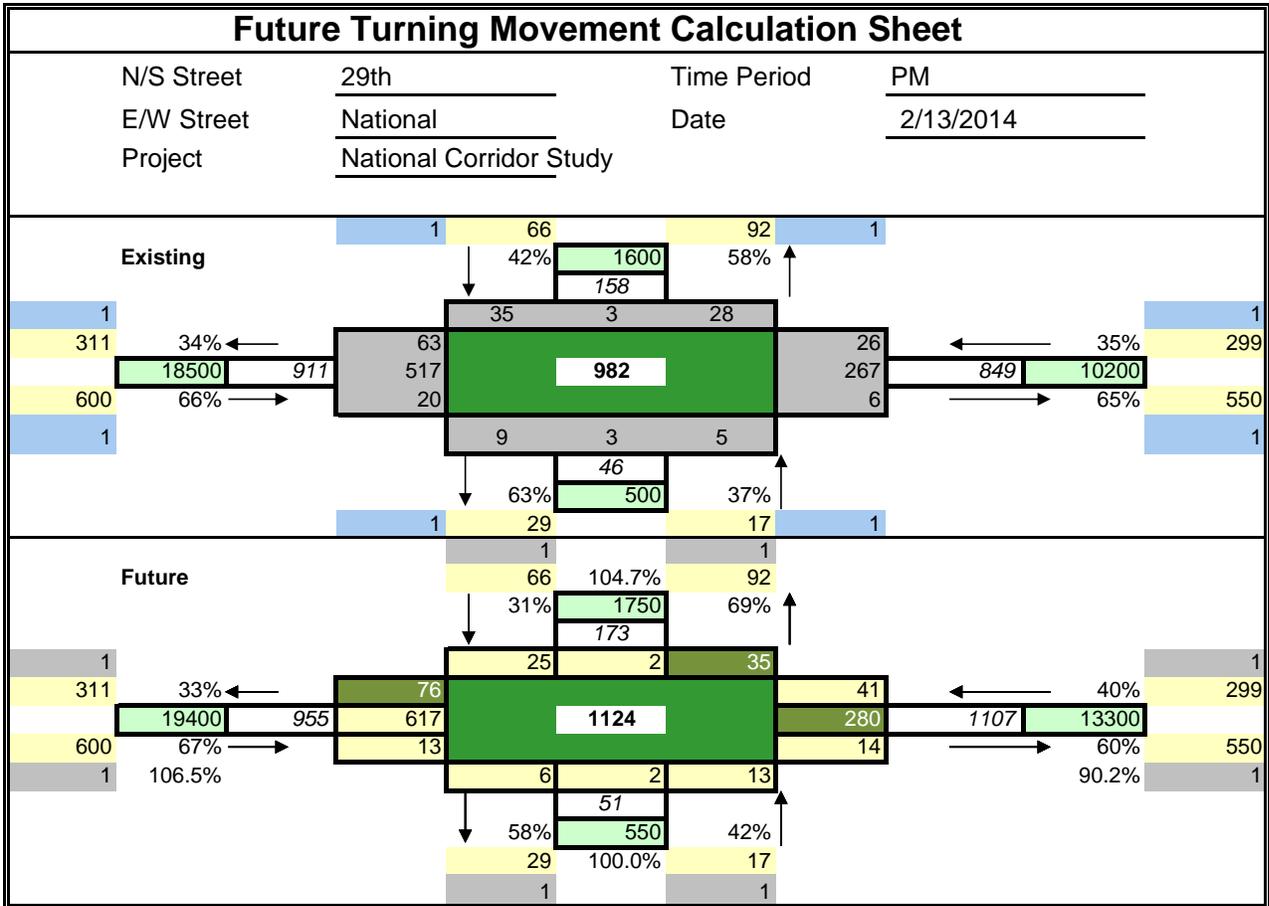


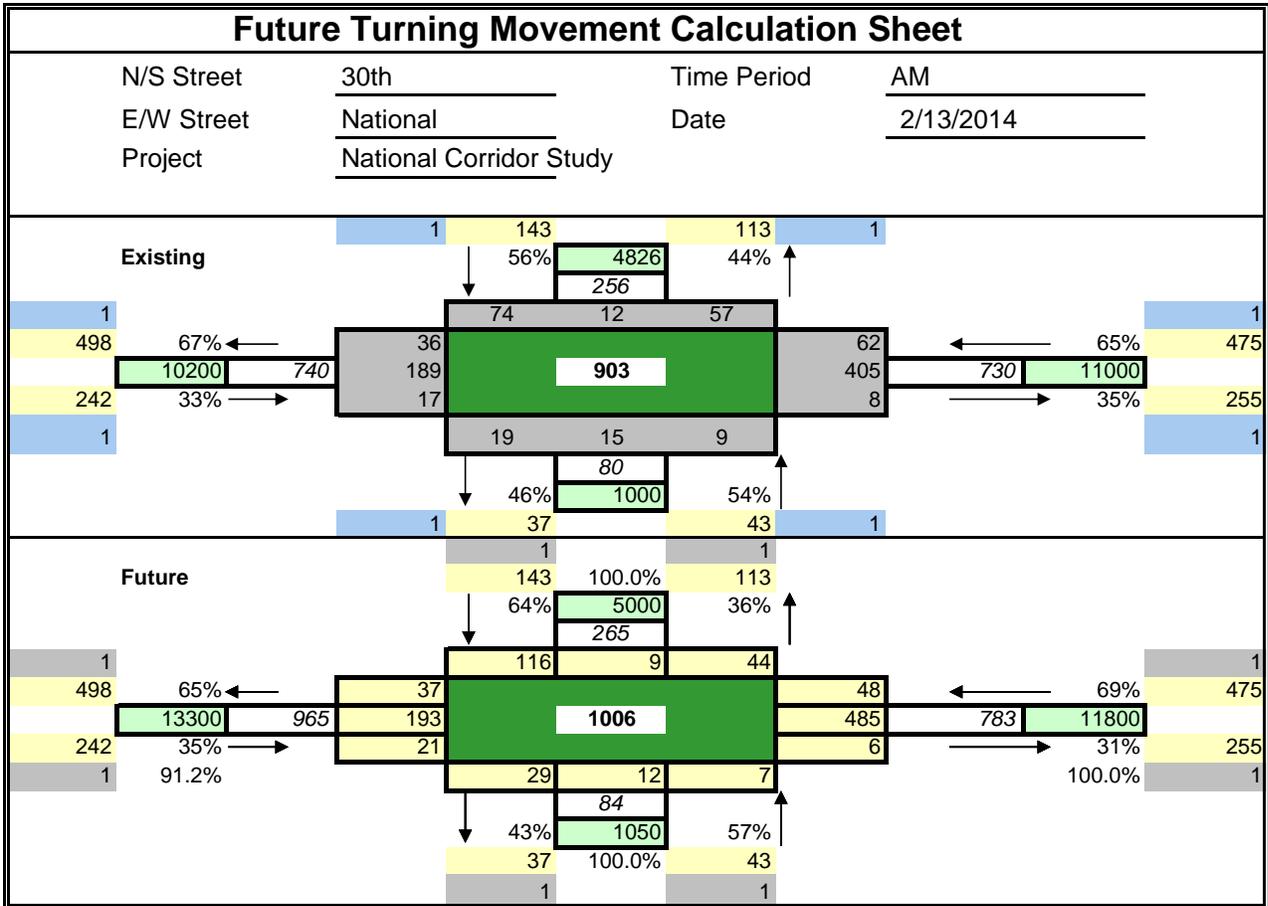


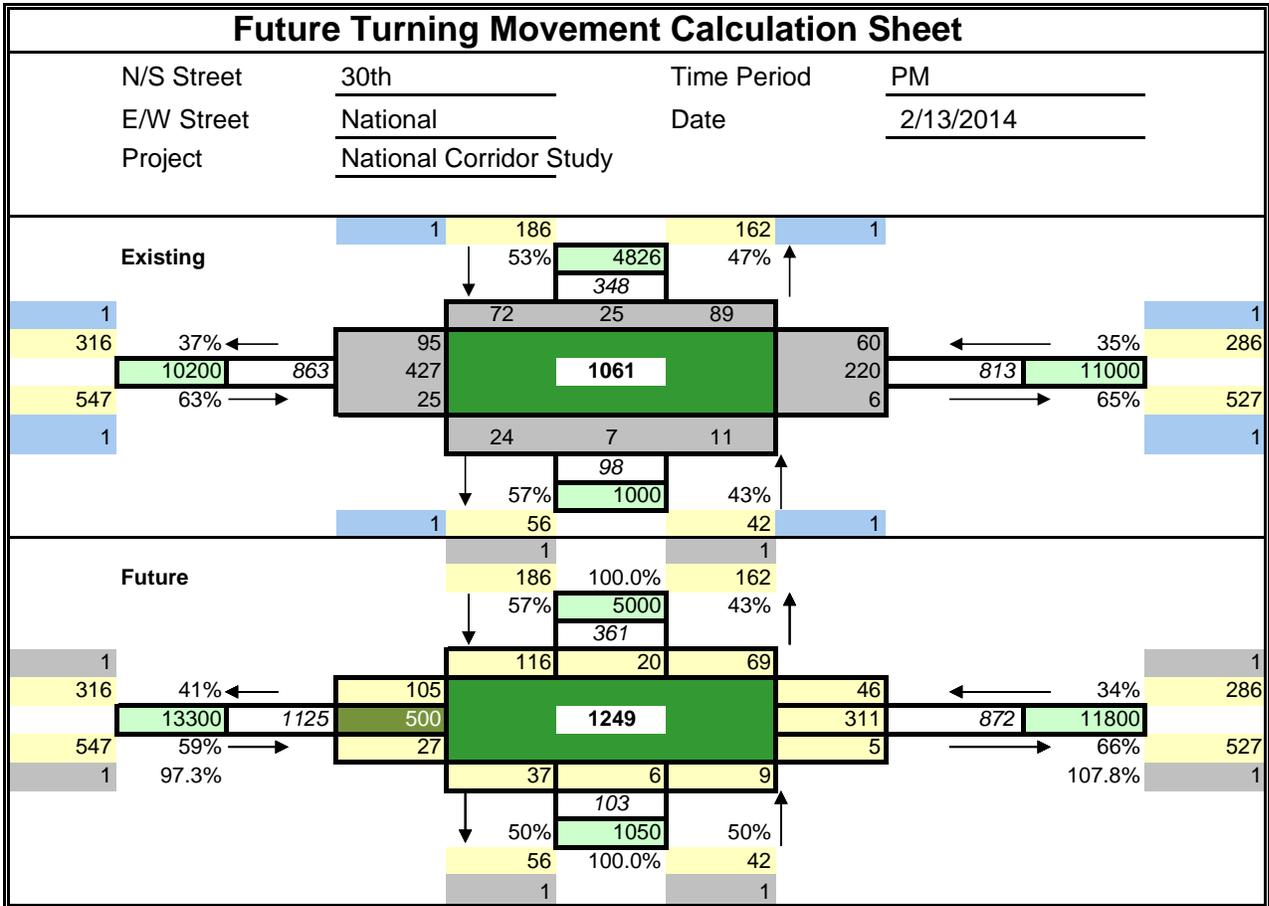


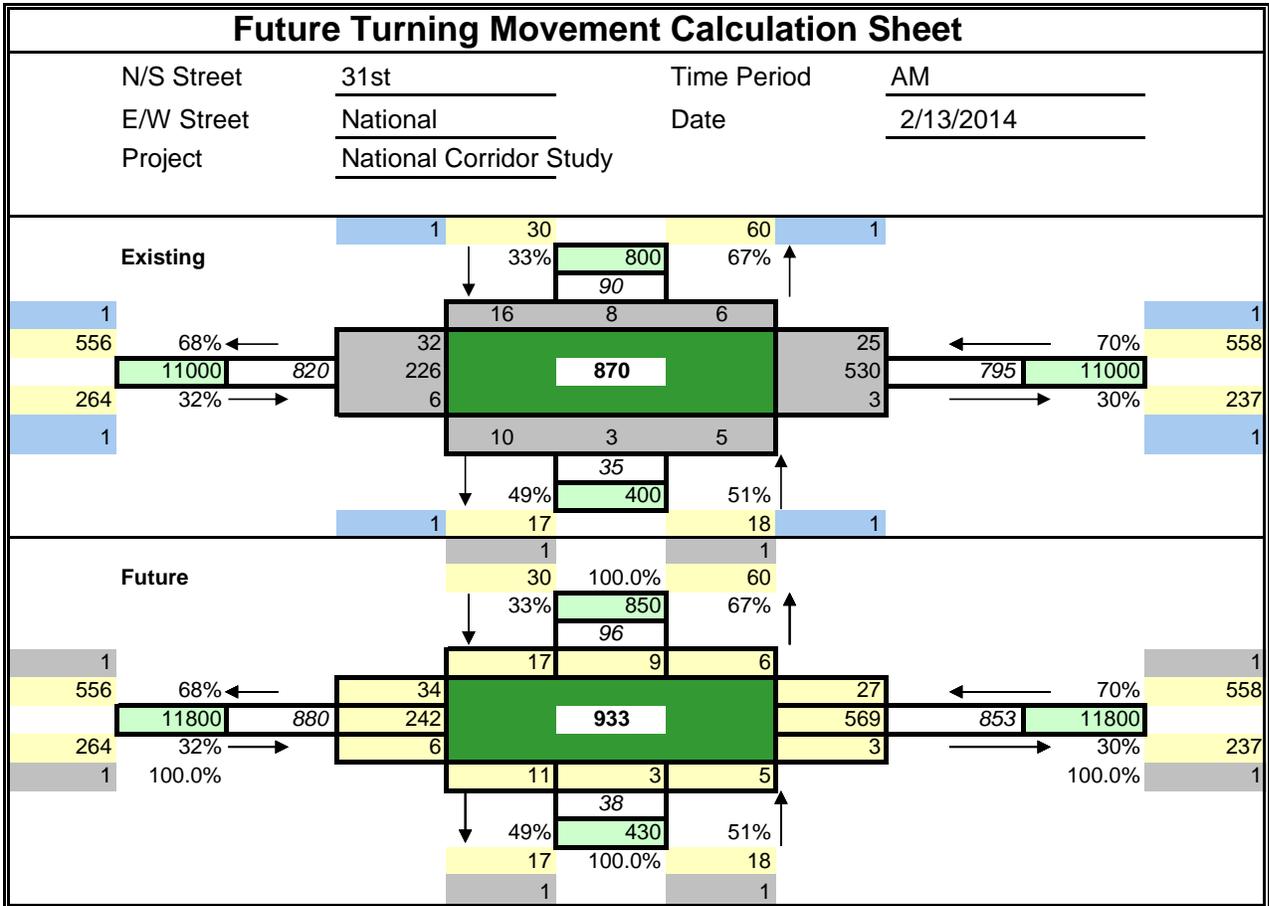


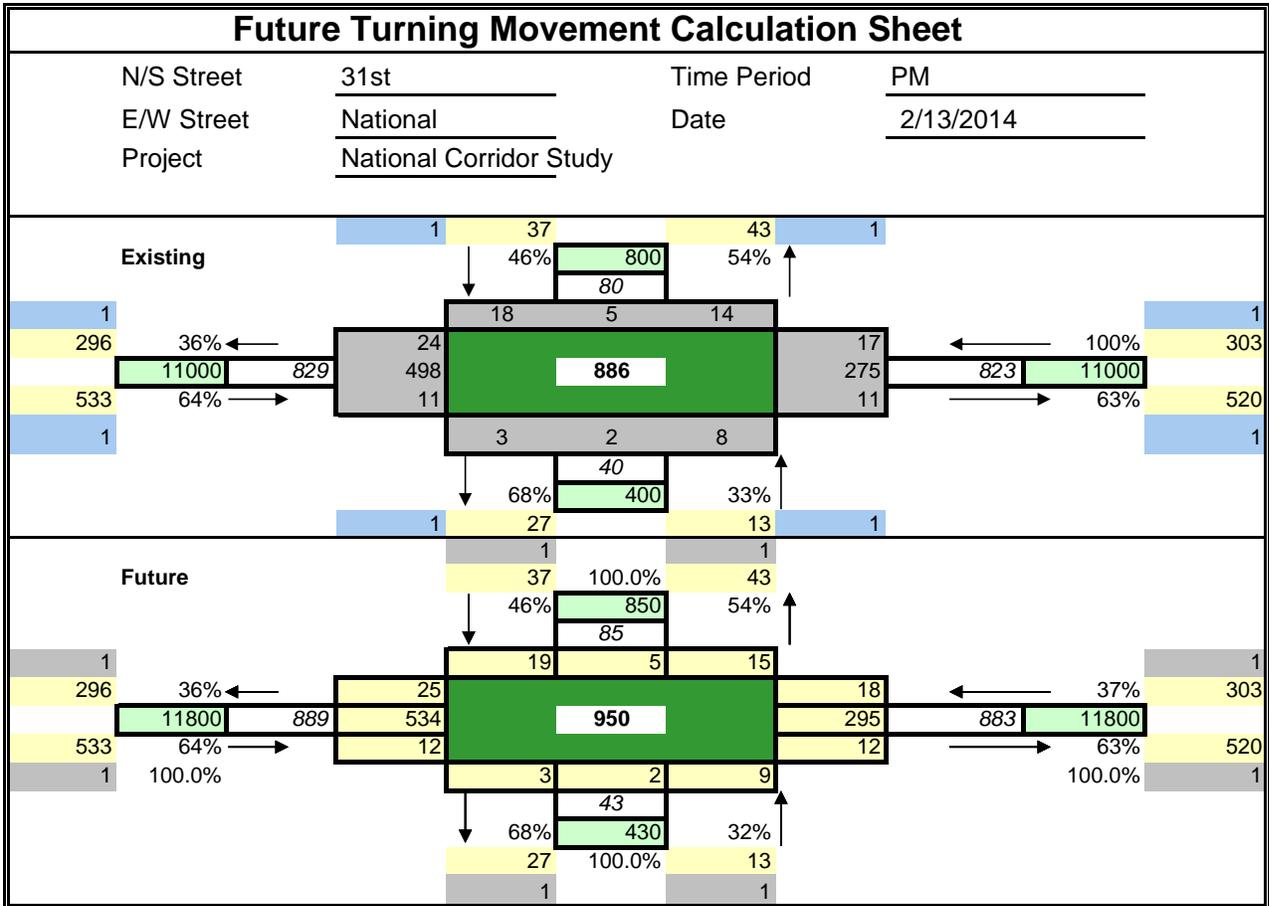


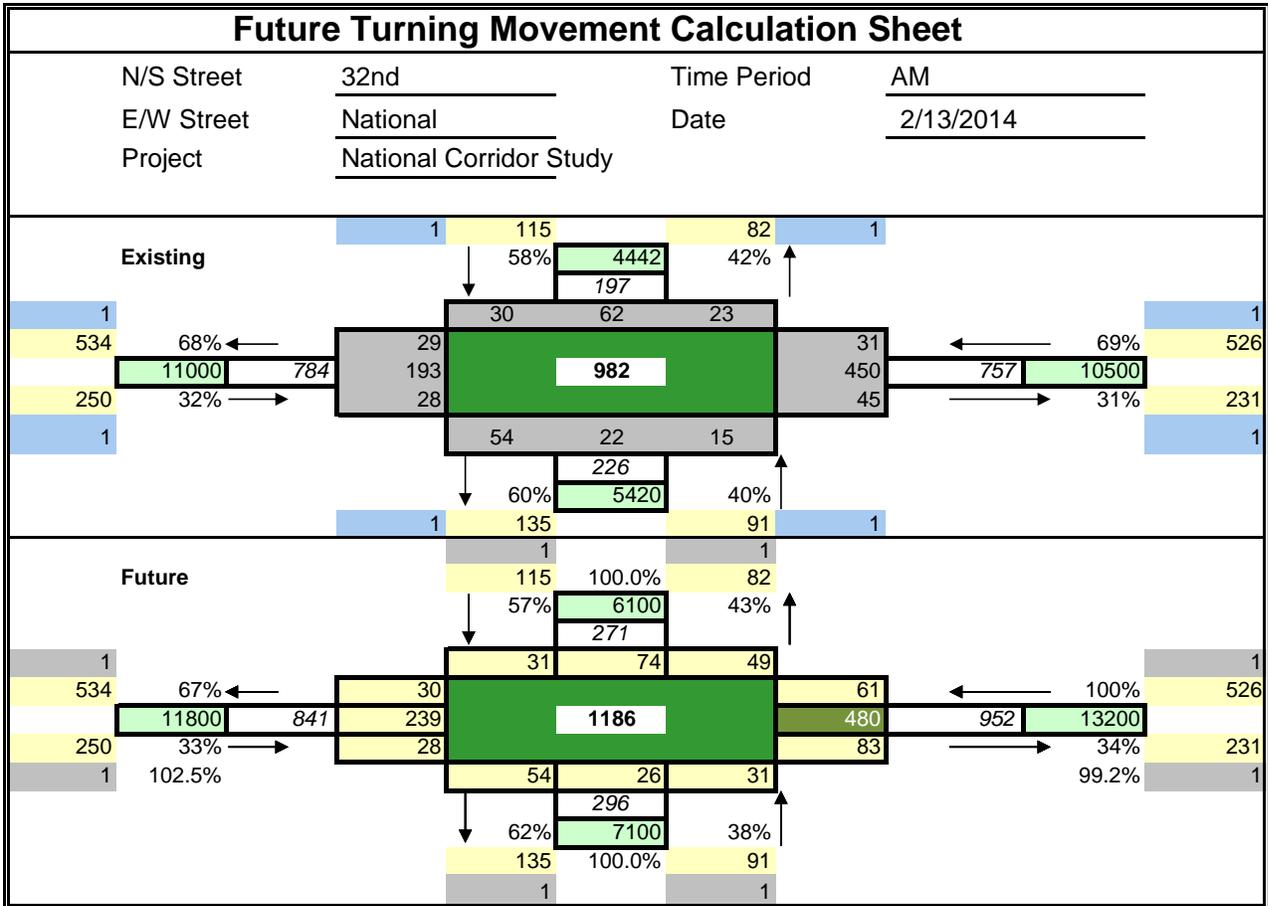


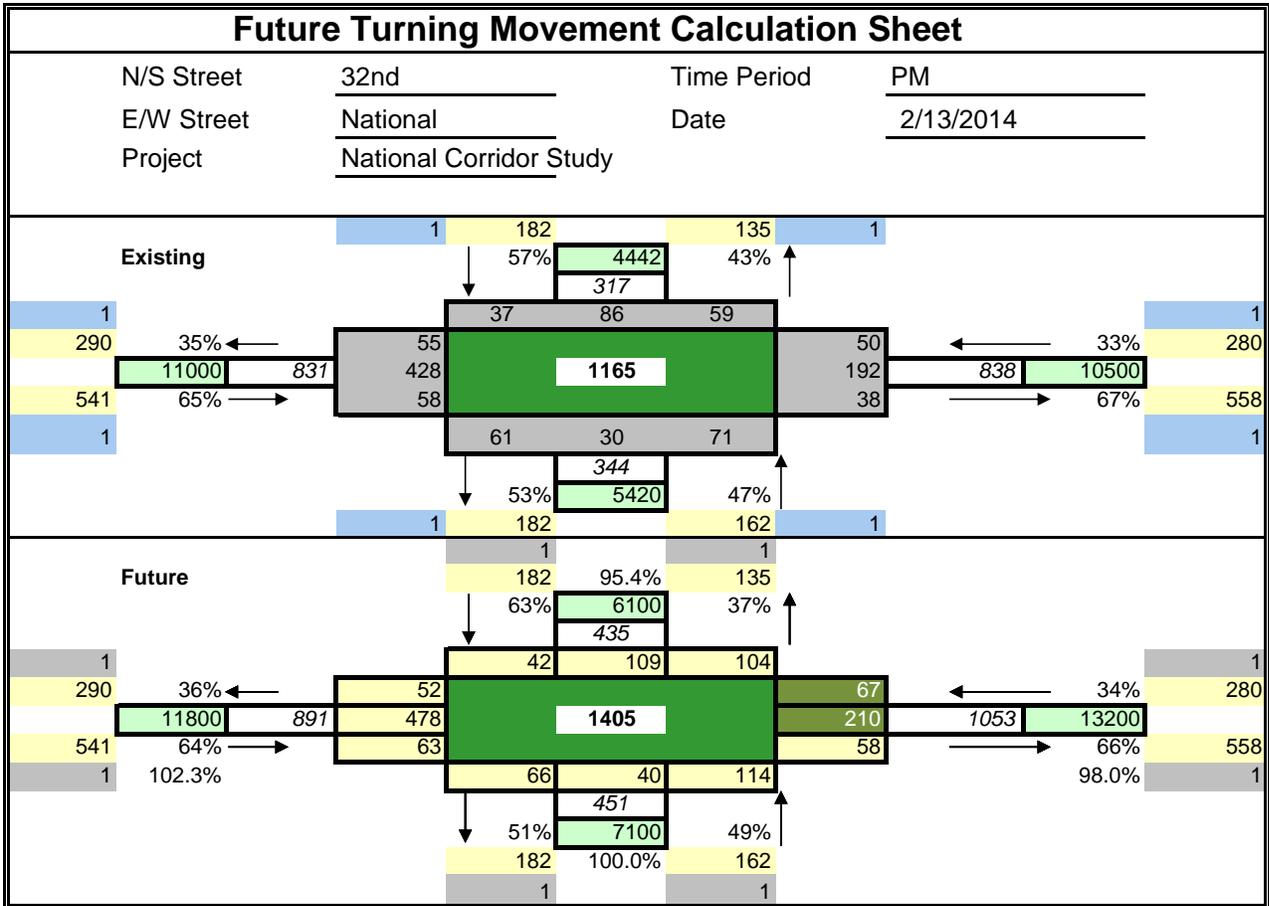


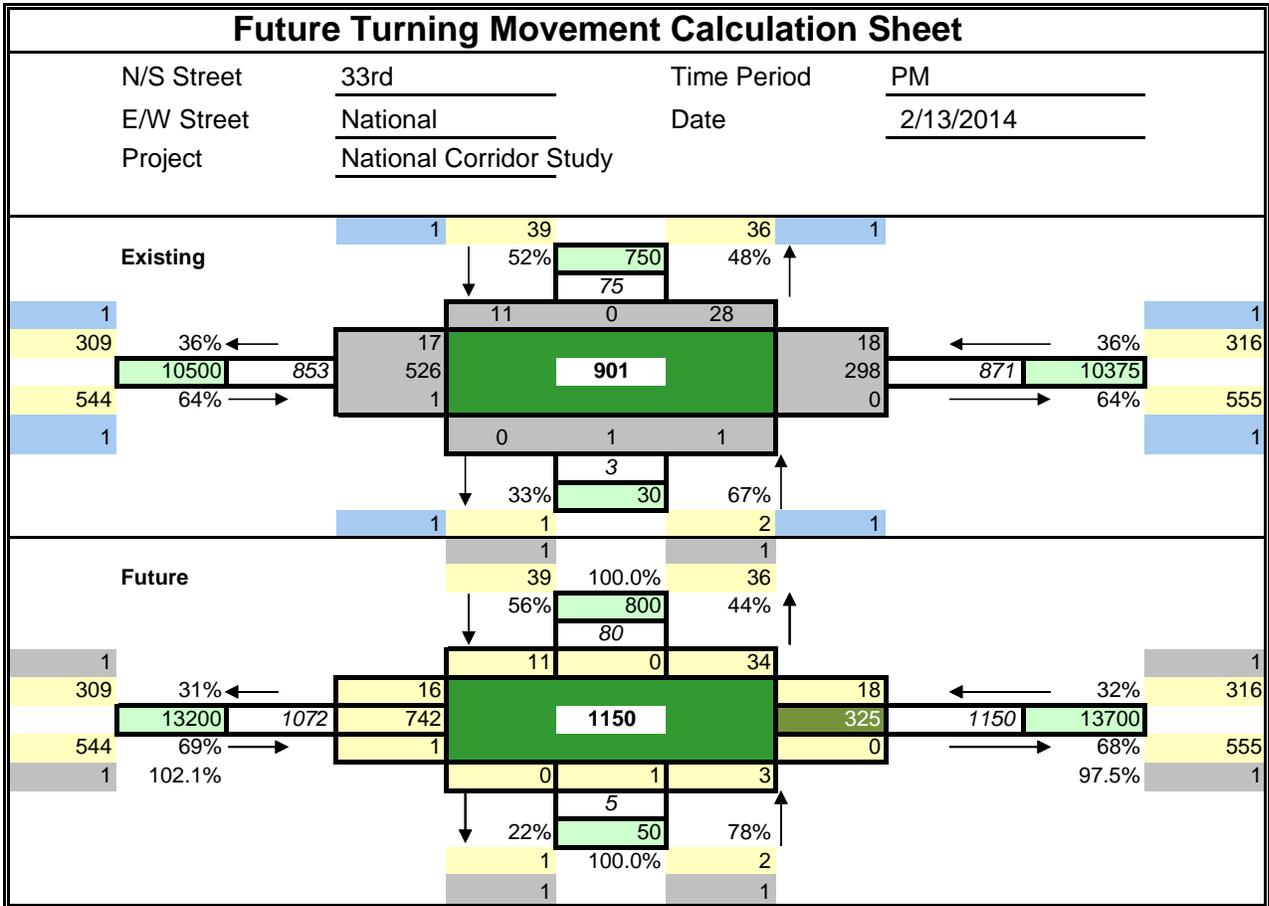


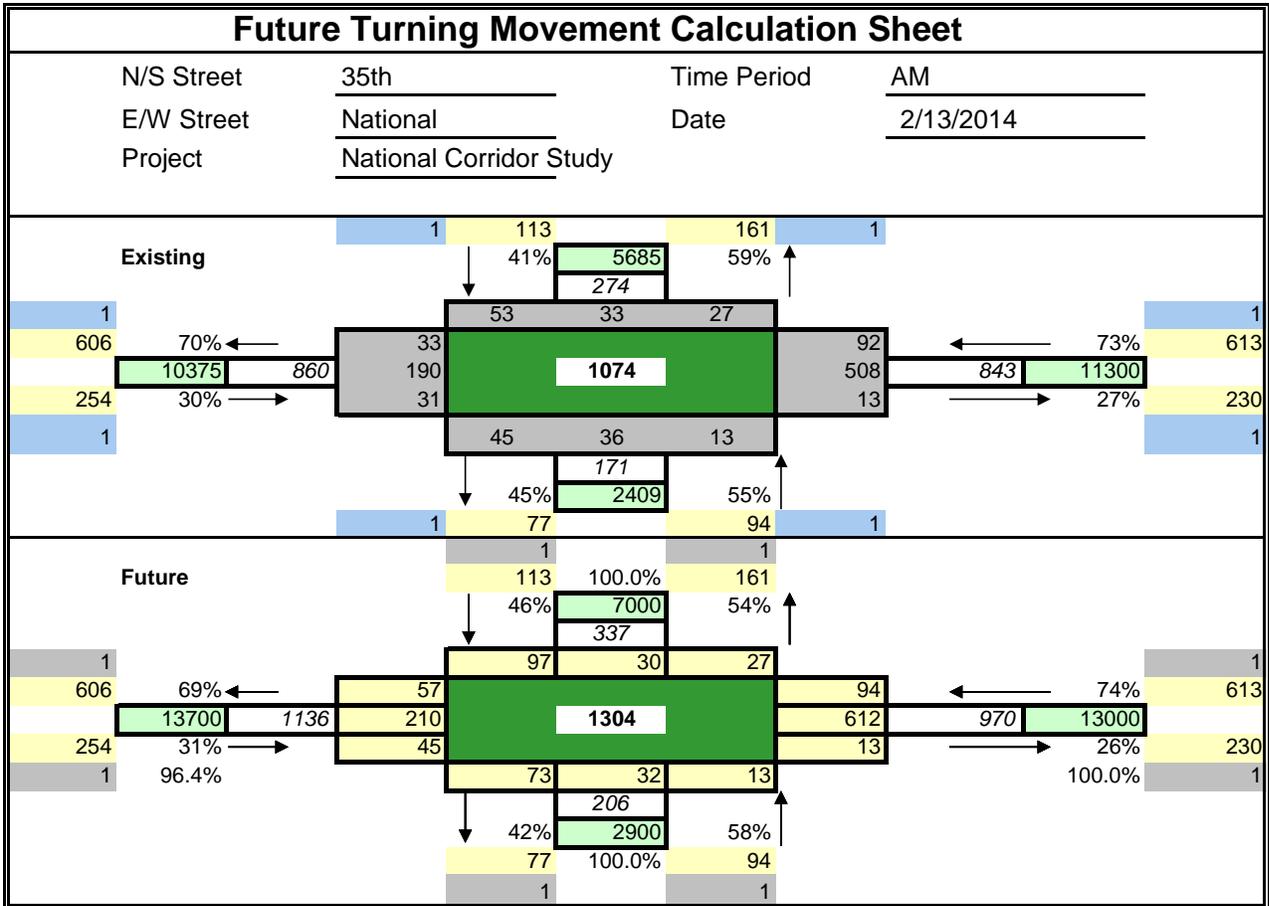


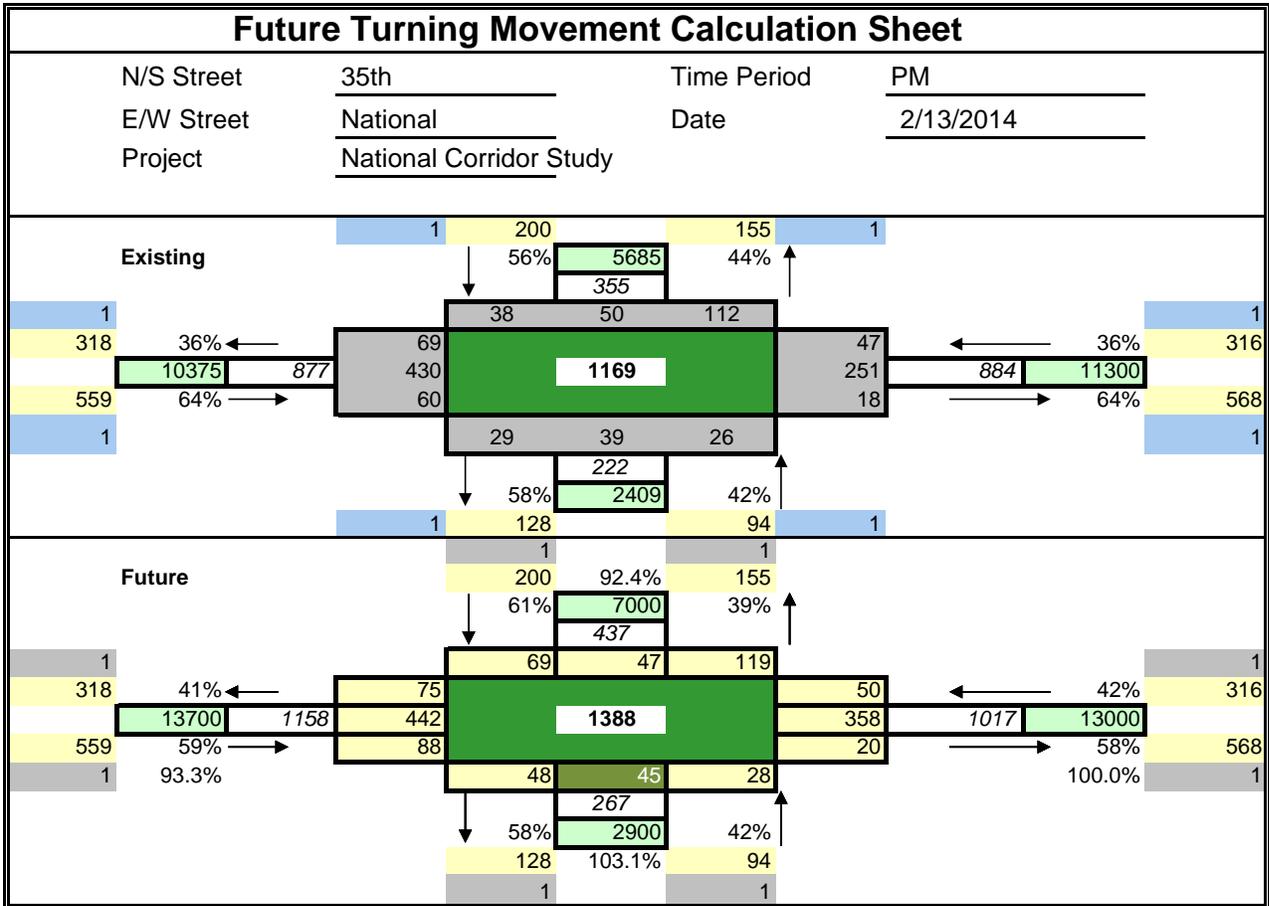


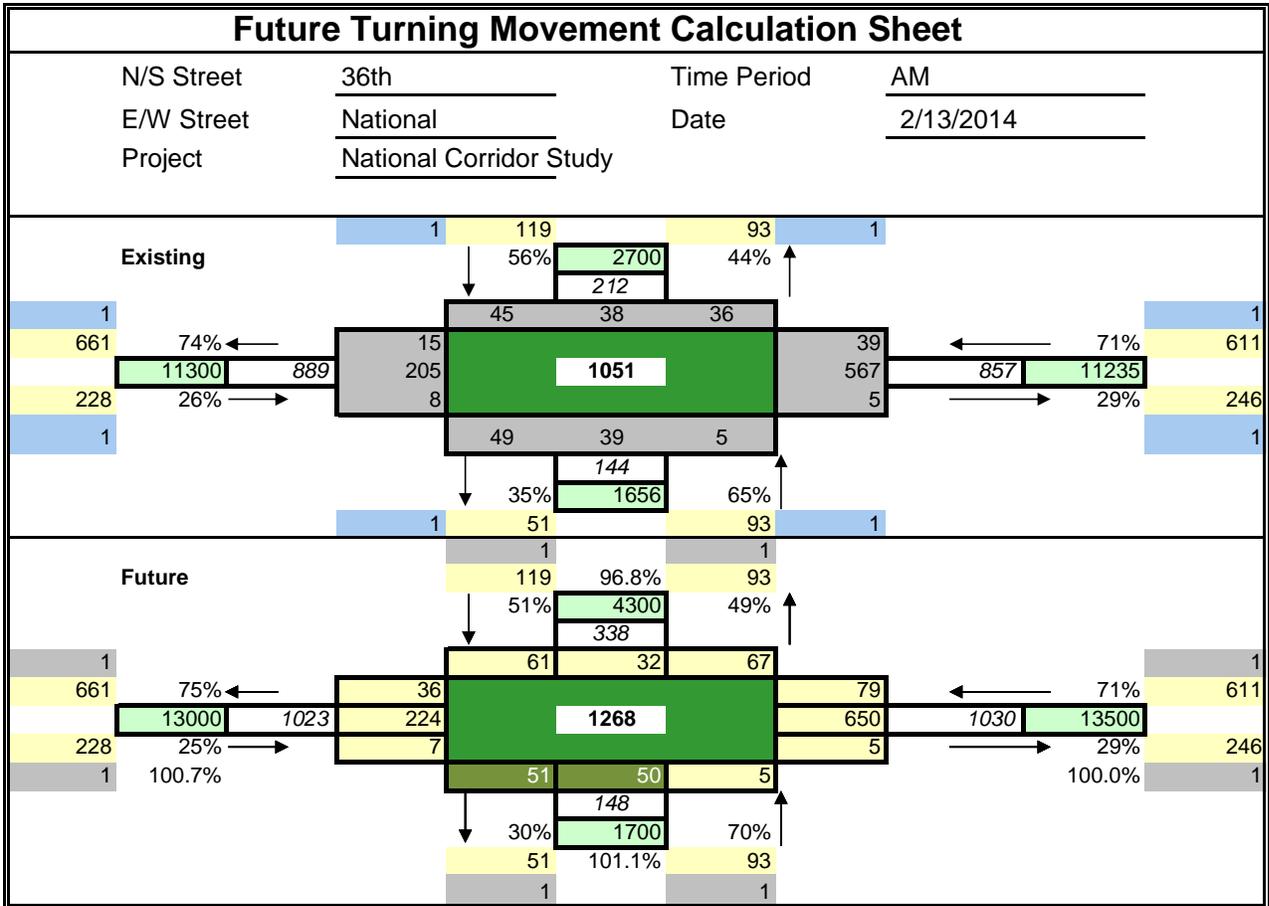


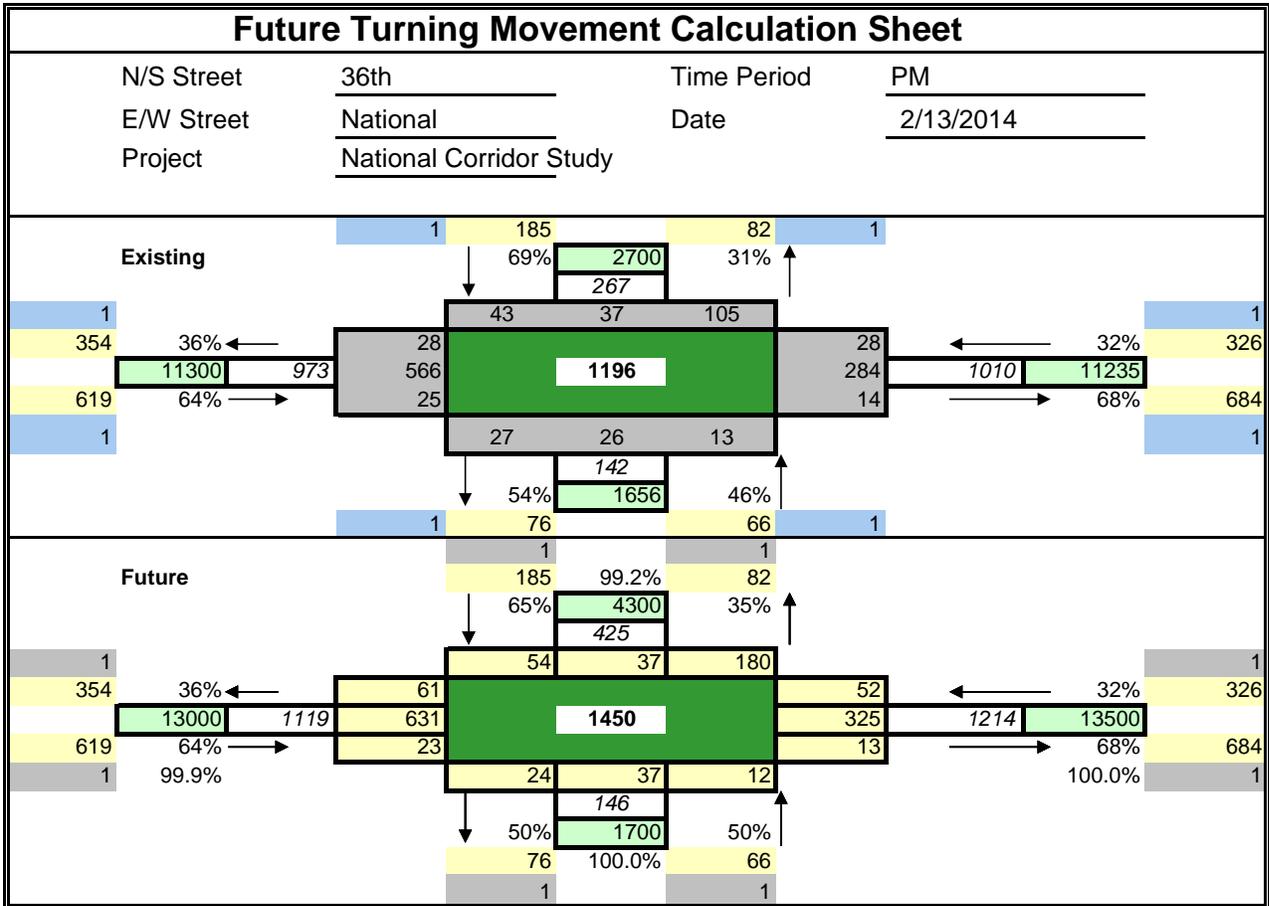


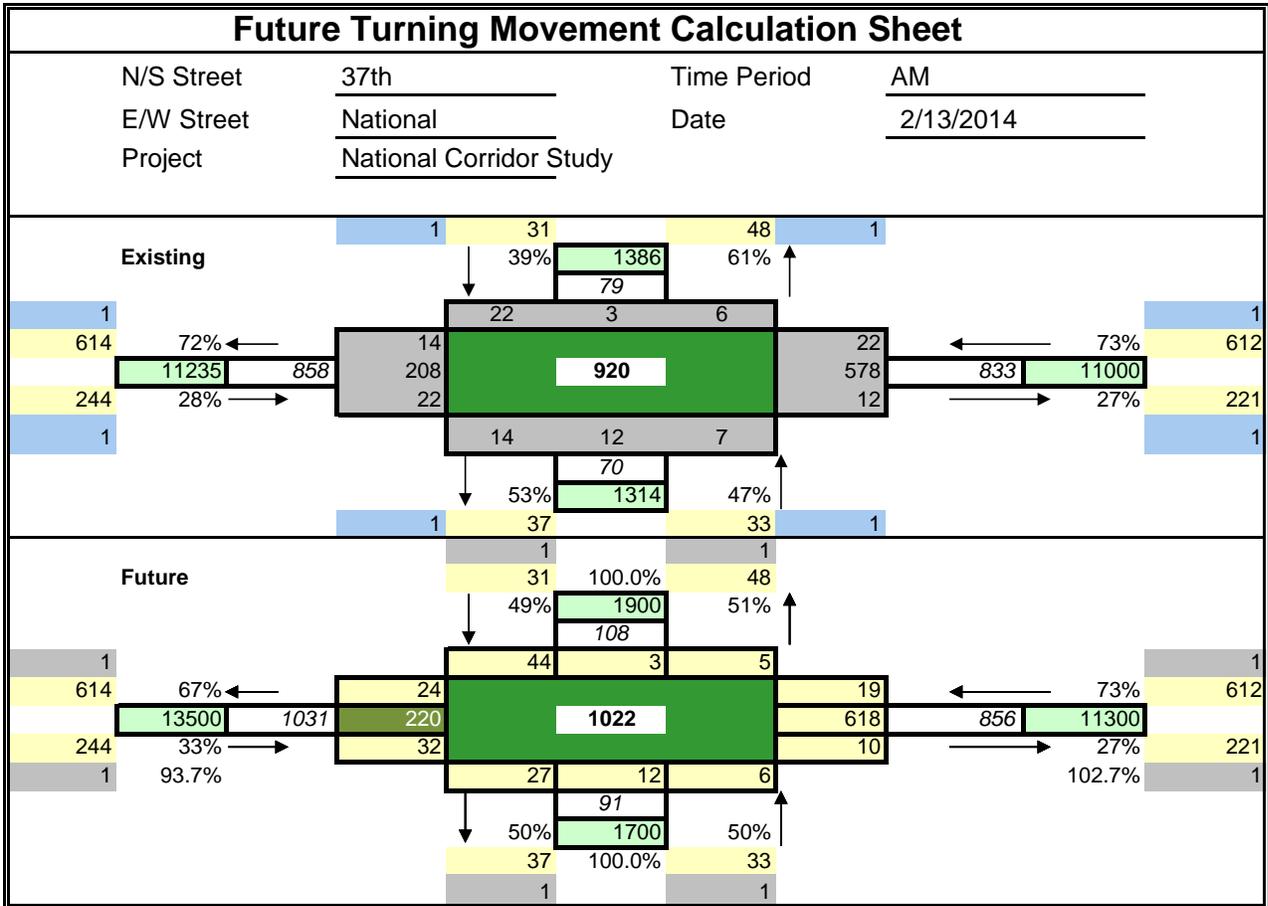


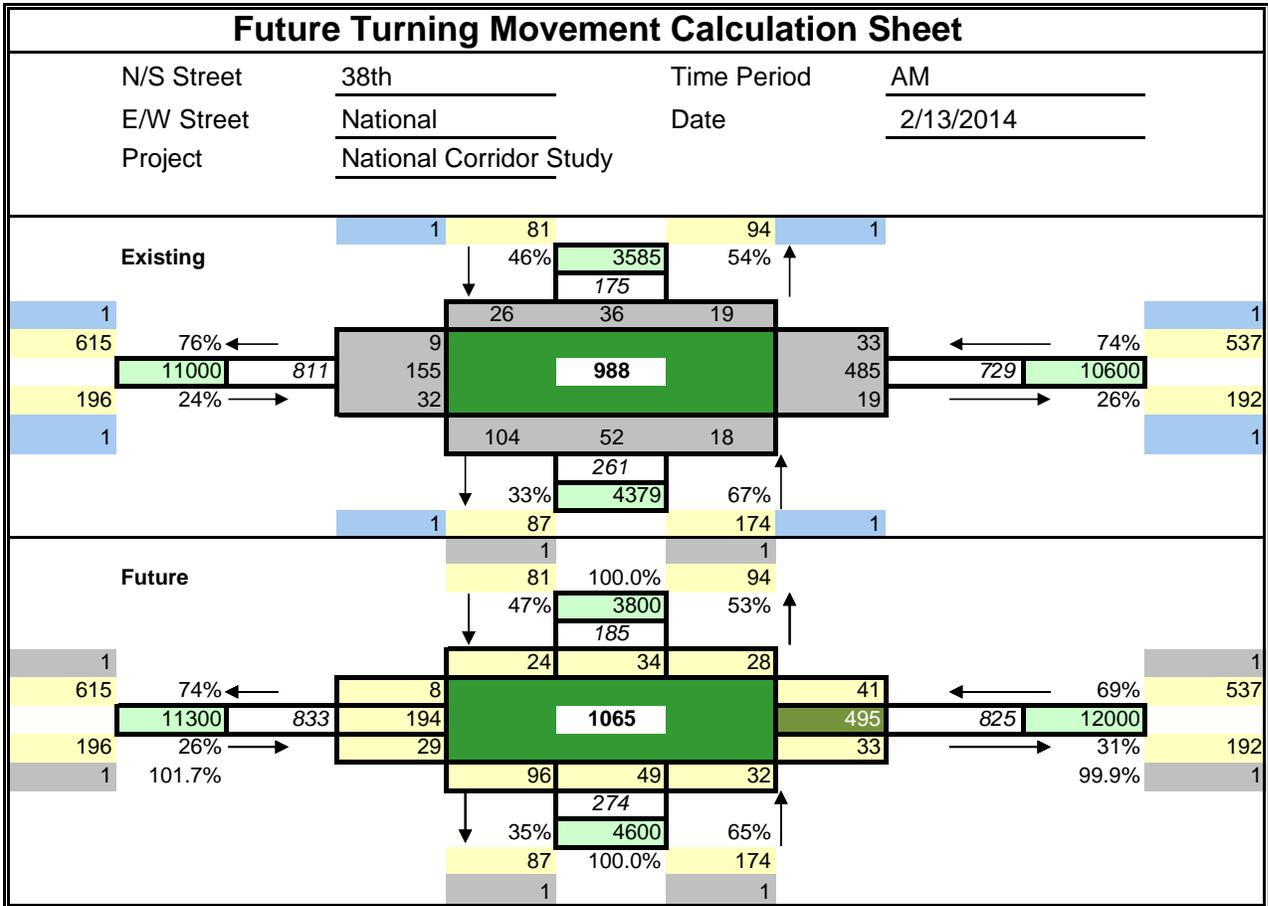


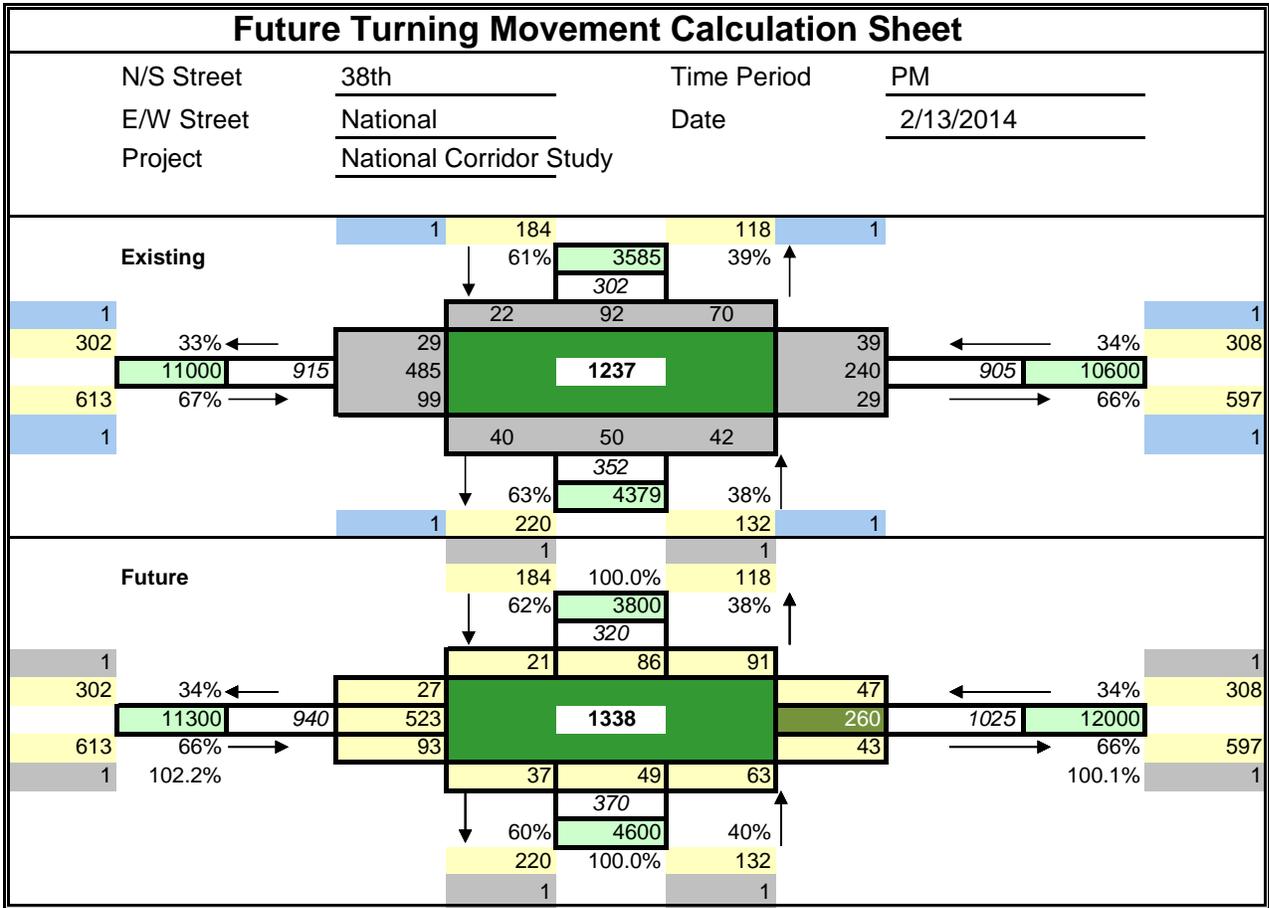


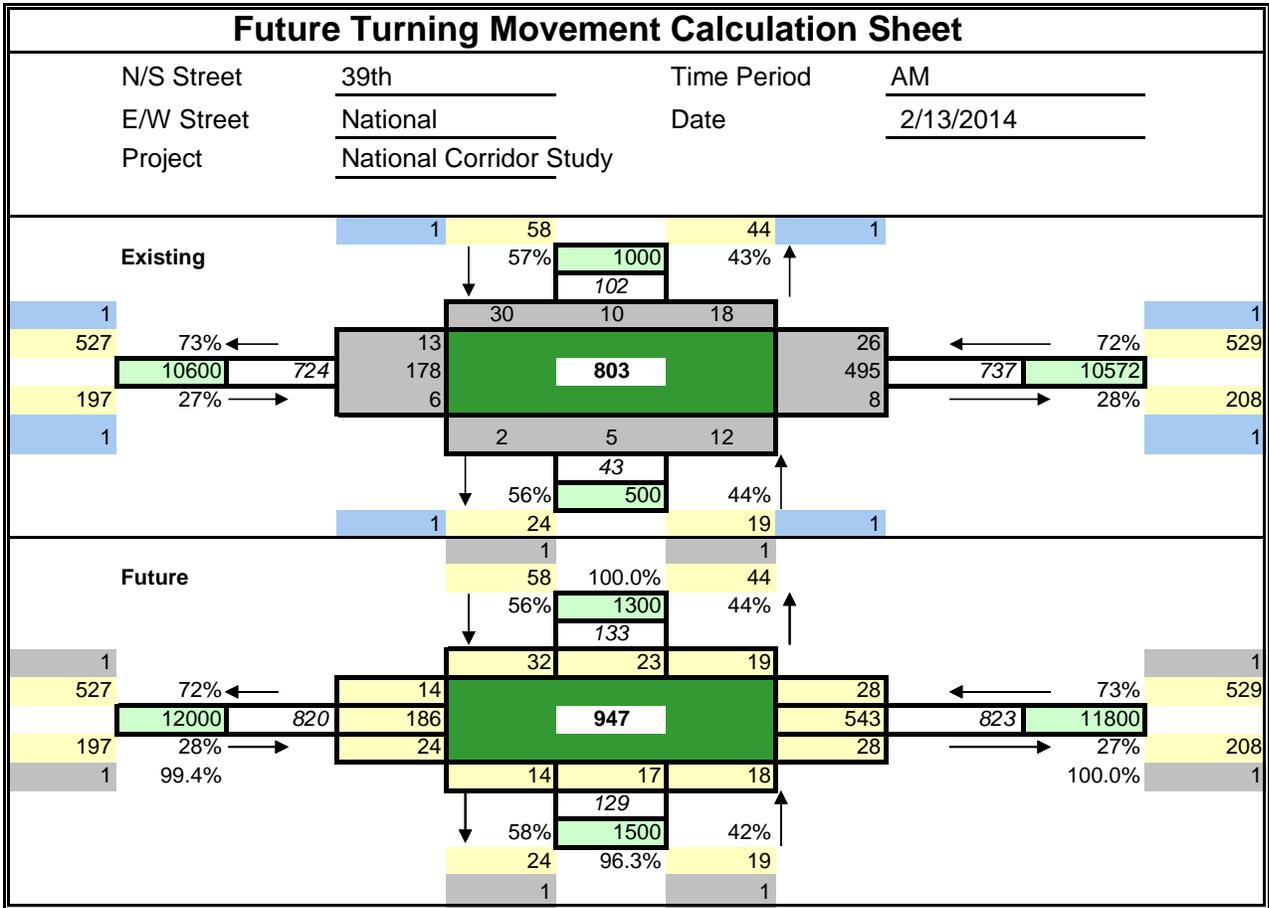


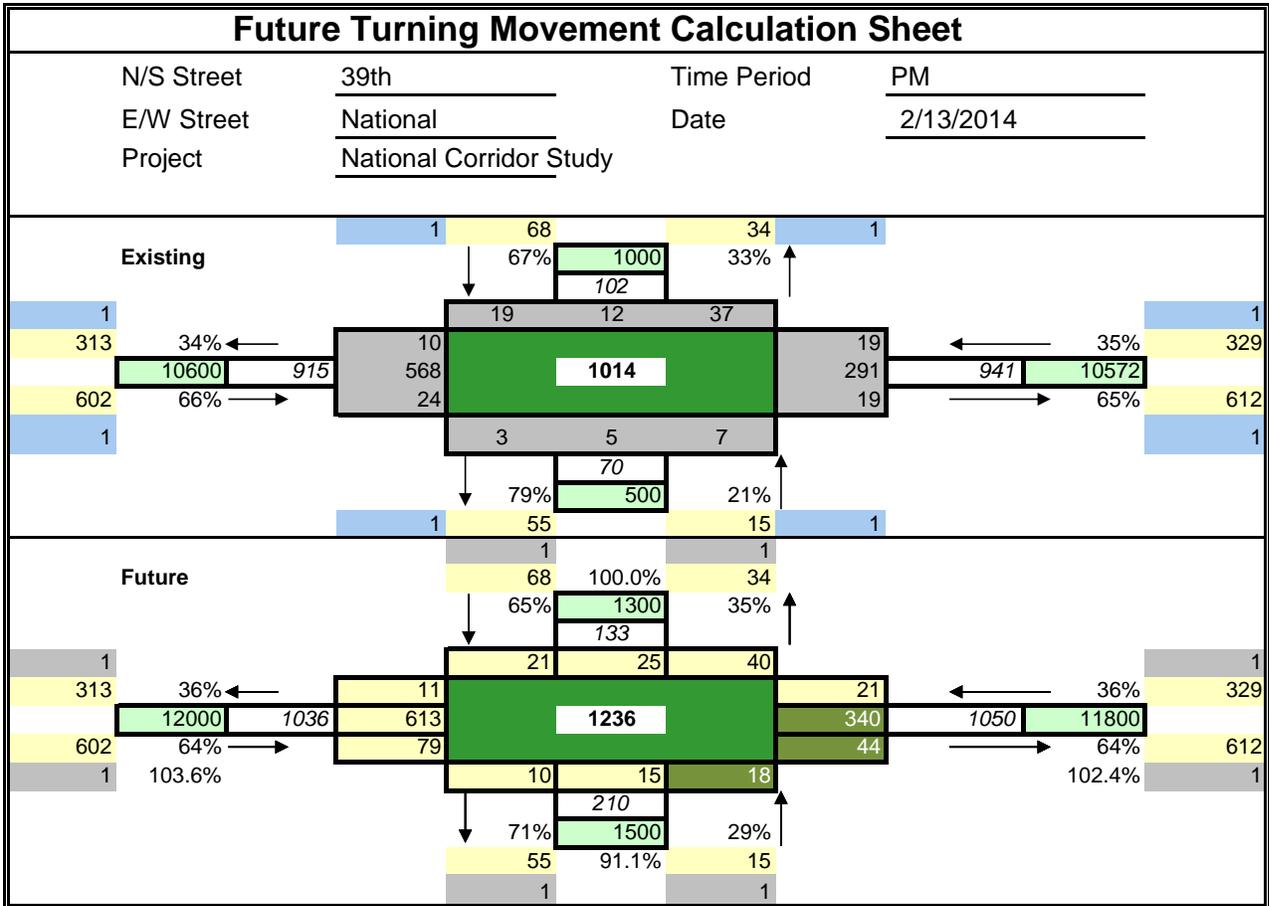


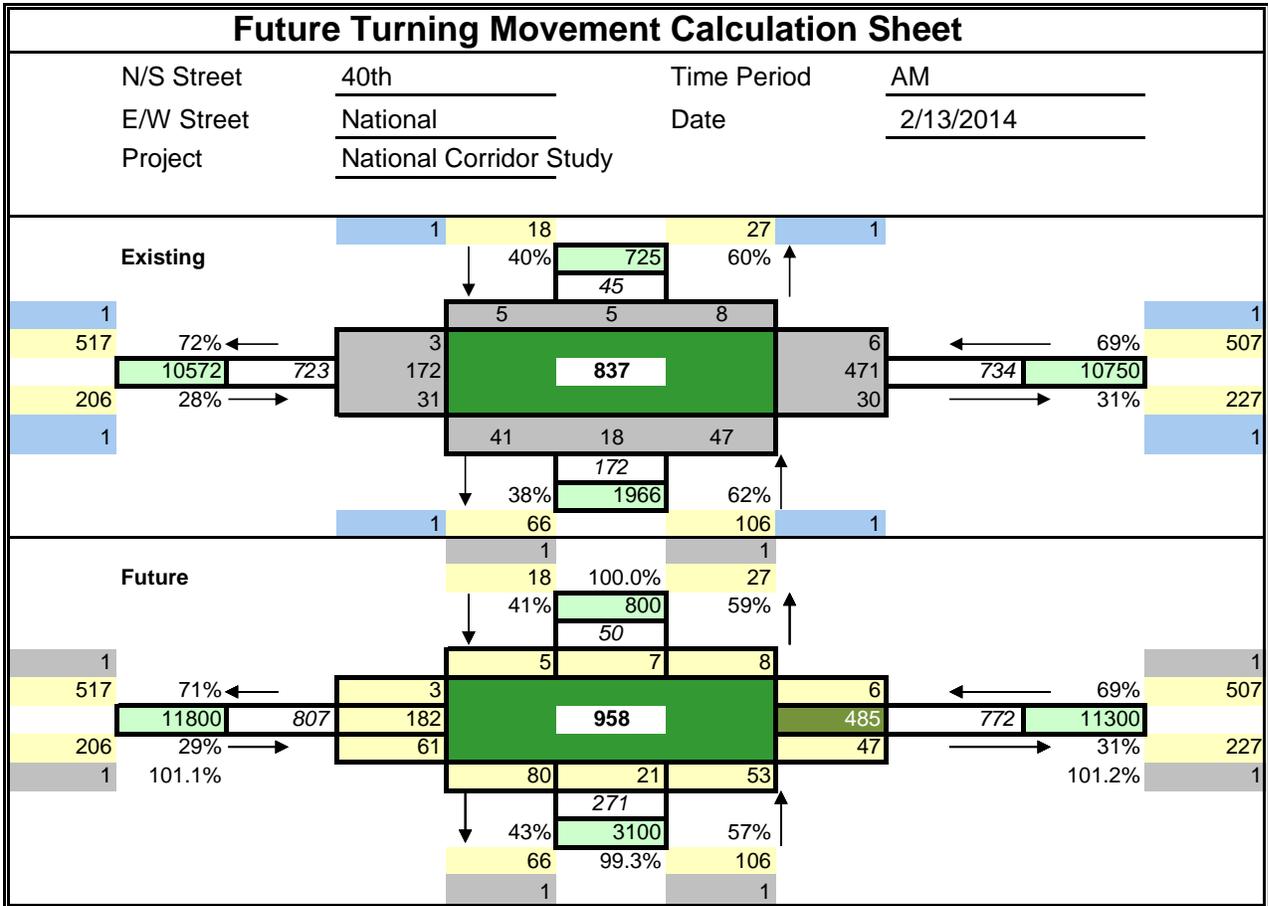


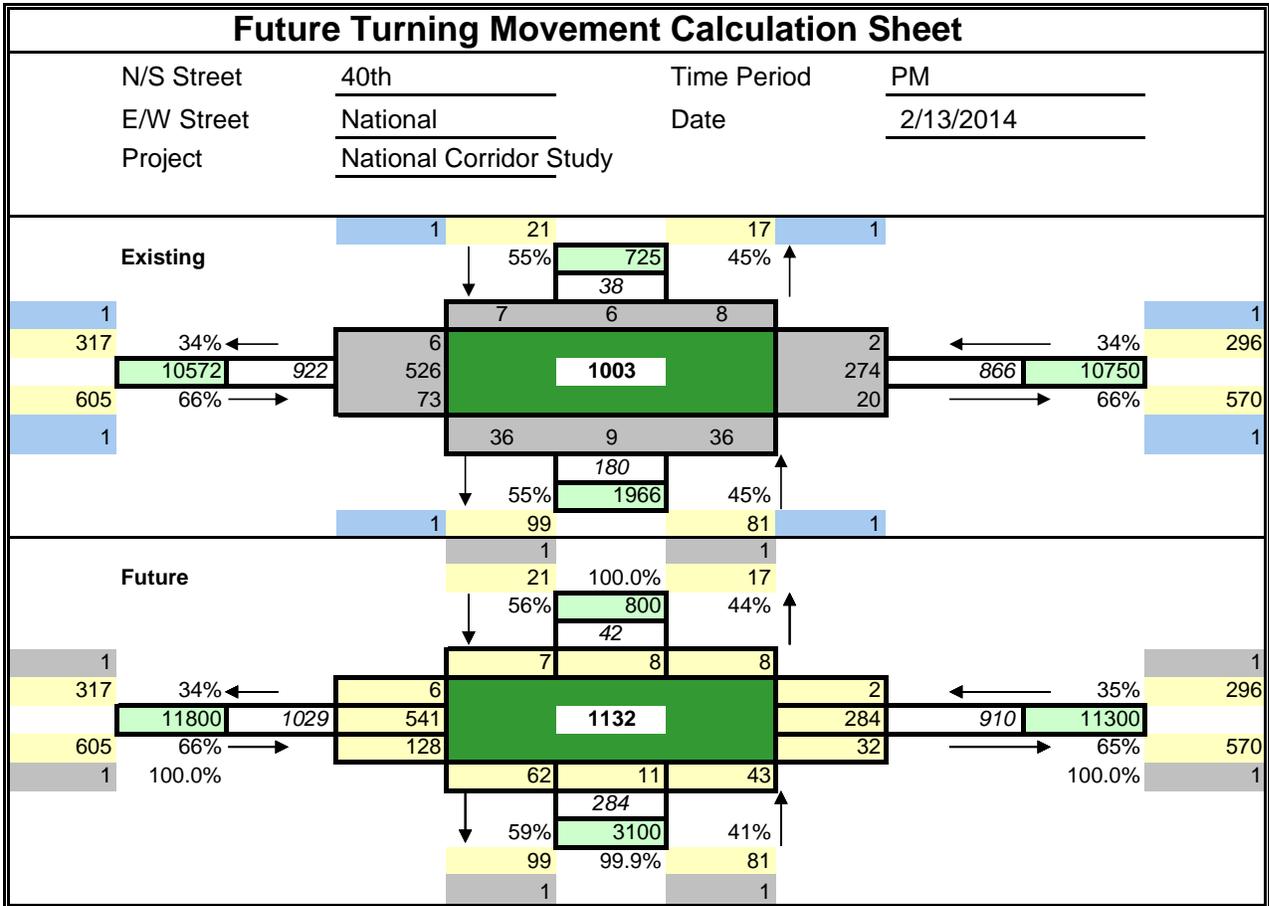


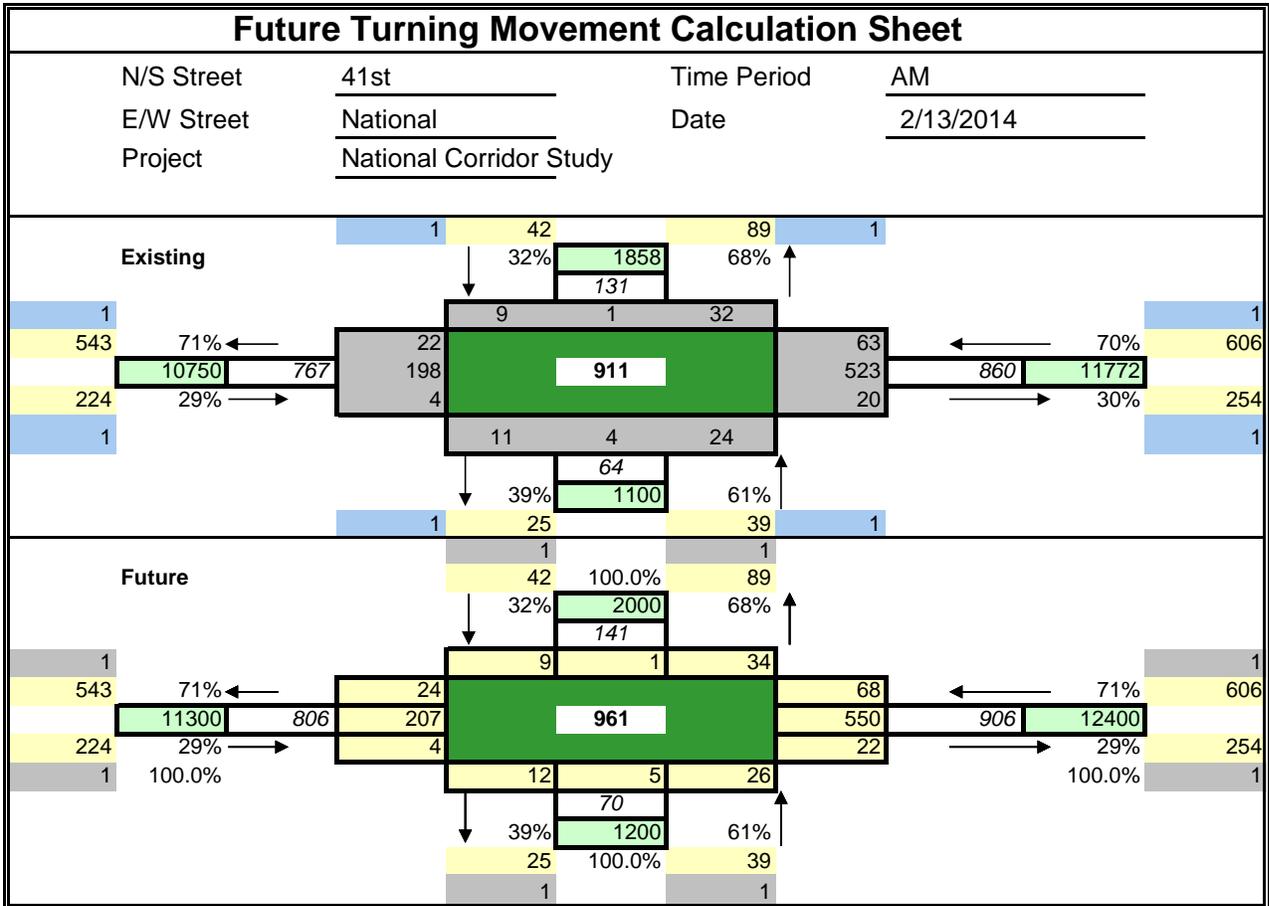


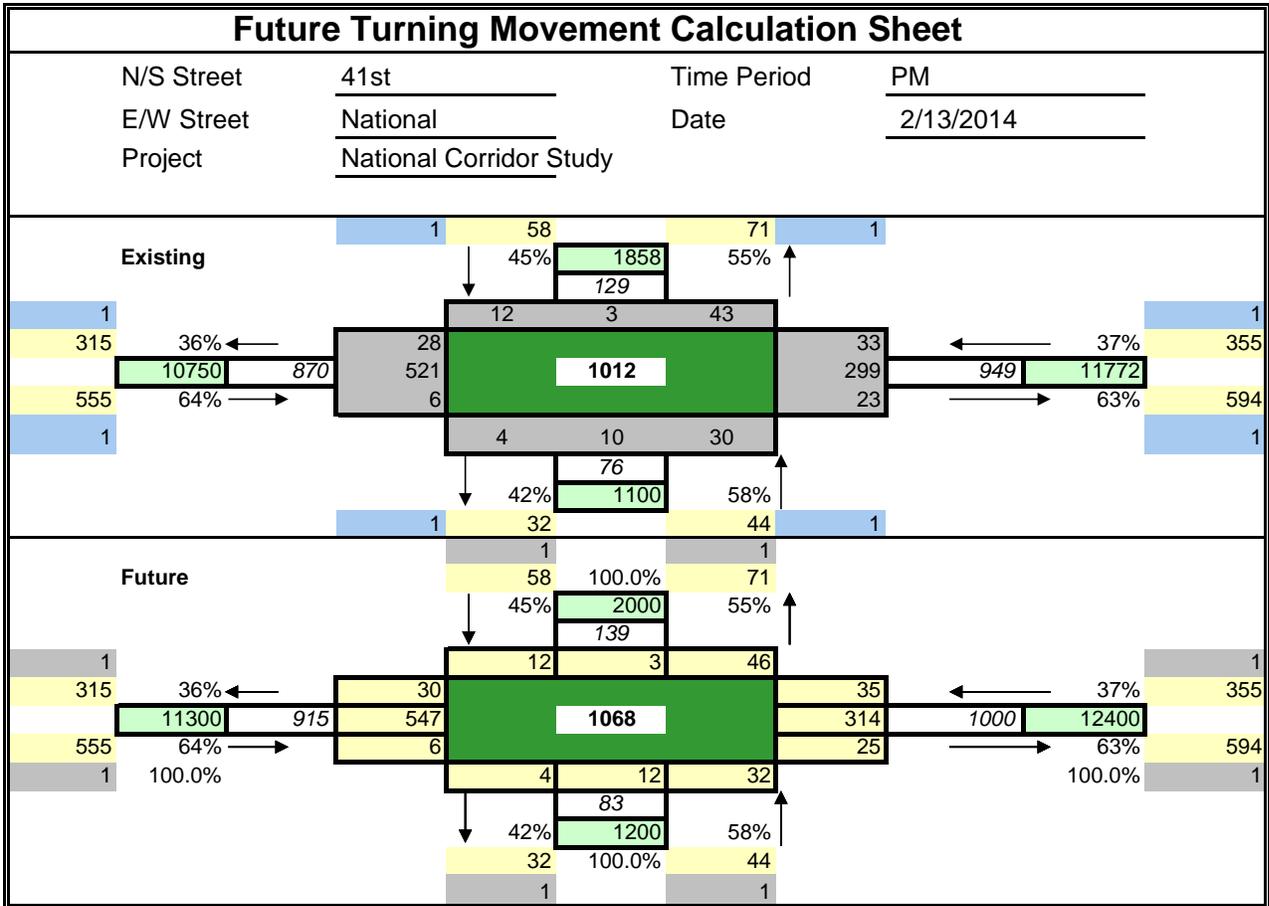


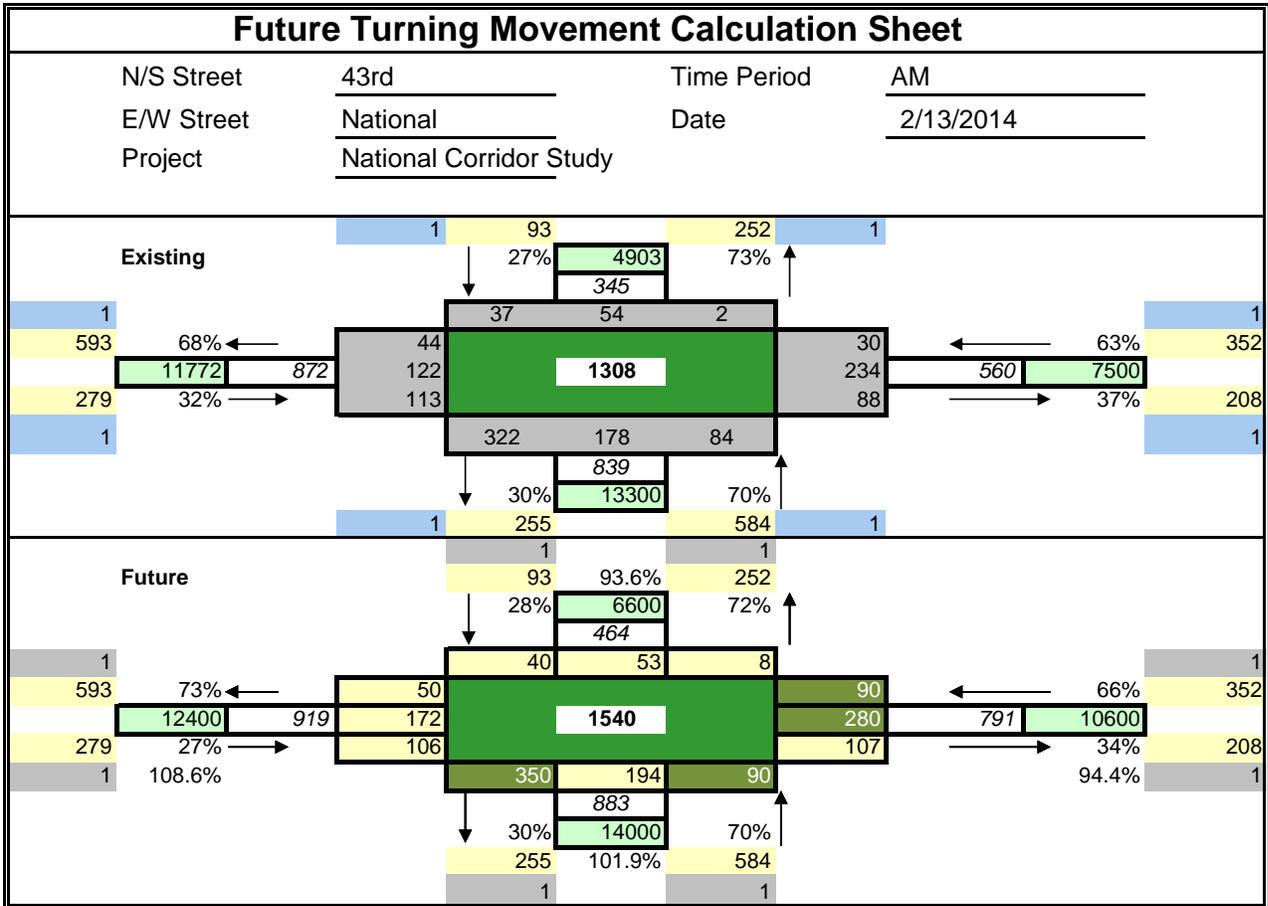


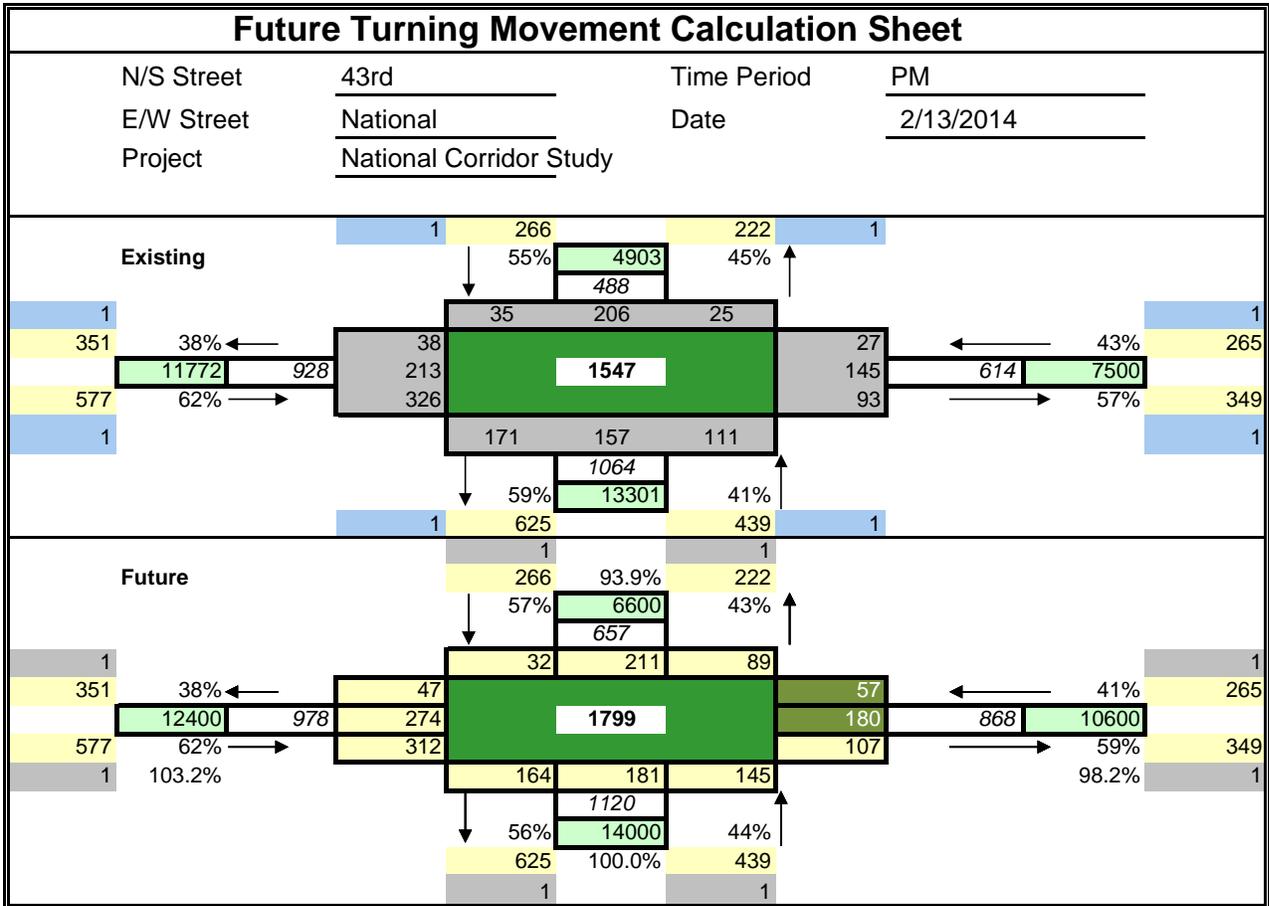












APPENDIX E: MXD MODEL RESULTS



MIXED USE TRIP GENERATION MODEL - ADVANCED OUTPUT

MODEL APPLICATION - ALL TRIPS

	Daily				AM Peak Hour				PM Peak Hour			
	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total
Number of "Raw" ITE Trips Subject to Model												
<i>Productions</i>	784	2099	1980	4862	120	117	43	280	106	179	202	487
<i>Attractions</i>	1768	8946	2191	12904	182	356	47	584	235	730	225	1190
Total	2551	11045	4170	17766	302	473	90	865	340	909	428	1677
Predicted Probabilities:												
<i>Productions</i>												
Internal Capture	5.28%	7.97%	11.50%	15.36%	7.13%	10.82%	15.62%	15.69%	9.61%	14.58%	21.06%	26.07%
Walking External	6.74%	6.08%	1.77%	4.37%	8.90%	8.03%	1.78%	7.48%	6.74%	6.08%	1.77%	4.36%
Transit External	4.28%	3.59%	7.10%	5.19%	6.08%	7.72%	15.26%	8.12%	6.63%	7.18%	14.20%	10.11%
<i>Attractions</i>												
Internal Capture	5.28%	7.97%	11.50%	5.79%	7.13%	10.82%	15.62%	7.53%	9.61%	14.58%	21.06%	10.67%
Walking External	6.74%	6.08%	1.77%	5.48%	8.90%	8.03%	1.78%	7.85%	6.74%	6.08%	1.77%	5.49%
Transit External	4.28%	3.59%	7.10%	4.25%	6.08%	7.72%	15.26%	7.76%	6.63%	7.18%	14.20%	8.26%
Total												
Internal Capture	5.25%	7.97%	11.51%	8.41%	7.29%	11.00%	15.58%	10.18%	9.40%	14.52%	21.05%	15.14%
Walking External	6.74%	6.08%	1.77%	5.20%	8.90%	8.03%	1.78%	7.73%	6.74%	6.08%	1.77%	5.20%
Transit External	4.28%	3.59%	7.10%	4.49%	6.08%	7.72%	15.26%	7.87%	6.63%	7.18%	14.20%	8.73%
Number of Trips:												
<i>Productions</i>												
Internal Capture	67	440	240	747	11	26	7	44	16	66	45	127
Walking External	48	101	31	180	10	7	1	18	6	7	3	16
Transit External	31	60	123	214	7	7	6	19	6	8	22	36
<i>Attractions</i>												
Internal Capture	67	440	240	747	11	26	7	44	16	66	45	127
Walking External	115	517	34	667	15	26	1	42	15	40	3	58
Transit External	73	306	138	517	10	25	6	42	14	48	26	88
Total												
Internal Capture	134	880	480	1494	22	52	14	88	32	132	90	254
Walking External	163	618	65	847	25	34	1	60	21	47	6	74
Transit External	103	365	262	730	17	32	12	61	20	56	48	124
Internal Capture including Site Specific Internal	134	880	480	1494	22	52	14	88	32	132	90	254
Net Number of IXI Vehicle Trips	2151	9181	3363	14695	238	355	63	656	267	674	284	1225

Results	External Vehicle Trips			VMT		
	Raw	Net	Reduction %	Raw	Net	Reduction %
Daily	17,766	14,695	17%	66,893	55,824	17%
AM Peak Hour	865	656	24%	3,810	2,939	23%
PM Peak Hour	1,677	1,225	27%	6,634	4,965	25%

NOTE: External trips are attributed half to project site uses, internal trips all to site uses for purposes of VMT allocation. NHB Trips by households that start and end outside the site are not included.

MODEL APPLICATION - TRIP ENDS ASSOCIATED WITH HOUSES IN THE PROJECT ONLY

	Daily				AM Peak Hour				PM Peak Hour			
	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total
Number of "Raw" ITE Trips Subject to Model												
<i>Productions</i>	784	2099	0	2882	120	117	0	237	106	179	0	285
<i>Attractions</i>	0	379	211	590	0	21	4	25	0	32	23	55
Total	784	2478	211	3473	120	138	4	262	106	211	23	340
Predicted Probabilities:												
<i>Productions</i>												
Internal Capture	5.28%	7.97%	11.50%	15.36%	7.13%	10.82%	15.62%	15.69%	9.61%	14.58%	21.06%	26.07%
Walking External	6.74%	6.08%	1.77%	4.37%	8.90%	8.03%	1.78%	7.48%	6.74%	6.08%	1.77%	4.36%
Transit External	4.28%	3.59%	7.10%	5.19%	6.08%	7.72%	15.26%	8.12%	6.63%	7.18%	14.20%	10.11%
<i>Attractions</i>												
Internal Capture	5.28%	7.97%	11.50%	5.79%	7.13%	10.82%	15.62%	7.53%	9.61%	14.58%	21.06%	10.67%
Walking External	6.74%	6.08%	1.77%	5.48%	8.90%	8.03%	1.78%	7.85%	6.74%	6.08%	1.77%	5.49%
Transit External	4.28%	3.59%	7.10%	4.25%	6.08%	7.72%	15.26%	7.76%	6.63%	7.18%	14.20%	8.26%
Total												
Internal Capture	0.00%	7.99%	0.00%	5.70%	0.00%	10.13%	0.00%	5.34%	0.00%	14.20%	0.00%	8.83%
Walking External	6.74%	6.08%	1.77%	5.96%	8.90%	8.03%	1.78%	8.36%	6.74%	6.08%	1.77%	5.99%
Transit External	4.28%	3.59%	7.10%	3.98%	6.08%	7.72%	15.26%	7.03%	6.63%	7.18%	14.20%	7.51%
Number of Trips:												
<i>Productions</i>												
Internal Capture	0	99	0	99	0	7	0	7	0	15	0	15
Walking External	53	122	0	174	11	9	0	20	7	10	0	17
Transit External	34	72	0	105	7	8	0	16	7	12	0	19
<i>Attractions</i>												
Internal Capture	0	99	0	99	0	7	0	7	0	15	0	15
Walking External	0	17	4	21	0	1	0	1	0	1	0	1
Transit External	0	10	15	25	0	1	1	2	0	1	3	4
Total												
Internal Capture	0	198	0	198	0	14	0	14	0	30	0	30
Walking External	53	139	4	195	11	10	0	21	7	11	0	19
Transit External	34	82	15	130	7	10	1	17	7	13	3	23
Internal Capture including Site Specific Internal	0	198	0	198	0	14	0	14	0	30	0	30
NHB trips occurring outside the project			805				13				74	
Non-XX NHB trips based on MXD model			93				2				16	
NHB trips still occurring outside the project			713				11				59	
Net Number of IXI Vehicle Trips generated by Project Residences	697	2060	192	2949	102	105	3	210	92	157	19	268

Results	External Vehicle Trips			VMT			VMT Per Household	
	Raw	Net	Reduction %	Raw	Net	Reduction %	Raw	Net
Daily	3,473	2,949	15%	33,289	29,041	13%	83.2	72.6
AM Peak Hour	262	210	20%	2,572	2,112	18%	6.4	5.3
PM Peak Hour	340	268	21%	3,412	2,806	18%	8.5	7.0

NOTE: all trips generated by project households (either produced or attracted or both) are counted 100%. This cannot be compared directly to the VMT in the section above.

MIXED USE TRIP GENERATION MODEL - ADVANCED OUTPUT

MODEL APPLICATION - ALL TRIPS

	Daily				AM Peak Hour				PM Peak Hour			
	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total
Number of "Raw" ITE Trips Subject to Model												
<i>Productions</i>	1160	3107	2480	6747	183	178	46	406	152	257	253	663
<i>Attractions</i>	1868	11444	2792	16105	149	411	51	610	240	933	286	1459
Total	3028	14551	5273	22852	332	589	97	1017	392	1191	540	2122
Predicted Probabilities:												
<i>Productions</i>												
Internal Capture	5.60%	8.46%	12.05%	15.09%	7.63%	11.49%	16.40%	13.53%	10.57%	15.92%	22.72%	26.70%
Walking External	6.97%	7.22%	2.05%	5.22%	9.20%	9.52%	2.07%	8.57%	6.97%	7.22%	2.05%	5.10%
Transit External	5.33%	4.07%	8.13%	5.84%	7.56%	8.75%	17.49%	9.11%	8.25%	8.14%	16.27%	11.39%
<i>Attractions</i>												
Internal Capture	5.60%	8.46%	12.05%	6.32%	7.63%	11.49%	16.40%	9.01%	10.57%	15.92%	22.72%	12.13%
Walking External	6.97%	7.22%	2.05%	6.34%	9.20%	9.52%	2.07%	8.87%	6.97%	7.22%	2.05%	6.27%
Transit External	5.33%	4.07%	8.13%	4.88%	7.56%	8.75%	17.49%	9.13%	8.25%	8.14%	16.27%	9.58%
Total												
Internal Capture	5.61%	8.45%	12.06%	8.91%	7.84%	11.55%	16.56%	10.82%	10.72%	15.96%	22.60%	16.68%
Walking External	6.97%	7.22%	2.05%	6.03%	9.20%	9.52%	2.07%	8.75%	6.97%	7.22%	2.05%	5.95%
Transit External	5.33%	4.07%	8.13%	5.15%	7.56%	8.75%	17.49%	9.12%	8.25%	8.14%	16.27%	10.08%
Number of Trips:												
<i>Productions</i>												
Internal Capture	85	615	318	1018	13	34	8	55	21	95	61	177
Walking External	75	180	44	299	16	14	1	30	9	12	4	25
Transit External	57	101	176	334	13	13	7	32	11	13	31	55
<i>Attractions</i>												
Internal Capture	85	615	318	1018	13	34	8	55	21	95	61	177
Walking External	124	781	51	956	13	36	1	49	15	60	5	80
Transit External	95	441	201	737	10	33	8	51	18	68	37	123
Total												
Internal Capture	170	1230	636	2036	26	68	16	110	42	190	122	354
Walking External	199	961	95	1255	28	50	2	79	24	72	9	105
Transit External	152	542	377	1071	23	46	14	83	29	81	68	178
Internal Capture including Site Specific Internal	170	1230	636	2036	26	68	16	110	42	190	122	354
Net Number of IXI Vehicle Trips	2507	11818	4165	18489	254	426	65	745	297	847	341	1485
Results												
	External Vehicle Trips				VMT							
	Raw	Net	Reduction %		Raw	Net	Reduction %					
Daily	22,852	18,489	19%		85,230	69,639	18%					
AM Peak Hour	1,017	745	27%		4,406	3,290	25%					
PM Peak Hour	2,122	1,485	30%		8,270	5,943	28%					

NOTE: External trips are attributed half to project site uses, internal trips all to site uses for purposes of VMT allocation.
NHB Trips by households that start and end outside the site are not included.

MODEL APPLICATION - TRIP ENDS ASSOCIATED WITH HOUSES IN THE PROJECT ONLY

	Daily				AM Peak Hour				PM Peak Hour			
	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total	HBW	HBO	NHB	Total
Number of "Raw" ITE Trips Subject to Model												
<i>Productions</i>	1160	3107	0	4267	183	178	0	361	152	257	0	409
<i>Attractions</i>	0	562	312	874	0	32	5	38	0	47	33	79
Total	1160	3669	312	5141	183	210	5	398	152	304	33	489
Predicted Probabilities:												
<i>Productions</i>												
Internal Capture	5.60%	8.46%	12.05%	15.09%	7.63%	11.49%	16.40%	13.53%	10.57%	15.92%	22.72%	26.70%
Walking External	6.97%	7.22%	2.05%	5.22%	9.20%	9.52%	2.07%	8.57%	6.97%	7.22%	2.05%	5.10%
Transit External	5.33%	4.07%	8.13%	5.84%	7.56%	8.75%	17.49%	9.11%	8.25%	8.14%	16.27%	11.39%
<i>Attractions</i>												
Internal Capture	5.60%	8.46%	12.05%	6.32%	7.63%	11.49%	16.40%	9.01%	10.57%	15.92%	22.72%	12.13%
Walking External	6.97%	7.22%	2.05%	6.34%	9.20%	9.52%	2.07%	8.87%	6.97%	7.22%	2.05%	6.27%
Transit External	5.33%	4.07%	8.13%	4.88%	7.56%	8.75%	17.49%	9.13%	8.25%	8.14%	16.27%	9.58%
Total												
Internal Capture	0.00%	8.45%	0.00%	6.03%	0.00%	11.42%	0.00%	6.02%	0.00%	15.80%	0.00%	9.82%
Walking External	6.97%	7.22%	2.05%	6.82%	9.20%	9.52%	2.07%	9.26%	6.97%	7.22%	2.05%	6.75%
Transit External	5.33%	4.07%	8.13%	4.63%	7.56%	8.75%	17.49%	8.29%	8.25%	8.14%	16.27%	8.78%
Number of Trips:												
<i>Productions</i>												
Internal Capture	0	155	0	155	0	12	0	12	0	24	0	24
Walking External	81	213	0	294	17	16	0	33	11	17	0	27
Transit External	62	120	0	182	14	15	0	28	13	19	0	32
<i>Attractions</i>												
Internal Capture	0	155	0	155	0	12	0	12	0	24	0	24
Walking External	0	29	6	36	0	2	0	2	0	2	1	2
Transit External	0	17	25	42	0	2	1	3	0	2	5	7
Total												
Internal Capture	0	310	0	310	0	24	0	24	0	48	0	48
Walking External	81	242	6	330	17	18	0	35	11	18	1	30
Transit External	62	137	25	224	14	16	1	31	13	21	5	39
Internal Capture including Site Specific Internal	0	310	0	310	0	24	0	24	0	48	0	48
NHB trips occurring outside the project			1409				22					130
Non-XX NHB trips based on MXD model			170				4					30
NHB trips still occurring outside the project			1240				18					101
Net Number of IXI Vehicle Trips generated by Project Residences	1017	2980	280	4277	152	152	4	309	129	217	27	372
Results												
	External Vehicle Trips				VMT				VMT Per Household			
	Raw	Net	Reduction %		Raw	Net	Reduction %		Raw	Net		
Daily	5,141	4,277	17%		50,746	43,681	14%		72.5	62.4		
AM Peak Hour	398	309	23%		3,932	3,141	20%		5.6	4.5		
PM Peak Hour	489	372	24%		5,064	4,066	20%		7.2	5.8		

NOTE: all trips generated by project households (either produced or attracted or both) are counted 100%. This cannot be compared directly to the VMT in the section above.

National Avenue
Corridor Master Plan
MXD+ Trip Summary

EXISTING NUMBER OF TRIPS			
MODE	AM	PM	Daily
Transit External	61	124	730
Bike/Ped External	60	74	847

FUTURE NUMBER OF TRIPS			
MODE	AM	PM	Daily
Transit External	83	178	1071
Bike/Ped External	79	105	1255

NET NEW NUMBER OF TRIPS			
MODE	AM	PM	Daily
Transit External	22	54	341
Bike/Ped External	19	31	409

Source: Fehr & Peers, 2014

Existing Transit Daily Boardings and Alightings Summary

Transit Stop	Boarding	Alighting	Total
<u>Route 11</u>			
National Avenue & 28 th Street	45	79	124
National Avenue & 29 th Street	114	125	239
National Avenue & 30 th Street	133	142	275
National Avenue & 32 nd Street	122	117	239
National Avenue & 33 rd Street	22	19	41
National Avenue & 35 th Street	179	161	340
National Avenue & 36 th Street	165	153	318
National Avenue & 38 th Street	257	260	517
National Avenue & 40 th Street	83	80	163
National Avenue & 41 st Street	61	59	120
National Avenue & 43 rd Street	286	243	529
Total	1,467	1,438	2,905

Source: SANDAG, 2010

APPENDIX F: INTERSECTION LEVEL OF SERVICE WORKSHEETS



HCM Unsignalized Intersection Capacity Analysis

1: 27th St & National Ave

2/28/14

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Volume (veh/h)	109	12	64	258	41	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	111	12	65	263	42	190
Pedestrians	5			1	11	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	631					
pX, platoon unblocked						
vC, conflicting volume				134	527	129
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				134	527	129
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				95	91	79
cM capacity (veh/h)	1437			482	911	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	123	329	42	190		
Volume Left	0	65	42	0		
Volume Right	12	0	0	190		
cSH	1700	1437	482	911		
Volume to Capacity	0.07	0.05	0.09	0.21		
Queue Length 95th (ft)	0	4	7	20		
Control Delay (s)	0.0	1.8	13.2	10.0		
Lane LOS		A	B	A		
Approach Delay (s)	0.0	1.8	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay				4.5		
Intersection Capacity Utilization	39.4%			ICU Level of Service		A
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis

2: 28th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 										
Volume (vph)	36	162	86	55	563	179	32	95	13	48	147	287
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		3.6	4.0		3.4	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.98		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	0.95		1.00	0.96		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3309		1770	1761		1770	1810		1770	1640	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3309		1770	1761		1770	1810		1770	1640	
Peak-hour factor, PHF	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	176	93	60	612	195	35	103	14	52	160	312
RTOR Reduction (vph)	0	53	0	0	14	0	0	8	0	0	103	0
Lane Group Flow (vph)	39	216	0	60	793	0	35	110	0	52	369	0
Confl. Peds. (#/hr)	24		9	9		24	5		35	35		5
Confl. Bikes (#/hr)			2			6			3			3
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	2.8	29.9		3.8	30.9		1.6	17.1		2.4	17.7	
Effective Green, g (s)	2.8	30.3		3.8	31.3		2.0	17.5		3.0	18.3	
Actuated g/C Ratio	0.04	0.43		0.05	0.45		0.03	0.25		0.04	0.26	
Clearance Time (s)	4.0	4.4		4.0	4.4		4.0	4.4		4.0	4.6	
Vehicle Extension (s)	2.0	3.4		2.0	3.4		3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	70	1432		96	787		50	452		75	428	
v/s Ratio Prot	0.02	0.07		c0.03	c0.45		0.02	0.06		c0.03	c0.23	
v/s Ratio Perm												
v/c Ratio	0.56	0.15		0.62	1.01		0.70	0.24		0.69	0.86	
Uniform Delay, d1	33.0	12.0		32.4	19.4		33.7	21.0		33.0	24.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.4	0.2		8.8	33.8		35.0	0.1		24.2	15.8	
Delay (s)	38.3	12.3		41.2	53.2		68.7	21.1		57.2	40.4	
Level of Service	D	B		D	D		E	C		E	D	
Approach Delay (s)		15.6			52.4			32.0			42.1	
Approach LOS		B			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			41.7			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			15.6			
Intersection Capacity Utilization			79.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: I-5 NB Off Ramp & National Ave

2/28/14

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	216	0	0	546	267	94
Ideal Flow (vphpl)	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
Frbp, 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	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1548
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1548
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	240	0	0	607	297	104
RTOR Reduction (vph)	0	0	0	0	0	73
Lane Group Flow (vph)	240	0	0	607	297	31
Confl. Peds. (#/hr)		14	14		2	2
Turn Type	NA			NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6	8	8
Actuated Green, G (s)	23.2			23.2	12.9	12.9
Effective Green, g (s)	23.8			23.8	13.5	13.5
Actuated g/C Ratio	0.53			0.53	0.30	0.30
Clearance Time (s)	4.6			4.6	4.6	4.6
Vehicle Extension (s)	7.7			7.7	2.0	2.0
Lane Grp Cap (vph)	978			978	527	461
v/s Ratio Prot	0.13			c0.33	c0.17	
v/s Ratio Perm						0.02
v/c Ratio	0.25			0.62	0.56	0.07
Uniform Delay, d1	5.9			7.6	13.4	11.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.5			2.7	0.8	0.0
Delay (s)	6.4			10.3	14.2	11.4
Level of Service	A			B	B	B
Approach Delay (s)	6.4			10.3	13.5	
Approach LOS	A			B	B	
Intersection Summary						
HCM 2000 Control Delay			10.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			45.3		Sum of lost time (s)	8.0
Intersection Capacity Utilization			57.1%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: 29th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	225	1	4	550	104	2	3	0	23	1	15
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	72	232	1	4	567	107	2	3	0	24	1	15
Pedestrians	8		2		7		13					
Lane Width (ft)	12.0		12.0		12.0		12.0		12.0		12.0	
Walking Speed (ft/s)	4.0		4.0		4.0		4.0		4.0		4.0	
Percent Blockage	1		0		1		1		1		1	
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	327				669							
pX, platoon unblocked	0.79					0.79	0.79			0.79	0.79	0.79
vC, conflicting volume	687			240			983	1079	241	1022	1026	642
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	477			240			849	970	241	898	904	419
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			99	98	100	87	99	97
cM capacity (veh/h)	853			1319			196	180	791	186	197	495
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	72	233	4	674	5	40						
Volume Left	72	0	4	0	2	24						
Volume Right	0	1	0	107	0	15						
cSH	853	1700	1319	1700	186	245						
Volume to Capacity	0.08	0.14	0.00	0.40	0.03	0.16						
Queue Length 95th (ft)	7	0	0	0	2	14						
Control Delay (s)	9.6	0.0	7.7	0.0	24.9	22.6						
Lane LOS	A	A		C		C						
Approach Delay (s)	2.3	0.0		24.9		22.6						
Approach LOS			C		C	C						
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			55.4%		ICU Level of Service		B					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

5: 30th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	193	21	6	485	48	29	12	7	44	9	116
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			0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.99			0.97	
Flpb, ped/bikes	0.98	1.00		0.97	1.00			0.99			0.99	
Frt	1.00	0.99		1.00	0.99			0.98			0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1733	1825		1714	1824			1742			3026	
Flt Permitted	0.29	1.00		0.60	1.00			0.80			0.88	
Satd. Flow (perm)	522	1825		1077	1824			1443			2706	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	42	217	24	7	545	54	33	13	8	49	10	130
RTOR Reduction (vph)	0	6	0	0	5	0	0	5	0	0	84	0
Lane Group Flow (vph)	42	235	0	7	594	0	0	49	0	0	105	0
Confl. Peds. (#/hr)	49		60	60		49	17		17	17		17
Confl. Bikes (#/hr)			2			6			4			2
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	30.6	30.6		30.6	30.6			21.0			21.0	
Effective Green, g (s)	31.6	31.6		31.6	31.6			22.0			22.0	
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.36			0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2			0.2	
Lane Grp Cap (vph)	267	936		552	935			515			966	
v/s Ratio Prot		0.13			c0.33							
v/s Ratio Perm	0.08			0.01				0.03			c0.04	
v/c Ratio	0.16	0.25		0.01	0.64			0.09			0.11	
Uniform Delay, d1	7.9	8.4		7.4	10.8			13.2			13.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.1		0.0	1.0			0.0			0.0	
Delay (s)	8.0	8.4		7.4	11.9			13.2			13.3	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		8.4			11.8			13.2			13.3	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			11.3			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			61.6			Sum of lost time (s)		8.0				
Intersection Capacity Utilization			65.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: 31st St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	34	242	6	3	569	27	11	3	5	6	9	17	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	4.4		4.4	4.4			4.4			4.4		
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98		
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			1.00		
Frt	1.00	1.00		1.00	0.99			0.96			0.93		
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99		
Satd. Flow (prot)	1745	1854		1752	1845			1716			1675		
Flt Permitted	0.35	1.00		0.58	1.00			0.80			0.93		
Satd. Flow (perm)	643	1854		1076	1845			1408			1570		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph)	40	281	7	3	662	31	13	3	6	7	10	20	
RTOR Reduction (vph)	0	1	0	0	1	0	0	5	0	0	18	0	
Lane Group Flow (vph)	40	287	0	3	692	0	0	17	0	0	19	0	
Confl. Peds. (#/hr)	41		15	15		41	7		19	19		7	
Confl. Bikes (#/hr)			4			3						1	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			8				4	
Permitted Phases	2			6			8			4			
Actuated Green, G (s)	31.5	31.5		31.5	31.5			4.7			4.7		
Effective Green, g (s)	31.5	31.5		31.5	31.5			4.7			4.7		
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.10			0.10		
Clearance Time (s)	4.4	4.4		4.4	4.4			4.4			4.4		
Vehicle Extension (s)	2.6	2.6		2.6	2.6			2.0			2.0		
Lane Grp Cap (vph)	450	1297		753	1291			147			163		
v/s Ratio Prot		0.15			c0.37								
v/s Ratio Perm	0.06			0.00				0.01			c0.01		
v/c Ratio	0.09	0.22		0.00	0.54			0.11			0.12		
Uniform Delay, d1	2.2	2.4		2.0	3.2			18.3			18.3		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.0	0.4			0.1			0.1		
Delay (s)	2.2	2.5		2.0	3.6			18.4			18.4		
Level of Service	A	A		A	A			B			B		
Approach Delay (s)		2.4			3.6			18.4			18.4		
Approach LOS		A			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			4.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			45.0									Sum of lost time (s)	8.8
Intersection Capacity Utilization			48.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

7: 32nd St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	30	239	28	83	480	61	54	26	31	49	74	31	
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		
Frbp, 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			0.99		
Frt	1.00	0.98		1.00	0.98			0.96			0.97		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98		
Satd. Flow (prot)	1753	1824		1730	1822			1709			1754		
Flt Permitted	0.36	1.00		0.58	1.00			0.83			0.86		
Satd. Flow (perm)	666	1824		1060	1822			1457			1541		
Peak-hour factor, PHF	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)	33	260	30	90	522	66	59	28	34	53	80	34	
RTOR Reduction (vph)	0	5	0	0	5	0	0	16	0	0	10	0	
Lane Group Flow (vph)	33	285	0	90	583	0	0	105	0	0	157	0	
Confl. Peds. (#/hr)	20		29	29		20	32		25	25		32	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			8				4	
Permitted Phases	2			6			8			4			
Actuated Green, G (s)	22.1	22.1		22.1	22.1			8.4			8.4		
Effective Green, g (s)	22.5	22.5		22.5	22.5			8.8			8.8		
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.22			0.22		
Clearance Time (s)	4.4	4.4		4.4	4.4			4.4			4.4		
Vehicle Extension (s)	2.6	2.6		2.6	2.6			2.0			2.0		
Lane Grp Cap (vph)	381	1044		606	1043			326			345		
v/s Ratio Prot		0.16			c0.32								
v/s Ratio Perm	0.05			0.08				0.07			c0.10		
v/c Ratio	0.09	0.27		0.15	0.56			0.32			0.45		
Uniform Delay, d1	3.8	4.3		3.9	5.3			12.8			13.2		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.1	0.5			0.2			0.3		
Delay (s)	3.9	4.4		4.0	5.8			13.0			13.5		
Level of Service	A	A		A	A			B			B		
Approach Delay (s)		4.3			5.6			13.0			13.5		
Approach LOS		A			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			7.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.53										
Actuated Cycle Length (s)			39.3									Sum of lost time (s)	8.0
Intersection Capacity Utilization			62.5%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

8: 33rd St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	373	1	3	627	41	1	1	3	32	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	13	455	1	4	765	50	1	1	4	39	2	9
Pedestrians		6			3			14			34	
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			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		649										
pX, platoon unblocked												
vC, conflicting volume	849			470			1309	1352	472	1321	1328	830
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	849			470			1309	1352	472	1321	1328	830
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			100			99	99	99	68	98	98
cM capacity (veh/h)	767			1079			123	141	583	122	146	358
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	470	818	6	50								
Volume Left	13	4	1	39								
Volume Right	1	50	4	9								
cSH	767	1079	246	139								
Volume to Capacity	0.02	0.00	0.02	0.36								
Queue Length 95th (ft)	1	0	2	37								
Control Delay (s)	0.5	0.1	20.0	44.8								
Lane LOS	A	A	C	E								
Approach Delay (s)	0.5	0.1	20.0	44.8								
Approach LOS			C	E								
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			51.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

9: 35th St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	57	210	45	13	612	94	73	32	13	27	30	97	
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		
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.99			0.98		
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			0.99		
Frt	1.00	0.97		1.00	0.98			0.98			0.92		
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99		
Satd. Flow (prot)	1758	1803		1758	1814			1759			1650		
Flt Permitted	0.23	1.00		0.57	1.00			0.62			0.94		
Satd. Flow (perm)	429	1803		1056	1814			1123			1563		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	
Adj. Flow (vph)	70	256	55	16	746	115	89	39	16	33	37	118	
RTOR Reduction (vph)	0	4	0	0	3	0	0	7	0	0	52	0	
Lane Group Flow (vph)	70	307	0	16	858	0	0	137	0	0	136	0	
Confl. Peds. (#/hr)	37		14	14		37	3		33	33		3	
Confl. Bikes (#/hr)			3			2			7			1	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6			4			8			
Actuated Green, G (s)	41.6	41.6		41.6	41.6			11.1			11.1		
Effective Green, g (s)	42.2	42.2		42.2	42.2			11.3			11.3		
Actuated g/C Ratio	0.69	0.69		0.69	0.69			0.18			0.18		
Clearance Time (s)	4.6	4.6		4.6	4.6			4.2			4.2		
Vehicle Extension (s)	2.4	2.4		2.4	2.4			2.0			2.0		
Lane Grp Cap (vph)	294	1237		724	1244			206			287		
v/s Ratio Prot		0.17			c0.47								
v/s Ratio Perm	0.16			0.02				c0.12			0.09		
v/c Ratio	0.24	0.25		0.02	0.69			0.66			0.47		
Uniform Delay, d1	3.6	3.7		3.1	5.8			23.3			22.4		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.3	0.1		0.0	1.5			6.1			0.4		
Delay (s)	3.9	3.7		3.1	7.3			29.4			22.9		
Level of Service	A	A		A	A			C			C		
Approach Delay (s)		3.8			7.2			29.4			22.9		
Approach LOS		A			A			C			C		
Intersection Summary													
HCM 2000 Control Delay			10.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			61.5									Sum of lost time (s)	8.0
Intersection Capacity Utilization			72.3%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

10: 36th St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	36	224	7	5	650	79	51	50	5	67	32	61	
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		
Frbp, ped/bikes	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			0.98		
Frt	1.00	1.00		1.00	0.98			0.99			0.95		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98		
Satd. Flow (prot)	1770	1850		1770	1818			1793			1675		
Flt Permitted	0.95	1.00		0.95	1.00			0.72			0.79		
Satd. Flow (perm)	1770	1850		1770	1818			1317			1356		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	
Adj. Flow (vph)	44	273	9	6	793	96	62	61	6	82	39	74	
RTOR Reduction (vph)	0	0	0	0	2	0	0	2	0	0	20	0	
Lane Group Flow (vph)	44	282	0	6	887	0	0	127	0	0	175	0	
Confl. Peds. (#/hr)	18		17	17		18	8		32	32		8	
Confl. Bikes (#/hr)						4			1			1	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6			4			8		
Permitted Phases							4			8			
Actuated Green, G (s)	4.2	54.4		1.0	51.9			14.6			14.6		
Effective Green, g (s)	4.2	55.6		1.0	52.4			14.6			14.6		
Actuated g/C Ratio	0.05	0.67		0.01	0.63			0.18			0.18		
Clearance Time (s)	4.0	5.2		4.0	4.5			4.0			4.0		
Vehicle Extension (s)	2.0	3.1		2.0	3.1			2.0			2.0		
Lane Grp Cap (vph)	89	1236		21	1144			231			237		
v/s Ratio Prot	c0.02	c0.15		0.00	c0.49								
v/s Ratio Perm								0.10			c0.13		
v/c Ratio	0.49	0.23		0.29	0.78			0.55			0.74		
Uniform Delay, d1	38.5	5.4		40.7	11.1			31.3			32.5		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	1.6	0.1		2.7	3.4			1.6			9.9		
Delay (s)	40.0	5.5		43.5	14.5			32.9			42.4		
Level of Service	D	A		D	B			C			D		
Approach Delay (s)		10.2			14.7			32.9			42.4		
Approach LOS		B			B			C			D		
Intersection Summary													
HCM 2000 Control Delay			18.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			83.2									Sum of lost time (s)	12.0
Intersection Capacity Utilization			60.6%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

11: 37th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	220	32	10	618	19	27	12	6	5	3	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	29	262	38	12	736	23	32	14	7	6	4	52
Pedestrians		5			3			10			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		0			0			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		646			684							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	777			310			1178	1149	294	1145	1157	771
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	572			310			1087	1050	294	1045	1060	564
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			73	91	99	96	98	87
cM capacity (veh/h)	767			1240			121	165	737	139	163	401
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	329	770	54	62								
Volume Left	29	12	32	6								
Volume Right	38	23	7	52								
cSH	767	1240	148	316								
Volume to Capacity	0.04	0.01	0.36	0.20								
Queue Length 95th (ft)	3	1	38	18								
Control Delay (s)	1.3	0.3	42.7	19.1								
Lane LOS	A	A	E	C								
Approach Delay (s)	1.3	0.3	42.7	19.1								
Approach LOS			E	C								
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			52.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

12: 38th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	194	29	33	495	41	96	49	32	28	34	24
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	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	0.99	1.00		0.97	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1759	1811		1718	1836			1750			1742	
Flt Permitted	0.29	1.00		0.60	1.00			0.79			0.87	
Satd. Flow (perm)	544	1811		1083	1836			1416			1545	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	9	226	34	38	576	48	112	57	37	33	40	28
RTOR Reduction (vph)	0	5	0	0	3	0	0	8	0	0	14	0
Lane Group Flow (vph)	9	255	0	38	621	0	0	198	0	0	87	0
Confl. Peds. (#/hr)	13		30	30		13	8		15	15		8
Confl. Bikes (#/hr)			2			2						1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	24.8	24.8		24.8	24.8			14.2			14.2	
Effective Green, g (s)	24.8	24.8		24.8	24.8			14.2			14.2	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.30			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	5.6	5.6		5.6	5.6			3.9			3.9	
Lane Grp Cap (vph)	287	955		571	968			427			466	
v/s Ratio Prot		0.14			c0.34							
v/s Ratio Perm	0.02			0.04				c0.14			0.06	
v/c Ratio	0.03	0.27		0.07	0.64			0.46			0.19	
Uniform Delay, d1	5.3	6.1		5.4	7.9			13.3			12.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.4		0.1	2.2			1.1			0.3	
Delay (s)	5.4	6.5		5.6	10.2			14.4			12.4	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		6.4			9.9			14.4			12.4	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.1								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			47.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			52.1%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

13: 39th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	186	24	28	543	28	14	17	18	19	23	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	202	26	30	590	30	15	18	20	21	25	35
Pedestrians		4			6			4			9	
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		0			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		661			1310							
pX, platoon unblocked												
vC, conflicting volume	630			232			967	940	225	956	938	618
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	630			232			967	940	225	956	938	618
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			92	93	98	90	90	93
cM capacity (veh/h)	945			1331			192	251	807	208	251	484
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	243	651	53	80								
Volume Left	15	30	15	21								
Volume Right	26	30	20	35								
cSH	945	1331	300	297								
Volume to Capacity	0.02	0.02	0.18	0.27								
Queue Length 95th (ft)	1	2	16	27								
Control Delay (s)	0.7	0.6	19.6	21.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.7	0.6	19.6	21.5								
Approach LOS			C	C								
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			51.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

14: 40th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	182	61	47	485	6	80	21	53	8	7	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	194	65	50	516	6	85	22	56	9	7	5
Pedestrians		23			33			23			28	
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		2			3			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					651							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	550			282			907	906	282	980	935	570
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	470			282			856	855	282	936	887	491
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 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			96			62	91	92	95	97	99
cM capacity (veh/h)	983			1256			223	250	722	173	239	510
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	262	572	164	21								
Volume Left	3	50	85	9								
Volume Right	65	6	56	5								
cSH	983	1256	298	234								
Volume to Capacity	0.00	0.04	0.55	0.09								
Queue Length 95th (ft)	0	3	77	7								
Control Delay (s)	0.1	1.1	30.9	21.9								
Lane LOS	A	A	D	C								
Approach Delay (s)	0.1	1.1	30.9	21.9								
Approach LOS			D	C								
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			66.2%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

15: 41st St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	24	207	4	22	550	68	12	5	26	34	1	9	
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		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99		
Flpb, ped/bikes	1.00	1.00		0.99	1.00			0.99			1.00		
Frt	1.00	1.00		1.00	0.98			0.92			0.97		
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96		
Satd. Flow (prot)	1764	1857		1758	1826			1657			1720		
Flt Permitted	0.36	1.00		0.62	1.00			0.90			0.74		
Satd. Flow (perm)	667	1857		1141	1826			1518			1330		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	26	223	4	24	591	73	13	5	28	37	1	10	
RTOR Reduction (vph)	0	0	0	0	3	0	0	24	0	0	9	0	
Lane Group Flow (vph)	26	227	0	24	661	0	0	22	0	0	39	0	
Confl. Peds. (#/hr)	8		8	8		8	26		8	8		26	
Confl. Bikes (#/hr)			1			1						1	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			8				4	
Permitted Phases	2			6			8			4			
Actuated Green, G (s)	35.2	35.2		35.2	35.2			6.6			6.6		
Effective Green, g (s)	35.2	35.2		35.2	35.2			6.6			6.6		
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.13			0.13		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0		
Vehicle Extension (s)	5.6	5.6		5.6	5.6			3.9			3.9		
Lane Grp Cap (vph)	471	1312		806	1290			201			176		
v/s Ratio Prot		0.12			c0.36								
v/s Ratio Perm	0.04			0.02				0.01			c0.03		
v/c Ratio	0.06	0.17		0.03	0.51			0.11			0.22		
Uniform Delay, d1	2.2	2.4		2.2	3.4			19.0			19.3		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.1	0.2		0.0	0.8			0.3			0.9		
Delay (s)	2.4	2.6		2.2	4.2			19.3			20.2		
Level of Service	A	A		A	A			B			C		
Approach Delay (s)		2.6			4.1			19.3			20.2		
Approach LOS		A			A			B			C		
Intersection Summary													
HCM 2000 Control Delay			5.2									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			49.8									Sum of lost time (s)	8.0
Intersection Capacity Utilization			54.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

16: 43rd St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 		 					
Volume (vph)	50	172	106	107	280	90	350	194	90	8	53	40
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		0.97	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	0.98	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1748	3539	1547	1739	3375		3433	1863	1543	1750	1708	
Flt Permitted	0.49	1.00	1.00	0.63	1.00		0.95	1.00	1.00	0.63	1.00	
Satd. Flow (perm)	897	3539	1547	1161	3375		3433	1863	1543	1153	1708	
Peak-hour factor, PHF	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	187	115	116	304	98	380	211	98	9	58	43
RTOR Reduction (vph)	0	0	57	0	22	0	0	0	42	0	20	0
Lane Group Flow (vph)	54	187	58	116	380	0	380	211	56	9	81	0
Confl. Peds. (#/hr)	23		24	24		23	29		25	25		29
Confl. Bikes (#/hr)			3			1			1			
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA	Perm	Perm	NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8					2	6		
Actuated Green, G (s)	12.3	12.3	23.5	12.7	12.7		11.2	26.3	26.3	10.7	10.7	
Effective Green, g (s)	12.7	12.7	24.3	12.7	12.7		11.6	27.2	27.2	11.6	11.6	
Actuated g/C Ratio	0.27	0.27	0.51	0.27	0.27		0.24	0.57	0.57	0.24	0.24	
Clearance Time (s)	4.4	4.4	4.4	4.0	4.0		4.4	4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.3	2.3	2.3	2.3	
Lane Grp Cap (vph)	237	938	913	307	894		831	1057	876	279	413	
v/s Ratio Prot		0.05	0.02		c0.11		c0.11	c0.11			0.05	
v/s Ratio Perm	0.06		0.02	0.10					0.04	0.01		
v/c Ratio	0.23	0.20	0.06	0.38	0.43		0.46	0.20	0.06	0.03	0.20	
Uniform Delay, d1	13.8	13.7	6.0	14.4	14.6		15.5	5.0	4.6	13.9	14.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.0	0.0	0.3	0.1		0.1	0.1	0.0	0.0	0.1	
Delay (s)	13.9	13.7	6.0	14.7	14.7		15.6	5.1	4.7	13.9	14.6	
Level of Service	B	B	A	B	B		B	A	A	B	B	
Approach Delay (s)		11.3			14.7			10.8			14.5	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			12.4				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			47.9				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			49.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

1: 27th St & National Ave

2/28/14

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↖	↗
Volume (veh/h)	491	26	32	221	39	222
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	501	27	33	226	40	227
Pedestrians	5			1	11	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	631					
pX, platoon unblocked						
vC, conflicting volume				539	821	526
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				539	821	526
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	88	59
cM capacity (veh/h)	1020			329	546	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	528	258	40	227		
Volume Left	0	33	40	0		
Volume Right	27	0	0	227		
cSH	1700	1020	329	546		
Volume to Capacity	0.31	0.03	0.12	0.41		
Queue Length 95th (ft)	0	2	10	51		
Control Delay (s)	0.0	1.4	17.5	16.2		
Lane LOS	A		C	C		
Approach Delay (s)	0.0	1.4	16.4			
Approach LOS	C					
Intersection Summary						
Average Delay	4.5					
Intersection Capacity Utilization	49.0%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis

2: 28th St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 											
Volume (vph)	100	500	87	130	350	160	31	125	44	137	550	123	
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		3.6	4.0		3.4	4.0		
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	0.99		1.00	0.97		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		
Frt	1.00	0.98		1.00	0.95		1.00	0.96		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)	1770	3439		1770	1729		1770	1750		1770	1801		
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (perm)	1770	3439		1770	1729		1770	1750		1770	1801		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	109	543	95	141	380	174	34	136	48	149	598	134	
RTOR Reduction (vph)	0	21	0	0	24	0	0	17	0	0	11	0	
Lane Group Flow (vph)	109	617	0	141	530	0	34	167	0	149	721	0	
Confl. Peds. (#/hr)	24		9	9		24	5		35	35		5	
Confl. Bikes (#/hr)			2			6			3			3	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA		
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases													
Actuated Green, G (s)	4.0	18.2		5.0	19.2		1.6	22.1		7.9	28.2		
Effective Green, g (s)	4.0	18.6		5.0	19.6		2.0	22.5		8.5	28.8		
Actuated g/C Ratio	0.06	0.27		0.07	0.28		0.03	0.32		0.12	0.41		
Clearance Time (s)	4.0	4.4		4.0	4.4		4.0	4.4		4.0	4.6		
Vehicle Extension (s)	2.0	3.4		2.0	3.4		3.0	2.0		3.0	2.0		
Lane Grp Cap (vph)	101	913		126	484		50	562		214	740		
v/s Ratio Prot	0.06	0.18		c0.08	c0.31		0.02	0.10		c0.08	c0.40		
v/s Ratio Perm													
v/c Ratio	1.08	0.68		1.12	1.09		0.68	0.30		0.70	0.97		
Uniform Delay, d1	33.0	23.0		32.5	25.2		33.7	17.8		29.5	20.2		
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2	112.5	4.0		115.7	68.9		31.8	0.1		9.4	26.6		
Delay (s)	145.5	27.0		148.2	94.1		65.5	17.9		39.0	46.9		
Level of Service	F	C		F	F		E	B		D	D		
Approach Delay (s)		44.3			105.1			25.3			45.5		
Approach LOS		D			F			C			D		
Intersection Summary													
HCM 2000 Control Delay			59.7									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	15.6
Intersection Capacity Utilization			87.6%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

3: I-5 NB Off Ramp & National Ave

2/28/14

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	513	0	0	315	307	142
Ideal Flow (vphpl)	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
Frbp, 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	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1548
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1548
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	570	0	0	350	341	158
RTOR Reduction (vph)	0	0	0	0	0	108
Lane Group Flow (vph)	570	0	0	350	341	50
Confl. Peds. (#/hr)		14	14		2	2
Turn Type	NA			NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6	8	8
Actuated Green, G (s)	22.9			22.9	13.8	13.8
Effective Green, g (s)	23.5			23.5	14.4	14.4
Actuated g/C Ratio	0.51			0.51	0.31	0.31
Clearance Time (s)	4.6			4.6	4.6	4.6
Vehicle Extension (s)	7.7			7.7	2.0	2.0
Lane Grp Cap (vph)	953			953	555	485
v/s Ratio Prot	c0.31			0.19	c0.19	
v/s Ratio Perm						0.03
v/c Ratio	0.60			0.37	0.61	0.10
Uniform Delay, d1	7.9			6.7	13.4	11.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.5			1.0	1.4	0.0
Delay (s)	10.3			7.7	14.8	11.2
Level of Service	B			A	B	B
Approach Delay (s)	10.3			7.7	13.7	
Approach LOS	B			A	B	
Intersection Summary						
HCM 2000 Control Delay			10.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			45.9		Sum of lost time (s)	8.0
Intersection Capacity Utilization			47.0%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: 29th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	76	617	13	14	280	41	6	2	13	35	2	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	78	636	13	14	289	42	6	2	13	36	2	26
Pedestrians		8			2			7			13	
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			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		327			669							
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	344			656			1159	1179	652	1161	1165	331
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	344			437			1070	1096	431	1073	1078	331
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			98			96	99	97	74	99	96
cM capacity (veh/h)	1202			886			138	153	492	138	157	698
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	78	649	14	331	22	64						
Volume Left	78	0	14	0	6	36						
Volume Right	0	13	0	42	13	26						
cSH	1202	1700	886	1700	253	206						
Volume to Capacity	0.07	0.38	0.02	0.19	0.09	0.31						
Queue Length 95th (ft)	5	0	1	0	7	32						
Control Delay (s)	8.2	0.0	9.1	0.0	20.6	30.2						
Lane LOS	A		A		C	D						
Approach Delay (s)	0.9		0.4		20.6	30.2						
Approach LOS					C	D						
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			55.1%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

5: 30th St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	105	500	27	5	311	46	37	6	9	69	20	116	
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			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.99			0.99			0.98		
Flpb, ped/bikes	0.97	1.00		0.98	1.00			0.99			0.99		
Frt	1.00	0.99		1.00	0.98			0.98			0.92		
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98		
Satd. Flow (prot)	1714	1843		1742	1807			1725			3088		
Flt Permitted	0.45	1.00		0.29	1.00			0.75			0.85		
Satd. Flow (perm)	811	1843		535	1807			1338			2665		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
Adj. Flow (vph)	118	562	30	6	349	52	42	7	10	78	22	130	
RTOR Reduction (vph)	0	3	0	0	8	0	0	6	0	0	84	0	
Lane Group Flow (vph)	118	589	0	6	393	0	0	53	0	0	146	0	
Confl. Peds. (#/hr)	49		60	60		49	17		17	17		17	
Confl. Bikes (#/hr)			2			6			4			2	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6			4			8			
Actuated Green, G (s)	30.6	30.6		30.6	30.6			21.0			21.0		
Effective Green, g (s)	31.6	31.6		31.6	31.6			22.0			22.0		
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.36			0.36		
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0		
Vehicle Extension (s)	0.2	0.2		0.2	0.2			0.2			0.2		
Lane Grp Cap (vph)	416	945		274	926			477			951		
v/s Ratio Prot		c0.32			0.22								
v/s Ratio Perm	0.15			0.01				0.04			c0.05		
v/c Ratio	0.28	0.62		0.02	0.42			0.11			0.15		
Uniform Delay, d1	8.5	10.7		7.4	9.3			13.3			13.5		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.1	0.9		0.0	0.1			0.0			0.0		
Delay (s)	8.7	11.7		7.4	9.5			13.3			13.5		
Level of Service	A	B		A	A			B			B		
Approach Delay (s)		11.2			9.4			13.3			13.5		
Approach LOS		B			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			11.1									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			61.6									Sum of lost time (s)	8.0
Intersection Capacity Utilization			97.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

6: 31st St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	25	534	12	12	295	18	3	2	9	15	5	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	4.4		4.4	4.4			4.4			4.4		
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99		
Flpb, ped/bikes	0.97	1.00		0.99	1.00			1.00			0.99		
Frt	1.00	1.00		1.00	0.99			0.91			0.93		
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98		
Satd. Flow (prot)	1716	1855		1758	1839			1631			1671		
Flt Permitted	0.53	1.00		0.32	1.00			0.96			0.91		
Satd. Flow (perm)	952	1855		592	1839			1584			1557		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph)	29	621	14	14	343	21	3	2	10	17	6	22	
RTOR Reduction (vph)	0	0	0	0	1	0	0	8	0	0	17	0	
Lane Group Flow (vph)	29	635	0	14	363	0	0	7	0	0	28	0	
Confl. Peds. (#/hr)	41		15	15		41	7		19	19		7	
Confl. Bikes (#/hr)			4			3						1	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)	28.7	28.7		28.7	28.7			12.2			12.2		
Effective Green, g (s)	28.7	28.7		28.7	28.7			12.2			12.2		
Actuated g/C Ratio	0.58	0.58		0.58	0.58			0.25			0.25		
Clearance Time (s)	4.4	4.4		4.4	4.4			4.4			4.4		
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.6			2.6		
Lane Grp Cap (vph)	549	1071		341	1061			388			382		
v/s Ratio Prot		c0.34			0.20								
v/s Ratio Perm	0.03			0.02				0.00			c0.02		
v/c Ratio	0.05	0.59		0.04	0.34			0.02			0.07		
Uniform Delay, d1	4.6	6.7		4.5	5.5			14.2			14.4		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.0	0.6		0.0	0.1			0.0			0.1		
Delay (s)	4.6	7.3		4.6	5.6			14.2			14.5		
Level of Service	A	A		A	A			B			B		
Approach Delay (s)		7.2			5.6			14.2			14.5		
Approach LOS		A			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			7.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			49.7									Sum of lost time (s)	8.8
Intersection Capacity Utilization			49.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

7: 32nd St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	478	63	58	210	67	66	40	114	104	109	42
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	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.98			0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00			0.99			0.99	
Frt	1.00	0.98		1.00	0.96			0.93			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1736	1818		1745	1774			1653			1755	
Flt Permitted	0.56	1.00		0.30	1.00			0.86			0.80	
Satd. Flow (perm)	1019	1818		556	1774			1440			1435	
Peak-hour factor, PHF	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)	57	520	68	63	228	73	72	43	124	113	118	46
RTOR Reduction (vph)	0	6	0	0	15	0	0	38	0	0	7	0
Lane Group Flow (vph)	57	582	0	63	286	0	0	201	0	0	270	0
Confl. Peds. (#/hr)	20		29	29		20	32		25	25		32
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	23.5	23.5		23.5	23.5			15.4			15.4	
Effective Green, g (s)	23.9	23.9		23.9	23.9			15.8			15.8	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.33			0.33	
Clearance Time (s)	4.4	4.4		4.4	4.4			4.4			4.4	
Vehicle Extension (s)	2.6	2.6		2.6	2.6			2.0			2.0	
Lane Grp Cap (vph)	510	910		278	888			476			475	
v/s Ratio Prot		c0.32			0.16							
v/s Ratio Perm	0.06			0.11				0.14			c0.19	
v/c Ratio	0.11	0.64		0.23	0.32			0.42			0.57	
Uniform Delay, d1	6.3	8.7		6.7	7.1			12.4			13.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.3		0.3	0.2			0.2			0.9	
Delay (s)	6.4	10.1		7.0	7.2			12.6			14.1	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)		9.7			7.2			12.6			14.1	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.4									B
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			47.7							8.0		
Intersection Capacity Utilization			69.2%									C
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

8: 33rd St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	742	1	0	325	18	0	1	3	34	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	20	905	1	0	396	22	0	1	4	41	0	13
Pedestrians		6			3			14			34	
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			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		649										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	452			920			1385	1411	922	1393	1400	447
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	452			782			1358	1389	785	1368	1377	447
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 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			100			100	99	99	54	100	98
cM capacity (veh/h)	1077			667			93	108	313	91	110	591
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	926	418	5	55								
Volume Left	20	0	0	41								
Volume Right	1	22	4	13								
cSH	1077	667	213	115								
Volume to Capacity	0.02	0.00	0.02	0.48								
Queue Length 95th (ft)	1	0	2	53								
Control Delay (s)	0.5	0.0	22.3	62.3								
Lane LOS	A		C	F								
Approach Delay (s)	0.5	0.0	22.3	62.3								
Approach LOS			C	F								
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			68.7%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

9: 35th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	442	88	20	358	50	48	45	28	119	47	69
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	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.98			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			0.98	
Frt	1.00	0.98		1.00	0.98			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1741	1806		1762	1816			1739			1701	
Flt Permitted	0.38	1.00		0.26	1.00			0.83			0.80	
Satd. Flow (perm)	691	1806		478	1816			1475			1395	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	91	539	107	24	437	61	59	55	34	145	57	84
RTOR Reduction (vph)	0	5	0	0	4	0	0	14	0	0	20	0
Lane Group Flow (vph)	91	641	0	24	494	0	0	134	0	0	266	0
Confl. Peds. (#/hr)	37		14	14		37	3		33	33		3
Confl. Bikes (#/hr)			3			2			7			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	25.9	25.9		25.9	25.9			17.2			17.2	
Effective Green, g (s)	26.5	26.5		26.5	26.5			17.4			17.4	
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.34			0.34	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.2			4.2	
Vehicle Extension (s)	2.4	2.4		2.4	2.4			2.0			2.0	
Lane Grp Cap (vph)	352	922		244	927			494			467	
v/s Ratio Prot		c0.35			0.27							
v/s Ratio Perm	0.13			0.05				0.09			c0.19	
v/c Ratio	0.26	0.69		0.10	0.53			0.27			0.57	
Uniform Delay, d1	7.2	9.6		6.5	8.5			12.6			14.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.3	2.1		0.1	0.4			0.1			1.0	
Delay (s)	7.4	11.7		6.7	9.0			12.7			15.1	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)		11.2			8.9			12.7			15.1	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			11.3								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			51.9								Sum of lost time (s)	8.0
Intersection Capacity Utilization			72.1%								ICU Level of Service	C
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: 36th St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	61	631	23	13	325	52	24	37	12	180	37	54	
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		
Frbp, ped/bikes	1.00	1.00		1.00	0.99			0.99			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.96		
Frt	1.00	0.99		1.00	0.98			0.98			0.97		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97		
Satd. Flow (prot)	1770	1848		1770	1805			1760			1675		
Flt Permitted	0.95	1.00		0.95	1.00			0.86			0.76		
Satd. Flow (perm)	1770	1848		1770	1805			1547			1314		
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	
Adj. Flow (vph)	74	770	28	16	396	63	29	45	15	220	45	66	
RTOR Reduction (vph)	0	1	0	0	4	0	0	6	0	0	7	0	
Lane Group Flow (vph)	74	797	0	16	455	0	0	83	0	0	324	0	
Confl. Peds. (#/hr)	18		17	17		18	8		32	32		8	
Confl. Bikes (#/hr)						4			1			1	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6			4			8		
Permitted Phases							4			8			
Actuated Green, G (s)	7.3	49.9		2.3	45.6			28.6			28.6		
Effective Green, g (s)	7.3	51.1		2.3	46.1			28.6			28.6		
Actuated g/C Ratio	0.08	0.54		0.02	0.49			0.30			0.30		
Clearance Time (s)	4.0	5.2		4.0	4.5			4.0			4.0		
Vehicle Extension (s)	2.0	3.1		2.0	3.1			2.0			2.0		
Lane Grp Cap (vph)	137	1004		43	885			470			399		
v/s Ratio Prot	c0.04	c0.43		0.01	0.25								
v/s Ratio Perm								0.05			c0.25		
v/c Ratio	0.54	0.79		0.37	0.51			0.18			0.81		
Uniform Delay, d1	41.7	17.2		45.1	16.3			24.0			30.2		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	2.3	4.4		2.0	0.5			0.1			11.3		
Delay (s)	44.1	21.6		47.1	16.8			24.1			41.5		
Level of Service	D	C		D	B			C			D		
Approach Delay (s)		23.5			17.9			24.1			41.5		
Approach LOS		C			B			C			D		
Intersection Summary													
HCM 2000 Control Delay			25.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			94.0									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													

HCM Unsignalized Intersection Capacity Analysis

11: 37th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	630	77	9	350	11	44	9	13	14	7	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	42	750	92	11	417	13	52	11	15	17	8	31
Pedestrians		5			3			10			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		0			0			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		646			684							
pX, platoon unblocked				0.65			0.65	0.65	0.65	0.65	0.65	
vC, conflicting volume	449			852			1374	1359	809	1367	1399	447
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	449			507			1307	1285	442	1296	1345	447
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			29	89	96	78	91	95
cM capacity (veh/h)	1094			685			73	99	398	74	91	599
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	883	440	79	56								
Volume Left	42	11	52	17								
Volume Right	92	13	15	31								
cSH	1094	685	91	152								
Volume to Capacity	0.04	0.02	0.86	0.37								
Queue Length 95th (ft)	3	1	117	39								
Control Delay (s)	1.0	0.5	140.8	41.8								
Lane LOS	A	A	F	E								
Approach Delay (s)	1.0	0.5	140.8	41.8								
Approach LOS			F	E								
Intersection Summary												
Average Delay			9.9									
Intersection Capacity Utilization			69.8%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

12: 38th St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	27	523	93	43	260	47	37	49	63	91	86	21	
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		
Frbp, ped/bikes	1.00	0.99		1.00	0.99			0.98			1.00		
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00			0.99		
Frt	1.00	0.98		1.00	0.98			0.94			0.99		
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98		
Satd. Flow (prot)	1748	1801		1749	1808			1702			1776		
Flt Permitted	0.51	1.00		0.23	1.00			0.89			0.81		
Satd. Flow (perm)	933	1801		425	1808			1528			1481		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph)	31	608	108	50	302	55	43	57	73	106	100	24	
RTOR Reduction (vph)	0	6	0	0	6	0	0	27	0	0	4	0	
Lane Group Flow (vph)	31	710	0	50	351	0	0	146	0	0	226	0	
Confl. Peds. (#/hr)	13		30	30		13	8		15	15		8	
Confl. Bikes (#/hr)			2			2						1	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			4				8	
Permitted Phases	2			6			4			8			
Actuated Green, G (s)	31.0	31.0		31.0	31.0			17.4				17.4	
Effective Green, g (s)	31.0	31.0		31.0	31.0			17.4				17.4	
Actuated g/C Ratio	0.55	0.55		0.55	0.55			0.31				0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0				4.0	
Vehicle Extension (s)	5.6	5.6		5.6	5.6			3.9				3.9	
Lane Grp Cap (vph)	512	989		233	993			471				456	
v/s Ratio Prot		c0.39			0.19								
v/s Ratio Perm	0.03			0.12				0.10				c0.15	
v/c Ratio	0.06	0.72		0.21	0.35			0.31				0.50	
Uniform Delay, d1	5.9	9.4		6.5	7.1			14.9				15.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00				1.00	
Incremental Delay, d2	0.1	3.4		1.2	0.5			0.5				1.1	
Delay (s)	6.0	12.9		7.7	7.6			15.4				17.0	
Level of Service	A	B		A	A			B				B	
Approach Delay (s)		12.6			7.6			15.4				17.0	
Approach LOS		B			A			B				B	
Intersection Summary													
HCM 2000 Control Delay			12.3									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			56.4									Sum of lost time (s)	8.0
Intersection Capacity Utilization			60.0%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

13: 39th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	613	79	44	340	21	10	15	18	40	25	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	666	86	48	370	23	11	16	20	43	27	23
Pedestrians		4			6			4			9	
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		0			1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		661			1310							
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	401			756			1254	1234	719	1252	1266	394
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			504			1171	1144	454	1168	1186	394
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 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			94			89	88	96	58	79	96
cM capacity (veh/h)	1149			789			96	137	449	103	129	648
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	764	440	47	93								
Volume Left	12	48	11	43								
Volume Right	86	23	20	23								
cSH	1149	789	169	140								
Volume to Capacity	0.01	0.06	0.28	0.67								
Queue Length 95th (ft)	1	5	27	93								
Control Delay (s)	0.3	1.8	34.2	71.7								
Lane LOS	A	A	D	F								
Approach Delay (s)	0.3	1.8	34.2	71.7								
Approach LOS			D	F								
Intersection Summary												
Average Delay			6.9									
Intersection Capacity Utilization			61.6%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

14: 40th St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	541	128	32	284	2	62	11	43	8	8	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	576	136	34	302	2	66	12	46	9	9	7
Pedestrians		23			33			23			28	
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		2			3			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					651							
pX, platoon unblocked												
vC, conflicting volume	332			735			1085	1080	700	1140	1147	354
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	332			735			1085	1080	700	1140	1147	354
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 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			96			60	94	89	94	95	99
cM capacity (veh/h)	1199			854			166	200	419	135	182	661
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	718	338	123	24								
Volume Left	6	34	66	9								
Volume Right	136	2	46	7								
cSH	1199	854	219	202								
Volume to Capacity	0.01	0.04	0.56	0.12								
Queue Length 95th (ft)	0	3	77	10								
Control Delay (s)	0.1	1.4	40.8	25.3								
Lane LOS	A	A	E	D								
Approach Delay (s)	0.1	1.4	40.8	25.3								
Approach LOS			E	D								
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			57.3%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

15: 41st St & National Ave

2/28/14

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	30	547	6	25	314	35	4	12	32	46	3	12	
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		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99		
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	1.00		1.00	0.98			0.91			0.97		
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96		
Satd. Flow (prot)	1761	1859		1764	1829			1667			1725		
Flt Permitted	0.54	1.00		0.39	1.00			0.98			0.75		
Satd. Flow (perm)	997	1859		730	1829			1632			1335		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	32	588	6	27	338	38	4	13	34	49	3	13	
RTOR Reduction (vph)	0	0	0	0	3	0	0	29	0	0	11	0	
Lane Group Flow (vph)	32	594	0	27	373	0	0	22	0	0	54	0	
Confl. Peds. (#/hr)	8		8	8		8	26		8	8		26	
Confl. Bikes (#/hr)			1			1						1	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			8				4	
Permitted Phases	2			6			8			4			
Actuated Green, G (s)	31.9	31.9		31.9	31.9			7.0			7.0		
Effective Green, g (s)	31.9	31.9		31.9	31.9			7.0			7.0		
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.15			0.15		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0		
Vehicle Extension (s)	5.6	5.6		5.6	5.6			3.9			3.9		
Lane Grp Cap (vph)	678	1264		496	1244			243			199		
v/s Ratio Prot		c0.32			0.20								
v/s Ratio Perm	0.03			0.04				0.01			c0.04		
v/c Ratio	0.05	0.47		0.05	0.30			0.09			0.27		
Uniform Delay, d1	2.5	3.5		2.5	3.0			17.2			17.7		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.1	0.7		0.1	0.3			0.2			1.0		
Delay (s)	2.6	4.2		2.6	3.4			17.4			18.7		
Level of Service	A	A		A	A			B			B		
Approach Delay (s)		4.1			3.3			17.4			18.7		
Approach LOS		A			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			5.3									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			46.9									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													

HCM Signalized Intersection Capacity Analysis

16: 43rd St & National Ave

2/28/14

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	274	312	107	180	57	164	181	145	89	211	32
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		0.97	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1743	3539	1540	1743	3377		3433	1863	1543	1749	1814	
Flt Permitted	0.59	1.00	1.00	0.57	1.00		0.95	1.00	1.00	0.63	1.00	
Satd. Flow (perm)	1086	3539	1540	1046	3377		3433	1863	1543	1167	1814	
Peak-hour factor, PHF	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)	51	298	339	116	196	62	178	197	158	97	229	35
RTOR Reduction (vph)	0	0	190	0	21	0	0	0	68	0	3	0
Lane Group Flow (vph)	51	298	149	116	237	0	178	197	90	97	261	0
Confl. Peds. (#/hr)	23		24	24		23	29		25	25		29
Confl. Bikes (#/hr)			3			1			1			
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA	Perm	Perm	NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8					2	6		
Actuated Green, G (s)	12.8	12.8	20.9	13.2	13.2		8.1	27.2	27.2	14.7	14.7	
Effective Green, g (s)	13.2	13.2	21.7	13.2	13.2		8.5	28.1	28.1	15.6	15.6	
Actuated g/C Ratio	0.27	0.27	0.44	0.27	0.27		0.17	0.57	0.57	0.32	0.32	
Clearance Time (s)	4.4	4.4	4.4	4.0	4.0		4.4	4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.3	2.3	2.3	2.3	
Lane Grp Cap (vph)	290	947	802	280	904		591	1061	879	369	574	
v/s Ratio Prot		0.08	0.03		0.07		c0.05	0.11			c0.14	
v/s Ratio Perm	0.05		0.06	c0.11					0.06	0.08		
v/c Ratio	0.18	0.31	0.19	0.41	0.26		0.30	0.19	0.10	0.26	0.45	
Uniform Delay, d1	13.9	14.4	8.4	14.9	14.2		17.8	5.1	4.8	12.6	13.5	
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	0.1	0.1	0.0	0.4	0.1		0.1	0.0	0.0	0.2	0.3	
Delay (s)	14.0	14.5	8.5	15.2	14.3		17.9	5.1	4.9	12.8	13.8	
Level of Service	B	B	A	B	B		B	A	A	B	B	
Approach Delay (s)		11.5			14.6			9.3			13.5	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			49.3			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			56.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

APPENDIX G: TRANSIT LEVEL OF SERVICE WORKSHEETS



C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	1	4	52%	100%	100%	0.30	No
2	0	4	52%	0%	0%	0.30	No
3	1	4	52%	100%	100%	0.30	No
4	0	4	52%	0%	0%	0.30	No
5	1	4	52%	100%	100%	0.28	No
6	0	4	52%	0%	0%	0.28	No
7	1	4	52%	100%	100%	0.28	No
8	2	4	52%	100%	100%	0.28	No
9	1	4	52%	100%	100%	0.25	No
10	0	4	52%	0%	0%	0.25	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrsctn (sec)	Transit Travel Speed (mph)
1	653	18.7	6.9	20.0	5.0	31.9	55.6	7.4	7.1
2	294	16.4	6.0	0.0	0.0	6.0	12.2	3.3	12.9
3	382	6.6	2.4	20.0	5.0	27.4	66.6	4.3	3.7
4	651	28.2	10.3	0.0	0.0	10.3	15.8	7.4	19.2
5	684	19.8	7.3	20.0	5.0	32.3	55.8	7.8	7.3
6	599	26.9	9.9	0.0	0.0	9.9	15.2	6.8	18.6
7	672	19.4	7.1	20.0	5.0	32.1	55.7	7.6	7.2
8	1307	18.7	6.9	20.0	5.0	31.9	111.3	14.9	7.1
9	683	19.8	7.2	20.0	5.0	32.2	55.8	7.8	7.3
10	657	34.0	12.5	0.0	0.0	12.5	13.2	7.5	21.7
Total/Avg	6582								8.4

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	2.7951	0.6660	1.8616	1.85	3.49	C
2	2.7951	0.7416	2.0729	1.72	3.15	C
3	2.7951	0.5797	1.6204	1.50	3.79	D
4	2.7951	0.7955	2.2235	0.94	2.81	C
5	2.7951	0.6717	1.8774	1.11	3.35	C
6	2.7951	0.7915	2.2123	1.04	2.84	C
7	2.7951	0.6695	1.8714	1.46	3.41	C
8	2.7951	0.6661	1.8619	1.13	3.38	C
9	2.7951	0.6715	1.8769	1.07	3.34	C
10	2.7951	0.8113	2.2676	1.05	2.76	C
Average					3.23	C

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	1	4	52%	100%	100%	0.25	No
2	0	4	52%	0%	0%	0.25	No
3	1	4	52%	100%	100%	0.25	No
4	1	4	52%	100%	100%	0.25	No
5	0	4	52%	0%	0%	0.25	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrscn (sec)	Transit Travel Speed (mph)
1	657	18.9	3.7	10.6	5.0	19.3	43.0	7.5	8.9
2	673	33.7	12.3	0.0	0.0	12.3	13.6	7.6	21.6
3	665	19.1	0.0	0.0	5.0	5.0	28.7	7.6	12.5
4	651	18.6	0.0	14.2	5.0	19.2	43.0	7.4	8.8
5	1058	33.0	12.1	0.0	0.0	12.1	21.8	12.0	21.3
Total/Avg	3704								13.1

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	2.7951	0.7004	1.9576	0.98	3.21	C
2	2.7951	0.8104	2.2652	1.03	2.76	C
3	2.7951	0.7535	2.1063	1.09	3.00	C
4	2.7951	0.6992	1.9544	1.13	3.24	C
5	2.7951	0.8089	2.2609	1.12	2.78	C
Average					2.97	C

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	1	6.5	52%	100%	100%	0.75	No
2	1	6.5	52%	100%	100%	0.85	No
3	0	6.5	52%	0%	0%	0.85	No
4	1	6.5	52%	100%	100%	0.85	No
5	1	6.5	52%	100%	100%	0.88	No
6	0	6.5	52%	0%	0%	0.88	No
7	2	6.5	52%	100%	100%	0.93	No
8	0	6.5	52%	0%	0%	0.93	No
9	1	6.5	52%	100%	100%	0.93	No
10	1	6.5	52%	100%	100%	0.93	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrsctn (sec)	Transit Travel Speed (mph)
1	665	19.1	4.4	12.6	5.0	22.0	45.7	7.6	8.5
2	661	19.0	4.8	13.8	5.0	23.6	47.3	7.5	8.2
3	1318	35.8	13.1	0.0	0.0	13.1	25.1	15.0	22.4
4	650	18.6	6.8	20.0	5.0	31.8	55.6	7.4	7.0
5	619	17.5	6.4	20.0	5.0	31.4	55.6	7.0	6.7
6	649	27.1	5.1	0.0	0.0	5.1	16.3	7.4	18.7
7	680	4.7	0.0	0.0	5.0	5.0	108.8	7.7	4.0
8	294	16.2	3.1	0.0	0.0	3.1	12.4	3.3	12.7
9	357	5.5	0.9	9.0	5.0	14.9	59.5	4.1	3.8
10	668	19.3	7.1	0.0	5.0	12.1	35.7	7.6	10.5
Total/Avg	6561								8.3

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	3.2082	0.6940	2.2266	2.05	2.97	C
2	3.2082	0.6817	2.1870	1.97	3.01	C
3	3.2082	0.8095	2.5971	2.02	2.41	B
4	3.2082	0.6587	2.1131	1.68	3.08	C
5	3.2082	0.6487	2.0812	1.89	3.16	C
6	3.2082	0.7825	2.5103	1.75	2.50	B
7	3.2082	0.5756	1.8467	1.94	3.52	D
8	3.2082	0.7236	2.3215	2.19	2.85	C
9	3.2082	0.5715	1.8334	2.95	3.69	D
10	3.2082	0.7085	2.2731	2.17	2.92	C
Average					2.93	C

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	2	6.5	52%	100%	100%	0.48	No
2	1	6.5	52%	100%	100%	0.53	No
3	0	6.5	52%	0%	0%	0.53	No
4	0	6.5	52%	0%	0%	0.53	No
5	1	6.5	52%	100%	100%	0.68	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrscn (sec)	Transit Travel Speed (mph)
1	1124	15.1	0.0	14.2	5.0	19.2	89.0	12.8	7.5
2	656	18.8	0.0	0.0	5.0	5.0	28.8	7.5	12.4
3	665	33.2	12.2	0.0	0.0	12.2	13.6	7.6	21.4
4	653	27.7	10.2	0.0	0.0	10.2	16.1	7.4	19.0
5	665	19.1	7.0	0.0	0.0	7.0	30.7	7.6	11.9
Total/Avg	3763								11.6

3. Compute Transit Level of Service

Segment	Headway Factor	Transit Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	3.2082	0.6755	2.1672	1.85	3.03	C
2	3.2082	0.7515	2.4111	1.79	2.65	B
3	3.2082	0.8093	2.5966	1.86	2.38	B
4	3.2082	0.7941	2.5476	1.71	2.43	B
5	3.2082	0.7451	2.3905	2.09	2.73	B
Average					2.69	B

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	1	4	52%	100%	100%	0.30	No
2	0	4	52%	0%	0%	0.30	No
3	1	4	52%	100%	100%	0.30	No
4	0	4	52%	0%	0%	0.30	No
5	1	4	52%	100%	100%	0.28	No
6	0	4	52%	0%	0%	0.28	No
7	1	4	52%	100%	100%	0.28	No
8	2	4	52%	100%	100%	0.28	No
9	1	4	52%	100%	100%	0.25	No
10	0	4	52%	0%	0%	0.25	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrscn (sec)	Transit Travel Speed (mph)
1	653	18.7	6.9	20.0	5.0	31.9	55.6	7.4	7.1
2	294	16.2	5.9	0.0	0.0	5.9	12.4	3.3	12.8
3	382	6.6	2.4	20.0	5.0	27.4	66.6	4.3	3.7
4	651	27.3	10.0	0.0	0.0	10.0	16.3	7.4	18.8
5	684	19.8	7.3	20.0	5.0	32.3	55.8	7.8	7.3
6	599	25.8	9.4	0.0	0.0	9.4	15.9	6.8	18.0
7	672	19.4	7.1	20.0	5.0	32.1	55.7	7.6	7.2
8	1307	18.7	6.9	20.0	5.0	31.9	111.3	14.9	7.1
9	683	19.8	7.2	20.0	5.0	32.2	55.8	7.8	7.3
10	657	33.0	12.1	0.0	0.0	12.1	13.6	7.5	21.3
Total/Avg	6582								8.4

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	2.7951	0.6660	1.8616	2.37	3.56	D
2	2.7951	0.7403	2.0693	2.13	3.22	C
3	2.7951	0.5797	1.6204	2.42	3.93	D
4	2.7951	0.7926	2.2156	1.67	2.93	C
5	2.7951	0.6717	1.8774	1.77	3.45	C
6	2.7951	0.7874	2.2009	1.89	2.98	C
7	2.7951	0.6695	1.8714	2.26	3.53	D
8	2.7951	0.6661	1.8619	1.88	3.49	C
9	2.7951	0.6715	1.8769	2.22	3.52	D
10	2.7951	0.8087	2.2605	2.00	2.91	C
Average					3.35	C

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	1	4	52%	100%	100%	0.25	No
2	0	4	52%	0%	0%	0.25	No
3	1	4	52%	100%	100%	0.25	No
4	1	4	52%	100%	100%	0.25	No
5	0	4	52%	0%	0%	0.25	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrsctn (sec)	Transit Travel Speed (mph)
1	657	18.9	3.8	11.0	5.0	19.8	43.6	7.5	8.8
2	673	31.9	11.7	0.0	0.0	11.7	14.4	7.6	20.8
3	665	19.1	0.0	0.0	5.0	5.0	28.7	7.6	12.5
4	651	18.6	0.0	13.6	5.0	18.6	42.4	7.4	8.9
5	1058	32.5	11.9	0.0	0.0	11.9	22.2	12.0	21.1
Total/Avg	3704								13.1

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	2.7951	0.6987	1.9531	1.93	3.36	C
2	2.7951	0.8060	2.2530	2.00	2.92	C
3	2.7951	0.7535	2.1063	1.86	3.12	C
4	2.7951	0.7010	1.9595	1.94	3.35	C
5	2.7951	0.8076	2.2574	1.66	2.86	C
Average					3.09	C

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	1	6.5	52%	100%	100%	0.75	No
2	1	6.5	52%	100%	100%	0.85	No
3	0	6.5	52%	0%	0%	0.85	No
4	1	6.5	52%	100%	100%	0.85	No
5	1	6.5	52%	100%	100%	0.88	No
6	0	6.5	52%	0%	0%	0.88	No
7	2	6.5	52%	100%	100%	0.93	No
8	0	6.5	52%	0%	0%	0.93	No
9	1	6.5	52%	100%	100%	0.93	No
10	1	6.5	52%	100%	100%	0.93	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrscn (sec)	Transit Travel Speed (mph)
1	665	19.1	3.4	9.8	5.0	18.2	41.9	7.6	9.2
2	661	19.0	3.6	10.2	5.0	18.8	42.5	7.5	9.0
3	1318	36.6	13.4	0.0	0.0	13.4	24.6	15.0	22.7
4	650	18.6	6.8	20.0	5.0	31.8	55.6	7.4	7.0
5	619	17.5	6.4	20.0	5.0	31.4	55.6	7.0	6.7
6	649	27.7	5.2	0.0	0.0	5.2	16.0	7.4	18.9
7	680	4.7	0.0	0.0	5.0	5.0	108.8	7.7	4.0
8	294	16.4	3.1	0.0	0.0	3.1	12.2	3.3	12.9
9	357	5.5	0.6	5.6	5.0	11.2	55.7	4.1	4.1
10	668	19.3	7.1	0.0	5.0	12.1	35.7	7.6	10.5
Total/Avg	6561								8.5

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	3.2082	0.7053	2.2627	1.21	2.79	C
2	3.2082	0.6957	2.2320	1.40	2.86	C
3	3.2082	0.8111	2.6021	1.38	2.30	B
4	3.2082	0.6587	2.1131	1.06	2.99	C
5	3.2082	0.6487	2.0812	1.26	3.07	C
6	3.2082	0.7843	2.5163	1.35	2.43	B
7	3.2082	0.5756	1.8467	1.31	3.43	C
8	3.2082	0.7253	2.3269	1.52	2.74	B
9	3.2082	0.5783	1.8552	2.20	3.55	D
10	3.2082	0.7085	2.2731	1.78	2.86	C
Average					2.82	C

C. Compute Transit LOS

Street: National Avenue

1. Input Data

Segment	Bus Stops (#)	Transit Frequency (bus/hr)	On-Time Performance (%)	Stops with Shelter (%)	Stops with Bench (%)	Pk Load Factor (p/seat)	Central Business District
1	2	6.5	52%	100%	100%	0.48	No
2	1	6.5	52%	100%	100%	0.53	No
3	0	6.5	52%	0%	0%	0.53	No
4	0	6.5	52%	0%	0%	0.53	No
5	1	6.5	52%	100%	100%	0.68	No

Population 5 million or more: No

2. Compute Average Transit Travel Speed

Segment	Segment Length (ft)	Transit Running Speed (mph)	Accel Decel Delay (sec)	Passenger Service Delay (sec)	Re-entry Delay (sec)	Total Stop Delay (sec)	Transit Running Time (sec)	Delay at Intrsctn (sec)	Transit Travel Speed (mph)
1	1124	15.1	0.0	13.6	5.0	18.6	87.8	12.8	7.6
2	656	18.8	0.0	0.0	5.0	5.0	28.8	7.5	12.4
3	665	33.7	12.4	0.0	0.0	12.4	13.5	7.6	21.6
4	653	28.2	10.3	0.0	0.0	10.3	15.8	7.4	19.2
5	665	19.1	7.0	0.0	0.0	7.0	30.7	7.6	11.9
Total/Avg	3763								11.7

3. Compute Transit Level of Service

Segment	Headway Factor	Perceived Trvl Time Factor	Transit Wait-Ride Score	Pedestrian Link LOS Score	Transit LOS Score	Transit LOS
1	3.2082	0.6773	2.1729	1.34	2.94	C
2	3.2082	0.7515	2.4111	1.34	2.59	B
3	3.2082	0.8105	2.6002	1.45	2.32	B
4	3.2082	0.7955	2.5523	1.13	2.34	B
5	3.2082	0.7451	2.3905	1.44	2.63	B
Average					2.61	B

APPENDIX H: BICYCLE LEVEL OF SERVICE WORKSHEETS



D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width	Bike/Shldr Lane Width	Segment Through Lanes	Intrsrctn Through Lanes	Divided/ Undivided	Signal I/S Cross Dist	Unsig Conf Per Mile	Shldr Width	Bike Lane Width
Signal	(ft)	(ft)	(One-Dir)	(One-Dir)	(D / UD)	(ft)	(conf/mi)	(ft)	(ft)
1	10.0	6.0	2	2	D	82.0	0.0	0.0	6.0
2	10.0	9.0	2	1	D	76.0	0.0	0.0	9.0
3	11.0	9.0	1	1	D	44.0	0.0	0.0	9.0
4	10.0	16.5	1	1	UD	63.0	0.0	7.5	9.0
5	10.0	16.5	1	1	UD	42.0	0.0	7.5	9.0
6	10.0	16.5	1	1	UD	49.0	0.0	7.5	9.0
7	10.0	16.5	1	1	UD	56.0	0.0	7.5	9.0
8	10.0	16.5	1	1	UD	44.0	0.0	7.5	9.0
9	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
10	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume	Heavy Vehicle	Percent On-street Parking	Pavement Rating
Signal	(vph pk 15)	(%)	(%)	(#)
1	224	2%	0%	4.0
2	294	2%	0%	4.0
3	245	2%	0%	4.0
4	243	2%	90%	4.0
5	256	2%	90%	4.0
6	321	2%	100%	4.0
7	410	2%	90%	4.0
8	252	2%	90%	4.0
9	299	2%	90%	4.0
10	228	2%	90%	4.0

Pavement Rating: 1=Poor, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream Intrsrctn	Bicycle Running Speed	Bicycle Delay at Intrsrctn	Bicycle Running Time	Bicycle Travel Speed	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
	(mph)	(sec)	(sec)	(mph)		
1	15.0	11.4	29.7	10.8	2.1417	B
2	15.0	7.1	13.4	9.8	1.7063	A
3	15.0	0.0	17.4	15.0	0.0000	A
4	15.0	9.1	29.6	11.5	1.4232	A
5	15.0	0.0	31.1	15.0	0.0000	A
6	15.0	9.1	27.2	11.2	1.3375	A
7	15.0	0.0	30.5	15.0	0.0000	A
8	15.0	54.4	59.4	7.8	1.1477	A
9	15.0	7.3	31.0	12.2	1.2096	A
10	15.0	0.0	29.9	15.0	0.0000	A
Average				11.3		

Segment &	Outside	Paved	Outside	Tot Width	Eff Width	Adjstd	Thru Cntrl	Link	Segment
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Downstream Intrsectn	Lane Width (ft)	Shoulder Wos (ft)	Th+BL+Shldr Wt (ft)	Th+BL+Shldr Wv (ft)	OS Thru We (ft)	HV % (%)	Delay (sec)	LOS Score	National Avenue (EB) 2035 AM Peak		
									Link LOS	Score	Segment LOS
1	10.0	0.0	16.0	16.0	22.0	2.0%	10.3	1.4091	A	3.1691	C
2	10.0	0.0	19.0	19.0	28.0	2.0%	12.8	-0.6563	A	3.4342	C
3	11.0	0.0	20.0	20.0	29.0	2.0%	Infinity	0.0594	A	3.3433	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	8.4	2.9211	C	3.6469	D
5	10.0	6.0	19.0	19.0	16.0	2.0%	5.5	3.1170	C	3.3487	C
6	10.0	6.0	19.0	19.0	14.0	2.0%	11.6	3.3087	C	3.7298	D
7	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.3552	C	3.3868	C
8	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.1372	C	3.3866	C
9	10.0	6.0	19.0	19.0	16.0	2.0%	9.1	3.0223	C	3.6410	D
10	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.0659	C	3.3405	C
Average										3.4395	C

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width	Bike/Shldr Lane Width	Segment Through Lanes	Intrsrctn Through Lanes	Divided/Undivided	Signal I/S Cross Dist	Unsig Conf Per Mile	Shldr Width	Bike Lane Width
Signal	(ft)	(ft)	(One-Dir)	(One-Dir)	(D / UD)	(ft)	(conf/mi)	(ft)	(ft)
1	10.0	16.5	1	1	UD	46.0	0.0	7.5	9.0
2	10.0	16.5	1	1	UD	40.0	0.0	7.5	9.0
3	10.0	16.5	1	1	UD	40.0	0.0	7.5	9.0
4	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
5	10.0	16.5	1	2	UD	81.0	0.0	7.5	9.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume	Heavy Vehicle	Percent On-street Parking	Pavement Rating
Signal	(vph pk 15)	(%)	(%)	(#)
1	255	2%	90%	3.0
2	222	2%	90%	4.0
3	242	2%	90%	4.0
4	263	2%	90%	3.0
5	269	2%	90%	3.0

Pavement Rating: 1=Poor, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream	Bicycle Running Speed	Bicycle Delay at Intrsrctn	Bicycle Running Time	Bicycle Travel Speed	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
Intrsrctn	(mph)	(sec)	(sec)	(mph)	Score	LOS
1	15.0	11.9	29.9	10.7	1.1836	A
2	15.0	0.0	30.6	15.0	0.0000	A
3	15.0	0.0	30.2	15.0	0.0000	A
4	15.0	0.0	29.6	15.0	0.0000	A
5	15.0	43.6	48.1	7.9	1.5200	A
Average				11.3		

Segment & Downstream	Outside Lane Width	Paved Shoulder	Outside Th+BL+Shldr	Tot Width Th+BL+Shldr	Eff Width OS Thru	Adjstd HV %	Thru Cntrl Delay	Link LOS Score	Link LOS	Segment LOS Score	Segment LOS
Intrsrctn	(ft)	Wos (ft)	Wt (ft)	Wv (ft)	We (ft)	(%)	(sec)	Score	LOS	Score	LOS
1	10.0	6.0	19.0	19.0	16.0	2.0%	14.5	3.3103	C	3.4156	C
2	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.0431	C	3.6115	D
3	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.0962	C	3.3454	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	6.7	3.4785	C	3.4066	C
5	10.0	6.0	19.0	19.0	16.0	2.0%	45.7	3.4681	C	3.4552	C
Average										3.4483	C

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width (ft)	Bike/Shldr Lane Width (ft)	Segment Through Lanes (One-Dir)	Intrsrctn Through Lanes (One-Dir)	Divided/Undivided (D / UD)	Signal I/S Cross Dist (ft)	Unsig Conf Per Mile (conf/mi)	Shldr Width (ft)	Bike Lane Width (ft)
1	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
2	10.0	16.5	1	1	UD	53.0	0.0	7.5	9.0
3	10.0	16.5	1	1	UD	44.0	0.0	7.5	9.0
4	10.0	16.5	1	1	UD	48.0	0.0	7.5	9.0
5	10.0	16.5	1	1	UD	47.0	0.0	7.5	9.0
6	10.0	16.5	1	1	UD	60.0	0.0	7.5	9.0
7	10.0	16.5	1	1	UD	47.0	0.0	7.5	9.0
8	11.0	9.0	1	1	D	76.0	0.0	0.0	9.0
9	10.0	6.0	1	1	D	49.0	0.0	0.0	6.0
10	10.0	6.0	1	2	D	0.0	0.0	0.0	6.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume (vph pk 15)	Heavy Vehicle (%)	Percent On-street Parking	Pavement Rating (#)
1	731	2%	90%	4.0
2	717	2%	90%	4.0
3	632	2%	90%	4.0
4	569	2%	90%	4.0
5	615	2%	90%	4.0
6	608	2%	90%	4.0
7	630	2%	90%	4.0
8	659	2%	0%	4.0
9	909	2%	0%	4.0
10	198	2%	0%	4.0

Pavement Rating: 1=Poort, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream	Bicycle Running Speed (mph)	Bicycle Delay at Intrsrctn (sec)	Bicycle Running Time (sec)	Bicycle Travel Speed (mph)	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
1	15.0	9.1	30.2	11.5	1.9222	A
2	15.0	5.2	30.0	12.8	2.0528	B
3	15.0	0.0	59.9	15.0	0.0000	A
4	15.0	9.1	29.5	11.5	1.7319	A
5	15.0	0.0	28.1	15.0	0.0000	A
6	15.0	9.1	29.5	11.5	1.9798	A
7	15.0	0.0	30.9	15.0	0.0000	A
8	15.0	7.1	13.4	9.8	2.0938	B
9	15.0	10.6	16.2	9.1	2.9523	C
10	15.0	0.0	30.4	15.0	0.0000	A
Average				12.8		

Segment & Downstream Intrsctn	Outside Lane Width (ft)	Paved Shoulder Wos (ft)	Outside Th+BL+Shldr Wt (ft)	Tot Width Th+BL+Shldr Wv (ft)	Eff Width OS Thru We (ft)	Adjstd HV % (%)	Thru Cntrl Delay (sec)	Link LOS Score	Link LOS	Segment LOS Score	Segment LOS
1	10.0	6.0	19.0	19.0	16.0	2.0%	18.6	3.4711	C	3.4806	C
2	10.0	6.0	19.0	19.0	16.0	2.0%	10.4	3.3541	C	4.0315	D
3	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.6216	D	3.4294	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	14.4	3.3452	C	3.4474	C
5	10.0	6.0	19.0	19.0	16.0	2.0%	8.7	3.5259	D	3.4141	C
6	10.0	6.0	19.0	19.0	16.0	2.0%	14.9	3.3419	C	3.7491	D
7	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5507	D	3.4181	C
8	11.0	0.0	20.0	20.0	29.0	2.0%	271.1	-0.1806	A	2.9104	C
9	10.0	0.0	16.0	16.0	22.0	2.0%	34.3	1.7681	A	3.8612	D
10	10.0	0.0	16.0	16.0	22.0	2.0%	Infinity	1.8455	A	3.4219	C
Average										3.5255	D

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width (ft)	Bike/Shldr Lane Width (ft)	Segment Through Lanes (One-Dir)	Intrsrctn Through Lanes (One-Dir)	Divided/Undivided (D / UD)	Signal I/S Cross Dist (ft)	Unsig Conf Per Mile (conf/mi)	Shldr Width (ft)	Bike Lane Width (ft)
1	10.0	16.5	1	2	UD	48.0	0.0	7.5	9.0
2	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
3	10.0	16.5	1	1	UD	48.0	0.0	7.5	9.0
4	10.0	16.5	1	1	UD	45.0	0.0	7.5	9.0
5	10.0	16.5	1	1	UD	39.0	0.0	7.5	9.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume (vph pk 15)	Heavy Vehicle (%)	Percent On-street Parking	Pavement Rating (#)
1	572	2%	90%	4.0
2	563	2%	90%	4.0
3	593	2%	90%	4.0
4	584	2%	90%	4.0
5	714	2%	90%	4.0

Pavement Rating: 1=Poort, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream	Bicycle Running Speed (mph)	Bicycle Delay at Intrsrctn (sec)	Bicycle Running Time (sec)	Bicycle Travel Speed (mph)	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
1	15.0	0.0	51.1	15.0	0.0000	A
2	15.0	0.0	29.8	15.0	0.0000	A
3	15.0	0.0	30.2	15.0	0.0000	A
4	15.0	11.9	29.7	10.7	1.7105	A
5	15.0	0.0	30.2	15.0	0.0000	A
Average				14.0		

Segment & Downstream	Outside Lane Width (ft)	Paved Shoulder Wos (ft)	Outside Th+BL+Shldr Wt (ft)	Tot Width Th+BL+Shldr Wv (ft)	Eff Width OS Thru We (ft)	Adjstd HV % (%)	Thru Cntrl Delay (sec)	Link LOS Score	Link LOS	Segment LOS Score	Segment LOS
1	10.0	6.0	19.0	19.0	16.0	2.0%	6.4	3.5469	D	3.4175	C
2	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5037	D	3.4106	C
3	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5310	D	3.4150	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	20.6	3.3481	C	3.4465	C
5	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5765	D	3.4222	C
Average										3.4217	C

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width	Bike/Shldr Lane Width	Segment Through Lanes (One-Dir)	Intrscn Through Lanes (One-Dir)	Divided/ Undivided (D / UD)	Signal I/S Cross Dist (ft)	Unsig Conf Per Mile (conf/mi)	Shldr Width (ft)	Bike Lane Width (ft)
1	10.0	6.0	2	2	D	82.0	0.0	0.0	6.0
2	10.0	9.0	2	1	D	76.0	0.0	0.0	9.0
3	11.0	9.0	1	1	D	44.0	0.0	0.0	9.0
4	10.0	16.5	1	1	UD	63.0	0.0	7.5	9.0
5	10.0	16.5	1	1	UD	42.0	0.0	7.5	9.0
6	10.0	16.5	1	1	UD	49.0	0.0	7.5	9.0
7	10.0	16.5	1	1	UD	56.0	0.0	7.5	9.0
8	10.0	16.5	1	1	UD	44.0	0.0	7.5	9.0
9	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
10	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume (vph pk 15)	Heavy Vehicle (%)	Percent On-street Parking	Pavement Rating (#)
1	687	2%	0%	4.0
2	660	2%	0%	4.0
3	670	2%	0%	4.0
4	573	2%	90%	4.0
5	556	2%	90%	4.0
6	701	2%	100%	4.0
7	774	2%	90%	4.0
8	590	2%	90%	4.0
9	825	2%	90%	4.0
10	657	2%	90%	4.0

Pavement Rating: 1=Poor, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream	Bicycle Running Speed (mph)	Bicycle Delay at Intrscn (sec)	Bicycle Running Time (sec)	Bicycle Travel Speed (mph)	Bicycle Intrscn LOS Score	Bicycle Intrscn LOS
1	15.0	18.7	29.7	9.2	2.5233	B
2	15.0	7.7	13.4	9.5	2.3099	B
3	15.0	0.0	17.4	15.0	0.0000	A
4	15.0	9.1	29.6	11.5	1.9688	A
5	15.0	0.0	31.1	15.0	0.0000	A
6	15.0	12.4	27.2	10.3	1.9653	A
7	15.0	0.0	30.5	15.0	0.0000	A
8	15.0	13.1	59.4	12.3	1.7053	A
9	15.0	14.1	31.0	10.3	2.0777	B
10	15.0	0.0	29.9	15.0	0.0000	A
Average				12.0		

National Avenue (EB) 2035 PM Peak

Segment & Downstream Intrscn	Outside Lane Width (ft)	Paved Shoulder Wos (ft)	Outside Th+BL+Shldr Wt (ft)	Tot Width Th+BL+Shldr Wv (ft)	Eff Width OS Thru We (ft)	Adjstd HV % (%)	Thru Cntrl Delay (sec)	Link LOS Score	Link LOS	Segment LOS Score	Segment LOS
1	10.0	0.0	16.0	16.0	22.0	2.0%	23.6	1.9624	A	3.3011	C
2	10.0	0.0	19.0	19.0	28.0	2.0%	350.4	-0.2462	A	3.5500	D
3	11.0	0.0	20.0	20.0	29.0	2.0%	Infinity	0.4965	A	3.4132	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	12.3	3.3196	C	3.7438	D
5	10.0	6.0	19.0	19.0	16.0	2.0%	15.4	3.4935	C	3.4090	C
6	10.0	6.0	19.0	19.0	14.0	2.0%	24.5	3.6449	D	3.8202	D
7	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.6530	D	3.4345	C
8	10.0	6.0	19.0	19.0	16.0	2.0%	20.3	3.5520	D	3.4789	C
9	10.0	6.0	19.0	19.0	16.0	2.0%	36.3	3.4521	C	3.7607	D
10	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5763	D	3.4222	C
Average										3.5297	D

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width (ft)	Bike/Shldr Lane Width (ft)	Segment Through Lanes (One-Dir)	Intrsrctn Through Lanes (One-Dir)	Divided/Undivided (D / UD)	Signal I/S Cross Dist (ft)	Unsig Conf Per Mile (conf/mi)	Shldr Width (ft)	Bike Lane Width (ft)
1	10.0	16.5	1	1	UD	46.0	0.0	7.5	9.0
2	10.0	16.5	1	1	UD	40.0	0.0	7.5	9.0
3	10.0	16.5	1	1	UD	40.0	0.0	7.5	9.0
4	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
5	10.0	16.5	1	2	UD	81.0	0.0	7.5	9.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume (vph pk 15)	Heavy Vehicle (%)	Percent On-street Parking	Pavement Rating (#)
1	678	2%	90%	3.0
2	667	2%	90%	4.0
3	592	2%	90%	4.0
4	629	2%	90%	3.0
5	511	2%	90%	3.0

Pavement Rating: 1=Poor, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream	Bicycle Running Speed (mph)	Bicycle Delay at Intrsrctn (sec)	Bicycle Running Time (sec)	Bicycle Travel Speed (mph)	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
1	15.0	10.9	29.9	11.0	1.8810	A
2	15.0	0.0	30.6	15.0	0.0000	A
3	15.0	0.0	30.2	15.0	0.0000	A
4	15.0	0.0	29.6	15.0	0.0000	A
5	15.0	43.6	48.1	7.9	1.7198	A
Average				11.3		

Segment & Downstream	Outside Lane Width (ft)	Paved Shoulder Wos (ft)	Outside Th+BL+Shldr Wt (ft)	Tot Width Th+BL+Shldr Wv (ft)	Eff Width OS Thru We (ft)	Adjstd HV % (%)	Thru Cntrl Delay (sec)	Link LOS Score	Link LOS	Segment LOS Score	Segment LOS
1	10.0	6.0	19.0	19.0	16.0	2.0%	20.0	3.7758	D	3.5263	D
2	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5558	D	3.6935	D
3	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.5287	D	3.4146	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	20.8	3.8988	D	3.4738	C
5	10.0	6.0	19.0	19.0	16.0	2.0%	47.0	3.7810	D	3.5164	D
Average										3.5246	D

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width	Bike/Shldr Lane Width	Segment Through Lanes	Intrsrctn Through Lanes	Divided/ Undivided	Signal I/S Cross Dist	Unsig Conf Per Mile	Shldr Width	Bike Lane Width
Signal	(ft)	(ft)	(One-Dir)	(One-Dir)	(D / UD)	(ft)	(conf/mi)	(ft)	(ft)
1	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
2	10.0	16.5	1	1	UD	53.0	0.0	7.5	9.0
3	10.0	16.5	1	1	UD	44.0	0.0	7.5	9.0
4	10.0	16.5	1	1	UD	48.0	0.0	7.5	9.0
5	10.0	16.5	1	1	UD	47.0	0.0	7.5	9.0
6	10.0	16.5	1	1	UD	60.0	0.0	7.5	9.0
7	10.0	16.5	1	1	UD	47.0	0.0	7.5	9.0
8	11.0	9.0	1	1	D	76.0	0.0	0.0	9.0
9	10.0	6.0	1	1	D	49.0	0.0	0.0	6.0
10	10.0	6.0	1	2	D	0.0	0.0	0.0	6.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume	Heavy Vehicle	Percent On-street Parking	Pavement Rating
Signal	(vph pk 15)	(%)	(%)	(#)
1	358	2%	90%	4.0
2	454	2%	90%	4.0
3	339	2%	90%	4.0
4	292	2%	90%	4.0
5	329	2%	90%	4.0
6	427	2%	90%	4.0
7	346	2%	90%	4.0
8	363	2%	0%	4.0
9	572	2%	0%	4.0
10	20	2%	0%	4.0

Pavement Rating: 1=Poor, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream Intrsrctn	Bicycle Running Speed	Bicycle Delay at Intrsrctn	Bicycle Running Time	Bicycle Travel Speed	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
	(mph)	(sec)	(sec)	(mph)		
1	15.0	17.3	30.2	9.5	1.3070	A
2	15.0	13.1	30.0	10.5	1.6181	A
3	15.0	0.0	59.9	15.0	0.0000	A
4	15.0	12.4	29.5	10.6	1.2742	A
5	15.0	0.0	28.1	15.0	0.0000	A
6	15.0	9.1	29.5	11.5	1.6821	A
7	15.0	0.0	30.9	15.0	0.0000	A
8	15.0	7.7	13.4	9.5	1.6065	A
9	15.0	18.1	16.2	7.1	2.3950	B
10	15.0	0.0	30.4	15.0	0.0000	A
Average				11.9		

Segment &	Outside	Paved	Outside	Tot Width	Eff Width	Adjstd	Thru Cntrl	Link	Segment
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National Ave (WB) 2035 PM Peak

Downstream Intrsectn	Lane Width (ft)	Shoulder Wos (ft)	Th+BL+Shldr Wt (ft)	Th+BL+Shldr Wv (ft)	OS Thru We (ft)	HV % (%)	Delay (sec)	LOS Score	Link LOS	LOS Score	Segment LOS
1	10.0	6.0	19.0	19.0	16.0	2.0%	22.6	3.1369	C	3.3926	C
2	10.0	6.0	19.0	19.0	16.0	2.0%	19.1	3.1890	C	3.9749	D
3	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.3208	C	3.3813	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	14.6	3.0254	C	3.3734	C
5	10.0	6.0	19.0	19.0	16.0	2.0%	11.6	3.2265	C	3.3662	C
6	10.0	6.0	19.0	19.0	16.0	2.0%	10.7	3.1881	C	3.7040	D
7	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.2645	C	3.3723	C
8	11.0	0.0	20.0	20.0	29.0	2.0%	17.3	-0.4823	A	2.8277	C
9	10.0	0.0	16.0	16.0	22.0	2.0%	31.8	1.5327	A	3.7335	D
10	10.0	0.0	16.0	16.0	22.0	2.0%	Infinity	0.6969	A	3.2382	C
Average										3.4508	C

D. Compute Bicycle LOS

Street: National Avenue

1. Geometric Input Data

Segment & Downstream	Outside Lane Width (ft)	Bike/Shldr Lane Width (ft)	Segment Through Lanes (One-Dir)	Intrsrctn Through Lanes (One-Dir)	Divided/Undivided (D / UD)	Signal I/S Cross Dist (ft)	Unsig Conf Per Mile (conf/mi)	Shldr Width (ft)	Bike Lane Width (ft)
1	10.0	16.5	1	2	UD	48.0	0.0	7.5	9.0
2	10.0	16.5	1	1	UD	43.0	0.0	7.5	9.0
3	10.0	16.5	1	1	UD	48.0	0.0	7.5	9.0
4	10.0	16.5	1	1	UD	45.0	0.0	7.5	9.0
5	10.0	16.5	1	1	UD	39.0	0.0	7.5	9.0

2. Performance and Other Input Data

Segment & Downstream	Traffic Volume (vph pk 15)	Heavy Vehicle (%)	Percent On-street Parking	Pavement Rating (#)
1	338	2%	90%	4.0
2	360	2%	90%	4.0
3	408	2%	90%	4.0
4	327	2%	90%	4.0
5	418	2%	90%	4.0

Pavement Rating: 1=Poor, 5=Excellent

Mid-segment traffic speed = average of auto free-flow speed, and mean auto speed with intersection delay.

3. HCM 2010 Bicycle LOS

Segment & Downstream	Bicycle Running Speed (mph)	Bicycle Delay at Intrsrctn (sec)	Bicycle Running Time (sec)	Bicycle Travel Speed (mph)	Bicycle Intrsrctn LOS Score	Bicycle Intrsrctn LOS
1	15.0	0.0	51.1	15.0	0.0000	A
2	15.0	0.0	29.8	15.0	0.0000	A
3	15.0	0.0	30.2	15.0	0.0000	A
4	15.0	10.9	29.7	11.0	1.2864	A
5	15.0	0.0	30.2	15.0	0.0000	A
Average				14.1		

Segment & Downstream	Outside Lane Width (ft)	Paved Shoulder Wos (ft)	Outside Th+BL+Shldr Wt (ft)	Tot Width Th+BL+Shldr Wv (ft)	Eff Width OS Thru We (ft)	Adjstd HV % (%)	Thru Cntrl Delay (sec)	Link LOS Score	Link LOS	Segment LOS Score	Segment LOS
1	10.0	6.0	19.0	19.0	16.0	2.0%	6.6	3.2922	C	3.3768	C
2	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.2890	C	3.3762	C
3	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.3526	C	3.3864	C
4	10.0	6.0	19.0	19.0	16.0	2.0%	13.6	3.0727	C	3.3815	C
5	10.0	6.0	19.0	19.0	16.0	2.0%	Infinity	3.3275	C	3.3824	C
Average										3.3802	C

APPENDIX I: PEDESTRIAN LEVEL OF SERVICE WORKSHEETS



B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	8	0	1.000	1.000	0	Infinity
2	8	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity
6	8	0	1.000	1.000	0	Infinity
7	8	0	1.000	1.000	0	Infinity
8	8	0	1.000	1.000	0	Infinity
9	5	0	1.000	1.000	0	Infinity
10	10	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)	Pedestrian Delay at Intersection			Ped Travel Speed (ft/s)	Ped Intrscn Cross Street Xing		Ped Intrscn Segment Xing	
				Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)		Score	LOS	Score	LOS
1	4.40	8.00	4.40	59.8	59.8	239.4	3.15	1.74	A	1.74	A
2	4.40	8.00	4.40	47.6	47.6	194.4	3.34	1.73	A	1.73	A
3	4.40	8.00	4.40	0.0	50.0	232.1	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	42.6	42.6	134.0	3.41	1.72	A	1.72	A
5	4.40	8.00	4.40	0.0	42.6	142.2	4.40	0.00	A	0.00	A
6	4.40	8.00	4.40	31.3	31.3	143.2	3.63	1.94	A	1.71	A
7	4.40	8.00	4.40	0.0	50.0	134.5	4.40	0.00	A	0.00	A
8	4.40	8.00	4.40	32.1	32.1	12.6	2.97	1.71	A	1.94	A
9	4.40	5.00	4.40	28.4	28.4	14.7	3.26	1.71	A	2.12	B
10	4.40	8.50	4.40	0.0	50.0	21.1	4.40	0.00	A	0.00	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	W1 BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link LOS Score	
									LOS Score	LOS
1	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3126	1.6621	2.05	B
2	10.0	6.0	19.0	10.0	0.0	-5.9756	0.2645	1.6313	1.97	A
3	10.0	6.0	19.0	10.0	0.0	-5.9756	0.5137	1.4387	2.02	B
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3131	1.2943	1.68	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4176	1.3998	1.89	A
6	10.0	6.0	19.0	10.0	0.0	-5.9756	0.2943	1.3830	1.75	A
7	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4306	1.4332	1.94	A
8	11.0	0.0	20.0	9.0	0.0	-5.4613	0.1044	1.4982	2.19	B
9	10.0	0.0	16.0	6.0	0.0	-5.2790	0.1178	2.0691	2.95	C
10	10.0	0.0	16.0	6.0	0.0	-4.7776	0.4537	0.4507	2.17	B

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrscn	Ped Segment RCDF	Ped Segment LOS Score	Ped Segment LOS

1	1.20	3.17	C
2	1.20	3.13	C
3	1.20	2.70	B
4	1.20	3.02	C
5	1.20	2.65	B
6	1.07	2.78	C
7	1.20	2.67	B
8	1.07	2.87	C
9	0.99	2.89	C
10	1.20	2.76	C
Average		2.85	C

5. Non-signalized Pedestrian Crossing Calculations

		----- Stage 1 -----							
Segment	Two-stage Crossing	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	53	2	15.05	0.286	0.9864	239.4	242.7	239.4
2	No	53	2	15.05	0.269	0.9826	194.4	197.9	194.4
3	No	53	2	15.05	0.283	0.9859	232.1	235.4	232.1
4	No	53	2	15.05	0.239	0.9727	134.0	137.8	134.0
5	No	53	2	15.05	0.244	0.9746	142.2	145.9	142.2
6	No	53	2	15.05	0.245	0.9748	143.2	146.9	143.2
7	No	53	2	15.05	0.240	0.9729	134.5	138.2	134.5
8	Yes	20	1	7.55	0.183	0.7485	8.7	11.7	8.7
9	Yes	16	1	6.64	0.253	0.8130	10.6	13.0	10.6
10	No	52	3	14.82	0.106	0.7916	21.1	26.6	21.1

		----- Stage 2 -----							
Segment	Motorist Yield Rate	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
3	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
6	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
7	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
8	0.000	20	1	7.55	0.103	0.5399	3.9	7.1	3.9
9	0.000	29	2	9.59	0.071	0.4951	4.2	8.4	4.2
10	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Intrsectn	Average Ped Delay (sec)	Pedestrian Intrsectn LOS
1	239.4	F
2	194.4	F
3	232.1	F
4	134.0	F
5	142.2	F
6	143.2	F
7	134.5	F
8	12.6	C
9	14.7	C
10	21.1	D

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	8	0	1.000	1.000	0	Infinity
2	8	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow		Ped Pedestrian Delay at Intersection				Ped Travel Speed (ft/s)	Ped Intrsctn		Ped Intrsctn	
	Walk Speed (ft/sec)	Effective SW Width (ft)	Walk Speed (ft/s)	Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)		Cross Street Xing Score	Xing LOS	Segment Xing Score	Xing LOS
1	4.40	8.00	4.40	0.0	47.2	110.2	4.40	0.00	A	0.00	A
2	4.40	8.00	4.40	0.0	50.0	114.1	4.40	0.00	A	0.00	A
3	4.40	8.00	4.40	0.0	50.0	112.9	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	47.2	47.2	126.7	3.34	1.73	A	1.73	A
5	4.40	8.00	4.40	0.0	50.0	191.7	4.40	0.00	A	0.00	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link LOS Score	Ped Link LOS
	1	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4819	1.3019	1.85
2	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4411	1.2809	1.79	A
3	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4417	1.3502	1.86	A
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3077	1.3280	1.71	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3945	1.6246	2.09	B

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrsctn	RCDF	Ped Segment LOS Score	Ped Segment LOS
1	1.20	2.64	B
2	1.20	2.61	B
3	1.20	2.64	B
4	1.20	3.03	C
5	1.20	2.72	B
Average		2.72	B

5. Non-signalized Pedestrian Crossing Calculations

Segment	Stage 1									
	Two-stage Crossing	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)	
1	No	53	2	15.05	0.224	0.9656	110.2	114.1	110.2	
2	No	53	2	15.05	0.227	0.9670	114.1	118.0	114.1	

National Avenue (WB) 2035 AM Peak

3	No	53	2	15.05	0.226	0.9666	112.9	116.8	112.9
4	No	53	2	15.05	0.235	0.9709	126.7	130.5	126.7
5	No	53	2	15.05	0.268	0.9823	191.7	195.2	191.7

Segment	Motorist	Stage 2							
	Yield Rate	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
3	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Downstream Intrsctn	Average Ped Delay (sec)	Pedestrian Intrsctn LOS
1	110.2	F
2	114.1	F
3	112.9	F
4	126.7	F
5	191.7	F

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	10	0	1.000	1.000	0	Infinity
2	6	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity
6	8	0	1.000	1.000	0	Infinity
7	8	0	1.000	1.000	0	Infinity
8	8	0	1.000	1.000	0	Infinity
9	8	0	1.000	1.000	0	Infinity
10	8	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)				Ped Travel Speed (ft/s)	Ped Intrscn		Ped Intrscn	
			Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)	Score		LOS	Score	LOS	
1	4.40	8.50	4.40	28.4	28.4	216.7	3.69	2.13	B	2.12	B
2	4.40	4.50	4.40	25.5	32.1	9.5	3.19	1.70	A	2.13	B
3	4.40	8.00	4.40	0.0	50.0	11.1	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	31.3	31.3	101.6	3.63	1.71	A	1.71	A
5	4.40	8.00	4.40	0.0	42.6	129.4	4.40	0.00	A	0.00	A
6	4.40	8.00	4.40	42.6	42.6	177.6	3.35	1.72	A	1.72	A
7	4.40	8.00	4.40	0.0	50.0	284.8	4.40	0.00	A	0.00	A
8	4.40	8.00	4.40	54.4	47.6	194.4	3.72	1.73	A	1.73	A
9	4.40	8.00	4.40	59.8	59.8	240.3	3.18	1.74	A	1.74	A
10	4.40	8.00	4.40	0.0	50.0	141.7	4.40	0.00	A	0.00	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link	
									LOS Score	LOS
1	10.0	0.0	16.0	6.0	0.0	-4.7776	0.3288	0.2553	1.85	A
2	10.0	0.0	19.0	9.0	0.0	-4.7701	0.1074	0.3342	1.72	A
3	11.0	0.0	20.0	9.0	0.0	-5.4613	0.3555	0.5565	1.50	A
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3175	0.5522	0.94	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4563	0.5815	1.11	A
6	10.0	6.0	19.0	10.0	0.0	-6.0219	0.2901	0.7294	1.04	A
7	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4547	0.9328	1.46	A
8	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4898	0.5732	1.13	A
9	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3152	0.6795	1.07	A
10	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4635	0.5193	1.05	A

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrscn	Ped Segment LOS	Ped Segment LOS
1	1.02	2.72

2	1.09	2.76	C
3	1.20	2.50	B
4	1.11	2.54	B
5	1.20	2.35	B
6	1.20	2.78	C
7	1.20	2.48	B
8	1.20	2.82	C
9	1.20	2.79	C
10	1.20	2.33	B
Average		2.62	B

5. Non-signalized Pedestrian Crossing Calculations

Segment	Two-stage Crossing	Stage 1							
		Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	52	3	14.82	0.283	0.9850	216.7	220.0	216.7
2	Yes	29	2	9.59	0.082	0.5428	5.0	9.1	5.0
3	Yes	20	1	7.55	0.068	0.4011	2.3	5.8	2.3
4	No	53	2	15.05	0.218	0.9621	101.6	105.6	101.6
5	No	53	2	15.05	0.237	0.9716	129.4	133.2	129.4
6	No	53	2	15.05	0.262	0.9806	177.6	181.2	177.6
7	No	53	2	15.05	0.300	0.9890	284.8	288.0	284.8
8	No	53	2	15.05	0.269	0.9826	194.4	197.9	194.4
9	No	53	2	15.05	0.286	0.9865	240.3	243.5	240.3
10	No	53	2	15.05	0.244	0.9745	141.7	145.4	141.7

Segment	Motorist Yield Rate	Stage 2							
		Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	16	1	6.64	0.145	0.6181	4.5	7.3	4.5
3	0.000	20	1	7.55	0.184	0.7499	8.8	11.7	8.8
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
6	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
7	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
8	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
9	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
10	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Downstream Intrsctn	Average Ped Delay (sec)	Pedestrian Intrsectn LOS
1	216.7	F
2	9.5	B
3	11.1	C
4	101.6	F
5	129.4	F
6	177.6	F
7	284.8	F
8	194.4	F
9	240.3	F
10	141.7	F

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	8	0	1.000	1.000	0	Infinity
2	8	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Pedestrian Delay at Intersection										
	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)	Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)	Ped Travel Speed (ft/s)	Ped Intrscn Cross Street Xing Score	Ped Intrscn LOS	Ped Intrscn Segment Xing Score	Ped Intrscn LOS
1	4.40	8.00	4.40	47.2	47.2	116.9	3.34	1.73	A	1.73	A
2	4.40	8.00	4.40	0.0	50.0	116.5	4.40	0.00	A	0.00	A
3	4.40	8.00	4.40	0.0	50.0	100.9	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	0.0	47.2	156.8	4.40	0.00	A	0.00	A
5	4.40	8.00	4.40	75.0	75.0	89.5	3.35	2.48	B	1.75	A

3. Compute Pedestrian Link LOS

Segment	Pedestrian Link LOS									Ped Link LOS
	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link LOS Score	
1	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3295	0.5804	0.98	A
2	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4537	0.5049	1.03	A
3	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4641	0.5508	1.09	A
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4604	0.5984	1.13	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4364	0.6118	1.12	A

4. Compute Pedestrian Segment LOS

Segment & Downstream	Intrscn	Ped Segment RCDF	Ped Segment LOS Score	Ped Segment LOS
1	1	1.20	2.76	C
2	2	1.20	2.32	B
3	3	1.20	2.34	B
4	4	1.20	2.36	B
5	5	1.20	3.01	C
Average			2.61	B

5. Non-signalized Pedestrian Crossing Calculations

Segment	Stage 1								
	Two-stage Crossing	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	53	2	15.05	0.229	0.9679	116.9	120.8	116.9
2	No	53	2	15.05	0.228	0.9678	116.5	120.4	116.5
3	No	53	2	15.05	0.217	0.9618	100.9	104.9	100.9

National Avenue (EB) 2035 AM Peak

4	No	53	2	15.05	0.252	0.9774	156.8	160.4	156.8
5	No	53	2	15.05	0.208	0.9559	89.5	93.6	89.5

Segment	Motorist	----- Stage 2 -----							
	Yield Rate	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
3	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Intrsectn	Average Ped Delay (sec)	Pedestrian Intrsectn LOS
1	116.9	F
2	116.5	F
3	100.9	F
4	156.8	F
5	89.5	F

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	10	0	1.000	1.000	0	Infinity
2	6	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity
6	8	0	1.000	1.000	0	Infinity
7	8	0	1.000	1.000	0	Infinity
8	8	0	1.000	1.000	0	Infinity
9	8	0	1.000	1.000	0	Infinity
10	8	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)	Pedestrian Delay at Intersection			Ped Travel Speed (ft/s)	Ped Intrscn		Ped Intrscn	
				Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)		Score	LOS	Score	LOS
1	4.40	8.50	4.40	28.4	28.4	608.9	3.69	2.13	B	2.12	B
2	4.40	4.50	4.40	25.5	32.1	18.9	3.19	1.70	A	2.13	B
3	4.40	8.00	4.40	0.0	50.0	12.3	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	31.3	31.3	175.8	3.63	1.71	A	1.71	A
5	4.40	8.00	4.40	0.0	42.6	144.2	4.40	0.00	A	0.00	A
6	4.40	8.00	4.40	42.6	42.6	241.1	3.35	1.72	A	1.72	A
7	4.40	8.00	4.40	0.0	50.0	330.7	4.40	0.00	A	0.00	A
8	4.40	8.00	4.40	47.6	47.6	229.7	3.79	1.73	A	1.73	A
9	4.40	8.00	4.40	59.8	59.8	454.1	3.18	1.74	A	1.74	A
10	4.40	8.00	4.40	0.0	50.0	237.8	4.40	0.00	A	0.00	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link LOS Score	Ped Link LOS
2	10.0	0.0	19.0	9.0	0.0	-4.7701	0.1049	0.7503	2.13	B
3	11.0	0.0	20.0	9.0	0.0	-5.4613	0.3095	1.5243	2.42	B
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.2978	1.3045	1.67	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4367	1.2656	1.77	A
6	10.0	6.0	19.0	10.0	0.0	-6.0219	0.2653	1.5950	1.89	A
7	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4284	1.7613	2.26	B
8	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4693	1.3419	1.88	A
9	10.0	6.0	19.0	10.0	0.0	-5.9756	0.2748	1.8765	2.22	B
10	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4349	1.4953	2.00	B

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrscn	Ped Segment RCDF	Ped Segment LOS Score	Ped Segment LOS
1	1.00	2.83	C
2	1.07	2.85	C

3	1.20	2.85	C
4	1.08	2.72	B
5	1.20	2.60	B
6	1.20	3.10	C
7	1.20	2.79	C
8	1.20	3.10	C
9	1.20	3.23	C
10	1.20	2.69	B
Average		2.90	C

5. Non-signalized Pedestrian Crossing Calculations

Segment	Two-stage Crossing	Stage 1							
		Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	52	3	14.82	0.367	0.9956	608.9	611.5	608.9
2	Yes	29	2	9.59	0.183	0.8275	16.6	20.0	16.6
3	Yes	20	1	7.55	0.186	0.7545	9.0	11.9	9.0
4	No	53	2	15.05	0.261	0.9803	175.8	179.3	175.8
5	No	53	2	15.05	0.245	0.9750	144.2	147.9	144.2
6	No	53	2	15.05	0.286	0.9866	241.1	244.4	241.1
7	No	53	2	15.05	0.312	0.9908	330.7	333.8	330.7
8	No	53	2	15.05	0.283	0.9857	229.7	233.0	229.7
9	No	53	2	15.05	0.337	0.9937	454.1	457.0	454.1
10	No	53	2	15.05	0.285	0.9863	237.8	241.1	237.8

Segment	Motorist Yield Rate	Stage 2							
		Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	16	1	6.64	0.086	0.4357	2.3	5.3	2.3
3	0.000	20	1	7.55	0.092	0.4992	3.3	6.7	3.3
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
6	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
7	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
8	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
9	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
10	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Intrsectn	Average Ped Delay (sec)	Pedestrian Intrsectn LOS
1	608.9	F
2	18.9	C
3	12.3	C
4	175.8	F
5	144.2	F
6	241.1	F
7	330.7	F
8	229.7	F
9	454.1	F
10	237.8	F

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	8	0	1.000	1.000	0	Infinity
2	8	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)	Pedestrian Delay at Intersection			Ped Travel Speed (ft/s)	Ped Intrscn		Ped Intrscn	
				Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)		Cross Street Xing Score	Xing LOS	Segment Xing Score	Xing LOS
1	4.40	8.00	4.40	47.2	47.2	237.8	3.34	1.73	A	1.73	A
2	4.40	8.00	4.40	0.0	50.0	281.9	4.40	0.00	A	0.00	A
3	4.40	8.00	4.40	0.0	50.0	158.4	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	0.0	47.2	215.8	4.40	0.00	A	0.00	A
5	4.40	8.00	4.40	75.0	75.0	129.4	3.35	2.48	B	1.75	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link	
									LOS	Score
1	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3122	1.5420	1.93	A
2	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4071	1.5177	2.00	A
3	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4411	1.3457	1.86	A
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4359	1.4318	1.94	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4232	1.1630	1.66	A

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrscn	RCDF	Ped Segment LOS Score	Ped Segment LOS
1	1.20	3.12	C
2	1.20	2.69	B
3	1.20	2.64	B
4	1.20	2.67	B
5	1.20	3.22	C
Average		2.90	C

5. Non-signalized Pedestrian Crossing Calculations

Segment	Two-stage Crossing	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Stage 1			
						Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	53	2	15.05	0.285	0.9863	237.8	241.1	237.8
2	No	53	2	15.05	0.299	0.9889	281.9	285.0	281.9
3	No	53	2	15.05	0.253	0.9777	158.4	162.0	158.4
4	No	53	2	15.05	0.278	0.9846	215.8	219.1	215.8

5 No 53 2 15.05 0.237 0.9716 129.4 133.2 129.4

Segment	Motorist	Stage 2							
	Yield Rate	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
3	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Downstream Intrsctn	Average Ped Delay (sec)	Pedestrian Intrsctn LOS
1	237.8	F
2	281.9	F
3	158.4	F
4	215.8	F
5	129.4	F

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	8	0	1.000	1.000	0	Infinity
2	8	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity
6	8	0	1.000	1.000	0	Infinity
7	8	0	1.000	1.000	0	Infinity
8	8	0	1.000	1.000	0	Infinity
9	5	0	1.000	1.000	0	Infinity
10	10	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)				Ped Travel Speed (ft/s)	Ped Intrscn		Ped Intrscn	
			Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)	Cross Street Score		Xing LOS	Segment Score	Xing LOS	
1	4.40	8.00	4.40	59.8	59.8	326.1	3.15	1.74	A	1.74	A
2	4.40	8.00	4.40	47.6	47.6	285.8	3.34	1.73	A	1.73	A
3	4.40	8.00	4.40	0.0	50.0	301.1	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	42.6	42.6	158.9	3.41	1.72	A	1.72	A
5	4.40	8.00	4.40	0.0	42.6	146.7	4.40	0.00	A	0.00	A
6	4.40	8.00	4.40	31.3	31.3	302.1	3.63	1.94	A	1.71	A
7	4.40	8.00	4.40	0.0	50.0	229.7	4.40	0.00	A	0.00	A
8	4.40	8.00	4.40	32.1	32.1	15.1	2.97	1.71	A	1.94	A
9	4.40	5.00	4.40	28.4	28.4	20.0	3.26	1.71	A	2.12	B
10	4.40	8.50	4.40	0.0	50.0	2.6	4.40	0.00	A	0.00	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link	
									LOS Score	LOS
1	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3288	0.8139	1.21	A
2	10.0	6.0	19.0	10.0	0.0	-5.9756	0.2922	1.0319	1.40	A
3	10.0	6.0	19.0	10.0	0.0	-5.9756	0.5348	0.7722	1.38	A
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3241	0.6632	1.06	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4367	0.7475	1.26	A
6	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3067	0.9724	1.35	A
7	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4499	0.7866	1.31	A
8	11.0	0.0	20.0	9.0	0.0	-5.4613	0.1076	0.8263	1.52	A
9	10.0	0.0	16.0	6.0	0.0	-5.2790	0.1347	1.3006	2.20	B
10	10.0	0.0	16.0	6.0	0.0	-4.7776	0.4695	0.0455	1.78	A

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrscn	RCDF	Ped Segment LOS Score	Ped Segment LOS
1	1.20	2.85	C

2	1.20	2.92	C
3	1.20	2.45	B
4	1.20	2.79	C
5	1.20	2.41	B
6	1.09	2.68	B
7	1.20	2.43	B
8	1.10	2.71	B
9	1.02	2.74	B
10	1.20	2.61	B
Average		2.63	B

5. Non-signalized Pedestrian Crossing Calculations

Segment	Two-stage Crossing	Stage 1							
		Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	53	2	15.05	0.311	0.9907	326.1	329.2	326.1
2	No	53	2	15.05	0.300	0.9890	285.8	289.0	285.8
3	No	53	2	15.05	0.304	0.9897	301.1	304.2	301.1
4	No	53	2	15.05	0.253	0.9778	158.9	162.6	158.9
5	No	53	2	15.05	0.247	0.9756	146.7	150.4	146.7
6	No	53	2	15.05	0.304	0.9898	302.1	305.3	302.1
7	No	53	2	15.05	0.283	0.9857	229.7	233.0	229.7
8	Yes	20	1	7.55	0.101	0.5329	3.8	7.1	3.8
9	Yes	16	1	6.64	0.159	0.6514	5.1	7.9	5.1
10	No	52	3	14.82	0.021	0.2716	2.6	9.6	2.6

Segment	Motorist Yield Rate	Stage 2							
		Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
3	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
6	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
7	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
8	0.000	20	1	7.55	0.214	0.8016	11.3	14.1	11.3
9	0.000	29	2	9.59	0.172	0.8079	14.9	18.4	14.9
10	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Downstream Intrsctn	Average Ped Delay (sec)	Pedestrian Intrsectn LOS
1	326.1	F
2	285.8	F
3	301.1	F
4	158.9	F
5	146.7	F
6	302.1	F
7	229.7	F
8	15.1	C
9	20.0	C
10	2.6	A

B. Pedestrian LOS

Street: National Avenue

1. Pedestrian Flow and Density

Segment	Sidewalk Width (ft)	Ped Flow (pph)	Glogal Growth Factor	Segment Growth Factor	Adj'd Ped Flow (pph)	Space Per Ped (sqft/ped)
1	8	0	1.000	1.000	0	Infinity
2	8	0	1.000	1.000	0	Infinity
3	8	0	1.000	1.000	0	Infinity
4	8	0	1.000	1.000	0	Infinity
5	8	0	1.000	1.000	0	Infinity

2. Compute Pedestrian Intersection LOS

Segment	Free-Flow Walk Speed (ft/sec)	Effective SW Width (ft)	Ped Walk Speed (ft/s)	Pedestrian Delay at Intersection			Ped Travel Speed (ft/s)	Ped Intrscn		Ped Intrscn	
				Parallel Path (sec)	Nearest Sig-Cntrl (sec)	Mid-Seg Crossing (sec)		Cross Street Xing Score	Xing LOS	Segment Xing Score	Xing LOS
1	4.40	8.00	4.40	0.0	47.2	160.1	4.40	0.00	A	0.00	A
2	4.40	8.00	4.40	0.0	50.0	238.6	4.40	0.00	A	0.00	A
3	4.40	8.00	4.40	0.0	50.0	279.9	4.40	0.00	A	0.00	A
4	4.40	8.00	4.40	47.2	47.2	189.1	3.34	1.73	A	1.73	A
5	4.40	8.00	4.40	0.0	50.0	380.1	4.40	0.00	A	0.00	A

3. Compute Pedestrian Link LOS

Segment	Outside lane (ft)	Wos (ft)	Wv (ft)	Wl BL+Shldr (ft)	Barrier (ft/tree)	Fw	Fs	Fv	Ped Link LOS Score	Ped Link LOS
1	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4981	0.7685	1.34	A
2	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4548	0.8185	1.34	A
3	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4544	0.9285	1.45	A
4	10.0	6.0	19.0	10.0	0.0	-5.9756	0.3180	0.7433	1.13	A
5	10.0	6.0	19.0	10.0	0.0	-5.9756	0.4149	0.9517	1.44	A

4. Compute Pedestrian Segment LOS

Segment & Downstream Intrscn	RCDF	Ped Segment LOS Score	Ped Segment LOS
1	1.20	2.44	B
2	1.20	2.44	B
3	1.20	2.48	B
4	1.20	2.82	C
5	1.20	2.48	B
Average		2.52	B

5. Non-signalized Pedestrian Crossing Calculations

Segment	Two-stage Crossing	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Stage 1			
						Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	No	53	2	15.05	0.254	0.9780	160.1	163.7	160.1
2	No	53	2	15.05	0.286	0.9864	238.6	241.9	238.6
3	No	53	2	15.05	0.298	0.9888	279.9	283.1	279.9
4	No	53	2	15.05	0.267	0.9820	189.1	192.6	189.1

5 No 53 2 15.05 0.323 0.9922 380.1 383.1 380.1

Segment	Motorist	Stage 2							
	Yield Rate	Crossing Length (ft)	Through Lanes (#)	Critical Headway (sec)	Veh Flow Rate (veh/sec)	Prob of Delayed Crossing	Avg Ped Gap Delay (sec)	Non-zero Gap Delay (sec)	Veh Yield Reduction (sec)
1	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
2	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
3	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
4	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0
5	0.000	0	0	0.00	0.000	0.0000	0.0	0.0	0.0

6. Non-signalized Pedestrian Crossing LOS

Downstream Intrsctn	Average Ped Delay (sec)	Pedestrian Intrsctn LOS
1	160.1	F
2	238.6	F
3	279.9	F
4	189.1	F
5	380.1	F

APPENDIX J: PLANNING-LEVEL COST ESTIMATES



Planning-Level Estimate of Improvement Costs

Project: National Avenue Corridor Master Plan (Long-Term Mobility Concept)
Location: San Diego, CA
Date: 2/28/2014
Project #: SD12-0070



SUBTOTAL \$1,589,195
30% CONTINGENCY \$476,759
30% DESIGN BUDGET \$476,759
TOTAL COST ESTIMATE \$2,542,713

Intersection	Improvement	Unit	Unit Cost	Quantity	Total
National Avenue & 28th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Remove Painted Striping and Markings	SF	\$3	360	\$1,080
	Add New Striping	LF	\$5	185	\$925
				<i>Subtotal:</i>	\$5,005
National Avenue & I-5 NB Off Ramp	Stripe/Restripe Marked Crosswalk	EA	\$750	2	\$1,500
	Install ADA Compliant Curb Ramps	EA	\$5,000	2	\$10,000
	Modify Signal Timing	SIGNAL	\$3,000	1	\$3,000
				<i>Subtotal:</i>	\$14,500
National Avenue & 29th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	8	\$40,000
	Construct Curb Extensions	CORNER	\$15,000	4	\$60,000
				<i>Subtotal:</i>	\$103,000
National Avenue & 30th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install Ped heads with Countdown Timers	EA	\$1,000	4	\$4,000
	Modify Signal Timing	SIGNAL	\$3,000	1	\$3,000
				<i>Subtotal:</i>	\$10,000
National Avenue & 31st Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	2	\$10,000
	New Traffic Signal	SIGNAL	\$275,000	1	\$275,000
				<i>Subtotal:</i>	\$288,000
National Avenue & 32nd Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	8	\$40,000
				<i>Subtotal:</i>	\$43,000
National Avenue & 33rd Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	8	\$40,000
	Remove Painted Striping and Markings	SF	\$3	350	\$1,050
	Add New Striping	LF	\$5	120	\$600
	Construct Curb Extensions	CORNER	\$15,000	4	\$60,000
				<i>Subtotal:</i>	\$104,650
National Avenue & 35th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
				<i>Subtotal:</i>	\$3,000
National Avenue & 36th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	2	\$10,000
				<i>Subtotal:</i>	\$13,000
National Avenue & 37th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	8	\$40,000
	Remove Painted Striping and Markings	SF	\$3	350	\$1,050
	Add New Striping	LF	\$5	120	\$600
	Construct Curb Extensions	CORNER	\$15,000	4	\$60,000
				<i>Subtotal:</i>	\$104,650
National Avenue & 38th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	4	\$20,000
				<i>Subtotal:</i>	\$23,000
National Avenue & 39th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	8	\$40,000
	Remove Painted Striping and Markings	SF	\$3	350	\$1,050
	Add New Striping	LF	\$5	120	\$600
	Construct Curb Extensions	CORNER	\$15,000	4	\$60,000
				<i>Subtotal:</i>	\$104,650
National Avenue & 40th Street	Stripe/Restripe Marked Crosswalk	EA	\$750	4	\$3,000
	Install ADA Compliant Curb Ramps	EA	\$5,000	8	\$40,000
	Remove Painted Striping and Markings	SF	\$3	350	\$1,050
	Add New Striping	LF	\$5	120	\$600
				<i>Subtotal:</i>	\$44,650
National Avenue & 41st Street	Stripe/Restripe Marked Crosswalk	EA	\$750	3	\$2,250
	Install ADA Compliant Curb Ramps	EA	\$5,000	6	\$30,000
	New Traffic Signal	SIGNAL	\$275,000	1	\$275,000
				<i>Subtotal:</i>	\$307,250
Total Intersection Improvement Cost:					\$1,168,355

Planning-Level Estimate of Improvement Costs

Project: National Avenue Corridor Master Plan (Long-Term Mobility Concept)
Location: San Diego, CA
Date: 2/28/2014
Project #: SD12-0070

SUBTOTAL	\$1,589,195
30% CONTINGENCY	\$476,759
30% DESIGN BUDGET	\$476,759
TOTAL COST ESTIMATE	\$2,542,713

Segments	Improvement	Unit	Unit Cost	Quantity	Total
National Avenue from 27th Street to approximately 400' east of 41st Street	Installation of Class II Bike Lanes with 2' Buffer	LF	\$5	52,462	\$262,310
National Avenue from 27th Street to 28th Street	Remove Painted Striping and Markings	SF	\$3	1,800	\$5,400
	Add New Striping	LF	\$5	470	\$2,350
National Avenue from 29th Street to 33rd Street	Remove Painted Striping and Markings	SF	\$3	7,290	\$21,870
	Add New Striping	LF	\$5	1,260	\$6,300
National Avenue from 33rd Street to 35th Street ¹	Remove Painted Striping and Markings	SF	\$3	6,000	\$18,000
	Add New Striping	LF	\$5	1,200	\$6,000
National Avenue from 35th Street to 36th Street	Remove Painted Striping and Markings	SF	\$3	1,920	\$5,760
	Add New Striping	LF	\$5	400	\$2,000
National Avenue from 36th Street to 39th Street	Remove Painted Striping and Markings	SF	\$3	16,020	\$48,060
	Add New Striping	LF	\$5	3,600	\$18,000
National Avenue from 39th Street to 40th Street	Remove Painted Striping and Markings	SF	\$3	3,360	\$10,080
	Add New Striping	LF	\$5	550	\$2,750
National Avenue from 40th Street to 41st Street	Remove Painted Striping and Markings	SF	\$3	3,120	\$9,360
	Add New Striping	LF	\$5	520	\$2,600
Total Segment Improvement Cost:					\$420,840

Source: Fehr & Peers, 2014.

Notes:

1. Cost estimate does not include the enhanced pedestrian crossing at the National Avenue segment between 33rd Street and 35th Street. The implementation of this enhanced pedestrian crossing is contingent upon the development of a park. If the park is developed and an enhanced pedestrian crossing is installed the total cost estimate shown above could increase up to an additional \$15,000.